

Plan Requirements for Solar Installations

Updated 9/29/2025

This document is the companion document to the solar installations checklist:

<https://www.fairfaxva.gov/SolarInstallationChecklist>

This document is intended as a guide when preparing building and electrical plans for solar photovoltaic systems. This document is not required to be filled out and submitted with permit filings for solar installations, but it is encouraged to help speed up the plan review process.

Plans are required to have the engineer's dated seal and contact information.

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Building Permit Plan Requirements for Solar Photovoltaic System

Structural Review of Solar PV Array Mounting System

Is the array to be mounted on a defined, permitted roof structure? ☐ Yes ☐ No
If No due to non-compliant roof or a ground mount, submit completed Structural Worksheet - WKS1 in Appendix A.

Roof Information:

- ☐ 1. Roof age: Structure: ☐ <5 yrs ☐ 5-10 yrs ☐ 20-30 yrs ☐ 30+ yrs
 Covering: ☐ <5 yrs ☐ 5-10 yrs ☐ 20-30 yrs ☐ 30+ yrs
- ☐ 2. Is the roofing type lightweight, (Yes = composition, lightweight masonry, metal, etc...) ☐
If No, submit completed Structural Worksheet - WKS1 in Appendix A. (No = heavy masonry, slate, etc...)
- ☐ 3. Does the roof have a single covering? ☐ Yes ☐ No
If No, submit completed Structural Worksheet - WKS1 in Appendix A.
- ☐ 4. Provide method and type of weatherproofing roof penetrations (e.g., flashing, caulk)
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Mounting System Information:

- ☐ 1. Is the mounting structure an engineered product designed to mount PV modules with no more than 18" gap beneath the module frames? ☐ Yes ☐ No
If No, provide details of structural attachment certified by a design professional. Must include design for uplift including system to rafter detail.
- ☐ 2. For manufactured mounting systems, fill out information on the mounting system below:
- Mounting System Manufacturer _____ Product Name & Model # _____
 - Total Weight of PV Modules and Rails _____ lbs
 - Total Number of Attachment Points _____
 - Weight per attachment Points (b÷c) _____ lbs *(if greater than 45 lbs. See WKS1 in Appendix A)*
 - Maximum Spacing Between Attachment Points on a Rail _____ inches
See product manual for maximum spacing allowed based on maximum design wind speed
 - Total Surface Area of PV Modules (square feet) _____ ft²
 - Distributed Weight of PV Module on Roof (b÷f) _____ lbs/ft²
If distributed weight of the PV system is greater than 5 lbs/ft² see Structural Worksheet - WKS1 in Appendix A.
 - Mounting Frame to Rafter Framing: ☐ Self-ballasted ☐ Penetrating
If penetrating, please provide for fasteners:
 Type: _____ Size: _____ Number: _____ Spacing: _____ inches

Appendix A - Structural Worksheet (WKS1)

Complete only if previous Structural Review questions ask for Structural Worksheet - WKS1 information.

*If array is **roof mounted**:*

This section is for evaluation roof structural members that are site built. This includes rafter system and site built trusses. Manufactured trusses and roof joist system, when installed with proper spacing, meet the roof structure requirements covered in item 2 below.

- ☐ 1. Roof Construction: Rafters____ Trusses____ Other: _____
- ☐ 2. Describe site-built rafter or other site-built truss systems.
 - a. Rafter Size: _____ x _____ inches
 - b. Rafter Spacing: _____ inches
 - c. Maximum unsupported span: _____ feet, _____ inches
 - d. Are the rafters over-spanned? (see the VRC Span Tables) ____ Yes ____ No
 - e. If **Yes**, complete the rest of this section
- ☐ 3. If the roof system has:
 - a. over-spanned rafters or trusses
 - b. the array over 5 lbs/ft² on any roof construction, or
 - c. The attachments with a dead load exceeding 45 lbs per attachment;

A recommendation is that you provide one of the following:

- A framing plan that show details for how you will strengthen the rafters using the supplied span table. This will include all supporting load paths.
- Confirmation certified by a design professional that the roof structure will support the array.

*If array is **ground mounted**:*

- ☐ 1. Show array supports, framing members, and foundation posts and footings.
- ☐ 2. Provide information on mounting structure(s) construction. If the mounting structure is unfamiliar to the local jurisdiction and is more than six (6) feet above grade, it may require engineering calculations by a design professional.
- ☐ 3. Show detail on module attachment method to mounting structure. Gravity loads and wind uplift must be addressed by design.

Electrical Permit Plan Requirements for Solar Photovoltaic System

The following items must be in the electrical plans for installation of solar photovoltaic systems:

- ☐ 1. Manufacturer Specifications
- ☐ 2. System Kilowatt (kW) rating (including the number of arrays)
- ☐ 3. A Single Line Diagram as per the National Electrical Code
- ☐ 4. Labelling as per the National Electrical Code
- ☐ 5. Grounding Details
- ☐ 6. Wiring Method

Electrical Review Checklist of PV System (Calculations for Electrical Diagram)

- ☐ 1. PV modules, utility-interactive inverters, and combiner boxes are identified for use in PV systems.
- ☐ 2. PV modules, utility-interactive inverters, and combiner boxes are identified for use in PV systems.
- ☐ 3. The PV array is composed of 4 series string or less per inverters.
- ☐ 4. The AC interconnection point is on the load side of service disconnecting means.
- ☐ 5. A standard electrical diagram can be used to accurately represent the PV system.