

Solar-Photovoltaic System Plan Requirements:

- **UPLOAD ATTACHMENTS SEPARATELY or format to match plan dimensions.**
(e.g., 11x17" plans must have 11x17" spec sheets if included as part of the plan set)

Site plan: A detailed site plan showing the location of the home/structure, electrical service meter, main service panel, interconnected sub-panels, and all PV system components on the property is required. Please provide the square footage of the structure and the total square footage of the panels to be installed. Confirm the solar panel layout shows all IRC required fire access pathways and ridge setbacks.

Mounting system: Include an evaluation by a Montana licensed professional engineer stating the structure will support additional loads and that the attachment hardware is sufficient for local design criteria. For calculations use, a **min. 30 psf (non-reducible) roof snow load**, an ultimate wind speed of 110 mph, and an exposure category of "C". Include mounting system details on the plan.

One-line diagram: A one-line diagram should specify the PV system type (string inverter, micro inverter, etc.), the exact number and layout of modules, array circuit type (series/parallel), each strings total power output, the array total power output and each component location. Specify and provide applicable calculations for conductor types, conductor sizes, conduit types, conduit sizes, Equipment grounding conductor, and the rating of all fuses or breakers.

Interconnected components: On the one-line diagram, show electrical panel(s) the PV system will backfeed through; noting the location and bus rating of each panel. Existing feeders being tapped or fed by separate power sources at opposite ends shall specify conductor size and the overcurrent protection rating provided. Qualify each interconnection type with a code reference from NEC article 705. Please provide pictures of the meter main, main service and/or sub panels that are a point of interconnection. Images should include an overall view of individual equipment and an additional view of the manufacturer applied specification labels.

Site specific labeling diagram: Include a colored detail page of labels to be placed on equipment. This should include a diagram indicating which labels will be applied to the specific equipment used on the project. "Typical" or "generic" labeling diagrams are not permitted. Labeling diagrams must be site specific. Ensure the directory required by NEC 705.10 is included on this page.

Module specification sheets: Provide the photovoltaic module (solar panel) specification sheets. These include information such as nominal power watts (W), volts (Vmp), amps (Imp), open circuit voltage (Voc), short circuit current (Isc), etc. Modules must be UL 1703 listed.

Inverter specification sheets: Provide the manufacturer specification sheet listing max voltage and current the inverter can safely handle. This will also include the inverter max AC output amperage and voltage. Utility tied inverters must be listed as "utility interactive" meeting UL 1741, and have ground fault protection. Compliance with rapid shutdown must be provided.



Billings
BUILDING
DIVISION

Click here to visit our website

www.billingsmt.gov