

Solar PV Permit Checklist

Applications will only be reviewed if completed checklist and all required items are submitted as an entire packet.

Roof-Mounted Solar PV Systems (Residential & Commercial)	Ground-Mounted Solar PV Systems (Residential & Commercial)
<input type="checkbox"/> Building Permit (Apply on ePermits) <input type="checkbox"/> Electrical Permit (Apply on ePermits) <input type="checkbox"/> Structural Compliance: Complete Appendix 1. Show a building section of roof framing in sufficient detail to verify compliance with the MN State Building Code. Identify rafter spans, framing details (eg, 2x4, 2x6, etc), location of rafter/ collar ties, and roof pitch. Include a picture showing roof framing under proposed attachment location. If roof system includes engineered trusses, then Engineering must verify that additional loads imposed by PV system will be safely supported. <input type="checkbox"/> Site plan showing location of major components on the property. A plan view showing location of PV arrays, setbacks, and pathways. Include total roof area, total PV array area, and widths of pathways and setbacks as measured horizontally so a person standing vertically will have the clear width required by the Code.	<input type="checkbox"/> Building Permit (Apply on ePermits) <input type="checkbox"/> Electrical Permit (Apply on ePermits) <input type="checkbox"/> Structural Compliance: Construction plan, specification sheets, photos, and installation manuals for all manufactured components (see Appendix 1). Additional information as requested by Inspector. <input type="checkbox"/> Site plan showing location of major components on the property, setbacks, elevations, size (see Appendix 2).

* The MN Department of Labor and Industry (DLI) and Minnesota Department of Commerce developed a Solar PV standardized structural load table for residential structures to help determine if the roof structure of wood-framed buildings is sufficient to handle the additional weight of solar PV systems. Permit applicants may use the standardized load table report in conjunction with manufacturer installation recommendations to demonstrate structural compliance.

Building Permit Fees (see [Building Permit Fee Schedule](#))

Please allow 5-10 business days for issuance of the permit. This process may be delayed if the plans are incomplete. You will be notified when your permit is ready to be picked up and paid for.

Appendix 1. Structural Review Of PV Installation Mounting System & Roof

1. Is the roof supporting the installation a pitched roof in good condition, without visible sag or deflection, no cracking or splintering of support, or other potential structural defect? <input type="checkbox"/> Yes <input type="checkbox"/> No
2. Is the roof a rafter system? <input type="checkbox"/> Yes <input type="checkbox"/> No
3. Is the equipment to be flush-mounted to the roof such that the collector surface is parallel to the roof? <input type="checkbox"/> Yes <input type="checkbox"/> No
4. Is the roofing type lightweight? (composition, lightweight masonry, metal, etc) <input type="checkbox"/> Yes <input type="checkbox"/> No
5. Does the roof have a single layer covering? <input type="checkbox"/> Yes <input type="checkbox"/> No <small>If "No" to any of questions 1–4 above, additional documentation may be required. Documentation may need to demonstrate the structural integrity of the roof and all necessary structural modifications needed to maintain integrity. A statement stamped by a Minnesota licensed/certified structural engineer certifying integrity may be needed. Contact the building official to determine submittal requirements.</small>
6. Identify method and types of weatherproofing for roof penetrations (eg, flashing, caulk):

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7. Is the mounting structure an engineered product designed for PV modules with no more than an 18" gap beneath the module frames?

Yes No (If "No" provide details of structural attachment certified by a design professional. Manufacturer's engineering specifications are sufficient to meet this requirement.)

8. For manufactured mounting systems, complete information below.**

a. Mounting system manufacturer: _____

b. Product name and model number: _____

c. Total weight of PV modules and rails: _____ lbs

d. Total number of attachment points: _____ (attachment points must be equally distributed across the array)

e. Weight per attachment point (c÷d): _____ lbs

f. Maximum spacing between attachment points on a rail: _____ inches

(See product manual for maximum spacing allowed based on maximum design wind speed.)

g. Total surface area of PV modules: _____ square feet

h. Distributed weight of PV module on roof (c÷g): _____ lbs/square foot

If the outcome of e. is greater than 45 lbs or h. is greater than 5 lbs/ft², a study or statement demonstrating the structural integrity of the installation, or a statement stamped by a Minnesota licensed/certified structural engineer, may be required. Contact the building official to determine requirements.

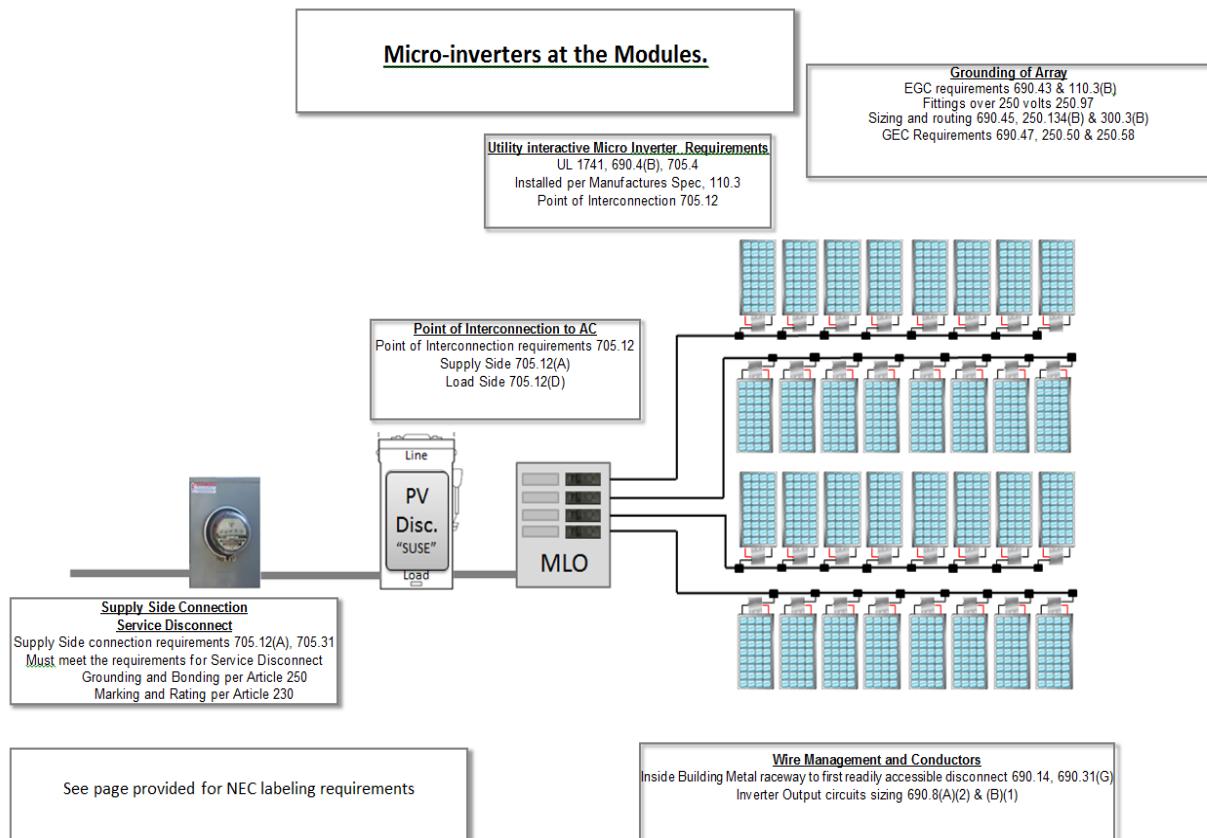
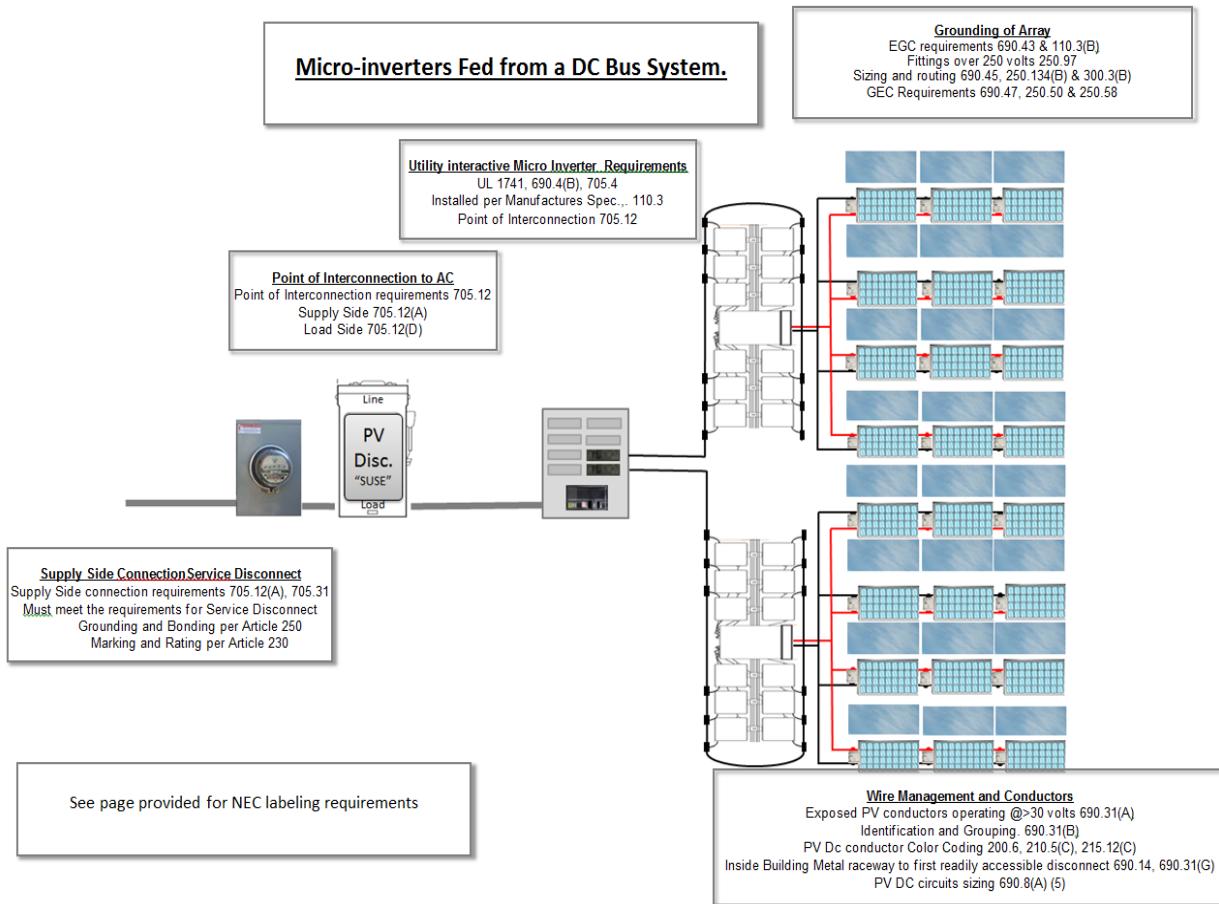
** Attaching the rail to each rafter or truss that passes under the array, or to blocking installed between each support, may serve to mitigate for any structural uncertainties on older roofs or wind loading concerns. This approach was used by Minneapolis and St Paul based on engineering studies conducted with their building stock. Contact the building official to determine requirements.

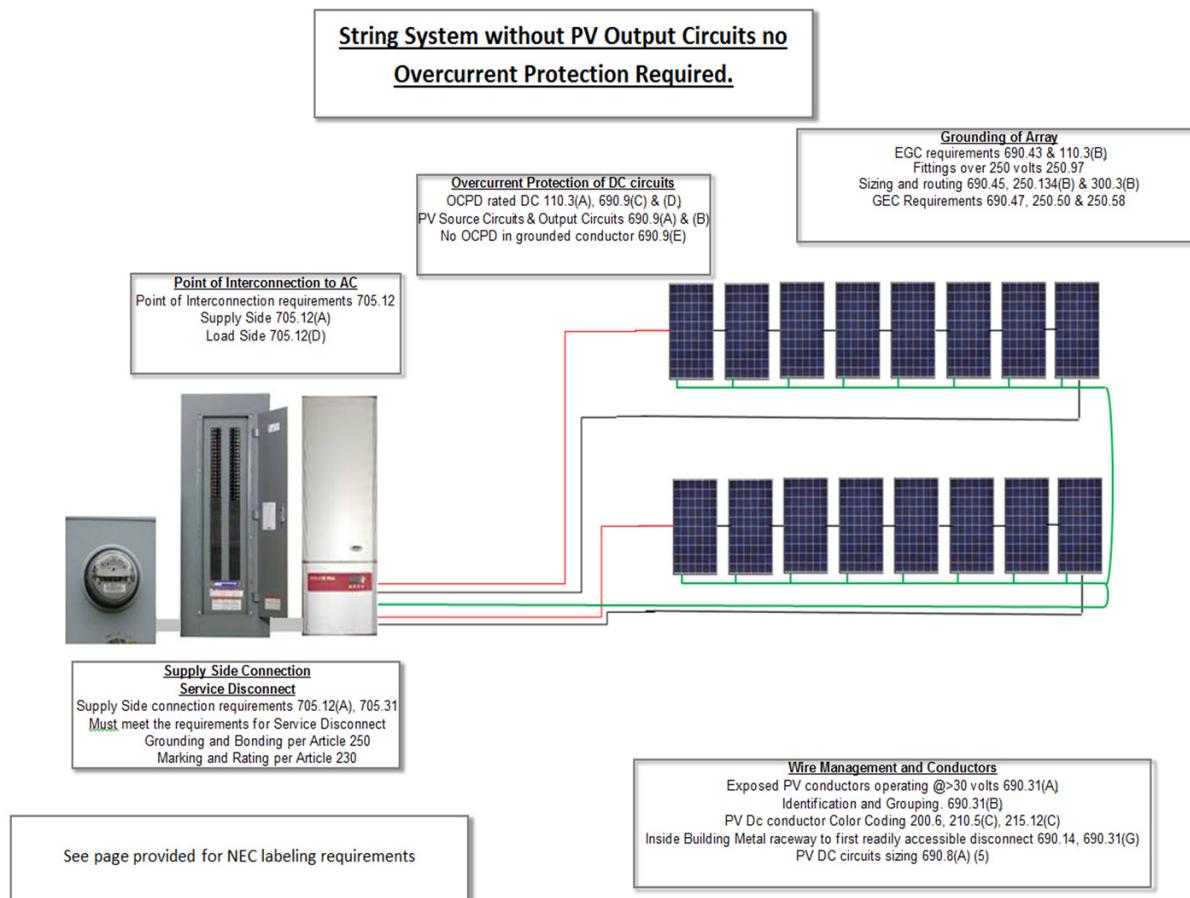
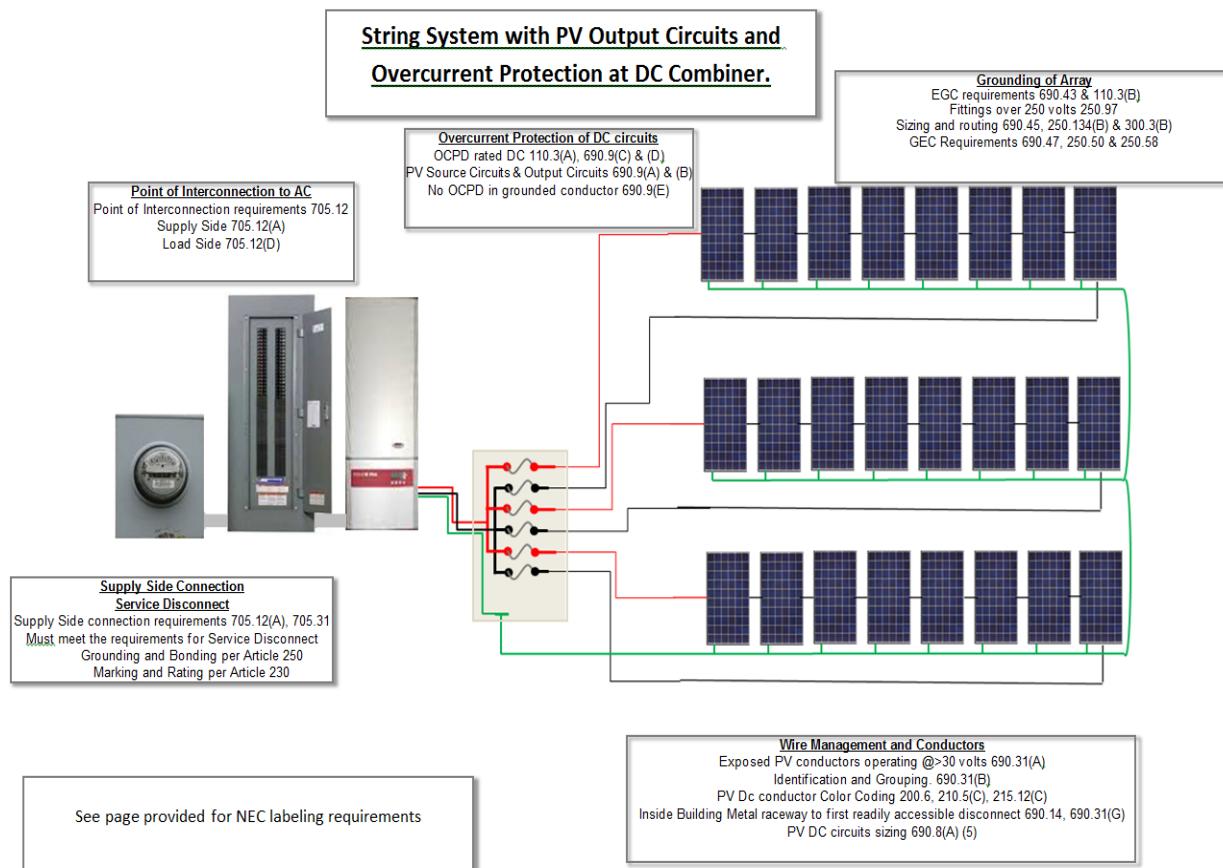
To view drawing examples, visit the Solar Photovoltaic (PV) Resources website at www.dli.mn.gov/business/electrical-contractors/solar-photovoltaic-pv-resources and look for the [Solar PV standardized structural load tables for residential structures](#) document.



This document is available in alternate formats upon a 72-hour request. Please call 763-593-8006 (TTY: 763-593-3968) to make a request. Examples of alternate formats may include large print, electronic, Braille, audiocassette, etc.







NEC Labeling Requirements

Section	Location of Label	Label Text and Appearance	Location of Label	Label Text and Appearance
690.5(C)	Shall appear on the utility-interactive inverter or be applied by the installer near the ground-fault indicator at a visible location	WARNING ELECTRICAL SHOCK HAZARD IF A GROUND FAULT IS INDICATED NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED	690.54	All interactive system(s) points of interconnection with other sources shall be marked at an accessible location at the disconnecting means as a power source and with the rated ac output current and the nominal operating ac voltage.
690.35(F)	Shall be labeled with the following warning at each junction box, combiner box, disconnect, and device where energized, ungrounded circuits may be exposed during service.	WARNING ELECTRICAL SHOCK HAZARD THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED	690.56(B) 690.4(D) 705.10 705.12(D)(3)	A permanent plaque or directory, denoting all electric power sources on or in the premises, shall be installed at each service equipment location and at locations of all electric power production sources capable of being interconnected.
690.13(B) 690.15	Each PV system disconnecting means shall be permanently marked to identify it as a PV system disconnect.	MAIN PHOTOVOLTAIC SYSTEM DISCONNECT PHOTOVOLTAIC DC DISCONNECT PHOTOVOLTAIC AC DISCONNECT	690.17(E)	Where all terminals of the disconnecting means may be energized in the open position, a warning sign shall be mounted on or adjacent to the disconnecting means.
690.53	A permanent label for the direct-current PV power source indicating the information specified in (1) through (5) shall be provided by the installer at the PV disconnecting means.	RATED MAX POWER-POINT CURRENT RATED MAX POWER-POINT VOLTAGE MAXIMUM SYSTEM VOLTAGE MAXIMUM CIRCUIT CURRENT MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER IF INSTALLED	705.12 (D)(2)(3)(b) 705.12 (D)(2)(3)(c)	A permanent warning label shall be applied to the distribution equipment adjacent to the back-fed breaker from the inverter. Permanent warning labels shall be applied to distribution equipment
690.31(G)(3)	The following wiring methods and enclosures that contain PV power source conductors shall be marked: (1) Exposed raceways, cable trays, and other wiring methods (2) Covers or enclosures of pull boxes and junction boxes (3) Conduit bodies in which any of the available conduit openings are unused	WARNING PHOTOVOLTAIC POWER SOURCE WARNING: PHOTOVOLTAIC POWER SOURCE	690.56(C)	Buildings or structures with both utility service and a PV system, complying with 690.12, shall have a permanent plaque or directory. Stating: THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR.
			690.31(G)(3)	Where circuits are embedded in built-up, laminate, or membrane roofing materials in roof areas not covered by PV modules and associated equipment, the location of circuits shall be clearly marked.
				