



## Solar PV Permit Checklist & Process

### Residential & Commercial, Building-Mounted, Solar PV Systems – Permit Checklist:

Submit this checklist with your building permit application & fee, your electrical permit application and fee, and applicable supporting documents as one entire package.

- ☐ [Building Permit](#)
- ☐ [Electrical Permit](#)
- ☐ [Conditional Use Permit](#) IF any of the following apply:
  - ☐ The solar installation is in the commercial district
  - ☐ The solar installation is on a light pole
- ☐ Scaled horizontal and vertical (elevation) drawings showing:
  - ☐ the location of the system on the building, or on the property for a ground-mounted system, including the property lines (see Appendix 1: “Diagrams to complement permit applications”)
- ☐ Manufacturer’s specifications and installation manual
- ☐ Demonstration of compliance with [MN State Building Code](#) and/or sufficient structural roof support for weight, wind, and snow loads for new Solar PV System (See “Standardized Load Table” below). Additional Information as Requested by Inspector.
- ☐ For all building-mounted systems other than a flat roof, show:

<ul style="list-style-type: none"><li><input type="radio"/> the highest finished slope of the solar collector</li><li><input type="radio"/> the slope of the finished roof surface on which it is mounted</li></ul>
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- ☐ For flat-building systems, show:

<ul style="list-style-type: none"><li><input type="radio"/> the distance to the roof edge and any parapets on the building</li><li><input type="radio"/> the height of the building on the street frontage side</li><li><input type="radio"/> the shortest distance of the system from the street frontage edge of the building</li><li><input type="radio"/> the highest finished height of the solar collector above the finished roof surface</li></ul>
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- ☐ For ground-mounted systems, show:

<ul style="list-style-type: none"><li><input type="radio"/> Height of the system</li><li><input type="radio"/> System setback from property lines</li><li><input type="radio"/> The area of the solar collector surface in relation to the lot area</li></ul>
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- ☐ Written evidence that the electric utility service provider that serves the proposed site has been informed of the applicant’s intent to install a solar energy system.
- ☐ Written evidence that the electric solar energy system components have a UL listing.

The cost of a Solar PV System electrical permit can be found in the fee schedule.

The cost of a Conditional Use permit is as follows:

**\$200 fee + \$450 escrow if residential \$850 escrow if commercial/industrial**

Cost of permit to be paid at time of application with cash, check, or credit card to City Inspections Department.

Your permit will be reviewed within 5-10 business days. After permits have been issued installation may be initiated. If you have any questions on what is needed to receive your building permit, contact City Hall at 612-782-3317.

**Standardized Load Table:** The MN Department of Labor and Industry (DLI) and Minnesota Department of Commerce developed a standardized load table to help determine if the roof structure of wood-framed buildings is sufficient to handle the additional weight of solar PV systems (see: <http://mn.gov/commerce-stat/pdfs/standardized-load-table-report.pdf>). Permit applicants may use the standardized load table report in conjunction with manufacturer installation recommendations to demonstrate structural compliance without consultation by a structural engineer.

1, 2, 3, 4

Decking: 5/8" plywood;

Roof Cover: one layer asphalt shingles;

Lag Bolts:  $\frac{1}{4}$ " bolts with 2  $\frac{1}{4}$ " length

7

4'X8' Solar Panel module  
raised 1', flush mounted to  
roof with manufacturer  
approved bracing/brackets

run

rise

5 4:12 pitch

9

12.6' span

*span*

- (1) Roof construction
- (2) Rafter size
- (3) Rafter spacing
- (4) Bolt style, diameter, and embedment length
- (5) Rafter span dimension
- (5) Approximate roof slope
- (7) Mounted solar system

# ELEVATION

**Flush-Mounted:**  
(collector surface is *parallel* to the roof surface)

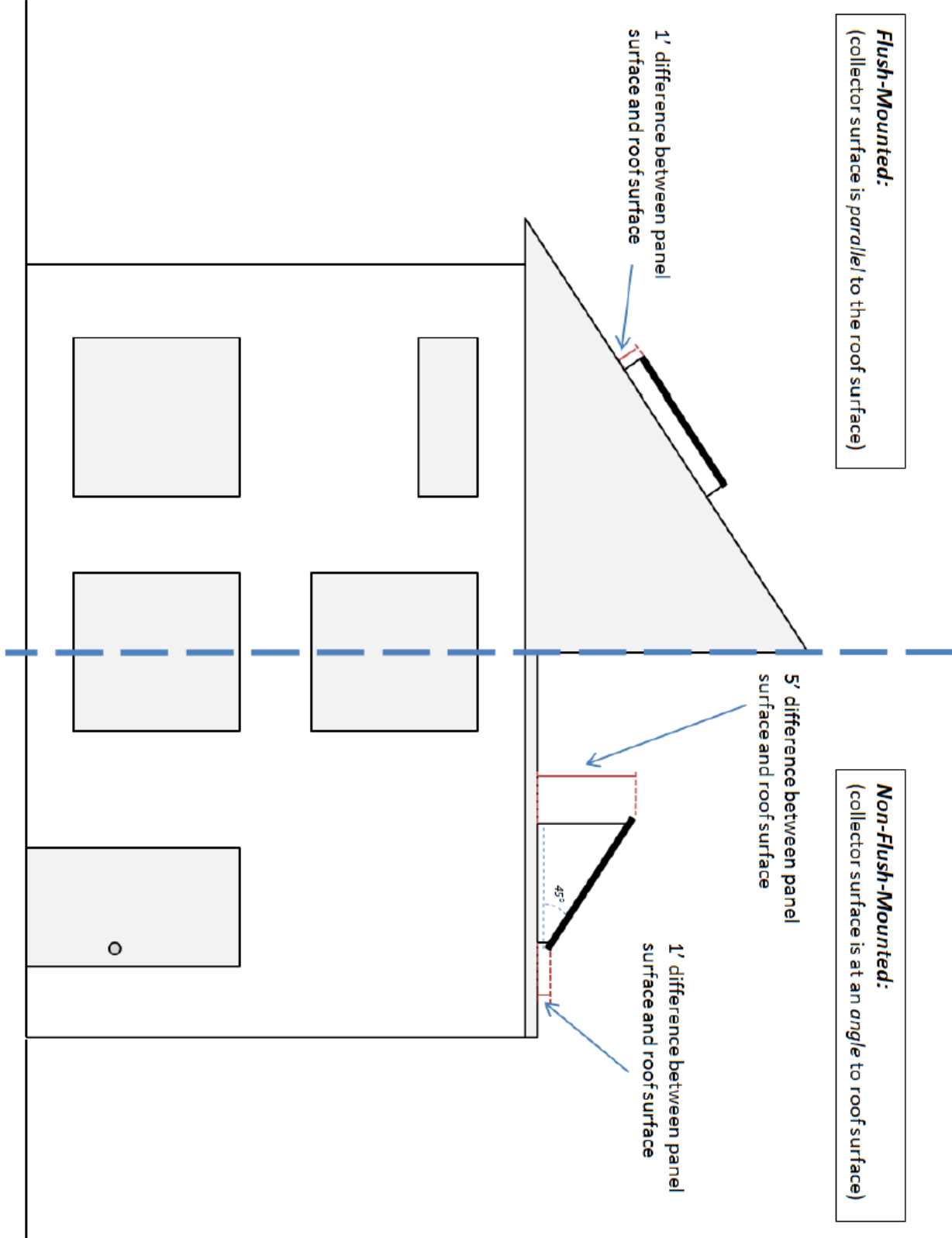
1' difference between panel  
surface and roof surface

5' difference between panel  
surface and roof surface

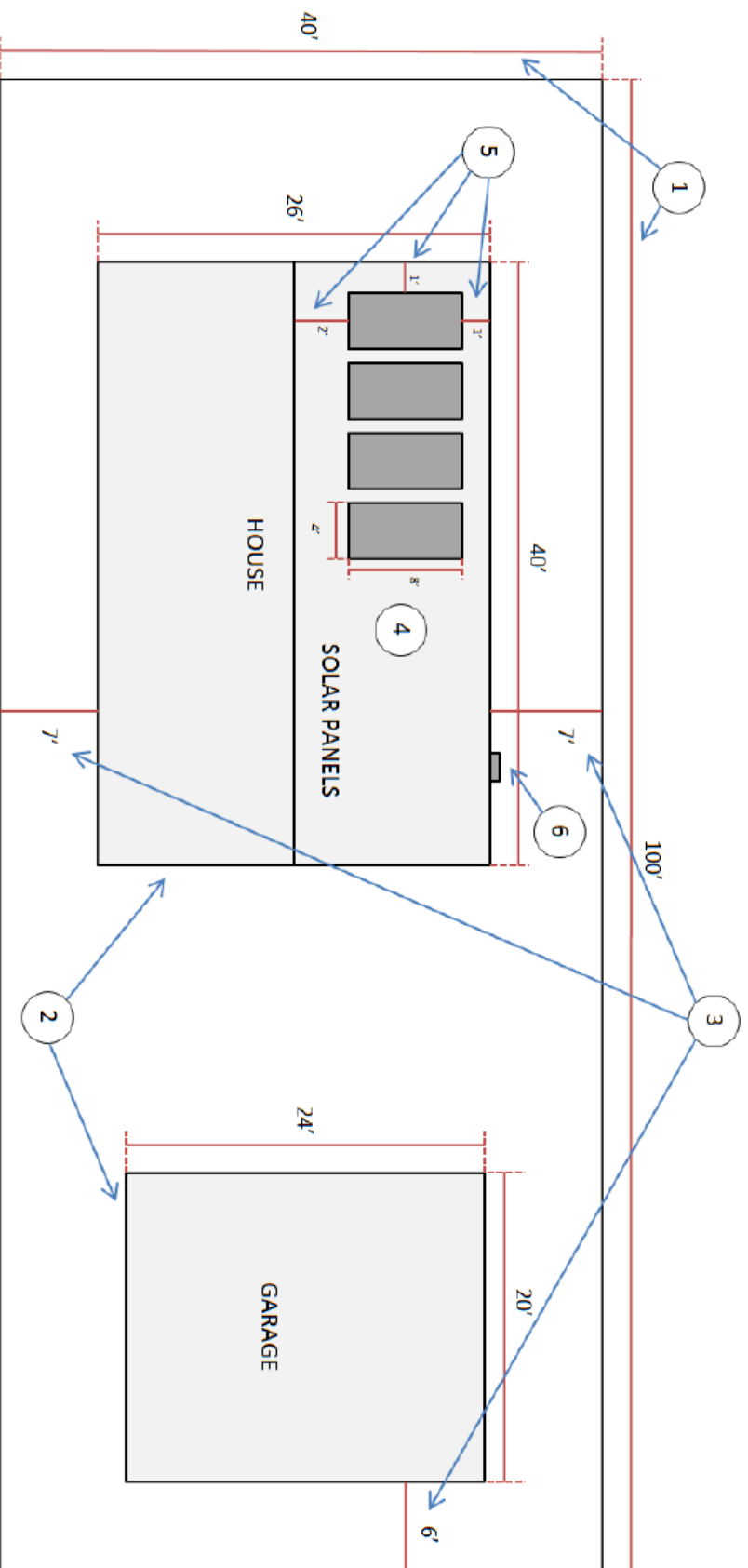
**Non-Flush-Mounted:**  
(collector surface is at an *angle* to roof surface)

1' difference between panel  
surface and roof surface

45°



# SITE PLAN



- (1) Property line locations
- (2) Location of all structures
- (3) Setback from property lines
- (4) Location of solar panel installations
- (5) Solar panel setback dimension from roof peak and edges
- (6) Main service location

## Micro-inverters Fed from a DC Bus System.

### Grounding of Array

EGC requirements 690.43 & 110.3(B)  
Fittings over 250 volts 250.97  
Sizing and routing 690.45, 250.134(B) & 300.3(B)  
GEC Requirements 690.47, 250.50 & 250.58

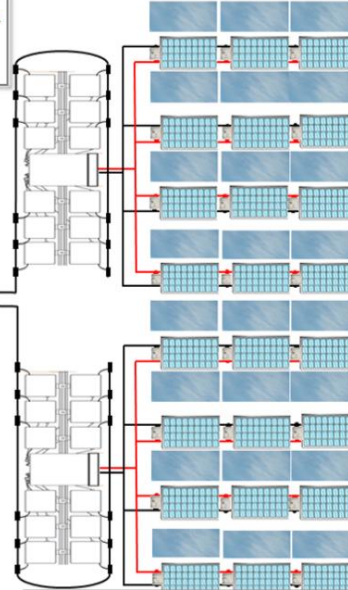
### Utility interactive Micro Inverter Requirements

UL 1741, 690.4(B), 705.4  
Installed per Manufactures Spec., 110.3  
Point of Interconnection 705.12

**Point of Interconnection to AC**  
Point of Interconnection requirements 705.12  
Supply Side 705.12(A)  
Load Side 705.12(D)

**Supply Side Connection Service Disconnect**  
Supply Side connection requirements 705.12(A), 705.31  
Must meet the requirements for Service Disconnect  
Grounding and Bonding per Article 250  
Marking and Rating per Article 230

See page provided for NEC labeling requirements



### Wire Management and Conductors

Exposed PV conductors operating @ >30 volts 690.31(A)  
Identification and Grouping 690.31(B)  
PV Dc conductor Color Coding 200.6, 210.5(C), 215.12(C)  
Inside Building Metal raceway to first readily accessible disconnect 690.14, 690.31(G)  
PV DC circuits sizing 690.8(A) (5)

## Micro-inverters at the Modules.

### Grounding of Array

EGC requirements 690.43 & 110.3(B)  
Fittings over 250 volts 250.97  
Sizing and routing 690.45, 250.134(B) & 300.3(B)  
GEC Requirements 690.47, 250.50 & 250.58

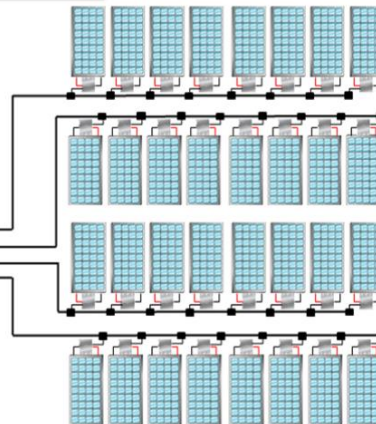
### Utility interactive Micro Inverter Requirements

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Installed per Manufactures Spec, 110.3  
Point of Interconnection 705.12

**Point of Interconnection to AC**  
Point of Interconnection requirements 705.12  
Supply Side 705.12(A)  
Load Side 705.12(D)

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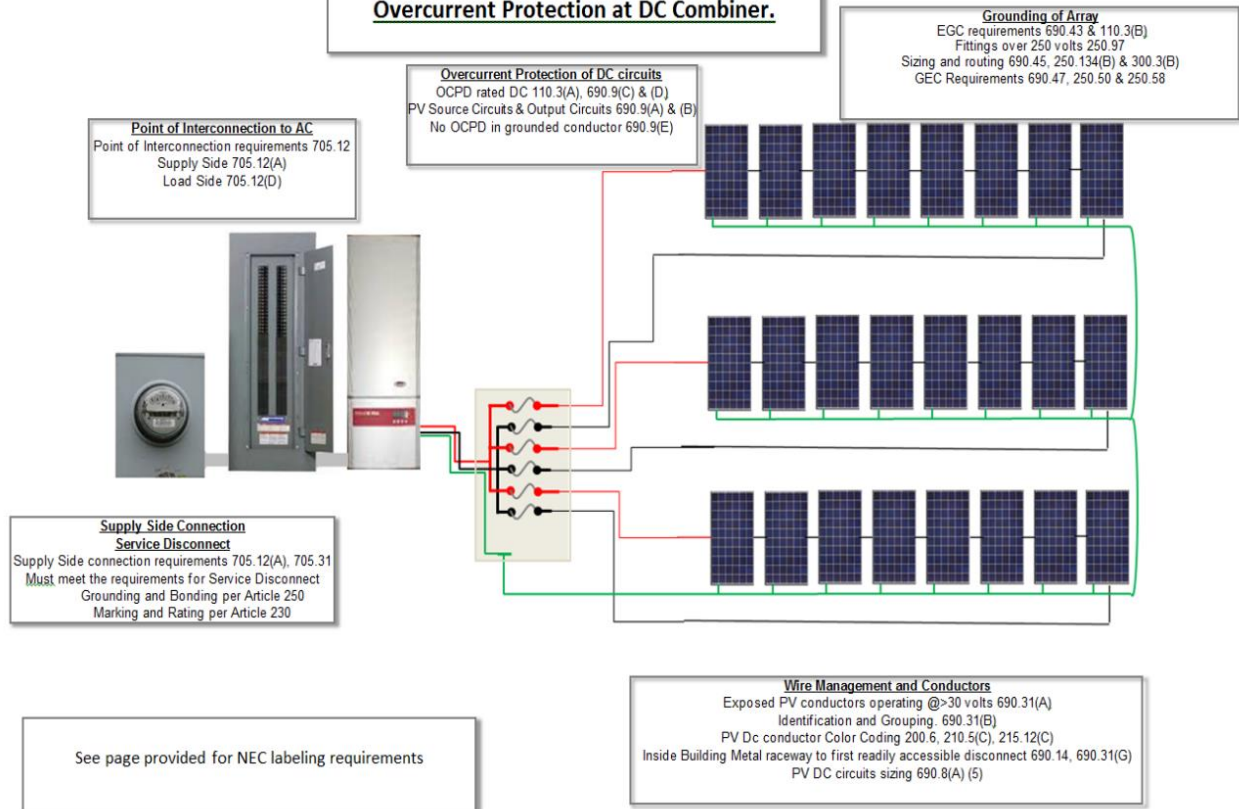
See page provided for NEC labeling requirements



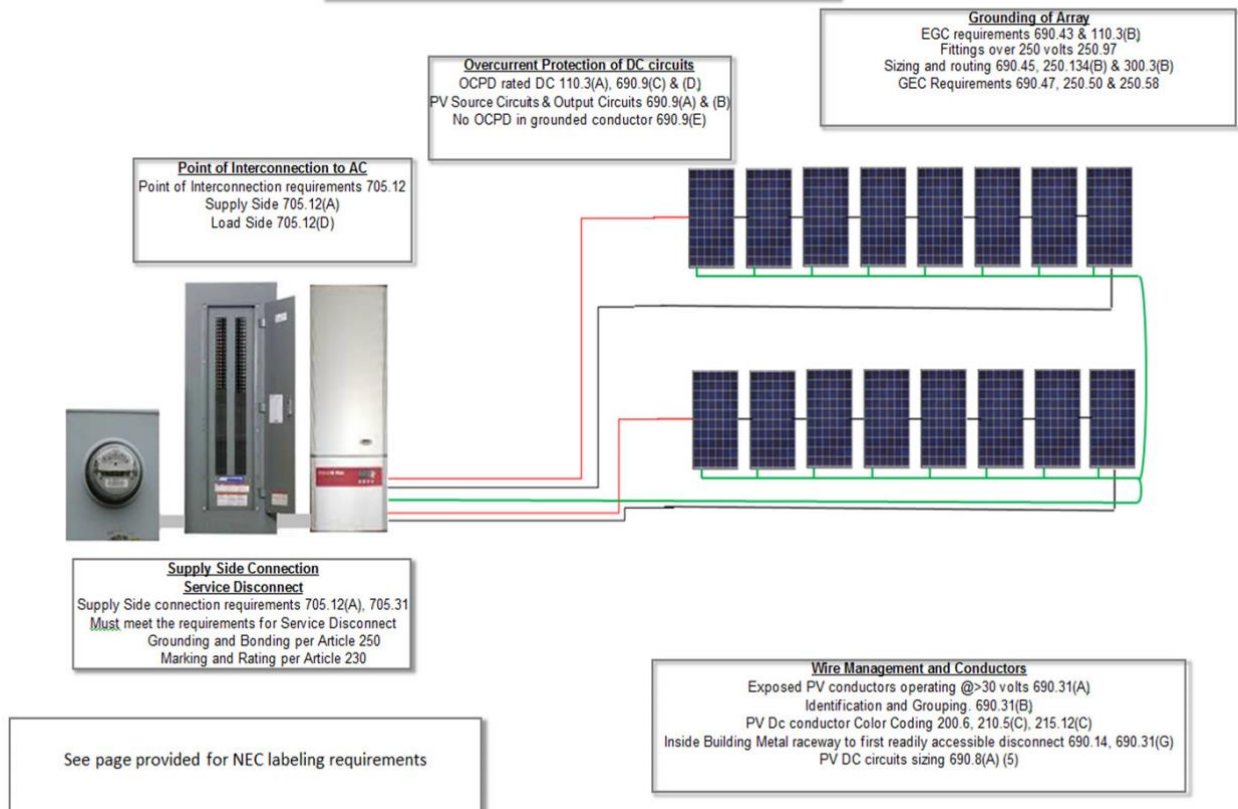
### Wire Management and Conductors

Inside Building Metal raceway to first readily accessible disconnect 690.14, 690.31(G)  
Inverter Output circuits sizing 690.8(A)(2) & (B)(1)

## String System with PV Output Circuits and Overcurrent Protection at DC Combiner.



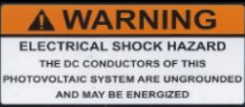


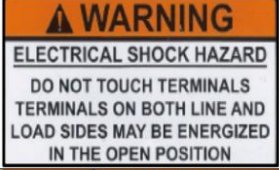

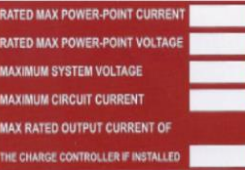
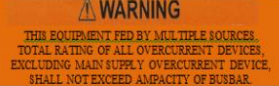




## String System without PV Output Circuits no Overcurrent Protection Required.





## 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		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.		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.		690.17(E)  705.12 (D)(2)(3)(b)	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.  A permanent warning label shall be applied to the distribution equipment adjacent to the back-fed breaker from the inverter.	 
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.		705.12 (D)(2)(3)(c)  690.56(C)	Permanent warning labels shall be applied to distribution equipment  Buildings or structures with both utility service and a PV system, complying with 690.12, shall have a permanent plaque or directory. Stating:	 
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		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.	