



Solar PV Permit Application Checklist

**APPLICATIONS WILL BE PROCESSED ONLY IF CHECKLIST AND ALL REQUIRED ITEMS ARE SUBMITTED.
Applicant will be notified when permit is approved with the total fee amount.**

Residential & Commercial, Flush Roof-Mount, Solar PV Systems – Permit Checklist:

- [Building Permit](#)
- [Electrical Permit](#)
- Site plan showing location of major components on the property and a framing cross-section that identifies type of support (rafter or truss), spacing, span dimension, and approximate roof slope. *See Appendix 1: "Diagrams to complement permit applications"*
- Structural Compliance* - Construction Plan, Specification Sheets, and Installation Manuals for all manufactured components. Additional Information as Requested by Inspector.

Commercial Ground-Mount, Solar PV Systems – Permit Checklist:

- [Building Permit](#)
- [Electrical Permit](#)
- [IUP Checklist and Application](#)
- Site plan showing location of major components on the property, setbacks, elevations, size. *See Appendix 1: "Diagrams to complement permit applications"*
- Structural Compliance - Construction Plan, Specification Sheets, photos, and Installation Manuals for all manufactured components. Additional Information as Requested by Inspector. [Solar Zoning Code Standard](#)

The cost of a **Residential** Solar PV System building permit (Roof Mount) is based on valuation. The cost of a **Commercial** Solar PV System permit (Ground or Roof Mount) is based on cost-recovery, which will be consistent with the cost for services (permit processing, site plan review, etc.). Cost of permit to be paid at time of application with cash, check, or credit card.

All applications will be reviewed within 5-10 business days. Installation may be initiated only after permits have been issued. If you have questions, please contact us at 952-873-5553 during regular business hours.

* 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.

Appendix 1: Diagrams to complement permit applications

BUILDING CROSS SECTION

1, 2, 3, 4

Rafters: 2X4 rafters, spaced 16" on center;

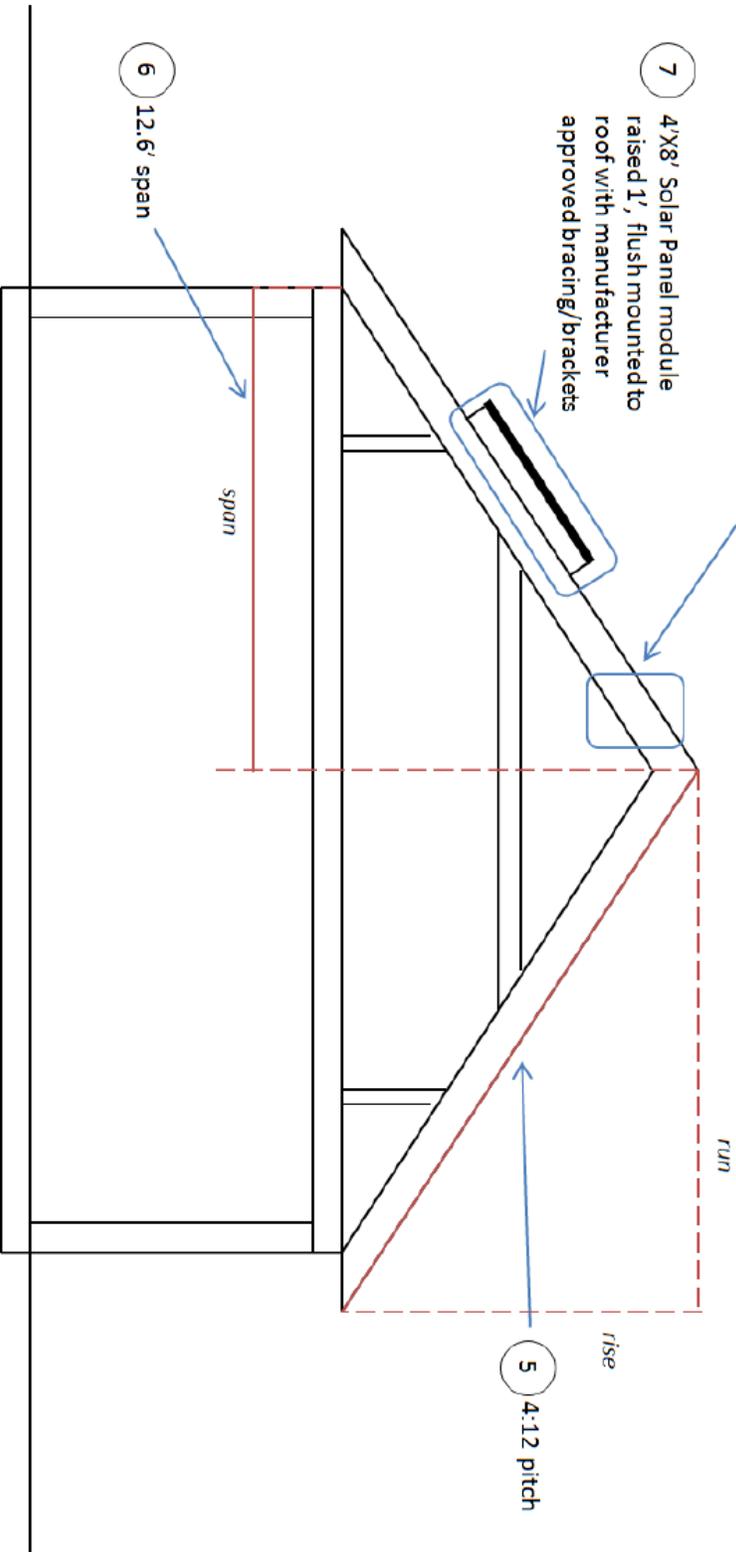
Decking: 5/8" plywood;

Roof Cover: one layer asphalt shingles;

Lag Bolts: 1/2" bolts with 2 3/4" length

7 4'X8' Solar Panel module raised 1', flush mounted to roof with manufacturer approved bracing/brackets

6 12.6' span



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

rise

5 4:12 pitch

run

span

ELEVATION

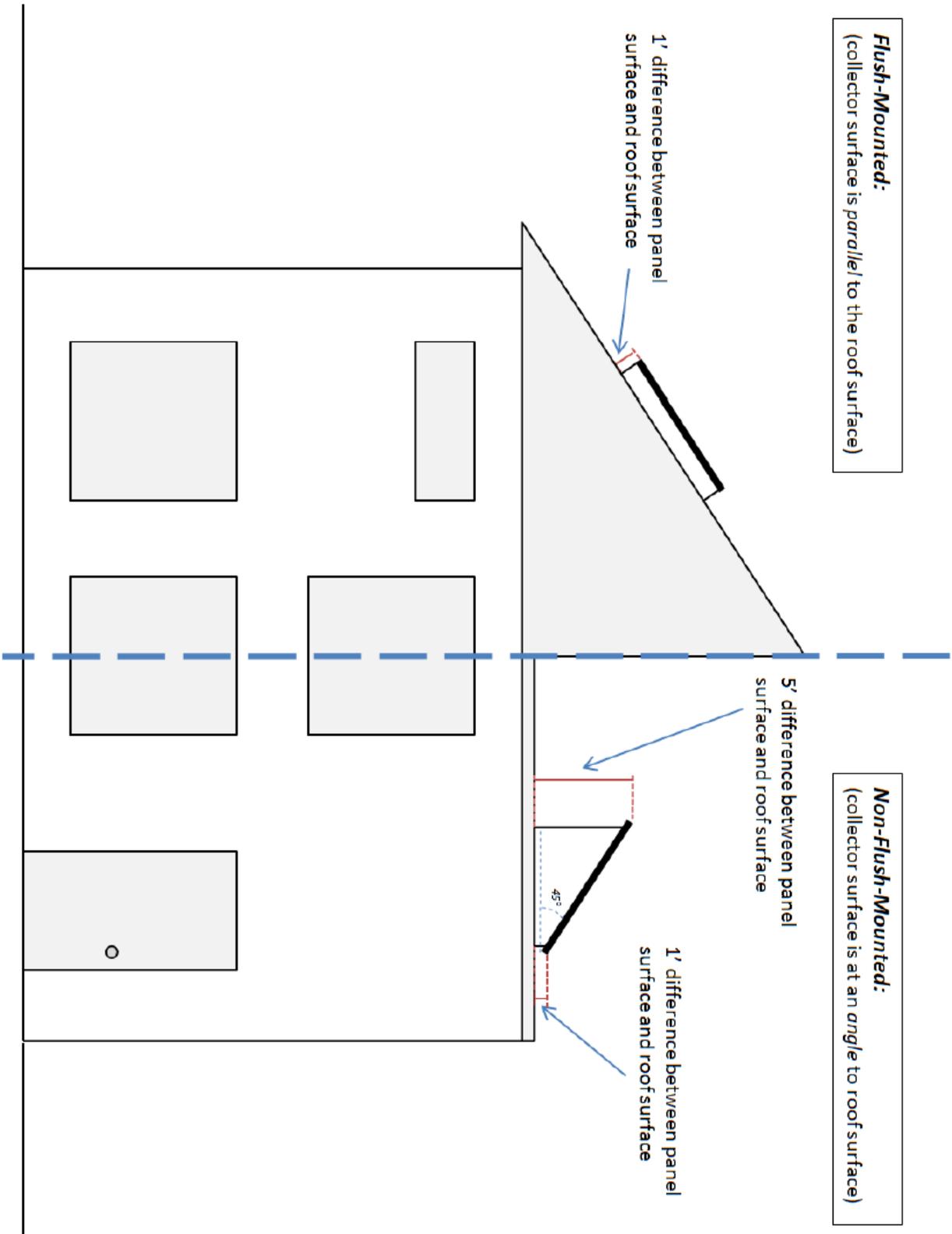
Flush-Mounted:
(collector surface is *parallel* to the roof surface)

1' difference between panel surface and roof surface

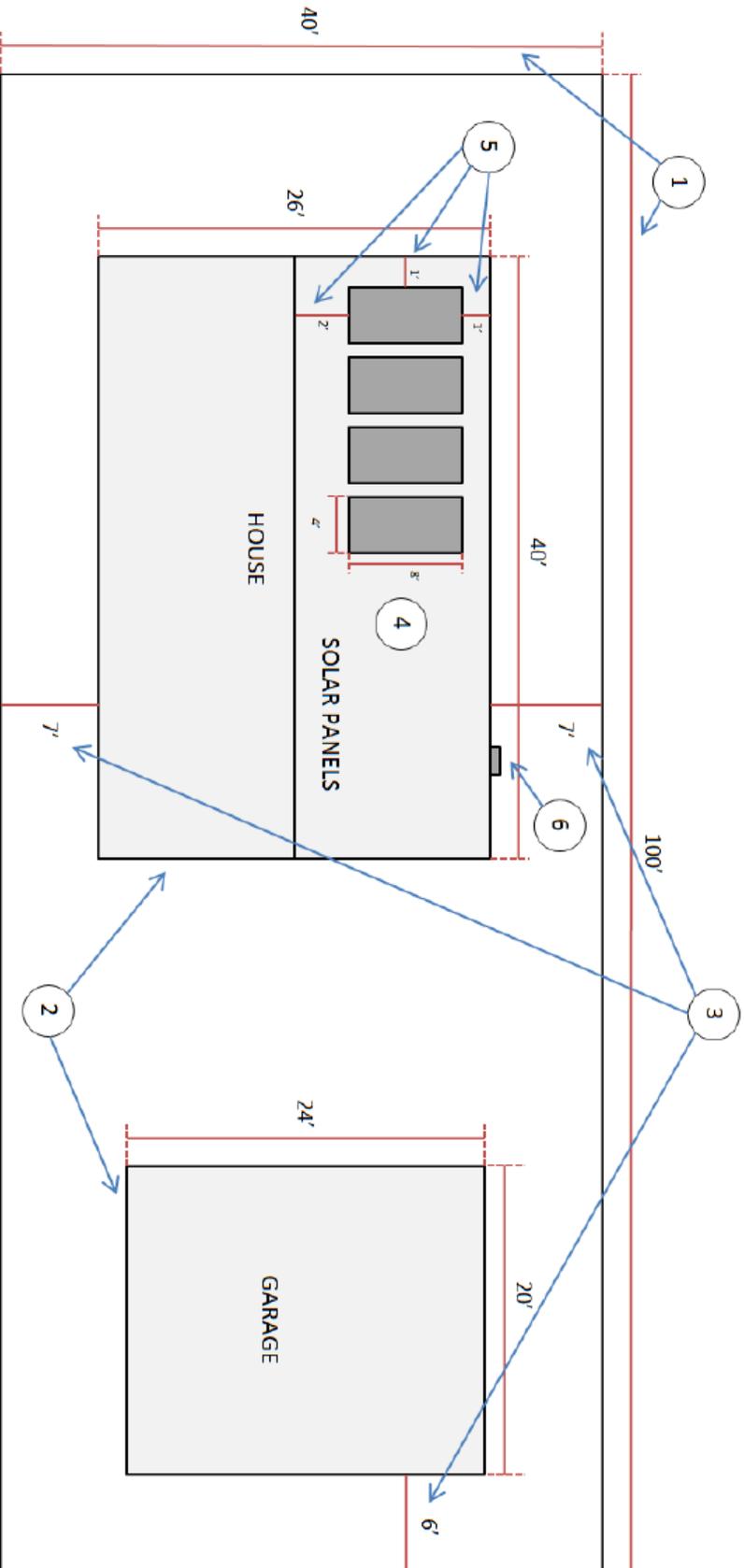
5' difference between panel surface and roof surface

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

1' difference between panel surface and roof surface



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.

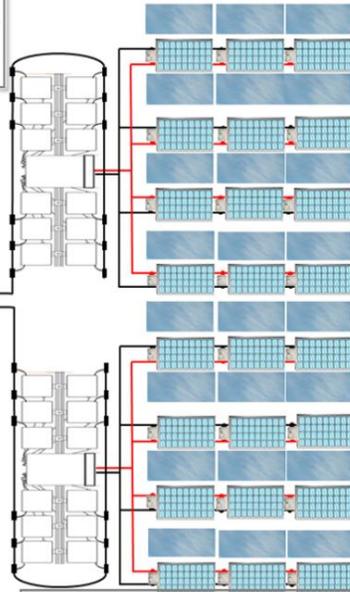
Grounding of Array
 EGC requirements 690.43 & 110.3(B)
 Fittings over 250 volts 250.97
 Sizing and routing 690.45, 250.134(B) & 300.3(B)
 GEC Requirements 690.47, 250.50 & 250.58

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.

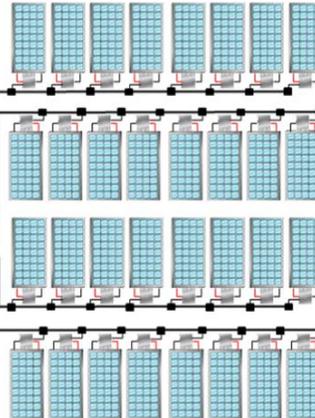
Grounding of Array
 EGC requirements 690.43 & 110.3(B)
 Fittings over 250 volts 250.97
 Sizing and routing 690.45, 250.134(B) & 300.3(B)
 GEC Requirements 690.47, 250.50 & 250.58

Utility interactive Micro Inverter Requirements
 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)

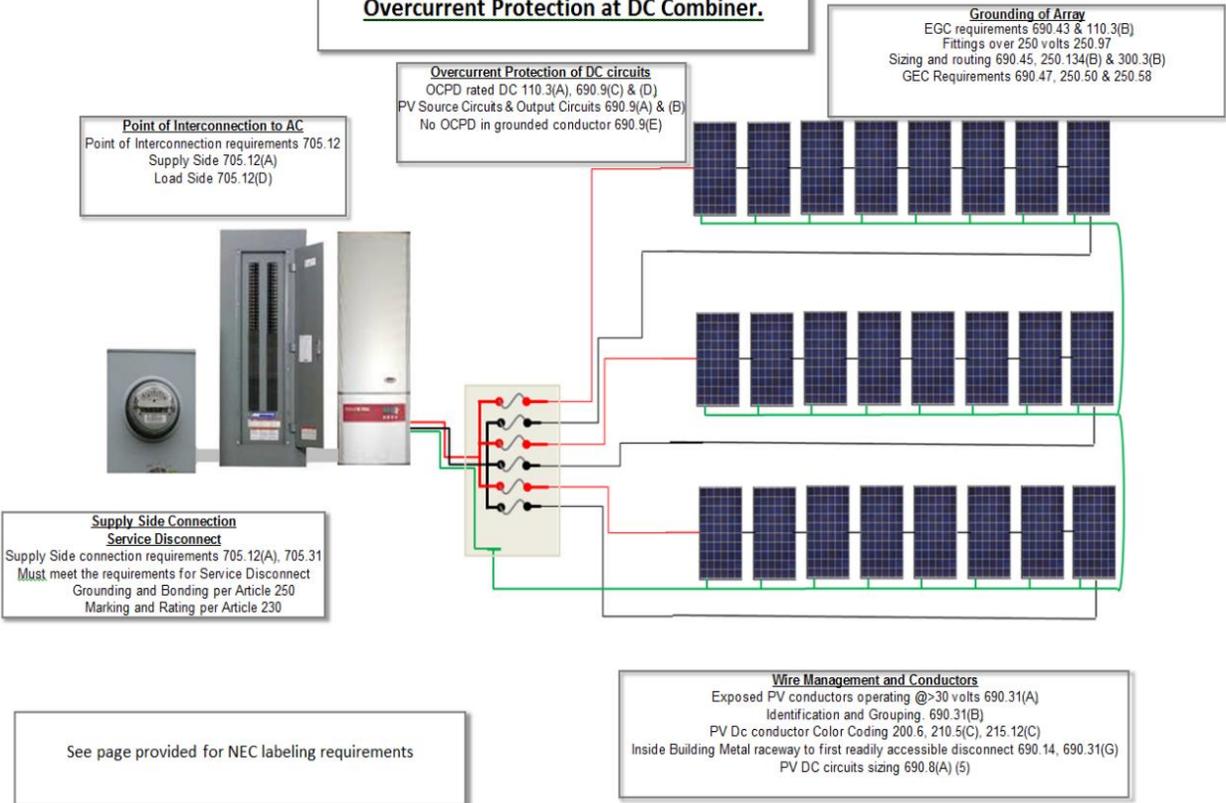
Supply Side Connection Service Disconnect
 Supply Side connection requirements 705.12(A), 705.31
 Must meet the requirements for Service Disconnect
 Grounding and Bonding per Article 250
 Marking and Rating per Article 230

See page provided for NEC labeling requirements

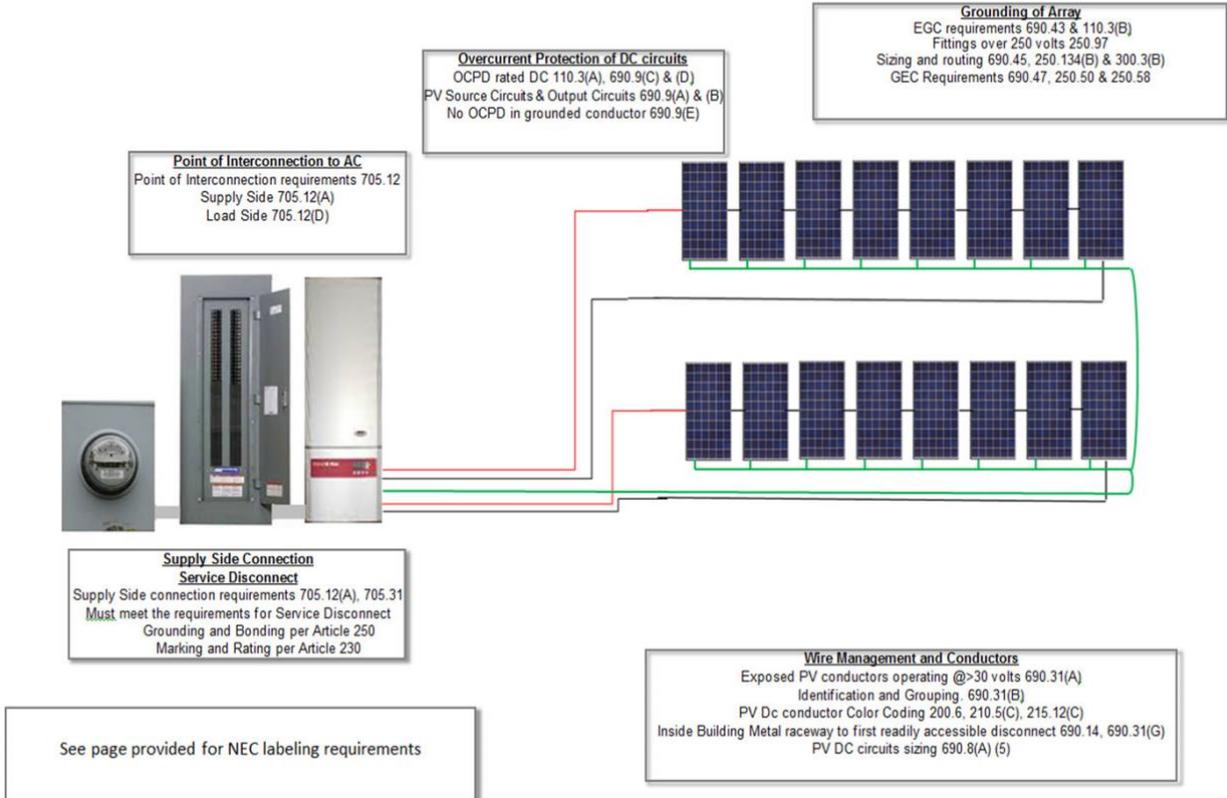


Wire Management and Conductors
 Inside Building Metal raceway to first readily accessible disconnect 690.14, 690.31(G)
 Inverter Output circuits sizing 690.8(A)(2) & (B)(1)

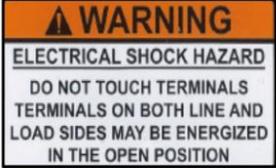
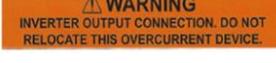
String System with PV Output Circuits and Overcurrent Protection at DC Combiner.



String System without PV Output Circuits no Overcurrent Protection Required.



NEC Labeling Requirements

Section	Location of Label	Label Text and Appearance	Section	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)	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.		705.12 (D)(2)(3)(b)	A permanent warning label shall be applied to the distribution equipment adjacent to the back-fed breaker from the inverter.	
			705.12 (D)(2)(3)(c)	Permanent warning labels shall be applied to distribution equipment	
			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:	
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.	