

Residential Rooftop Solar PV Permit Application Checklist

Submit this fully completed checklist, accompanying information, and completed Residential Building Permit as one application. Note that additional information may be requested.

- ☐ [Residential Building Permit](#)
- ☐ [Electrical Permit](#)
- ☐ Compliance with [Solar Energy Systems Ordinance](#) for applicable zoning district.
 - Any deviation from the required standards of the ordinance may be permitted through a conditional use permit in accordance with City Code Section 10-7-29(P)
- ☐ Electrical diagram showing PV array configuration, wiring system, overcurrent protection, inverter, disconnects, required signs, and AC connection to building. (See **Appendix 1**)
- ☐ Specification sheets and installation manuals (if available) for all manufactured components including, but not limited to, PV modules, inverter(s), combiner box, disconnects, and mounting system. If there is no installation manual available, fill out **Appendix 2**.
- ☐ Solar Energy Systems installed on flat roofs shall include a site plan and elevation plan. (See **Appendix 3**)

Application Submittal. The permit application may be submitted for review by way of any of the following methods. Complete and thorough applications for small rooftop solar PV permits will be processed in 5 – 10 business days (takes 1 week on average).

- **Email:** permits@burnsvillemn.gov
- **In-person:** 100 Civic Center Parkway, Burnsville, MN 55337
- **Mail:** 100 Civic Center Parkway, Burnsville, MN 55337

Associated Fees. Payment must be made in-person at City Hall. The city accepts payments in the form of Cash / Check / Credit Card.

- **Electrical Permit Fee:** See [Electrical Permit Fee Schedule](#)
- **Building Permit Fee:** Based on the total value of all work. Value includes, but is not limited to: Finish work, painting, roofing, electrical, plumbing, mechanical systems, structure, design, profit, and all other costs related to the project. See [Permits & Inspections Fees & Charges](#)

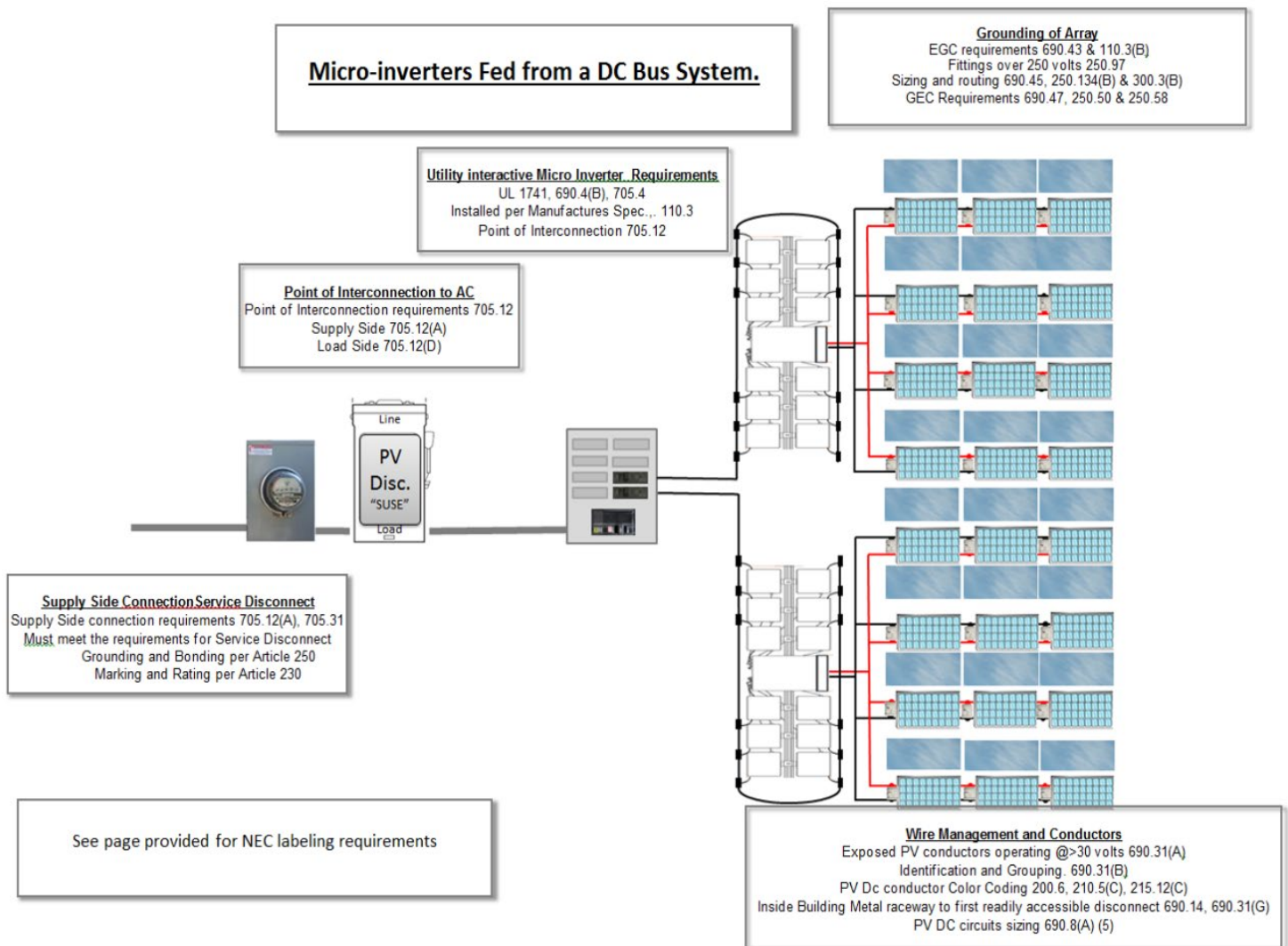
EXAMPLE: Residential 11.22kW Solar Photovoltaic Roof Mounted Array

Construction Valuation \$16,830

Building Permit fee	\$295.00	
Plan Review Fee	\$191.75	.65*[BLDGPERMITTABLE]
State Surcharge Variable	\$8.42	[STATESURCOMBLDGMech]
Permit Fee	\$495.17	

Appendix 1

Electrical diagram ([MN DoLI - One-Line Diagrams](#))



Micro-inverters at the Modules.

Utility interactive Micro Inverter Requirements
 UL 1741, 690.4(B), 705.4
 Installed per Manufactures Spec, 110.3
 Point of Interconnection 705.12

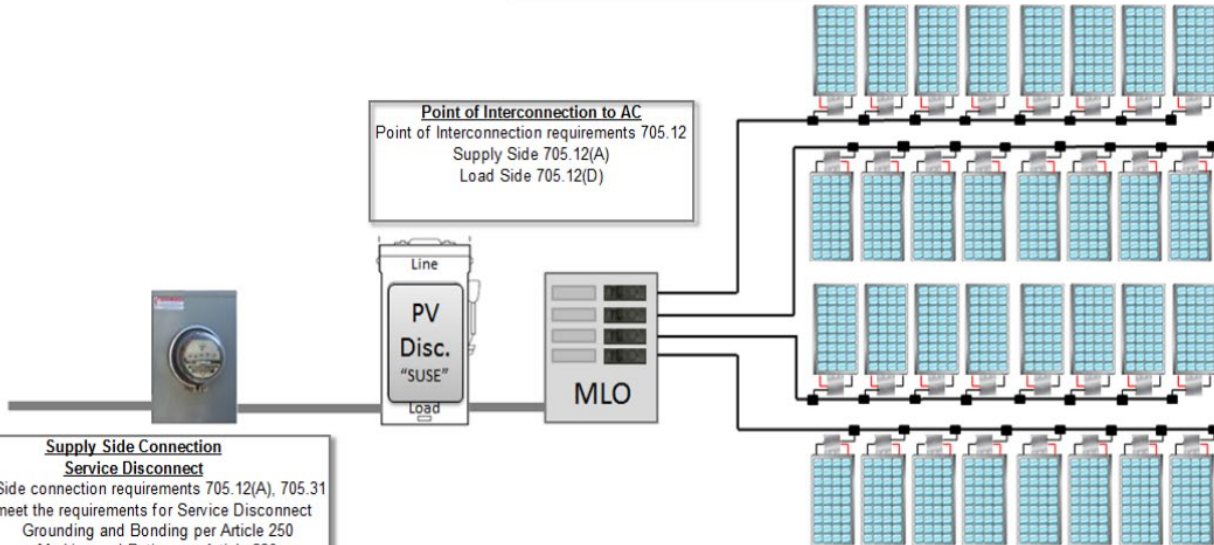
Grounding of Array
 EGC requirements 690.43 & 110.3(B)
 Fittings over 250 volts 250.97
 Sizing and routing 690.45, 250.134(B) & 300.3(B)
 GEC Requirements 690.47, 250.50 & 250.58

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.

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

Overcurrent Protection of DC circuits
OCPD rated DC 110.3(A), 690.9(C) & (D)
PV Source Circuits & Output Circuits 690.9(A) & (B)
No OCPD in grounded conductor 690.9(E)

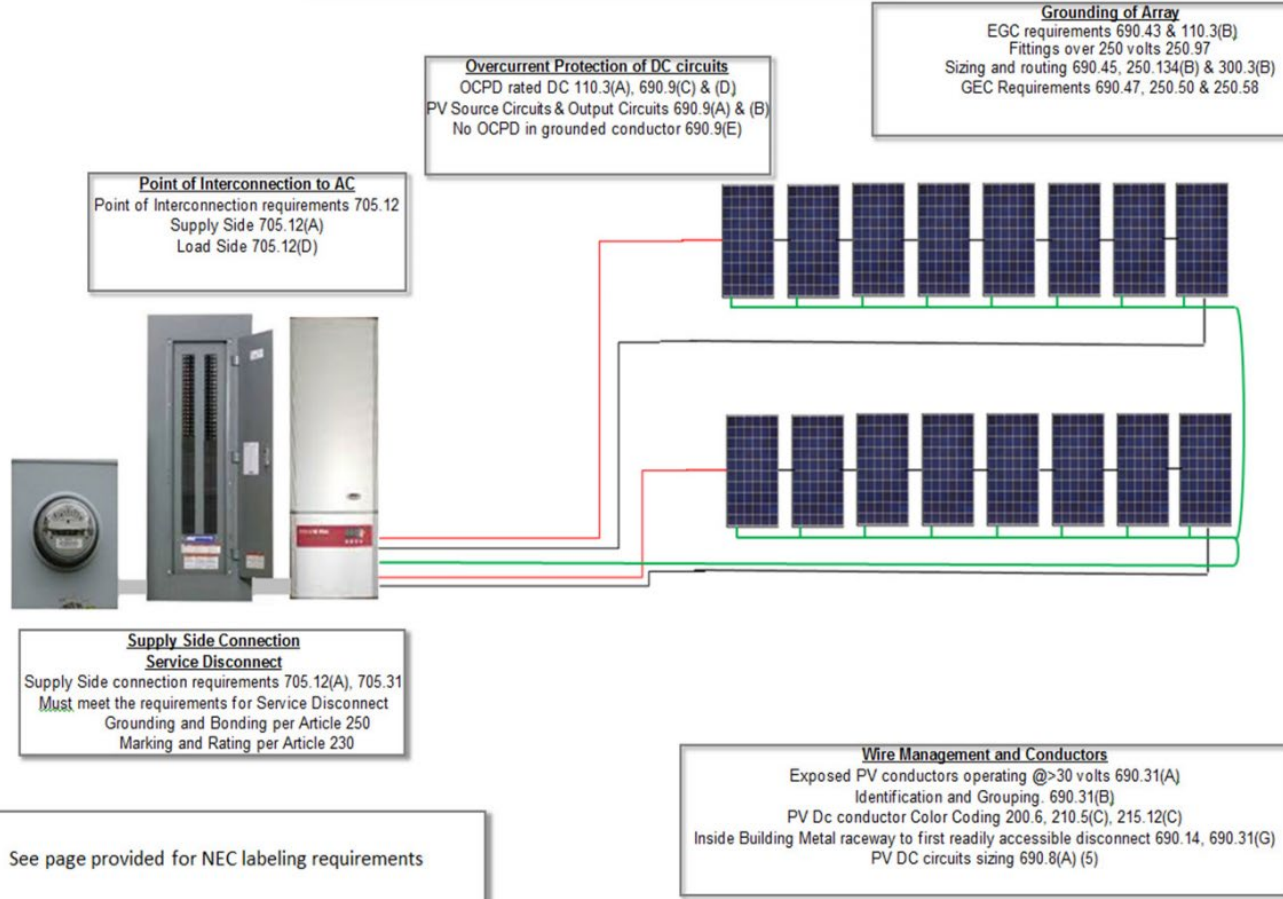
Grounding of Array
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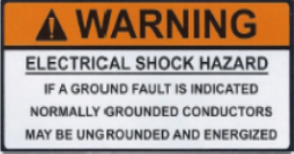
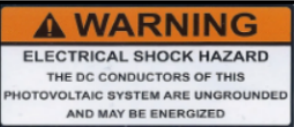
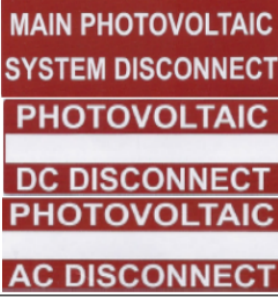
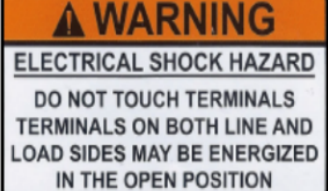
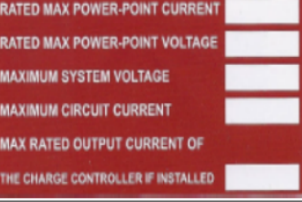
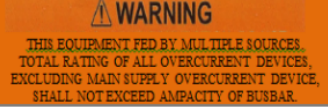
**Supply Side Connection
Service Disconnect**
Supply Side connection requirements 705.12(A), 705.31
Must meet the requirements for Service Disconnect
Grounding and Bonding per Article 250
Marking and Rating per Article 230

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)

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)	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.	
			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.	
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)	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.	

Per “[Section 10-7-29 – Solar Energy Systems](#)” of Burnsville’s City Code, the solar PV system shall meet the parameters of subsection “(J) Utility Notification; (K) Identification and (L) Standards and Certification.”

(J) Utility Notification: All on grid SES shall comply with the interconnection requirements of the electric utility. The applicant shall provide written authorization from the local utility company to the City acknowledging and approving such connection to the grid. Off grid systems are exempt from this requirement.

(K) Identification: SES may be labeled to include:

1. The name or logo of the manufacturer and/or installer.
2. The make, serial number, and other pertinent information about the solar energy system.

(L) Standards And Certification: All solar energy systems shall meet all applicable codes and ordinances.

Appendix 2

Structural Review of PV Installation Mounting System & Roof

([MN DoL - Great Plains Institute's "Solar Permitting Toolkit for MN Municipalities"](#))

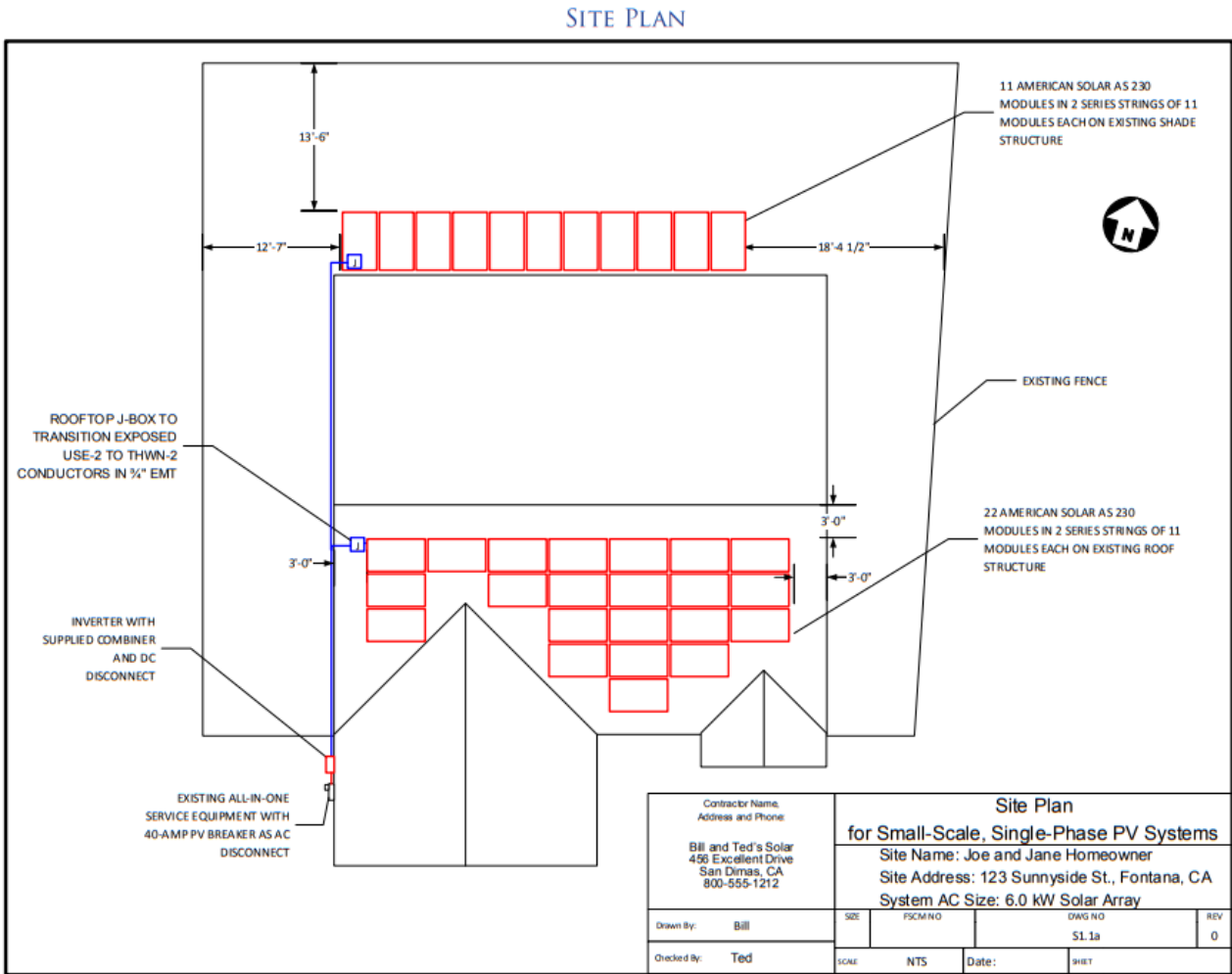
1. Is the roof supporting the installation a pitched roof in good condition, without visible sag or deflection, no cracking or splintering of support, or other potential structural defect? ☐ YES ☐ NO
2. Is the roof a rafter system*? ☐ YES ☐ NO
3. Is the equipment to be flush-mounted to the roof such that the collector surface is parallel to the roof?
☐ YES ☐ NO
4. Is the roofing type lightweight? ☐ YES (composition, lightweight masonry, metal, etc...) ☐ NO
5. Does the roof have a single layer roof covering? Yes No
 - 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.
6. Identify method and types of weatherproofing for roof penetrations (e.g. flashing, caulk):

7. Is the mounting structure an engineered product designed to mount 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, fill information on the mounting system below**:
 - a. Mounting System Manufacturer _____
 - b. Product Name and Model # _____
 - 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) _____ ft²
 - h. Distributed Weight of PV Module on Roof (c÷g) _____ lbs/ft²
 - o 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

**For truss systems, additional information may be needed to establish the truss' design loads. The [SolarStruc Tool](#) allows contractors to calculate truss capacity for solar installations. Contact building official for standards on when structural analysis will be needed.*

****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 Saint Paul based upon engineering studies conducted with their building stock. Contact the building official to determine requirements.**

Example Site Plan
(Solar American Board for Codes & Standards)

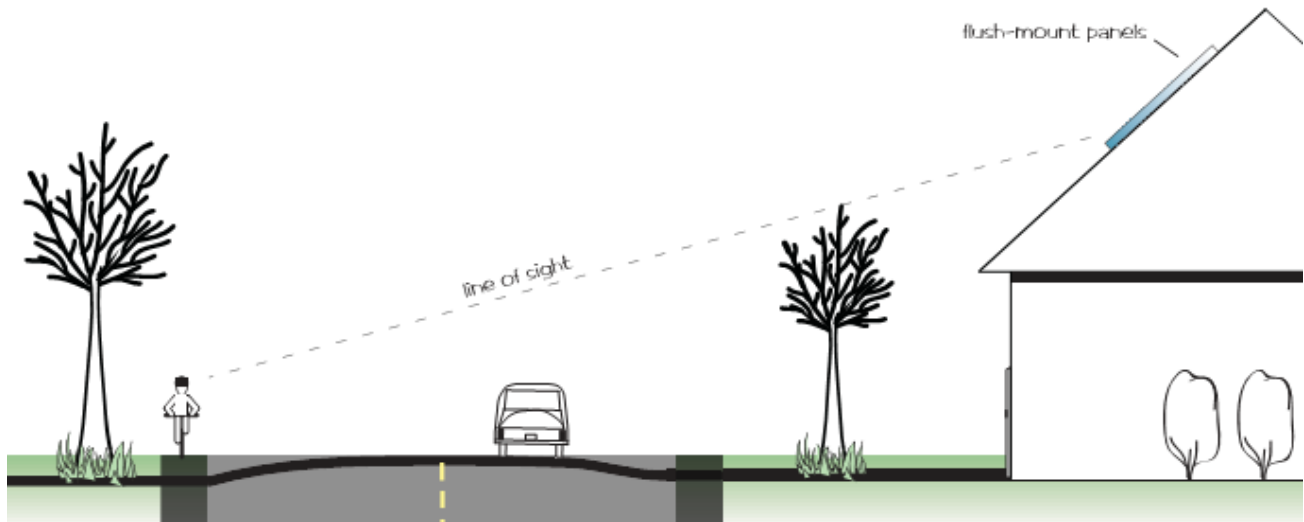


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SOLAR AMERICA BOARD FOR CODES AND STANDARDS REPORT

Example Elevation Plan

Design Guidelines for Solar Roofs Pitched Roof



Design Guidelines for Solar Roofs Flat Roof

