City Of Burnsville
952-895-4400
100 Civic Center Parkway • Burnsville, Minnesota 55337-3817 www.burnsvillemn.gov

Solar PV Inspection Checklist Contractor License #_____Installer_____

Job Address_____

Required Documentation

- □ Manufacturer's specifications for the inverter
- □ Manufacturer's specifications for the optimizer (if used)
- □ Manufacturer's specifications for the module
- □ Verification that the racking system grounding and bonding is listed

Inspections Process FAQ's

- **How many inspections are required for accessory use solar PV projects? Which specific inspections are those?**
  - *Projects that are installed per their manufacturer specifications, Minnesota state building codes, and Minnesota state electrical codes, can expect to have **two inspections: One Building Inspection, and one Electrical Inspection.***
- **Does the city offer inspection appointment times in lieu of appointment windows for solar PV?**
  - *Building and Electrical inspections are scheduled for appointment date and time for each Inspector.*
- **How many days does the City take to complete solar PV inspections after the inspection request?**
  - *Inspections take place on the date/time scheduled by the Building Inspections staff at soonest availability for inspectors.*
- **Does the city provide an online process for solar PV Inspection scheduling?**
  - *Inspections are made via phone with our Building Inspections Staff.*
- **What details will inspectors be looking for?**
  - *Reference the **MN Department of Labor & Industry's** "Solar PV Resources" webpage, as well as the following four (4) inspections categories below: 1. PV Inverter, 2. Wiring Methods & Disconnecting Means, 3. System Grounding, 4. Interconnection.*

1. **PV Inverter**
   - □ Is the PV system utility-interactive or standalone? 690.2
   - □ Is all the equipment listed for PV application? 690.4
   - □ Is the system grounded or ungrounded? (if ungrounded, the system needs to comply with 690.35)
   - □ Has DC Ground-Fault Protection been provided and properly labeled? 690.5 & 690.35(C)?
   - □ What is the maximum PV system voltage? 690.7
   - □ Is all listed equipment rated for the maximum voltage? 690.7
   - □ Determine the maximum circuit current for the PV Source and Output Circuit; Inverter Output Circuit; Stand-Alone Inverter Input Circuit; and DC to DC Converter Output (refer to inverter documentation)

2. Wiring Methods and Disconnecting Means

- □ Are the conductor and cable ampacities determined at 125% before adjustment factors? 690.8 (B)
- □ How are the PV Source and Output Circuit protected from overcurrent? 690.9 (A&B)
- □ Do AC or DC OCPD's have the appropriate voltage, current and interrupt ratings? 690.9(C)
- □ Has arc-fault circuit protection been provided for DC source and/or output circuits? 690.11
- □ Is a rapid shutdown required and if so, how is it accomplished and identified? 690.12
- □ Is the PV disconnect permanently marked and installed in a readily accessible location? 690.13
- □ Has the fuse disconnecting means, if required, been installed? 690.16
- □ Are PV source or output circuits > 30 volts in a raceway or guarded if readily accessible? 690.31
- □ Is single conductor cable used outdoors Type USE-2 or listed & labeled PV wire? 690.31(C) (Ungrounded systems must be labeled PV wire only. 690.35)
- □ Are PV source or output circuits on or inside a building in a metal raceway and marked? 690.31(G)
- □ Are all connectors polarized, guarded, latching-type or tool-safeguarded, rated to interrupt the available current or labeled "Do Not Disconnect Under Load"? 690.33

3. System Grounding

- □ Has the system been grounded at one single point? 690.42
- □ Are all exposed non-current carrying metal parts of the PV system grounded? 690.43(A&B)
- □ Are the mounting structures or systems used for equipment grounding? 690.43(C&D)
- □ Are the interconnecting devices used for equipment grounding listed and identified? 690.43 (C&D)
- □ Is the EGC properly sized and protected if exposed and smaller than #6? 690.50, 250.122, 250 .120(c)
- □ Has the grounding electrode system been installed? 690.47
- □ If both are present, has the DC grounding electrode system been bonded to the AC GES? 690.47(C)
- □ Was an auxiliary electrode installed at the array? 690.47

4. Interconnection

- □ Has a plaque or directory been installed at each disconnecting means (capable of interconnection) denoting all electric power sources & power production sources? 705.10
- □ Has the point of connection to other sources been installed per 705.12? 690.64
- □ Is the supply side disconnect readily accessible and within 10’ of the connection point? 705.12 (A)
- □ Are the utility interactive inverters connected to the system through a dedicated circuit breaker or fusible disconnecting means? 705.12(D)(1)
- □ Does the bus or conductor ampacity comply with 705.12(D) (2)?
- □ Have all the required labels been applied? (See appendix 1 “NEC Labelling Requirements”)

Appendix 1 – "NEC Labelling Requirements"

NEC Labeling Requirements

Section	Location of Label	Label Text and Apperance
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
690.35(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
690.13(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
690.53	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
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

Section	Location of Label	Label Text and Apperance
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.	PHOTOVOLTAIC AC DISCONNECT MAXIMUM AC OPERATING CURRENT: NOMINAL OPERATING AC VOLTAGE:
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.	⚠ WARNING DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM
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.	⚠ WARNING ELECTRICAL SHOCK HAZARD DO NOT TOUCH TERMINALS TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
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.	⚠ WARNING INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.
705.12 (D)(2)(3)(c)	Permanent warning labels shall be applied to distribution equipment	⚠ WARNING THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR.
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:	PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN
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.	

Link: https://www.dli.mn.gov/sites/default/files/pdf/solar_diagram.pdf