Village of Hales Corners

5635 S. New Berlin Road
Hales Corners, WI 53130
Phone: (414) 529-6161
www.halescornerswi.gov

James R. Ryan Municipal Building

Solar PV Permit & Inspection Checklist

Required Documentation

- An electrical permit application
- A building permit application (or provide sufficient information to verify that additional structural support is not needed for the proposed solar panels)
- Manufacturer's specifications for the inverter
- Manufacturer's specifications for the module
- Manufacturer's specifications for the optimizer (if used)
- One line diagram showing the proposed wring for all components. Include the number and size of conductors between each component.

Frequently Asked Questions, and Additional Information

Q: How many inspections are required for accessory use solar PV projects? Which specific inspections are those?

A: Most projects that are installed per their manufacturer specifications, Wisconsin state building codes, and Wisconsin state electrical codes, can expect to have simply one building & electrical inspection. However, inspections may vary depending on the nature and quality of the project.

Q: What details will inspectors be looking for?

A: The following four (4) inspections categoriesare the primary points of interest: 1. PV Inverter, Wiring Methods & Disconnecting Means, 3. System Grounding, 4. Interconnection.

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

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□ 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)

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

System Grounding

□ Has the system been grounded at one single point? 690.42

□ Is 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)

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□ Are the interconnecting devices used for equipment grounding listed and identified? 690.43 (C&D)

□ Is the EGC properly sized and protected ifexposed 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

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")

Structural Considerations

□ Show the size of the exiting rafters/trusses

□ What is the distance between connections which hold the solar panels to the roof?

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□ What is the weight per square foot of the solar panels?

□ Will the plane of the solar panels be parallel to the plane of the roof? If not (if the solar panels are tipped), show how the existing roof structure can resist the new wind load.

The Village of Greendale administers Wisconsin state construction and electrical-related codes, which provide minimum standards to protect life, property and ensure public well-being. All utility interconnections to be approved by WE Energies prior to submittal of plans and application for permit.

Building

- *Uniform Dwelling Code applies to single and two-family dwellings, townhouses, and accessory structures*
- *2015 International Building Code W/ Wisconsin amendments applies to Commercial and Industrial Buildings and Accessory structures.*

Electrical

- *2017 National Electrical Code (NEC), additional Wisconsin statutes and rules from SPS 316 apply.*
- *The 2017 National Electrical Code cannot be accessed online. Your local library may have a copy.*