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Joint Appendix JA12

Appendix JA12 – Qualification Requirements for Photovoltaic System

JA12.1 Purpose and Scope

Joint Appendix JA12 provides the qualification requirements for photovoltaic system to meet the prescriptive or performance standards set forth in Title 24, Part 6, Sections 150.1(b) and 150.1(c)

JA12.2 Shading Verification

The shading conditions on the PV system **shall** be consistent with those used in the performance calculations. The performance calculations **shall** be done either assuming that the minimal shading criterion is met, or based on the specific shading characteristics using a Solar Assessment Tool.

JA12.2.1 Minimal Shading Criterion

The minimal shading criterion is that no obstruction is closer than a distance (“D”) of twice the height (“H”) it extends above the PV array. (See Figure JA12-1 for an artistic depiction of “H” and “D.”) As the figure illustrates, the distance “D” must be at least two times greater than the distance “H.” All obstructions that project above the point on the array that is closest to the obstruction **shall** meet this criterion for the array to be considered minimally shaded. Obstructions that are subject to this criterion include:

- Any vent, chimney, architectural feature, mechanical equipment, or other obstruction that is on the roof or any other part of the building.
- Any part of the neighboring terrain.
- Any tree that is mature at the time of installation of the PV system.
- Any tree that is planted on the building lot or neighboring lots or planned to be planted as part of landscaping for the building. (The expected shading **shall** be based on the mature height of the tree.)
- Any existing neighboring building or structure.
- Any planned neighboring building or structure that is known to the applicant or building owner.
- Any telephone or other utility pole that is closer than 30 feet from the nearest point of the array.

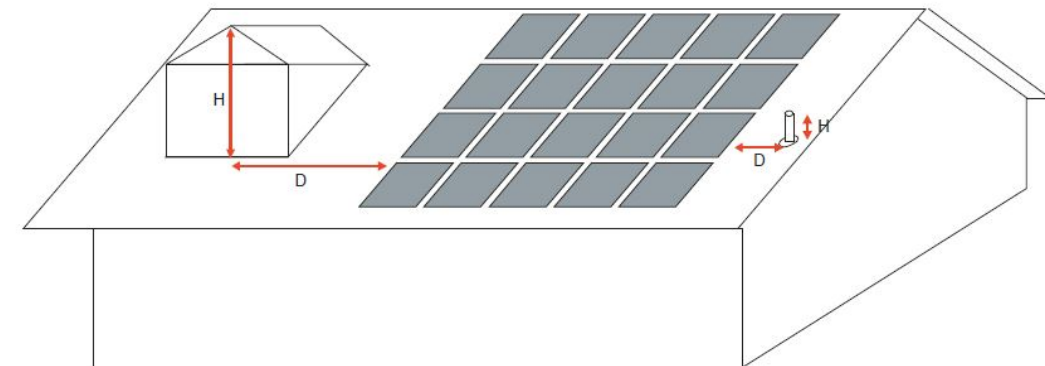


Figure JA12-1: The Minimal Shading Criterion Artistic Depiction of "H" and "D"

JA12.2.2 Solar Assessment Tool Measurements

Measurements made with a solar assessment tool **shall** ascertain the extent of the shading conditions on the PV system from existing obstructions. At each measurement point, the tool **shall be** placed on the PV array, leveled, and oriented consistent with the manufacturer's instructions. Once the tool is properly positioned, it **shall** determine the obstructions that cast shade and the month and time of day when shading will occur. The tool **shall** enable these determinations using either a digital photograph or a manual tracing on an angle estimator grid overlay. The installer **shall** keep documentation of the shading shown on the tool, the location of the tool on the array, and the shading obstructions that are indicated on the tool.

Measurements shall be made at all the major corners of the array with no adjacent measurement being more than 40 feet apart. (See example in Figure JA12-2.) The points of measurement shall be distributed evenly between two major corners if they are more than 40 feet apart such that the linear distance between any sequential points is no more than 40 feet. However, if any linear edge of the array has no obstructions that are closer than two times the height they project above the closest point on the array, then the intermediate measurements along that edge do not need to be made. Measurements made at each major corner and intermediate point shall be combined into a single data set and converted into an annual solar access percentage to be compared to the solar access entered into the performance calculation.

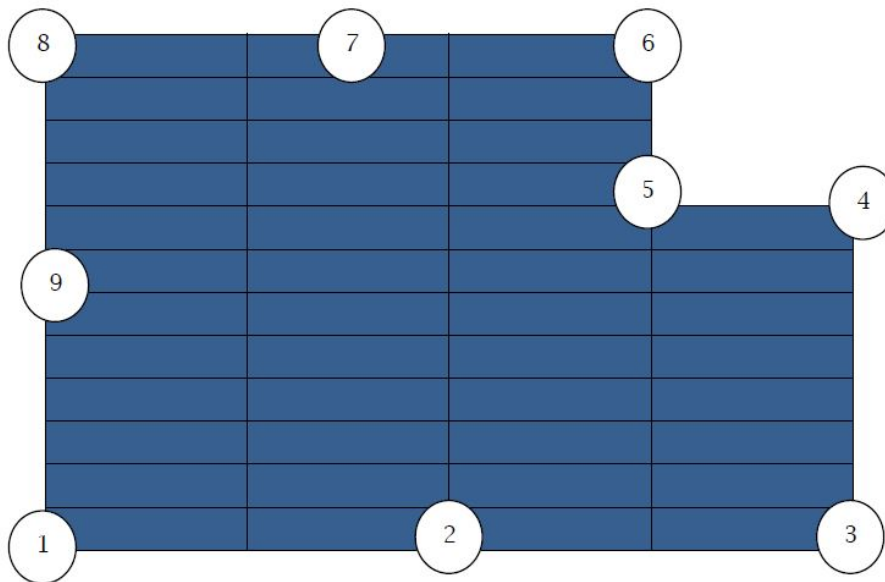


Figure JA12-2: Example of Points Where Measurement Shall Be Made Using a Solar Assessment Tool

JA12.3 System Monitoring Requirements

JA12.3.1 Dwelling Monitoring Capability

The PV system shall be equipped with a display located at the dwelling unit that at a minimum displays the following information:

- (a) Number of PV panels
- (b) Current kWh production of the entire PV system
- (c) Running total of daily kWh production

JA12.3.2 Remote Monitoring Capability

The PV system shall have a web based portal and a mobile device application that at a minimum provide the dwelling occupants access to the following information:

- (a) The nominal kW rating the PV system.
- (b) Number of PV panels and the nominal watt-hr rating of each panel.
- (c) Hourly (or 15 minute interval), daily, monthly, and annual kWh production.
- (d) Running total of daily kWh production.
- (e) Daily kW peak power production.
- (f) Current kWh production of the entire PV system.
- (g) Instantaneous output of each panel if equipped with [panel level monitoring](#); instantaneous output of each string if equipped with [string level monitoring](#).

JA12.4 Certificates and Availability

The PV installer shall certify on the Certificate of Installation that all provisions of JA12 are met and document all measurements made with a solar assessment tool if applicable. The Certificate of Installation shall be available on the building site for inspections.