



## Best Practices for On-Site Shade Measurements Using the Solmetric SunEye-210

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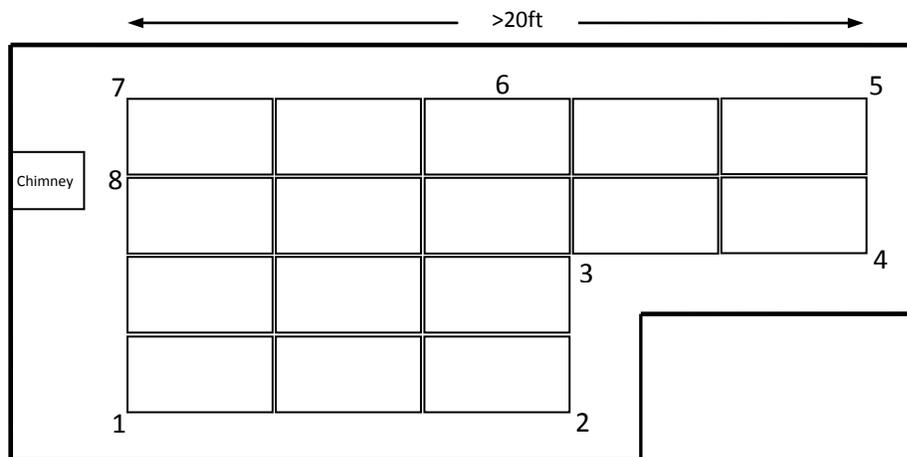
Accurate estimates for solar production require accurate shade measurements. Getting accurate and consistent shade measurements requires the right tools and the right process for data collection and reporting. This document is intended to describe best practices in the measurement of shade, and to facilitate a common approach within an organization and across multiple organizations. It includes details about using the user interface of the SunEye-210 as well as the process for how and where to make the measurements on site.

Procedure for using the Solmetric SunEye-210:

1. SunEye Device Setup
  - a. The time and date must be set correctly on the SunEye device so that the shade measurements are correctly time-stamped and the solar access is correctly calculated.  
*To check this, select the Tools menu, then "set date and time".*
  - b. The time zone must be set correctly on the SunEye device.  
*To check or set the timezone of the SunEye device select the tools menu, then "set date and time". To check or change the time zone of an existing session, select "Session" menu, and then "Session Properties" and click the timezone link.*
2. Session setup
  - a. At least one new session must be created for each new site. A new session could also be established for each roof plane or layout area.  
*A new session is created by selecting the "session" menu, then "new".*
  - b. The longitude/latitude or city of the site being measured must be set correctly in order for the Sunpaths to be correctly calculated. Use of the integrated SunEye GPS for setting the session location is the most accurate and is preferred.
  - c. The name of the client should be recorded as the name of the session for quick identification of the data.
  - d. The address of the site should be recorded in the session note for future reference (note this does not affect the solar access data).  
*Session name and note can be entered when creating a new session or afterward they can be viewed or modified in the "Session" menu, and then "Session Properties".*
3. Collecting Shade Measurements
  - a. The tilt and azimuth (compass heading) of the array must be set correctly for each Skyline.  
*Tilt and azimuth is entered when you initiate capturing the first skyline. A new skyline is captured by*

selecting “skyline” menu, then “new”. All subsequent skylines will use the same tilt and azimuth until changed again. To check or change the tilt or azimuth, go to the “view” menu, then “annual Sunpath view” and click on “panel” link. Tilt and azimuth can also be changed after the data is taken. In the desktop software there is an option to change all skylines at once. Note, the SunEye-210 measurements are always made with the device itself oriented approximately level and south, independent of the orientation of the array. This is so that the user does not interfere with the sunpaths (eg if the SunEye is oriented north) and pieces of the horizon are not outside the field of view of the camera (eg if the SunEye is tilted more than 5 degrees). In all cases the SunEye-210 will account for the orientation and tilt of the SunEye itself at the instant the Skyline is captured.

- b. Shade measurements must always be made at the height of the array (eg for a flush-mount roof system, the SunEye should be held 4-6 inches above the surface of the roof when a Skyline is captured.)
- c. Shade measurements should be made at least on every corner of the proposed array and enough additional measurements should be made such that there is no more than 20 feet between measurements along any perimeter edge of the array area. If there is a shade causing obstruction, such as a chimney or vent pipe near the array, at least one shade measurement should be made at the edge of the array closest to the obstruction. An example layout is shown below. The numbers in the drawing show where Skyline measurements would be made.



- d. The location (on the roof or ground) where the shade measurements are made should be recorded in the skyline note with each shade measurement (eg “Southwest corner of array”, “Southeast corner of roof”, etc.).  
*The notes for each skyline measurement can be entered in the Annual Sunpaths view by clicking “<Tap here to add a note>”.*
- e. The automatic obstruction detection must be verified and edited as needed for each skyline to make sure obstructions like trees and buildings are appropriately colored with the green overlay.  
*The SunEye uses a green overlay color for obstructions and yellow overlay color for open sky. Edit mode is accessed from the edit icon in the lower right corner of the Annual Sunpaths view. Sometimes bright white buildings could be interpreted by the SunEye as sky or a dark cloud could be interpreted as an obstruction, therefore the user must always verify and correct any incorrect green and yellow areas.*

4. Creating reports. The shade measurements must be transferred to a computer and should be submitted in the form of a .PDF document.

*Reports in the SunEye are generated as follows*

- a. *Transfer data from device to desktop: In the SunEye desktop software, go to “file”, then “transfer from device”*
  - b. *Create report: go to “file”, then “export session report and data”.*
  - c. *Enter name and address of client into report wizard*
  - d. *Enter name and address of installer in report wizard*
  - e. *Select the Skylines that are relevant (eg some may have been duplicates).*
  - f. *Select PDF format. Note, the SunEye Desktop software version 4.61 or later is required to create PDF reports. This version can be downloaded for free at <http://www.solmetric.com/support-downloads.html>*
5. *Email the .pdf report and/or the zipped data files (see below).*
  6. *Sharing raw SunEye data (for when recipient must be able to edit data and generate own reports).*
    - a. *Bundle all the SunEye source data files into a ZIP folder for emailing:*
      - i. *In Windows Explorer, browse to the location of the session folder (SunEye session is usually in: Documents or My Documents then in Solmetric/SunEye/Sessions/<datecode; name of session>).*
      - ii. *Right click on the session folder (the one with the <datecode; session name>) and select Send to.. Compressed (zipped) folder.*