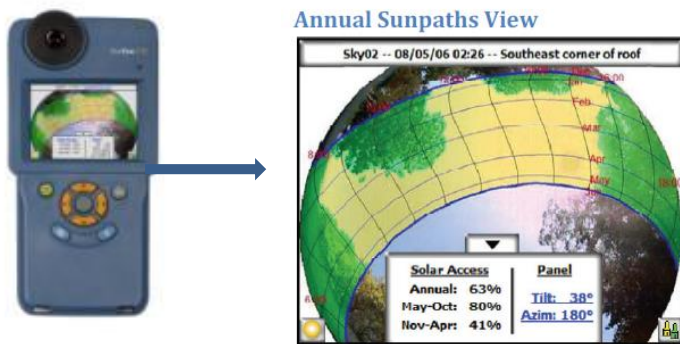


SolarEdge Added Energy Evaluation using Solmetric SunEye - Application Note

This paper is presenting a simple method to evaluate the effect of shading on PV installation performance using the Solmetric SunEye¹ shade measuring tool. The Solmetric SunEye uses an integrated digital camera and an automatic fish eye lens to capture an image of the entire horizon in 360 degrees and immediately calculates and displays the solar access percentage (the ratio of insolation with shade to available insolation without shade) and details about obstructions for every measurement.

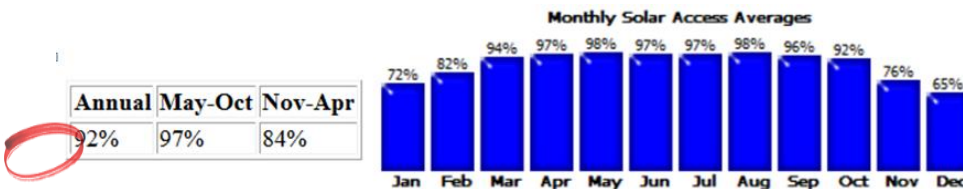
PVEL has conducted shading mitigation testing based on an NREL test protocol² which resulted in a SolarEdge Shading Mitigation Factor (SMF) of 24.8%. This means that a SolarEdge system will recover approximately 25% of energy lost by a traditional system due to shading.

Combining the Solmetric SunEye shading measurements with the SolarEdge SMF enables a quick evaluation of the SolarEdge advantage under shading conditions.



Calculating the SolarEdge Advantage

Locate the solar access percentages in the SunEye measurement report:



The SolarEdge advantage is obtained from the SunEye solar access percentages according to the following formula:

$$\text{SolarEdge Effective Energy Gain} = \frac{SMF * (1 - SA)}{SA}$$

Where:

SMF is the SolarEdge shade mitigation factor of 24.8%

SA is the solar access from the SunEye measurement

Example:

In the above report, the annual solar access is 92%

$$\text{SolarEdge Effective Energy Gain} = \frac{0.248 * (1 - 0.92)}{0.92} = 0.0215 = 2.15\%$$

This energy gain is related only to SolarEdge shading losses recovery and does not reflect the additional energy gain due to mitigation of other mismatch losses resulting from manufacturing tolerances, uneven aging, soiling, temperature, etc.

¹ <http://www.solmetric.com/>

² <http://www.nrel.gov/docs/fy12osti/54876.pdf>