Making Solar Affordable
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Solar Electricity Production

Solar Impact strives to provide the most accurate information on the amount of electricity production you can expect from your system. One of the key Solar Impact advantages is that a PhD licensed professional engineer with 25 years of experience modeling sunlight interception has analyzed your system for electricity production.

The production values we provide include the site-specific shading and the solar panel angle and orientation of your system. We use the most sophisticated computer simulations available, including the National Renewable Energy Laboratory's (NREL) System Advisor Model (SAM) and Solar Impact's proprietary models.

Unfortunately, not all solar companies have our expertise or desire to provide accurate electricity production information. We are providing the following information to aid in your understanding of what to expect from your solar electric system.

Sunlight

For the North Central Florida region, we average 5.2 "good" sunlight hours per day (see Figure 1). A "good" hour is 1,000 watts per square meter, which is what we get on a clear day with the sun high in the sky.

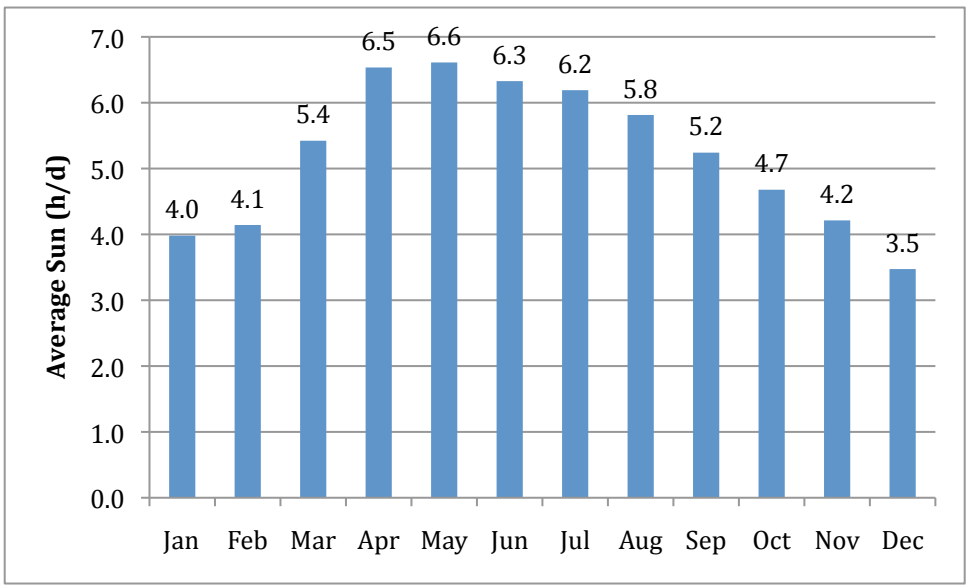

Figure 1. Typical average daily sun hours for North Central Florida from NREL's Typical Meteorological Year data

Optimal Electricity Production

A good quality solar photovoltaic panel under optimal conditions will annually produce 1,500 kWh per kilowatt of solar panels (see Figure 2). "Optimal conditions" means the photovoltaic panels are facing due south, tilted at 25-30 degrees, and no shading. Examples of quality panels include the mono-crystalline and poly-crystalline solar panels produced by Sharp, Suntech, and Mage. Solar panels from Sanyo and SunPower can increase production by up to 3%; however, the price of these panels is significantly higher and thus they fail our "bang for the buck test."

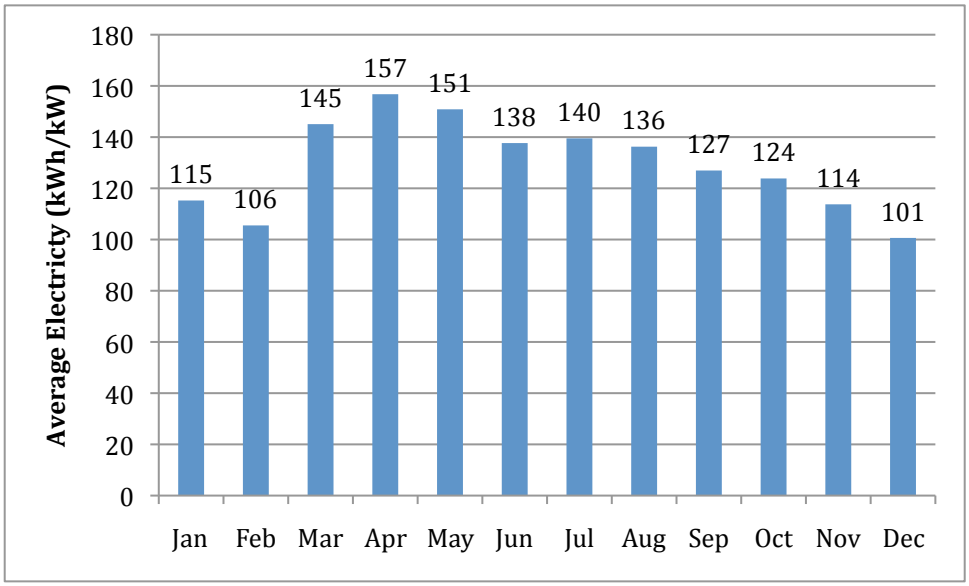

Figure 2. Monthly electricity production for standard crystalline solar module at optimal orientation and no shading using NREL System Advisor Model (SAM) version 2010.10.8

Site Shading

Shading can significantly reduce electricity production. Solar Impact analyses each potential site for shading and selects the location that will have the best production. Several tools are available for analyzing shading. We prefer the "Solar Pathfinder" because of its accuracy and ease of use. We recommend always using a tool. Trying to "eyeball" a site is extremely inaccurate.

Solar Panel Tilt

The tilt of the solar panel is not nearly as important as many believe. Some solar installers believe that every system should be at 30 degrees because that is our latitude. The reality is that systems between 20 and 35 degrees produce almost exactly the same amount of electricity. Even a low sloped of 10 degrees reduces production by 4%. We don't recommend installing a system below 10 degrees because the rainwater will not flow off the solar panels quickly enough to keep them clean.

Solar Panel Direction

The solar panel direction is also not nearly as important as many believe. Due south is the best, but anything between southeast and southwest does not vary by more than 4.5%. Even facing the system due east or west reduces the electricity production by 8 to 15%, depending on the solar panel tilt. The effect of the direction is lower if the solar panel tilt is lower.