

The Science of Sizing

How a properly sized solar lighting system ensures reliability, efficiency, and cost-effectiveness



At Sol, our philosophy is to provide a **solar light** that operates like a **regular street light**—meaning we don't dim the lights in bad weather to ensure we don't kill the battery. Instead, we **properly size** our solar lighting systems for each location to ensure we have the **right amount of solar and battery capacity**. This means the **EverGen** light will maintain the same light levels as a grid-tied light and be reliable throughout the year in all weather conditions—when you need it most!

Energy in must equal energy out.

Energy in!

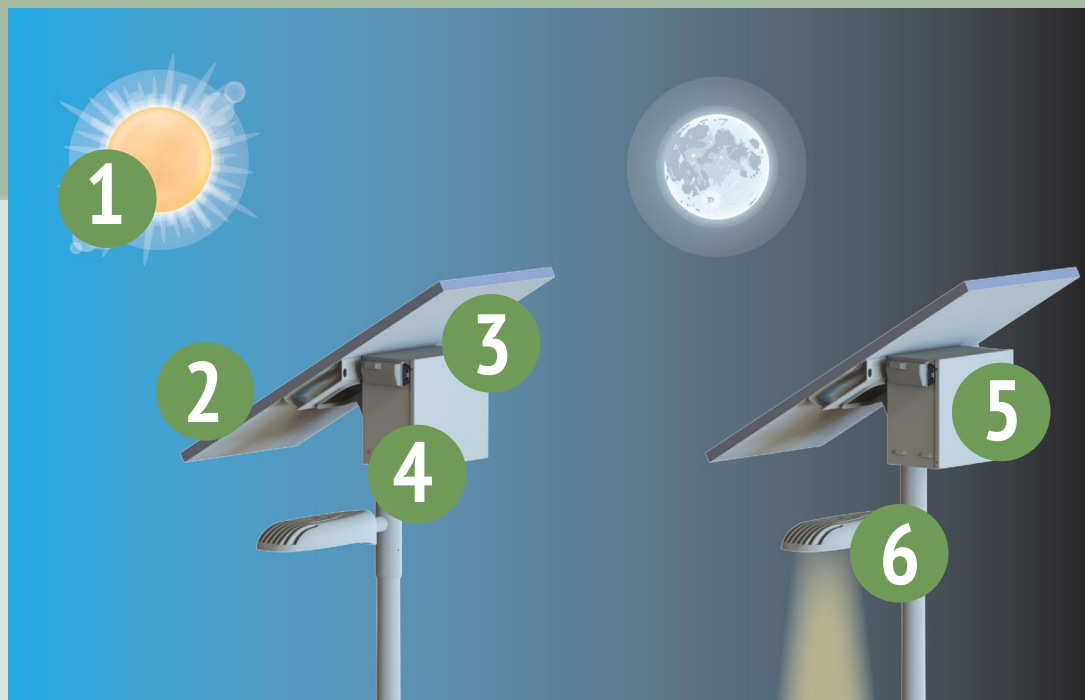
The energy collected and stored within the batteries.

1 The **sun's** energy generates power (even when it's cloudy). Summer = more energy generated. Winter = less energy generated.

2 The **solar panel** collects and converts the sun's energy into DC power.

3 The **energy management system (EMS)** helps regulate and maximize the flow of power to the battery.

4 The **battery** stores the DC power during the day until it's needed at night.



Energy out!

The energy required to run your light. (Even when the weather is poor.)

5 The **EMS** prevents power loss when it transfers the right amount of power from the battery to the fixture, turning it on and off as intended.

6 The **LED fixture** turns on and provides light where and when you need it.

How do you know if a system has been properly sized?

It's easy to tell if a system is NOT properly sized: the battery will die prematurely. That means that the components are not properly configured to work together sustainably over the long term.

Here's how we make sure that doesn't happen.

Location, location, location



A reputable manufacturer should factor in the location of your lights when sizing your solar light. We use data from NASA and NREL to measure the solar energy available in your location in the wintertime. This is called solar insolation—AKA equivalent sun hours or peak sun hours.

Solar panel sizing

We ensure that energy in exceeds energy out. This should be achieved by selecting panels of an appropriate wattage for the sun hours in the light's location.



Batteries that work

There are several types of batteries, including lead acid and lithium ion, but no matter what type you choose, it should have enough power collection and storage capacity to ensure the system can sustain the light levels you require while being properly factored into the sizing equation.



LED fixture sizing

Solar lighting systems use LED fixtures because they are the most energy-efficient light fixtures available. Today's LEDs have higher efficacy, meaning they can provide more units of light (lumens) with less energy (watts).

A team of experts



We used our extensive human experience to build a sizing engine that calculates the location data mentioned above against our own engineered components' performance. This means we clearly understand exactly how our system will perform in your location—and to your standards.

Delve deeper.

[Explore our Ultimate Specification Guide](#)

