

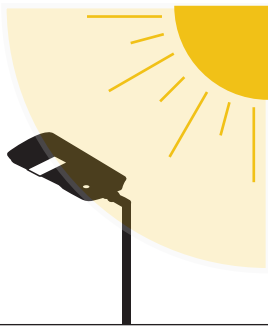
## Solar Lights

Best Practices & Guidelines

# Best Practices & Guidelines

Light Efficient Design will be offering both "off-grid" and "hybrid" solar lighting. **Today we only offer "off-grid"**. There are inherent limitations to using "off-grid" solar. Please understand these limitations before recommending or installing an "off-grid" solar system. In low-light or cold areas of the world, there will be some days of the year when "off-grid" solar lighting is not illuminated for part or all of the night. Please explain this to your customer before installation. **For critical environments, such as hospital parking lots or other areas where proper lighting is required to be on 365 nights per year, "off-grid" solar may not be appropriate.** Please look for our hybrid products coming soon as well as our standard line voltage offerings.

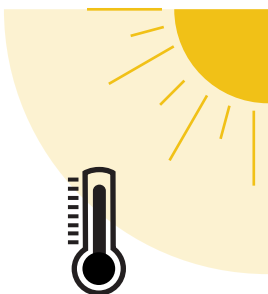
## —○ Installation Location



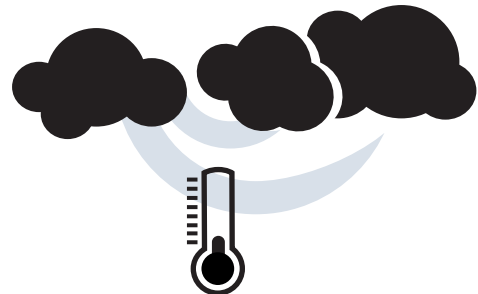
Most hours of direct sunlight, unblocked by trees or buildings



Limited or no direct sunlight, shaded by trees or blocked by buildings



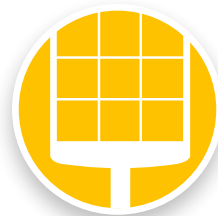
Warmer location with predominant sunshine  
= maximum performance



Cold location with consecutive cloud covered days  
= possible inconsistent performance  
\* choose motion sensing mode (see mode selection)

### FACT

Batteries do not charge well in freezing temperatures because the electrons cannot move as fast. The battery will self-protect and stop charging in temperatures below 32°F, **however the light engine will work in temperatures down to -4°F** (if previously charged).



Solar Lights

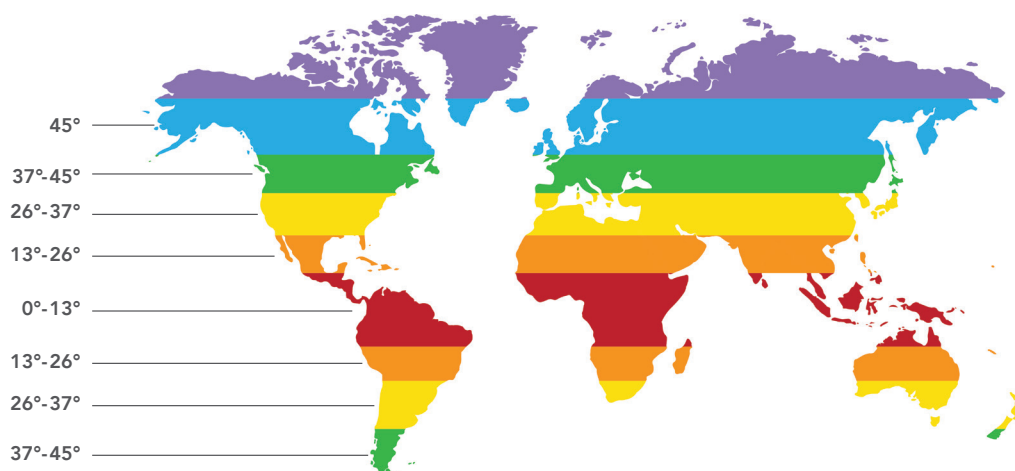
## —° Panel Angle



Angle your panel to the approximate degree based on your location in the world.



DO NOT leave your panel flat...unless you are near the equator.






**In the northern hemisphere, solar panels charge most optimally when installed facing South.** Since the space will dictate the installation of the fixture and where light is needed, the panel isn't always able to achieve a southern direction and this is okay! West & East facing panels won't get as much light as a southern facing panel, but will still collect good sunlight. A north facing panel will work, but it will take longer to charge than any other direction meaning solar charging may be less than optimal in installations facing this way.

## — Mode Selection

Most of our solar fixtures have different selectable operating modes. See specific instruction manual for the modes and how to adjust (either on unit or via provided remote control). These modes can allow you to select between a constant brightness mode (meaning light fixture is ON all night), a time schedule mode (meaning the fixture ramps up and down brightness throughout the night) and a motion sensing mode (meaning that the integrated motion sensor is activated to turn fixture ON or increase brightness when motion is sensed near the fixture). Depending on where you are geographically and how much direct sunlight is available in your mounting environment should dictate what mode you choose. Unfortunately, there is no perfect answer for what mode to use.

**MODES (order indicates how to get the longest life from your battery charge)**

- 1  **Motion Sensing** When motion is detected the fixture can either turn "on" or increase in brightness. This is the best mode for battery longevity and should be used whenever possible.
- 2  **Time Schedule** Fixture ramps up brightness as the night gets later and dims as dawn approaches.
- 3  **Constant Brightness** Fixture is "on" all night at full brightness. This mode will drain the battery fastest.

### Questions to ask yourself to help you choose the best mode

#### **Am I in an area of the world where temperatures can drop to or near freezing?**

Batteries do not charge well in cold temperatures compared to warmer temperatures. This is because there is increased resistance inside the battery, and the electrodes cannot move as fast. Therefore, in cold climates you will want to choose modes such as motion sensing that will extend battery duration the longest.

#### **Am I in an area of the world where there can be many cloudy days in a row?**

While the fixtures are designed with extra duration capacity in mind to account for some cloudy hours of the day, the reality of an off grid solar fixture is that it can only charge when sunlight hits the solar panel. In Florida where most days are sunny, constant brightness mode can be acceptable. In Boston where there can be many cloudy days in a row, you will want to choose modes such as motion sensing that will extend battery.

#### **Am I mounting the fixture in a location that could be partially blocked by a tree or another building, thus shading the solar panel at certain points of the day?**

Always try and choose locations where the solar panel has unobstructed views of the sun. When this is not possible, you will want to choose modes such as motion sensing that will extend battery duration the longest.

## — Maintenance

Be sure to keep the solar panel free of dirt, sand, bird nests and other debris to help maximize charging ability. Soapy water is safe to use. Tilting the panel will help snow and ice buildup to slide off.



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