



Using Wildlife-Friendly Canopy Lighting with Solar Mounts PV Mounting Structures

Background:

Solar Mounts LLC ("SMLLC") designs and fabricates commercial solar ground mounts and solar carports, with or without under-decking. Solar Construction LLC ("SCLLC"), a wholly owned subsidiary of Solar Mounts, installs PV modules on the metallic structure per UL 2703 and in accordance with ANSI/NFPA 70®, National Electrical Code (NEC®)

Although Solar Construction LLC installs PV modules and can supply the (optional) Solar Mounts, LLC carport/canopy lights for carport projects, Solar Construction does not do any electrical work. After the solar support structure is built, 3rd party electrical equipment installation teams are contracted by the customer to connect PV modules to the utility grid, and/or on-site battery storage. The SMLLC lighting fixtures are attached to the carport and the lighting solution is connected by the electrical team to a power source, timers, sensors, etc.

Carport / Canopy Lighting is Recommended

Canopy lighting is recommended for both security and aesthetic reasons. Under-canopy lighting is particularly efficient because all the light from the fixture is focused directly on the ground and any light escaping from the fixture is normally reflected down to the ground by the SMLLC carport structure.

Wildlife Friendly ("Turtle") Lighting

However, If the site produces safe levels of light for carport users at night, this level of brightness is likely disorienting local wildlife to some degree, e.g., native turtles. The color temperature on the best canopy lighting ranges from 3000K to 5000K where 3000K is closer to daylight and 5000K is more of a crisp white light. Although some streetlights boast of 2200K color temperatures and an "amber white" light, even this level of brightness can disturb nocturnal and migrating animals. If bright lighting is affecting local wildlife, Solar Mounts recommends "turtle lights", a slang term for canopy lighting that is more amber in color and is commonly half-shielded or fully shielded to reduce light spread.

Wildlife-friendly lighting ("turtle lighting") produces an amber color light. This amber color can be achieved in 3 ways.

- 1) The LED can be a typical LED at 3000K, and the light fixture itself will have a thick amber colored lens.
- 2) The LED light fixture can use Phosphor-Converted Amber (PCA) LEDs (these work by using a blue LED chip with a special phosphor coating that turns the blue light to amber)
- 3) Direct Emission Amber LEDs (these emit amber light directly without the need for phosphor conversion).

Although a standard white LED inside a light fixture with a thick amber lens can be less disturbing to wildlife than bright white canopy lights, this is not an ideal solution. And while

Phosphor converted amber LEDs are more efficient, only the true, amber-limited wavelength LEDs (i.e., direct emission amber LEDs ~590 nm) meet the strictest legislative requirements in certain municipalities. For example, the Florida Fish and Wildlife Conservation Commission (FWC) has developed a model lighting ordinance as a guideline to help coastal counties in Florida develop their own local ordinances to protect sea turtles, other nocturnal animals and migratory birds from the adverse effects of artificial lighting.

Optional Solar Mounts, LLC Carport / Canopy Lighting

Solar Mounts LLC offers under-deck light fixtures (see Figure 1). This light has proven its capabilities on scores of sites around the country. It's a tough and efficient light, but other lights are available on the market. The installation contractor has many options (ask Solar Mounts about light fixtures certified to TAA, Trade America Act). If the contractor chooses their own lights for the project, SMLLC recommends LED lights because of their durability and long life.



Figure 1. Solar Mounts Standard LED Carport Light



Figure 2. Solar Mounts Wildlife Friendly Carport Lights

Solar Mounts, LLC Carport / Canopy Wildlife Friendly Lighting Installation

The following carport / canopy lighting mounting methods will not void the SMLLC warranty and are suggestions from SMLLC, based on our experience. Alternative strategies may work better on site and be more acceptable in your jurisdiction

As seen in Figure 2, Solar Mounts LLC recommends a true 590 nm amber LED lighting fixtures where bright white lights would disturb local wildlife. Examples of wildlife friendly lights are the EPTA 80W and 40W (no UV) 590 nm Amber LED Linear Lights and the ARTO 44W 590 nm Amber LED fixture. If the direction of downward light needs to be limited, look for light fixtures that can be fitted with a half or full shields to direct light straight down.



Figure 3. SMLLC LED Light suspended from an electrical work box, EMT and Uni-Strut

Lighting fixtures can be suspended 3-4 inches from an electrical work box connected to metallic conduit (“pendant mount”). Fixtures and work boxes suspended from the carport ceiling are held tight to the purlins with Uni-Strut (see Figure 3). This strategy also provides adequate air flow around the fixture’s heat sink. Alternatively, carport lighting can be surface mounted to any carport post, and with a half shield, will provide excellent lighting while limiting the spread of light on the edge of the carport closest to wildlife pathways.

Solar Mounts, LLC recommends one (1) lighting fixture per “bay” (NOTE: an SMLLC carport bay is ~27 feet wide). SMLLC recommends the fixture be mounted in the middle of the bay however, installers have mounted fixtures to SMLLC posts, struts or purlins at either end of bays (See Figure 4). Auto-dimming (motion sensors, etc.) can reduce power draw from the carport.



Figure 4. Lights mounted near the strut at the end of the Bay.

Wildlife Friendly Carports

As stated earlier, canopy lighting is recommended for both functionality and aesthetics. For contractors and customers who want to be environmentally friendly, it would be ideal if customer structures did not actively disturb local wildlife. With new types of “turtle lights”, customers can enjoy the security and comfort that solar carports provide while feeling satisfied that their new carport is friendly to the “locals”.

Contact Us

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