



Solar is **Lighting the Future** of Electrical Contracting.



Why Are Electrical Contractors Choosing Solar?

For Electrical Contractors, the days of relying on AC power to light streets, paths, parks and even parking lots are numbered. Local governments are now realizing that an investment in solar lighting is one that pays dividends over its extended life, which has translated into a greater demand for Electrical Contractors to install solar lights.

Solar Lighting is the Cost-Effective Choice

According to the World Resources Institute, solar leads in both capacity and renewable energy transactions, especially in city and county governments.¹ With grants from the Federal Government, such as the Rural Energy for America Program (REAP), the Department of Energy, and Investment Tax Credits, making the switch to solar lighting has never been more accessible or incentivized. Additionally, the savings arising from no utility bills and unexpected costs associated with AC-powered lights have improved the bottom line of municipal operating budgets. The same could be said for Electrical Contractors, whose budgets could benefit from installing solar instead of AC lights.

Why Should Electrical Contractors Choose Solar Lighting?

Electrical Contractors have risen to meet the demand for outdoor solar lighting due to concerns expressed by City/Urban Planners, Parks Managers and Facilities Managers about the risk of installing grid-tied outdoor lighting with the need to lay copper wiring, which has become a liability due to theft. Andrew Ketch, C.E.O. of FLT, a solar lighting company that manufactures high-performance and reliable commercial outdoor solar lights, supports this claim by noting "copper wire theft can cost municipalities upwards of ten times the actual cost of copper stolen."

Ketch continues to say, "Solar lighting is the most cost-effective choice for Electrical Contractors. The significant reduction in installation time and maintenance/repair costs make it the ideal choice for contractors with budgetary, time and labor constraints." Further, Electrical Contractors have noted that solar lights require less permitting and fewer site visits, making it easier and faster to start and complete a project. On average, installing AC-powered lights requires a minimum of five site visits, whereas solar lights only need two: one to auger the hole and create a base and the second to install the light in a matter of minutes.

Solar Lighting Weathers the Storm

When designing, installing and maintaining outdoor commercial and industrial lights, Electrical Contractors want assurance that the lights will provide the reliability and efficiency needed to stand the test of time. To that end, the myths that solar lights do not shine as brightly as AC-powered lights, require additional maintenance, or are unreliable in certain weather conditions, have long since been debunked.

Municipalities are calling upon Electrical Contractors to install solar lights to provide their citizens with consistently safe, well-lit streets even during inclement weather and power outages. The ability to collect, store and generate energy while withstanding hurricane winds, extreme temperatures and snow has led municipalities to gravitate toward solar power as the preferred energy source.

In fact, [Babcock Ranch](#), Florida has taken this to the next level by becoming the first U.S. city to be fully solar powered and never lost power throughout three hurricanes — all thanks to solar. Further, the versatility of solar lighting enables Electrical contractors to install fixtures in a variety of applications, ranging in size and location, all the while illuminating each area perfectly.

Another notable example of the rising demand for solar lighting can be found in Utah, a place subject to unpredictable weather conditions, including high winds, hail, flooding and winter storms. There, solar energy has surpassed natural gas and coal to be the leading source of energy in the state. In May 2026 alone, Utah produced 1-terawatt hour², which is enough energy to power between 90,000 and 150,000 homes for an entire year.³



Solar Lighting Explained

Although solar is overall the optimal and most efficient choice for Electrical Contractors, it should be said that solar technology varies from manufacturer to manufacturer. Therefore, it's advisable for contractors to inquire into the quality of several essential features of a solar unit before committing to a supplier, including:

Adaptative controls

Light Control

Battery

Optics and Dark Sky certification

Wattage

Charger

The Battery: Your Solar Bank Account

Think of the battery as your bank account, and nightly runtime as your spending. Watt-hours (Wh) represent the battery's bank account balance. A 50-watt light running for 10 hours uses 500 Wh per night. Since solar charging varies day to day, extra battery capacity helps protect performance during low-sun conditions.

Battery capacity in solar lighting systems is often listed in amp-hours (Ah), but Ah does not account for voltage. Because solar lighting systems operate at different voltages, watt-hours (Wh) are the most reliable way to compare battery capacity.

Amp-hours can be misleading unless the voltage is the same.

Watt-hours account for both voltage and current, showing your true battery balance.

Example: 25.6V 100Ah = 2,560 Wh vs. 12.8V 100Ah = 1,280 Wh

Both batteries have 100 Ah, but different voltages. Same Ah, different Wh (different balance).



Solar Panel Wattage: Your Solar Salary

If your battery is your bank account, then your solar panel wattage is your salary. Wattage describes how much energy the panel can “earn” during peak sun. A higher wattage panel can generate more energy in the same amount of time, helping recharge the battery more fully.

However, a panel only produces its full potential when it operates near its maximum power point. That's why panel wattage alone does not guarantee real-world performance. What matters is how well the system converts solar energy into usable stored power for nighttime operation.

Solar Lighting Charger Options

One of the major technical differences between chargers is PWM versus MPPT. Different chargers determine how efficiently solar energy is converted into usable stored power.

PWM controllers: Simple and lower cost but less efficient.

MPPT controllers: Actively optimize energy transfer to capture more usable power.

PWM (Pulse Width Modulation)

1. Forces the panel to operate at battery voltage
2. Mismatched voltages result in lost solar energy
3. Simpler and lower cost, but less efficient

MPPT (Maximum Power Point Tracking)

1. Actively adjusts voltage and current to keep the panel operating efficiently
2. Converts excess voltage into usable charging current
3. Harvests more energy, especially in cold weather, low light, winter months and cloudy conditions.

Light Control: Astronomical Lighting vs. Light Sensing

Astronomical Lighting

Best Suited For: Coordinated, multi-fixture solar lighting installations, where predictable operation and reduced false triggering are required.

Key Strengths: Predictable on/off timing based on time, date and location; ensuring consistent operation across multiple solar lighting fixtures.

Key Considerations: More sophisticated system requiring smart controllers.

Light Sensing

Best Suited For: Cost-sensitive, standalone solar lighting installations where fixtures operate independently and simplicity is a priority.

Key Strengths: Simple solar lighting technology with minimal configuration, making it easy to deploy and maintain in basic installations.

Key Considerations: May not turn on if nearby lights are present (especially for bollard applications); fixtures can turn on and off at different times; can activate during heavy cloud cover.

Product Configuration for Outdoor Installations

In outdoor solar lighting applications, product configuration directly affects energy harvesting, installation and design flexibility across different climates and site conditions.

Self-Contained

- Fewer components and connection points, for a faster, simpler install
- Clean, integrated aesthetic — no separate luminaire or extra hardware
- Compact footprint, well suited to pathway, park and streetscape fixtures where appearance matters most

Distributed

- Panel can be oriented independently of the luminaire, allowing optimal tilt toward the sun
- Mounting flexibility supports sites where placement options matter most, such as large-scale streetlights
- Used in highest-output products, where maximizing energy harvest is the priority

LED Color Temperature Choices for Commercial Solar Lighting

LED color temperature impacts how solar lighting looks and performs in real-world environments. Measured in kelvin (K), it influences perceived brightness, visual comfort and environmental impact across applications from pathways to roadways and security lighting.

The table below compares common LED color temperature options used in commercial solar lighting and when each is most appropriate.

Rating	Color Temperature	Light Appearance	Common Uses	Key Benefits	Considerations
Bright	2700K–3000K (Warm White)	Soft, yellowish warm	Parks, pathways, urban pedestrian zones, hospitality	Welcoming low glare, wildlife friendly	Needed for Dark Sky requirements
Brighter	4000K (Neutral White)	Clean, balanced white	Walkways, campuses, streets, parking lots	Balanced comfort + visibility, versatile	Less warm than 3000K
Brightest	5000K–6500K (Cool White/Daylight)	Bright, crisp, bluish-white	Roadways, parking lots, security, industrial	Brightest, high contrast, solar-efficient	Harsher feel, degrades night vision
Bright	Lumileds NightScape Technology (approx. 3000K, spectrally optimized)	Warm white with reduced blue content	Urban streets, park roads, dark sky zones	Reduced sky glow, comfortable visibility	Slightly lower efficacy, premium LED option
Low Brightness	1800K–2200K (Amber)	Very warm, amber/orange	Coastal parks, wildlife sensitive areas	Lowest ecological impact, ultra-low glare	Poor color rendering, limited brightness, niche use
Bright	RGB / Tunable White	Adjustable color or CCT	Public spaces, amenity lighting	Adjustable color, dynamic control	Higher cost, added complexity

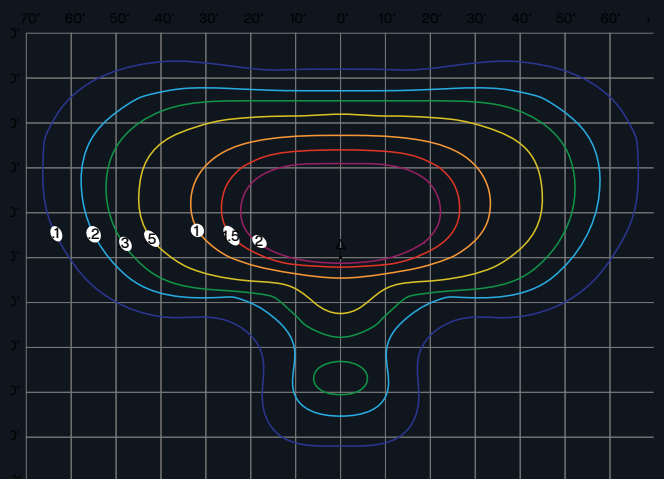
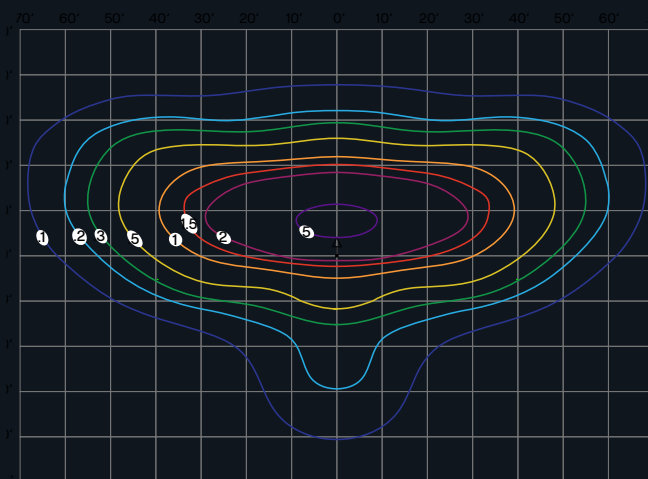
Environmental Considerations for Outdoor Solar Lighting

Environmental performance matters in outdoor solar lighting for public spaces and municipalities. Beyond energy efficiency, well-designed solar lighting reduces glare, light pollution, light trespass and sky glow—while improving nighttime visibility.

Understanding BUG Ratings (Backlight, Uplight and Glare)

BUG ratings are measured on a scale from 0 to 5 and describe how a luminaire controls Backlight, Uplight and Glare, influencing light pollution and visual comfort.

- Uplight is light directed into the night sky. Lower uplight supports dark sky goals.
- Backlight is light spilling behind the pole. In most roadway and pathway lighting applications, backlight causes light trespass onto nearby properties and is undesirable.
- Glare occurs when light is directed into your field of vision. Some glare is unavoidable in wide roads and paths, but reducing glare often impacts uniformity. Managing glare is a design trade-off when selecting light distribution.



Lighting Profiles vs. Constant Output

Both options keep a site light all night; Lighting Profiles allow you to tailor the light output to the site or project's needs.

A lighting profile is a programmed schedule that adjusts brightness over the course of the night, while constant output maintains the same light level from dusk to dawn.

When aligned with how an area is used, lighting profiles are almost always the better choice. They reduce light pollution and lower power consumption, allowing for smaller, more cost-effective solar lighting systems.

However, lighting profiles must match actual usage. If output is reduced while a path or roadway is still heavily used, visibility and safety can be compromised.



DarkSky Approved vs. Dark Sky Compliant

These terms are often confused. While both aim to reduce environmental impact, they are not equivalent.

DarkSky Approved solar luminaires are approved by DarkSky International based on manufacturer testing. They meet strict limits for uplight, color temperature and blue light and are often required for municipalities, parks and sensitive environments.

Dark Sky Compliant products follow dark sky principles but are not officially certified. Approval depends on local codes or project requirements.

Why Light Trespass Matters

Light trespass occurs when illumination spills beyond the intended area, affecting homes, wildlife and neighboring properties. Working with the right solar lighting supplier can optimize product selection and lighting layout design on each project to minimize light trespass and support responsible public illumination.

To learn more about how solar technology is transforming the commercial outdoor lighting industry, visit: [Solar Lighting Technology | First Light Technologies](#)

¹ [How US Cities and Counties Are Getting Renewable Energy | World Resources Institute](#)

² [In a first, Utah got more power from solar than any other source | Grist](#)

³ [What are the safest and cleanest sources of energy? | Our World in Data](#)