SOLAR STREETLIGHTING - WHEN DOES IT MAKE SENSE

In today's current climate of high energy costs, carbon footprint and environmental awareness, increasing consideration is being given to intelligent systems and alternative technology that can minimise both the cost and environmental impact of our street and public lighting decisions.

With tens of thousands of minor road streetlights in operation every night in Australia, it is without a doubt that solar power systems can provide an effective way of reducing the load on our already over-stretched energy infrastructure. However, when considering the additional capital cost involved with a solar powered streetlight, the question needs to be asked – when does solar make sense?

Factors for consideration

When considering incorporating solar power into street lighting plans, the following factors must be considered:

	YES	NO	N/A
Is the current lighting insufficient or no lighting installed at all?	☐	☐	☐
Is the cost of trenching and/or environmental disruption high?	☐	☐	☐
Is the electrical grid difficult or impossible to access?	☐	☐	☐
Are the locations of utilities unknown?	☐	☐	☐
Are underground checks costly and/or too time consuming?	☐	☐	☐
Is the existing underground wiring nearing its end-of-life?	☐	☐	☐
Is copper theft an ongoing problem?	☐	☐	☐
Is the cost of disruption to normal traffic flow high?	☐	☐	☐
Is there a desire to be seen to move towards renewable energy?	☐	☐	☐
Is government funding a factor?	☐	☐	☐

If you answered 'YES' to a majority of the above questions, then it is highly likely that solar is a viable solution for your application.

What Solar options are available?

Once the viability of solar power for your site application has been established, it is important to consider what objectives you would like to achieve out of your solar power solution.

All solar streetlighting options require additional components to move energy through a series of conversion steps to convert it from sunshine to illumination.

Option 1: Off-grid Solar Solutions

Off-grid solar powered lighting can provide a good alternative to traditional mains powered public lighting systems. Off-Grid solar powered lighting is a completely self-contained solution, taking its charge from the sun, and storing in its integral battery, with the luminaire then drawing on this stored energy to run when required.

Off-grid solar allows advantages for new sites where landscaping may need preserving, or difficult to access locations such as shown in Fig 1. Due to its self contained nature, Off-grid solar packages provide a simple "fit and forget" solution for difficult to access locations, along with the perfect solution for temporary lighting requirements such as temporary traffic intersections during road-works, or special event lighting, as the self contained package is easily relocatable when no longer required.

Fig 1. Off-grid solar perfect for difficult access sites

Option 2: Back-to-grid Solar Solutions

Depending on your energy motivation and incentives from local energy authorities, back-to-grid solar powered lighting can provide the benefits of solar power public lighting systems but with the added reliability of the mains powered grid.

Componentry for a back-to-grid solar package consists of a solar panel which takes its charge from the sun, feeding it directly back to the grid, with the luminaire then drawing power from the grid as per normal operation. This solution is only suitable for sites where mains power already exists and is accessible, and offers peace of mind for areas such as in the far southern parts of Australia where the sun is not as reliably present year round. And depending on your negotiations with local energy authorities and/or government bodies, you may be able to draw a rebate from the excess power generated by the installed solar panels.

Establishing the true financial benefit of Solar

Once you have determined that solar is a viable option for your public lighting solution and chosen your desired solar delivery method from the two options detailed above, it is essential to assess the financial viability of investing in solar power for your application.

When undertaking a cost comparison between traditional mains powered methods versus solar powered solution, the full depth costs associated with mains power must be taken into consideration, such as:

1. Cost of underground checks for location of services
2. Cost of permit approval
3. All costs associated with laying new or upgrading existing cable
    - -Trenching Cost
    - -Cost of cable
    - -Cost of labour
4. Connection costs
5. Costs associated with ongoing cable maintenance and service
6. Yearly energy costs for running the luminaire

Comparing all of the above with the capital cost and ongoing energy cost savings provided by solar solutions, along with any available government rebates that may be available for installation of renewable energy source, will give you an accurate cost comparison and allow you to determine your cost-payback period.

Integrating solar with energy saving luminaires and intelligent control technology

With the rapid development in energy saving technology through the commercialisation of reduced wattage light sources and intelligent controls, options are endless in combining these new technologies with solar powered systems to provide a complete, environmentally sustainable solution for public lighting applications.

Solar systems can be integrated with Compact Fluorescent and LED technology to provide further reduced energy benefits over traditional lighting practices. Combine this with intelligent control technology such as advanced monitoring systems, dimming and occupancy sensing, solar can provide leading edge, sustainable solutions that are second to none.

Sylvania Lighting has a number of Solar Lighting Solutions, including complete packages (*Luminaire, Solar Panel & Batteries*) as well as luminaires only.

For more information and to obtain a tailored solution to suit your application please contact your nearest SLA Representative.

EVERGEN 1700 SOLAR LED

SOLAR (CATEGORY P)

The EverGEN 1700 Series, is a high output solar LED lighting solution suitable for residential street, pathway, carpark, perimeter, intersection and site lighting applications.

The EverGEN 1700 Series consists of an integrated, pole top solar engine enclosure containing the solar panels, energy management system, and Absorbed Glass Mat batteries. An intelligent energy management system allows for customised operating profiles and motion control capabilities.

Functioning completely off the grid, the EverGen 1700 Series is configured for year-round reliable operation using a product simulation tool that models solar energy inputs and dynamic system power requirements of the installation location for a five year period.

All components used in the EverGEN 1700 Series are completely recycleable offering an eco-friendly solution through to end of life.

For more information on a customised solar LED solution for your installation, please contact your nearest SLA representative.

LUMINAIRE CONSTRUCTION

- Corrosion resistant, durable powdercoated cast aluminium housing
- High efficiency black contact mono-crystalline solar panel
- Absorbed Glass Mat (AGM) batteries
- Polyester powder coat finish in Silver RAL 7035 on front and Grey RAL 7042 on back of solar engine, as standard

FEATURES

- Typical lumen range 2,000 - 9,000 lumens (dependent on location and operating profile)
- Up to two fixtures per unit
- 6000K and 4300K colour temperature
- 63 operating profiles
- Installation in under 30 minutes
- LED indicators identify battery state of charge, battery charging mode, system fault indication and reverse polarity indication for the solar panels and batteries
- Pre-configured optimal tilt angle based on the latitude of the installation location
- Options:
  - Advances Occupancy Sensing (AOS)
  - Bird deterrent spikes
  - Communication Cable from EMS to Base of Pole
  - Communications Cable from EMS/Base of Pole to PC

Additional solar panels and luminaire options are available.
Contact your SLA representative for further details.

ROADWAY