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## Solar and Wireless Technologies Deliver Fail-Safe Solutions to Secure Perimeters



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By [Robert Reynolds](#), Founder and CEO, Solis Energy

Have you ever watched a tidal region as the tide recedes? During that natural process, small hill tops emerge from the sand and begin to grow until they are separated only by thin rivulets of water.

Integrated security systems are evolving much the same way. Perimeters are expanding. They are more fluid, encompassing wetlands, forests and beaches. These changes require security systems to become more adaptable. While the need for early detection has always been a priority for security planners, making decisions at the edge is critical. As terrorism grows and new threats are identified, these systems are expanding to encompass the farthest reaches of a property -- up to and including the boundaries. Placing the necessary equipment where it is needed is imperative.

It has always been important to detect abnormal situations and investigate them as early as possible. Historically, an event might generate a guard patrol or heightened surveillance. That philosophy changed quite some time ago. With the advent of IP-based video systems, intelligent sensing and wireless networks and interoperability, security personnel are notified automatically and decisions are happening in real-time. Placing equipment where it can support these decisions is easy. The difficult part is building the infrastructure to support it. Fortunately, technology is keeping pace with these challenges.

Much like the telecom and IT industries over the past few decades, security systems

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and wireless networks are growing together. The opportunity to surf the web from a park bench is giving municipalities the option to add surveillance. The rapid evolution of IP-based products along with the newer Power Over Ethernet (PoE) power option has built renewed interest in the use of alternative energy forms for power. Though wind, geothermal, fuel cell and other technologies are on the rise, solar is becoming the preferred choice simply because it has proven to be reliable and fits most environments.

While placing a solar power plant, a wireless network node, surveillance and detection equipment at the optimal location is an efficient and cost-effective solution, there are many factors to consider when deploying a solar-based system. The design of a solar power plant may seem fairly simple, but that is not always the case, particularly if the technician with whom you are working is not familiar with solar deployment. For example, a system performance chart showing only amp-hours per day is not enough for sizing a system. Here are several examples of what can go wrong with an incorrectly designed solar power plant:

- Failure to compensate for temperature extremes can result in system downtime and costly, repetitive maintenance. Batteries de-rate (performance scales down) in the cold.
- Failure to design using worst-case sun hours can result in downtime as well. Design for the worst month.
- Failure to design for the proper amount of autonomy.
- Misunderstanding the various voltage and amperage requirements and how these affect system efficiency. Make sure to include all necessary equipment in the design.

Also, it is entirely possible to overdesign a solar power plant. This is usually the result of using the maximum power versus the true steady-state power draw. While many equipment manufacturers believe you should always design for worst-case, using a max number for system design, this can cause the estimate to exceed budget guidelines which can delay or kill a much-needed project. If the calculations are done properly, there will be enough system tolerance to handle the out-of-the-ordinary situation without inflating system capacity.

*Robert Reynolds is the founder and CEO of [Solis Energy](#).*

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