

ILLUMIENT



Residential Subdivisions

SMART OFF- GRID LIGHTING

Technology driven change is always upon us. it affects every aspect of our lives whether we are aware of it or not. A case in point is the inconspicuous residential street light, as common as the automobile, yet we pass by thousands every day and don't give them a second thought. These quiet guardians can now serve us with added functionality, at a lower cost and with minimal environmental impact, all of which is made possible by new Smart Off-Grid technology.

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THE AGE OF THE LED LIGHT

Looking at the evolution of the street lamp starting with the arc lamp to the incandescent, to fluorescent, and then mercury vapor, followed by high pressure sodium and CFL's, we can detail a smooth and seamless transition. Each new technology brought incremental gains in functionality and efficiencies but none of them will match the impact on the lighting industry that LEDs are having.

With efficiency gains of up to 35% and electronic control, LED light replacement programs are all the rage. They make it viable for huge industry-wide investment in replacement programs which will save cities and businesses millions of dollars. LEDs are a key component of utility providers' proliferation of Smart Grid technology rollouts, allowing for a level of control and monitoring of each device not previously possible.

Flying under the radar is another even more revolutionary change, once again made possible by LED luminaires. LEDs enable off-grid lighting to be the better alternative based on its environmental benefits and economic value. For years tinkerers, do-it-yourselfers and home owners have been creating off-grid lighting solutions. This has spurred investment and growth by larger, more serious players to deliver truly engineered solutions that are now being specified by consultants, city planners and engineers for applications such as pathway, parking lot and residential street lighting.

OFF-GRID AND RELIABILITY

Off-grid lighting won't get universal acceptance however, unless it can quell concerns about reliability. As utilities move toward the "Smart Grid", reliability will only improve, making it a formidable hurdle for off-grid lighting to overcome. Smart grid technology will create an infrastructure that enables utilities to both monitor and control individual devices on the grid. With street lights, the utility will be able to know immediately when a fault occurs and have the data on hand to diagnose the problem, allowing for improved response time with certainty of the root cause, ultimately improving reliability and response time.

Off-grid lighting has evolved to the point of being a reliable technology. Companies have combined components to deliver solutions but, until recently, off-grid lighting had only limited capabilities to communicate status, with virtually no level of control or real time information.

POWERED BY



Enter the Illumient smart controller with real time, anywhere, cloud-based software.

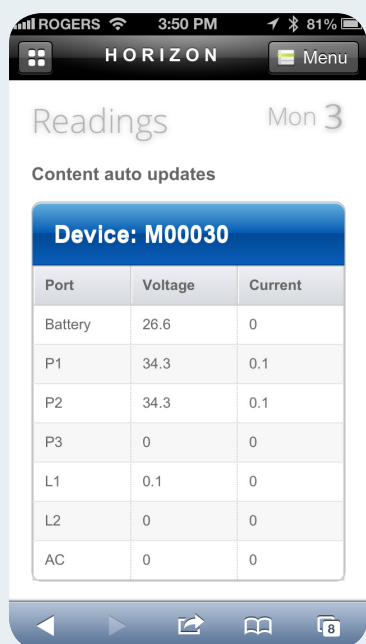
Illumient Smart Off-Grid was invented by experts who understood that off-grid lighting needed to deliver the reliability of on-grid while also providing remote, real time monitoring and control.

Illumient brings smart grid technology to off-grid lighting and security solutions, bringing unmatched reliability and acceptance in the industry.



MONITOR AND CONTROL OVER THE INTERNET.

From any PC or
Smartphone



SMART OFF-GRID CONTROL

For off-grid lighting to be robust and reliable it needs to deliver:

- **Support & Serviceability:** Green systems work in a dynamic, ever-changing environment, so there is a need to both monitor and control them remotely. With Illumient all of the historical data is stored, making it easy to diagnose issues, which increases reliability and uptime.
- **Reliability & Service Delivery:** Illumient's remote energy and load management ensures that the system delivers the service required even under difficult environments. This optimizes battery life, enables weather and seasonal adjustments for hours of operation and more.
- **Light & Pole Flexibility:** With Illumient, customers have the option to purchase a complete turnkey solution or choose the luminaire and pole combination of their choice, while still getting the benefit of Illumient's advanced controller and Smart Off-Grid software. Unlike other systems which limit pole and light options, Illumient opens up off-grid lighting to any pole and LED combination.
- **Diverse Application Support:** In today's world, it's not just about street lights any more. Now security cameras, traffic monitoring, and other devices are needed to meet customer requirements. The Illumient Smart Off-Grid control system uniquely delivers this capability by supporting multiple loads and different loads simultaneously.
- **Easy to Use:** Instead of specialized electrical wiring, every Illumient system comes with industry standard, plug and play color-coded connectors. This makes it easy to install and configure so they can be connected by anyone with no training needed.

- **Advanced Functionality:** Illumient Smart Off-Grid

SMART OFF-GRID: RESIDENTIAL USE

Reliable, cost effective off-grid lighting and security is ideal for residential subdivisions. Unlike traditional utility systems, Smart Off-Grid lighting is independent of other lights and therefore not susceptible to power grid outages or system-wide events that could affect large areas of lighting. Off-grid eliminates monthly utility bills with its ever rising costs. Instead, off-grid's only consumable costs are batteries, which have a useful life of six to seven years and are likely to be replaced by even better technology in the future.

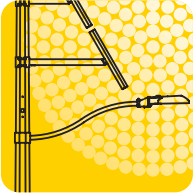


City and town administrators and homeowners will see the added benefit of having control over their own lights without being subject to high costs forced upon them by the utility. A town-owned lighting system gives control to the town with an investment that can be written off, and gives complete control over where lights can go without having to get utility approvals. Homeowners will embrace off-grid because the costs will be lower. Integrating security with more lighting profile options will be welcome to homeowners as it enhances safety.

The following analysis is based upon the actual costs from a midwestern US residential subdivision.

Off-Grid Lighting in Residential Subdivision: Example of Costing for Two Pole Entrance		
Cost Factors	Utility Smart Grid Power Leased or Rented to Municipality or HOA	Municipal or Homeowners Assn Smart Off-Grid Power
Pole and LED light (\$2000/pole) Installation	\$4000 \$2000	\$4000 \$1000
Distribution panel, controller with Smart Grid technology	\$7000	Not required
Concrete pad	\$800	Not required
Trenching (assuming 250 ft @\$20/ft x2)	\$10,000	Not required
Paving & concrete (paving \$59/ft, concrete cutting and removal \$1000 / day)	Not required	Not required
Cable and conduit	\$7500	Not required
Off-Grid components (batteries, solar panels, controller, monitoring, \$3450 x2)	Not required	\$6900
Electricity costs over 20 year avg cost is 20cts/kwh, 352kwh/yr x2	\$3520	\$0
Battery replacement cost approx once every 5 years, \$1500x2	Not required	\$3000
Maintenance on lights and ballast	\$800	\$800
TOTAL of 5-year TCO	\$35,658	\$15,700

CONCLUSION



Off-Grid street lighting in residential applications costs less than traditional lighting, is environmentally friendly and with the Smart Off-Grid capabilities offered only by Illumient, achieves extraordinary levels of reliability to make it the best option.

ILLUMIENT SMART OFF-
GRID LIGHTING WITH
REAL TIME CONTROL
AND MONITORING
OVER THE INTERNET

