LUMEWAVE
By **ECHELON**

SHINING A LIGHT
ON ENERGY SAVINGS

Cut energy bills by 30%, put more money back into your city's budget, and improve public safety — with Echelon technology for outdoor lighting.

Streetlights are among a city's most important assets, providing safer streets, parks, and city centers. They also consume a huge part of a city's budget — as much as 40% in electricity bills and significant resources for maintenance and operations. Smart street lighting systems lay the foundation for becoming a smart city by reducing electricity use, costs, and carbon emissions while enhancing environmental aesthetics and safety.

Echelon, the market leader in smart street lighting solutions, controls streetlights in 500 cities around the world. Our energy control networking platform transforms streetlights into networked, remotely managed infrastructures that deliver cost-effective, dependable light for safer living environments. Better still, because the platform is based on open standards, you can use it for controlling other city systems, moving you further along the path to building a smart city.

SAVE 30% ON ENERGY BILLS

PROVEN TO REDUCE THE COST OF ENERGY IN 500 CITIES AND COUNTING

Cities using our technology reduce street lighting energy use by an average of 30%. The city of Oslo, a Clinton Foundation Climate Initiative best practices example, installed Echelon SmartServer segment controllers and reduced energy consumption by 62%. In China, 500,000 smart streetlights using our power line technology are coming online during 2014, with an expected energy reduction of 55%.
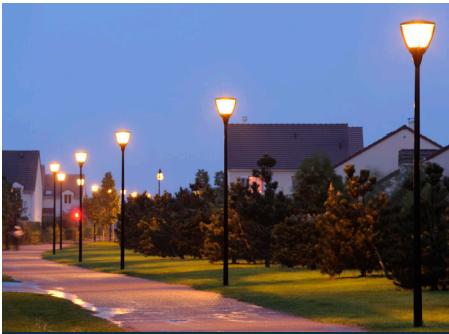
"The solution provided by Echelon is proven, open, and capable of supporting many applications, which gives us the ability to deploy streetlight controllers from multiple manufactures as well as different light technologies over time. We felt that Echelon is the best technology partner for us to implement our green and smart city strategy. Their proposal has far reaching capabilities and longevity that others could not match."

Tom Kristoffersen
Head of section Maintenance and Operation in the Agency for Urban Environment in Oslo Kommune

Key benefits of Echelon-based street lighting systems include:
• 30% less energy use in addition to savings from high-efficiency lamps
• 20% or more savings per year in operating and maintenance costs
• Better living environments with more reliable and safer lighting
• The ability to mix lamp technologies (e.g., LED, HPS, induction)
• Expandable infrastructure that supports multiple applications

Our power line smart transceivers provide nearly flawless performance and reliability and control of every type of luminaire. This same technology is used in more than 35 million smart electricity meters worldwide to provide extremely reliable operation (99.7% to 100% accuracy and reliability). At work in more than 100 million devices throughout the world, Echelon solutions are more thoroughly proven than any other control networking technology.

The power line solution solves critical challenges facing cities today, including:
• How to bring outdoor decorative and historical light fixtures into the control network. Because these light fixtures have no photocell socket, it's not possible to control them using wireless radio frequency (RF). With power line, the light controller can simply be placed in the pole or at the bottom of the pole, to start remotely controlling the lights.
• How to implement cost-effective standards-based wireless communications. In certain power grid topologies for outdoor lighting applications, it's not feasible or cost-effective to use existing power line wires. In these cases, wireless two-way communication to each light fixture becomes critical.

Unlike proprietary wireless solutions, Echelon augments a wireless solution on top of an ISO 14908 standards-based network, thereby providing affordable wireless communications with the flexibility and future-proofing of a standards-based approach.

NETWORK SENSORS

Outdoor lighting for public spaces such as streets, parks, and parking lots provides drivers, pedestrians, and residents with visibility and safe passage, but typically at a high energy cost. With the emergence of LED lights for outdoor applications, a new "follow-me-lighting" capability can be realized. Because LED lights can be set instantly to a desired output level, this helps reduce energy consumption even further.

THE POWER OF AN OPEN STANDARD

Street lighting owners and operators need to adopt open standard technologies to ensure they can operate and expand the system with the least cost and most choice. Our power line ICs use ISO/IEC 14908.1 and 14908.3 standards, and our SmartServer segment controller adheres to open IP communication standards. As a result, you are never limited by proprietary technology.

For instance, devices that include our power line components, such as those for weather monitoring and pollution measurement, can be added inexpensively to Echelon control networks because new wiring is not needed. These applications can be easily accessed over the Web just like the smart streetlights.

PROVEN, OPEN STANDARD. MULTI-APPLICATION

The function of the street lighting network itself can expand with more sophisticated applications, such as brightening or dimming to improve traffic flow and pedestrian safety. For example, Ville de Quebec, Canada, added a bus-lane control system to its street lighting network and eliminated the cost of a second infrastructure.

BECOME A GREENER CITY WITH A COST-EFFECTIVE, MULTI-APPLICATION PLATFORM

Cities can add green, energy-efficient, and cost-conscious applications to Echelon-based street lighting systems for minimal additional cost.

GLOBAL PARTNERS FOR THE SERVICES YOU NEED

Echelon's technology partners let you build complete street lighting systems using best-of-breed products and services. Our partners include:
- System software providers for individual light monitoring and control
- Third-party manufacturers providing ISO/IEC 14908-compliant integrated ballasts, outdoor lighting controllers, drivers, and generators
- Installation, operation, and maintenance partner companies

For example, in China, energy services companies assess, manufacture, install, and operate Echelon-based street lighting networks for a fraction of the operating and energy costs, with no out-of-pocket expense to cities.

SMART PRODUCTS FOR SMART CITIES

What do you get when you buy Echelon's energy control networking platform for smart street lighting? You get a three-tier architecture comprising Echelon's power line and RF controllers, Echelon's Segment Controllers, and a selection of third-party and Echelon-branded software providers for one complete end-to-end solution. Whether you are a lighting OEM or city manager, and wherever you are on your journey to enable smart cities, Echelon makes it easy to start and easy to reach your goals.
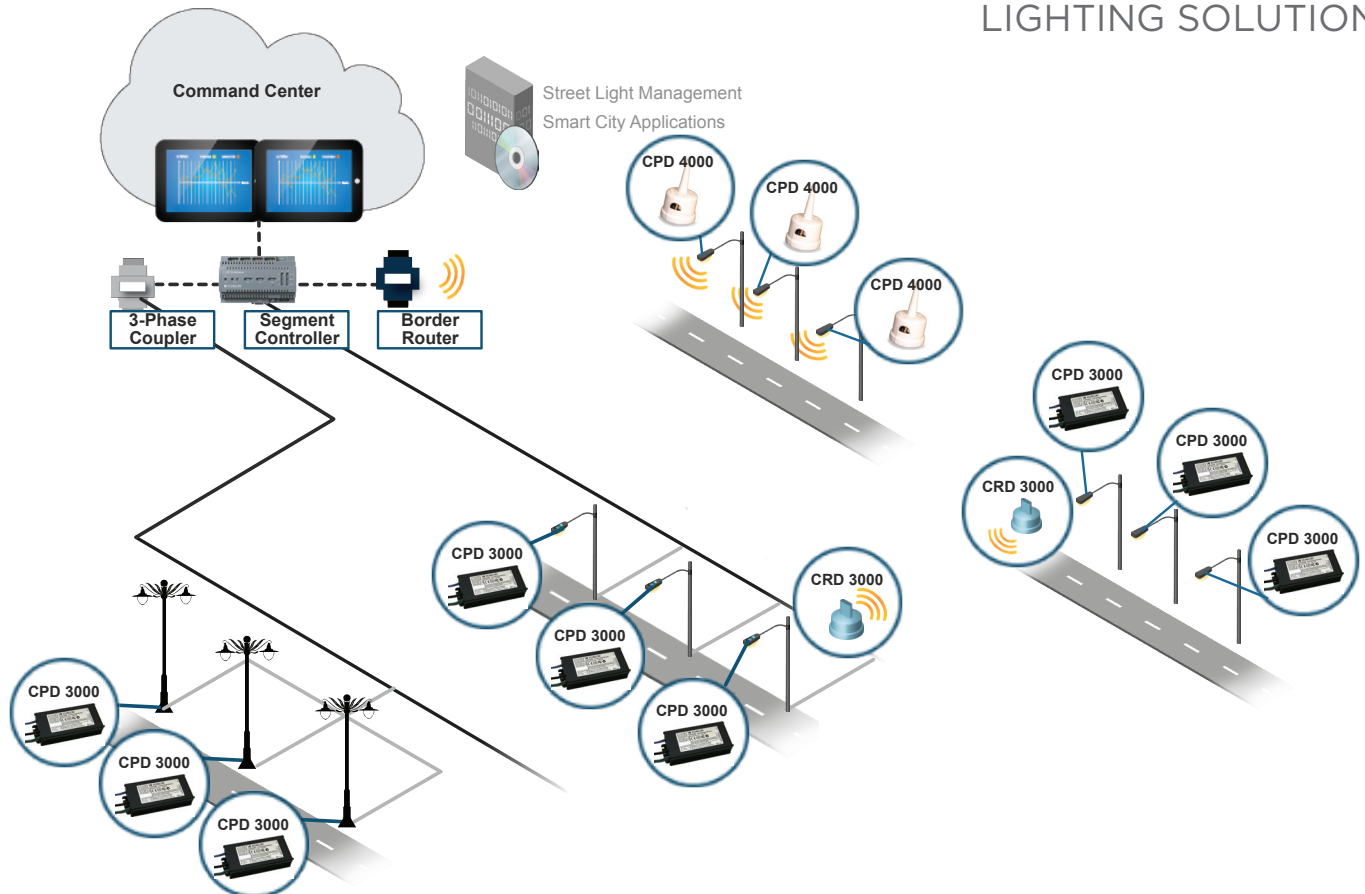
ECHELON'S OUTDOOR LIGHTING SOLUTION

PRODUCTS THAT FIT YOUR NEEDS

LIGHTING CONTROLLERS

Echelon offers both power line and wireless embedded lighting controllers that integrate easily into any light fixtures (LED, high-pressure, induction, plasma) CPD 3000 – PL embedded outdoor lighting controller

ROUTERS
Echelon RF/
PL Bridge. Used to connect multiple segments of streetlights into a single 'virtual segment.' It is ideal when segments contain few lights, or when the power line has extreme noise. The RF/PL Bridge uses a plug-and-play RF connection for simple, low-cost installation. Each virtual segment communicates with Echelon's Segment Controller over existing power lines.

CPD 4000 – RF embedded outdoor lighting controller.

CRD 4000

An integral component in Echelon's smart street lighting solution, the CRD 4000 Border Router connects with the Echelon Segment Controller to provide a seamless interface to wireless networks.

CONTROL NODE

Echelon Segment Controller.
Powerful controller and gateway for connecting streetlight segments to a city's service center. The Segment Controller provides rules for operation, invoking on/off time and sequencing, dimming time and percentage, and other functions. Data logging of parameters such as uptime or energy use, alarming and scheduling functions, and a standard IP connection to third-party system software make it a key part of a citywide infrastructure.
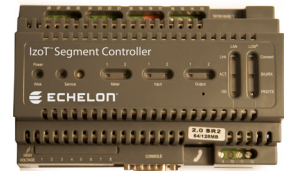
SYSTEM SOFTWARE

Third-party system and Echelon-branded software integrates with a city's enterprise applications and manages the street lighting network. Using the SmartServer for control and communication, system software is available in hosted or server-based configurations.
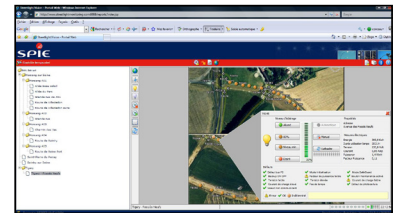
GET STARTED TODAY

To learn how Echelon can help you reduce energy costs and improve system performance, call +1 408 938 5200 or visit us at www.echelon.com.

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