



Intelligent Street Lighting Solution

ConnectM
a Sasken and IDG Ventures company

Need

The operation of street lighting accounts for a significant portion of the overall energy consumption. Modern cities require millions of luminaires ranging from 70 to 250 watts in capacity to light up streets. The rate of new installations which is growing at 3-5% every year, nullifies efforts being made by lamp manufacturers by introducing energy efficient lamps. It would take a couple of generations to replace existing installations even if the cost of replacement efforts were ignored.

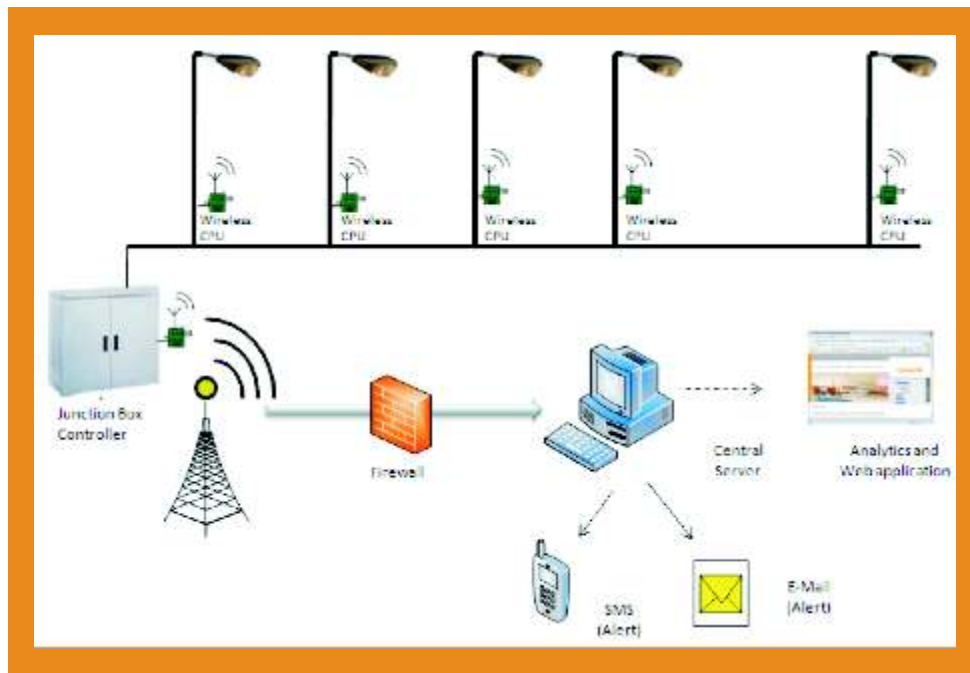
Soaring energy bills burden utilities, tax payers and consumers alike. Indiscriminate use of energy burdens the environment with CO2 emissions every year and contributes to global warming. Street lighting is an area of high potential in this respect.

The Solution

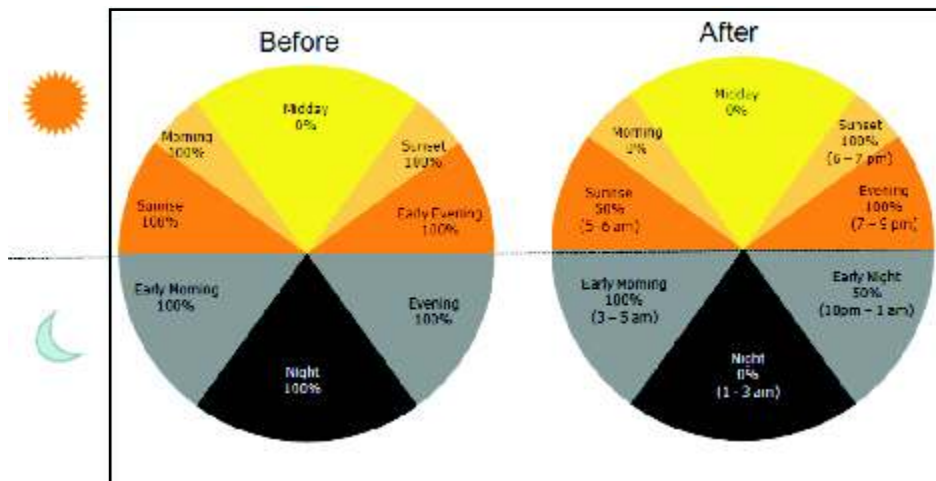
Traffic & pedestrian usage patterns do not remain constant throughout the 'darkness' hours. 'Activity level' drastically reduces during late night and early morning hours. Street usage at other times varies depending of the type of street and demographics of the area.

Utilities that do not deploy Street lighting controls normally switch on all street lights together at a fixed time during the evening. Street lights glow at full intensity till the early hours of the morning.

The Intelligent Street Lighting Control solution from ConnectM allows the Utility to vary light output on individual sections of the network in a controlled manner and reduces energy consumption by matching actual lumen output to the lighting criteria for known variable conditions. The street lighting control is provided from a central location over the internet. Signals are sent through wireless links to individual Junction box controllers.



Sample usage pattern profiles are given below:



Additionally, this system helps the utility monitor performance of lights on individual streets, assess energy consumption and savings due to dimming. Data is analysed in real time to provide efficient maintenance services.

Solution Features

- A) **Remote Operation:** Street lights are programmed to switch on/off at fixed hours every day. This can be overridden in cases of exception or special events.
- B) **Control Lighting (Dimming):** Normal usage pattern of individual streets is programmed based on which the luminescence of street lights is controlled (dimming). Pre-defined Profiles accommodate weekly or seasonal fluctuations. Profiles may be overridden to accommodate exceptions and special events.



- C) **Monitor Lamp Status:** Real time monitoring of lamp status enables the utility to schedule maintenance activities. Fault history logs can be maintained.

The screenshot shows a 'Lamp Status' monitoring interface. It features a table with columns for 'Name', 'Faulty', 'Critical Faulty', and 'Event Time'. The table lists several lamps, with some marked as 'Faulty' (red dot) and others as 'Critical Faulty' (green dot). A sidebar on the left contains a search bar and a list of street names.

Name	Faulty	Critical Faulty	Event Time
Lamp 01	●	●	01-12-2008 13:00
Lamp 01	●	●	01-12-2008 13:00
Lamp 02	●	●	01-12-2008 13:00
Lamp 03	●	●	01-12-2008 13:00
Lamp 04	●	●	01-12-2008 13:00
Lamp 04	●	●	01-12-2008 13:00
Lamp 05	●	●	01-12-2008 13:00

- D) **Programmability:** Street lights are programmed for remote operation and dimming based on observed usage patterns. Modifications may be made over-the-air through internet.

E) Analytics:

- 1) **Alerts:** Alerts are generated through e-mail or sms whenever a parameter crosses predefined thresholds (min/ max values)
- 2) **Reports:** Standard reports provide weekly/ monthly/ yearly performance related information. Eg.
 - Time based status of lamps
 - Energy consumption (conservation) against baseline
 - Maintenance reports
 - Lamp life monitoring (against base line provided by manufacturer)
 - Customized reports



Sample report: Energy Conserved (daily report)

- 3) **Benchmarking:** Bench marking studies are conducted to compare performance with best-in-class utilities. Improvement initiatives are launched accordingly.

Benefits

- A) **Energy Conservation:** Utility companies have achieved between 40-50% reduction in energy consumption. The level of reduction depends on the current usage pattern, type of street and type of initiatives adopted by the utility company.
- B) **Improvement in lamp life:** Supply voltage varies based on time-of-day due to varying load/demand patterns. This creates abnormal electrical operating conditions for lamps and reduces their life. The Intelligent Street lighting solution ensures uniform operating conditions. Research studies and laboratory tests indicate that dimming significantly improves the life of lamps.
- C) **Operational improvements**
- 1) **Remote operation:** Street lights are controlled from remote which adds to operational efficiency.
 - 2) **Reduced cost of maintenance:** Maintenance activities can be scheduled accurately based on actual condition of installed equipment. Fault localization (lamp level) ensures that street lights need not be switched on during daylight hours for maintenance activities. This contributes to a 5-10% reduction in operational expenses.
 - 3) **Spare part inventory optimization:** Spare parts can be optimally planned and unlocks capital blocked in inventories. Utility companies have reduced their investment by 10-15%.
 - 4) **Real time lamp status monitoring:** Real time monitoring ensures uniform lighting conditions throughout the stretch of street.

About ConnectM

ConnectM is a global solutions provider for the Automotive, Railroad, Aerospace, Industry, Utilities and Enterprise markets. We help customers improve profitability, enhance productivity and reduce cost using Analytics based on Remote Monitoring. Our proven solutions deliver significant, sustained and measurable business impact for our customers. ConnectM is backed by Sasken and IDG Ventures.

Our solutions portfolio also includes:

- Remote Asset Management
- Remote Monitoring and Diagnostics
- Fleet Management
- Energy Management Solution
- e-Metering Solution
- Automated Cathodic Protection

Email : contactus@connectm.com

Web : www.connectm.com

Corporate Address : ConnectM Technology Solutions Pvt. Ltd., Adarsh Tech Park - SEZ, Devarabeesanahalli, Outer Ring Road, Sarjapur, Bangalore 560037