

# Networked Lighting Controls

Energy Design Engineers, LLC.

734.215.1133

[www.energydesignengineers.com](http://www.energydesignengineers.com)

[info@energydesignengineers.com](mailto:info@energydesignengineers.com)



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## What are Networked Lighting Controls (NLC)?

Lighting is a critical contributor to the productivity, efficiency, and safety of any industrial environment. Lighting can also be challenging to control, customize, and maintain, making lighting-related energy costs difficult to monitor, measure, and manage. With intelligent lighting, you have a canopy of smart sensors and advanced cloud-based software to maximize your energy savings, improve productivity, and maintain safe, comfortable light levels.

- ❑ Control, automate, and optimize lighting to achieve up to 90% energy savings.
- ❑ Measure, validate, and analyze energy usage with real-time and historical data.
- ❑ Access multi-site controls, monitoring, and reporting from a single dashboard via the web or mobile apps.

### Maximized Energy Savings:

With proper network lighting controls, customize and apply industry-leading lighting control strategies — including daylight harvesting, progressive dimming, and off-hour setback — to achieve up to 90% energy savings. Accessible via web and mobile applications, intuitive software provides easy management of lighting system settings and comprehensive reporting tools to maximize energy savings, safety, and visual comfort.

### Measure, Validate & Analyze:

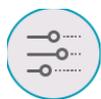
All of our intelligent LED fixtures and Digital Light Agents (DLA) are equipped with a utility-grade power meter, enabling the collection of lighting-related energy usage data to validate savings for utility rebates or internal stakeholders. The NLC dashboard displays real-time energy usage and savings data and enables custom reports for easy benchmarking of lighting-related energy use across zones, facilities, or sites.

### Instrumenting the IIoT:

Using a suite of Industrial IoT applications we deliver unprecedented control, insight, and value to facilities through Intelligence Overhead. With our Intelligent LED fixtures and Digital Light Agent lighting controls, your facility is immediately instrumented with an easily expandable IIoT platform that pays for itself through energy savings. Facility-wide IIoT enables flexible, easy-to-install deployment of additional sensor-based applications that extend beyond lighting to deliver even greater operational insight and create new value streams.

## What Can Networked Lighting Controls Do?

Create facility-wide, cross-organizational value that extends beyond precision lighting controls and massive energy savings. Equip users with the means to automate critical but time-consuming tasks, unlock new operational insights, and easily expand a network of customizable IIoT solutions.



### Task Tuning

Customize and manage precise lighting parameters on individual fixtures, or override entire groups quickly and easily through the mobile and web applications.



### Boost Operational Efficiency

Utilize occupancy data and heatmaps to understand facility traffic patterns and trends, create data-driven staffing and scheduling plans, or optimize inventory placement.



### Daylight Harvesting

Capitalize on natural lighting. Each of our intelligent LED fixtures or digital light agents can leverage natural lighting to dim fixtures while maintaining consistent light levels.



### Decreased Downtime

Remote configuration and diagnostics of lighting control settings allow users to adjust settings in real-time from anywhere and avoid unnecessary interruptions to busy production and manufacturing spaces.



### Scheduled and Astronomical Setback

Schedule lighting settings for a specific start and end time, or create responsive lighting settings based on sunrise and sunset.



### Automate Safety Compliance

Ensure employee safety with automated life safety testing and reporting, eliminating costly and time-consuming manual testing procedures.



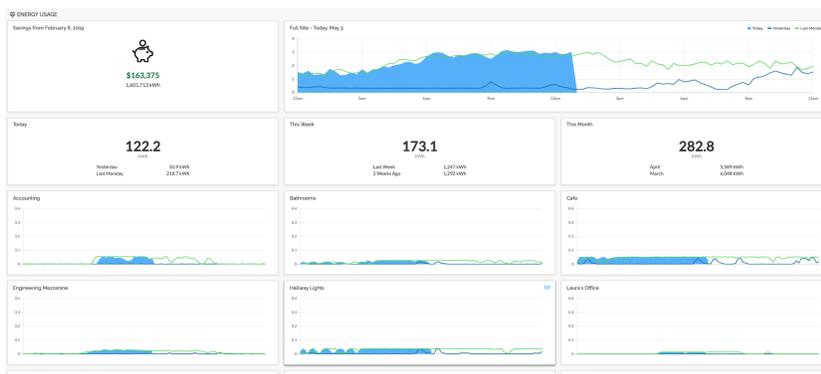
### Energy Usage & Savings Reports

Collect lighting-related data to validate savings for utility rebates and internal stakeholders. The dashboard also displays real-time energy usage and savings data, and shareable custom reports can be created for any time period, across any zone, facility, site, or enterprise for easy benchmarking.



### Access Insights from Anywhere

In addition to lighting management, monitor real-time occupancy patterns and view usage reports from your desktop, tablet, or mobile device.



**“If you can’t measure it,  
you can’t improve it.”**  
-Peter Drucker

## Networked Lighting Controls | Beyond Illumination

Beyond illumination and lighting energy savings, Networked Lighting Controls is customizable and scalable to meet the needs of each facility. Quickly access, gather, and act on critical environmental data within all spaces across your facility, site, or enterprise. So what can **Networked Lighting Controls** do beyond illumination?

- ❑ Automate & Verify the collection of environmental data such as temperature, relative humidity, or air quality.
- ❑ Gain insight into unoccupied or previously unmonitored spaces and auxiliary areas.
- ❑ Optimize utility services (W.A.G.E.S) such as water, air, gas, electricity, sewage, and more.
- ❑ Better allocate costs and avoid unplanned downtime by monitoring production and machine-level usage and performance.



### Configure Event-Based Alerts

Configure value-based thresholds for any single variable (such as temperature, relative humidity, decibel levels, etc.), and receive alerts via email, push notification, or text message.



### Benchmark & Improve

Track and benchmark line-level production costs and utility consumption to identify trends and anomalies allowing for process and profit improvement opportunities.



### Monitor Auxiliary Spaces

Gain insight into intervening spaces or unmonitored auxiliary areas to proactively identify leaks or potential HVAC issues.



### Avoid Unnecessary Downtime

Track machine-level usage and other sensor-based variables such as vibration that may indicate a decline in machine performance, and trigger data-based action on preventive maintenance measures.



### Protect Product Quality

Monitor critical production or storage areas to ensure that optimal and/or required environmental conditions are met and maintained and product quality isn't compromised.



### Reduce Manual Tasks

Reduce or eliminate time-consuming and unreliable manual data collection efforts and create an integrated snapshot of environmental variables across your facility.



### Secure Facility Data

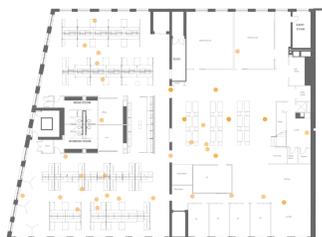
Enable secure, unalterable data recording throughout your facility to ensure reporting accuracy.



### Enhance Cost Allocation

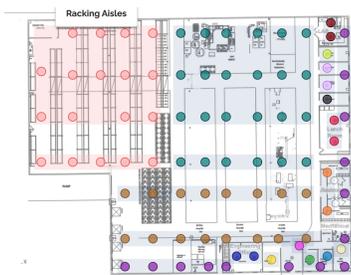
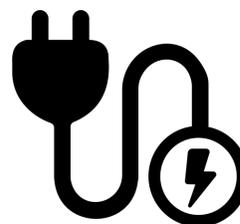
Hone operational expense allocation by specific customers or production lines through line-level usage of utilities.

## Networked Lighting Controls | Beyond Illumination



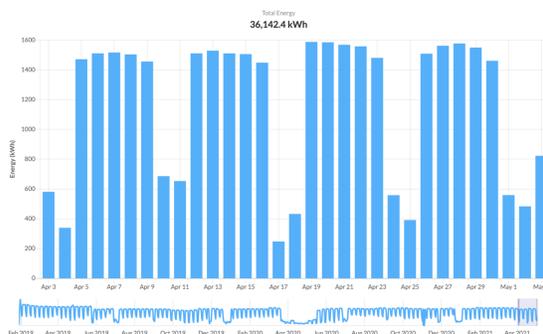
**Assets Tracking:** Lighting overlooks every inch of your facility, making it the perfect vessel to provide Location, Track, Count, Geo-Fencing, and Alarms for your assets using Bluetooth tags. Using asset tracking saves time, money, identifies choke points, and reduces congestion in the production line. Whether it's saving time when you're looking for the closest forklift, locating a product in the warehouse, or stopping a tool from leaving the premises; Asset Tracking will help your operation maximize efficiency and data.

**Occupancy Based Load Control (OBLC):** Monitoring and using the Occupancy Data gathered from your intelligent lighting system to power down or power on equipment for automated savings and efficiency. With OBLC, there are significant energy waste reductions and cost savings when controlling Man Fans, Conveyors, Dust Collectors, and more based on occupancy of the area. OBLC not only extends the life of your equipment, but it also extends your bottom line with simple paybacks averaging 6-months.



**Coordinated Controls:** A lighting control strategy that allows a user to select multiple light fixtures to operate together in unison, based on a single fixture detecting occupancy. Coordinated Controls allow for more flexibility in lighting behavior and ensures safety is not compromised, all while using intelligent controls to maximize energy savings in surrounding areas. In a warehouse, coordinated controls are often used to turn on all or most lights in a racked aisle as a fork truck enters to ensure the driver does not enter a dark space. This mechanism also signals other operators and foot traffic that the racking aisle is currently occupied.

**Data, Insights, and Reporting:** Data is critical in today's world as companies strive to maximize the bottom line, process efficiency, and increase their competitive advantage. With real-time data, monitoring, and insights, Networked Lighting Controls are helping industrial companies with space optimization, energy efficiency, time management, employee safety and planning, quality control, accountability, and more. With the ability to send a detailed data-driven report, the hours spent collecting and organizing data have been solved with a strategic network of intelligent devices customizable to meet the needs of any operation.



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## Summary: Why Networked Lighting Controls?

- 1. Maximum Energy Savings.** With automated and customizable settings, Networked Lighting Controls save an **average of 47%** more energy over LED alone. You can save up to 90% on lighting energy costs by making the switch to NLC. Think of it this way - if an LED-only solution saves \$40,000.00 Annually, the LED with NLC solution will save \$58,800.00. The additional \$18,800.00/year is \$188,800.00 in savings over the first 10-years of the lighting system's life. Over the lifetime of the NLC Lighting System, savings total over \$530,000.00, not including the increases in energy prices we will undoubtedly see in the coming years.
- 2. Higher Utility Incentives.** Until Networked Lighting Controls become a code requirement in the not-so-distant future, Michigan utilities offer some of the best, if not the best, incentive programs in the country. Why? Because the utilities want to reduce the amount of kWh they need to make, and Networked Lighting Controls with LED is one of the best ways to reduce energy waste in facilities. The additional cost of the Networked Lighting Controls is often offset by the Utility Incentive and generally speaking pays for itself in the 1st Year of the project's life.
- 3. Increase the life of your LED fixtures and your lighting system.** Unlike fluorescent or metal halide lighting, LEDs aren't negatively affected when dimmed or turned on and off. In fact, by doing so, you extend the useful life of the fixtures and implement a project with a life expectancy of over 25 years, maximizing your investment. LED with NLC has a rated life of 250,000 plus hours compared to 100,000 hours of an LED without NLC.
- 4. Control, Data, and Insights.** Lighting is an untapped asset that is widely overlooked in today's industrial and commercial facilities. Think about it. Lighting is the only thing that truly oversees every inch of your facility, and it can provide you with the essential data and insights you need to maximize production, efficiency and be more competitive.
- 5. Beyond Illumination.** When you implement the right NLC solution, you implement a system that will grow and evolve with your business, helping to futureproof your operation. Beyond the illumination of your facility, **NLC** can monitor, alert, and provide real-time data and insights on every aspect of the operation. Asset tracking, Geofencing monitoring, and occupancy-based load control (OBLC) are just a few examples of beyond illumination.