

Lighting Solution

Intelligent lighting.
Energy efficiency.
Data insights.



5M

Sensors installed

Up to **90%**

Lighting energy savings

1000+

Customer installations

60

Countries

2M

Tons of total CO₂ reduction

Building owners and operators are challenged to simultaneously reduce energy and operating costs, while ensuring occupant comfort.

The Enlighted Lighting Solution drives down energy costs, improves occupant comfort, and brings the Internet of Things (IoT) to commercial, industrial, and institutional real estate.

By transforming light fixtures into wireless IoT-enabled intelligent collection devices and driving impactful solutions, building managers can gain data-powered insights into, and control over, lighting profiles, energy usage, and energy costs, to increase efficiency and occupant comfort.

The solution provides complete flexibility, with the ability to control lighting systems, integrate with building management and HVAC systems, and reduce building-wide energy usage by up to 90 percent, simultaneously providing a rich set of time-series data for deeper analysis around real estate use.

Discover the possibilities

- Simple to install and program
- Improve overall light quality with LED and sensor-enabled fixtures
- Increase energy savings by up to 90%
- Lower lighting maintenance costs by up to 25%
- Collect robust data and insights for lighting and other IoT applications
- Easily adjust task tuning, occupancy monitoring, and daylight grouping and harvesting
- Easily adjust color temperature and intensity manually or automatically
- Pay for retrofits to LED lighting and smart sensors through energy cost savings

Advanced lighting controls for advanced buildings

The Enlighted Lighting Solution delivers the most advanced lighting control system available in the market today. Built on the leading Internet of Things IoT Infrastructure, the system consists of a network of LED lights fitted with patented sensors, which are wirelessly connected in a mesh grid and an advanced analytics platform.

The sensors collect data 65 times per second, to monitor environmental and occupancy changes, and make immediate, real-time lighting adjustments for occupant comfort and energy savings.

Easily adjusted features like individual task lighting level and color temperature tuning let users enjoy ideal lighting conditions, while continuous automatic occupancy monitoring and daylight harvesting dramatically reduce energy costs.

Real benefits for people and businesses

Productivity: Task-specific lighting and lighting scenes, paired with color temperature tuning, creates ideal workspaces.

Comfort: Lighting intensity and color are automatically adjusted, ensuring occupant well-being.

Energy efficiency: Daylight harvesting and vacancy detection contributes additional energy savings to already-efficient LED lighting.

Occupancy insights: Sensors deliver time series data that can be leveraged for occupancy analysis, traffic pattern discovery and many other business decisions.

Intelligent sensors

The Enlighted Lighting Solution leverages patented, software-defined Enlighted smart sensor.

Smart

The Enlighted smart sensor transforms light fixtures into wireless IoT-enabled building intelligence solutions. Measuring temperature, light, energy consumption, and motion, along with Bluetooth® capabilities, Enlighted sensors continuously capture robust real-time data from every square inch of the building.

Extendable

The Bluetooth capabilities extend the IoT enablement to third-party wall switches, sensors, and systems, as well as enable advanced applications such as wayfinding and location services.

Simple

Compact and easy to install, our sensors are both aesthetic and practical – delivering better occupant experiences, with lower installation and energy costs.

Responsive

Our award-winning sensors control lighting based on customized profiles, then capture and respond to data that shows changes in occupancy and ambient light levels. Each sensor maintains its programmed behaviors even if outages effect network health.

Scalable

Enlighted sensor technology was designed from the start to be fully scalable and has been proven in installations from small office buildings to multi-million-square-foot factories, in 60 countries and counting.

Future-proof

Our system is software upgradeable, enabling future intelligent applications to be created, and allowing smooth adaptation to changes in specifications and building codes.



Sensing multiple aspects of an IoT enabled space



Motion

A digital passive Infrared (PIR) sensor supports precise motion identification while minimizing false detection.



Light

Light-level schedules, preferences, and behavior profiles are locally stored to ensure continuous operation.



Temperature

Separate ambient sensing detects shifts in temperature.



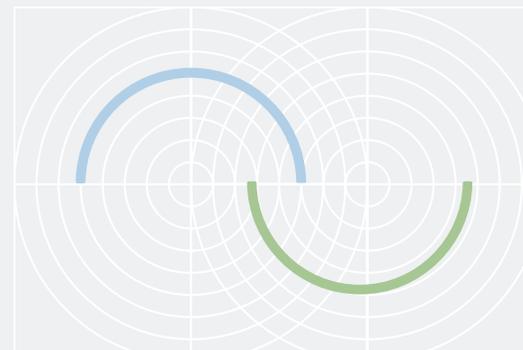
Power

Enlighted Control Units, via the serial interface, capture energy consumption data.



Bluetooth® LE

A BLE radio allows the sensor to receive and transmit beacons with lighting control devices and other sensors.



IoT infrastructure

The IoT infrastructure is the most advanced in the industry, creating an ecosystem of options for energy savings, process efficiency, and real estate optimization. By configuring and defining zones and parameters via the system console, users have the ability to dynamically change configurations without the need to access hardware components.

Dense sensor grid

Enlighted sensors are installed in – and powered by – each lighting fixture in a building to create a dense and regular grid of coverage, gathering data anywhere in the building. Additional sensors can be installed under desks for desk-level occupancy sensing.

Robust and scalable wireless network

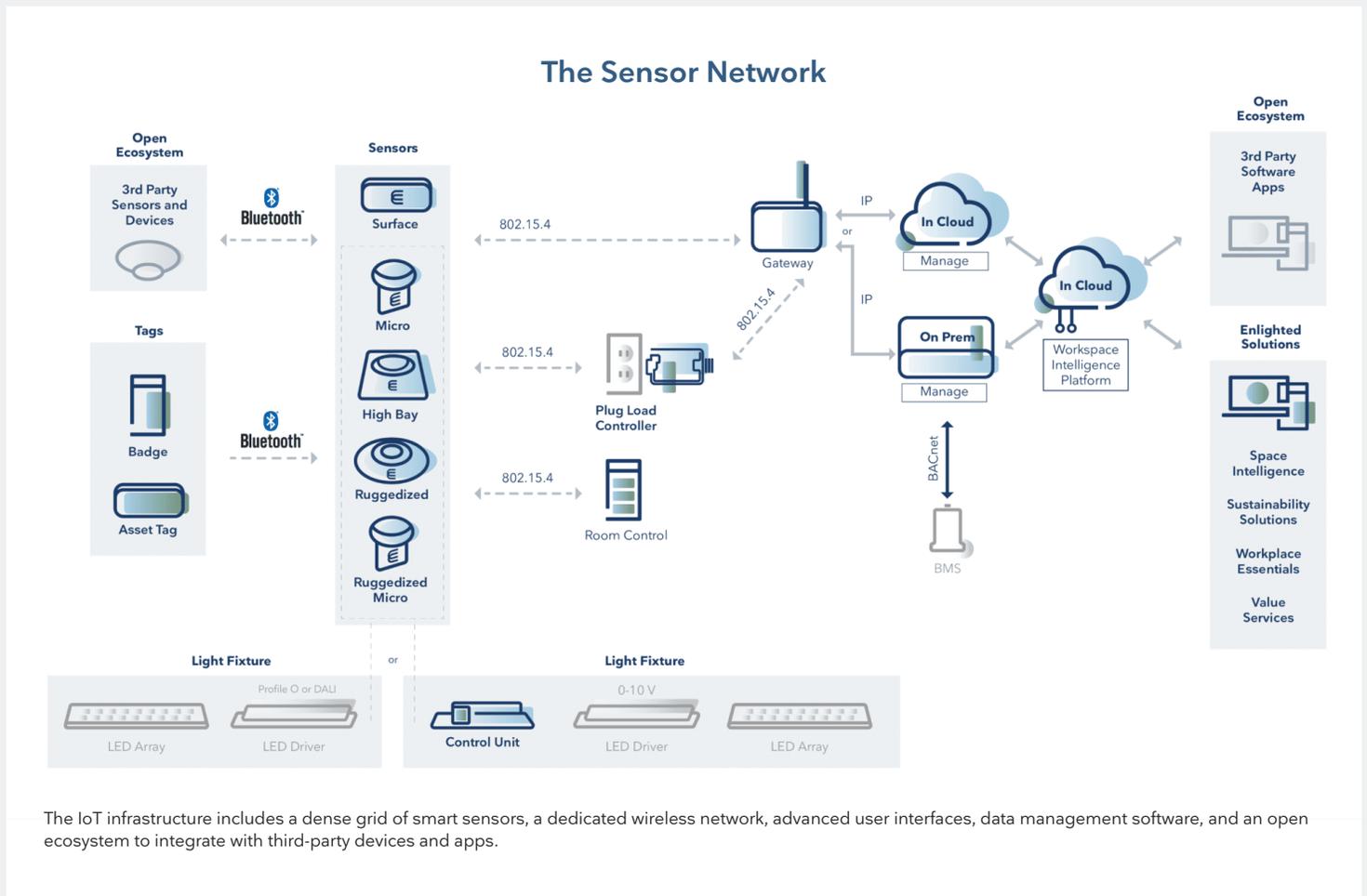
The platform’s robust wireless network has proven to scale to even some of the largest buildings in the world.

Asset tags and badges

The IoT infrastructure uses Bluetooth® LE in physical asset tags to locate equipment, and in visitor or staff badges to locate people, in real time.

Cloud-based data and apps

The combination of sensors, mesh network and cloud integration enables a vast collection of building IoT data. Rich visualization and analytics about building usage and motion patterns can be gleaned from this data. Customizable templates provide deep data insights around occupancy, traffic patterns, occupant preferences and movements to paint a time-series picture of real estate use.



Intelligent lighting control

The IoT Infrastructure enables advanced energy savings of up to 65-80 percent through smart lighting control and LED fixtures.

Occupancy sensing

Lighting automatically adjusts based on occupancy. When the room is vacant, lights turn off or dim to programmed levels, and turn on to programmed levels when occupied.

Daylight harvesting

Smart sensors adjust light levels to save energy by automatically taking advantage of available daylight.

Task tuning

Settings can be programmed to individual areas, based on each area's intended usage, to create appropriate lighting for any task and schedule. Sensors may also be grouped together, ensuring a uniform light level for a harmonious visual experience.

Tunable white

Color temperature and intensity can be adjusted to increase occupant comfort and well-being through perceptions of color temperature. Warm-hued white light promotes a feeling of calm, while cool white hues increase alertness and productivity.

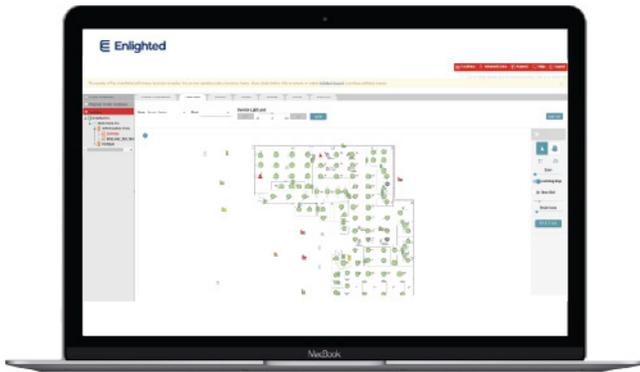
“

This product can adjust the light level based on the task. Before, if anyone wanted less light in their environment, they took the bulbs out of their fixtures or for more light used desk lamps. Instead of taking out bulbs or adding extra lights and getting an uneven light, we can tune it up or down.

”

MARK HOGAN

Energy & Environmental Manager
Wrightington, Wigan and Leigh NHS Foundation Trust



Lighting control efficiency opportunities

| | |
|-----------------------------|----------------------|
| Tasking tuning: | 20-40% savings |
| Occupancy sensing: | 30-60% savings |
| Daylight harvesting: | 3-10% savings |
| Manual override: | Scene selection |
| Demand response: | DR and ADR functions |

Human-centric lighting

Health, productivity, and circadian rhythms can all be enhanced with better lighting. Smart controls provide a simple method for programming the intensity and color temperature output of white LED lighting, creating lighting scenes and experiences that are task-specific, and appropriate for different times of the day.

Intelligent energy management

The Manage web-based application interface provides a one-stop console where operators can configure and control light fixture grouping and behaviors. Building managers can easily create and adjust groupings of individual lights, and track energy and usage patterns – in a room, across a floor, a building, a campus, or even portfolio-wide.

Insightful data

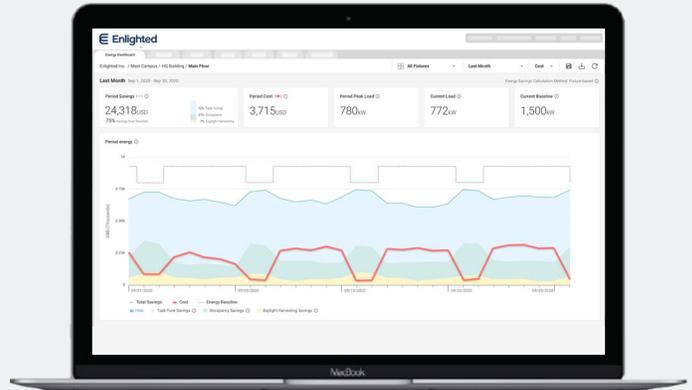
Each fixture shares power metering data, allowing the system to display a dashboard of total energy savings, with a breakdown of energy savings by technique—from daylight harvesting, to task tuning, to vacancy detection.

Sustainable savings

In a recent study, the system demonstrated total lighting energy savings of 88 percent across a range of space types, sizes, and geographies, in over 328 U.S. installations. Of those savings, 50 percent came from switching to LED lighting, and the additional 38 percent came from intelligent lighting control.

Temperature control savings

The Manage application, part of the Enlighted Lighting Solution, integrates with building management systems to use occupancy data to adjust HVAC settings, providing additional energy savings of 35 percent or more.



Automatic Demand Response (ADR) and Demand Response (DR)

The IoT Infrastructure supports energy savings and sustainability initiatives through its Automatic Demand Response (ADR) and Demand Response (DR) capabilities. It can be seamlessly integrated with existing building management systems to meet current and future energy savings mandates.

Set ADR profiles

Create energy savings profiles for disparate building areas to ensure ADR responsiveness without sacrificing occupant comfort and productivity.

Optimize operating costs

Comply with energy efficiency regulations and more rapidly achieve sustainability goals. Additional savings of up to 35 percent can be achieved when integrated with Building Management Systems to control HVAC settings.

BACnet® integrations

The Enlighted Lighting BACnet/IP interface enables seamless integration between the Lighting Control network and any BACnet® compatible Building Management System.



We reduced our energy spend, where the system was installed, by 65-80% while increasing the comfort and safety of building users.



KENNY SEETON

California State University, Dominguez Hills

Temperature control with HVAC integration

When integrated with a Building Management System, the Enlighted Lighting Solution unlocks a range of energy savings through intelligent HVAC management.

Occupancy sensing

Sensor data ensures optimized heating, air conditioning, and air flow based on actual, real-time occupancy.

Configurable

User-friendly interface lets you customize time schedules and building zones to balance optimal occupant comfort with energy efficiency.

Flexible

Integration with a wide range of vendor HVAC systems is possible using any BACnet compatible Building Management System.

Temperature control benefits

- Reduce energy costs by up to an additional 35%
- Accommodate occupant comfort by ensuring accurate heating and cooling for occupied spaces
- Reach sustainability and ESG goals quicker with temperature automation

Compliance made simple

The entire environment provides instant compliance with ASHRAE 90.1-2016 and California Title 24 guidelines, and is adjustable to meet future updates to these and other energy use regulations that may be implemented in the future.

Instant compliance

Quickly and easily installed into existing or new light fixtures, Enlighted sensors provide out-of-the-box compliance with energy use regulations. The sensors' capacity for vacancy detection, daylight harvesting, demand response, and energy savings reporting makes it easy to meet and exceed current and future guidelines. They are also European Dali Part 202 code-compliant, meeting EU standards for emergency lighting.

Responsive

The IoT platform includes demand response capabilities to automatically adjust energy use during times of peak demand, making buildings policy-compliant, eligible for rebates, and protected from penalties.

Adaptive

The software is easily upgradeable to address changes in building codes, such as the California Energy Commission's three-year updates to its Title 24 Building Energy Efficiency Standards. See Title 24 Guidance at www.enlightedinc.com for more information.

Meets key title 24 requirements

The solution helps buildings meet and exceed California Title 24 requirements, which are updated every three years. Current requirements include:

- **Section 130.1(b)** - Multi-Level Controls that support continuous dimming and shut off when spaces are unoccupied
- **Section 130.1(d)** - Automatic Daylighting Controls that adjust lighting according to ambient light levels
- **Section 130.1(e)** - Demand Response Controls to automatically reduce lighting energy use by at least 15 percent
- **Section 130.5(a)** - Service Metering to report on total electrical use

Secure, private, and flexible data management

Powered by our advanced sensors, a wireless mesh network, data management capabilities and secured cloud connectivity, the Workspace Intelligence Platform provides the means for data-powered lighting control, energy management, occupant comfort, and advanced usage analytics across multiple floors, buildings, campuses and portfolios.

Standards-based communications protocols

Industry-standard communication protocols provide robust and mature capabilities. REST-based APIs support GET, POST requests, and XML, JSON responses.

Data security

AES 128-bit encryption for wireless data transmission and TLS encryption for TCP/IP along with the use of a 2048-bit certificate and SHA-256 Cipher enable the highest standards of Corporate Data Security requirements.

Data privacy

The solution collects and stores occupancy data captured by our sensors. The sensors cannot directly reference, distinguish, or identify any natural person. User details such as login and logout events, IP address, first name, last name, and application pages accessed by the user, along with the organization’s name, occupancy data, and floor plans, are all stored securely.

Flexible deployment

EMC (Enlighted Manage in the Cloud) is cloud-hosted, reducing the burden on your IT organization and allowing globally distributed sites to be managed from a single location.

Powerful business insights

By transforming light fixtures into wireless IoT-enabled business intelligence solutions, building operators can not only control lighting and temperature, but gain data-powered insights. The Enlighted Lighting Solution aggregates your complex energy, temperature, movement, occupancy and lighting data and makes it easy to extract value through our available data APIs and customizable templates. Visualize lighting profiles, energy usage, and energy costs while addressing top business questions such as how to increase efficiency, identify unused space, and protect occupant safety and comfort. Data Services are offered across three valued areas:



Efficiency Insights

Aggregate complex energy, temperature and lighting data and makes it easy to extract value through ready-made reporting templates and dashboards. Visualize lighting profiles, energy usage, and energy costs while gaining visibility to top sustainability insights such as energy efficiency, savings and occupant comfort.



Occupancy Insights

From the occupancy, motion and people count data collected by space utilization sensors you can quickly move from data to decisions with our insights templates. Leverage insights for multiple use cases to understand occupant patterns preferences and trends such as when space is intended to be used, how it is actually used and how it should be optimally used.



Location Insights

A dense sensor grid reliably tracks tagged assets in real time across large and complex building environments. Sophisticated algorithms help you visualize asset use patterns for determining how effectively assets are utilized or identify locations in real time. Dashboards and reports help teams make inventory buying decisions, reduce time spent searching for equipment and staff and keep assets within boundaries.

Flexible support options

Ensuring the quality and consistency of your lighting control system is top of mind. We also understand that different customers may need additional support for activities such as tuning and configuration analysis to ensure the highest levels of energy efficiency from your implementation. Further, response requirements may vary, depending on the location and building use. For that reason, a tiered approach for support can align with your particular requirements.

Premium support options

| | Essential | Priority | Priority Plus |
|---|-----------------------------------|--|---|
| Technical Support | 9 hrs x 5 days phone, email chat | 24 hrs x 5 days phone, email chat | 24 hrs x 7 days phone, email chat |
| Remote Response Time | 2 hrs | 2 hrs | 2 hrs |
| Named Customer Solution Engineer | Not included | Yes, remote | Yes, remote 1 x visit per year (select countries) |
| Emergency Visit (Field Support) | Not included | 1 x visit per site annually Discounted expedite fees (For US-based customers only)* | 1 x visit per site annually No expedite fees (For US-based customers only)* |
| Embedded Software Upgrades | Technical assistance upon request | Proactive updates to latest firmware every quarter | Proactive updates to latest firmware every quarter |
| Network/System Health | Gateway connection annual check | Semi-annual check of all Enlighted devices | Quarterly check of all Enlighted devices |
| Energy Savings Opportunities | Not included | Annual energy savings workshop | Annual energy savings workshop |
| Tuning (Light Levels, Motion Sensitivity, Daylight Harvesting) | Not included | On-demand remote occupant ticket resolution annual review | On-demand remote occupant ticket resolution quarterly review |
| Training and Continuing Education | Quarterly training webinar | Remote proactive training 1 x per year, per site | Remote proactive training 1 x per year, per site On-site training 1 x per year |
| BACnet® | BACnet knowledge base support | Remote BACnet support | 1 x visit up to 3 days per year |
| APIs | API knowledge base support | Remote API support | 1 x visit up to 3 days per year |

* For customers based outside the US, emergency visits would be provided by certified vendors.



Building Robotics, Inc.,
a Siemens Company

Turn Everyday Spaces into Extraordinary Places

Wherever space, people and work meet, Enlighted empowers organizations with the technology to transform real estate spaces into regenerative places that fuel positive impact for people, portfolio, and our planet.

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