

# Lighten up your smart city. And your bottom line.

Solution brief

**Reduce energy and maintenance costs with Verizon Intelligent Lighting and NetSense — a central management system.**

**Legacy lighting is being replaced with LEDs connected to smart controls in cities around the world. This smart city lighting technology boosts energy efficiency and ultimately reduces energy and operational costs.**

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## **An energy-efficient alternative and much more**

Verizon Intelligent Lighting makes it possible to regulate light levels in the way that best suits your needs. Our solution helps optimize operations and maintenance through sensor-enabled insights and intuitive workflows in a modern user interface. Verizon Intelligent Lighting includes three interrelated components:

- Lighting control nodes installed on lighting assets
- Connectivity on America's most reliable network<sup>1</sup>
- NetSense® Lighting Application, a cloud-based portal that provides a central management system (CMS) to monitor your smart lighting infrastructure

NetSense allows you to control your lights using smart features like scheduling, dimming and photo control mode. The app provides access to a wealth of data to better manage operations and reduce energy and maintenance costs. You'll also have the controls and alerts needed to help maintain a safe lighting environment.

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## **Key features of the NetSense Lighting Application**

- **Control node compatibility:** Works with all Verizon lighting control nodes, including the City Hub® and Light Sense nodes. When you install the Light Sense node in the luminaire, it automatically connects to cellular infrastructure and communicates with the app. Plus, no gateways are required for either node
- **Security:** Provides security infrastructure with role-based access control and encryption of data at rest and in motion

- **Cloud-managed solution:** Delivers apps, feature updates and firmware upgrades with high availability, enhanced functionality and security through a fully managed, cloud-based solution
- **Easy access:** Allows use of a standard web browser and internet connection. There are no complicated integration, dedicated servers or customized IT processes required
- **Intuitive interface:** Offers a modern, easy-to-use design and features based on real user feedback. You also get asset map and list views, dynamic clustering of nodes based on map scale, a lasso tool for easy multi-select, and an extensive online user guide
- **Scalability:** Evolves and seamlessly adjusts over time, along with its cloud infrastructure, to support hundreds of thousands of control nodes
- **Integration:** Unites with other Verizon smart city solutions through City Hub, such as Parking Optimization and Intersection Safety Analytics

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## **Managing and monitoring your lights with the NetSense Lighting Application**

### **Node commissioning**

You can easily verify that the node is installed, associated with the correct pole or luminaire, and functions according to key design and specifications by checking the on/off/dimming schedules and alerts.

- Node commissioning of Light Sense nodes is streamlined and straightforward because these nodes are designed to automatically connect to the Verizon network and communicate with the app within a few minutes of turning them on
- Light Sense nodes automatically associate with the correct account and geofenced site

- Onboard GPS allows the Light Sense nodes to position themselves within NetSense and are designed to automatically associate with any customer-provided, preloaded pole information
- Quickly verify any exceptions, customize naming, add additional information, create groups and assign schedules
- The Light Sense nodes are designed to operate in photocell mode by default until a schedule is assigned from NetSense, so your community will have the lighting it needs even when a schedule is not yet programmed

### Groups

To better manage schedules and organize reporting, NetSense allows you to create two types of groups—lighting and organizational.

- Lighting groups are used to assign and manage lighting schedules
- Organizational groups are used to help organize and manage operations and reporting
- For example, lights can be in multiple organizational groups and can be created based on geographic jurisdictions, light type, pole type, electrical circuit or another characteristic
- Filter by groups on the Nodes Management view and generate reports based on group selection

### Lighting schedules

Create and apply lighting schedules, including on/off functions and dimming levels with up to six different set points.

- Schedules can be based on sunset and sunrise, time of day and ambient light with up to six user-defined set points per day
- For example, lights could be set to turn on at sunset, dim to 50 percent between 1 AM and 5 AM when minimal activity is expected, and turn off again at sunrise
- The photocell can be overlaid during daytime hours to turn lights on if ambient light levels unexpectedly drop
- Schedules can be set by day of week as well as date to adjust schedules for special events
- Brightness level can be adjusted from 0 to 100 percent
- A schedule can be set for individual lights or groups
- Manually override a schedule for a temporary period of time and specified driver level

### Energy analytics report

Access energy consumption data for luminaires through an easy-to-read report.

- Provides data in kWh that can be filtered by node, fixture, group and time frame
- Calculate the ongoing energy savings from LED conversion projects
- Receive certificate-based mutual authentication, server verification and encrypted communications to ensure both the server and the client are communicating with authorized and verified endpoints
- Nodes provide an accurate view of energy consumption; they're designed to provide utility-grade quality with 0.5 percent accuracy per American National Standards Institute (ANSI) C12.20 standard
- Export raw energy data as a CSV, or export a chart as a PDF

### Asset management

Store and view, either in list form or map view, key asset information for poles, luminaires and lighting control devices.

- Stores and presents key asset information regarding all nodes and luminaires in a single view
- Nodes are shown on the map based on their geolocation
- GIS data import helps you upload asset information
- Application programming interfaces (APIs) are available to plug into work-order management systems, user interfaces and back-end systems

### Event-driven alert notification

View the current status of lighting control devices, and review and manage alerts. Receive alerts via SMS or email about issues with luminaires and nodes, including a loss of connectivity due to events such as power outages, storm and environmental damage, traffic accidents, or vandalism. Examples of key alerts include:

- Power fault detection
- Node connectivity
- Stuck relay

### Diagnostic report

Plot multiple sensors and nodes for diagnostic purposes and filter by node, fixture, group and time frame.

- Maintenance crews can identify problematic fixtures by plotting driver level and main power source, such as the current and voltage levels
- Conduct near real-time polling for latest diagnostic data

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### Security that provides peace of mind

Intelligent Lighting provides security infrastructure with role-based access control and data-at-rest and data-in-motion encryption.

- Transport Layer Security (TLS) 1.2, AES 256-bit encryption for device authentication
- Role-based access control for NetSense application
- Secure Sockets Layer (SSL)-encrypted access to the NetSense portal through a standard web browser on a laptop, desktop, smartphone or tablet
- Periodic vulnerability scan and penetration testing

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### Easily share data or create your own interface.

For additional control and system flexibility, NetSense has a robust API. It allows you to export data to other back-office and monitoring systems. You can create your own lighting control interfaces, in addition to using the one on the NetSense portal, or build custom applications to expand functionality.

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### Stay ahead of community safety, cost and conservation concerns.

#### Save energy with adaptive lighting control.

Verizon Intelligent Lighting offers advanced control features that can be operated and monitored remotely, allowing you to use lights only when needed. You can adjust LED lighting levels based on time and situation, and dim lights based on your specific needs. You use only what you need, when you need it.

#### Promote public safety.

Get alerts via email or SMS from the Verizon Intelligent Lighting application so you know when power or connectivity issues occur. This helps maintain public safety and reduces citizen complaints by helping to ensure that issues are resolved quickly and lights are on when and where they are needed. Alerts can be conveniently summarized into customizable reports, and the API can facilitate integration into your work-order management system so field crews can efficiently manage issue resolution.

### Get accurate metering and use reports.

With an energy consumption report, you can monitor your energy savings as you apply different dimming schedules. In addition, you can also compare your energy consumption before and after an LED conversion project.

### Control costs with a fully managed solution.

Verizon Intelligent Lighting helps you better predict implementation and ongoing maintenance expenses. With upfront or flexible recurring payment options, our straightforward pricing includes cloud infrastructure, device connectivity,<sup>2</sup> software application and device firmware updates, as well as remote technical support with no hidden fees or separate data charges. And you'll have the flexibility for up to a 10-year term, which promotes long-term budget certainty.

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### Why Verizon

We have the nation's largest and most reliable 4G LTE network, as well as a tightly integrated ecosystem of Internet of Things (IoT) and wireless network technologies. And we're hard at work on the nation's most advanced 5G network.

We can help public- and private-sector planners with their objectives to increase economic development, drive citizen engagement and promote sustainability with our suite of Smart Communities solutions. Plus, we can deploy at any level. From end-to-end, city-wide solutions to individual business projects, we'll match our Intelligent Lighting and other Smart Communities solutions to your needs – and your budget.

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### Learn more:

To find out more about how Verizon Intelligent Lighting can help you reduce energy and maintenance costs, contact your Verizon Wireless account specialist.



<sup>1</sup> Based on RootMetrics® by IHS Markit's RootScore® Reports: 1H 2019. Tested with best commercially available smartphones on four national mobile networks across all available network types. Experiences may vary. RootMetrics awards are not an endorsement of Verizon.

<sup>2</sup> There are no add-on charges for data transport. Fees are included in Intelligent Lighting pricing.

Network details & coverage maps at vzw.com. © 2019 Verizon. SB622921