

# WHAT'S THE WORD ON THE STREET?

It's 'smart cities,' as sensor-equipped streetlights offer the proverbial mother lode of data

By Paul Tarricone

There was a time when planters hanging from light poles or signage affixed to brackets to promote next weekend's farmer's market constituted innovation in street lighting. Today, in the age of connectivity, streetlights have gotten much smarter. As cities hope to leverage the power of big data to better manage resources, streetlights outfitted with sensors are being used by municipalities to manage traffic flow, deliver audio messages and even detect gun shots.

Three case studies, one from each coast of the U.S. plus another from the Land Down Under, show what smart cities are up to.





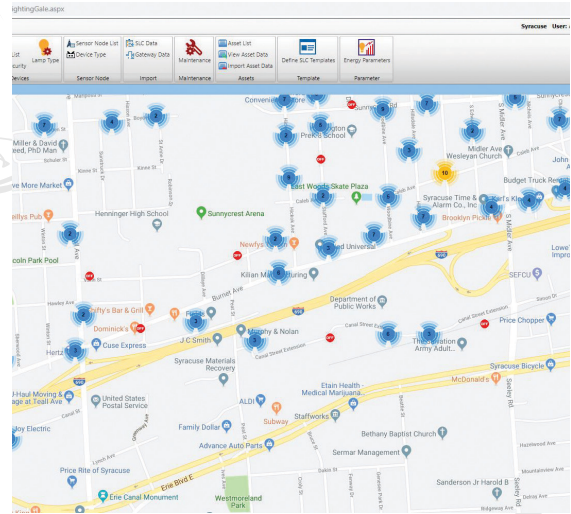
Left: Gunshot detection is one of the more innovative applications in San Diego.

## San Diego

In 2017, San Diego announced a \$30 million initiative (in partnership with Current powered by GE) to deploy what they call the “world’s largest smart city IoT sensor platform.” The far-ranging program includes installation of 4,200 intelligent sensor nodes and 14,000 new LED fixtures (Evolve from GE) to help optimize traffic and parking, as well as enhance public safety, environmental awareness and overall livability for San Diego residents. The luminaires are forecasted to save the city \$3.6 million annually in energy and maintenance costs. Each fixture also comes equipped with an advanced controls system called Light-Grid which allows city managers to dim, brighten and check maintenance on the lights remotely through a single dashboard.

In late 2018, San Diego debuted the first “smart city apps” for the project. The apps provide data visualization software for parking and traffic safety improvements, and support police and first responders. It’s all hands on deck in San Diego, as the Office of Economic Development, San Diego Police Department and the Traffic Engineering and Operations Division are already working with the data to improve traffic flow and pedestrian safety.

Moreover, San Diego will use its streetlights as a crime-fighting weapon via ShotSpotter technology, which can detect the location of gunshots in real-time and provide the location to law enforcement.



## Syracuse, NY

Right: A map view of the lights deployed in Syracuse. The dashboard shows the status of each light (blue dots mean on, red are off and yellow are managed as a group) and allows the city to control the light remotely.

The initiative is named “Syracuse Surge”—an ironic moniker considering that energy use will go down thanks to a network of smart streetlights. As for the “surge,” the city is banking on a \$200 million investment in technology to make Syracuse New York State’s flagship smart city and a model for other municipalities hoping to leverage data to spur both economic development and better day-to-day operations (see sidebar).

One of the first infrastructure projects is to upgrade 17,500 streetlights to save \$3 million per year in energy and maintenance, reduce the need for citizens to call in outages, enable remote dimming and improve the quality of light for both residents and first responders. Syracuse is using CIMCON’s intelligent controls connected to its central management system, LightingGale, to proactively manage, monitor and maintain the new LED streetlights. The installation began in early July in residential neighborhoods.

The smart lighting program is just one piece of the broader Syracuse Surge smart city plan that also includes traffic counting, flood sensing and air quality monitoring. Another potential application is the use of embedded sensors to monitor pavement temperature and inform decisions about when to treat roads. Syracuse Mayor Ben Walsh has likened the smart city plan to the “Fourth Industrial Revolution,” this one driven by the Internet and connectivity.

## A CITY PLANNER TALKS ABOUT THE 'SURGE'

By Rebecca Klossner

Managing a smart city project can be complicated. Having just gone through the process myself, I wanted to share some thoughts you may find helpful.

We started our journey by conducting interviews with each city department to identify existing problems and priorities. We realized electricity for streetlights was one of our biggest expenses, so converting them to energy-saving LED lights quickly rose to the top of our list of high-impact projects.

Getting our lighting conversion off the ground was probably more complicated than it may be for other cities. For example, in Syracuse, we didn't own our streetlights. They've always been leased from the local utility. When we began exploring the possibility of converting them to LEDs, we discovered our utility didn't offer that as an option. We needed to buy the lights from the utility, but the cost the utility initially proposed made the conversion unfeasible. To solve this problem, we joined with Albany and Buffalo to negotiate changes to the buy-back pricing during a utility rate case. That was a critical development in the process.

That kind of cooperation brings up another point. We knew we couldn't do this entire conversion alone. Yes, we have a visionary mayor to drive things forward, but we needed help and support from a variety of groups and individuals to make this work. We collaborated with the administration, our street lighting coordinator, the New York Power Authority (NYPA), our finance and budget departments, the Syracuse Common Council and Guth DeConzo, an engineering consulting firm.

Guth DeConzo helped Syracuse distill the vision, goals and priorities into a set of technical requirements and an RFQ for vendors of smart lighting controls and smart city solutions. As we explored the costs and benefits of various types of sensors and approaches, we invited the city staff back. Together, we discussed whether the planned options would address the identified needs. Surprisingly, there was general agreement across departments.

That broad consensus was really helpful in setting both immediate and longer term priorities. It was also helpful that the lighting conversion essentially pays for itself. This allows people to get comfortable with—and appreciate the potential of—smart city initiatives. As we move forward to implement other smart city projects, being able to point to this success will help us move new programs further and faster.

*Rebecca Klossner is sustainability coordinator with the City Planning Division, Syracuse, NY.*



### Rockhampton, Australia

Streetlights in Rockhampton, Australia, are a veritable fountain of information, supplying everything from weather reports to holiday lighting. And they talk, too. The ongoing smart infrastructure project has thus far encompassed 130 light poles in the riverbank, historic and central business districts of the Central Queensland city of 78,000. To meet its objective of offering a safer, more engaging visitor experience, the city specified the Intellistreets system, developed by Illuminating Concepts, Farmington Hills, MI.

The poles, to put it simply, carry the load. They're equipped with dimmable LED luminaires, which light the community's historic façades, as well as CCTV cameras to enhance safety, Wi-Fi access points, digital LED banners on selected poles that display everything from weather alerts to community event announcements, color-changing wayfinding lights—for example, to indicate a curve in the road—integrated speakers with ambient music and civic disaster messaging, and duress buttons that will initiate security intervention when pressed. The “brain” controlling the smart poles is Intellistreet's post-top module—the first use of this technology in Australia. ©

The poles include LED luminaires, CCTV cameras, digital banners and color-changing wayfinding lights.