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## Street Smarts: Cary, N.C., Doesn't Do IoT in a Piecemeal Way

The town's tech plans hinge on housing and sharing data in a streamlined, efficient manner.

by [Erin Brereton](#)

Erin Brereton has written about technology, business and other topics for more than 50 magazines, newspapers and online publications.

**LISTEN** 08:21

*Editor's Note: This is the eighth article in "Street Smarts," an ongoing StateTech series that highlights local stories of smart city projects, from development to execution. Check out the first article in the series on Montgomery, Ala., the second on Colorado Springs, Colo., the third article on Racine, Wis., the fourth article on Columbus, Ohio, the fifth article on Chattanooga, Tenn., the sixth article on Coral Gables, Fla., and the seventh on Peachtree Corners, Ga.*

The town of Cary, N.C., has looked at implementing various smart technology tools. Some were designed to facilitate traffic, while others help manage utility use.

Generally, though, they share one common feature: enabling accessibility.

Solutions Cary considers have to be compatible with its platform strategy — which involves moving data after it's been normalized with Dell's [Boomi middleware integration tool](#) to larger platforms for use by internal and external parties, says Cary CIO Nicole Raimundo.

"Most vendors come with their own analytics and dashboards — very standalone things. That's not what we wanted to do," Raimundo says. "As long as we can take data from whatever the existing tool is and feed it through there, we can disseminate data wherever we want."

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### A Designated Area Allows Officials to Sample Smart Tech

Cary's downtown was undergoing streetscape renovation work in 2016, and that work initially helped [kickstart the town's smart technology testing](#) and implementation efforts, says Smart Cities Program Manager Terry Yates.

"It really gave us the idea: Hey, let's use our campus, which represents a mini city and lab, to develop smart city technology," Yates says. "Let's learn about it so we can understand how we can deploy it from an enterprise level."

Cary has implemented technology from a wide range of partners in the space, according to Susan Sanford, executive director of the [Research Triangle Cleantech Cluster](#), an initiative of business, government, academic and nonprofit leaders that work to accelerate innovation in the region.

"They have this wonderful smart campus in the town hall area," Sanford says. "Their whole worldview is to have a 360-degree view, so every time the city touches a resident, it understands who that person is and what services are available to them."



Cary's smart campus includes smart parking and labs for public safety, transportation and citizen engagement. Photo courtesy of the Town of Cary.

Cary's tech team works with corporations, nonprofits and startups to test and evaluate smart city technology. The network of things tools on the [Smart City Campus](#), which encompasses a park, community centers, the town hall and other city buildings.

In one early project, Cary installed in-ground, disc-shaped devices in parking spots at a community center to gauge parking availability. The devices use an electromagnetic pulse to assess whether something is in a spot; occupancy data is then transmitted via a LoRa (Long Range) gateway, using the low-power WAN protocol, to the [Cisco Kinetic for Cities](#) cloud platform, and eventually to Boomi.

While the devices worked well, the pilot prompted the town to instead install a [Cisco Meraki](#) video camera-based system in its new library parking deck. The solution provides automated counts of the vehicles that enter and exit to help officials understand the facility's daily, weekly and monthly usage, Raimundo says.

"The initial devices are great, but I wouldn't do it on a larger scale," Raimundo says. "More technology is available now, and the maintenance of putting those in the ground is something we wouldn't want to do again."

[READ MORE: Find out how LoRa and LoRaWAN help smart cities.](#)

### Smart Road Solutions Aim to Ease Traffic Management

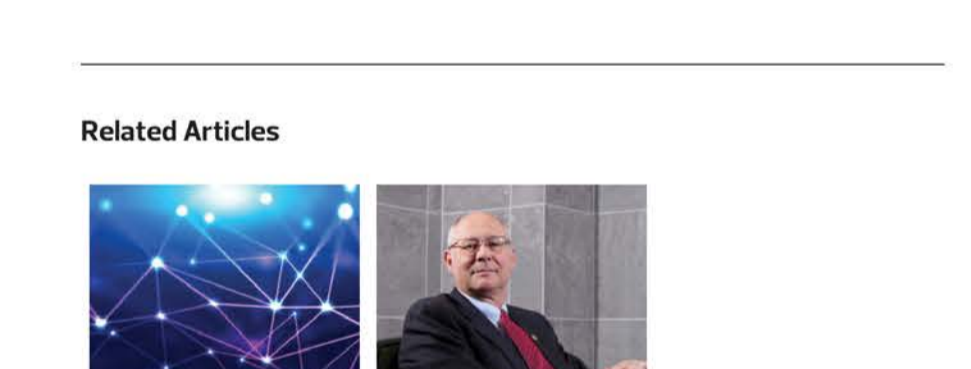
Cary has also tried out different traffic management tools, including both dedicated short-range communication and cellular-based C-V2X technology on 20 traffic signals located in two major traffic corridors in 2018, allowing approaching motorists to see the traffic signal timing on their dashboards (provided their cars' manufacturers included that capability).

"It's really about vehicle safety — being able to see what is going to happen, how long that light is going to be red and providing that information to vehicles," Yates says.

Cary is testing both technologies because a specific standard hasn't yet been set, Yates says.

"Some of the manufacturers are going with cell-based, and some are radar," he says. "Basically, with either one, you're required to have some type of box programming device that talks to either the internet or a box installed directly at the intersection. Our goal is to try to get both there, so we're not stuck if it pivots to one of the standards."

Thanks to devices installed at traffic signals, which receive and validate infrared signals from corresponding devices that were added to emergency vehicles, emergency responders have received priority access at stoplights since 2002.



Cary's traffic management center is fed live video feeds from 12 cameras. Photo courtesy of the Town of Cary.

Live video feeds are also sent from 112 [Axis video cameras](#), positioned along roadways in 2012, through [Cisco industrial switches](#) to Cary's traffic management center using fiber connectivity, which Yates estimates was installed around 2004.

"When we get calls from citizens, we have the ability to quickly verify what's going on," he says. "A lot of times, a problem can be rectified without having to send somebody into the field. Let's say intersections are taking a long time to change; we can use those cameras to adjust timing plans from the traffic management center."

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### Sensor Technology Manages and Conserves Resources

In addition to smart traffic solutions, Cary has implemented technology to help track potential water-related issues.

A residential water usage system sends readings from a small radio unit inside meter boxes that's connected to the meter via RFID to collector units located on water tanks and radio and cell phone towers, which transmit the data to receivers in the town hall four times a day.

Citizens can set up text alerts to notify them if their usage goes over a certain amount.

"We run reports, too, that look for anomalies," Raimundo says. "If something seems kind of out of whack, we'll call the homeowner. Someone could be filling a pool, it could be a water heater leaking, or they left a hose running and are on vacation."



“Most vendors come with their own analytics and dashboards — very standalone things. That's not what we wanted to do.”  
Nicole Raimundo, CIO, Cary, N.C.

Late last year, the town also initiated a stormwater project in which sensors were placed across its Walnut Creek stream basin.

Information is transmitted to a centralized database using via the [First Responder Network Authority](#), the high-speed nationwide wireless broadband network dedicated to public safety and supported by contractor AT&T. It is then sent to a geographic information system tool for visualization and Salesforce notification, and to a variety of technology tools for long-term analysis.

"We sit on top of three river basins, so when we get rain events, our stormwater effects other municipalities — they need to know, from our data, when the water levels are rising," Yates says. "It gives them advance warning: There's going to be flooding, get your cars out from the area, maybe send a trigger to a sign or start thinking about having first responders close the street."

Cary was first in the area to deploy smart water meters and is generally regarded as a tech innovator in the region, Sanford says. The town's approach to initiatives like the stormwater project illustrate its commitment to both its residents and neighboring communities.

"Cary is very smart — tech forward; they think about things holistically," Sanford says. "They're always looking to improve the experience of living and working in Cary. They're also very collaborative — and looking to share what they've learned with other governments."

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