



## **City of Aurora, Colorado**

An ENCOM "Then and Now" Success Story



## Then

Managing the ebb and flow of traffic in Aurora, the third-largest city in Colorado, is challenge enough.

But for years, the traffic management centre in the Rocky Mountain city of 300,000 people was faced with an additional burden—obsolete communication links that undermined the entire operation.

Aurora's Intelligent Transportation System (ITS) operations hinged on leased telephone lines to each of its approximately 300 traffic controllers.

The phone lines, from a regional telecom giant, made up the lion's share of a \$150,000 annual bill for the city. They were antiquated and suspect, with service interruptions that caused constant troubleshooting headaches.

"It was up and down. We'd have failures fairly often," says Anna Bunce, a traffic project engineer for the City of Aurora, which is part of metropolitan Denver.

"It was an issue of sheer aggravation," adds Bunce. "If communications were interrupted (at a traffic controller), it sometimes took multiple visits to resolve the issue. Usually (the telecom reps) wanted to see their equipment that's in our signal cabinet, which meant our techs had to go back out and meet the Qwest representative whenever they were available.

*"We wanted our staff to be able to put their attention where they needed to put it, and not have to continue to deal with issues that really shouldn't keep coming up."*

—Anna Bunce, City of Aurora



## Enter ENCOM

Taking advantage of a long-term U.S. federal grant program, the City of Aurora's traffic engineering department enlisted the help of ENCOM Wireless. in developing an ITS mesh network that would provide wireless connectivity with the city's entire complement of traffic controllers.

The wireless solution, which will be rolled out in several phases through 2012, was infinitely preferable to the alternatives, such as copper or fiberoptic cable.

According to recent traffic-industry studies, trenched copper cable costs as much as 10 times as Spread Spectrum wireless networks, while the price tag for buried fiberoptic cable can be 15 times as large.

"Fiber, for us, was not really a viable option," says Bunce. "Due to the lease lines being individual to the locations, we didn't have much in the way of actual interconnect between the signals.

*"A lot of our signals are in areas that are already fairly well developed. Even getting the conduit in—totally aside from the cost of pulling the fiber, terminating the fiber, testing everything—would have been substantial."*

—Anna Bunce, City of Aurora

Working in partnership with the City of Aurora, ENCOM representatives designed an Ethernet-based, future-minded wireless system to accommodate growth, expansion and modernization to IP-addressable controllers.

The system employs a 5.8-GHz broadband-based backbone, with 802.11a wireless mesh network providing minimum 10 Mbps to each node location, on a main arterial. Perpendicular ribs are formed by using 900 MHz frequency-hopping Ethernet radios, with the ability to communicate long distances under non-line-of-sight conditions, at each controller.

To date, about 60 intersections have been equipped with CommPAK IP 900 radios.

Meanwhile, about 25 CommPAK BB 58 units along the system's backbone form a mesh network—which provides an extremely secure, reliable and flexible form of communication thanks to its unique tendency to continuously connect and reconfigure itself around broken or blocked paths.

Plans also call for a pair of supporting 5.8-GHz backbones to be installed at a later date.



## Now

ENCOM has provided the City of Aurora with a win-win scenario—enhancing service while also improving the bottom line.

*"The total cost savings, assuming all of our existing signal communications are converted down the road, is in the order of \$150,000 a year."* —Anna Bunce, City of Aurora

As for performance issues, ENCOM's wireless solution continues to function flawlessly—right from the first phase of installation, which took place seamlessly despite occurring during one of Colorado's most intense winter storms in years.

"It's a huge improvement," says Bunce. "The speed difference alone is considerable.

"On a day-to-day basis, that may not make a huge difference, but we do occasionally need to push out updated signal timing to a whole corridor at once.

"Being able to do it at 19.2K or 38.4K instead of 1,200 baud makes a big difference."

ENCOM's CommPAK BB units combine the latest in MPEG compression and state-of-the-art modem technology, allowing low-latency communications and crisp video feeds.

Presently, Aurora's traffic management officials are using the Ethernet system to provide video detection, oversee three mid-arterial-sized Dynamic Message Signs, and control backup uninterruptible power supplies (UPS) and malfunction management units.

They've even seen a big improvement back at HQ.

"Our technicians and our main server are in two different buildings," explains Bunce. "There was a copper connection running across the parking lot that was really slow, so we replaced that with a pair of nodes.

*"That's really helped out a lot, as far as communication between the technicians' work station and the main server goes."* —Anna Bunce, City of Aurora

*"I'd love to have a travel-time map or speed map for the public."* —Anna Bunce, City of Aurora



### **About ENCOM Wireless:**

ENCOM, based in Calgary, Canada, provides field-proven, cost-effective wireless data solutions for municipal and industrial clients, with applications in the areas of:

- Intelligent transportation systems
- Public safety communications
- Municipal corporate security and IT networks
- Waste and water management
- Electrical utilities
- Oil and gas

### **What's Next?**

Thanks to some long-view thinking, ENCOM has provided the City of Aurora with a dedicated wireless communication system that allows for growth, expansion and modernization.

Bunce says Aurora's traffic engineering department is looking into funding for video cameras with PTZ (pan tilt zoom) control. She's also examining the possibility of system detection—specifically, continuous real-time speed and volume information, and real-time travel time information.

*"I'd love to have a travel-time map or speed map for the public."* —Anna Bunce, City of Aurora

### **Another Satisfied Customer**

What ENCOM provided the City of Aurora:

- A reliable, field-proven dedicated wireless network with a fraction of the cost of wired alternatives, such as copper or fiberoptics;
- A win-win alternative to leased-line scenarios, enhancing service while also improving the bottom line by \$150,000 US a year;
- A cutting-edge Ethernet-based system that will accommodate system growth, expansion and modernization;
- A self-healing mesh network, providing extremely secure, reliable and flexible communication;
- Protection of its client's investment with one of the best warranties in the business.



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