



Muscatine Power and Water's Paul Wedel (center) discusses communications utility plans with Sal LoBianco (left) and David Fyffe.

Building The Network— And The Local Economy

It's not a matter of "if you build it, they will come." Municipal electric utilities find customers knocking on the door asking them to build a local data network.

An important decision awaits the business or public institution seeking to ride the rising tide of the Internet and advanced data networking. Since most small businesses cannot afford to build their own high-performance networks, to whom can they turn for reliable, dependable networking services and Internet connectivity?

If the goal is a genuine, business-enhancing networking solution, the answer is not always clear. The picture becomes even more muddled with the rapid, overnight proliferation of companies offering to provide customized networking services and connections to the Internet.

But to be a valid solution, network services have to be dependable. To truly unlock the power of the Internet for a busi-

ness, the network services also must feature top performance.

The answer, in a growing number of communities, is to turn to institutions whose names are synonymous with reliability and consistent service: municipal utilities.

Municipal utilities across the United States are discovering they can leverage a public networking infrastructure to provide advanced data networking capabilities for a

variety of public and private institutions in the communities they serve. The new services offered by these utilities include data transport, Internet access, video conferencing, cable TV and even voice services—a convenient, one-stop menu of cost-effective communications services.

"Our objective in implementing a new metropolitan area network (MAN) was to extend the performance and cost benefits of a high-performance MAN to as many users as possible, enabling municipal government and other public entities to enhance their ability to deliver services more effectively," said Arnie Hersh, communications specialist at Ocala Electric Utility, a municipal utility serving approximately 100,000 central Florida residents and businesses. "Our municipal network enables us to meet those objectives while lowering costs for all users."

Like many municipal utilities seeking to establish a reliable MAN, Ocala Electric settled on networking technology known as asynchronous transfer mode (ATM) to provide the network backbone. ATM technology breaks data down into "cells" of a standard size for efficient and rapid transport across a network. Because of the way cell-based data is handled by ATM network devices, ATM can provide superior bandwidth control and guaranteed service quality for critical applications, such as telephone service, real-time video signals or other time-sensitive traffic. This permits a variety of services, such as voice, data transfer, e-mail and videoconferencing, to travel through the network without interfering with one another.

Ocala Electric took advantage of these capabilities by building a network utilizing ForeRunner ATM backbone switches from Warrendale, Pa.-based FORE Systems, Inc. As a result, voice traffic from the utility, city government and public safety departments have been consolidated onto an OC-3 (155 Mbps) ATM network backbone. In addition, the network carries traffic for Ocala's fire and police departments' wireless communications systems, all emergency alarm tone services, emergency voice ring-down services and 800-Mhz wireless radio services. The same 800-Mhz wireless services

are provided to municipal workers and other city departments and to Ocala Electric utility employees. At the local airport, the customs office depends on the network for all voice and telephony services.

Along with carrying voice traffic, the utility provides data services to 52 departments at more than 20 separate locations by using ATM and Ethernet LAN switches from FORE Systems. ATM-to-Token Ring switches also enable the city government to leverage its existing Token Ring LAN investment while gaining the benefits of high-performance MAN connections.

"Network performance is everything we expected," Hersh said. "We still have a way to go before the network is loaded down, but right now it literally screams. Our users are extremely satisfied."

Ocala Electric actively markets its services to other public and private organizations and plans to offer high-speed data, Internet access and enhanced cable TV services. Future applications enabled by ATM may include remote court arraignments and a citywide video surveillance system.

Often, the choice to upgrade a municipal network with high-performance tech-

nology is done for larger-scale economic development reasons.

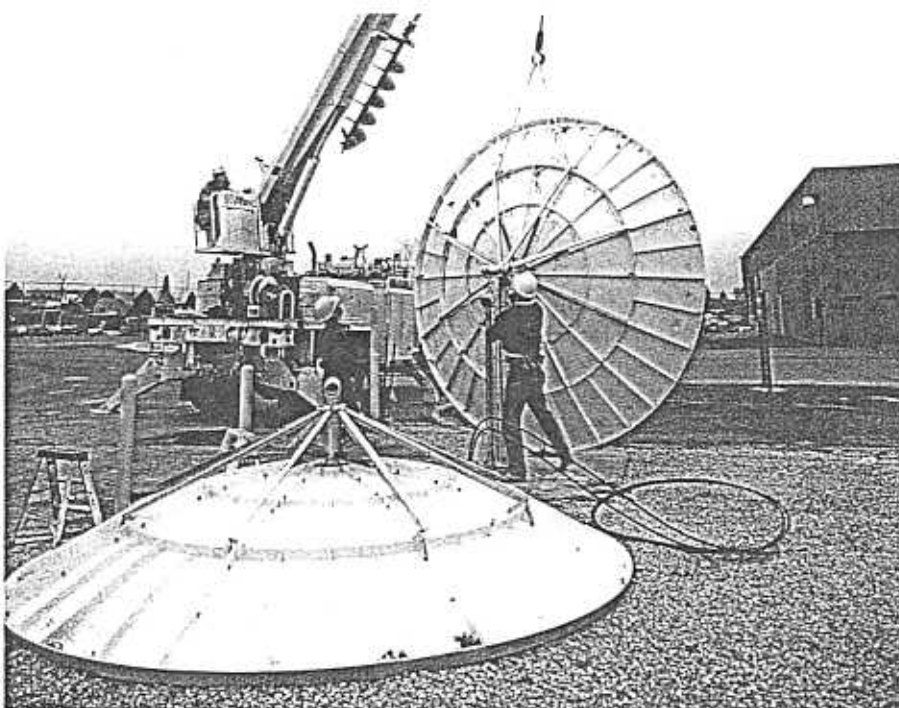
"Our high-speed data network provides a valuable incentive for businesses to expand within or relocate to our city," said Brian Beauregard, assistant electric superintendent at Holyoke Gas & Electric in Massachusetts.

Utilizing ATM switches from FORE that run over an OC-3 backbone and LAN switches placed on customer premises, Holyoke Gas & Electric provides customers with a choice of either 10BaseFL (10 Mbps) or 100BaseFX (100 Mbps) switched Ethernet to the desktop.

Response to the network has been overwhelming.

"Once businesses learned of our plan to develop a high-speed MAN, we were immediately approached by local companies looking for solutions to their networking needs," said Beauregard. "We feel that this initiative will serve to strengthen customer relationships and give us the competitive edge in a newly deregulated environment."

A local manufacturer saved money and consolidated operations by relocating another division to a vacant Holyoke site and



Contractors installed a dish farm in Muscatine that enables the city to provide customers more than 200 cable television channels.

networking the offices over the MAN, Beauregard said.

"The company was maintaining a complete set of customer service and billing representatives at each former location. And while the two old locations did have a network link, it was so slow that information could only be updated nightly," recalled Beauregard. "This was a great solution. The city was able to increase its manufacturing base, and the company was able to reap tremendous cost savings." The reduction in software site license costs alone allowed the customer to more than offset the price of network service, he said.

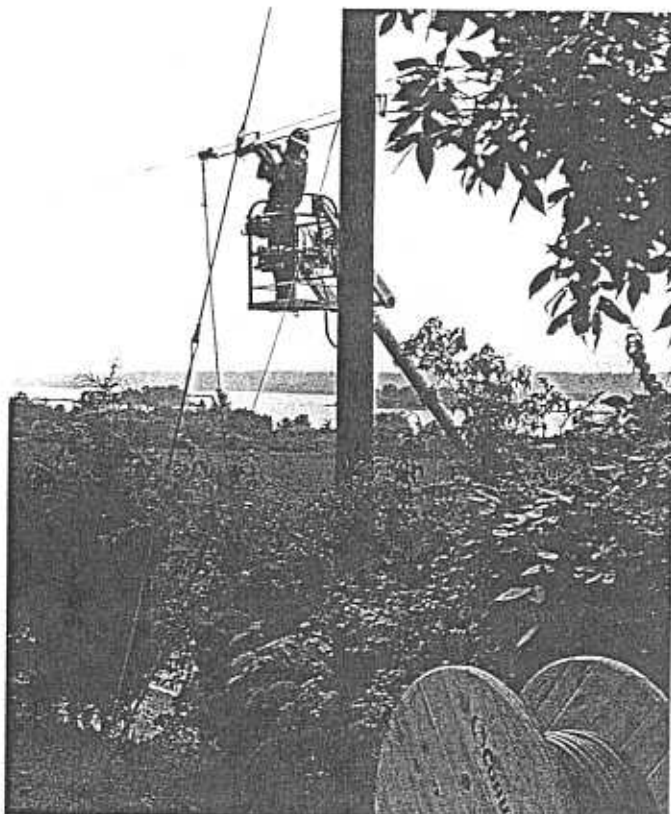
In Muscatine, Iowa, where a number of Fortune 500 companies operate facilities, Muscatine Power & Water is building a citywide OC-3 and OC-12 ATM backbone anchored by ForeRunner ATM switches.

Formed at the request of local business organizations, the networking subsidiary of the utility will offer cable TV, data transport and Internet access services to the city's 700 business and industrial users.

"Our local business community came to us with the request to create a municipal communications utility that could support existing firms and drive additional development by providing a high-performance, multiservice communications infrastructure," said Sal LoBianco, communication utility project manager at Muscatine Power & Water.

As public entities, municipal utilities thoroughly evaluate technology options based on a variety of factors, including total cost of ownership. What they find is that ATM networks spur a wide range of opportunities to accelerate return on investment for all network users.

"We've eliminated 46 leased lines by burying our own fiber," Ocala Electric's Hersh said. "That savings alone will pay off the new system in less than five years. However, we're also finding new opportunities—such as leasing lines to the county sheriff's



Overhead fiber optic cable is part of Muscatine's hybrid fiber-coax system.

department and marketing services to other businesses and residents—that will enable us to recoup our investment even sooner.

"We can also be more responsive because we've taken these services in-house. In certain instances, it took our carrier a long time to respond to problems or requests for additional service when we leased lines. Now our staff deals with the phone lines, so response is far quicker."

Holyoke Gas & Electric's Beauregard said his department's customers are also tapping into the savings provided through the network's support of voice traffic.

"We can provide our business clients with voice transport over ATM that will eliminate the need for off-premise extensions or tie lines with their regular carriers," said Beauregard. "And because we own the fiber, the department can do it very cost-effectively."

The utility is also working with both the city and the local school district to provide voice services over the MAN, projecting savings that are large enough to cost-justify both

customers terminating their current phone carrier contracts.

"The ability to provision bandwidth and share circuits will enable both parties to share lines and save money, yet guarantee that their service remains every bit as efficient and reliable as what they now receive from their current carrier," said Beauregard.

Holyoke Gas & Electric is already saving more than \$1,000 each month by placing its own voice traffic on the network.

"The more we utilize the network, the more money we save," Beauregard said. "I truly believe that the MAN represents the future of our department—there is just no limit to its applications. We already expect the network investment will be paid back in just five years, and over time we predict that the return on investment will accelerate exponentially."

If the initial response of customers is any indication, the future looks bright for utilities seeking to bring data services to their communities. Before it even finished building its new high-performance network, Muscatine Power & Water found customers knocking at its doors once word of the network spread.

"Even though we're still constructing the fiber ring, one industrial customer wanted data connectivity immediately, so we ran five miles of backbone in advance of system design and deployment and connected them with switches," LoBianco said. "A second customer requested point-to-point connectivity for data transport, so we installed fiber spurs to get them up and running in advance of full deployment."

"Our research shows clearly that there is strong interest in municipal communications services that make this project extremely viable," he said. ■ Kim Yackovich and Steve Fine

The authors work for FORE Systems, Inc. in Warrenton, Pa.