

MUSCATINE UTILITY MEETS NEW SERVICE DEMANDS

Innovative communications bundling offers opportunity.

When UTC member Muscatine Power and Water (MP&W) in Muscatine, Iowa learned of the growing demand for a new type of service in its community, it saw an opportunity to enter the fast-growing field of networked communications. MP&W is Iowa's largest municipal water and electric utility. With more than 260 employees and over \$60 million in revenues, MP&W provides electric and water services to Muscatine's population of 24,000 residents, delivering electricity to more than 10,600 customers and water to more than 8,600 customers.

Like utilities across the United States, MP&W is preparing for increased competition resulting from impending electric industry deregulation. This means enhancing current operational efficiency and providing new services to the community. In short, it means increasing competitiveness. At the same time, MP&W learned of growing local demand for innovative communications services such as Internet access and advanced business data networking.



Installation of overhead fiber optic cable came as a response to public demand for bundled services in Muscatine, Iowa.

In these developments, MP&W recognized an opportunity to initiate innovative communications services for its customers while keeping rates low and efficiency high. MP&W constructed a state-of-the-art communications infrastructure to serve as the backbone for the company's communications utility, bringing businesses and residents new and better communications services. In addition, MP&W knew a modern telecommunications

infrastructure would help attract new businesses to enhance overall economic development.

Sal LoBianco, communication utility project manager at Muscatine Power and Water, describes it this way: "Our slogan here at MP&W is to provide the right services at the right time. And with the help of our new asynchronous transfer mode (ATM) network, we are technologically empowered to do just that. Providing high-speed, high-capacity data, voice and video services to our business customers, as well as additional services such as Internet access, is critical to our continued success and also necessary as we move the Muscatine community forward into the next millennium."

MAKING COMMUNICATIONS SERVICES A REALITY

MP&W is among many utilities across the United States that have sought to offer telecommunications services in recent years. The trend took off as provisions of the Telecommunications Act of 1996 cleared the way for utilities to become telecommunications service providers. These utilities are discovering that by responding to their communities' demand for affordable data networking and telecom services, a new and growing revenue stream can be tapped.

MP&W's transition into the new role began when members of the Muscatine Development Corporation and the Chamber of Commerce asked MP&W to investigate becoming a municipal communications utility. MP&W researched the feasibility and quickly recognized the community's demand for an alternative to existing telecom service providers. Furthermore, MP&W considered its own need to prepare for potential market opportunities created by anticipated utility deregulation.

"In July 1997, when city voters approved a referendum with a 94 percent show of support, we began developing a plan to provide services such as CATV, data/cable modems, Internet and similar services," said LoBianco. "The plan also called for supporting several growth opportunities such as local telephony, security services, energy management and automatic meter reading."

Although the business case was clear, a central question was how these advanced telecom services would be delivered. In



some instances, utilities can gain access to an existing communications infrastructure, such as one maintained by a telephone company, under provisions of the Telecom Act.

However, no such resource was available that could support the advanced services MP&W planned to deliver. The company decided to build a two-way hybrid fiber coaxial backbone and a Municipal Area Network (MAN) throughout the community.

CHOOSING A MULTI-SERVICE NETWORK

Precisely which technology should be deployed over the network was not as clear. In recent years, the pace of networking technology development has exploded with technologies such as fast ethernet, gigabit ethernet, frame relay, ATM and others offering a variety of benefits. Because of this rapid evolution of technologies, MP&W wanted to choose a mature technology based on recognized industry standards to enhance long-term manageability and upgradability. MP&W needed a network powerful enough to support increasing demand for services such as high-speed data networking and Internet access. At the same time, however, the network also needed to scale to meet future demands for enhanced service offerings in telephony, video distribution and similar advanced uses.

Overall, MP&W wanted a telecommunications infrastructure for the new millennium, one that could adapt to rising demand for existing, upcoming or even as-yet unconceived services. After considerable research supported by network consulting

companies, MP&W settled on ATM, which is widely recognized as offering optimal support for voice, video and data services. ATM breaks network data into easily manageable cells for high-speed transport through fiber or another medium. Because the cells can be sorted and prioritized with great efficiency by network switches, certain types of traffic, such as time-sensitive voice or video, can be protected and prioritized. As a result, an ATM Municipal Area Network (MAN) can deliver high quality voice service without disruption by traffic from Web surfing, for example. In addition, ATM provides excellent support for a wide variety of networking protocols, including Internet Protocol (IP), the most commonly used method for communicating data over the Internet, as well as in growing numbers of enterprise networks. This flexibility was key as MP&W considered potential future offerings.

ATM is a mature networking technology supported by a wide number of networking vendors. According to LoBianco, "ATM is the only standards-based networking technology capable of supporting our service goals. It combines the reliability, flexibility and quality of service that is essential for meeting the changing needs of our customers and the utility itself."

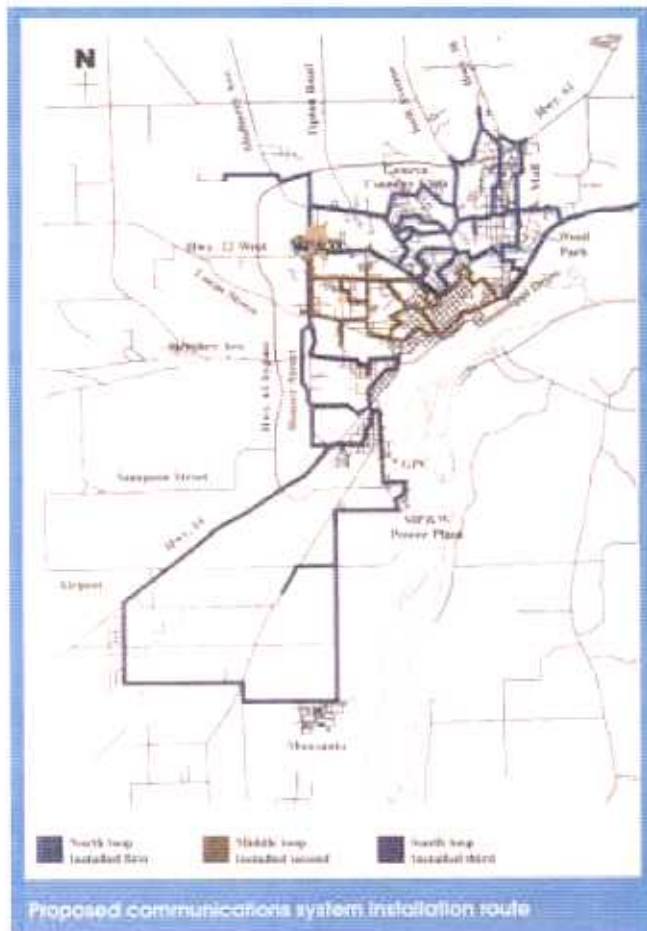
MP&W's network is a citywide OC-12 (622 Mbps) ATM backbone anchored by two ATM backbone switches. The network provides a direct fiber-optic connection between various sites similar to a wide area network (WAN) for high-speed data connectivity between multiple business locations.

The Municipal Area Network is currently supporting two local Fortune 500 companies, HON Industries and Bandag, Inc. Overall, the network offers data transport to the city's 700 business and industrial users, and as MP&W's communications services continue to grow, the company anticipates adding more switches for greater redundancy and to continually support additional business services.

The Municipal Area Network also enables businesses to transmit data, voice and video much faster than alternative systems currently available in Muscatine. For example, a file transfer that took more than five minutes over a company's existing service now takes less than 30 seconds with MP&W's MAN.

Residential customer services are delivered over the hybrid fiber coaxial network, and MP&W launched cable television service in March. The initial offering is a controlled launch, and MP&W has more than 1,000 cable subscribers, with the number growing daily. In addition, MP&W expects to roll out cable modem service over the next several months.

MP&W will be poised to offer additional future services, including local and long distance telephone service, cellular service, home security systems, video on demand, teleconferencing, real-time pricing of electric use and electric/water remote meter reading.



LEVERAGING NETWORK TO SUPPORT MISSION-CRITICAL FUNCTIONS

MP&W also saw that implementing a high-performance network infrastructure would improve its own communications and further its business objectives. In general, utilities seeking to upgrade their communications networks have several potential goals:

- **Combine process and business data to make better business decisions.** Utilities continually make critical decisions regarding power brokering, purchasing and trading, load shedding, maintenance and other operational issues. Having access to accurate information from all segments of the business to make decisions--from power generation and usage to financial data--will enable maximized profitability.
- **Connect geographically dispersed facilities.** With consolidation of business entities that comprise widely separated locations, information must be shared rapidly and efficiently among multiple facilities. For example, although engineering resources and maintenance resources can be centralized, these personnel must communicate with personnel in other offices, or obtain information from remote sites. Deploying a high-performance network enables collaborating on projects and sharing of critical information among remote locations. A network that supports voice traffic also can provide significant savings in long distance

phone charges. By using a multi-service networking technology such as ATM, utilities can consolidate voice, video and data services and realize significant cost savings over multiple leased lines.

- **Provide distance learning for power plant and other utility employees.** Most utility employees spend several weeks per year in training that could be accomplished via distance learning applications. This would save training costs and travel time and cause less disruption to the work schedule.

FACILITATING ECONOMIC GROWTH

Once the Muscatine community learned MP&W was building its network, the utility received an immediate response. "As word got around about our new ATM network, we found customers knocking at our doors," said LoBianco. "Even though we were still designing the system, HON Industries wanted data connectivity immediately, so we ran five miles of fiber backbone in advance of system design and development, and connected them with ATM switches."

The customer requests did not stop there. According to LoBianco, "Bandag, Inc. requested point-to-point connectivity for data transport, so fiber spurs were installed to get them up and running in advance of full deployment. Our research clearly showed that there is strong interest in municipal communications services, which make this project extremely viable. Judging from our customers' immediate reactions, our research proved to be extremely accurate."

The revenues generated from MP&W's additional services will remain in the Muscatine community since the company is a municipal utility. MP&W plans to promote its ATM network as a powerful tool in providing economic vitality for existing businesses, which, in turn, will help attract new business and investments to the community.

"When you consider all of these factors," says LoBianco, "there is no doubt that the MAN has provided an excellent return on our investment and will continue to do so for many years to come."

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