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## Case Study



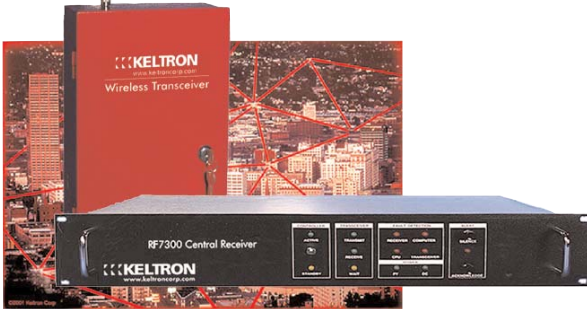
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# Active Network Radio System at Naperville, Illinois



Mrs. O'Leary's cow began a fire protection legacy in the Chicago metropolitan area that is perhaps the most comprehensive in the country. To enable the fastest, most accurate response to their fire alarms, most fire departments in the northern Illinois area demand that NFPA code-required buildings connect their fire alarm systems to a fire alarm monitoring facility in the municipal 9-1-1 center.

### The Challenge

For the past 20 years, the City of Naperville in northern Illinois connected their fire alarm subscribers to their on-site central dispatch station using signal-grade direct connection telephone lines provided by the local telephone company. Inherent in using telephone lines to monitor fire alarms are a variety of problems. Failures can occur when sending signals through telephone lines due to complications such as inclement weather, vandalism, inconsistent connections in old cables, and inadvertent signal interruption by telephone company repair personnel working on the wrong wires.

#### The numbers:

- Total # of subscribers: **1300**
- Converted to radio in 2003: **850**
- Average cost for signal telephone lines **\$40.00/month**
- Additional revenue to Naperville after operational costs of the Keltron network **\$130,000/year**

Of Naperville's 1,300 subscribers connected by telephone lines to the city's 9-1-1 center, there was an average of 4 to 6%, or 65 to 95 subscribers that were out of service at any given time due to one of these complications. Some outages existed in excess of 30 days, compromising the fire department's ability to maintain effective support services. In addition, false alarms caused by these failures required a manned response including fire apparatus that was costing the City of Naperville tens of thousands of dollars annually in false alarm servicing. Although fines to subscribers offset some of this cost, the city was absorbing the bulk of the expense.

Since the alarm companies that owned and maintained the alarm equipment paid Naperville an average of \$9 per month per subscriber to offset the costs for dispatching and responding to alarms as well as administering the relationship between the city and the alarm service vendor, the fire and city officials knew they needed to make some changes.

### The Solution

In late 1999, the City of Naperville officials decided to explore alternatives to their 20-year-old alarm-monitoring program. "We were looking for a solution that would provide reliability and high performance and would also offset some of our expense for monitoring and responding to the alarms reported by the monitoring system," noted Daniel J. Voiland, assistant chief of the Naperville Fire Department. Over the next two years, they issued exploratory requests for proposal to the fire safety market and received a wide range of suggested solutions from dealers and manufacturers with varied abilities and qualifications. This research supplied the Naperville officials with the information they needed to make a qualified decision on a variety of options, approaches and concepts.

In 2001, having considered numerous solutions and technologies, the City of Naperville officials chose an active network radio system manufactured by Keltron Corporation. This active network radio system, based on Keltron's proven, reliable alarm monitoring systems, features UL-listed radio transceivers that replace conventional telephone lines. Their unique, powerful and patented store-and-forward multipath capability alleviates the need for both towers and expensive repeater sites as each subscriber radio transceiver functions as a repeater.

Distributed intelligence and dynamically evaluated transmission paths ensure that the system always uses the most reliable path to the central receiver. Each added subscriber transceiver strengthens the network and can provide another transmission path to the central receiver for the other subscribers. Network monitoring software enables a PC to display and record all network activity. This software provides vital network status information required to effectively operate, troubleshoot and maintain the network.

## The Advantage

This wireless network system is owned and maintained by the City of Naperville. By leasing their network with a turnkey approach that includes installation and on-going maintenance, the city avoids any potential conflict with taxpayers who do not use the city's alarm services. The leasing program covers the hardware and labor costs for all of the equipment installed in the Naperville 9-1-1 center as well as all hardware and labor to install equipment at the subscriber's premises. Because proceeds from subscriber alarm monitoring fees cover 100% of the equipment, installation and on-going maintenance costs, the City of Naperville was able to purchase and implement the entire system with no up front cost to the city.

Subscribers connected to the municipality's 9-1-1 center by telephone lines incurred a monthly cost for service that they paid to the local phone company. This cost varied from subscriber to subscriber but averaged over \$40.00 per month. By redirecting this monthly fee from the phone company to a leasing company, the subscriber's cost for wireless equipment, installation and on-going maintenance was paid with no up front or added cost to the subscriber for less than \$35.00 per month, locked in for 5 years. At Naperville, a portion of the revenue from fees charged to subscribers is used by the city to offset the cost purchasing, installing, monitoring and maintaining the network. The remaining collected fees generate approximately \$130,000 per year in additional revenue, which the city uses to offset costs for 9-1-1 center dispatchers, administrative and billing costs and alarm response services.

Adopting the Keltron wireless system using a leased, turnkey approach also reduced another problem that Naperville's subscribers experienced - lack of coordination among the telephone company, the alarm company and the subscriber. The new program allows the city to coordinate all installation and service related issues between subscribers, alarm companies and the city.

Subscribers execute an ongoing service contact with the City of Naperville, which fixes the cost of monthly alarm monitoring, equipment and maintenance at a set amount - less than the combined cost for their former telephone lines and monitoring, and with a 60-day cancellation clause. "In this win-win situation, the municipality maintains control of the network, and the subscriber receives dependable alarm monitoring services at no up front or ongoing extra cost," said Voiland.

### Keltron's active network radio system features include:

- Meets NFPA 72 fire codes and all UL fire standards
- Radio receiver interfaces with any new or existing fire alarm systems
- Multi-path capability eliminates towers and repeater sites
- Intelligent, dynamic transmission paths direct optimal routing
- Constant route analysis and prioritization for optimal routing
- Two-way signaling ensures signal receipt and acknowledgement
- Network monitoring software provides vital network status information
- Digital data packets guarantee transmission reliability
- Programmable message database provides fast, accurate dispatch
- Field-programmable output controls enable radio signal integration

In spring of 2002, the City of Naperville awarded the project to Chicago Metropolitan Fire Prevention, Inc. Installation of the new system began within 60 days of the decision and it became operational in August. Initial deployment of subscriber radios began in September 2002. As of September 2003, Naperville's wireless technology system services 850 of its 1,300 subscribers and is on a steady course of converting the balance of the subscribers who are still on the old phone line system to radio by the end of 2004. When all 1,300 subscribers are converted to radio, revenue that can be used to offset response costs will exceed \$250,000 per year.

Keltron develops and manufactures universally-compatible, UL listed life safety event management systems for the municipal and proprietary markets. Solutions include Ethernet signaling systems, active network radio systems, distributed multiplex systems, digital communicator/receiver systems, and direct wire systems. This document is not intended for installation or maintenance purposes. All specifications are subject to changes without notice. For more information visit [www.keltroncorp.com](http://www.keltroncorp.com) or contact us at 781-894-8710.



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