NEPTUNE TECHNOLOGY GROUP

CITY OF WARREN WATER DEPARTMENT

CLIENT

WARREN, OH

LOCATION

BOB SCHEIDEMANTEL, NEPTUNE BUSINESS DEVELOPMENT MANAGER; JOHN MANDARINO, GENERAL MANAGER OF EAP; BOB DAVIS, EXECUTIVE DIRECTOR FOR THE CITY OF WARREN'S WATER DEPARTMENT; AND ANDY SHUPE, PRESIDENT OF PENNSYLVANIA MUNICIPAL CONSULTANTS

BACKGROUND

The City of Warren, Ohio is a city that is no stranger to change. Located in the Mahoning Valley, Warren is near the border of Pennsylvania and an hour from Cleveland or Pittsburgh. Warren is Trumbell County's largest city and county seat and is positioned in the economic center of the medical, automotive and steel markets. Warren is the headquarters for Delphi Packard Electric Systems and has eight colleges in close proximity to round out its diversity. The city was founded in 1798 and named after Moses Warren, a surveyor. The City of Warren runs along the banks of the Mahoning River and has all the satisfaction and charm of a small town with the excitement of a big city. Formally know as the Festival City, Warren earned this claim to fame when it hosted continuous festivals throughout the year. The City has managed the need for change over the years, keeping Warren a great place to live.

Warren Water Department serves more than 70,000 residents. Bob Davis, the executive director for the City of Warren's Water Department, is responsible for all utility services. Formerly superintendent for Water Treatment, Davis holds a Class Four license and knows his way around all aspects of a water utility. The City of Warren had been using Sensus meters for more than forty years, completing their last total meter changeover in 1985. The City was updating its meters to the Sensus ECR®II from a failing Rockwell TTR reading system. Additionally, the commercial meters installed in 1985 followed the mindset of the time. Warren installed downsized turbines instead of compounds and, in doing so, traded low flow meter accuracy for the difference in meter costs. Because of his progressive nature, Davis knew his water system needed a change and that change would encompass leading-edge metering practices and AMR technology. Having managed a utility that used Neptune meters earlier in his career, he was familiar with Neptune. When he was approached by Andy Shupe, president of Pennsylvania Municipal Consultants, and Bob Scheidemantel, business development manager for Neptune to schedule a consultative review meeting, Davis agreed.

TIMELINE

1985
Last changeover of ICI meters by Warren

Many applications featured downsized turbines instead of compounds

2002
Conducted SEER analysis on Warren's population of ICI meters

Warren validated SEER results using a third party

Initial changeover of turbines with compounds realized 20% increase in annual revenue

2003
Awarded changeover contract to Neptune/EAP

2004
Changeover of 1,200 ICI meters equipped with E-Coders and R900's have begun.
System to be read with MRX920 and EZGate units.

SEER® ANALYSIS

In September 2002, Davis met with Neptune and Shupe to hear a proposal for an economic analysis of Warren's installed base of Industrial, Commercial, and Institutional (ICI) meters and metering operations using Neptune's SEER (Statistical Evaluation for Enhancement of Revenue) Analysis. After a short review period, Davis agreed to move forward with the analysis. Neptune's SEER analysis projected a substantial increase from unrealized revenue. Davis thought the report was good; but the added revenue seemed too incredible! He had 48 of his large meters tested by a third party to validate Neptune's findings. The actual field test results validated Neptune's findings with SEER; however, the results could not account for the inaccuracies at low flow because of the misapplied turbine meters. The challenge was to prove that compounds would make the difference in revenue projections. With Davis' permission, 3"and 4" compound meters were installed to replace the turbine meters on apartment building and dormitory applications. After several months, comparative tests showed more than 20 percent increase in annual revenue would be realized through the enhanced low flow sensitivity of compound meters versus turbine meters. Davis still wanted to conduct his own due-diligence, so he and several of his staff members made field trips to see competitive meter installations. Not only was Davis satisfying his own analytical mind but also he knew that any changes would be closely reviewed and would impact the City's water and sewage treatment revenue for years. There was no margin for error and only the best meters should be approved for Warren's Water Department.

RECOMMENDATION

The consultant's recommendation, backed by the SEER analysis, was for Warren to enter into a full scale ICI meter changeover followed by an upgrade of 23,000 residential meters. Because of the steady increase in water and sewer treatment costs, Davis was convinced that the City needed to adopt this recommendation and conduct a review of the ICI applications to ensure compound meters were properly applied where low-to-high flow conditions were prevalent. The recommendation included an AMR upgrade to Neptune's "hybrid" mobile and targeted fixed network ARB® Utility Management Systems™ technology, including E-Coder solid state absolute encoders, R900 RF MIUs, EZNet targeted fixed network using fixed network EZGate data collectors, and MRX920 (EZDrivePLUS) mobile systems.

The approval process didn't stop here because there was still the technology question. Davis wanted all the benefits of a fixed-based system if he planned to conduct a total meter changeover. Davis and his manager, Rick Griffing, elected to visit locations where various AMR technologies were being used. They visited the Neptune factory with side visits to several utilities to see Neptune's new solid state E-Coder in operation as well as the MRX920 and EZNet "hybrid" mobile and targeted fixed network reading system technology. With the due diligence performed by Davis and his staff, they were able to make a valuable comparison of the technology available in the marketplace. Davis was impressed with the flexibility of the Neptune system. He was convinced that targeted fixed network technology for his commercial meters and E-Coder and mobile reading technology for the residential meters would provide Warren with all the meter data necessary to be proactive with their customers and optimize their AMR investment.

DECISION

After reviewing the results of the SEER analysis, Davis decided to change out the large meters first. According to Davis, "With the proper sizing and use of compound meters, our large meter program will stimulate unrealized water and sewer revenue and in turn help us fund our small meter changeover project." Davis and his staff finalized the specifications and plans for a large meter project. Warren's specifications focused on three key elements:

- The system had to be comprehensive, scalable, and employ an absolute encoder that could produce the value-added data provided by the E-Coder and that could be deployed using a "hybrid" approach (a combination of mobile and targeted fixed network system technologies).
- The meters had to comply with ANSI/NSF 61 Standards.
- The compound meters had to have the best low flow sensitivity (1/8 gpm on 2" & 3" sizes).

Warren's bid process was completed in late 2003; and, after close review, EAP, a Neptune distributor, was awarded the contract to provide and install 1,200 Neptune commercial meters ranging from 1" to 10", equipped with high resolution E-Coders, R900 RF MIUs, an MRX920 mobile meter reading system and ten Neptune EZGate fixed network data collectors. EAP began installation in mid-July 2004 and is on schedule to complete the project before the end of the year.

Davis stated, "When completed, Warren will be able to chart and track time-of-use data on our high volume customers as well as detect leaks, reverse flow, and tamper occurrences on both commercial and residential service lines; and with Neptune's solid state E-Coder, EZNet fixed network, and MRX920 mobile meter reading systems, we will proactively address customer service, water loss management, and homeland security issues. The conversion to this advanced AMR system technology is a needed change for the City of Warren; one that will help us focus on the changing needs of our customers and our community well into the future."

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