

REQUEST FOR COUNCIL ACTION

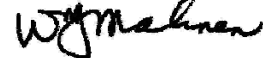
Date: March 29, 2010

Item No.: 10.a

Department Approval



City Manager Approval



Item Description: Automated Meter Reading (AMR) Presentation

BACKGROUND

The City has operated a water distribution system since the early 1960's. In order to track and bill for water usage, water meters were installed inside every location that is connected to the City watermain. In most cases, an outside reader/register (OSR) is connected by a wire to the inside meter so that a read can be obtained without entering the home or business. Historically, City employees walk door to door to manually read the (OSR) and enter the reading into a handheld device. The majority of meters can be read without risk of injury to staff and most are readily accessed. There are a number of OSR's where this is not the case. There are Site related injury risks and the associated liabilities are a concern where animals, hidden hazards, and registers in hazardous locations exist. Furthermore, not all meters are readily accessed as some are located behind locked gates or in difficult terrain and are more difficult to read and as such increase reading cost. Delayed and restricted access imposed by property owners also adds cost. Occasionally, inaccurate manual meter reads can lead to customer concerns, which take time and resources to resolve. For all of the above reasons, we have been studying implementation of AMR (Automated Meter Reading) systems for 15 years and have continued to research current available options.

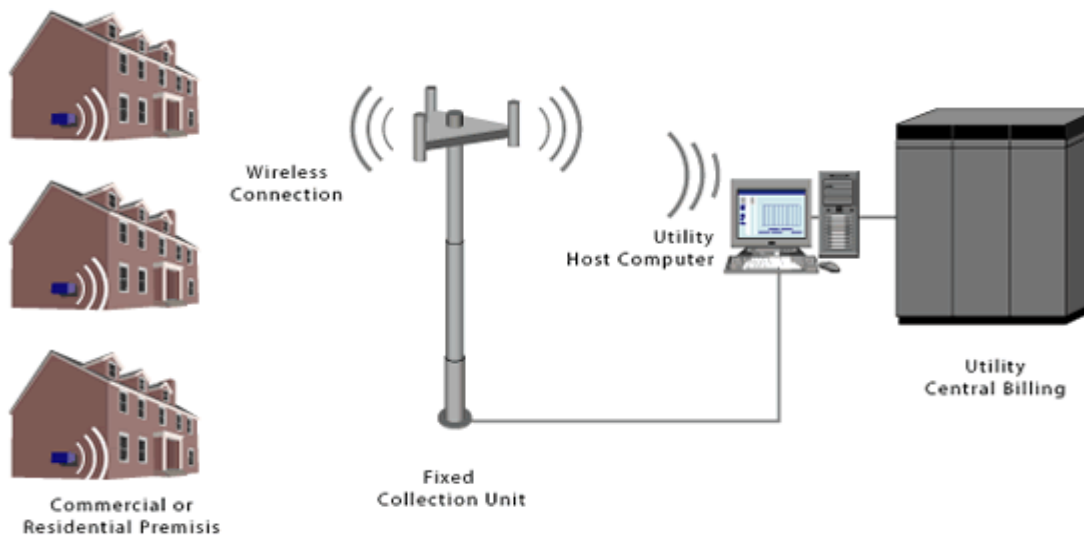
DISCUSSION

There are two types of AMR systems: Drive-by and fixed-base. In a drive-by vehicle system, a vehicle is equipped with a radio read data collector. Staff collects the readings simply by driving the vehicle at normal road speeds around the intended route. Once the driver is in radio range, the unit can receive and process the meter data. Once the information is collected by the receiver, data is then sent to a laptop computer where it is matched up with the pre-loaded route information. The information is then downloaded into a route management or billing system back at the billing office. (See Figure 1) This type of AMR system is somewhat less upfront cost but factoring rising fuel costs, vehicle costs, and employee risk and time, is more costly when those costs are added. Another way of capturing data is to permanently mount a radio receiver in a central location as in a fixed-base system. (See Figure 2) The receiver is then connected to a central processing unit that captures the data from the field. Fixed-base networks are more suitable for densely populated areas and are a cost effective means of collecting usage data. One of the advantages of a fixed radio network is the ability to capture readings on demand or on a more frequent basis.

Figure 1 Mobile Meter Reading System



Figure 2 Fixed Meter Reading System



Types of AMR communication systems:

One-way systems, as its name implies communicate normally in one direction only. Typical AMR systems that use one-way have the remote metered device transmit information from the meter location to a central receiver. In some cases, one-way systems might have a "wake-up" that alerts the remote devices to turn on and begin transmitting, in other cases, the end units transmit all the time. One-way systems are ideal for applications that require only basic information to be communicated. The frequency of how often a one-way system can be read is dependent on the receiving system.

Two-way systems, as the name implies, permits the communication of information from the remote meter location to the receiver, as well as, from the receiver to the remote meter location. These systems offer utilities more functionality, including on-demand meter reading,

interrogation of the meter remotely, immediate power failure alerts, and other advanced services.

One-Way Versus Two-Way Communication Types	
One-Way	Two-Way
One-way systems, as its name implies communicate normally in one direction only	Permits the communication of information from the remote meter location to the receiver, as well as, from the receiver to the remote meter location
The remote metered device transmits information from the meter location to a central receiver	Offers more functionality, including on-demand meter reading, interrogation of the meter remotely, immediate power failure alerts
One-way systems are ideal for applications that require only basic information to be communicated	Saves time and money because you do not have to physically go out to a site

Benefits of AMR to a water utility:

- Reduced meter reading costs
- Ability to access difficult-to-read meters
- Improved customer service
- Improved meter reader safety
- Reduced read-to-bill time
- Improved leak detection and fraud indicators
- Reduced worker's compensation risk

Reduced meter reading costs:

Manual meter reading is a labor-intensive process and can represent a considerable percentage of operating cost. In addition to the labor component, ancillary elements such as vehicle costs and insurance claims are recurring costs that can be avoided by using a technology solution.

Ability to access difficult-to-read meters:

In many cases, utility meters are located within the customer's premises. This is particularly true for water meters in areas where the temperatures may cause the meter to freeze. Accessing these meters often requires the meter reader to gain physical access to the meter to read it or to leave a card requesting the customer to call in with the reading or make an appointment. These situations are costly because they interfere with obtaining a timely read.

Improved customer service:

Customer satisfaction is important to the City. AMR can help improve customer service by providing timely and accurate bills, reducing customer disruptions caused by manual reads and

improving the process of resolving water usage disputes. Additionally, there is heightened customer sensitivity about allowing strangers access into homes.

Improved meter reader safety:

Whether it is a dog, snow & ice, or a confined space, meter readers today can easily find themselves in unsafe environments. AMR helps reduce the threat of worker's compensation claims due to injury by automating the meter data collection process.

Reduced read-to-bill time:

AMR allows for the reduction of read-to-bill time, by tightly integrating the meter data capture and billing process. Improved meter data acquisition will give us the option to increase billing frequency or offer more billing options to our customers.

Improved leak detection and fraud indicators:

AMR will better assist in detecting whether or not a meter has been tampered with or if wires have been cut at the meter. The system will flag the account to notify of a problem. The system will also provide efficient leak detection. This way, a notification can be sent immediately so that the issue can be investigated before a basement is flooded or other damage can occur. Also leaky fixtures which can lead to high usage can be detected.

Benefits of AMR to water customers:

- Accurate and possibly more frequent billing statements
- Improved customer service by the availability of detailed usage information
- Improved meter reading accuracy through the reduction of errors from manual readings
- Less interruptions to their day as they will not have to allow the staff access
- Improved consumption information for tracking and budgeting purposes

Policy Objective

To provide accurate metering and billing for water use and to provide excellent customer service to all utility customers. To explore all available options currently available technology in the water metering industry.

Financial Impacts

Total AMR costs for a fixed-base system with two-way communications for Roseville would be approximately \$1,500,000 to \$1,700,000 for total implementation of all 10,500 meters in the City of Roseville (commercial and residential). Currently we are expending approximately .75 FTE staff time and additional vehicle costs reading water meters on a quarterly basis.

Staff Recommendation

Staff will further detail implementation options and costs associated with implementation at your meeting.

Requested Council Action

Discussion of the benefits of implementing automated meter reading in Roseville.

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