

# **GREEN BUSINESS CASE WATER METER REPLACEMENT**

FOR THE

## **NORTHEAST COPIAH WATER ASSOCIATION**

### **I. SUMMARY**

Northeast Copiah Water Association, Inc. is experiencing significant water revenue loss in their existing water distribution system. This revenue loss is mainly due to substantially malfunctioning water meters. In recognition of the value of this precious natural resource, the Association wants to transform their current system water system into a more efficient and environmentally friendly water system.

Therefore, the Association is seeking “green” funding through the Mississippi State Department of Health, Drinking Water Revolving Fund, American Recovery and Reinvestment Act, for the construction of the project. The proposed project is designed to correct inaccurate water metering (unbilled sales) and provide Automatic Radio Read meters. It is anticipated that this project will result in annual operation and maintenance cost savings of \$7,500.00, and an annual revenue increase of approximately \$24,000.00.

### **CURRENT SYSTEM**

The Association’s original water system was constructed in 1968, with numerous extensions since that date. Currently the water system serves approximately 2,500 people through approximately 1100 residential connections. The Association’s system contains approximately 97 miles of 2” through 8” water mains with the bulk of the pipe being PVC installed between 1968 and 1976.

There are no users presently that qualify as “major” based on usage of five (5) percent or more of the daily capacity of the system. The certificated area is primarily residential, with some small commercial customers. Meters are ¾” in size and there are no apartments, schools, agricultural, or other large users on the system.

### **II. PROPOSAL**

The Northeast Copiah Water Association is proposing to undertake a program to replace all existing substantially malfunctioning water meters in the system with new meters equipped with automatic meter reading capability (green technology).

The existing meters that are currently used in the Association’s water distribution system are made up of several different brands and models. According to the meter manufacturers, the specified useful life of meters is expected to be twenty (20) years. It is calculated that 800± of the residential meters in the Association’s water system have exceeded their service life expectancy. In addition, the manufacturers also warrant their meter’s usage for 1,500,000 gallons. Based on average monthly consumption, 75 percent of the residential meters have passed in excess of 1,500,000 gallons.

Table 1 presents a summary of the number of water meters in the system by age.

**Table 1: Estimated Overall System Accuracy**

Meter Age (Years)	0-10	11-20	21-30	31-40	> 40
Number of Meters	75	125	200	300	400
Average Accuracy	95%	85%	70%	60%	50%
% of Total Meters	6.8%	11.4%	18.2%	27.3%	36.3%
Weighted Accuracy	6.5%	9.7%	12.7%	16.4%	18.2%
<b>OVERALL SYSTEM ACCURACY</b>					63.5%

In addition to the meters reaching the limit to their useful lives, these meters are also diminishing in meter accuracy. The majority of the meters are in poor condition and are recording inaccurate water usage. These inaccurate readings, given by the substantially malfunctioning water meters, provide misleading information regarding water usage and result in unaccounted water loss, billing inaccuracies and lost revenue for the water system.

A Water Rate Analysis dated July 23, 20098 prepared by the Rural Community Assistance program (RCAP), Community Resource Group, Inc., shows a generally steady decline in average monthly customer usage as follows.

<u>FY</u>	<u>Customers</u>	<u>Average Monthly Usage (Gal.)</u>
2005	1050	5440
2006	1074	5738
2007	1083	5603
2008	1085	5347
2009	1089	5152

The RCAP analysis concluded that slow, inaccurate water meters could be contributing to the reduction in usage and recommended an aggressive testing and/or replacement program.

It is conservatively estimated that the billable water loss to the Association exceeds 6,000,000 gallons. This equates to approximately one month of lost revenue per year.

Accurate metering of water consumption is an important, indirect water efficiency measure. The Association is seeking green funding for installation of new water meters equipped with automated meter reading (AMR) equipment. This green technology allows the monitoring of the customers piping and fixtures for water loss. The new AMR equipment will be equipped with technology that will monitor and record water usage on a 15-minute basis and store that information for approximately 90 days. This information is invaluable for documenting water usage, in responding to customer complaints, for educating customers regarding water conservation and in conducting public relations campaigns.

Accurate metering is the first step in determining where and how much water is used or lost in the system. The proposed AMR equipment will be able to more accurately and quickly bill their customers, providing a stronger price signal that encourages water efficiency. Customers receiving metered water service from the new AMR system will see a direct impact on their monthly budget from their monthly water bill. Their awareness of the direct cost savings available as a result of water conservation is magnified, and therefore, results in a conscious effort to use water wisely.

Unauthorized use of water is another problem that the Association has faced in the past. Customers have tampered with the meters to reverse the recorded water usage on the existing manual meters. With the proposed automated meter reading equipment, an alarm will immediately be sent to the Association to warn of any meter tampering. Unauthorized use of water will be found within minutes of tampering, allowing the Association to take appropriate actions and collect from customers who may have previously slid by without being detected.

### **III. ANALYSIS OF BENEFITS**

The benefits of the Meter Replacement Project are anticipated to be as follows:

1. **Increased Water Revenue**: The Association is anticipated to see an increase in revenue due to the accuracy of the new meters. According to the manufacturer, it is estimated that the new water meters will measure water consumption within 99.5 percent accuracy. These meters will also be able to detect low volume water use up to a tenth (1/10) of a gallon per minute. The increased accuracy of water measurement and low volume use should account for an increase in water sales of approximately 6.0 million gallons annually. This increase in sales volume should result in an increase in revenue of approximately \$24,000 annually.

2. **Reduced Meter Reading Costs:** Another significant anticipated cost-benefit of the Project will most likely be found in the conservation of vehicles, gasoline and manpower by eliminating reads, re-reads, and service starts and stops. With the existing system, it takes a team of two (2) meter readers with vehicles approximately three (3) days to read all meters and an additional two (2) days for return trips to recheck high or questionable readings of meters. With the proposed Project, meter reads and re-reads are estimated to be read within one (1) day or less. This system will reduce the Association's fuel consumption and carbon footprint while increasing the integrity of the water supply system and customer satisfaction. It is estimated that the proposed system will save the Association \$7,500 annually in O&M costs.

The overall estimated financial benefits associated with the Project are as follows:

**Table 2: Estimated Annual Savings**

Increased Water Revenue	\$24,000.00
Reduced Meter Reading Costs	\$ 7,500.00
<b>Total Savings</b>	<b>\$31,500.00</b>

#### **IV. CONCLUSIONS**

All project costs are eligible for grant funding through the MSDH Drinking Water State Revolving Fund 2009 American Recovery and Reinvestment Act for the following reasons:

1. Therefore, this project should be approved for funding. This project meets the EPA's requirements for qualifying under the Green Project Reserve. All savings associated with this project are directly linked to water efficiency.
2. This project qualifies for a categorical exclusion under the environmental review regulations.
3. No governmental permits are required for this project.
4. This project is ready to proceed to construction upon authorization from the MSDH.

Therefore, this project should be approved for funding.