
Case Study

*Town of Rocky
Ford*

*Performance
Contract to Install
AMR/AMI*

2013

\$1.28 million

*Water Company
Information*

Approx. Population Served

Approx. 4,000

Approx. Number of Connections

Approx. 1,700

Project Summary

The Town of Rocky Ford has had issues with substantial water loss in the past, with non-revenue water ranging from 35 to 50% of water production annually. Since the Town was aware that non-revenue water includes both real and apparent water loss - with apparent losses including unauthorized consumption, customer metering inaccuracies, and systematic data handling errors – the Town decided to enter into a performance contract to install all new customer water meters.

Given the large amount of labor that the Town had to commit to customer meter reading, and that most of the Town's lost time work injuries related to meter reading, the Town decided to install automated meter reading (AMR) and advanced meter instrumentation (AMI) systems to substantially reduce the labor required to collect customer water use and support billings (using Census meters and iPerl transmitters).

The performance contract was developed with the expectation that the capital investment would be amortized over a 15 year period, during which time the savings related to the reduction in non-revenue water and labor to read meters would offset the debt service. Although the details related to the performance contract entered into by the Town are confidential, the Town has not received the value expected when the contract was originally negotiated. Nonetheless, the Town has realized improvements in water loss management associated with the project as noted below.

Project Components

Beginning in October 2012, the Town's performance contractor (Energy Systems Group (ESG) out of the state of Indiana) began the project. The performance contract called for establishing a baseline of water use and customer meter accuracy prior to installation of any new equipment. To this point, ESG's contractors tested 36 existing meters for accuracy using three different flow rates (low, medium and high). According to ESG's contractor, the average current meter inaccuracy was 90.5% of delivered flow volume (note that the median of the tested group of meters was about 98%, however some meters tested very low (less than 20%) skewing the average). The new meters were estimated (and later tested in place to verify) as 98.5% accurate. ESG also established baseline customer water use (based on 2011 customer use rates) and current and estimated future water rates (i.e., price per thousand gallons of water delivered to customers).

New meters were installed along with the AMR and AMI transducers and transponders, satellite data collection stations and computer based software to collect the customer use data and interface with the billing software over the period October 2012 through April 2013.

Estimates of future revenue impacts on Town water sales and expenses were developed in a three step process, with the first step involving measuring meter performance before and after the project, and developing a baseline of water use by the Town's customers. The next two steps included calculating the following:

- i) Costs savings related to expense were estimated:
 - a. For the Town to replace all of its customer meters over a 15 year period, escalated at 2% and de-rated in accordance with ESG experience with similar projects;
 - b. Costs for reduced vehicle maintenance and fuel costs; and
 - c. Adjustments for increased costs for software license, technical support and internet.
- ii) Costs savings related to additional water sales revenue were estimated based on:
 - a. Increased meter accuracy (from 90.5% to 98.5%);
 - b. Expected water sales volume; and
 - c. Current and future water rates.

These costs were combined to estimate a total 15-year expected savings as a means to frame the value of the initial \$1.28 million investment.

Note for any organizations that are considering a performance contract, it is vitally important to be aware of the various assumptions and data used to develop the estimated cost savings, for there are a number of assumptions that must be made to develop a credible cost model. It is this cost model that defines the potential benefits related to the project, and frames the changes in revenue that will ultimately fund repayment of the debt service.

Project Benefits

The Town's non-revenue water over the period 2011 through 2014, as shown in Figure 1, has dropped since the installation of the new meters. Prior to the project, non-revenue water averaged about 80 million gallons for the first six months of the year (January through June) or about 13 million gallons per month. After the project, non-revenue water for the same six-month period in 2014 was about 60 million gallons, or about 10 million gallons per month, which is a 25% decrease in the volume of non-revenue water.

This volume is in keeping with the estimated increase in billed water made by ESG as part of its performance contract. Total billing increases were expected to be in the range of 16 million gallons in a year. This value was derived by increasing the baseline water use in 2011 of 198.8 million gallons by 8% (which is that difference between the old meter accuracy (90.5%) and the new meter accuracy (98.5%)). In essence the total billing increase occurs as a result of more of the water being delivered to customers being measured by the meter, and therefore included in the billings.

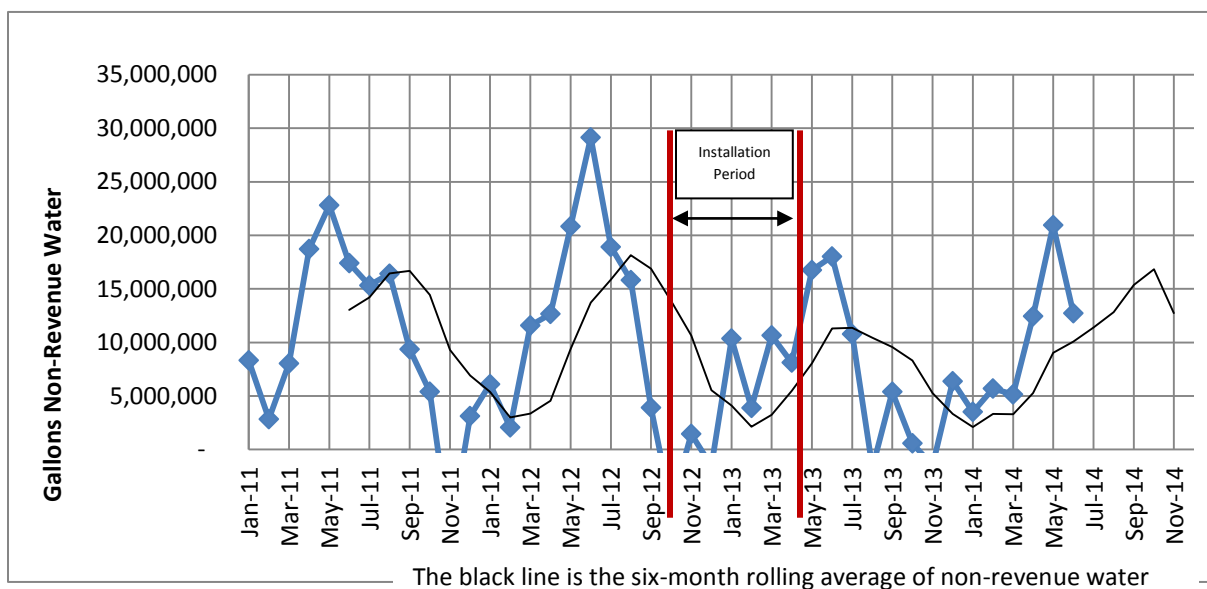
Table 1			
Summary of Water Production, Water Billings and Non-Revenue Water for Period Jan through June for Each of the Past Four Years (in millions of gallons)¹			
	Water Production	Sold Water	Non-Revenue Water
2011	140.2	62.0	78.2
2012	144.0	61.6	82.4
2013	135.4	67.6	67.8
2014	138.0	77.5	60.5

As can be seen in Table 1, the volume of non-revenue water has decreased over the past two years, after it peaked in 2012. Also noteworthy is that the volume of water sold increased substantially from 2012 through 2013 and into 2014. The amount of water sold relates to the improved accuracy of the customer meters².

Based on the improvements in customer meter accuracy, the predicted water sales revenue increases have been reasonably well founded and have supported the Town collecting in the range of \$45,000 per year of previously lost revenue due to meter inaccuracy. Also note that the Town realizes benefits associated with the reallocation of labor from meter reading to water system distribution preventative maintenance (PM) programs such as valve exercising, hydrant flushing and other vital programs that reduce water loss and improve overall quality of water delivered to customers. Improved PM will help to reduce water loss.

Noteworthy is that there are other processes that are influencing non-revenue water and water loss in the Town beyond the meter inaccuracy issue resolved by this project, such that continued persistence by the Town is warranted to help characterize other ongoing losses related to current operations.

Figure 1 – Non-Revenue Water for the Town of Rocky Ford (2011 –June 2014)



¹ January to June was selected since billing data for the second half of 2014 was not available.

² Note that 2011 and 2012 were drier and hotter than 2013 and 2014 (based on evapotranspiration data for La Junta); whereas customer water use was higher in the relatively wetter years of 2013 and 2014. The observed increase in water sales further supports the benefits of the improved accuracy of the new customer water meters.