

NON-REVENUE WATER A CRITICAL PERFORMANCE INDICATOR

By Julie Petit



The WeiserMazars 2015 U.S. Water Industry Outlook found that non-revenue water is a critical performance measure that provides indicators of aging of the system, opportunities for improved efficiency, and opportunities for improved financial performance or pricing.

According to the survey, 91% of U.S. water industry respondents are operating with less than 30% non-revenue water given in Figure 1.

The energy and water department of the World Bank estimates that water utilities worldwide lose an estimated USD 14 Billion in non-revenue water every year. This represents 25% to 50% of total water usage according to the International Water Association (IWA). www.weisermazars.com

Definition and Computation of Non-Revenue Water

According to both the IWA and the American Water Works Association (AWWA), non-revenue water is equal to the total amount of water flowing into the water supply network from a water treatment plant (the 'System Input Volume') minus the total amount of water that industrial and domestic consumers are authorized to use (the 'Billed Authorized Consumption').

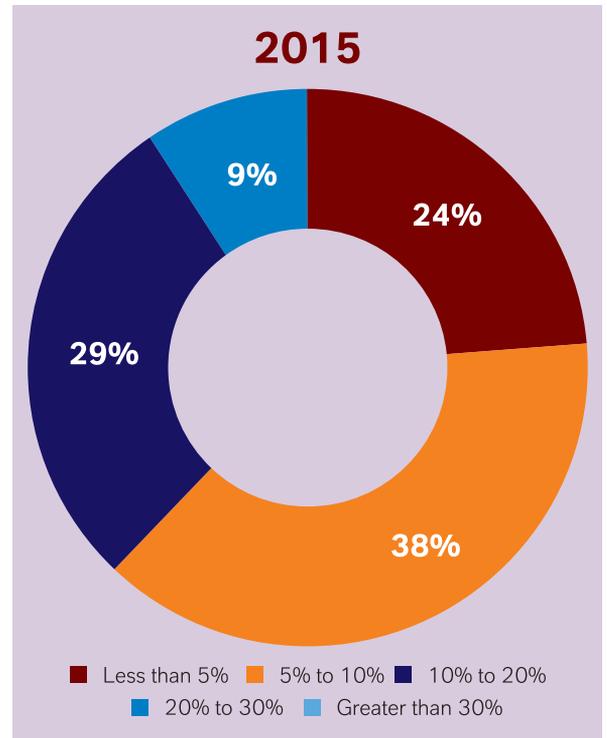


Figure 1: Non-Revenue Water in System Accounts for



BY REDUCING NON-REVENUE WATER, WATER UTILITY COMPANIES DECREASE THEIR PRODUCTION COSTS AND INCREASE THEIR BILLING REVENUE WITHOUT RAISING RATES.

Non-Revenue Water = System Input Volume – Billed Authorized Consumption

It is water that was treated but not billed to a consumer because of water losses or unbilled authorized consumption.

Water losses consist of real and apparent losses. Real losses are due to leakages and overflows in the distribution system up to the point of customer metering. Apparent losses are unauthorized consumption or metering inaccuracies.

Unbilled authorized consumption consists of water consumption that public policy exempts from paying rates such as water used for fire-fighting.

Several performance indicators can be computed with the non-revenue water. For example, the volume of non-revenue water as a percentage of system input volume can be used as a general financial indicator. The volume of the non-revenue water as a percentage of the annual cost of running the water system can also be used in cost benefit analysis.

The Challenge of Reducing Non-Revenue Water

By reducing non-revenue water, water utility companies decrease their production costs and increase their billing revenue without raising rates.

From an environmental sustainability perspective, reducing non-revenue water is essential. Some countries in the world and some areas in the United States are already facing water scarcity. When there are compelling reasons for reducing levels of non-revenue water, we wonder why it has not been further reduced in the United States.

Non-revenue water reduction activities can quickly be profitable where they are due to apparent losses. However, reducing real losses such as physical leakages can require significant capital investments. These large investments are profitable over the long term and cost benefit analysis needs to be performed. Capital investments are critical for operational efficiency of water utility companies, but can be delayed to the detriment of the non-revenue water ratio.

Water losses are major issues due to the difficulty in locating leaks and the expense of replacement or repair. Technological improvements assist in the location of non-revenue water losses through real time tracking systems. These technologies are currently expensive. However, because they are continually being improved, in the future, they will make reduction of non-revenue water easier.

Eliminating non-revenue water is not economically sustainable, but it is useful to reduce non-revenue water until the economic optimum has been reached. This is achieved when the marginal cost of reducing non-revenue water exceeds the marginal benefits of reducing water losses. When the economic optimum is reached with high non-revenue water, for example when water production is cheap, water utility companies have fewer financial incentives to reduce non-revenue water. This can be an issue knowing that old infrastructure with high non-revenue water increases the likelihood of producing low quality water and encountering system interruptions.

It seems clear that the challenge in reducing non-revenue water is both a technical and a financial issue. This is where the private sector could be of assistance, and a wide range of options are available from Public-Private Partnerships (such as service concession arrangements) to service contracts which limit subcontracting of specific activities.

Last, but not least, regulations and incentives could lead water utility companies to carry out an effective non-revenue water reduction program. Denmark is a great example. According to the IWA, Danish water suppliers have, over the last decade, worked intensively to reduce non-revenue water, leading to a significant decrease. It all started in 1989 with a tax on water produced. The water utilities thereby had a strong incentive to reduce water losses and improve the quality of the distribution system. The result is that most Danish water supplies today are below 10% non-revenue water.

In the United States, an increasing number of Public Service Commissions, which fix the price of water charged to customers through regulated water utility companies, require those companies

to report their non-revenue water, analyze the reasons for the water losses and implement a loss control program.

In addition, it is becoming more common for water utilities to perform water audits in accordance with the AWWA/IWA water audit methodology. Non-revenue water and water losses are computed during these audits. As more and more companies, regulators and agencies support and complete these audits, this will become a standardized approach that will produce data to allow performance comparisons and establish best practices on a national and international level.

In conclusion, non-revenue water is a key topic for water utility companies from both operational and financial perspectives. The non-revenue water level is set to reduce through technological improvements and capital investments in the foreseeable future. The importance of this indicator to the water industry also means that there may well be stronger regulation surrounding non-revenue water and water losses in the near future.

About the Author

Julie Petit has over 6 years of experience with WeiserMazars in the United States and in Europe. She provides external auditing services and consulting services for middle size companies, multinational corporations as well as SEC registrants. She has industry expertise in energy & utility, distribution and manufacturing. Julie has an extensive experience within the non-regulatory and regulatory reporting frameworks of water and wastewater utilities in the United States. Her utility industry background has included financial statements audits of companies that build or operate water and wastewater treatment plants.

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