

5 Keys On Reducing Non-Revenue Water

Water loss is a constant concern for drinking water utilities. After all of the hard (and expensive) work it takes to get a purified product out of the plant, losing it to leaks and aging infrastructure before it reaches ratepayers can be problematic.

But there is reason for hope. Certain tools are out there that can help utilities reduce instances of non-revenue water, saving them time and money. To discuss the issue of water loss and the methods for combating it, Water Online spoke with Dan Hardin of [McCrometer, Inc.](#) He gave us five tips for reducing non-revenue water and then answered our questions about the issue.

1. Understanding how critical the problem of non-revenue water is in the industry.

Non-revenue water is a huge issue for water utilities. Utilities across the U.S. spend a significant amount of money pulling water from its source, cleaning and treating it so it's ready for consumption, and then pumping it into an intricate distribution system. The hope is that it will arrive at the end user and that the utility can collect revenue in order to repeat the process.

As water infrastructures continue to age and deteriorate, the number of leaks, inaccurate meters, and other causes of non-revenue water continue to rise. This costs the utility because they spend the time and money to provide their



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customers with clean drinking water, and in some cases only about 80 percent of it arrives at the end user. That represents a 20 percent loss in revenue.

2. Determining critical statistics that illustrate the severity of the problem.

As I travel and talk to water utilities, I have found that the average water loss, or non-revenue water, is about 20 percent. Typically, older and aging infrastructure

often means higher water loss. Most water utilities don't have the funds to locate and repair every water leak or water loss issue in their systems.

3. The public's perception of non-revenue water and the toll it takes on their local utilities.

I don't think the public at large is as aware of the problem as they should be, nor does it understand what it takes to

get clean, safe drinking water delivered to their faucets every day. If a utility doesn't have the funds to repair an aging water system, the problems continue to multiply, which makes it even harder to stay ahead of the necessary repairs and can result in higher bills for the public.

4. Typical issues that result in non-revenue water.

Leaks are a big concern. As the water infrastructure ages, there will be more leaks in the system, which can go undetected for years if processes aren't put in place to detect and repair them.

For instance, if a water utility is pumping 1 MGD out of the water treatment plant into their system, and their measurement could be inaccurate by 10 percent or more, that's 100,000 gallons of non-revenue water before it even gets into the distribution system.

5. How these problems are typically resolved or mitigated.

To help mitigate their leak problems, utilities can use various leak detection methods such as district metering or system audits. Flow meters are very useful tools to reduce non-revenue water. By implementing district metering, water utilities can easily determine how much water is flowing into each section of their distribution system. For example, if you install a flow meter in the line prior to entering a certain distribution zone or district, you can measure the amount of water that was pumped into the area and compare that to the amount registered on residential and commercial meters and come up with a loss amount fairly quickly. If you flow 100,000 gallons into a district, and those correlating residential meters only account for 90,000 gallons, you know that you have lost 10,000 gallons somewhere in that district. This method gives the utility an accurate method for locating areas in the distribution system that have leaks. They can then deploy resources as necessary to find and fix those leaks.

Methods for combating non-revenue water.

McCrometer's FPI Mag® Next Generation

Mag Meter is a great flow meter to use for district metering. It can be installed through a simple two-inch tap at almost any location where the utility wants to measure flow without having to shut the line down. Some examples would be pump houses, pressure-reducing valve (PRV) stations, booster stations, and basically anywhere with access to the pipe. The FPI Mag is a 0.5 percent accurate meter, so the utility will know the data they are getting is accurate. The FPI Mag can also reduce non-revenue water by replacing older, non-functioning mechanical meters that have deteriorated over time, causing them to under-register.

What about the design makes it more effective at reducing non-revenue water than other flow meters available on the market?

The FPI Mag can be installed with as little as one diameter of upstream straight-run pipe, which gives the utility many more options regarding the location of where they can place a flow meter. The FPI Mag is a full-profile insertion meter, which means it is inserted into the pipe, goes all the way through, and touches the other side of the pipe wall, allowing the meter to measure the entire flow profile. This is what gives the FPI Mag more accurate readings than single-point insertion meters, which only measure the flow at one point.

The FPI Mag can be installed in about 45 minutes without having to shut down and depressurize the line. In addition, if the meter needs to be certified or recalibrated, it can be removed just as easily without disruption of service. The FPI Mag also has several different communication protocols available that can utilize a utility's existing infrastructure to communicate the data back to the office quickly and efficiently.

How quickly can the FPI Mag's water-saving capabilities offset the cost of purchase and installation?

The first savings the customer will see is in the overall installation costs. McCrometer has found that the installation of the FPI Mag meter saves a utility 45 percent or more on total cost of ownership compared to the installation of other

meter technologies. Upgrading older meters to McCrometer's FPI Mag meter can also provide a quick return on investment. Older mechanical meters can under-register as much as 20 percent and in some cases more.

If these meters are being used for revenue generation, the utility can then see an immediate increase in revenue by upgrading to the FPI Mag meter. When the FPI Mag is used for district metering, a utility can quickly start to see where their water is going and how much is making it to the consumer. They can then use this data to determine which areas have the most leaks and begin to focus their efforts on repairs.

You can't manage what you don't measure, and the FPI Mag is an accurate, easy-to-install measurement tool that can be used in many applications to help a utility begin to improve efficiency and reduce non-revenue water.

What do you think it would take to find a permanent fix for non-revenue water?

I think many utilities are already taking small steps to minimize non-revenue water. As new technologies are developed, I think utilities will start to implement them, and we will start to see a steady decline in non-revenue water. ■