



Stepping Up Water Loss Control: Utility in Focus

Halifax Water, Population Served: 350,000

The Center for Neighborhood Technology (CNT) is working to help utilities embrace more sustainable water management practices. Our *Fixing the Leaks* initiative produces research, awareness, outreach, and assistance in ramping up water loss control and infrastructure reinvestment. The following is a case study that highlights the benefits of robust water loss auditing through the experience of **Halifax Water**.

The M36 water auditing manual created by the American Water Works Association (AWWA) is internationally recognized as a best practice for achieving a robust and standardized water loss audit. Among other benefits, these methods allow utilities to:

- Expand system knowledge and develop water loss control programs
- Reduce apparent and real losses

Additionally, it helps states and regions look at wider-scale water loss trends, enabling them to more effectively reduce water waste and make a stronger economic case for infrastructure reinvestment.

UTILITY PROFILE

Halifax Water was established in 1996 and is dedicated to becoming a leader in innovative water supply practices. It was the first water utility in North America to employ the IWA/AWWA methodology for water loss control, formally adopting it in 2000.¹ The Halifax Water service area sources water from six watersheds and serves a population of 350,000.²

For more information on Halifax Water and its various initiatives, visit its website: www.halifaxwater.ca

DRIVERS FOR UTILITY ADOPTION AND WATER LOSS CONTROL ACTIVITIES

KEY DRIVERS: OPERATIONAL SAVINGS, HIGH WATER LOSS, IMPROVED ASSET MANAGEMENT AND COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

Halifax Water's principal reason for adopting the IWA/AWWA methodology as portrayed in the M36 manual was to reduce distribution leakage, which was around 34% of production in 2000.³ The utility also wanted to redefine its water supply practices by emphasizing system accountability, improved asset management and environmental protection. Halifax Water recognized that the methodology was more holistic than other auditing methods and provided robust water leakage



HALIFAX WATER STAFF INVOLVED IN LEAK DETECTION ACTIVITIES

(Photo Source: Halifax Water)

tracking mechanisms.⁴ In 1999, prior to adopting the methodology, the utility consulted with an international expert for initial training and implementation of the methodology.⁵

Since adopting the IWA/AWWA methodology in 2000 and gaining a more complete picture of its water loss issues, the utility has developed 75 district metered areas (DMAs) to facilitate proactive leak management. It also expanded its supervisory control and data acquisition (SCADA) system to enable flow trend analysis in each DMA. Additionally, Halifax Water reviewed large-meter customers to maximize revenue potential and reduce unauthorized consumption. These efforts have allowed for the deferral of capital investment for treatment plant expansion or repair.⁶

M36 BENEFITS

BENEFITS FOR HALIFAX 7-8

Expand system knowledge and develop water loss control programs

Adopting the IWA/AWWA methodology has enabled Halifax Water to accurately track water consumption and losses. The utility has **developed long-term water loss control programs, such as the construction of bulk fill stations, the development of DMAs, and a revenue protection program.**

Reduce apparent losses

Halifax Water **carried out a successful review of large-meter customers to maximize revenue potential and eliminate unauthorized consumption.** It also used the SCADA system to monitor flows to large customers in real time, alerting them of increases in flow. Although the water lost was all metered, the utility felt it had a stewardship responsibility to educate and assist customers in the pursuit of water-use efficiency. A charge was levied to provide the service, ensuring cost neutrality for the utility.

Reduce real losses

Halifax Water has engaged in many leak-detection activities, including the **development of 75 DMAs, expansion of its SCADA system and the purchase of a data historian.** Between 2000 and 2013, the utility reduced its Infrastructure Leakage Index (ILI = ratio of current leakage to unavoidable real losses) from 9.0 to 2.5. **Over this period, Halifax Water’s total system leakage reduction amounted to 10.5 mgd, valued at \$600,000 per year.**

HALIFAX WATER LOSS CONTROL PROGRAM ACTIVITIES AND FUNDING MATRIX 9

ACTIVITY	TIMEFRAME	FUNDING
Hire an international AWWA/IWA consultant to train Halifax Water employees on implementation and use of the methodology	1999	\$100,000
Develop DMAs, expand SCADA system and purchase data historian	2000 and onward	\$750,000
Perform a thorough review of large-meter customers to eliminate unauthorized consumption	2001 and onward	In-house staff
Design and construct bulk fill stations for water haulers and contractors, ultimately leading to the Utility and Review Board’s approval of a special water rate	2002	450,000
Monitor flows to large customers in real time, increasing efficiency in leak detection and repair	2004	Cost neutral

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Develop an asset management plan to replace or rehabilitate aging and leak-prone mains.

Encourage cross-departmental coordination.

Adopt a continuous improvement culture: secure corporate support, commit to innovative water supply technology, and ensure that staff are dedicated to improving water loss control.

Celebrate and recognize success: the utility embedded the Infrastructure Leakage Index (ILI) metric within the Utility Corporate Balanced Scorecard and celebrated milestones.

“The IWA/AWWA methodology promotes accountability with an audit that has a place for everything and everything in its place. The performance indicators embedded in the methodology also ensure that progress can be measured. As the adage goes: If you can measure it, you can manage it.”

- Carl Yates, General Manager, Halifax Water

To learn more about this report, CNT’s *Fixing the Leaks* initiative, and the various resources available for your agency, please contact Danielle Gallet, Infrastructure Strategist and Water Supply Program Manager, at danielleg@cnt.org

REFERENCES

¹ IWA/AWWA, *Manual of Water Supply Practices: M36, 3rd Edition*, (2009), 252-259.

² Halifax Regional Municipality, *Halifax Water*, (2014). www.halifax.ca/hrwc/

³ IWA/AWWA (2009), 252

⁴ IWA/AWWA (2009), 252

⁵ Yates, Carl, *Holistic in Halifax – An Integrated Approach to Water Management*, CWN Conference, [PowerPoint], (March 20, 2013). www.cwn-rce.ca/assets/resources/powerpoint/CWR-2013-Presentations/Yates-Carl-FINAL.pdf

⁶ IWA/AWWA (2009), 252-255

⁷ IWA/AWWA (2009), 256-258

⁸ Yates, 2013.

⁹ IWA/AWWA (2009), 252-259

¹⁰ IWA/AWWA (2009), 252-259