



City of Dubuque - Contribution of UFR to "Smart Metering" Leak Detection System

Project Background:

In January of 2010, the City of Dubuque, Iowa began a change-out of its 22,500 existing water meters to new Neptune T-10 positive displacement (PD) meters. The project included an upgrade to a fixed base radio read network and implementation of over 18,000 Unmeasured-Flow Reducers (UFRs) by AY McDonald Manufacturing Company. As part of the City's "Smarter Sustainable Dubuque" project, the intent was to be able to accurately measure consumption and notify residents of potential leaks in their homes, allowing them to consider corrective measures which translate into "smarter" water use.

Installation:

With the project nearing completion, the City of Dubuque has installed 21,966 3/4" or smaller water meters. Of those, 18,699 were installed with a UFR meter coupling or with the UFR in a 10 series resetter. 3,267 services received no UFR due to PRVs or RPZs located directly after the meter. The new Neptune T-10 PD meters, installed in the basement, utilize a Neptune R450 digital data-logging register that transmits a signal to a meter interface unit (MIU) placed on the outside of the home.

Leak Detection Technology:

The R450 register logs 96 data points every 24 hours (15 minute read intervals) and transmits that information to an MIU which then uploads the information via the fixed base radio network to the City's server once every 24 hours. The registers are equipped with a leak indicator that registers a leak based on the following criteria. If 56 to 95 of the 96 data points show usage, the system considers the home to have an intermittent leak. If all 96 of the data points show usage, the system considers the home to have a continuous leak.

The UFR Factor:

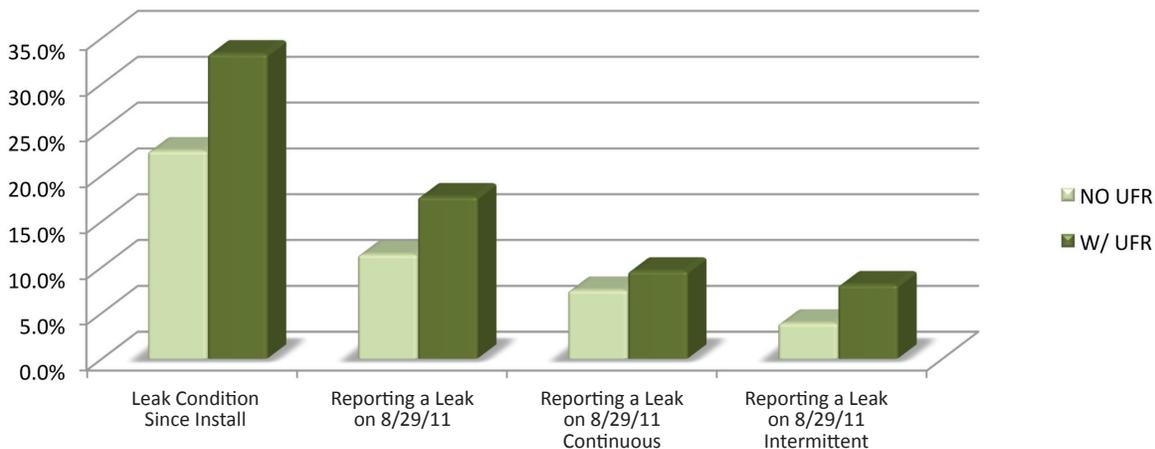
Even when installed in conjunction with one of the most accurate water meters available today, the UFR's contribution to the accuracy of the newly installed meters and the above mentioned leak detection system is dramatic:

Of the 3267 new Neptune meters installed *without* UFR's:

- 22.7% have registered a leak condition since install
- 11.4% were reporting a leak condition on 8/29/11
 - 7.5% intermittent
 - 3.9% continuous

Of the 18,699 new Neptune meters installed *with* UFR's:

- 33.3% have registered a leak condition since install
- 17.7% were reporting a leak condition on 8/29/11
 - 9.6% intermittent
 - 8.1% continuous



Conclusion:

The UFR's contribution to the ability of the system to detect, report and measure leakage is as follows:

- On services with UFR's, an additional 10.6% of the meters have registered a leak condition since install.
- On services with UFR's, an additional 6.3% of the meters were reporting a leak condition on 8/29/11.

For more information about the UFR: www.ayufr.com

For more information about the City of Dubuque's meter change-out project: www.cityofdubuque.org



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