

## ACTION ITEM 5.6 – ASSESS AND REDUCE WATER SYSTEM LEAKAGE

### ACTION ITEM

Assess local water losses annually using the IWA/ AWWA water audit methodology.

Develop a program for identifying and reducing local water system loss.

### OBJECTIVE

The objective of this measure is to reduce water losses within the water distribution system and water treatment facilities.

### DESCRIPTION OF MEASURE

Water providers must identify methods to reduce leakage in their systems, and to reduce unbilled water. The first step is to determine the extent of water losses in the distribution system using the International Water Association (IWA) and American Water Works Association (AWWA) methodology, herein referred to as the IWA / AWWA method.

The IWA / AWWA methodology is recommended to quantify and classify non-revenue water because it addresses some of the major problems in estimating system water loss. The commonly used percentage of “unaccounted-for-water” method of determining system water loss does not provide a standard for measurement of water use and water loss. The IWA / AWWA methodology defines all uses and losses and is designed to function with different units and measures using a water balance format.

The methodology uses an Excel spreadsheet and is more comprehensive and accurate than previously available tools for water loss calculations. Within IWA/AWWA methodology, no water is considered “unaccounted for”, as it is allocated as either a consumption or loss. Water loss programs can then target the most significant categories of losses, which will vary for every local water provider. The spreadsheet provides benchmark information and allows utilities to easily set performance targets.

Local water providers must establish a goal for reducing the “real” water losses, or those associated with loss through all types of leaks, breaks and overflows on mains, service reservoirs and service connections, up to the point of customer metering. The goal for reducing the real component of water loss will be based on existing water loss, the specifics for the distribution system and the water loss program. The goal for real water loss established by each local water provider will be achieved over the next five years.

The IWA/AWWA identifies the areas of biggest water losses as well as their financial impact. Based on water loss data, each local water provider can develop a water loss program that will be

<b>Responsible Party</b>
<input checked="" type="checkbox"/> Local Water Provider
<input type="checkbox"/> Local Government
<input type="checkbox"/> Other: _____
<b>In Coordination With</b>
<input type="checkbox"/> Local Water Providers
<input type="checkbox"/> Local Wastewater Provider
<input checked="" type="checkbox"/> Local Government
<input checked="" type="checkbox"/> Other: <u>Fire &amp; Police Departments</u>

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beneficial to their particular water system. Optional example programs to reduce water losses include the following list. All options will not be appropriate for all water systems.

- Conduct an on-going meter calibration and/or replacement program. Older meters should routinely be checked for accuracy. Faulty meters almost always underestimate the amount of water used, resulting in significant amounts of non-billed water.
- Use leak detection equipment (sonar) and software to identify leaks. There are several different types of leak detection equipment on the market, ranging from hand-held listening devices to permanent and semi-permanent devices that are placed within the system to record leaks at low demand times (such as early morning hours, 3 am). Proactive leak detection programs have been successful in the Metro Water District in finding minor leaks that are not usually found, and can result in significant water losses over time.
- Maintain an understanding of the system through a current water distribution model. Optimization of the system and understanding of system challenges will allow for quicker identification of leaks and other losses.
- Establish DMAs (district metered areas) within the system to identify real losses. A DMA is a distribution system zone monitored routinely to produce a pattern for night flows. DMAs enable the identification and location of unreported breaks and leakage, or real losses.
- Actively manage system pressure by establishing different pressure zones for the system or by reducing pressures across the system. Care must be taken when lowering system pressure to adhere to minimum required pressures for daily operation and fire protection. Benefits of pressure management include: reduction in leakage volumes, reduction in new break frequencies, reduced hydraulic impact, and extension of the existing infrastructure.
- Work with intergovernmental departments (fire and police staff) to routinely inform the utility of standing water areas and potential leaks.
- Establish a strategy for prioritizing leak repairs. Although main breaks require swift response time, losses on smaller lines deserve as much or more attention, as small losses over long periods of time may result in significant losses.
- Address leaks or inefficiencies in the water treatment plant.
- Maintain an asset management program to track aging pipes and meters with a schedule for planned replacement.
- Maintain accurate billing system records through communication between meter reading, distribution maintenance and customer service staff. Lack of communication can sometimes result in customer service staff entering erroneous information into the system (wrong multiplier, active vs. inactive accounts, etc.). Periodic field checks of billing system data may help identify and correct these errors.

A leak detection and repair program to recover lost water may benefit the water provider in many ways because recovered lost water:

- delays the need for developing new water sources and infrastructure;
- is treated and ready for use by the customer;
- is pressurized to reach the customer;

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- generates additional revenue; and
- conserves energy.

### SPECIFIC SUB-TASKS

Sub-Task	Description
Assess local water losses annually	Use the IWA/AWWA methodology annually to calculate the system water loss and causes of greatest water loss.
Develop a program for identifying and reducing local water system loss	Based on the water loss assessment and local knowledge, develop steps for reducing apparent and real losses as used in the AWWA Water Audits. These steps should be based on local conditions, such as the age and condition of the system and past efforts at reducing water losses.
Set a goal for real water losses	Each water system must set a goal for real water losses that will be achieved and/or maintained over the next five years.