2.13 Metering of All New Connections and Retrofit of Existing Connections

A. Applicability

This BMP is intended for all Municipal Water User Groups ("utility") that do not have 100 percent metering of all customer connections. Improved accuracy of meters resulting from increased maintenance efforts should result in increased revenue and reduced "water loss." Metering of all new customer connections and retrofit of existing connections are effective methods of accounting for all water usage by a utility within its service area.

B. Description

Proper installation of meters by size and type is essential for good utility management. Using and maintaining the most accurate meter for each type of connection will generate adequate revenues to cover the expenses to the utility, equity among customers, reduce water waste and reduce flows to wastewater facilities. The American Water Works Association (AWWA) provides a number of resources listed in the reference section of this BMP. The purpose of this BMP is to ensure that all aspects of meter installation, replacement testing and repair are managed optimally for water use efficiency.

For a utility's meter program to qualify as a BMP it should have several elements:

1) Required metering of all new connections and existing connections.
2) A policy for installation of adequate, proper-sized meters as determined by a customer's current water use patterns. The use of compound meters for multi-family ("MF") residential connections or other industrial and commercial accounts is recommended.
3) Direct utility metering of each duplex, triplex, and fourplex unit whether each is on its own separate lot or whether there are multiple buildings on a single commercial lot.
4) Metering of all utility and publicly owned facilities, as well as customers.
5) Use of construction meters and access keys to account for water used in new construction.
6) Required separate irrigation meters for all new commercial buildings with a site plan area of more than 10,000 square feet and for all duplexes, triplexes and fourplexes.
7) Implementation of the State requirements in HB 2404, passed by the 77th Legislature Regular Session and implemented through Texas Water Code 13.502, that requires all new apartments to be either directly metered by the utility or submetered by the owner.
8) Review of capital recovery fees to determine whether the fees provide any disincentive to developers to use utility metering of apartment units.
9) Annual testing and maintenance of all meters that are larger than two inches since a meter may underregister water use as the meter ages.
10) Regular testing and evaluation of 5/8 and ¾ inch meters which are 8 to 10 years in service to determine meter accuracy or a periodic, consistent replacement

program based on the age of the meter or cumulative water volume through the meter. This program should be based on testing of meters at each utility to determine the optimal replacement/repair period since it depends both on the quality of water and the average flow rate through the meter versus the capacity of the meter.

11) An effective monthly meter-reading program where readings are not estimated except due to inoperable meters or extenuating circumstances. Broken meters should be fixed within 7 days or a reasonable time frame.
12) An accounting of water savings and revenue gains through the implementation of the Meter Repair and Replacement Program.

C. Implementation

To accomplish this BMP, the utility should do the following:

1) Conduct a Meter Repair and Replacement Program following the methodology and frequency currently recommended in industry practices and specified by the AWWA.
2) Develop and perform a proactive meter-testing program and repair identified meters.
3) Notify customers when it appears that leaks exist on the customer's side of the meter. An option would be to repair leaks on the customer's side of the meter.

D. Schedule

To accomplish this BMP, the utility should do the following:

1) The utility should develop procedures for implementation of this BMP within the first twelve months.
2) The procedures should include annual or more frequent benchmarks for measuring implementation.
3) The program participant should develop procedures for and maintain a proactive Leak Detection and Repair Program (*See*, Water Loss BMP) within the first twelve months.

E. Scope

To accomplish this BMP, the utility should do the following:

1) Develop and implement a metering program based on current AWWA practices and standards.
2) Produce a regular schedule for the utility meter repair and replacement program based upon total water use and the consumption rates of utility accounts.
3) Effectively reduce real water losses though implementation of the meter replacement and repair programs.

F. Documentation

To track the progress of this BMP, the utility should gather the following documentation:

1) Copy of meter installation guidelines based upon customer usage levels.
2) Copy of meter repair and replacement policy.
3) Records of number and size of meters repaired annually.
4) Report on the method used to determine meter replacement and testing intervals for each meter size.
5) Estimate of water savings achieved through meter replacement and repair program.

G. Determination of Water Savings

Every year the utility should estimate its annual water saving from the BMP. Savings can be estimated based upon a statistical sample analyzed as part of the meter-testing program. Project potential savings into future years and include in utility water savings targets and goals.

H. Cost-Effectiveness Considerations

Capital costs to the utility in implementing this BMP may include the costs of installing new meters and retrofitting older ones, as well as one-time or periodic costs such as purchase of meter testing and calibration equipment. A replacement meter can run from as little as $50 for a residential meter to several thousand for larger compound meters. Meter testing and repair can be done by utility staff or by outside contractors. Smaller utilities could consider sharing testing facilities. A typical residential meter test can be done from $15 to $50. There also may be administrative costs for additional tracking and monitoring of meter replacements.

I. References for Additional Information

1) *Water Loss Control Manual,* Julian Thornton, McGraw-Hill, 2002.
2) *M6 Water Meters – Selection, Installation, Testing and Maintenance,* AWWA 4th Edition, 1999.
3) *Applying Worldwide BMPs in Water Loss Control,* AWWA Water Loss Control Committee, Journal AWWA, August 2003.
4) *HB 2404 2001 Session.* http://www.capitol.state.tx.us/cgi-bin/tlo/textframe.cmd?LEG=77&SESS=R&CHAMBER=H&BILLTYPE=B&BILLSUFFIX=02404&VERSION=5&TYPE=B
5) *Texas Water Code, Submetering Rules for Apartments, Subchapter M, Section 13.502.* http://www.capitol.state.tx.us/statutes/docs/WA/content/htm/wa.002.00.000013.00.htm#13.502.00