From: roncoke@aol.com
To: Gene Robertson
Cc: Craig Hannah (JCI); Ricardo Barillas; Don Onwiler; Michael. Keilty
Subject: NTEP action plans
Date: Monday, July 7, 2025 11:07:24 AM

July 7, 2025

NTEP Committee
Attn: Chair Gene Robertson:

My name is Ron Koch and I represent Master Meter, Inc on the AWWA Water Meter Standards Committee. For a period of time, Master Meter participated all of the several market segments that use water meters. To explain that forementioned statement, water meters are used in three primary markets, 1) Drinking water, 2) Industrial or Commercial, and 3) Submetering. In the primary Drinking Water market, the North American association preparing product design and product requirement standards is the American Water Works Association (AWWA). These standards may or may not be used for meters as voluntary guides for these other markets in North America sometimes intermixed with NIST Handbook #44; these two standards have minor differences. For example, the AWWA Standards recognize that the water meter technology makes design, repeatability & accuracy limit changes per the seven technologies used; whereas Handbook #44 only recognizes differences only for multijets and Mass-type water meters; as of the 2024 version of HB #44, it has not recognized the newer technology "static meters" per AWWA Standard C715.

At the annual AWWA Conference in June 2025, the AWWA Water Meter Committee was advised of reported high failure rates in audits of Submeters in Los Angeles County, San Diego County, Orange County and Reno Nevada. However, no information or data was provided as to whether the meters were those adhering to the AWWA Standards as those used by utility members of the drinking water segment. Submeters are not required to have the same quality as those used for primary drinking water revenue measurement. The Submetering segment is widely populated with less expensive water meters including foreign imports.

However, this minimal information report instituted a situation where water meters are being (considered) added to NTEP's VCAP program. These reported fails should have been reported complete with test data, models & serial numbers, age and NIST Handbook #44 repeat test data.

What is also misunderstood is that the water **meter business is in a technical discontinuity** where older technology mechanical water meters and older technology electromechanical water meters are being displaced by a new technology generation of electronic mag and transit time ultrasonic water meters that some designate as "static meters" conforming to new AWWA Standard C715. These new generation of velocity type static meters cannot be correctly tested on old or even expensive recent water meter test stands without MAJOR MODIFICATIONS to both the equipment and the technique. Indicative of a technique change, 5/8" utility type water meters are required to be accurate at 0.25 gpm by Handbook #44; whereas, by AWWA Standard

C715, 5/8" utility type static meters are required to be accurate at 0.11 gpm (and most are recording flows as low at 0.06 gpm). This extremely Low Flow rate capability corresponds to the utility segment's two high priority interests in Source Water availability without waste and Leak control in mainline, letterals, service lines and residences.

And at the aforementioned AWWA Conference, several utility members reported to the committee that they are also having trouble testing the new generation of static meters because they are not educated in the corresponding testing upgrades needed in test stands and test methods. One common example of the test stand change needed is that many test stands employ Variable Frequency Drives (VFDs) on their supply pumps to save electricity. Such VFDs cause high frequency pulsations (not visible on hydraulic test gauges) that seriously impact test accuracy on some metering technologies. These VFDs must be mitigated or removed and replaced by other hydraulic means to test these new static meters correctly.

In other words, while NTEP has identified a problem but may have incorrectly identified the cause; **the water meter test stands may need the VCAP attention,** not the water meters. These California County test facilities have assumed a role in Submetering commerce; as such these testing facilities (test stand & techniques) must be NIST Handbook #44 qualified with respect to accuracy precision, repeatability limits and collection means calibration. These County Test facilities should be regularly checked for true measurement precision of ± 0.25% that allows for test stand collection calibration differences, however each design's characteristic accuracy performance curves must be demonstrated with the (too generous in my view) required 3-test repeatability in each flow rate range of 1.2% in the Normal range and 2.4% in the Low Flow range as per Handbook #44.

Considering the incomplete or lack of supporting information from the California county tests, we hope that at a minimum, NTEP keeps this matter as an Informational Item or as a Withdrawn Item not properly supported by the advisement made.

As Chair Don Onwiler advised, I am going attempt to also post our letter on https://www.ncwm.com/publication-16 for committee viewing.
Thank you. If my letter needs further information, please contact me.

Ron Koch
Master Meter, Inc.
email: rkoch@mastermeter.com
Cell: 412-551-2663