



4545 W Brown Deer Road  
PO Box 245036  
Milwaukee, Wisconsin 53224-9536  
414-355-0400 | 800-876-3837

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California Energy Commission  
Dockets Unit  
Docket # 12-AAER-2C  
docket@energy.ca.gov

California Energy Commission <b>DOCKETED</b> <b>12-AAER-2C</b>
TN 70754 MAY 10 2013

RE: 2013 Water Appliances Efficiency Rulemaking

To Whom It May Concern:

We would like to thank you for including Badger Meter in your quest for information regarding water appliances efficiency rulemaking. While a water meter does not fall under Title 20, we are happy to provide you with background information regarding utility water meters.

Utility water meters consist of a variety of sizes and technologies and are used in various applications ranging from small residential services to large master meter service lines. All states require utility water meters to meet the operation and performance standards of ANSI/AWWA C700 through C713 as determined by the meter type. The purpose of these standards is to ensure that water meters used by utilities meet appropriate test flow and accuracy requirements. See the attached Appendix A for a reference list of AWWA standards. As a supplement to these standards, the AWWA Water Meters – Selection, Installation, Testing and Maintenance manual M-6 includes guidance on testing water meters and also provides requirements for meter accuracies. You can obtain a copy of the standards and the M-6 manual directly from AWWA.

More importantly, over the last few decades there have been considerable developments in automated (AMR/AMI) meter reading technologies. These technologies provide water utilities and in some cases, homeowners, with water consumption information including leak detection at every metered service on a monthly, daily or even hourly basis. These systems are specifically designed to give visibility to water consumption patterns to promote conservation and the efficient use of water.

In advance of your May 31, 2013 Staff Workshop on water appliances, Badger Meter hopes that this information will prove to be useful. We look forward to providing more feedback during the formal rule making process.

Sincerely,

**BADGER METER**

A handwritten signature in blue ink that reads 'George De Jarlais'.

George De Jarlais  
Principal Engineer, Mechanical  
[gdejarlais@badgermeter.com](mailto:gdejarlais@badgermeter.com)

cc: William Bergum, Badger Meter, VP – General Counsel & Secretary  
Kim Stoll, Vice President – Sales and Marketing

## APPENDIX A

### Summary of AWWA Standards for Utility-type Water Meters\*

- C700 nutating disc and oscillating piston positive displacement meters, with bronze main-cases, in sizes from ½" (1/4 to 15 gpm) to 2" (2 to 160 gpm).
- C701 turbine meters. Class I turbines range in size from ¾" (1.5 to 30 gpm) up to 6" (15 to 1300 gpm). Class II turbines range in size from 1-1/2" (4 to 120 gpm) up to 20" (300 to 12000 gpm).
- C702 compound meters in sizes 2" (1/4 to 160 gpm) to 8" (2 to 1600 gpm).
- C703 fire service meters. Type I proportional devices range in size from 3" (minimum flow determined by the by-pass meter selected, maximum flow 400 gpm) to 10" (minimum flow determined by the by-pass meter selected, maximum flow 4400 gpm). Type II compound devices range in size from 3" (minimum flow determined by the by-pass meter selected, maximum flow 350 gpm) to 10" (minimum flow determined by the by-pass meter selected, maximum flow 4400 gpm). Type III turbine devices range in size from 3" (4 to 350 gpm) to 10" (35 to 4400 gpm).
- C704 propeller meters in sizes from 2" (45 to 120 gpm) to 72" (9000 to 115000 gpm).
- C708 multijet meters in sizes from 5/8" (1/4 to 20 gpm) to 2" (2 to 160 gpm).
- C710 nutating disc and oscillating piston positive displacement meters with plastic main-cases in sizes from ½" (1/4 to 15 gpm) up to 1" (3/4 to 50 gpm).
- C712 singlejet meters in sizes from 5/8" (1/4 to 20 gpm) up to 6" (1-1/2 to 1000 gpm).
- C713 fluidic oscillator meters in sizes from ½" (1/4 to 15 gpm) up to 2" (2 to 160 gpm).

AWWA subcommittees are also working on additional water meter standards, including meters used in residential fire sprinkler installations and solid-state water meters for larger line sizes.

NIST Handbook 44, Section 3.36, covers utility-type water meters, in sizes ½" (1/4 to 8 gpm) to 2" (2 to 120 gpm). Section 3.36 is not specific to any one metering technology, and has accuracy tolerances comparable to those of AWWA standards.

\*Please see the actual AWWA standards listings.