Sizing Water Service Lines and Meters

AWWA MANUAL M22

Second Edition

American Water Works Association

Science and Technology

AWWA unites the drinking water community by developing and distributing authoritative scientific and technological knowledge. Through its members, AWWA develops industry standards for products and processes that advance public health and safety. AWWA also provides quality improvement programs for water and wastewater utilities.

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Foreword

This manual contains information needed to estimate customer demand and maximum expected flow that can be used to size new service lines and meters. A field method of demand profiling is presented that can be used to evaluate actual customer use patterns and help optimize meter size selection. The data presented in the manual were obtained from field measurements, utility surveys, technical publications, and hydraulic design calculations. This information has been condensed into a simplified format to facilitate its use. The methods contained in this manual can be used by technicians, architects, and engineers to address most service conditions. However, there may be special cases where the design is beyond the scope of this manual.

If you have any comments or questions about this manual, please call the AWWA Volunteer & Technical Support Group, 303.794.7711, FAX 303.795.7603, or write to the group at 6666 West Quincy Avenue, Denver, CO 80235-3098.

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Acknowledgments

The American Water Works Association published the first edition of Manual M22, *Sizing Water Service Lines and Meters* in 1975. The manual was the first effort to provide guidance to the water industry on sizing water meters and services to meet the objectives of water utilities and their customers. The AWWA Distribution and Plant Operations Division recognized that the manual was not meeting the needs of AWWA members or professionals who worked with utilities in formulating sizing recommendations. The Customer Metering Practices Committee is responsible for updating the manual. In 1995 a manual revision subcommittee was established to review the existing manual and begin the process of developing an updated version and incorporating the impacts of existing technology into this sizing process. The efforts of that subcommittee resulted in this revision of the meter and service line sizing manual.

The members of the subcommittee who were involved with revising this manual include:

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This manual was approved by the Customer Metering Practices Committee (membership at the time of approval):

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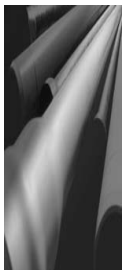

Chapter 1

Introduction

OVERVIEW

This manual is the second edition of AWWA Manual M22 *Sizing Water Service Lines and Meters*. The first edition was printed in 1975. Although this new edition expands the ways to approach the sizing issue for water service, much additional work is recommended through future manual revisions to keep abreast of changing water demands and new information.

Manual M22 is premised on the notion that having more information about a specific sizing situation will result in the best sizing decision from the tap to the meter. The authors recognize that the 55,000-plus water utilities and countless number of professionals who may be using this manual have varying degrees of familiarity regarding their local water demand patterns and peak demand profiles. This document is structured to encourage water utilities and water professionals to study and understand their own local water demands, to provide methods to identify real-time peak demand requirements, and, from this platform of knowledge, to approach sizing decisions and policies with adequate information.

A brief description of the manual content follows. The manual initially focuses on water demand patterns and issues. Next, demand profile products widely used to accurately measure real demands and provide necessary information for final meter and line sizing decisions are discussed. The manual concludes with guidelines and tools for making meter and service-line sizing decisions. It should also be noted that the manual includes techniques for sizing both new meters and existing meters, which may need to be resized because of changing conditions or initial sizing decisions. These techniques may differ in particular for existing meters where accurate real-time demand flow profile data can be collected to enhance meter sizing decisions.

Chapter 2: Consumer Water Demands

The manual is structured to establish water demand as the fundamental factor to consider when sizing water service lines and meters. Today more is known and understood about general water demand patterns and peak demands because of the increasing focus on demand management in the water industry. Many water demand