Developing Rates for Small Systems

Second Edition

American Water Works Association
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PURPOSE

In 2012, the American Water Works Association (AWWA) published the sixth edition of AWWA Manual M1, Principles of Water Rates, Fees, and Charges. That manual provides comprehensive guidance on establishing rates and charges for water service. The methods and examples contained in Manual M1, while recommended and appropriate for many water utilities, may prove to be overly complex and burdensome for others. This burden applies particularly to the development of cost-of-service rates. Such rates require the determination of revenue requirements by customer class before designing and adopting a rate structure.

Recognizing the limitations Manual M1 may have for smaller systems, or larger systems without sufficient data or rate-making capability, the AWWA Rates and Charges Committee (authors of Manual M1) developed the idea for a “Manual M1-type” alternative. A rate manual for small systems provides guidelines for the development of rates for utilities that lack the data and resources needed to apply the methods described in Manual M1. For these utilities, this manual—Developing Rates for Small Systems—provides guidance in developing rates when data and information may be lacking. The Rates and Charges Committee encourages all utilities to use Manual M1 as the primary guidance tool but believes this manual fills a need for small systems.

INTENDED AUDIENCE

This manual is intended to serve as a resource for managers (and others) of small water systems in the determination of rates for water service. Other resources, for example, Manual M1 and state and local government agencies, may also be of value in the preparation of rates for small systems. However, this manual focuses on the unique attributes of small systems as related to financial planning and rate design. Managers and operators of small systems and their advisors (financial, accounting, and engineering professionals) should find this manual useful in preparing water rates that recover costs using generally accepted cost-based practices.

For purposes of this manual and for those who might benefit from its use, there is no reason to specifically define a small system in terms of connections or population. Rather than define a small system in either of these terms, and therefore restrict or limit the applicability of this manual, the characteristics of the systems to which this manual may apply are the primary consideration. For example, such factors include

- A lack of or limited customer or demand data
- A system that predominately serves only a single class of customers, e.g., residential accounts
- Limited system peak-day and peak-hour data
- Limited or nonexistent fixed-asset data

Regardless of size, water systems with these and other similar characteristics will likely benefit from this manual. So although this manual is generally written for systems
serving a limited population, any system having one or more of the characteristics listed above may also find it useful.

At the same time, this manual may not be applicable for many water systems. Systems with a rapidly growing or diverse customer base, those with a large industrial customer or customer base with significant outside city or wholesale service arrangements, or those with contracts requiring cost-of-service–based rates should refer to Manual M1 for guidance in financial planning, cost allocation methods, and rate design. Systems seeking to materially modify their rate design approach would also benefit from the information contained in Manual M1. In addition, Manual M29, Water Utility Capital Financing, should be reviewed as well when developing a financial plan.

UNDERLYING FINANCE AND RATEMAKING PRINCIPLES

The AWWA has established policies for finance, accounting, and rates. These AWWA policies provide direction to AWWA members and the volunteers that produced this manual. These policies are updated and generally available from AWWA. The policies included in the preparation of this manual were those revised by the Board of Directors on January 17, 2010.

The relevant AWWA policies for this manual include:

1. Water utilities’ revenues from water service charges, user rates, and capital charges (e.g., impact fees and system development charges) should be sufficient to enable utilities to provide for:

   - Annual operation and maintenance expenses
   - Capital costs (e.g., debt service and other capital outlays)
   - Adequate working capital and required reserves

2. Water utilities should account for and maintain their funds in separate accounts from other governmental or owning entity operations. Water utility funds should not be diverted to uses unrelated to water utility services. Reasonable taxes, payments in lieu of taxes, and/or payments for services rendered to the water utility by a local government or other divisions of the owning entity may be included in the water utility’s revenue requirements after taking into account the contribution for fire protection and other services furnished by the utility to the local government or to other divisions of the owning entity.


4. Modifications may be made to satisfy the financial and management control reporting needs of the utility and to meet the requirements of legislative, judicial, or regulatory bodies.

5. Water rate schedules should be designed to distribute the cost of water service equitably among each type and class of service. Rate-setting practices that are not based on cost of service may be appropriate in some situations, subject to legal review and approval, provided they reflect market conditions, the benefits received by the users of the service, and an appropriate balance of the goals and objectives essential to the public good. Any rate-setting practice not based on cost of service that is implemented by a utility should be fully disclosed to its customers, regulators, and the financial community. Such disclosure should identify each such rate-setting practice, its expected benefit, and its impact on the utility’s customers.

6. Water utilities should maintain asset records that detail sufficient information to provide for the monitoring and management of the physical condition of infrastructure. These asset records should also support planned and preventive maintenance programs and budgets adequate to maintain the utility’s assets at a level of service consistent with good utility practice. Utilities should annually provide comparative information to customers, the financial community, and...
the general public about the utility’s sustained capability to provide water service and generate revenue levels necessary to protect the financial investment of others in the utility. Such information could include historical expenditures for renewal and replacement during each of the past several years, as well as the revenues that would be generated under planned and adopted rates to support renewal and replacement during each of the next several years.

OVERVIEW OF THE MANUAL

This manual contains five chapters and three appendices:

• Chapter 1: Basics of Water Ratemaking—presents an overview of the rate-setting process.
• Chapter 2: Customer Account and Usage Data—discusses the importance and use of system and customer account and usage data in the rates-setting process and begins a case study that presents this type of data for an example small utility.
• Chapter 3: Preparing a Financial Plan and Evaluating Revenue Sufficiency—discusses the types of costs often encountered in a small water utility, the establishment of reserves, and the process of developing a projection of costs and the compilation of a cash flow statement for use in projecting the need for future revenue adjustments. Continuing the case study, this chapter calculates revenues from current rates based on the customer and usage data contained in chapter 2. This chapter also discusses the process of determining revenue requirements and presents alternatives (as part of the case study) for increasing revenues, with consideration given to the use of reserves and the impact on customers.
• Chapter 4: Rate Design—discusses considerations and alternatives in the design of rates and illustrates a rate-design option based on the case study developed in the previous chapters.
• Chapter 5: The Rate Adoption Process—presents a variety of issues associated with the rate design process, including system development charges and funding of capital infrastructure, rates by customer class, affordability, public involvement, and the regulatory process for approval of rates (for investor-owned and some government-owned utilities).
• Appendix A: Alternative Cash Flow Plans—presents complete alternative cash flow plans.
• Appendix B: Examples of Financial Policies—presents various financial policies that utilities should consider.
• Appendix C: Frequently Used Financing Sources for Water Utilities—presents possible funding alternatives for small water utilities.
The AWWA Management and Leadership Division gratefully acknowledges the contributions made by those volunteers who drafted, edited, and provided the significant and critical commentary essential to updating M54. The Editorial Review Board members dedicated countless hours in the final stages of preparation of this edition to ensure the overall technical quality, consistency, and accuracy of the manual.

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Basics of Water Ratemaking

**BASIC PREMISE**

Water utility services are best provided by autonomous and financially independent utilities. Autonomous service means that the utility does not rely in any substantial way on outside agencies or entities for financial support. This also implies that the revenues collected by the utility are sufficient to operate and maintain the fixed assets as well as meet the ongoing operational needs of the utility over time while minimizing long-term financial costs for the users.

**WATER UTILITY SERVICE**

Although water itself, whether obtained from surface water or groundwater sources, is often free, the collection, treatment, and distribution of water to customers are not free. Services that are typically provided by water utilities include: water supply, storage, treatment, transmission, distribution, fire protection, metering, administration, billing, and customer service. The cost of each of these functions may be tracked in the utility’s cost accounting system by various levels of detail. The cost of water utility service is typically expressed in annual operations and maintenance and annual capital costs.

**FINANCIAL SELF SUFFICIENCY**

The financing of water utilities in North America relies substantially on rates and fees charged to the utility’s customers. Other sources of financing (e.g., property tax revenue,
support from the community’s general governmental funds, federal and state grants) have become increasingly less common. Meeting the financial needs of the utility has become an important responsibility of the utility’s management and policymakers.

THE FINANCIAL PLAN

A financial plan is (see chapter 3) used by a utility to ensure its long-term capital and operating needs are met by future water rates. Figure 1-1 presents a basic schematic of a financial plan. In addition to annual operation and maintenance costs the plan should also address the capital costs needs of the utility. For utility planning, a multiyear financial plan is recommended that determines the annual revenue needs to prudently fund the utility’s operating and capital needs.

An engineering master plan is the ideal starting point for determining capital costs. An engineering study of the infrastructure needed to serve projected levels of water demand in the longer term provides such information. The next step is the development of a capital improvements program (CIP). A CIP is a systematic listing of needed improvements ordered by priority and year. It usually spans a minimum of five years but may be longer. Ongoing operational costs also need to be studied. These include treatment costs, staff, administration, ongoing maintenance, meter reading, billing, and so on.

COST-OF-SERVICE RATE STUDY

Figure 1-2 presents six commonly followed steps to conduct a cost-of-service rate study. These steps are more fully described in AWWA Manual M1. A brief description of the process follows.

The first step in developing cost-of-service rates is to determine the revenue requirements. The revenue requirements for most utilities are taken directly from the utility’s financial plan discussed in later in chapter 3 of this manual. The rates calculated by the cost-of-service study are set to generate an amount of revenue equal to the revenue requirements.
As a next step, in addition to determining revenue requirements, a cost-of-service study will often examine how the utility places customers into classes. Some small systems may have only one class of customers. Others may have separate classes for single-family residential, multifamily residential, commercial, institutional, irrigation, and so on. When a utility separates customers into classes, it generally adopts separate rates for each class to recognize the differences in the costs incurred to serve each class.

The third step in a cost-of-service study is normally to assign costs to functions. Common water system functions include source of supply, treatment, pumping, storage, transmission and distribution, meters and services, customer service, and billing.

After assigning costs to water system functions, the rate analyst develops unit costs for each function based on how the utility’s customers use the system. These unit costs serve as the basis for the cost-of-service rates.

Once the unit costs by function are determined for each function, the analyst distributes these costs to each customer class by multiplying the units of service demanded by each customer class by the unit costs for each function. The product resulting from this multiplication is called the cost-of-service for the customer class.

The final step in a typical cost-of-service study is to select a rate design. The rate design is the specific set of rates for each class of customer to recover the cost-of-service for that customer class. Most rate designs use the unit costs developed in a cost-of-service study to set the fixed charges (i.e., that part of the rate design that does not vary with the amount of water used but may vary with the size of the meter) and the volume charges. Chapter 4 of this manual discusses the rate design process.

IMPLEMENTING RATES

After a rate design has been selected and rates calculated, the utility should consider engaging its customers in a public process. That process could range from a simple public presentation to more complicated presentations using study/focus groups with representative customers. Chapter 5 discusses the rate adoption process in more detail.
PERIODIC REVIEWS

Regular reviews of the utility’s financial status are critically important to stay abreast of revenue needs, meet operational needs, and help the utility to achieve long-term cost efficiencies. Many utilities benefit from conducting these reviews annually as part of their budgeting process. In those cases, the utility may update its financial plan based on changes that have occurred since adopting the current rates. Minimally, the periodic review should include:

- Assessments of revenue received versus expenses
- Operational cost trends versus budgets
- Capital cost expenditures trends versus capital plan
- Maintaining sufficient operational and capital reserves
- Condition assessment of major fixed assets
- Trends in customer use (including the effects of conservation)