**U.S. Environmental Protection Agency**
Water Conservation Plan Guidelines

# PART 2
# OVERVIEW OF THE GUIDELINES

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# 1. WATER CONSERVATION GUIDELINES AND THE SDWA

Section 1455 of the Safe Drinking Water Act (SDWA) requires the U.S. Environmental Protection Agency to publish these guidelines:

> Sec. 1455. (a) Guidelines.—Not later than 2 years after the date of enactment of the Safe Drinking Water Act Amendments of 1996, the Administrator shall publish in the Federal Register guidelines for water conservation plans for public water systems serving fewer than 3,300 persons, public water systems serving between 3,300 and 10,000 persons, and public water systems serving more than 10,000 persons, taking into consideration such factors as water availability and climate.
>
> (b) Loans or Grants.—Within 1 year after publication of the guidelines under subsection (a), a State exercising primary enforcement responsibility for public water systems may require a public water system, as a condition of receiving a loan or grant from a State loan fund under section 1452, to submit with its application for such loan or grant a water conservation plan consistent with such guidelines.

The guidelines are addressed to *water system managers.* Use of the guidelines is *not* required by federal law or regulation; however, water systems can benefit from conservation planning, whether or not it is required by law. It is up to each State to decide whether or not to require water systems to file conservation plans consistent with these or any other guidelines. *It is very important that water system managers understand and comply with their own state, regional, or local regulatory requirements.*

# 2. Benefits of Conservation and Planning

Water conservation consists of *any beneficial reduction in water losses, waste, or use.* In the context of utility planning, the term "beneficial" usually means that the benefits of an activity outweigh the costs. Conserving water can be beneficial in many ways, but one important reason for conservation is that it can help systems avoid, downsize, or postpone water and wastewater projects. The facilities used to treat and deliver drinking water (and to collect and treat wastewater) are sized to meet demand; if the level of demand is inflated by wasteful use, people pay more in both capital and operating costs than necessary to provide safe and adequate water supply and wastewater services. Moreover, when the cost of supplying drinking water and processing wastewater is reduced, financial resources can be used to meet other needs.

In connection with infrastructure funding, the value of conservation is appropriately assessed in terms of supply, treatment, and distribution costs that can be *avoided* because of planned reductions in water demand. Conservation becomes more valuable over time because future water supplies and the facilities needed to deliver them are expected to cost more (even when adjusting for inflation). In other words, permanent conservation savings that are realized today will have increasing value into the future.

***Benefits of Water Conservation***

*In order to meet the needs of existing and future populations and ensure that habitats and ecosystems are protected, the nation's water must be sustainable and renewable. Sound water resource management, which emphasizes careful, efficient use of water, is essential in order to achieve these objectives.*

*Efficient water use can have major environmental, public health, and economic benefits by helping to improve water quality, maintain aquatic ecosystems, and protect drinking water resources. As we face increasing risks to ecosystems and their biological integrity, the inextricable link between water quality and water quantity becomes more important. Water efficiency is one way of addressing water quality and quantity goals. The efficient use of water can also prevent pollution by reducing wastewater flows, recycling industrial process water, reclaiming wastewater, and using less energy.*

**Source: EPA Office of Water, *Statement of Principles on Efficient Water Use* (December 1992).**

Planning is a means of anticipating the future and organizing activities in response. Conservation planning can help water system managers take inventory of their existing efforts and identify new opportunities. Planning can help utilities manage competing goals and rising costs, such as those associated with SDWA compliance, infrastructure improvement, and meeting demand growth. The investment that water system managers make in conservation planning should yield savings that can be measured in terms of water and dollars.

The planning approach suggested by these Guidelines is designed to be accessible and relatively inexpensive. It is very important for utilities to know exactly what planning requirements apply in their states and how other plans already prepared by the system might be used in conjunction with these Guidelines.

# 3. Overview of the Planning Process

These Guidelines provide a framework that water managers can use to assess the cost-effectiveness of conservation, as well as the value of conservation in avoiding, lowering, or postponing supply-side capital and operating costs.

## Table 2-1: System Size Categories and Type of Guidelines

| System Size Category (SDWA) | Applicable Guidelines |
|---|---|
| Serves fewer than 3,300 people | Basic Guidelines<br>or<br>Capacity-Development Approach [a] |
| Serves between 3,300 and 10,000 people | Basic Guidelines<br>Up to 10,000 people served |
| Serves more than 10,000 people | Intermediate Guidelines<br>Up to 100,000 people served |
| | Advanced Guidelines<br>More than 100,000 people served |

[a] States also can promote water conservation planning by small water systems through their capacity-development strategies. Some states may provide assistance to small systems in the planning and implementation of water conservation programs through their capacity-development strategies.

EPA has prepared three sets of Guidelines (as summarized in Table 2-1):

- The Basic Guidelines are designed for use by water systems serving populations of 10,000 or fewer. Some water systems, especially those serving fewer than 3,300 people, may be included in a Capacity-Development Approach, which addresses water conservation through state capacity-development strategies required by the SDWA. (See Section 5 of Part 1.) Systems should check with their state primacy agency for information and guidance about capacity development.

- The Intermediate Guidelines are designed for water systems serving between 10,000 and 100,000 people.

- The Advanced Guidelines are designed for water systems serving more than 100,000 people.

Which Guidelines are appropriate also may depend on various factors and conditions affecting water systems and their need for conservation planning. For example, smaller systems with constrained water supply resources may want to follow the Intermediate Guidelines. *Water system managers should check with their own state's rules, regulations, and recommendations about which Guidelines to follow.*

Each of the Guidelines follows a similar framework for the planning process; however, the Basic, Intermediate, and Advanced Guidelines vary in terms of the scope of the analysis and the amount of detail required when preparing a conservation plan. The Basic Guidelines provide a very simplified planning approach. The Intermediate and Advanced Guidelines lead to a comprehensive conservation plan, as outlined in Table 2-2. The outline may be adapted to better meet system needs and state requirements.

Many of the worksheets refer to gallons as the unit for measuring water quantity. However, water systems should use the unit of measurement that they typically use for planning, reporting, and other purposes. Water systems also should use available information resources (such as current demand forecasts) whenever feasible in order to expedite preparation of the conservation plan and avoid duplication of other efforts.

The Guidelines also focus on the benefits of conservation for water systems. It may be appropriate for many systems to expand the analysis to include wastewater systems, particularly in the assessment of benefits and costs. Conservation can help communities reduce the cost of wastewater facilities, as well as water facilities, and the Guidelines can provide a framework for making this assessment.

One important distinction among the Guidelines is the number of conservation measures recommended for consideration by managers. The Guidelines reflect a cumulative approach to conservation measures, which are organized into three levels (see Tables 1-3 and 2-3). Each level includes additional categories of measures. For example, the Intermediate Guidelines include more measures than the Basic Guidelines and the Advanced Guidelines include more measures than the Intermediate Guidelines. This framework recognizes the general continuum of conservation measures available to water systems with different needs and capabilities.

This organization of measures should not be interpreted to place a higher value on some measures over others. Water system managers and planners are strongly encouraged to consider the full range of conservation measures, which are described in Appendix A.

# Table 2-2: Contents of a Comprehensive Water Conservation Plan

1. SPECIFY CONSERVATION PLANNING GOALS
   - List of conservation planning goals and their relationship to supply-side planning
   - Description of community involvement in the goals-development process

2. DEVELOP A WATER SYSTEM PROFILE
   - Inventory of existing facilities, production characteristics, and water use
   - Overview of conditions that might affect the water system and conservation planning

3. PREPARE A DEMAND FORECAST
   - Forecast of anticipated water demand for future time periods
   - Adjustments to demand based on known and measurable factors
   - Discussion of uncertainties and "what if" (sensitivity) analysis

4. DESCRIBE PLANNED FACILITIES
   - Improvements planned for the water system over a reasonable planning horizon
   - Estimates of the total, annualized, and unit cost (per gallon) of planned supply-side improvements and additions
   - Preliminary forecast of total installed water capacity over the planning period based on anticipated improvements and additions

5. IDENTIFY WATER CONSERVATION MEASURES
   - Review of conservation measures that have been implemented or that are planned for implementation
   - Discussion of legal or other barriers to implementing recommended measures
   - Identification of measures for further analysis

6. ANALYZE BENEFITS AND COSTS
   - Estimate of total implementation costs and anticipated water savings
   - Cost effectiveness assessment for recommended conservation measures
   - Comparison of implementation costs to avoided supply-side costs

7. SELECT CONSERVATION MEASURES
   - Selection criteria for choosing conservation measures
   - Identification of selected measures
   - Explanation for why recommended measures will not be implemented
   - Strategy and timetable for implementing conservation measures

8. INTEGRATE RESOURCES AND MODIFY FORECASTS
   - Modification of water demand and supply capacity forecasts to reflect anticipated effects of conservation
   - Discussion of the effects of conservation on planned water purchases, improvements, and additions
   - Discussion of the effects of planned conservation measures on water utility revenues

9. PRESENT IMPLEMENTATION AND EVALUATION STRATEGY
   - Approaches for implementing and evaluating the conservation plan
   - Certification of the conservation plan by the system's governing body

# Table 2-3: Guidelines and Associated Conservation Measures [a]

| Measures | ← Basic Guidelines → | ← Intermediate Guidelines → | ← Advanced Guidelines → |
|---|---|---|---|
| **LEVEL 1 MEASURES** | | | |
| Universal metering [B] | ▪ Source-water metering<br>▪ Service-connection metering and reading<br>▪ Meter public-use water | ▪ Fixed-interval meter reading<br>▪ Meter-accuracy analysis | ▪ Test, calibrate, repair, and replace meters |
| Water accounting and loss control [A] | ▪ Account for water<br>▪ Repair known leaks | ▪ Analyze nonaccount water<br>▪ Water system audit<br>▪ Leak detection and repair strategy<br>▪ Automated sensors/ telemetry | ▪ Loss-prevention program |
| Costing and pricing [B] | ▪ Cost-of-service accounting<br>▪ User charges<br>▪ Metered rates | ▪ Cost analysis<br>▪ Nonpromotional rates | ▪ Advanced pricing methods |
| Information and education [B] | ▪ Understandable water bill<br>▪ Information available | ▪ Informative water bill<br>▪ Water-bill inserts<br>▪ School program<br>▪ Public-education program | ▪ Workshops<br>▪ Advisory committee |
| **LEVEL 2 MEASURES** | | | |
| Water-use audits [B] | | ▪ Audits of large-volume users<br>▪ Large-landscape audits | ▪ Selective end-use audits |
| Retrofits [A] | | ▪ Retrofit kits available | ▪ Distribution of retrofit kits<br>▪ Targeted programs |
| Pressure management [A] | | ▪ Systemwide pressure management | ▪ Selective use of pressure-reducing valves |
| Landscape efficiency [P] | | ▪ Promotion of landscape efficiency<br>▪ Selective irrigation submetering | ▪ Landscape planning and renovation<br>▪ Irrigation management |
| **LEVEL 3 MEASURES** | | | |
| Replacements and promotions [B] | | | ▪ Rebates and incentives (nonresidential)<br>▪ Rebates and incentives (residential)<br>▪ Promotion of new technologies |
| Reuse and recycling [B] | | | ▪ Industrial applications<br>▪ Large-volume irrigation applications<br>▪ Selective residential applications |
| Water-use regulation [B] | | | ▪ Water-use standards and regulations<br>▪ Requirements for new developments |
| Integrated resource management [B] | | | ▪ Supply-side technologies<br>▪ Demand-side technologies |

[a] See Appendix A for a description of the measures. Water systems should consider *at least* the measures listed under the guidelines applying to them.

[A] measure affects average-day demand

[P] measure affects maximum-day (peak) demand)

[B] measure affects both average and peak demand