



Information for States on Implementing the Capacity Development Provisions of The Safe Drinking Water Act Amendments of 1996

- Includes:
- Ensuring That All Community Water Systems and Nontransient, Noncommunity Water Systems Demonstrate Technical, Managerial, and Financial Capacity
 - Preparing Capacity Development Strategies
 - Assessing Capacity

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ACRONYMS

Acronym	Meaning
AMWA	Association of Metropolitan Water Agencies
ASDWA	Association of State Drinking Water Administrators
AWWA	American Water Works Association
CCE	Comprehensive Compliance Evaluation
CCN	Certificates of Convenience and Necessity
CCP	Composite Correction Program
CFR	Code of Federal Regulations
CIP	Capital Improvement Plan
CPE	Comprehensive Performance Evaluations
CWS	Community Water System
DEP	Department of Environmental Protection
DOH	Department of Health
DWSRF	Drinking Water State Revolving Fund
EPA	Environmental Protection Agency
FVT	Financial Viability Test
G&A	General and Administrative
MCL	Maximum Contaminant Level
MOU	Memorandum of Understanding
NARUC	National Association of Regulatory Utility Commissioners
NAWC	National Association of Water Companies

Acronym	Meaning
NCWS	Noncommunity Water Systems
NDWAC	National Drinking Water Advisory Council
NETA	National Environmental Training Association
NPDWR	National Primary Drinking Water Regulations
NRWA	National Rural Water Association
NTNCWS	Nontransient, Noncommunity Water System
O&M	Operations and Maintenance Cost
OGWDW	Office of Ground Water and Drinking Water
PUC	Public Utility Commission
PWS	Public Water System
RCAP	Rural Community Assistance Programs
RCW	Revised Code of Washington
RUS	Rural Utility Service
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SRF	State Revolving Fund
TNCWS	Transient Noncommunity Water Systems
WAC	Washington Administrative Code

CHAPTER 1:

Introduction to Technical, Managerial, and Financial Capacity of Water Systems

What is water system capacity?

Water system capacity is the ability to plan for, achieve, and maintain compliance with applicable drinking water standards. Capacity has three components: technical, managerial, and financial. Adequate capability in all three areas is necessary for a system to have “capacity.”

What is water system capacity development?

Capacity development is the process of water systems acquiring and maintaining adequate technical, managerial, and financial capabilities to enable them to consistently provide safe drinking water. The SDWA’s capacity development provisions provide a framework for States and water systems to work together to ensure that systems acquire and maintain the technical, managerial, and financial capacity needed to meet the Act’s public health protection objectives.

How does the SDWA address capacity development?

The SDWA as amended establishes a focus on capacity development through two major provisions. First the law requires States to develop and implement programs to ensure that new systems demonstrate capacity and to assist existing systems in acquiring and maintaining capacity. States failing to develop and implement such programs will have up to 20% of their DWSRF allotment withheld.

Second, the law ties a water system’s eligibility to receive assistance from a DWSRF to the system’s technical, managerial, and financial capacity. In short, the law prohibits DWSRF assistance to a system which lacks the technical, managerial, and financial capacity to ensure compliance with SDWA requirements. The only exception for systems lacking capacity is if they agree to undertake changes in operations, such as changes in ownership, management, accounting, rates, etc. These would apply if the State determines that the changes are necessary to ensure that the system has the technical, managerial, and financial capacity to comply with the SDWA over the long term. Section 1452(a)(3) establishes the prohibition on DWSRF assistance to a system lacking the capacity to ensure SDWA compliance unless the system agrees to restructuring changes to ensure it has the necessary technical, managerial, and financial capacity to comply with the Act over the long term.³

To which water systems do the SDWA’s capacity development provisions apply?

Section 1420(a), the new systems provision, applies to all new CWSs and all new NTNCWSs.

³ Section 1452(a)(3): *LIMITATION.- (A) IN GENERAL.- Except as provided in subparagraph (B), no assistance under this section shall be provided to a public water system that- (i) does not have the technical, managerial, and financial capability to ensure compliance with the requirements of this title; or (ii) is in significant noncompliance with any requirement of a national primary drinking water regulation or variance. (B) RESTRUCTURING.- A public water system described in subparagraph (A) may receive assistance under this section if - (i) the use of such assistance will ensure compliance; and (ii) if subparagraph (A)(i) applies to the system, the owner or operator of the system agrees to undertake feasible and appropriate changes in operation (including ownership, management, accounting, rates, maintenance, consolidation, alternative water supply, or other procedures) if the State determines that such measures are necessary to ensure that the system has the technical, managerial, and financial capability to comply with the requirements of this title over the long term.*

Section 1420(c), the capacity development strategy provision, applies to all PWSs, but States must consider which systems they will focus on.

Section 1452(a)(3), the prohibition of DWSRF assistance to PWSs which lack capacity, applies to all PWSs eligible for DWSRF assistance, which are CWSs, nonprofit NTNCWS, and nonprofit TNCWS.

What is a public water system (PWS)?

A PWS is a “system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year.” (40 CFR 141.2) This category includes community water systems (CWSs), nontransient noncommunity water systems (NTNCWSs), and transient community water systems (TNCWSs). There are approximately 172,000 PWSs nationwide.

What is a community water system (CWS)?

A CWS is a “public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.” (40 CFR 141.2) About 55,000 CWSs serve more than 246 million people.

Slightly more than 86 % of CWSs are “very small” (serving fewer than 500 persons) or “small” (serving fewer than 3,300 persons). Although a significant majority of CWSs, these systems serve just over 10 percent of the CWS service population. CWSs can be privately owned or publicly owned. A substantial number of privately-owned systems are “ancillary systems” they provide water as an ancillary function of their principal business. An example is mobile home parks, which provide water as an adjunct to their principal business. Fifty-three percent of CWSs serving between 25 and 100 persons are ancillary systems. Only 0.1 percent of CWSs serving more than 10,000 persons are ancillary systems. See Figure 1.

What is a nontransient noncommunity water system (NTNCWS)?

A NTNCWS is “a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 months per year.” (40 CFR 141.2) NTNCWSs are generally commercial or institutional establishments having their own water supply which serves 25 or more of the same people on a regular basis. Examples include schools, factories, office and industrial parks, and major shopping centers. Approximately 20,000 NTNCWSs across the nation serve some 6 million people. Over 96 % of NTNCWSs use ground water as their primary source. Ninety-nine percent of NTNCWSs are “very small” or “small”. Most are privately owned.

What is a transient, noncommunity water system (TNCWS)?

A TNCWS is a “non-community water system that does not regularly serve at least 25 of the same persons over six months per year.” (40 CFR 141.2) TNCWSs are generally commercial or not-for-profit establishments having their own water supply which serves 25 or more people per day, but not the same people on a regular basis. Examples include restaurants, roadside stops, campgrounds, and hotels.

What is technical capacity, and how can it be assessed?⁴

Technical capacity is the physical and operational ability of a water system to meet SDWA requirements. Technical capacity refers to the physical infrastructure of the water system, including the adequacy of source water and the adequacy of treatment, storage, and distribution infrastructure. It also refers to the ability of system personnel to adequately operate and maintain the system and to otherwise implement requisite technical knowledge.

A water system's technical capacity can be determined by examining key issues and questions, including:

- *Source water adequacy.* Does the system have a reliable source of drinking water? Is the source of generally good quality and adequately protected?
- *Infrastructure adequacy.* Can the system provide water that meets SDWA standards? What is the condition of its infrastructure, including well(s) or source water intakes, treatment, storage, and distribution? What is the infrastructure's life expectancy? Does the system have a capital improvement plan?
- *Technical knowledge and implementation.* Is the system's operator certified? Does the operator have sufficient technical knowledge of applicable standards? Can the operator effectively implement this technical knowledge? Does the operator understand the system's technical and operational characteristics? Does the system have an effective operation and maintenance program?

What is managerial capacity, and how can it be assessed?⁵

Managerial capacity is the ability of a water system to conduct its affairs in a manner enabling the system to achieve and maintain compliance with SDWA requirements. Managerial capacity refers to the system's institutional and administrative capabilities.

Managerial capacity can be assessed through key issues and questions, including:

- *Ownership accountability.* Are the system owner(s) clearly identified? Can they be held accountable for the system?
- *Staffing and organization.* Are the system operator(s) and manager(s) clearly identified? Is the system properly organized and staffed? Do personnel understand the management aspects of

⁴ Additional information on technical capacity can found within *Information for States on Implementing the Capacity Development Provisions of the Safe Drinking Water Act Amendments of 1996*.

⁵ Ibid.

regulatory requirements and system operations? Do they have adequate expertise to manage water system operations? Do personnel have the necessary licenses and certifications?

- *Effective external linkages.* Does the system interact well with customers, regulators, and other entities? Is the system aware of available external resources, such as technical and financial assistance?

What is financial capacity, and how can it be assessed?⁶

Financial capacity is a water system's ability to acquire and manage sufficient financial resources to allow the system to achieve and maintain compliance with SDWA requirements.

Financial capacity can be assessed through key issues and questions, including:

- *Revenue sufficiency.* Do revenues cover costs? Are water rates and charges adequate to cover the cost of water?
- *Credit worthiness.* Is the system financially healthy? Does it have access to capital through public or private sources?
- *Fiscal management and controls.* Are adequate books and records maintained? Are appropriate budgeting, accounting, and financial planning methods used? Does the system manage its revenues effectively?

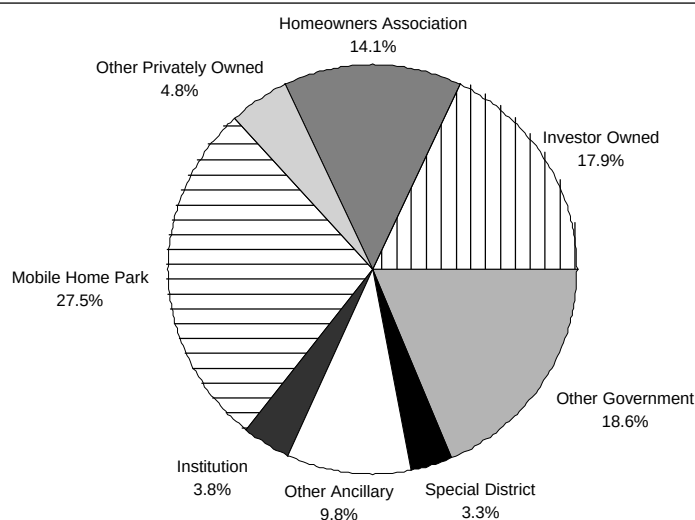
How are technical, managerial, and financial capacity related?

Many aspects of water system operations involve more than one kind of capacity. Infrastructure replacement or improvement, for example, requires technical knowledge, management planning and oversight, and financial resources. A deficiency in any one area could disrupt the entire effort. The relationship between the three areas of capacity is illustrated in Figure 2. Additional information on technical, managerial, and financial capacity and how they relate to one another can be found in *Information on Implementing the Capacity Development Provisions of the Safe Drinking Water Act Amendments of 1996*.

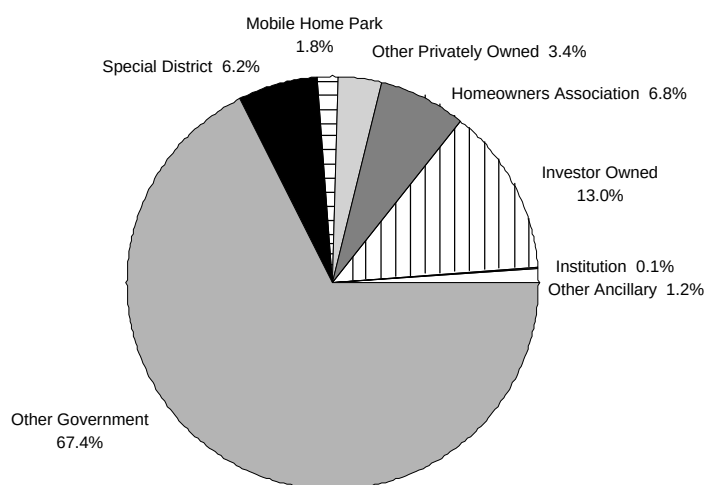
⁶ Ibid.

FIGURE 1

Ownership of Systems Serving Population 25 - 500
(Percent of Systems)



Ownership of Systems Serving Population > 500
(Percent of Systems)



Note: Percentages do not add to 100% due to rounding.

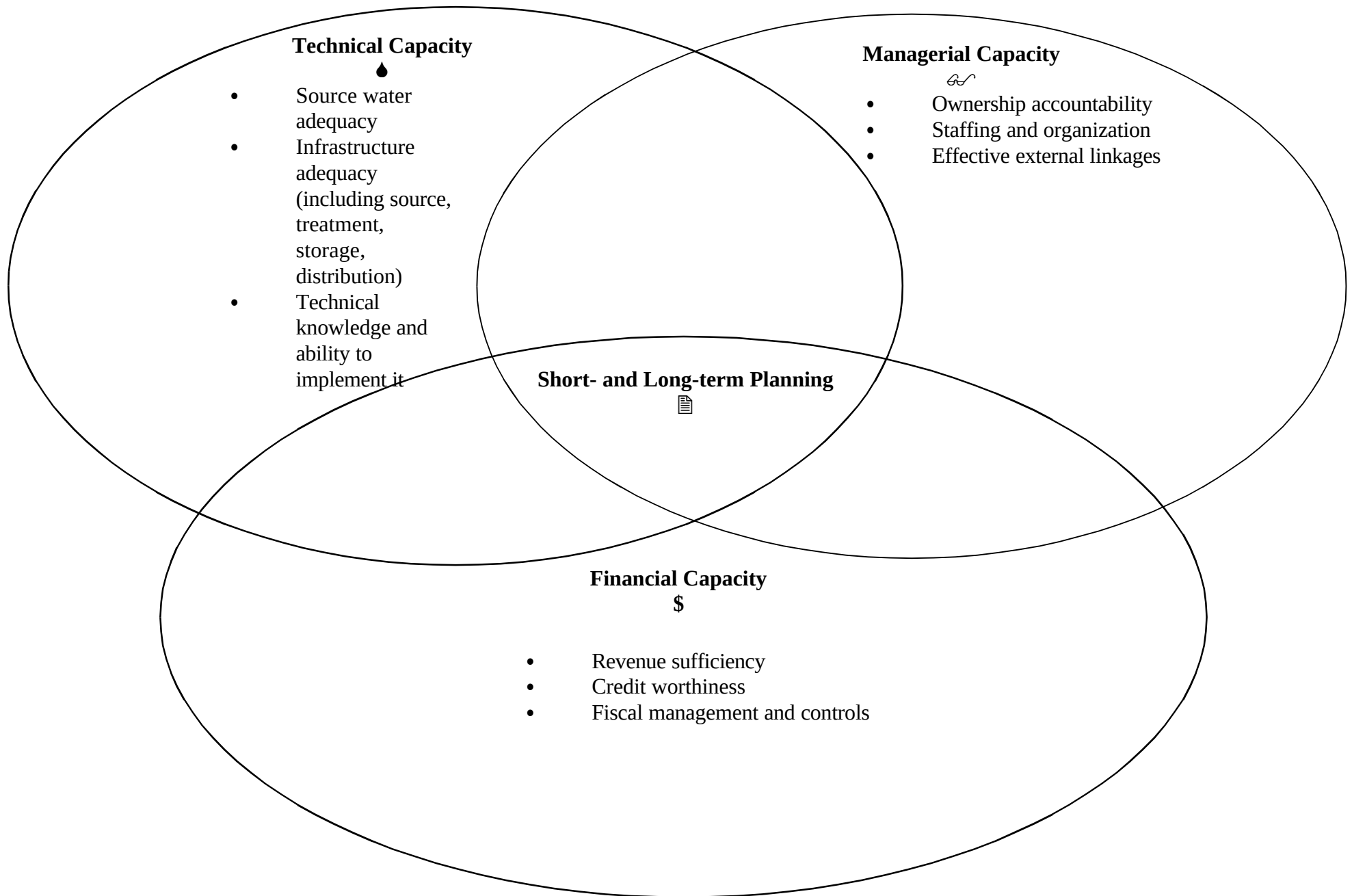


Figure 2
Technical, Managerial, and Financial Capacity

CHAPTER 2:

Ensuring That All New CWSs and NTNCWSs Demonstrate Technical, Managerial, and Financial Capacity

INTRODUCTION

SDWA §1420(a) directs the EPA Administrator to withhold a portion of a State’s allotment under §1452 unless the State “has obtained the legal authority or other means to ensure that all new community water systems and new nontransient, noncommunity water systems . . . demonstrate technical, managerial, and financial capacity with respect to each national primary drinking water regulation in effect, or likely to be in effect, on the date of commencement of operations.”

Under this provision, a State must develop and implement a functional program to ensure that all new CWSs and new NTNCWSs beginning operation after October 1, 1999 demonstrate technical, managerial, and financial capacity. States should:

- Demonstrate a basis of authority for ensuring that all such systems show technical, managerial, and financial capacity. This authority could include State legislation, regulations, policies, or other implementing authorities that provide the State with the ability to intervene in the process of developing new CWSs or NTNCWSs to obtain assurances of technical, managerial, and financial capacity.
- Identify at least one control point. A control point is a crux in a new system’s development at which a State (or other unit of government) can exercise its authority to ensure the new system’s capacity. Although local governments can play an important part in the new system capacity-assurance process, each State must have one or more control points at which it directly exercises its authority.
- Present a plan for implementation of the new system capacity-assurance program.

The next section of this chapter provides an overview of State authority and associated control points. The third section discusses strategies that can be used to enhance State authority. The final section of this chapter reviews special issues that may arise when dealing with proposed NTNCWSs.

AUTHORITY AND CONTROL POINTS

Table 1 provides a summary of the types of authority and the associated control points where States can intervene in the development process to ensure new system capacity. Columns in the table provide the following information:

- A. Basis of Authority.** Statutes, regulations, rules, or policies are typically the primary bases of authority for government agencies to ensure the technical, managerial, and financial capacity of new water systems.

- B. **Agency Vested with Authority.** The governmental agency with jurisdiction to make authoritative determinations about new water system capacity.
- C. **Control Points.** The specific points in the process of new water system development where agencies can exercise their authority to ensure capacity.
- D. **Type of Capacity Assessed.** Agencies can assess technical, financial, or managerial capacity of proposed new water systems. This column generalizes about the type of capacity assessed at each control point.

The authority vested in State and local governments varies substantially from State to State. Not every jurisdiction has adequate authority to ensure new water system capacity. Some may find it necessary to seek more explicit or additional authority from State legislatures.

This chapter discusses the following types of authority:

- State Authority for Drinking Water Quality
- State Authority for Economic Regulation of Public Utilities
- State Authority for Water Resource Management
- State Authority for Revolving Loan Funds
- State Authority for Planning and Growth Management
- State Enabling Authority for Local Government
- State Authority for Public Safety
- Local Governmental Authority For Land Use, Planning, And Finances
- Federal Rural Utilities Authority
- Interstate Authorities and Compacts
- State Authority to Regulate Related Businesses

The discussion following Table 1 provides an overview of each type of authority and the agencies and control points with which it is associated. States may consider which control points are most appropriate for assessing each component of capacity for new systems.

Table 1: Potential Authorities and Control Points for Ensuring the Technical, Managerial, and Financial Capacity of New Water Systems

A.	B.	C.	D. Capacity Assessed		
Basis of Authority (Statutory or Other)	Agency Vested with Authority	Control Points for Ensuring New System Capacity	Technical	Managerial	Financial
State Authority for Drinking Water Quality	State drinking water primacy agency	Facility plan review and permit*			
		Operating permit*			
		Operator certification			
		Construction requirements for wells			
		Source water protection plans			
		System planning requirements			
State Authority for Economic Regulation of Public Utilities	State public utility commissions (PUCs)	Certificate of convenience and necessity*			
		Approval of system's investments (ratebase)			
		Approval of system's financial structure (debt and equity)			
		Approval of initial rates and rate design			
		System planning requirements			
State Authority for Water Resource Management	State water resource agency	Withdrawal and source development permits*			
		Approval of water rights			
		System planning requirements			
		Approval of environmental impact assessment.			
State Authority for Revolving Loan Funds	State financial assistance agency	Eligibility and approval of grants and loans			
State Authority for Planning and Growth Management	State planning, growth management, or development agency	Review and approval of plans*			
	Regional planning councils (intrastate)	Review and approval of plans			
State Enabling Authority for Local Government	Secretary of State (or other State agency)	Authorization of local governments and districts			
		Subdivision and platting regulations			
	State financial control agency	Authorization of local government financing (public systems)			
State Authority for Public Safety	State fire marshal (or other agency)	Permits and approvals related to fire protection codes			
Local Governmental Authority for Land-Use, Planning, and Finances	Municipalities, counties, and special districts	Subdivision, zoning, and land-use approvals*			
		Construction permits and approvals			
		Franchise approval*			
		Local planning approvals			
		Authorization of local government financing			
Federal Rural Utilities Authority	Rural Utilities Service	Approval of grants and loans			
Interstate Authorities and Compacts	River basin commissions	Basin withdrawal permits*			
		Basin planning and resource management requirements			
State Authorities to Regulate Related Businesses	Banking regulators	Loan approval by commercial lenders			
	Insurance regulators	Insurance approval by insurers			

*principal approval processes for creating a water system.

State Authority for Drinking Water Quality

State Drinking Water Primacy Agency

Implementation of SDWA's provisions, as well as implementation of State statutes, is generally vested in State primacy agencies. Their comprehensive jurisdiction makes State primacy agencies critical for ensuring new system capacity. Some States provide only the minimal authority required to carry out the SDWA, while others define the primacy agency's mission in terms of broader public health objectives. In recent years, some States have added capacity concepts to their statutes.

Within the broader function of water quality regulation, State primacy agencies exercise authority related to certification, technical standards, and planning. Control points implemented by State primacy agencies include:

- **Plan and specification review and/or construction permit.** State SDWA primacy agencies generally require a review of plans and specifications or a permit before construction can begin on a new PWS. The plan approval or permitting process itself presents the major control point in any new system capacity assurance program, affecting all PWSs and providing an opportunity to impose additional requirements and guarantees.
- **Construction requirements for springs and wells.** Some States may require new systems using groundwater resources to meet construction requirements for springs and wells. Meeting well-construction requirements may be a signal of technical capacity.
- **Operating permit.** In addition to approving plans and specifications and issuing construction permits, primacy agencies may grant a renewable operating permit. Primacy agencies also may grant licenses to operate ancillary facilities such as mobile home parks, nursing homes, and other supervised living facilities.
- **Operator certification.** A facility operator generally must be certified as technically competent. States vary in certification requirements for different categories of systems, as well as in the requirements related to the on-site presence of the operator.
- **Approval of source water protection plan.** Primacy agencies may require new systems to submit a source water protection plan. The ability to do so may signal technical as well as managerial capacity.
- **System planning requirements.** Primacy agencies may also require a comprehensive business plan or multi-year operating plan from new water systems above and beyond the basic facilities plan.

State Authority for Economic Regulation of Public Utilities

State Public Utility Commissions

Forty-five State public utility commissions (PUCs) regulate water utilities. The PUCs in Georgia, Michigan, Minnesota, North Dakota, and South Dakota do not have this authority. Commissions typically wield authority over investor-owned or private water systems, although commissions in several States have some authority over publicly owned systems.

Several State commissions have addressed water system capacity by conducting formal proceedings on small system policies (New York); developing and issuing policy statements (California, Connecticut, and Pennsylvania); and engaging in Memoranda of Understanding (MOUs) with sister agencies (Connecticut, Missouri, North Carolina, Pennsylvania, and Washington).

Within their broader role in economic regulation, State PUCs exercise authority related to certification, ratemaking, and planning. Control points implemented by the State commissions include:

- **Issuance of certificate of convenience and necessity.** Most PUCs require new water systems to obtain a certificate of convenience and necessity (or need) that establishes their service territory and places other conditions on service. PUC approvals or certificate modifications may be required for extensions of service to new developments outside the original service territory. PUC certificates can be conditioned by the requirement of a performance bond or other financial guarantees.
- **Approval of system investments (ratebase).** Many PUCs can review the new water system's ratebase investments, either as part of the certification process or separately. Some commissions use informal benchmarks (e.g., investment per customer) to evaluate whether the investment in the system is sufficient to maintain financial health.
- **Approval of financial structure.** Many PUCs can review the new water system's financial structure (e.g., its use of debt and equity instruments and its debt to equity ratio). Commissions also may require a business or financial plan focused on cost-of-service, financing, and rate issues.
- **Approval of initial rates and rate design.** Initial rates must be approved by the State PUC for all systems subject to ratemaking jurisdiction. Commission review generally focuses on whether rates adequately reflect the cost of providing service and properly balance the interests of investors and ratepayers. Rate design refers to the differentiation of rates based on class of service, amount of water used, period of use, and other factors.

- **System planning requirements.** The PUC role in planning varies and may be somewhat limited, even for investor-owned systems. Increasingly, however, commissions require some form of capital planning, as well as other types of system planning. Commissions also often play a review and advisory role in planning processes required by other State agencies. In some cases, PUCs may be asked to review financial aspects of plans prepared by utilities not under their jurisdiction.

State Authority for Water Resource Management

State Water Resource Agency

The authority for water quantity regulation generally rests with State natural resource agencies (which may be identical to the primacy agencies). The authority of the water resources agency may derive from general environmental laws or separate statutes. The nature of authority over water quantity issues and the instruments of water resource policy (e.g., rights, permits, and registration systems) vary by geographic region and by State.

State water resource agencies exercise authority related to permitting, planning, and environmental resource management. Control points at which State authority is implemented by water resource agencies include:

- **Withdrawal and source development permits.** Access to a reliable water source is an obvious necessity for drinking water systems. Water resource agencies may have authority to approve proposed developments and withdrawals, water markets (sales and transfers), and supply management measures.
- **Approval of water rights.** In some States, a system of water rights governs access to and use of water resources. The State water resource agency may be involved in reviewing and approving water rights or transfers of water rights from one party to another.
- **System planning requirements.** Water resource agencies may be responsible for developing, encouraging, or overseeing development of Statewide, regional, or river basin plans for water use. Some resource agencies may require demand management and supply management measures.
- **Approval of environmental impact assessment.** Larger developments may require an environmental impact assessment. Impacts considered include ecological and social systems, and the benefits and costs of the proposed project. In this context, better planning and regional solutions also could be encouraged to address some environmental goals.

State Authority for Revolving Loan Funds

State Financial Assistance Agency

The State agency responsible for administering a State revolving fund (SRF), or other grant and loan program, can exert substantial authority to ensure new system capacity. Some States have established independent agencies for this purpose (e.g., PENNVEST in Pennsylvania). This authority focuses on financial capacity because of the need to ensure the prudent use of grant funds or the timely repayment of loans. The control point for State financial assistance agencies is:

- **Deciding eligibility and approving grants and loans.** Eligibility criteria used by the State financial assistance agencies can incorporate capacity provisions. Information needed to assess capacity can be obtained as part of the loan or grant application process.

State Authority for Planning and Growth Management

State Planning or Development Agency

Water systems play a role in the growth and development of communities. Some States have planning, development, or growth management agencies authorized to promote better planning and growth management strategies. A few States have implemented Statewide regional planning processes for water supply (e.g., Maryland). The control point for State planning and development agencies is:

- **Review and approval of plans.** State planning agencies may be authorized to review development plans that include new water systems.

Regional Planning Councils (Intrastate)

Regional planning councils can act as comprehensive planning organizations and as special-purpose water resources planning bodies. In many instances, these bodies do not have significant authority to affect new system development, but they may have influence on the local and county governments within the region. The control point for regional planning councils is:

- **Review and approval of plans.** Regional planning agencies may be authorized to review development plans that include new water systems.

State Enabling Authority for Local Government

Secretary of State (or other agency)

State enabling laws define the powers and responsibilities of local government and can provide local government with an important role in the new water system development process. Enabling legislation may affect the formation of a new water system in a variety of ways. Control points in this area include:

- **Authorization of local governments and special districts.** Formation of a new local governmental entity, including special districts to provide water service, requires State authorization. Some States also have planning statutes of various types that confer special powers to local jurisdictions.
- **Subdivision and platting regulations.** In many States, land development is guided by local government subdivision and platting regulations. Local governments can exercise this authority through land development approval.
- **Authorization of funding (debt, bonds).** Local governments generally must have State approval to issue debt instruments, such as bonds, which may be needed to fund new systems.

State Authority for Public Safety

State Fire Marshal (or other agency)

The State Fire Marshal (or another agency vested with public safety responsibilities) may require water systems to meet fire protection standards. Potential control points at which authority is exercised by the State Fire Marshall include:

- **Permits and approvals related to fire protection codes.** Distribution systems for new water systems typically should be designed to meet fire protection codes. New systems might be required to submit engineering specifications related to water storage, pressure, fire hydrant locations, and various building codes.

Local Governmental Authority for Land Use, Planning, and Finances

Municipalities, Counties, and Special Districts

Local governments (municipalities, counties, and special districts) can play an important role in the creation of new water systems. Local governments can intervene very early in the creation of new systems. Specific procedures approving new developments are defined in local ordinances. Control points where local governments can exercise authority to ensure new system capacity include:

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- **Subdivision, zoning, and land-use approvals.** Developers usually must obtain preliminary and final approval for subdivisions. The preliminary approval process is the most important control point because it usually occurs before the developer has made significant fixed commitments. Active local or county governments require sufficient planning information to evaluate the need for utilities, roads, and other services. Performance bonds also may be required.
- **Construction permits and approvals.** Local government can exercise authority through requirements such as building permits.
- **Franchise approval.** For many utility services, providers must obtain a franchise that defines the service territory and the terms of service. The franchise agreement can be negotiated and conditioned to help ensure capacity.
- **Local planning approvals.** Capacity-related questions are often raised during the local planning process. The extent to which local authority for planning is exercised varies. Some States have adopted a strategy of encouraging local water supply planning processes where feasible and developing other means of addressing new systems in other parts of the State.
- **Authorization of local government financing.** A new publicly owned system requires local approval of financing arrangements, such as the issuance of debt instruments.

Federal Rural Utilities Authority

Rural Utilities Service

Grants and loans from the federal Rural Utilities Service (RUS; formerly the Farmers' Home Administration) are a critical control point at which new system capacity can be addressed. RUS currently evaluates capacity when making loan and grant decisions.

- **Approval of grants and loans.** Capacity may be tied to the eligibility criteria and approval processes for grants and loans. Use of grants and loans also may be affected by various provisions and conditions.

Interstate Authority

River Basin Commissions

In a few river basin regions, interstate authority may be relevant to the development of new water systems. For example, the Delaware River Basin Commission has authority comparable to State water resource agencies. Federal interstate compacts, however, carry the force of federal

law and thus can preempt certain State policies. Interstate institutions and authorities may become more important as conflict increases over water resources. Control points exercised by river basin commissions include:

- **Basin withdrawal permits.** An interstate commission can require a withdrawal permit for water resources common to more than one State. These permits may be conditioned on a variety of terms.
- **Basin planning and resource management requirements.** An interstate commission can require supply management and demand management to ensure that only necessary withdrawals are permitted.

State Authority to Regulate Related Businesses

Banking Regulators

The States regulate the banking industry, which in turn makes loans to water systems and developers. A control point exercised by banks is:

- **Loan approval.** The loan eligibility and approval process can assess the financial capacity of applicants.

Insurance Regulators

The States regulate the insurance industry, which in turn provides insurance to water systems and developers. A control point exercised by insurance companies is:

- **Insurance approval.** The insurance eligibility and approval process can assess the financial capacity of applicants.

ACTIONS TO ENABLE OR ENHANCE STATE AUTHORITY

This section provides an overview of actions that States can take to 1) establish the necessary authority and control points to ensure new system capacity or to 2) enhance the effectiveness of existing authority. These actions can be used with several types of authority and control points. The actions are not mutually exclusive, but mutually reinforcing. The challenge is in designing a comprehensive, coordinated set of actions that best meets each State's institutional arrangements and capacity development needs.

The following actions are described below:

- Expand authority to add, strengthen, or coordinate control points
- Coordinate agency capacity efforts
- Enhance system approval processes
- Promote awareness of capacity issues
- Encourage interconnection, consolidation, or regionalization
- Strengthen new system capacity
- Require guarantees and assurances

Expand Authority to Add, Strengthen, or Coordinate Control Points

Enact Legislation Regarding Authority or Jurisdiction

A State should determine whether it currently has the authority to intervene prior to new system development to obtain assurances of technical, managerial, and financial capacity. State authority and the specific control points derived from it can be added, strengthened, and coordinated statutorily to ensure new system capacity. Another potential use of legislation is to expand the jurisdiction of agencies. Legislation can also be used to improve agency coordination and to specify when and how agencies will collaborate in joint efforts. For a State program to effectively ensure capacity, the State must have the authority to intervene prior to new system development.

Issue Rules, Regulations, and Policies

Some States may find that existing statutory authority provides sufficient basis for developing and clarifying new water system capacity policies through rules, regulations, or policy statements. Where adequate statutory authority exists, new elements can be added to application requirements by amending regulations or revising guidance manuals or application forms.

Enhance Capacity Assessment Resources

State capacity development efforts may require expanded engineering analysis and financial analysis capabilities within State agencies. Staff may need additional tools and training to conduct business planning and other activities. New staff functions might be created or outsourced. MOU can address sharing of personnel among agencies. In some States, for example, PUCs perform financial reviews for primacy agencies.

Agency resources devoted to capacity development will prevent future capacity problems, resulting in a net savings in State resources.

Coordinate Agency Capacity Efforts

Conduct Regular Meetings

Many States could coordinate their capacity development efforts by conducting regular meetings that include representatives of the agencies that have authority over water systems. These meetings can facilitate informal (e.g., information sharing) and formal (e.g., executive memoranda of understanding) means of coordination. Regular meetings allow agency personnel to craft and implement more effective capacity policies.

Formulate Interagency Policies and MOU

State agencies can formulate joint policies to direct their capacity development activities. These policies establish common goals and activities across agencies. The development of a formal MOU can greatly enhance coordination among State agencies. MOU typically include a joint policy statement or statement of objectives, a description of the specific areas where collaboration is envisioned, and the mechanics of the collaboration.

Some of the major mechanical issues addressed in MOU are coordinating information required of applicants to avoid duplication, streamlining application requirements, and ensuring consistent application evaluations by establishing evaluation criteria to be used by all involved agencies; sharing analytical resources and capabilities (e.g., one agency may have engineering capabilities while another has financial capabilities); coordinating decision making to clarify which agency decides first, whether one agency's decision is contingent upon that of another, or whether the multiple agencies need to act concurrently; and establishing a protocol for monitoring and evaluating the collaboration defined in the MOU.

Primacy agencies and public utility commissions in several States have developed MOU. In some cases, natural resource agencies also have engaged in the development of MOU. These agreements also could be drafted to include State financial assistance agencies, the RUS, and local governments.

Hold Joint Proceedings or Provide Testimony

Government agencies often have authority to conduct joint hearings with other agencies whose missions and interests are similar. This type of authority could be used to formally establish a consolidated approval process among the agencies responsible for water quality, water quantity, and economic regulation.

Another means of procedural coordination is to have personnel in one agency provide testimony at the hearings of another agency.

Share Data and Information Resources

The inaccessibility of relevant information is a significant barrier to effective review of new water systems. Economic regulators may have access to key financial information, while primacy agencies may have access to key technical information. Sharing information and developing a complete picture of a system's capacity may be difficult. New information-sharing technology (e.g., computer mapping) can enhance interagency communications and policymaking.

Clarify State and Local Roles

Successful capacity development requires clarification of State and local roles. While States are responsible for ensuring the capacity of new water systems, many critical control points exist at the local level. Well-informed, active local governments will achieve more efficient development practices and reduce the need for State intervention.

Where allowed by State law, States can delegate some of the responsibility for ensuring capacity of new systems to local government, provided that the arrangement is guided by clear written agreements. Local control points are most effective when coordinated with local approval processes and known and understood by new system applicants.

Enhance System Approval Processes

Conduct Preliminary Feasibility Meetings With Applicants

Some States encourage informal pre-feasibility meetings between developers and their engineers and State plan review and permitting staff. The objective is to discuss alternative approaches for providing service, in light of State requirements, as early as possible.

Develop a Standard Operating Procedure (SOP) for Approvals and Denials

A fragmented process of approving new water systems could be coordinated by developing a standard operating procedure (SOP) identifying critical authorities and control points and an optimal sequence of approvals. The SOP should be drafted with input from stakeholders, formally recognized in an MOU, and used by the counties and municipalities to coordinate State and local activities.

States may also want to develop a “disapproval” SOP in which alternatives to new system creation are recommended to applicants who cannot meet capacity requirements. Denial of an application does not preclude the State from providing the advice or technical assistance necessary for the applicant to later obtain approval.

Promote Awareness of Capacity Issues

Form a Stakeholder Group

State capacity development efforts can be enhanced by a formal process for stakeholder involvement. The key groups involved in new system formation are builders associations, realty associations, mobile home park operators associations, county associations, municipal associations, planning associations, consulting engineers associations, water industry groups (Association of Metropolitan Water Agencies (AMWA), American Water Works Association (AWWA), National Association of Water Companies (NAWC)), consumer advocates, environmental organizations, operators associations, and technical assistance providers (National Rural Water Association (NRWA), Rural Community Assistance Programs (RCAP)). While such organizations do not represent everyone, their communication networks reach a large percentage of the target audience.

Several States have convened advisory committees or task forces consisting of all relevant stakeholder groups and the relevant agencies of State government. Some of these groups continue to meet regularly to monitor and manage the implementation process. Some States have developed written communications plans to support program implementation. The plans identify objectives, specify the individual segments of the target audience, outline the messages and information to be conveyed to each segment, and itemize the options for delivering the messages and information.

Educate New System Applicants

New system applicants may be unfamiliar with State regulations and unaware of capacity development policies. Clear, early communications with new water system applicants (e.g., property developers) is an important aspect of capacity development.

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Property developers can be important partners in ensuring capacity. One of the most significant hurdles in development is minimizing uncertainty. Once property developers begin to commit significant investment dollars, they need to have some confidence that they will be able to complete the development within a predictable period. Developers often will trade assurances of capacity for minimized uncertainty. This process will become easier as consulting engineers and local officials become aware of the importance of including capacity in decisions about development.

Educate Consumers and Communities

Educating consumers and communities can help bring market forces to bear on new system capacity. If home buyers know what to look for and how to recognize a well-conceived CWS, market forces may provide substantial pressure to ensure capacity. State and local governments should provide consumers with information and opportunities for public hearings related during approval processes.

Educate the Technical Community

Property developers may rely on many technical consultants to design and build infrastructure facilities. Engineering and other consultants should be made aware of capacity development issues and policies.

Educate the Financial Community

New water systems usually require support from the private sector, including the lending and insurance industries. Bankers and insurers can avoid potential liabilities by fully understanding water system capacity. Better-informed providers can exert their market power on the water industry to enhance capacity development efforts.

Encourage Interconnection, Consolidation, or Regionalization

Require Consideration of Regional Alternatives

The State approval process could include consideration of regional alternatives. Regulators may require a new system applicant to demonstrate that the proposed service area cannot be absorbed by a larger system or served by a line extension from a nearby system. Regional options could be considered for all or part of utility operations. For example, a system might run its distribution facilities, but purchase wholesale water from a regional supplier. Another system might maintain ownership but contract with a nearby utility for operations services. Washington State's water system plan requirement is one example of a State-sanctioned regional alternative.

Promote Regional Planning

Regional water system planning can promote capacity by providing efficient alternatives to creating new systems. Regional planning can link capacity development to other planning processes by providing opportunities for local governments to interact. For example, all new development in Maryland is authorized through county planning processes. The States can promote regional planning through grants and other incentives.

Establish an Interconnection Policy

Through policy statements, MOU, and other instruments, State agencies can establish interconnection policies to guide approvals and other determinations. A State-level interconnection policy requires coordination of existing policies that may or may not be consistent with regionalization goals. These policies include State natural resource agency determinations about water transfers, State public utility commission orders regarding acquisitions by investor-owned utilities, and local annexation policies and practices. Some States require serious consideration of interconnection with an existing system for all proposed systems.

Minimize Bypass Opportunities

A policy that requires customers in an enfranchised service territory to connect to the water system and stay connected, rather than draw from individual wells, can enhance capacity by reducing uncertainty and enlarging the customer base, making it possible to achieve economies of scale. Minimizing bypass also can improve regional environmental management by making it easier to monitor and control withdrawals, supply management, and source protection practices.

Modify Annexation Policies

Local annexation policies and practices may encourage inefficient growth and development, preventing annexation where it makes sense. State annexation policies might be modified to consider new system capacity. States can work with local governments to use annexation to promote regional solutions to water utility services.

Strengthen New System Capacity

Require a Comprehensive Business Plan

Requiring new water systems to provide comprehensive business plans (also called water system plans) may be one of the most important means of ensuring technical, managerial, and financial capacity. Planning is a diagnostic as well as a capacity development tool. Planning can be used to generate reliable information about costs and other issues needed to make sound decisions about a water system's future.

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Some States already have the authority to require financial data. Other States have amended statutes and regulations to clarify authority to gather and use planning information. Several States have used this authority to develop processes for the evaluation of business and water system plans. Several States have produced technical guidance manuals for completing water system plans.

One issue in the implementation of a water system plan approach is the need for review capability at the State level. This review has two dimensions: engineering analysis and financial analysis. Engineering staff would be called upon to evaluate the engineering elements of the water system plan, and may need additional training. State review of water system plans also requires a method for comparing cost estimates submitted in the plans against standard cost estimates and actual operating experience (e.g., the PAWATER cost model developed by Pennsylvania and EPA).

For SDWA primacy agencies, the rationale for incorporating business planning into State approval processes is to protect public health and ensure safe, adequate, and reliable service. From the State PUC perspective, the rationale is to increase service reliability and affordability. Local governments use water system planning to ensure that new infrastructure is conceived in a sustainable manner, providing a stronger footing for economic development. For the consumer, water system planning means safe, reliable, and affordable drinking water.

Require a Technical Operations Plan

This approach relies on inherent public health authority to set expanded engineering standards for such topics as well construction (Minnesota), requirements for approval of surface water sources for small systems (Missouri), requirements for the frequent presence of a certified operator on the premises (Florida and South Carolina), specific operator certification requirements, requirements for system water rates, and management certification requirements.

Unexpected circumstances during the construction process can require that modifications be made to the original design specification. Thus the plans may not reflect the actual condition of the system “as built.” Details of the “as built” water system should be included with the overall plan once the system is operational. This precaution makes it much easier to identify and correct any technical problems that may occur.

The engineering and operations approach can be implemented with existing State primacy agency staff. While this approach provides a high level of insurance of technical and managerial capacity, the insurance of financial capacity is indirect. Standards are available for conducting engineering reviews, but States also have considerable room to exercise judgment if not fully satisfied with the adequacy of proposed plans. In most cases, the basis for exercising this judgment is the State’s legal authority to protect public health.

Develop Benchmarks or Minimum Standards

Under various authorities, agencies can develop benchmarks or minimum standards for screening proposed systems. For example, systems may be required to make a minimum per-customer investment or achieve a specified coverage ratio. While standards usually are developed formally, benchmarks often emerge from practical experience. Benchmarks and standards also can be used to monitor system performance.

Require Guarantees And Assurances

Provide Performance Guarantees

Performance guarantees provide specific remedies for a system's failure. Guarantees can be required of either the system developer or the local government authorizing the system's creation. Guarantees tend to emphasize financial protection and may take the form of performance bonds, letters of credit, guarantees from a parent company or affiliated organization, or operations contracts with reputable providers that include performance criteria. Some States (Maryland and Washington) require developers of new water systems to establish escrow accounts or reserves.

Ensure Takeover by Another Entity in Case of Failure

Ensuring the takeover of a failed water system can help guarantee that new systems have adequate capacity, while providing a solution if they do not meet performance expectations. Ensuring a takeover involves appointing a local government or another system as trustee or securing a commitment from the local government to annex, assimilate, or interconnect the system. One approach is to give some unit of sub-state (municipal or county) government responsibility for all water service within its purview. Therefore, if a new system fails, the sub-state unit is required to provide water to the customers served by the failed system.

New Jersey approves only municipal or investor-owned water systems, which forces local government to accept responsibility to provide service for new development unless an investor-owned system seeks to provide the service. In Connecticut and Washington, a local government that approves a new system prior to the State's viability review can be designated as the receiver if the system fails. Of course, the goal of capacity development is to avoid receivership and mandatory takeovers of failed systems.

Table 2 provides a list of specific actions that States can take to meet their objectives for enhancing State authority.

Table 2: Actions to Establish or Enhance Authority to Ensure the Capacity of New Water Systems

Objectives	Actions
Expand authority to add, strengthen, or coordinate control points	Enact legislation regarding authority or jurisdiction
	Issue rules, regulations, and/or policies
	Enhance capacity assessment resources
Coordinate agency capacity efforts	Conduct regular meetings
	Formulate interagency policies and MOU
	Hold joint proceedings and/or provide testimony
	Share data and information resources
	Clarify State and local roles
Enhance system approval processes	Conduct preliminary feasibility meetings with applicants
	Develop a protocol for approvals and denials
Promote awareness of capacity issues	Form a stakeholder group
	Educate new system applicants
	Educate consumers and communities
	Educate technical community (consultants)
	Educate financial community (lenders and insurers)
Encourage interconnection, consolidation, or regionalization	Require consideration of regional alternatives
	Promote regional planning
	Establish an interconnection policy
	Minimize bypass opportunities
	Modify annexation policies
Strengthen new system capacity	Require comprehensive business plan
	Require a technical operations plan
	Develop benchmarks or minimum standards
Require guarantees and assurances	Require performance guarantees
	Assure takeover by another entity in case of failure

ENSURING CAPACITY OF NEW NONTRANSIENT, NONCOMMUNITY WATER SYSTEMS

NTNCWSs serve schools, factories, office and industrial parks, major shopping centers, resort hotels, and other establishments that may be physically isolated from central water supply systems. Water service in these instances is an ancillary function. Many NTNCWSs are private, investor-owned establishments; some are publicly owned (e.g., schools).

Evaluating capacity in new NTNCWSs must be approached somewhat differently. This section reviews the major program elements discussed for CWSs, focusing on areas in which the approach to new NTNCWSs needs to be developed differently.

Legal Authority or Other Means

All of the local and county government sources of legal authority discussed for CWSs are relevant to NTNCWSs, but NTNCWSs may be more involved in zoning approval than subdivision approval. The authority of the State water resources agency and SDWA primacy agency still pertains, but the State PUC is unlikely to be involved. A technical operations plan review may be an effective means of ensuring capacity for NTNCWSs.

Adding the capacity assurance dimension for NTNCWSs to the traditional authority of State primacy agencies may require the same effort in developing regulations, guidance, or new legislation as for CWSs, depending upon existing statutory language and practices.

Control Points in the New System Development Process

Many control points relevant to new CWSs do not apply to NTNCWS (e.g., home buyers, developers, mortgage lenders), but local government and State agencies (except the PUC) still play important roles in the NTNCWS approval processes. In addition, the local government control point may be less effective with NTNCWSs than it is with CWSs. Therefore, State control points may be more appropriate in ensuring new system capacity.

Actions to Ensure Capacity of New Systems

In ensuring the capacity of new NTNCWSs, the full range of communication, coordination, and consolidation discussed for CWSs are also relevant. Technical assistance by States, the water industry, and the private sector also can be an effective way to develop capacity in NTNCWSs. However, capacity evaluations must be approached differently because the nature of the service provided by CWSs and NTNCWSs is different.

The fact that an NTNCWS is an ancillary service of a larger business or public enterprise could be interpreted to imply a performance guarantee by that larger business or enterprise. There is, in

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effect, more capacity implicit in the fact that the system will not have to stand financially on its own. Rather than attempt to obtain authority sufficient to probe the finances of private businesses or school districts, a simpler approach would be to formalize the implied guarantee, making it an explicit condition of the approval and stressing to the applicant that performance shortfalls can result in permit revocation, shutting the entire facility down. In this context, the State drinking water regulator is no different than the food service inspector, the building code inspector, or the fire marshal. This approach could be coupled with the engineering and operating standards approach to provide a high level of capacity assurance in approving new NTNCWSs.

CHAPTER 3:

Preparing Capacity Development Strategies Under §1420(c)(2) of the Safe Drinking Water Act

INTRODUCTION

SDWA §1420(c)(2) addresses the strategies developed by each State to ensure the technical, financial, and managerial capacity of PWSs under their jurisdiction. A State that does not develop and implement a capacity development strategy will receive only 90 percent of the DWSRF allotment it would otherwise receive in FY 2001, 85 percent of its scheduled DWSRF allotment in 2002, and 80 percent of its scheduled DWSRF allotment in each subsequent fiscal year.⁷

In developing and implementing a capacity development strategy, SDWA §1420(c)(2)(A-E) requires States to "consider, solicit public comment on, and include as appropriate" five elements:

- Methods or criteria to prioritize systems [§1420(c)(2)(A)]
- Factors that encourage or impair capacity development [§1420(c)(2)(B)]
- How the State will use the authority and resources of the SDWA [§1420(c)(2)(C)]
- How the State will establish the baseline and measure improvements [§1420(c)(2)(D)]
- Procedures to identify interested persons [§1420(c)(2)(E)]

In addition to considering these elements, §1420(b) requires States to “prepare, periodically update, and submit to the Administrator a list of community water systems and nontransient, noncommunity water systems that have a history of significant noncompliance and, to the extent practicable, the reasons for noncompliance.” States are also required to “report to the Administrator on the success of enforcement mechanisms and initial capacity development efforts in assisting [those systems] . . . to improve technical, managerial, and financial capacity,” by August 6, 2001. The list and the report must be included as part of the State’s capacity development strategy to avoid the withholding of DWSRF monies, as stipulated in §1452(a)(1)(G)(i).

This chapter identifies some of the tools and resources that States could use to address the five potential programmatic elements listed above [§1420(c)(2)(A-E)] and discusses some of the ways in which they can contribute to the success of other parts of a State’s drinking water program. When appropriate, this chapter also provides suggestions as to how the tools might be assembled to form a functioning capacity development strategy.

Due to the unique characteristics and circumstances of each State, the tools and strategies employed by States will vary. Therefore, each of the five potential programmatic elements is discussed individually.

⁷ See EPA, Office of Water, *Drinking Water State Revolving Fund Program Guidelines* (EPA 816-R-97-005, February 1997).

BUILDING A STRATEGY

As noted above, each State must consider, solicit public comment on, and include as appropriate five potential elements of a capacity development strategies:

- **Methods or criteria to prioritize systems.** [§1420(c)(2)(A)] These include methods or criteria that could be used to identify and prioritize PWSs most in need of improving technical, managerial, and financial capacity.
- **Factors that encourage or impair capacity development.** [§1420(c)(2)(B)] These include the “institutional, regulatory, financial, tax, or legal factors” that exist at the federal, State, or local level that encourage or impair capacity development.
- **How the State will use the authority and resources of the SDWA.** [§1420(c)(2)(C)] States should describe how they will use the authority and resources of the SDWA or other means to:
 1. Assist PWSs in complying with NPDWRs.
 2. Enhance technical, managerial, and financial capacity by encouraging the development of partnerships between PWSs.
 3. Assist PWSs in the training and certification of their operators.
- **How the State will establish the baseline and measure improvements.** [§1420(c)(2)(D)] States should describe how they will establish a baseline and measure improvements in the capacity of PWSs under their jurisdiction. This potential programmatic element provides the tools that State primacy agencies must have to produce and submit a report to their Governors on the efficacy of their capacity development strategy and progress made toward improving the technical, managerial, and financial capacity of PWSs in their State.
- **Procedures to identify interested persons.** [§1420(c)(2)(E)] States should identify and involve stakeholders in the creation and implementation of their capacity development strategy.

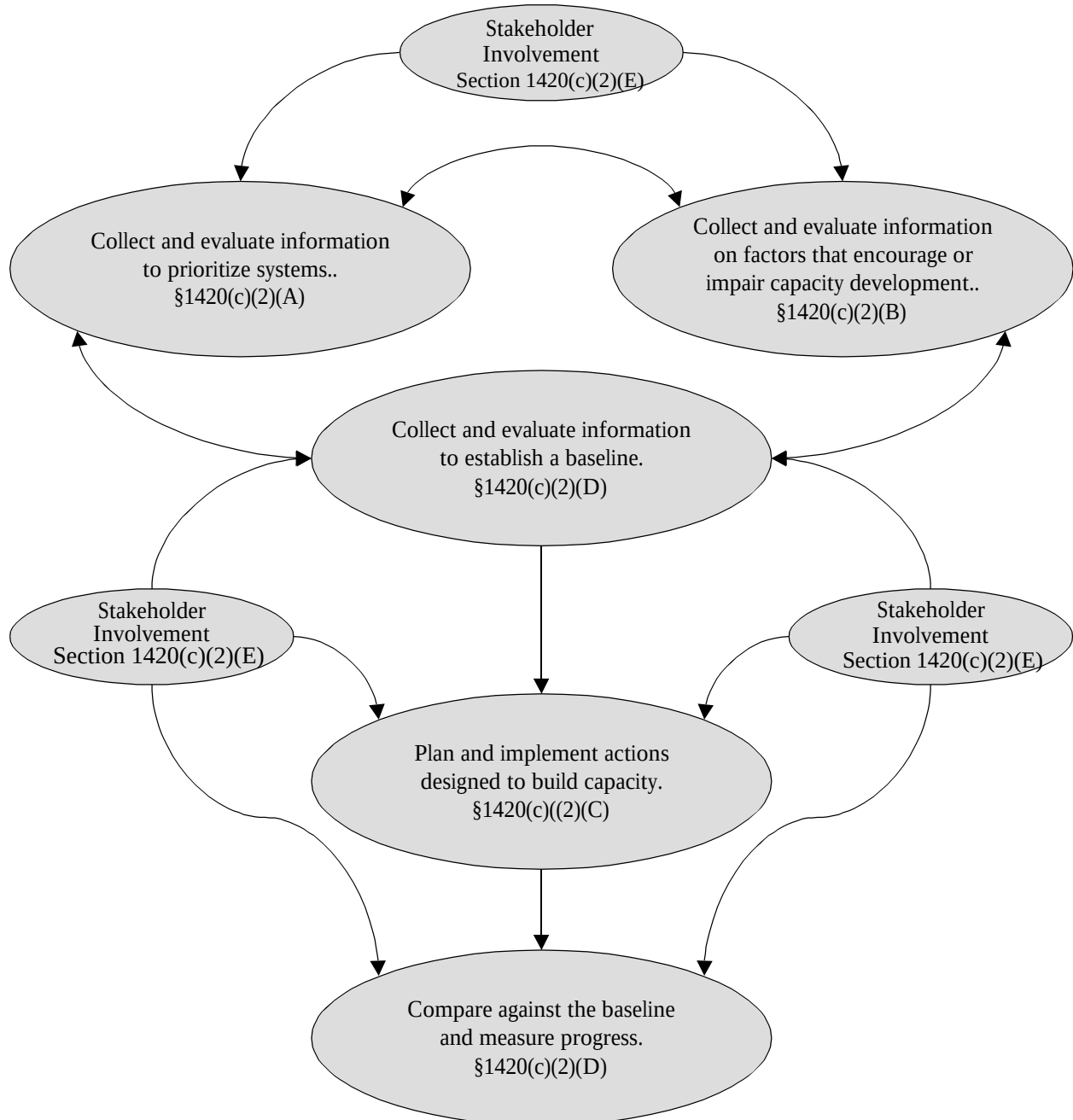
Tools to address these five potential programmatic elements into a strategy are described in the appendix. Exhibit 1 illustrates a way in which these elements may be integrated to form a comprehensive capacity development strategy. This strategy consists of four steps:

1. Collection and evaluation of information to prioritize systems for capacity development efforts and to identify factors that encourage or impair system capacity.
2. Planning for implementation.

3. Implementation actions.
4. Collection and evaluation of information to assess the success of the strategy.

Throughout each of these steps, States are encouraged to identify and involve stakeholders.

Figure 1: Building a Capacity Development Strategy



Relationship Between the Elements of a Capacity Development Strategy and the Tools Used to Enable Their Implementation

Although the SDWA requires that a State consider each of the five potential programmatic elements for inclusion in its capacity development strategy, it does not require the State to use specific tools to implement the selected elements. Each State is unique and must make policy decisions based upon its own characteristics and in light of its particular circumstances. Some States have access to many of the tools described in the appendix, while others have access to only a few. Further, a specific tool may need to be applied differently across States to contribute to capacity development efforts.

Water systems are also unique. A tool that is useful for developing capacity for privately owned, ancillary systems may not be useful for developing capacity in municipal systems.

Exhibit 2 provides a framework for the review of the applicability of each tool in the preparation of a successful capacity development strategy. The cells in the matrix have been left blank, to permit each State to shape their own strategy given their unique situation. The tools, and examples of their use, are described in detail in the appendix.

Exhibit 2: Tools and Resources for Developing State Capacity Programs

Tools	Element A Methods or criteria to prioritize systems	Element B Factors that encourage or impair capacity development	Element C Methods by which the State will use the authority and resources of the SDWA to:			Element D Methods to establish a baseline and measure improvements	Element E Procedures to identify and involve stakeholders
			Assist PWSs to comply with NPDWRs	Encourage the development of partnerships between PWSs	Assist PWSs in the training and certification of their operators		
Compliance data							
Sanitary surveys							
Water system plan or business plan							
Self assessments and peer reviews							
The "Dozen Questions" approach							
Regional plans							
Operator certification programs							
Permitting requirements							
Capital improvement plans							
Comprehensive performance evaluations							
Statewide water quality/quantity studies							
DWSRF loan applications							
DWSRF loans							
Simplified budgeting worksheets							
Annual financial reports							
Cooperation with industry groups							
Public education efforts							
Rate reviews and approvals							
Cooperation with NGOs							
Big brother and "buddy system" programs							
Restructuring programs							
Training and technical assistance programs							
Coordination with other agencies							
Source water assessment programs							
Water conservation plans							
Emergency response plans							
Certificates of Convenience and Necessity							
Review of audit reports							
Review of bond issues							
Satellite management programs							
Consumer Confidence Reports							
Enforcement records							
State/Federal survey of infrastructure needs							

Element A: Methods or Criteria to Prioritize Systems

A variety of methods and criteria can be used to identify and prioritize systems that need to improve their technical, managerial, and financial capacity. In many cases, a combination of tools is most effective in collecting the information needed to prioritize systems. States may consider the following in developing their methods and criteria:

- **Does the State's methods or criteria for prioritizing systems permit the consideration of all systems in the State?** Review of compliance data would meet this suggestion. Tools such as sanitary surveys or simplified budgeting worksheets would meet this suggestion if they were required of all systems over a specified period of time period.
- **Do the methods or criteria for prioritizing systems provide the State with a ranking scheme?** The use of some of the tools discussed below leads naturally to ranking schemes. For example, States could prioritize systems currently in significant noncompliance. In other cases, States must adopt ranking schemes that fit the available tools.
- **Are the methods or criteria for prioritizing systems easy to implement?**
- **What are the data requirements of the prioritization procedure? Does the State have an existing database, can an existing database be modified, or can a new data system be developed, given available resources?** It would be helpful to organize any new prioritization database to ensure easy maintenance, user-friendly data retrieval, and the availability of the correct data. A State should also coordinate its capacity development database with the databases for programs with similar data needs, such as a State's disadvantaged-community program.

Washington and Massachusetts have developed systems to identify and prioritize those systems most in need of capacity development:

Washington tracks the performance of all systems in terms of their compliance histories, their water system plans, and the financial viability component of their water system plans. Systems are classified according to their compliance and capacity. Systems classified as "green" have adequate capacity and compliance histories; systems coded as "red" have inadequate capacity and/or compliance histories.

Massachusetts' program for "viability assessment and assurance" covers all CWSs and NTNCWSs serving fewer than 1,000 persons. The program requires each of these systems to undergo a Comprehensive Compliance Evaluation (CCE) Sanitary Survey and a follow-up survey at least once every 6 years. Depending on the results of the CCE, systems may be referred to a "Mobilization Partner" for viability assessment and technical assistance.

Exhibit 3 lists some tools that States might use in developing their methods or criteria for prioritizing systems. This table is meant to serve only as a starting point—depending upon their unique circumstances, States may be able to take advantage of additional tools to help prioritize systems. A full description of each tool and examples of its use are provided in the appendix.

Exhibit 3
Tools to Develop Methods or Criteria to Prioritize Systems

Tool
Annual Financial Reports
Capital Improvement Plans
Compliance Data
Comprehensive Performance Evaluations
Consumer Confidence Reports
DWSRF Loan Applications
Operator Certification Programs
Permitting Requirements
Sanitary Surveys
Self-Assessments
Source Water Assessment Programs
State or Federal Surveys of Infrastructure Needs
Statewide Water Quality/Quantity Studies
Water System Plans or Business Plans

Element B: Factors That Encourage or Impair Capacity Development

Under §1420(c)(2)(B) of the SDWA, States must consider developing a description of the "institutional, regulatory, financial, tax, or legal factors at the Federal, State, or local level that encourage or impair capacity development." The broad spectrum of factors that might be included in this description may make it quite comprehensive for each State. Factors that impair capacity development efforts within a State might include:

- A State's lack of legal (or regulatory) authority to develop and implement a capacity development strategy.
- Institutional barriers to developing a capacity development strategy.
- Legal and financial issues associated with water rights.
- Insufficient State or local funding to implement a capacity development strategy.
- A lack of reciprocity for operator certification.
- Barriers that preclude systems from obtaining variances or exemptions reasonably.
- State statutes or regulations that hinder consolidation, regionalization, or interconnection.

The 1996 Amendments streamline the process of applying for variances and exemptions, and provide access to DWSRF resources to help States overcome some of the barriers outlined above.

Factors that encourage capacity development within a State might include:

- Statewide growth-management legislation—encourages capacity development by checking the unrestricted growth of poorly-planned water systems (other statewide planning statutes have similar beneficial effects).
- Statutes dealing with privatization or procurement—allows systems to contract for operations and maintenance or other services more easily.
- Statutes dealing with mergers and acquisitions—encourages consolidation by allowing adjustments to the rate base.
- Statutes that require renewable operating permits for water systems, CCNs, or periodic sanitary surveys—encourages capacity development by enabling the State to periodically assess capacity.

Chapter III

States' reports to their legislatures on the subject of capacity development may prove useful in the creation and implementation of capacity development strategies. Many of these reports include discussions of the factors that encourage or impair capacity development. Examples of useful reports are those submitted in Washington, Connecticut, California, and Pennsylvania. While each State's report has unique aspects, the process that was followed — including the issues that were discussed — should be helpful to other States that are considering these issues.

Reports derived from the deliberations of stakeholder workgroups, such as those published in North Carolina and South Carolina, may also prove helpful in the preparation of capacity development strategies for other States.

Exhibit 4 lists several tools that address the factors that impair capacity development. This table is meant only as a starting point. As States build their capacity development strategies, they are likely to find other tools to address factors that impair capacity efforts. A full description of each tool and examples of its use are provided in the appendix.

Exhibit 4
Tools to Address Factors that Impair Capacity Development Efforts

Tool
Capital Improvement Plans
Comprehensive Performance Evaluations
Consumer Confidence Reports
Cooperation with NGOs
Coordination with Other Agencies
DWSRF Loan Applications
Operator Certification Programs
Permitting Requirements
Rate Reviews and Approvals
Regional Plans
Restructuring Programs
Sanitary Surveys
Satellite Management Programs
Source Water Assessment Programs
Training and Technical Assistance Programs
Water Conservation Plans
Water System Plans or Business Plans

Element C: Description of How the State Will Use the Authority and Resources of the SDWA

Under SDWA §1420(c)(2)(C), States must describe how they will use the authority and resources of the SDWA to improve capacity in PWSs. Specifically, the State is asked to describe how it will accomplish three goals central to a sound capacity development strategy:

1. Assist PWSs in complying with NPDWRs.
2. Encourage the development of partnerships between PWSs to enhance the technical, managerial, and financial capacity of the systems.
3. Assist PWSs in the training and certification of their operators.

This is the core element of a State's capacity development strategy. Under this element the State describes how it will use the new financial and programmatic resources of the 1996 SDWA Amendments, and any other statutory or programmatic means, to help water systems reliably deliver safe drinking water. This element encompasses a wide variety of activities meant to provide assistance to individual water systems and to build partnerships among systems.

The activities set forth in element C are at the heart of the linkages between the capacity development program and other sections of the SDWA. Not only are the authority and resources provided in other parts of the SDWA—and the “other means” that may be available in other State and federal programs—vital to developing capacity, the development of greater system capacity through compliance, including technical assistance and multi-system partnerships, is essential for other important sections of the SDWA to function.

For example, variances and exemptions are key parts of the new flexibility provided to small water systems. Before States can grant variances or exemptions, the SDWA requires them to evaluate whether restructuring and water supply alternatives are affordable compliance options. Because both alternatives include, by definition, multi-system partnerships, the State's database and methodology for analyzing that data will need to look well beyond the options that lie within the reach of the individual system seeking a variance or exemption.

Because this information has not been required for the drinking water program in the past, many States may not have the database or analytic capabilities to perform these needed functions. But by formulating a capacity development strategy and using the resources available through the DWSRF, States can assemble this database and develop analytic methodologies that will help them make these decisions.

In formulating capacity development strategies, State drinking water programs should locate and evaluate data sources and prepare to apply them to assess compliance options for small

systems that apply for variances or exemptions. The source water assessments required of States under §1453 of the SDWA (funded through the DWSRF) can be an important means of assembling information on the water sources currently used by PWSs, if designed with this use in mind.

Exhibit 5 lists several tools that may permit States to exercise the authority and resources of the SDWA. This table is meant only as a starting point as States build their capacity development strategies. A State is likely to find other tools. A full description of each tool and examples of its use are provided in the appendix.

Exhibit 5
Tools that May Permit the State to Exercise the Authority and Resources of the SDWA

Tool
Big Brother and “Buddy System” Programs
Capital Improvement Plans
Certificates of Convenience and Necessity
Compliance Data
Comprehensive Performance Evaluations
Cooperation with NGOs
Cooperation with Industry Groups
Coordination with Other Agencies
DWSRF Loan Applications
Emergency Response Plans
Enforcement Records
Operator Certification Programs
Permitting Requirements
Public Education Programs
Rate Reviews and Approvals
Regional Plans
Restructuring Programs
Bond Issue Review
Reviews of Audit Reports
Sanitary Surveys
Satellite Management Programs
Self-Assessments
Statewide Water Quality/Quantity Studies
Training and Technical Assistance Programs
Water System Plans or Business Plans
Water Conservation Plans

Element D: Establishing a Baseline and Measuring Improvements

Establishing a baseline and measuring improvements are crucial to fulfilling State responsibilities under §1420(b)(2), which requires State reports to the EPA Administrator, and §1420(c)(3), which requires State reports to the Governors. States must evaluate the success of their capacity development efforts as part of both reports. The most meaningful way to measure the success of State efforts is to measure actual improvements in water system capacity, but capacity building is an incremental process that may take years to result in measurable improvements. Therefore, even highly effective capacity development programs may not show immediate improvements in the actual capacity of water systems.

There are several approaches to measuring capacity:

- **Outreach activity.** A State could assess its program on the basis of its effectiveness in reaching water systems. This could include sanitary surveys conducted, Comprehensive Performance Evaluations conducted, technical assistance provided, and completion of water system plans or self-assessments. To make this a valid measure, States need to ensure that these activities are helping systems achieve and maintain capacity.
- **Operator certification.** States could base their assessment on the prevalence of certified operators who have the training necessary to improve the capacity of the systems they operate.
- **Planning mechanisms.** States could use the results of water system self-assessments, water system plans, annual financial reports, or simplified budgeting worksheets to measure improvements in capacity. This process would require a baseline measure of all systems at the time when the capacity development efforts began and a method to update system assessments regularly.
- **Compliance data.** Since the statute explicitly mentions capacity with respect to national primary drinking water regulations, analyzing compliance trends could be a useful way to measure improvements in capacity. The baseline would be compliance data from the calendar quarter when the capacity development efforts began. Variables such as the number of systems in significant noncompliance, number of exceedances, number of M/R violations, and time required to achieve compliance could be used as indicators of capacity. Measuring improvements solely on the basis of compliance might yield an analytical framework that is too limited, since factors such as new regulations or new enforcement tools could influence compliance rates. In addition, trends in compliance data may not yield sufficient data over the short term because capacity development is an incremental, long-term process.

Element E: Identifying Interested Persons

The purpose of this element is to identify stakeholders, people that have an interest in and are involved in the development and implementation of the capacity development strategy. The overall purpose of identifying and involving stakeholders is to inform the parties that interact with water systems so they will be better able to contribute to capacity assurance in their actions.

One approach to identifying stakeholders is to use resources available to related outreach programs. Potentially interested parties include:

- **Advisory panels for new system development.** Foremost among the methods for involving and informing key stakeholders is the creation of a formal stakeholder advisory panel as part of a new system capacity assurance program. Such panels should include governmental and nongovernmental organizations. States could use panels to disseminate information on existing system capacity. The key groups involved in new system formation do not represent everyone, but their communication networks do reach a large proportion of the target audience. Potential advisory panel constituents include:
 - Builders' associations
 - Realtors' associations
 - Mobile home park operators' associations
 - County associations
 - Municipal associations
 - Planners' associations
 - Consulting engineers' associations
 - Associations of utilities (AWWA, NAWC, NRWA)
 - Consumer advocates
 - Environmental groups
 - Operators' associations
 - Technical assistance providers (NRWA, RCAP)
 - Community action agencies
 - Community development corporations
 - Homeowners' associations
 - Chambers of commerce
 - Regulated community
 - Citizens who have registered an interest
 - Bankers and lenders
- **Operator certification advisory boards.** Operator certification advisory boards can be key resources in disseminating capacity information. States might work with operator certification boards to develop a certification curriculum that would help ensure capacity.

Tools to identify additional stakeholders include:

- **Regional plans.** Regional planning can promote communication and information sharing between water systems in the planning area. In Washington State, the regional planning document explicitly specifies the types of support that large systems will provide to smaller systems within the plan's jurisdiction. This support system is a formal agreement under which a large or central utility in a county performs direct, contract, or support services for smaller utilities.
- **MOU with public utility commissions.** Some State PUCs are involved in regulating public water districts or authorities and even municipal water systems. PUC approval may also be required to extend service from an existing investor-owned system to a new development outside the original franchise area, or from a municipal water system to a new development outside the municipal boundaries. The statutory authority for the PUCs' actions are defined in the statutes that authorize them to promote the general public interest (e.g., safe and reliable service at reasonable cost) by regulating the manner in which monopoly services are provided.

These statutory authorities make PUCs logical partners in capacity development. Several State commissions have adopted more expanded roles in small water system capacity by opening formal proceedings on the matter and requesting public comment (New York); developing and issuing a new policy statement adopted by the commissioners (California, Connecticut); and drafting MOU that state the broad objectives of small system capacity development and itemize specific commission responsibilities (Connecticut, Pennsylvania, North Carolina).

- **Permitting requirements.** The permitting process alerts permittees to capacity development and helps the State identify affected stakeholders.
- **Cooperation of industry groups, lenders, and nongovernmental organizations.** Developing relationships with these important groups helps ensure their participation in the capacity development process.
- **Public education.** Public education plays an essential role in identifying interested persons by informing the public of the issue and the opportunity to participate. In addition, public education allows the general public to participate as an informed party in the preparation of the capacity development strategy.
- **Coordination with other agencies.** Coordinating with all involved agencies helps ensure that the capacity development process runs smoothly. This is particularly important in States where the primacy agency is not the only agency participating in the DWSRF process.

NONCOMMUNITY WATER SYSTEMS

Unlike CWSs, NCWSs generally do not charge for their water. Instead, the cost of operating the system is built into the cost of their product or service (if the system is a business), or is part of the cost of public services (in the case of public schools).

NCWSs are much like ancillary CWSs, and can be dealt with similarly; capacity development in both NCWSs and ancillary CWSs must be approached somewhat differently than in most CWSs. Many elements of the approach are still the same, however.

In this section, the five elements are reviewed with a focus on the places where the approach to new NCWSs needs to be developed differently.

Methods or criteria to prioritize systems

Many of the tools discussed for CWSs could also be used for NCWSs. For example, States are likely to have information to prioritize NCWSs from permit applications, compliance data, or sanitary surveys (since these types of data collection generally apply to both NCWSs and CWSs). NCWSs are less likely, however, to employ tools such as water supply plans and capital improvement plans. In addition, only nonprofit NCWSs are eligible to apply for DWSRF funding. Because many are privately owned, NCWSs may resist disclosing financial data.

Factors that encourage or impair capacity development

Many of the factors that impair or encourage capacity development in CWSs are likely to apply to NCWSs. Operator certification may be less relevant for NCWSs in many States, because NCWSs may not be required to have access to certified operators. Dedicating resources to training and technical assistance will encourage capacity in NCWSs.

In some States, regulatory, statutory, or policy requirements that encourage capacity may not apply to NCWSs. States should recognize these limitations when they consider element B of their capacity development strategies.

How the State will use the authority and resources of the SDWA

States can use the programmatic and funding resources of the SDWA to help NCWSs achieve compliance, build partnerships, and gain access to trained operators. In some cases, States will want to work with individual NCWSs. In other cases, partnerships between CWSs and NCWSs may be appropriate.

States should recognize the limitations of the SDWA with regards to NCWSs. For example, consumer confidence reports are required only of CWSs, and the operator certification

requirements apply only to CWSs and NTNCWSs, not TNCWSs. However, the Act's source water protection provisions apply to NCWSs and CWSs.

How the State will establish a baseline and measure improvements

Assuming that the States rely on traditional data sources to establish their baselines and measure improvements, States are likely to have data on CWSs and NCWSs. Data sources such as compliance reports, sanitary surveys, and permit applications are likely to have information on all PWSs. There is one difference between data collected on CWSs and those collected on NCWSs: States collect information on NCWSs less frequently than CWSs, making it more difficult to measure improvements in NCWSs.

Another characteristic of NCWSs is that ownership may change frequently, particularly for small businesses. This may make it more difficult for States to measure improvement in these systems.

Procedures to identify persons that have an interest in and are involved in the development and implementation of the strategy

The State should identify representatives of NCWSs and the communities served by NCWSs to participate in the preparation of the State capacity development strategy. These stakeholders can be identified using the tools discussed under element E.

States have been trying to reach out to NCWSs for many years, and some States have perfected methods for doing so. One important step is to identify the largest categories of NCWSs (e.g., public schools, day care centers, offices, factories). Interest groups representing these entities can help conduct outreach and identify interested persons.

Some States find it difficult to reach the public affected by TNCWSs, yet many organizations represent these groups. For example the American Automobile Association has an interest in water quality at highway rest stops. Similarly, tourism organizations have a keen interest in avoiding outbreaks of acute waterborne illnesses. In States that rely on tourism (e.g., Colorado, Florida, and California) the tourism industry has focused public attention on water quality in highway rest stops.

The statute recognizes not only persons with an interest in the strategy, but also those who will be involved in its implementation. This is useful because some drinking water regulators may need to coordinate with other agencies, particularly regarding NCWSs. For example, drinking water regulators may need to work closely with the State agencies that license TNCWSs such as restaurants and lodging establishments. An MOU with the licensing authority may substantially increase the effectiveness of a capacity development strategy.

CHAPTER 4:

Assessing System Capacity

INTRODUCTION

SDWA §1452(a)(3) prohibits assistance from the DWSRF to a PWS that “does not have the technical, managerial, and financial capability to ensure compliance with the requirements of this title” or is in significant noncompliance with an NPDWR or variance. The Act does, however, allow a system lacking adequate capacity or in significant noncompliance to receive DWSRF assistance if one of two conditions is met:

- The use of the assistance ensures the compliance of a system in significant noncompliance.
- The owner or operator of a system that lacks capacity agrees to undertake feasible and appropriate changes in operations (including ownership, management, accounting, rules, maintenance, consolidation, alternative water supply, or other procedures) that the State determines would ensure the system’s technical, managerial, and financial capacity.

Basically, the States are required to address the following question: *Does the system applying for a loan have adequate technical, managerial, and financial capacity? Is the system in significant noncompliance? If not, will the assistance ensure compliance? Does the owner/operator agree to make changes necessary to ensure capacity?*

This chapter identifies the tools and resources that States can use to answer this question.

METHODS OF ASSESSING CAPACITY

The DWSRF is a lending operation. Therefore, assessments of capacity for DWSRF purposes should be based on criteria used to make lending decisions. It is bad management of DWSRF monies to fund projects for water systems that would not have the ability to adequately operate and maintain the improvements provided by those projects. The borrower must have the financial capacity to repay the loan and to maintain the system over the life of the loan. DWSRF assessment of capacity must be comprehensive, with an emphasis on financial capacity. There are many tools for assessing a system’s technical, managerial, and financial capacity:

- Compliance data
- Sanitary surveys
- Water system plans or business plans
- Self-assessment/peer reviews
- Regional plans
- Criteria used by lenders
- Financial viability assessment methods
- Operator certification
- Financial and managerial training
- Permit application data
- Capital improvement plans
- Comprehensive performance evaluation

- Consumer complaint records.
- State-wide studies of water quality or quantity
- SRF loan application
- Budgeting worksheets
- Annual financial reports
- Source water assessment programs
- Water conservation plans
- Emergency response plans
- Certificates of Convenience and Necessity (CCN)
- Review of audit report
- Bond issue reviews
- Rate reviews and approvals
- Credit rating services
- Financial assurance mechanisms
- Consumer confidence reports
- Interviews with personnel familiar with the system

It is difficult to determine which tool is most appropriate for evaluating which element of capacity. Each State is unique; some States have access to many of the tools described above, while others have access to only a few. In addition, tools are used differently in each State.

Systems are unique, too. A tool that is useful for assessing the capacity of a very small system may not be useful for assessing the capacity of a large system. Tools to assess privately owned, ancillary systems may be different from the tools to assess municipal systems.

The matrices on the following pages provide a framework for reviewing each tool's applicability to various aspects of capacity. The matrices have been left blank so that each State can use them to identify tools that address its unique situation. The tools and examples of their uses are described in detail in the appendix.

Table 1: Capacity Development Matrices

Tools	Managerial Capacity											
	Ownership Accountability		Staffing and Organization						Effective Linkages			
	Clear ownership identity	Management information system	Clear identification of operator/manager	Training and continuing education	Sufficient qualified staff	Staff with appropriate	Procedures and policies	Understanding of management aspects of regulatory requirements	Awareness of available external resources	Communications with other systems	Communication with customers	Communication with regulators
Compliance data												
Sanitary surveys												
Water system or business plans												
Self-assessments												
Regional plans												
“Dozen Questions”												
Criteria used by lenders												
Financial viability assessment methods												
Operator certification												
Financial and managerial training												
Permit application data												
Capital improvement plans												
Comprehensive performance evaluations												
Consumer complaint records												
State-wide studies of water quality or quantity												
DWSRF loan applications												
Budgeting worksheets												
Annual financial reports												
Source water assessment programs												
Water conservation plans												
Emergency response plans												
Certificates of Convenience and necessity												
Review of audit report												
Bond issue reviews												
Rate reviews and approvals												
Credit rating services												
Financial assurance mechanisms												

Tools	Financial Capacity																
	Revenue Sufficiency					Credit Worthiness					Fiscal Management and Controls						
	Revenues cover expenses	Appropriate rate structure	Billing and collection	Revenues for depreciation and interest	Cost-of-service studies	Positive credit rating	Access to capital through public and private sources	Healthy financial ratios	Bonds and assurances	Good debt/equity ratio	Adequate books and records	Annual budgeting and reporting	Appropriate accounting practices	Valuation of utility assets	Capital facilities planning	Appropriate management revenues	Investment strategy
Compliance data																	
Sanitary surveys																	
Water system or business plans																	
Self-assessments																	
Regional plans																	
“Dozen Questions”																	
Criteria used by lenders																	
Financial viability assessment methods																	
Operator certification																	
Financial and managerial training																	
Permit application data																	
Capital improvement plans																	
Comprehensive performance evaluations																	
Consumer complaint records																	
State-wide studies of water quality or quantity																	
DWSRF loan applications																	
Budgeting worksheets																	
Annual financial reports																	
Source water assessment programs																	
Water conservation plans																	
Emergency response plans																	
Certificates of Convenience and necessity																	
Review of audit report																	
Bond issue reviews																	
Rate reviews and approvals																	
Credit rating services																	
Financial assurance mechanisms																	

APPLICATION OF THE ASSESSMENT TOOLS FOR NONTRANSIENT NONCOMMUNITY WATER SYSTEMS

NTNCWSs are stand-alone water systems serving schools, day care centers, factories, offices, and other establishments that have nontransient populations. Unlike CWSs, most NTNCWSs were not designed to serve water to the public. Instead, water service is an auxiliary function to the principal business or focus of the organization.

Because of their unique characteristics, assessing the capacity of NTNCWSs may need to be approached differently. Most of the tools described above apply to both CWSs and NTNCWSs. Nevertheless, there may be some areas where tools need to be modified.

Technical Capacity

The three elements of technical capacity—adequacy of source water, adequacy of infrastructure, and technical knowledge—can be assessed similarly in CWSs and NTNCWSs. NTNCWSs are simpler in design and construction, but most States require a review of their plans and specifications before construction, just as they do for CWSs. This review and inspection prior to construction is an important step in ensuring the technical capacity of NTNCWSs.

A State could review the adequacy of source water and infrastructure for CWSs and NTNCWSs. A State also could assess the technical knowledge of personnel in both types of systems, but it will be more difficult in NTNCWSs because the person responsible for the system will not necessarily be a water system professional.

The discussion of technical knowledge under element B is relevant to NTNCWSs. A State could investigate, for example, whether the system complies with all applicable monitoring requirements, whether the system has access to adequately trained personnel, and so forth. The materials presented in the preceding pages can be used for NTNCWSs and CWSs.

Managerial Capacity

The three elements of managerial capacity—ownership accountability, staffing and organization, and effective external relations—can be assessed in similar ways in NTNCWSs and CWSs, despite the smaller, simpler organizational structure of NTNCWSs.

Some aspects of managerial capacity are not relevant to all NTNCWSs. These aspects can simply be skipped when assessing capacity. The tools presented in this chapter and discussed in the appendix are relevant, they simply must be adjusted to the size and complexity of the system.

Financial Capacity

The financial structure of NTNCWSs differs significantly from that of CWSs. As discussed above, NTNCWSs generally do not charge for their water; their cost of operation is built into the cost of the product or service. Therefore, it is unlikely that these systems will be able to readily produce data essential to the assessment of financial capacity.

While it is clear that the financial structure of NTNCWSs is fundamentally different from that of medium-sized CWSs, NTNCWSs share many of the characteristics of very small CWSs. Very small CWSs generally are ancillary, privately owned systems, much like NTNCWSs. Assessment tools developed for small, ancillary CWSs should be applicable to NTNCWSs.

APPENDIX:

The Tools

INTRODUCTION

The tools described in this appendix are intended to provide States and stakeholders with ideas for meeting the capacity development provisions of the SDWA. By no means is this list intended to be exhaustive or restrictive. Each State is unique; tools that work well in one State may be inappropriate in other States. Use of any of these tools should be informed by the unique situation faced by the State. The primary function of the appendix is merely to complement the information provided in the preceding chapters and provide examples and suggestions that may help States build and strengthen their capacity development programs. Each description comprises a brief explanation of the tool, several examples of the way the tool can be used, a table outlining the broader applicability of the tool, and a listing of sources for additional information.

Annual Financial Reports

The content of annual financial reports varies, depending on the system's size, level of sophistication, and accounting system. Ownership (i.e. public or private) is the major variable affecting accounting structure, but there are also variations within publicly owned systems, since some systems have adopted an enterprise fund method of accounting while others have not. Annual financial reports include itemizations of operating expenditures and capital expenditures, revenues and other sources of income, debt service expenditures, and the status of reserve accounts. For investor-owned systems and some publicly owned systems, financial reports will also include balance sheet information (assets and liabilities). Furthermore, some systems may provide cost-of-service analyses, comparisons with previous years' expenditures, information on stock value and dividends (for investor-owned systems), discussions of the system's investment strategy, and predictions of future revenues and expenditures.

Public utility commissions (PUCs) require annual financial reports of the systems that they regulate. These reports generally follow the same format, use a uniform system of accounts, and are reviewed by commission staff. Annual reports to commissions always contain data on operating and capital expenditures, revenues, and they usually contain information on operations, service area, customer base, source of supply, pumpage rates, and other information on system finances and operations. Annual reports to PUCs are not likely to have much forecasting information; instead, they provide a good snapshot of current operations.

Uses of this tool include:

- ***Prioritizing systems.*** Annual financial reports are an excellent source of current financial information that could be part of a State prioritization method. For example, a State could assign highest priority to those systems in the worst financial condition.
- ***Establishing a baseline and measuring improvements in capacity.*** Improvements in capacity could be measured in terms of changes in the financial ratios taken from annual financial reports. There are several problems with this approach:
 - Financial ratios may be slow to reflect improvements in capacity.
 - Unfavorable financial ratios may mask improvement in other areas of capacity (e.g., a major problem facing systems is the lack of investment in infrastructure, so State capacity development strategies may recommend such investment, which may require additional debt, and (other things being equal) may cause debt service ratios to get worse, not better).
 - Annual financial reports are "snapshots" of financial conditions at a single point of time each year, and thus may not be a good measure of the overall financial health of systems. A better approach is to look at trends over time for each system.

- **Assessing capacity.** In assessing capacity, States might examine a system's expenses, revenues, reserves, and future expenditures as reported in annual financial reports. The way in which systems estimate and document these important financial elements can be an excellent indicator of capacity.

Sources of Additional Information

For more information on annual financial reports see:

National Association of Regulatory Utility Commissioners, *Uniform System of Accounts for Water Utilities (by class)*.

The broad applicability of this tool is outlined below:

Annual Financial Reports					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems			✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements			✓	✓
	Element E: Identifying Interested Persons				
Assessing Capacity				✓	✓

Big Brother and Buddy System Programs

Several State SDWA primacy agencies, working cooperatively with non-governmental organizations representing utilities (e.g., American Water Works Association or National Rural Water Association) have experimented with "big brother" or "buddy system" programs. These programs encourage partnerships between water systems, pairing a well-managed system with one that needs guidance. The idea is that the well-managed system can provide training and technical assistance to the system that is less well-managed.

In a "big brother" program, the well-managed system is usually large, and the system that needs help is usually small. In this respect, the arrangement is similar to a satellite management program. The "buddy system" arrangement pairs two systems of equal size, generally two small systems. Matching systems of similar size offers a better understanding of the problems to be resolved and a better acceptance of peer-level assistance and training.

Uses of this tool include:

- **Prioritizing systems.** The identification of systems being assisted by big brother and buddy programs could be one type of information used to prioritize PWSs.
- **Assisting PWSs in complying with NPDWRs; encouraging the development of partnerships between PWSs; and assisting PWSs in training, certification, and continuing education of operators.** Big brother and buddy system programs are examples of partnerships between PWSs.

Sources of Additional Information

For more information on buddy system programs see:

Association of State Drinking Water Administrators, *Enhancing Drinking Water System Viability: Options for States*, December 15, 1995, p. 19.

Please refer to the description of Satellite Management for more information.

The broad applicability of this tool is outlined below:

Big Brother and Buddy System Programs					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs	✓	✓	✓
		Assist PWSs in the Training and Certification of Their Operators	✓	✓	✓
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
	Assessing Capacity				

Bond Issue Reviews

Some States require publicly owned water systems to obtain State regulatory approval before issuing general obligation bonds. The bond approval process includes an engineering review of the facilities to be purchased with bond proceeds and a financial review of the feasibility of the system to make debt service payments. Like the audit report, this review reflects the State's responsibility to ensure that political subdivisions with taxing authority act responsibly when incurring debt.

Uses of this tool include:

- **Prioritizing systems.** As with the review of audit reports, bond issue reviews provide additional information about systems. This information can be used to supplement information routinely available to primacy agencies for establishing priorities.
- **Assessing capacity.** The application for bond approvals includes an engineering report that explains why the technology for the infrastructure was selected; various resolutions of the governing board of the system to indicate that the board has reviewed and approved the application and the terms of the bond issue; and an analysis of the potential tax revenues for the development, based on current and future assessed valuations of the property over the life of the bonds, usually 20 years. Thus bond issue reviews can be used to assess all aspects of capacity.

Sources of Additional Information

NARUC, Annual Report on Utility and Carrier Regulation, Washington, DC. (202) 898-2200

Beecher, Janice. *1995 Inventory of Commissions of Regulated Water and Wastewater Utilities*, Indianapolis Center for Urban Policy and the Environment.

EPA's Environmental Finance Program: A Guidebook of Financial Tools:
www.epa.gov/efinpage/guidebk/guindex.htm

The broad applicability of this tool is outlined below:

Bond Issue Reviews					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
	Assessing Capacity			✓	✓

Capital Improvement Plans

Capital Improvement Plans (CIPs) are planning documents produced by local governments, utilities, or water systems that rigorously catalogue, for a specified period of time, all needed capital projects, the reason for each project, and the associated costs. Often, CIPs also list the source of funding. Most large water systems develop CIPs, but only a limited number of small systems use this tool. Investor-owned systems and systems in States that place a strong emphasis on planning are more likely to develop CIPs than other small systems.

Uses of this tool include:

- ***Prioritizing systems.*** Capital improvement plans provide outstanding forward-looking financial and technical data for a system. Capital improvement plans usually provide information on all capital projects planned by a system for five, ten, or twenty years into the future. Unfortunately, capital improvement plans are generally completed only by larger water systems.
- ***Assessing capacity.*** Often, CIPs include a description and assessment of the system's existing infrastructure. They always include information on infrastructure needs. States can use CIPs to ensure that systems have accurately evaluated capital improvements needs by comparing the needs listed in the CIP with needs from other sources, such as recent sanitary surveys or CPEs.

A well-managed system will develop a CIP that helps customers and local regulatory authorities understand and appreciate the need for infrastructure improvements and rate increases. Therefore, a review of the CIP could help the State understand the system's ability in this important aspect of managerial capacity. In addition, the quality or quantity of information in a CIP could provide insight into a system's management information system.

Sources of Additional Information

For more information on CIPs see:

The "PAWATER Model." This model validates cost estimates and provides comparative information between proposed and existing water systems. Contact the Pennsylvania Department of Environmental Protection, 400 Market Street, Harrisburg, PA 17105. (717) 783-2300.

The broad applicability of this tool is outlined below:

Capital Improvement Plans					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
	Assessing Capacity			✓	✓

Certificates of Convenience and Necessity (CCNs)

A CCN is a license that allows certain public utilities to operate as regulated monopolies within defined areas. A utility's ability to provide continuous and adequate service is assessed prior to granting or transferring CCNs. This may involve a review of the utility's debt/equity ratio, the feasibility of obtaining service from another utility, the effect on the consumers of granting the CCN, and other technical, managerial, and financial capabilities.

Investor-owned utilities, water supply corporations, and border counties are required to obtain a CCN. Cities and districts must obtain a CCN only if they wish to serve in an area lawfully served by another utility. The order to grant, amend, or transfer a CCN may include requirements to improve the utility's ability to provide continuous service. The orders are monitored for compliance. If a utility is being transferred, the new owner must describe in the application how the current facilities will be maintained or improved to meet minimum State standards.

Uses of this tool include:

- ***Assisting PWSs in complying with NPDWRs; and encouraging the development of partnerships between PWSs.*** States can use CCN requirements to assist systems in maintaining compliance. Also, the nature of the CCN review process, particularly since it permits other nearby systems to comment on the application, can assist in the development of partnerships between water systems.
- ***Identifying interested persons.*** The process for issuance or renewal of a CCN includes explicit procedures for involving water system customers. PUCs that issue or renew CCNs could assist State primacy agencies in the identification of stakeholders.
- ***Assessing capacity.*** The process for issuance or renewal of a CCN involves an assessment of the capacity of the system applying for the CCN. It therefore can be used to supplement the primacy agency's assessment of the technical, financial, and managerial capacity of water systems.

Sources of Additional Information

NARUC, *Annual Report on Utility and Carrier Regulation*, Washington, DC. (202)898-2200

Beecher, Janice. *1995 Inventory of Commissions of Regulated Water and Wastewater Utilities*, Indianapolis Center for Urban Policy and the Environment.

The broad applicability of this tool is outlined below:

Certificates of Convenience and Necessity					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs	✓	✓	✓
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons		✓	✓	✓
	Assessing Capacity		✓	✓	✓

Compliance Data

Compliance data are records of system compliance with State and federal drinking water regulations; data are maintained by State primacy agencies and routinely uploaded to EPA's Safe Drinking Water Information System (SDWIS). Certain elements of a system's technical and managerial capacity can be assessed by reviewing these data. At a minimum, States can identify systems that are in significant non-compliance and examine the specific nature of the non-compliance. States can determine whether the non-compliance is due to monitoring and reporting, maximum contaminant level, or treatment technique violations, and whether it is an isolated event or a recurring problem. Monitoring and reporting data also may provide information not related to a violation, but which is interesting for assessing capacity (e.g., monitoring data on unregulated contaminants).

Uses of this tool include:

- ***Prioritizing Systems.*** Systems could be prioritized on the basis of monitoring and reporting data, testing results, and other compliance data available in the Safe Drinking Water Information System (SDWIS) and in States' compliance databases. Compliance data can be used to identify systems that are in significant noncompliance, that are currently violating NPDWRs, that are likely to experience compliance problems in the future, and that do not appear to understand applicable monitoring and reporting requirements or have the necessary resources to meet these requirements.
- ***Establishing a baseline and measuring improvements in capacity.*** Since the statute explicitly mentions capacity with respect to NPDWRs, analyzing compliance trends is a useful way to measure improvements in capacity. The baseline would be compliance data from the calendar quarter when the capacity development efforts began. Variables such as number of systems in significant noncompliance, number of exceedances or violations, and time required to achieve compliance could be used as indicators of capacity.

Measuring improvements solely on the basis of compliance might yield an analytical framework that is too limited, since factors such as new regulations or new enforcement tools could influence compliance rates. In addition, trends in compliance data may not yield sufficient data over the short term because capacity development is an incremental, long-term process. This is especially true for small systems and NCWSs, which are generally required to submit compliance data less often than larger systems.

- ***Assessing Capacity.*** Compliance data can reveal violations that do not lead to significant noncompliance, but may nevertheless reveal potential capacity problems. For example, intermittent violations of bacteriological standards may indicate a problem with the system's treatment facilities or distribution system. If the State finds indications of potential problems, it

should use other tools, such as sanitary surveys, peer reviews, or self-assessments, to determine if the system is taking steps to identify or address any deficiency.

EPA's guidance on assessing capacity directs the State to ensure that systems have the capacity to comply with current *and future* SDWA requirements. Compliance data review can help States understand how future SDWA requirements might affect a system.

Sources of Additional Information

For definitions of Significant Non-Compliance, see U.S. Environmental Protection Agency, *Water Supply Guidance Manual*. Relevant sections of this document are available from the Internet on the Office of Ground Water and Drinking Water (OGWDW) home page. You can access these documents at www.epa.gov/OGWDW.

If you do not have access to the Internet, call the Safe Drinking Water Hotline at 800-426-4791.

The broad applicability of this tool is outlined below:

Compliance Data					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements		✓	✓	
	Element E: Identifying Interested Persons				
	Assessing Capacity		✓	✓	

Comprehensive Performance Evaluation

The Comprehensive Performance Evaluation (CPE) is the first of two formal procedures developed as part of the Composite Correction Program (CCP) approach to optimizing surface water treatment plant performance. A CPE is a thorough review and analysis of a surface water treatment plant's design capabilities and associated administrative, operation and maintenance practices. CPEs are conducted to identify factors that may adversely impact a plant's ability to achieve optimal performance.

A CPE involves five basic elements: evaluation of the major unit processes; assessment of plant performance; identification and prioritization of performance-limiting factors; determination of the necessity of a follow-up Composite Technical Assistance program (the second phase of the CCP approach); and reporting of the results of the evaluation.

The recommended CPE format utilizes a series of detailed forms and defined evaluation procedures to provide consistent and comparable results. A significant aspect of this is the list of definitions for assessing performance-limiting factors in administrative, maintenance, design, and operations areas. Completion of all activities would be necessary to apply findings of a CPE to an assessment of small water system capacity.

Uses of this tool include:

- **Prioritizing systems.** The findings of a CPE could be used in an assessment of water system capacity. However, this tool is only appropriate for surface water systems and is thus limited for the purpose of statewide prioritization.
- **Assessing capacity.** The results of a CPE provide an evaluation of the major unit processes, an assessment of plant performance, a list of performance-limiting factors, and a recommendation on the need for follow-up. Each of these distinct activities help States and systems understand appropriate treatment technologies, optimal plant operations, and effective maintenance programs. From a managerial perspective, the evaluation also helps ensure that system operators understand the plant.

A primary objective of CPEs is to determine if significant improvements in performance can be achieved without major capital expenditures. Comparing the results of a CPE to the planned infrastructure improvements outlined in the SRF application can help the State determine if the system has the capacity to understand its needs and allocate its budget appropriately. CPEs examine financial records and investigate a system's budget and financial planning to make determinations about the capacity of the system.

Sources of Additional Information

U.S. Environmental Protection Agency, *Summary Report: Optimizing Water Treatment Plant Performance with the Composite Correction Program*, EPA/625/8-90/017, March 1990.

The broad applicability of this tool is outlined below:

Comprehensive Performance Evaluation					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements		✓	✓	
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	

Consumer Confidence Reports

SDWA §1414(c)(4) requires that all CWSs inform their customers about the levels of contaminants in the drinking water provided by that system. Systems serving more than 10,000 persons are required to inform their customers by mail. The Governor of a State may allow systems serving fewer than 10,000 persons to inform their customers through notice in newspapers if they are willing to make the report available upon request.

Uses of this tool include:

- **Assessing capacity.** Consumer confidence reports discuss both technical and managerial capacity. Their results could be used by States in an effort to assess capacity. The levels of contaminants in finished water provided to customers reflects on the adequacy of source water (from a qualitative standpoint). It also reflects infrastructure capacity and technical knowledge. Weaknesses in each of these elements could contribute to levels of contaminants that exceed standards.

The levels of contaminants in finished water also could reflect problems with the management of a system. From the standpoint of capacity development, contaminant levels that exceed standards are most likely linked to the staffing and organizational element of managerial capacity.

Sources of Additional Information

The Nov. 8, 1996 “Water Quality Reports Update” on Consumer Confidence Reports.
www.awwa.org/ccrupdat.htm.

AWWA and the CCR: www.awwa.org/ccr.htm.

Discussion of CCR regulations that EPA must publish:
www.epa.gov/OGWDW/sdwa/consumer.html.

Examples of CCRs: www.ci.portland.or.us/water/ccrindex.htm;
www.city.davis.ca.us/city/pworks/wqrept95.htm; www.water.denver.co.gov/dwbwq96.htm.

Fact sheet: www.epa.gov/OGWDW000/ccr/ccrfsold.html.
“Consumer Confidence Reports: Opportunity’s Knocking.” *Journal of the American Water Works Association*. (Apr. 1997): 12.

AWWA’s listing of utilities with CCRs: www.awwa.org/utility.htm.

The broad applicability of this tool is outlined below:

Consumer Confidence Reports					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	

Consumer Complaint Records

This tool is a State's record of consumer complaints regarding a water system. These records may reside with the State primacy agency or with regional or local authorities. State housing commissions may receive information on water systems operated by developers, neighborhood associations, or communities of manufactured housing. The State public utility commission processes complaints regarding investor-owned utilities and other utilities within its jurisdiction.

Uses of this tool include:

- **Prioritizing systems.** States could use this tool as part of a system of prioritization. It is not likely to be the most important criterion, particularly when compared to more direct tools, such as compliance data and sanitary surveys.
- **Assessing capacity.** Sometimes, consumer complaints help identify problems with water systems. The most common consumer complaints usually concern taste, odor, or low pressure. The State can use follow-up information on the complaint or other tools to determine if the system is taking steps to identify the source and find a solution to any problem. If there are problems with a system's billing and collection procedures, consumers are likely to complain. Consumers may complain that they were over-billed, or that the water system fails to recognize receipt of their payments. Such errors may indicate a lack of financial capacity.

Sources of Additional Information

As mentioned above, States have different methods of recording consumer complaints but most have records at either the State, regional, or local level. State Better Business Bureaus and Departments of Health may have useful information.

The broad applicability of this tool is outlined below:

Consumer Complaint Records					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
	Assessing Capacity			✓	✓

Cooperation with Non-Governmental Organizations

Non-governmental organizations have an important role to play in the implementation of capacity development strategies. These organizations offer a non-governmental and non-regulatory resource for technical assistance and training services for PWSs. Non-governmental organizations that are active in the field of public water supply are organizations like the American Water Works Association, the National Rural Water Association, the Association of Metropolitan Water Agencies, the National Association of Water Companies, the Association of Boards of Certification, the Rural Community Assistance Program, and others.

Developing relationships with non-governmental organizations helps ensure their participation in the capacity development process and creates a forum for discussion. In addition, because they are non-governmental and non-regulatory, their participation brings a fresh perspective to the challenges facing small water systems.

Uses of this tool include:

- ***Assisting PWSs in complying with NPDWRs; encouraging the development of partnerships between PWSs to enhance technical, managerial, and financial capacity; and assisting PWSs in training, certification, and continuing education of operators.*** Cooperation with non-governmental organizations could assist the State in achieving all of these objectives.
- ***Identifying interested persons.*** Many non-governmental organizations represent important stakeholder groups.

Sources of Additional Information

American Water Works Association: www.awwa.org

Association of Metropolitan Water Agencies: www.amwa-water.org/water

National Rural Water Association: www.nrwa.org

Rural Community Assistance Program: www.rcap.org

Partnership for Safe Water: www.awwa.org/partner2.htm

Association of State Drinking Water Administrators (ASDWA): www.asdwa.org

American Water Works Association Research Foundation (AWWARF): www.awwarf.com

The broad applicability of this tool is outlined below:

Cooperation with Non-Governmental Organizations					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs	✓	✓	✓
		Assist PWSs in the Training and Certification of Their Operators	✓	✓	✓
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons		✓	✓	✓
	Assessing Capacity				

Cooperation of Industry Groups and Lenders

An effective capacity development strategy will rely extensively on cooperation between the SDWA State primacy agency and other groups that can help to implement the strategy. For example, if the primacy agency wants to implement a strategy that relies on public education of potential home buyers, then cooperation of the mortgage lending community can be an important asset. Mortgage lenders can assist in public education by explaining the value of reliable water systems to prospective home buyers. Indeed, lenders may require homes to be supplied by a reliable system before they will provide a loan. Similarly, the primacy agency might need the cooperation of organizations that represent the water supply industry. Organizations like the American Water Works Association (AWWA) and the National Rural Water Association (NRWA) are important allies in the development of public education programs, technical assistance programs, and other efforts that may be part of the capacity development strategy.

Uses of this tool include:

- **Identifying interested persons.** Relationships with industry groups are essential to identifying some of the most interested parties, the owners and operators of PWSs.
- **Factors that encourage or impair capacity development.** Relationships with industry groups and lenders can encourage capacity development by helping systems comply with NPDWRs and informing and training system owners and operators.

Sources of Additional Information

For more information on cooperation with industry groups and lenders see:

A Guidebook of Financial Tools. Environmental Finance Program.

This document is available through the EPA home page. You can access this document at www.epa.gov/efinpage/guidebk/guindex.htm.

Information on organizations can be found at:

American Water Works Association: www.awwa.org

National Rural Water Association: www.nrwa.org

Rural Community Assistance Program: www.rcap.org

The broad applicability of this tool is outlined below:

Cooperation of Industry Groups and Lenders					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development		✓	✓	✓
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons		✓	✓	✓
Assessing Capacity					

Coordination with Other Agencies

Effective design and implementation of capacity development strategies requires the coordination of a large number of governmental agencies. At the State level, these may include the State SDWA primacy agency, the public utility commission (PUC), the SRF development financing agency, and the water resources management agency. In some States, several of these may be authorized by a single statute and be in the same overall agency. In other States, there may be substantial fragmentation.

Public utility commissions (PUCs) play an important role in the regulation and oversight of PWSs in many States, and are logical partners in capacity development strategies. Several state commissions have adopted more expanded roles in small water system capacity.

The State financing agency, if different from the primacy agency, is another important actor. This agency administers grant and loan programs that can provide incentives for capacity development efforts. Establishing coordination between the primacy agency and the financing agency is an essential part of a capacity development strategy.

The State agency responsible for administering water supplies (through water rights or user permits) is likely to have data on water allocations that are necessary for evaluating the supply options in an area. Similarly, a State's water quality agency will have some data on the quality of those surface or ground water supplies; this information is valuable for determining whether treatment costs or contamination problems may be associated with a particular supply alternative. In addition, university geology departments and federal agencies such as the U.S. Geological Survey or the Army Corps of Engineers may have conducted studies that include either or both types of useful information.

At the sub-State level, the primacy agency must coordinate with all regional, county, and municipal governments that may play a role in capacity development. Agencies concerned with development, land use planning, and growth management are likely candidates for partnerships. Coordination is necessary to develop a State-wide effort to ensure that all new residential and commercial developments are served by systems with adequate capacity. In most States, most land use planning is done at a sub-State level by municipal governments, county governments, or regional planning agencies.

Coordination between agencies is usually accomplished through Memoranda of Understanding. These could be implemented in several different ways.

- Primacy agencies and PUCs could jointly issue renewable operating permits. The primacy agency could focus on technical areas where it has strong engineering and operations expertise, while the PUC could focus on financial areas. Together, the two agencies could

perform a more thorough development assessment than either agency could perform alone.

- Both the PUC and the State financing agency could be included in the MOU, thereby ensuring that prospective uses of grant and loan funds are reviewed by both the primacy agency and the PUC.
- Primacy agencies could sub-contract the assessment of PWSs' financial capacity to PUCs or the State financing agency, thereby bringing the expertise of these other agencies to bear on this critical element of capacity assessment.

Uses of this tool include:

- **Prioritizing systems.** Coordinating with all other agencies that routinely assess capacity of water systems would improve the ability of the primacy agency to prioritize systems.
- **Identifying factors that encourage or impair capacity development.** Coordination with other, relevant agencies encourages capacity development, and absence of coordination will impair the implementation of a capacity development strategy.
- **Establishing a baseline and measuring improvements in capacity.** Coordination with other agencies, particularly through MOU, would be one indication of improvement in the State program.
- **Assessing capacity.** Coordination with other agencies is an important step in assessing capacity. As demonstrated throughout this document, each of these agencies may have technical expertise that would not be available from the primacy agency alone. For example:
 - PUCs have information on financial aspects of the capacity of systems that they regulate. The staff includes professionals who are trained to assess financial capacity—a type of expertise that may not be found in the primacy agency.
 - State financing agencies have a unique database comprised of applications for grants and loans, plus agency evaluation of the capacity of systems applying. Also, like PUCs, financing agencies have trained professionals who are expert in assessment of financial capacity.

Sources of Additional Information

For more information on coordination with other agencies see:

A Guidebook of Financial Tools. Environmental Finance Program.

This document is available through the EPA home page. You can access this document at www.epa.gov/efinpage/guidebk/guindex.htm.

Washington Public Utility Districts Association: www.wpuda.org

The broad applicability of this tool is outlined below:

Coordination with Other Agencies					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	✓
	Element B: Factors That Encourage or Impair Capacity Development		✓	✓	✓
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements		✓	✓	✓
	Element E: Identifying Interested Persons		✓	✓	✓
Assessing Capacity			✓	✓	✓

Credit Rating Services

There are several different credit rating services. Different institutions rate the credit-worthiness of different types of PWSs. Two institutions, Standard & Poor's and Moody's, rate the credit of some PWSs that have issued bonds; not all systems that issue bonds are rated. Both publicly owned and privately owned systems are included in these ratings. Dun & Bradstreet, another credit rating service, issues reports on the credit-worthiness of millions of investor-owned businesses, which include investor owned water systems. All of these services use a variety of financial ratios to compare the financial condition of the entity being rated with comparable publicly owned or privately owned entities. Dun & Bradstreet also uses a history of accounts payable to assess whether the utility pays its vendors promptly.

Many small PWSs do not have the type of financial history that is required to obtain a credit rating from institutions like Moody's, Standard & Poor's, or Dun & Bradstreet. Because the inability to get a credit rating from these services is generally due to the systems' small size, it is not a good indicator of capacity for very small systems.

Uses of this tool include:

- **Assessing capacity.** All of the credit rating services focus primarily on an evaluation of the financial condition of water systems. Therefore, they are most useful in assessing the financial capacity of systems. It is likely that most small systems will not be rated by any of these services. Nevertheless, the procedures and techniques used by the services may provide some insights to States as they develop methods for assessing financial capacity.

The credit rating services described above provide insights into variables that are of most interest to creditors. The bond rating services focus primarily on variables that are related to the ability of a water system to establish and maintain a revenue stream that will allow a system to repay the institutions that purchased the bonds. Dun & Bradstreet, in contrast, is more interested in day-to-day credit worthiness, e.g., the ability of a system to pay its vendors. The type of analysis used by Dun & Bradstreet is particularly useful for the smallest systems that are unlikely to ever issue debt instruments.

Sources of Additional Information

For more information on credit rating services see:

AWWA Research Foundation, "Meeting Future Financial Needs of Water Utilities."

Standard & Poor's: www.ratings.standardpoor.com/

Moody's: www.moody.com

Dun & Bradstreet: www.dnb.com/

EPA's Environmental Finance Program: A Guidebook of Financial Tools:
www.epa.gov/efinpage/guidebk/guindex.htm

The broad applicability of this tool is outlined below:

Credit Rating Services					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity					✓

Criteria Used by Lenders

All lenders have criteria that they use to evaluate loan applications. Some lenders (e.g., the Rural Utilities Service (RUS) and Co-Bank) have experience in lending to small water systems. Both RUS and Co-Bank provide financial assistance to small water systems; in the course of making decisions about providing that assistance, both institutions review the financial capacity of the systems that have applied for loans. The criteria used by these institutions could be used to assess a system's financial capacity.

Uses of this tool include:

- **Prioritizing systems.** Criteria used by lenders might provide examples of measures that could be used to prioritize systems.
- **Assessing Capacity.** A basic concern of both RUS and Co-Bank is that their loans be repaid. Therefore, both will look for system policies and procedures that ensure an adequate source of revenue. For small systems, this generally means adequate fees (or taxes for publicly owned systems). Fees or taxes should be complemented by sound financial planning, including separate accounts for debt service payments. Both lending institutions request several types of financial information from systems that have applied for loans. Since the information requested has been tailored to the unique conditions of small systems, they may be particularly useful for States as they evaluate systems' financial capacity.

RUS looks at more than financial capacity; it also assesses the managerial capability of the system as an important aspect of the system's overall capacity.

Sources of Additional Information

For more information on lending criteria see:

“Financial Viability Manual for New and Expanding Small Water Systems.” Washington State Department of Health, Environmental Health Programs, March 1995.

The broad applicability of this tool is outlined below:

Criteria Used by Lenders					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems			✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity				✓	✓

DWSRF Loan Applications

To take advantage of the funding opportunities outlined in §1452 of the SDWA, water systems must submit an application to the agency managing the DWSRF in their State. These applications commonly require systems to include detailed information on system needs, long-term plans, service population demographics, and financial structure. Reviewing SRF applications can also help the State assess the system's technical, managerial, and financial capacity. In particular, the State should examine the system's ability to identify a dedicated source of funds for repayment (or loan security, in the case of private systems).

Uses of this tool include:

- **Prioritizing systems.** Under the 1996 SDWA, States must provide assurances that water systems receiving SRF assistance currently have the technical, managerial, and financial capacity to meet SDWA requirements, or that the SRF assistance will help them attain capacity. As a result, SRF loan applications should be tailored to elicit from systems the data most relevant to prioritization.
- **Assessing capacity.** In accordance with the SRF guidelines, the State must adopt policies and procedures to assure that borrowers have a dedicated source of revenue for repayment (or adequate security). Generally, loan applicants work with the County Council (or similar body) to pass a resolution to reserve revenues from user fees, taxes, or other sources for this account. The system's ability to accomplish this helps demonstrate its ability to engage in sound financial planning, establish appropriate user fees, work with local regulators, and obtain the necessary political support for its system.

Many States are requesting basic financial data on SRF applications or pre-applications. The types of data requested are modeled after the information requested in the Clean Water SRF program. They are aimed at determining municipal financial conditions and can often be used in conjunction with a State's disadvantaged community program. Requested information often includes debt data (e.g., debt level, debt per capita, debt as a percentage of full market property), financial operations (e.g., property tax collection rates), socioeconomic indicators (e.g., median income, employment, and poverty level), and information to assess user fee impact (e.g., user fees as a percent of median household income). States should note, however, that the financial capacity of the municipality does not necessarily correlate with the capacity of the water system. System-level indicators, such as cost-of-service analyses, should also be examined.

Sources of Additional Information

For more information on SRF applications see:

U.S. Environmental Protection Agency, "Drinking Water State Revolving Fund Program Guidelines," EPA 816-R-97-005, February 1997. This document was developed to provide a description of guidelines that will apply in the operation of the DWSRF program.

The broad applicability of this tool is outlined below:

DWSRF Loan Applications					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems			✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity				✓	✓

Emergency Response Plans

One potential step in building capacity is the development of an Emergency Response Plan that will define how systems respond to emergency situations. These plans cover both “routine” and “disaster” emergencies. The plan lists procedures that a system should follow when emergencies occur. The goal is for the system to develop the capacity to handle routine emergencies so the system will be better capable of protecting public health if a disaster occurs.

Uses of this tool include:

- **Assessing capacity.** Examining how a system will respond to routine and disaster emergencies could cover all aspects of capacity, but is most applicable to technical capacity, particularly technical knowledge and infrastructure adequacy. Secondly, the tool could be applied to assessments of managerial capacity for the element of staffing and organization. Finally, analyzing ERPs may provide insight as to whether a system is capable of handling the financial burden of responding to emergencies.

Sources of Additional Information

Washington State requires an emergency response plan as an element of a system’s Water System Plan. Washington State Department of Health, "Planning Handbook: A Guide for Preparing Water System Plans," August 23, 1993.
www.doh.wa.gov/ehp/dw/newpubz.htm#planning

National Rural Water Association, "Emergency Response Manual for Small Systems."

For more information on emergency response plans, contact the National Rural Water Association at 405-252-0629, or the American Water Works Association at 303-799-7711.

RCAP: “Small System Guide to Risk Management and Safety.” (703) 771-8636

EPA: The National Response Team’s Integrated Contingency Plan Guidance.
www.epa.gov/swercepp/pubs/one-plan.html

The broad applicability of this tool is outlined below:

Emergency Response Plans					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	✓

Enforcement

Many States consider enforcement to be a tool for improving system capacity. As one State representative put it, "this is the last tool in the toolbox." In other words, enforcement (or the threat of enforcement) can assist in capacity building.

Uses of this tool include:

- ***Assisting PWSs in complying with national primary drinking water regulations.***
Enforcement is one tool that can be used (as a last resort) to ensure that systems are complying with NPDWRs.

Sources of Additional Information

For more information on enforcement, see:

"In the Main." Massachusetts Division of Water Supply. Spring 1996.

"Enforcement Program." Washington Division of Drinking Water: www.doh.wa.gov/ehp/dw/

The broad applicability of this tool is outlined below:

Enforcement					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity					

Financial Viability Assessment Methods

State SDWA primacy agencies and public utility commissions (PUCs) have developed methods to assess the financial viability of PWSs. Typically, these methods focus on a few key financial ratios that are indicative of overall financial health. These methods may help States assess the financial capacity of systems.

Uses of this tool include:

- **Prioritizing systems.** Like criteria used by lenders, the financial ratios that are used in financial viability assessment methods may be useful in prioritizing systems.
- **Assessing capacity** One of the problems that States may have when trying to apply financial ratios is deciding which ratios to use. Financial analysis typically is the strength of public utility commissions rather than SDWA primacy agencies. An advantage of these viability assessment methods is that they have been applied and tested on financial data from many utilities. The ability of each ratio to predict financial health has been assessed empirically.

Sources of Additional Information

For more information on regional planning, see:

Beecher and Dreese, "Financial Distress Models for Small Water Utilities," *Proceedings* of the Eighth NARUC Biennial Regulatory Information Conference, Vol. IV, pp. 175-195 (Columbus, OH 1992).

The broad applicability of this tool is outlined below:

Financial Viability Assessment Methods					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity					✓

Financial Assurance Mechanisms

Several States have authority to require that system owners provide some form of financial assurance prior to construction of a new water system or expansion of an existing system. While the types of financial assurance mechanisms vary from State to State, the intent generally is the same: to ensure that sufficient funds are available to repair and/or operate the system in the event that the owner is unable to do so. Typically, these requirements are more often imposed on small, privately owned systems.

Examples of financial assurance mechanisms include:

- Escrow accounts (Maryland)
- Reserve accounts to cover emergency or system component failure costs (Washington)
- Surety bonds (North Carolina)
- Letters of credit
- Trust funds
- Financial tests (e.g., an analysis of financial statements that demonstrates the financial health of the water system)

Uses of this tool include:

- ***Assessing capacity.*** These financial assurance mechanisms are a quick test of a system's financial capacity. If the system cannot afford one of these financial assurance mechanisms, then it may not have the financial capacity to provide safe drinking water.

Sources of Additional Information

U.S. Environmental Protection Agency, "Ensuring the Viability of New, Small Drinking Water Systems: A Study of State Programs," EPA-570/9-89-004, April 1989.

EPA's Environmental Finance Program: A Guidebook of Financial Tools:
www.epa.gov/efinpage/guidebk/guindex.htm

The broad applicability of this tool is outlined below:

Financial Assurance Mechanisms					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				✓
	Element B: Factors That Encourage or Impair Capacity Development				✓
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity					✓

Financial and Managerial Training

In 1990, EPA, ASDWA, AWWA and NRWA joined together to form the National Drinking Water Training Coalition. The purpose of this coalition was to establish State staff and operator training programs. The Coalition was expanded in 1991 to include RCAP and the National Environmental Training Association (NETA).

One lesson learned from the work of the Coalition is that existing training programs, while adequate in addressing technical issues, are less effective in financial and managerial aspects. Training programs need to address all three aspects of capacity. Indeed, training on financial and managerial issues needs to be given emphasis equal to training on technical issues.

Uses of this tool include:

- ***Assisting PWSs in complying with NPDWRs, encouraging the development of partnerships between PWSs; and assisting PWSs in the training, certification, and continuing education of operators.*** Many States believe that managerial and financial training are essential in helping systems to comply with regulations. Such training also assists PWSs in the training and continuing education of their operators.
- ***Assessing capacity.*** Most training programs assess needs prior to developing curricula and giving courses. Most programs also do evaluations of the effectiveness of their training courses.

Sources of Additional Information

For more information on financial and managerial training see:

National Training Coalition, "Final Report on Training Needs and Providers," July 1997.

Andrew A. Holton, CET, "Introduction to Utility Management." This is a management training course designed for small and very small water systems.

RCAP-Community Resource Group, "The Small System Guide to Financial Management," "The Small System Guide to Planning, Financing and Constructing Facility Improvements."

You can obtain more information by calling the Association of State Drinking Water Administrators at 202-293-7655, or RCAP-Community Resource Group at 501-443-2700.

The broad applicability of this tool is outlined below:

Financial and Managerial Training					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs		✓	✓
		Encouraging the Development of Partnerships Between PWSs		✓	✓
		Assist PWSs in the Training and Certification of Their Operators		✓	✓
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity				✓	✓

Interviews with Personnel Familiar with the System

States should not overlook the obvious step of talking with individuals who are familiar with the system.

Uses of this tool include:

- ***Assessing capacity.*** States could obtain valuable information from sanitarians, engineers, or regulatory staff at the State, county, or local level who are familiar with the system; local planning boards, operator certification boards, or developers' associations; technical assistance personnel such as circuit riders; and system owners and operators.

The broad applicability of this tool is outlined below:

Interviews with Personnel Familiar with the System					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	✓

Operator Certification

One method of assessing aspects of technical and managerial capacity is to determine whether a system has a certified operator. EPA, in conjunction with a State working group and a NDWAC working group, is developing guidelines for State operator certification programs. The final guidelines for States will be published not later than February 1999. Under §1419 of the SDWA, States are required to adopt and begin implementing operator certification programs for CWSs and NTNCWSs by February 2001.

Uses of this tool include:

- **Prioritizing systems.** Many States have data on the number of systems with certified operators and, in some cases, the qualifications of those operators.
- **Identifying interested persons.** Operator certification advisory boards can be key resources in identifying and informing interested persons. States might work with operator certification boards to develop a curriculum that would help ensure capacity. Such a curriculum might include continuing education requirements that would keep stakeholders informed.
- **Assessing capacity.** States generally agree that systems that have certified operators have greater managerial and technical capacity.

Sources of Additional Information

Association of Boards of Certification (ABC), "Operator Certification Program Standards," January 1997.

ABC, "ABC Survey of Water Treatment Certification Requirements: Preliminary Results," December 12, 1996.

"American Water Works Association White Paper on Operator Certification Programs."

Association of State Drinking Water Administrators (ASDWA), "Final Position Statement-Operator Certification," #96-03, October 30, 1996.

National Rural Water Association (NRWA), "Operator Certification—the NRWA Position," Fourth Quarter 1996.

You can obtain more information by calling the ABC at 515-232-3623, the AWWA at 303-799-7711, the ASDWA at 202-293-7655, or the NRWA at 405-252-0629.

The broad applicability of this tool is outlined below:

Operator Certification					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	
		Encouraging the Development of Partnerships Between PWSs	✓	✓	
		Assist PWSs in the Training and Certification of Their Operators	✓	✓	
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons		✓	✓	
Assessing Capacity			✓	✓	

Permit Application Data

Permitting is a process designed to help ensure that PWSs are complying with all applicable environmental and public health regulations and that they will have adequate technical, managerial, and financial capacity to provide safe drinking water. The State's authority to issue a permit is an opportunity for the State to assess system capacity. The requirement to renew operating permits ensures that this assessment of system capacity will be repeated periodically.

Uses of this tool include:

- ***Prioritizing systems.*** Permitting requirements can provide a wide range of data that could be used by States to prioritize systems. Since permitting requirements vary across States, and the availability of accessible databases will differ, the usefulness of this tool will be State-specific.
- ***Identifying interested persons.*** The issuance of permits affords States an opportunity to identify and communicate with stakeholders.
- ***Assessing capacity.*** Permit applications collect information that can be used to evaluate the overall management and operation capabilities of a water system. The permit applications of most States have components that include, to varying degrees, technical, managerial, and financial documentation.

Sources of Additional Information

For more information on permitting see:

U.S. Environmental Protection Agency, "Initial Summary of Current State Capacity Development Activities," EPA Document # 816-S-97-001, January 1997. This report reviews State capacity development efforts as of August 1996. It responds to the statutory mandate contained in §1420(d)(2) of the SDWA.

The broad applicability of this tool is outlined below:

Permit Application Data					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons		✓	✓	✓
Assessing Capacity			✓	✓	✓

Public Education and Information

Public education and information is at the heart of many capacity development strategies. Regardless of available grants and loans, it is likely that some of the costs of compliance (including infrastructure and operations improvement) will fall on consumers. Water systems may be concerned about increasing user fees. However, if the public (including system owners and operators) is fully informed of the costs associated with operation of a reliable water system, the options available for meeting the water supply needs of the public, and the association between public health and sound drinking water infrastructure, then responsible citizens will choose the least-cost option that protects public health. For example, if prospective home buyers were aware of the risks and potential costs associated with joining a homeowners association that owns its own water system, then there would be pressure on developers to rely more extensively on professionally managed water systems.

Uses of this tool include:

- ***Assisting PWS in complying with NPDWRs and encouraging the development of partnerships between PWSs.*** Public education can be used to assist PWSs in achieving both of these objectives.
- ***Identifying interested persons.*** Public education could play a role in identifying interested persons by informing the public of the issues and the opportunity to participate. In addition, public education allows the general public to participate as an informed party in the preparation of the capacity development strategy.

Sources of Additional Information

Powell, John R., David J. Allee and Charles McClintock. "Groundwater Protection Benefits and Local Community Planning: Impact of Contingent Valuation Information." *American Journal of Agricultural Economics*. 76 (Dec. 1994): 1068-1075.

Public Involvement Strategies: A Manager's Handbook. AWWARF. Denver: 1996.

Plank, R. David, Roddy Rogers, Frank L. Shorney, David J. Novak and Robert R. Zion. "Public Involvement Helps Supply Project Succeed." *Journal of American Water Works Association*. (May 1997): 40-54.

USEPA Office of Water. (WH595), EPA 430/09-89-006. July 1989. "Building Support for Increasing User Fees."

AWWA Blue Thumb Project, "Give Drinking Water A Hand."
<http://www.awwa.org/bluethum.htm>

The broad applicability of this tool is outlined below:

Public Education and Information					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs	✓	✓	✓
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons		✓	✓	✓
Assessing Capacity					

Rate Reviews and Approvals

Public utility commissions (PUCs) periodically review the rate structures of the PWSs they regulate. The theoretical ideal is to set rates equal to the cost of service plus a reasonable return on investment. Since the cost of service changes periodically, it is useful to review costs and rates and determine whether systems are, in fact, recovering their full cost of service. Approval of the rate application is largely contingent on having adequate records to determine cost-of-service and the valuation of rate base.

The review of a rate application requires the collection of substantial information that may be relevant to issues of capacity development. For example, PUCs routinely examine the results of sanitary surveys. There also may be an on-site inspection of the facilities to determine whether deficiencies noted on the sanitary survey have been addressed.

The rate review process identifies systems that are not metered or that use flat rates; utilities may be ordered to meter customers or to set rates based on usage. This process encourages conservation and helps to identify systems with significant leaks.

Customers are notified of the rate change application and have an opportunity to protest the rates or the service provided by the utility. Customer complaints during the rate approval process could be another source of information indicating system deficiencies that should be addressed.

Uses of this tool include:

- **Prioritizing systems.** Data from rate reviews can be used to help prioritize systems. If data from rate reviews are not of uniform quality, or if the number and percentage of systems with reviews is small, rate review data could be used to supplement other data sources.
- **Establishing a baseline and measuring improvements in capacity.** The data from rate reviews can be used to measure progress. A longitudinal analysis of the technical, financial, and managerial capacity of systems, as measured by information obtained during rate reviews, could be used to supplement information on these subjects gathered from other sources.
- **Assessing capacity.** Rate application data are taken from sanitary surveys and occasionally on-site inspections of the facilities. These types of information provide substantial insights into the technical capacity of the system. The records of all systems submitting a rate application will be subject to inspection by PUC staff, allowing thorough assessment of managerial capacity. The PUC review of cost-of-service, valuation of rate base, depreciation expense and the debt/equity ratio to ensure appropriate rates could also assist in assessing financial capacity.

Sources of Additional Information

For more information on rate reviews see:

Public Utilities Commission, State of California, Proceeding No. I.90-11-033, "Staff Report on Issues Related to Small Water Utilities," June 10, 1991.

AWWA Research Foundation, "Meeting Future Financial Needs of Water Utilities."

The broad applicability of this tool is outlined below:

Rate Reviews and Approvals					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements		✓	✓	✓
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	✓

Regional Plans

Regional planning is a strategic management process used to coordinate resolution of drinking water issues related to population demographics, new system development, and overall water quality. The process often involves the consolidation and integration of individual water system plans and identifies potential conflicts among individual plans. These plans are usually examined by a committee comprised of representatives of county governments, water utilities, and the State drinking water program. The committee structure also provides a forum to resolve identified conflicts.

Each State approaches regional planning differently. In many States, planning occurs at the county level and may be augmented with State assistance or formal regulatory control. In Maryland, for example, counties are responsible for submitting county-wide plans for water and sewer services; the water system component of the plan must be approved by the Maryland Department of the Environment. These plans must identify present and future water systems and provide schedules and financial information for system construction, development, extension, and expansion to meet county population growth over a 10-year period.

Typically, the planning committee delineates the exact boundaries of the planning area and produces a final integrated planning document. This final document may include the following components:

- demarcation of present and future service areas
- outline of anticipated water system development
- itemization of procedures for authorizing new water systems
- delineation of arrangements for shared use of facilities
- description of minimum design and fire flow performance standards
- creation of satellite support systems to provide assistance to small systems

Uses of this tool include:

- ***Assisting PWSs in complying with regulations and encouraging the development of partnerships between PWSs.*** Regional water supply plans, by requiring a planning process for all systems in a region, assist systems in complying with all federal and State regulations, and since the planning process is regional, it encourages the development of partnerships among systems.
- ***Assessing capacity.*** Regional planning provides an opportunity to predict a utility's future service area, based on population projections. The first step in this process usually involves compilation of individual water system plans, which typically include information about current and anticipated service plans. Washington State, for example, requires individual water system

plans to address a 20-year planning horizon. With review of these plans, committees can identify and resolve any conflicts that may exist between individual water systems and plan to ensure future capacity.

Sources of Additional Information

For more information on regional planning, see:

Washington State Department of Health, "Planning Handbook: A Guide for Preparing Water System Plans," August 23, 1993.

The broad applicability of this tool is outlined below:

Regional Plans					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs	✓	✓	✓
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons		✓	✓	✓
Assessing Capacity			✓	✓	✓

Restructuring

Restructuring is one approach to improving system capacity. This is a broad term referring to a wide range of changes a system could make in its operations, management, or institutional structure. Restructuring means changing the way a system does business in order to ensure its customers the best possible service at the lowest possible cost.

Experts who have written about restructuring often categorize restructuring strategies into two broad categories: internal and external. Internal strategies seek to provide greater access to capital financing and operating efficiency. External strategies involve collaboration with neighboring systems to achieve the advantages of economies of scale.

An example of internal restructuring is increasing rates, thereby improving the financial condition of the system and providing greater access to capital markets. External restructuring may be categorized into two types: consolidation (e.g., physical restructuring, mergers, and acquisitions), and cooperation (a variety of methods including contract operations and maintenance agreements). Thus, external restructuring could include a wide range of changes, from mergers and acquisitions to satellite management, contract O&M, and even big brother arrangements.

Uses of this tool include:

- ***Assisting PWSs in complying with NPDWRs; and to encourage the development of partnerships between PWSs.*** Restructuring is designed to improve compliance and encourage partnerships.
- ***Assessing capacity.*** Restructuring also could be used in a general way to assess all aspects of capacity. It is a means of ensuring that water system customers obtain the best possible service at the lowest cost, and it may help States and systems to consider least-cost alternatives to new construction.

Sources of Additional Information

For more information on restructuring see:

U.S. Environmental Protection Agency, *Restructuring Small Drinking Water Systems: Options and Case Studies*, 1996.

Castillo, Eloise Trabka, Scott J. Rubin, Sally Keefe and Robert S. Raucher. "Restructuring Small Systems." *Journal of the American Water Works Association*. (January 1997): 65-74.

The broad applicability of this tool is outlined below:

Restructuring					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs	✓	✓	✓
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity					

Review of Audit Reports

Some States require that utilities submit an annual audit report to the State. One reason for this requirement is the States' oversight responsibility for political subdivisions that may issue municipal bonds and levy taxes. This oversight requires audit information so that States may monitor their burden of responsibility. States may require that supplemental information be included with the audit report to assist the State in evaluating the water system's capacity.

Uses of this tool include:

- ***Prioritizing systems.*** As with many other types of financial reviews conducted by State agencies, the review of audit reports provides additional information about these systems. This information can be used to supplement information routinely available to primacy agencies as they establish priorities.
- ***Assessing capacity:*** Managerial capacity can be assessed by examining a system's internal controls. The annual audit report is analyzed to ensure its rates, charges, and revenues are sufficient to cover debt service and operating expenditures. This analysis can be used as an assessment of capacity.

Sources of Additional Information

For more information on audit reports, see:

Texas Natural Resource Conservation Commission, "Annual Audit Report Requirements for Texas Districts and Authorities." www.tnrcc.state.tx.us/admin/topdoc/wv.html

The broad applicability of this tool is outlined below:

Review of Audit Reports					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems			✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity				✓	✓

Sanitary Surveys

In 40 CFR 141.2, a sanitary survey is defined as an on-site review of the water source, facilities, equipment, operation, maintenance, and monitoring compliance of a PWS for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water. It reviews many facets of a system's operation and management, with the intent of identifying and documenting actual and potential problems that might lead to noncompliance or degradation of drinking water.

Each primacy State must establish a systematic program for conducting sanitary surveys, in which the following factors may be considered in determining which systems will be evaluated: compliance history of the system; source type, including whether a new source was recently added; treatment technology, including recent changes; system size; system type; whether the system has received a monitoring waiver; and whether the system has a new operator.

Several aspects of sanitary surveys require special attention. Inspectors or field engineers must ensure that distribution and storage equipment is properly maintained and that all regulations related to cross-connection control are followed. Evaluation of these components requires inspectors to perform a physical inspection of the relevant system components and discuss with system personnel the standard procedures used for operation and management of these components. For example, if an inspection reveals fecal contamination of a finished water storage tank, it is important to identify the proximate cause (e.g., a loose-fitting cover over the storage tank) and also to identify the procedural breakdown that allowed the problem to occur.

Uses of this tool include:

- **Prioritizing systems.** Sanitary survey data are constantly being updated, and can identify systems with ongoing, recurring deficiencies. These deficiencies may not require compliance or enforcement action, but do indicate the need for capacity development. Sanitary survey procedures can be structured to provide data that are most relevant to capacity issues; by tying sanitary surveys to a capacity development strategy, States can begin to break the cycle of recurring, uncorrected deficiencies. Unfortunately, few States have assembled their data into databases that allow easy data retrieval.
- **Assessing capacity.** Information on the condition and history of a system's infrastructure is extremely useful in assessing technical capacity. Sanitary surveys provide an opportunity to collect and review this information and directly observe the operation of a system's infrastructure. Direct observation of the competence of staff interviewed during the survey provide one measure of the system's management capability. Other, more formal measures include review of the existence and quality of documents such as operations and maintenance manuals and plans; emergency contingency plans; management information system

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documentation; general personnel, purchasing, and accounting policies; and bylaws or articles of incorporation documenting the utility's decision-making structure. Sanitary surveys provide an opportunity to confirm a system's compliance history by reviewing monitoring data logs and reports to ensure that these logs accurately reflect data reported by the systems. Additionally, they allow verification of the quality of monitoring data recorded and reported by the system.

Sources of Additional Information

For more information on sanitary surveys, see "EPA/State Joint Guidance on Sanitary Surveys," December 1995.

Call the Safe Drinking Water Hotline at 800-426-4791, or call the Association of State Drinking Water Administrators (ASDWA) at 202-293-7655.

The broad applicability of this tool is outlined below:

Sanitary Surveys					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements		✓	✓	
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	

Satellite Management

Satellite management generally refers to an arrangement whereby a large CWS (e.g., a municipal or county system) agrees to become responsible for specified management tasks for nearby smaller systems. The smaller systems therefore become “satellites” of the larger system. A variation on this arrangement is satellite ownership where the assets of the smaller system are transferred to the larger system. Satellite management programs provide relief to smaller systems overwhelmed by the increasing challenges of water system management

The generic concept of satellite management is applied in many different ways across the country. In Washington State, for example, satellite management was a central concept in the development of regional water supply plans. Counties, in particular, were urged to offer satellite management services to small water systems in their service area. More recently in Washington, a new statute has enlarged the role of satellite management and seeks to provide incentives for large systems to become certified satellite management agencies.

Each State will want to shape the concept of satellite management to fit its unique circumstances. In Washington State and many other States, the candidates most likely to become satellite managers are large publicly owned systems like counties. In States where large investor-owned utilities predominate, however, it may be useful to encourage these systems to engage in satellite management.

Uses of this tool include:

- ***Assisting PWSs in complying with NPDWRs; and to encourage the development of partnerships between PWSs.*** Satellite management is designed to improve compliance and encourage partnerships.
- ***Assessing capacity.*** Satellite management could be used in a general way to assess all aspects of capacity. For example, a State might require that systems requesting assistance demonstrate that they have considered satellite management options prior to proposing any major infrastructure improvements.

Sources of Additional Information

For more information on satellite management programs, see:

Washington State Department of Health, "Satellite Management Program," "Satellite Management," and "Impacts of Engrossed Second Substitute Senate Bill . . . on Satellite Management of Public Water Systems."

The broad applicability of this tool is outlined below:

Satellite Management					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs	✓	✓	✓
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	✓

Self-Assessment and the “Dozen Questions”

Several States have used self-assessment to help small water system owners assess their system’s capacity. States typically provide a self-assessment manual that contains a structured system of yes/no questions that follow the major elements of a complete business or water system plan. Thus, the questions are organized around issues related to technical, managerial, and financial capacity. Questions are further grouped according to overall topic areas. Each topic represents an important area where there may be hidden costs in store for the water system. The manual may contain simple budget worksheets that assist the water system in using its estimates of future costs to develop an assessment of projected revenue, capital requirements, and water rates.

Uses of this tool include:

- ***The “Dozen Questions”*** is a self-assessment tool that groups important questions regarding system capacity into twelve categories. States have used these questions as part of a business plan approach or as a self-assessment exercise to assist PWSs in complying with NPDWRs, encourage the development of partnerships between PWSs, and assist PWSs in the training of operators.
- ***Measuring improvements in capacity.*** This process would require a baseline measure of all systems at the time when the capacity development efforts began, and a method to update system assessments regularly.

Sources of Additional Information

Cromwell, Schmidt and Albani, "A Dozen Questions to Assess Small System Viability," Proceedings of the 1993 AWWA Annual Conference, San Antonio, Texas.

Pennsylvania Department of Environmental Protection, "Pennsylvania Water System Self-Assessment Guide," September 1996.

Iowa Department of Natural Resources, "Self Assessment Manuals for Iowa Water System Viability," September 1996.

RCAP-Community Resource Group, "The Small System Guide to Viability."

RCAP-Community Resource Group, "The Self-Evaluation Guide for Decision-Makers of Small Community Water Systems."

Rural Water Association and American Water Works Association, Georgia Section, "Georgia's Small System Peer Review Program."

You can obtain more information by calling the RCAP-Community Resource Group at 501-443-2700, the Georgia Rural Water Association at 770-358-0221, the National Rural Water Association at 405-252-0629, or the American Water Works Association at 303-799-7711.

The broad applicability of this tool is outlined below:

Self Assessment and the Dozen Questions					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs	✓	✓	✓
		Assist PWSs in the Training and Certification of Their Operators	✓	✓	✓
	Element D: Establishing a Baseline and Measuring Improvements		✓	✓	✓
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	✓

Source Water Assessment Programs

Source water and capacity development have two fundamental links. One link is to the DWSRF, which allows States to set aside funds for prevention activities. The second link is to public participation. A consistent theme in the Amendments is for States to have both flexibility and resources in adjusting programs to meet State needs, especially in the prevention area, and the obligation for public information and involvement to ensure that States' choices correspond to their constituents' needs and conditions.

Wellhead Protection Programs (for ground water) and Watershed Control (or Protection) Programs (for surface water) are types of source water assessment programs that many States have implemented for years. Wellhead Protection Programs can include requirements that a PWS determine the susceptibility of its source water to surface activities; delineate wellhead protection areas; investigate potential contaminant sources; notify owners, operators, regulators, land use planners, and emergency responders of the findings; and develop contingency plans in the event of a contamination incident.

Uses of this tool include:

- ***Prioritizing systems.*** Source water protection programs can provide information on potential sources of contamination that could help in prioritization.
- ***Assisting PWSs in complying with NPDWRs; and encouraging the development of partnerships between PWSs.*** Source water protection, encouraged by the 1996 Amendments to SDWA, assists in both of these efforts.
- ***Establishing a baseline and measuring improvements in capacity.*** Given the potential importance of source water protection and its links to capacity development, one measure of improvement in capacity development could be the extent to which the State and its systems have implemented source water protection.
- ***Assessing capacity.*** Developing a sound source water protection or wellhead protection program involves all three components of capacity: the technical ability to determine hydrogeologic data, the management skills to develop and implement the plan; and the financial capacity to finance any needed facilities or activities. The presence of a source water protection program or wellhead protection program is an indicator of capacity. Similarly, developing a watershed control program requires all three components of capacity: the technical ability to determine watershed data, the management skills to develop and implement the plan, and the financial capacity to finance any needed facilities or activities.

Sources of Additional Information

U.S. Environmental Protection Agency. "State Source Water Assessment and Protection Programs Guidance" EPA Document # 816-R-97-007, April 1997.

Washington State's Department of Health has an administrative mandate for requiring watershed control programs (WAC 246-290-135) and provides guidance in the "Water System Planning Handbook."

Washington State has also mandated wellhead protection programs for ground water systems (WAC 246-290-135A). The State has a guidance document available, *Washington State Wellhead Protection Program Guidance Document*, April 1995.

The broad applicability of this tool is outlined below:

Source Water Assessment Programs					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs	✓	✓	✓
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements		✓	✓	✓
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	✓

State or Federal Surveys of Infrastructure Needs

Several States (e.g., Washington, Pennsylvania, Oregon, and New York) conducted surveys of infrastructure needs during the first half of this decade. In 1995, EPA began the first national survey of infrastructure needs, and all States participated in this effort to survey a national sample of CWSs. In 1999, EPA will conduct a second national survey of infrastructure needs, as required by SDWA §1452. One limitation of EPA's survey is that it was limited to CWSs. Some States, however, also included noncommunity systems' needs.

Uses of this tool include:

- **Prioritizing systems.** Federal or State surveys of infrastructure needs could be used to prioritize systems in need of assistance in capacity development. A capacity development strategy might focus its activities on systems that have a large backlog of unfunded infrastructure needs. In this way, these surveys could assist in the development and implementation of a State's capacity development strategy.

Sources of Additional Information

For more information on surveys of infrastructure needs, see:

U.S. Environmental Protection Agency, *Drinking Water Infrastructure Needs Survey: First Report to Congress*, January 1997, EPA 812-R-97-001. www.epa.gov/ogwdw.

The broad applicability of this tool is outlined below:

State or Federal Surveys of Infrastructure Needs					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs			
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity					

State-Wide Studies of Water Quality or Quantity

This group of tools includes studies that cover topics such as contaminant occurrence, ground water subsidence, and pesticide usage or other watershed management concerns. Such studies may be produced by the State primacy agency, regional or local authorities, large water systems, academic institutions, or they may appear in trade journals.

Uses of this tool include:

- **Prioritizing systems.** Poor source water quality may be an important factor in prioritizing systems. Water quantity problems also may be a criterion, particularly in western States.
- **Encouraging the development of partnerships between PWSs.** Water quantity problems may be best resolved through partnerships between and among systems to optimize the use of scarce water resources. Quantity problems are often amenable to regional solutions.
- **Assessing capacity.** Often, States or institutions within the States will conduct studies to estimate the impact of future regulations. Such studies may indicate that a system is located in an area where a future standard may pose a problem. Studies may also indicate that the system is located in a watershed where activities such as fertilizer or pesticide use may affect the quality of the system's source. Further, a study may show that a system is in an area affected by source-depletion issues. The State could use other tools to ensure that the system is prepared to deal with potential water quality and quantity problems identified in State-wide studies.

Sources of Additional Information

Examples of State-wide studies of water quantity or quality are conducted by a variety of different organizations and thus can be found in an equally wide variety of sources. Two examples of such studies are:

Kolpin, Dana, Stephen J. Kalkhoff, Donald A. Goolsby, Debra A. Sneck-Fahrer, and E. Michael Thurman. "Occurrence of Selected Herbicides and Herbicide Degradation Products in Iowa's Ground Water, 1995." *Ground Water*. 35.4 (July-Aug 1997): 679-688.

Stuart, Maureen A., Frederick J. Rich and Gale A. Bishop. "Survey of Nitrate Contamination in Shallow Domestic Drinking Water Wells of the Inner Coastal Plain of Georgia." *Ground Water*. 33.2 (Mar.-Apr. 1995) 284-290.

Information on the Targeted Watershed Approach in Illinois can be accessed on the Internet at www.epa.state.il.us/org/bow/targeted-watershed. Additional information on State-wide water quality and quantity studies can be found on a variety of State home pages.

The broad applicability of this tool is outlined below:

State-Wide Studies of Water Quality or Quantity					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs	✓	✓	
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	

Training and Technical Assistance

The SDWA provides new resources to assist systems with capacity development. One important use of these funds is training and technical assistance. These tools are likely to play a vital role in capacity development strategies. A common theme in systems that lack adequate capacity is the absence of trained, professional personnel to operate and manage the system. Training and technical assistance can remedy that deficiency. These tools also can be used to educate and persuade system owners and operators to adopt practices and methods that will enhance capacity and reliability. Both State and non-governmental organizations offer training and technical assistance programs. Services range from on-site assistance to educational programs for operator certification and community planning.

Uses of this tool include:

- ***Prioritizing systems.*** Training and technical assistance providers could be one source of information for prioritization. However, systems that need training or technical assistance, but have not sought them out, are probably most in need of improving capacity.
- ***Assisting PWSs in complying with NPDWRs; encouraging the development of partnerships between PWSs; and assisting PWSs in training, certification, and continuing education of operators.*** Training and technical assistance providers can be important assets in the development of this aspect of a strategy, particularly with respect to training, certification, and continuing education.

Sources of Additional Information

There are a wide variety of providers of training and technical assistance. These include:

Rural Community Action Project (RCAP) and their regional affiliates

National Rural Water Association (NRWA) and their State associations

American Water Works Association (AWWA) and their State sections

State public utility commissions

International City Managers Association (ICMA)

National Environmental Training Association (NETA)

For more information on training and technical assistance providers see:

National Training Coalition, "Final Report on Training Needs and Providers," July 1997.

You can obtain more information by calling the Association of State Drinking Water Administrators at 202-293-7655, RCAP-Community Resource Group at 501-443-2700, the National Rural Water Association at 405-252-0629, or the American Water Works Association at 303-799-7711.

The broad applicability of this tool is outlined below:

Training and Technical Assistance					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	
		Encouraging the Development of Partnerships Between PWSs	✓	✓	
		Assist PWSs in the Training and Certification of Their Operators	✓	✓	
	Element D: Establishing a Baseline and Measuring Improvements				
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	

Water Conservation Plans

Some States use Water Conservation Plans to help boost water systems' technical capacity, as well as the systems' managerial and financial capacity. Typically, these plans include three components:

- **Water conservation program:** various conservation measures are evaluated and those that are cost effective are scheduled for implementation (description, budget, monitoring program, etc.).
- **Water demand forecasting:** systems are required to forecast 6- and 20-year water demands considering projected population, historic water use, land use, projected conservation savings, and other appropriate factors.
- **Water use data collection and reporting:** various parameters of water use are required to be collected and reported to the State annually.

Requirements for water conservation plans will vary, depending on the size of the water system. The larger the system the more detailed and complex the requirements.

Uses of this tool include:

- ***Encouraging the development of partnerships between PWSs.*** Existence of conservation programs, particularly those that require long-term forecasting of water demands, could facilitate partnerships between water systems.
- ***Establishing a baseline and measuring improvements in capacity.*** For those States where water quantity is an important public policy issue, implementation of water conservation plans can be used to measure improvements in capacity.
- ***Assessing capacity.*** Each of the three components of capacity are addressed in various sections of a water conservation plan. Knowing future water demands and current water usage provide a technical basis for making managerial decisions to ensure adequate physical capacity. Knowing when additional system component capacity will be needed based upon projected water conservation savings and water demand forecasts will lead to sound financial decisions related to needed system expansions and improvements.

Sources of Additional Information

Washington requires water conservation plans under RCW 43.20.230, 43.70.310, and WAC 246-290-100. Additional authorities from the Department of Ecology related to water conservation are found in RCW 43.27A.090, 90.03.005, 90.54.020, and 90.54.180. DOH and Ecology’s “Water Conservation Planning Requirements” provide detailed guidelines and requirements for water conservation for PWSs.

Readers may wish to cross-reference water conservation plans with other tools, specifically the water supply plan or business plan. Some States require that water conservation plans be included with other planning documents.

The broad applicability of this tool is outlined below:

Water Conservation Plans					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems				
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs			
		Encouraging the Development of Partnerships Between PWSs	✓	✓	✓
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements		✓	✓	✓
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	✓

Water System Plans or Business Plans

Water system plans (called business plans in some States) are comprehensive documents that attempt to capture the true cost of building and operating a water system by projecting costs and revenues over time. They can be used for both new and existing water systems, and cover not only the physical condition of the system's source, infrastructure, and operations, but also managerial and financial issues. In addition, water system plans force system owners and operators to ponder and plan for the future of their system. Water system plans include a Facilities Plan Checklist that contains a description of required infrastructure and resources, a Management Plan Checklist that describes the system's proposed (or existing) management strategy, and a Financial Plan Checklist that requires systems to provide a complete financial plan.

Uses of this tool include:

- ***Prioritizing Systems.*** The Pennsylvania Department of Environmental Protection (DEP) has developed a series of benchmarks and indicators for use with business plan data (the PAWATER cost model) that provide an overview of where a proposed system fits in relation to other existing systems. This process provides statistically significant capacity information that could be an effective means of prioritization.

Washington State has a water system planning program that is based on the capacity and size of the system. It includes a comprehensive analysis of the system's capacity, and seeks to ensure and document system capacity for the future.

- ***Assisting PWSs in complying with national primary drinking water regulations and encouraging the development of partnerships between PWSs.*** Water system plans, by requiring a planning process for all systems, assist systems in complying with all federal and State regulations. Since the planning process typically involves consideration of regional solutions to system problems, it also encourages the development of partnerships among systems.
- ***Measuring improvements in capacity.*** This process would require a baseline measure of all systems at the time when the capacity development efforts began, and a method to regularly update system assessments.
- ***Assessing capacity.*** Water system plans typically examine such factors as the characteristics of a system's service area; the adequacy and quality of its source; the condition of its facilities; and its O&M, management, and accounting practices.

In Washington State, a Financial Viability Test (FVT) is required of all CWSs serving fewer than 1,000 service connections that must submit a water system plan. The FVT consists of four steps:

- 1) Develop an operating budget showing that its revenues will meet all incurred expenses over

a six-year period.

- 2) Create and fund an operating cash reserve account at a level equal to or greater than one-eighth of its operating budget (O&M plus G&A expenses). This reserve account can be funded by a one-time charge, a transfer of funds from an existing reserve, or from funds accumulated in the first year of the six-year budget from step 1.
- 3) Create and fund an emergency reserve account to cover the cost of an emergency or failure of its most vulnerable system component (for small systems, usually a well or pump). This reserve account can be funded by a one-time charge, a transfer of funds from existing reserves, a plan to accumulate the fund in the six-year budget from step 1, or an alternative financing arrangement (e.g., an insurance mechanism).
- 4) Conduct a median household income index analysis. The system must demonstrate that the rates required to meet the budget from step 1 and to fund the reserves in steps 2 and 3 do not exceed 1.5 percent of the annual median household income for its county.

In addition to all of these elements of the water system plan, systems typically submit relevant documents that support the plan, e.g., maps of service areas, maps of facilities, and so forth.

Sources of Additional Information

For more information on water system plans, see:

Washington State Department of Health, "Planning Handbook: A Guide for Preparing Water System Plans," August 23, 1993.

Washington State Department of Health, "Financial Viability Manual for New and Expanding Small Water Systems," March 1995.

Pennsylvania Department of Environmental Protection, "Pennsylvania Water System Self-Assessment Guide," September 1996.

The broad applicability of this tool is outlined below:

Water System Plans or Business Plans					
Potential Uses			Area of Capacity		
			Technical	Managerial	Financial
Ensuring New System Capacity					
Capacity Development Strategy	Element A: Prioritizing Systems		✓	✓	✓
	Element B: Factors That Encourage or Impair Capacity Development				
	Element C: Using the Authority and Resources of the SDWA	Assisting PWSs in Complying with NPDWRs	✓	✓	✓
		Encouraging the Development of Partnerships Between PWSs	✓	✓	✓
		Assist PWSs in the Training and Certification of Their Operators			
	Element D: Establishing a Baseline and Measuring Improvements		✓	✓	✓
	Element E: Identifying Interested Persons				
Assessing Capacity			✓	✓	✓