**EPA**

United States
Environmental Protection
Agency

# Assessing Water System Managerial Capacity

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# ACKNOWLEDGEMENTS

# DISCLAIMER

The information presented in this document represent opinions of individual workgroup members and not official EPA opinions. This document is not intended to be a regulation; recommendations contained within this guide are not legally binding. Any changes in implementation of state programs are purely voluntary and must comply with legally binding requirements.

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# FOREWORD

In September 2010, the U.S. Environmental Protection Agency (EPA) hosted the National Capacity Development/Operator Certification Workshop in Dallas, Texas, with 150 participants representing EPA Headquarters and Regions, states, third- party technical assistance providers, other federal agencies, academics and utility associations. The participants at the workshop wanted to continue the exchange of ideas, best practices and lessons learned after the workshop ended, as well as to collaborate to overcome challenges they identified as barriers to greater sustainability of small public water systems and further efficiencies of state programs. Participants identified a need for more information and resources to assist small systems in the development of managerial capacity. Following the national workshop, EPA brought together a group of interested attendees to further evaluate and describe best practices in evaluating and building managerial capacity.

This document is a reflection of the discussions held over the course of a year by this group of individuals. It was developed to provide ideas on assessing managerial capacity for those involved in the Capacity Development Program, including EPA Headquarters staff, EPA Regional staff and state staff. In addition, this document may be informative to the staff of other programs (e.g., Drinking Water State Revolving Fund) who help public water systems (PWSs) attain and maintain technical, managerial and financial (TMF) capacity. The information contained in this document may not apply to every state program or every drinking water system within a state, but can be used to begin thinking about how managerial capacity can be assessed.

The workgroup acknowledges that it's not possible to completely isolate technical, managerial and financial capacity components. They are an inter-related set of knowledge, skills and resources that together make a system successful. Examples in this document emphasize financial and technical aspects of capacity that are intertwined with managerial capacity.  The workgroup considers managerial capacity to be the cornerstone of this relationship. Without knowledgeable, resourceful and responsible decision-makers, water systems cannot build and maintain strong capacity.

# BACKGROUND ON STATE CAPACITY DEVELOPMENT PROGRAM IMPLEMENTATION

> *Measuring managerial capacity isn't as straightforward as measuring compliance with a maximum contaminant level (MCL). Many states have expressed the challenge of assessing managerial capacity of water systems. This section gives a brief background on the Capacity Development program with a focus on managerial capacity.*

## The Capacity Development Program — Ensuring Water System Capacity

The 1996 Safe Drinking Water Act (SDWA) Amendments emphasize a holistic approach to the protection of public health and prevention of drinking water contamination. The Act's provisions for Capacity Development provide a framework for EPA, states and water systems to work together to ensure that systems acquire and maintain the technical, managerial and financial (TMF) capacity. State Capacity Development programs consist of:

1. New Systems program in which the state ensures that new Community Water Systems (CWSs) and Non Transient Non Community Water Systems (NTNCWSs) demonstrate adequate TMF capacity;

2. Developing and implementing their capacity development strategies to assist existing Public Water Systems (PWSs) - CWSs, NTNCWSs and Transient Community Water Systems (TNCWSs) - achieve and maintain TMF capacity; and

3. Assessing TMF capacity for systems applying for Drinking Water State Revolving Fund (DWSRF) loans.

### Terms to Know

**Water System Capacity -** Ability to plan for, achieve, and maintain compliance with applicable drinking water standards. The three components of capacity are: technical, managerial and financial.

**Managerial Capacity -** Ability of a water system to conduct its affairs in a manner enabling the system to achieve and maintain compliance with the Safe Drinking Water Act (SDWA) requirements. Managerial capacity refers to the system's institutional and administrative capabilities.

**Capacity Development -** Process of a water system acquiring and maintaining the knowledge, tools, and resources to demonstrate it can provide safe and reliable drinking water now and into the future.

**Capacity Assessment -** Procedure used to evaluate the technical, managerial and financial capacity of public water systems.

**Indicator -** Key information that allow states to assess water systems' strengths and weaknesses.

# Measuring Managerial Capacity

Managerial capacity is defined in the *Guidance on Implementing the Capacity Development Provisions of the 1996 SDWA Amendments (EPA 816-R-98-006, July 1998)* as:

*"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."*

Key issues and questions that can help in assessing managerial capacity include:

▶ **Ownership accountability.** Is the system owner(s) clearly identified? Can the owner 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 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?

States have learned how challenging assessing adequate managerial capacity may be. For this reason, many state programs have supplemented the list of key issues and questions described above to better assess managerial capacity in practice. Some of these include the following:

▶ Inclusion of short- and long- term planning principles;

▶ Establishing level of service goals;

▶ Protecting the health of customers;

▶ Communicating with elected officials and regulators;

▶ Maintaining recordkeeping procedures;

▶ Clearly defining roles and responsibilities;

▶ Establishing budgeting methods;

▶ Ongoing training for board members/governing entities; and

▶ Minimizing water loss.

# CONSIDERATIONS IN ASSESSING WATER SYSTEM CAPACITY

*Capacity assessments are an essential way to provide a consistent, standardized method of determining water system capacity. This section gives an overview of some approaches to assessing capacity.*

State Capacity Development programs are responsible for assessing new systems' and existing systems' TMF capacity. Forms, checklists and questionnaires are commonly used tools to evaluate and measure the capacity of water systems. These tools:

- Can vary in length and style depending on the goal of the assessment.
- May be implemented through the state's Capacity Development program, or through existing means of collecting information, such as sanitary surveys or planning documents.
- Often include technical, managerial and financial (TMF) sections.
- May include a scoring component to show relative capacity levels among multiple systems.

The *Managerial Capacity Resources section* of this document includes examples of state assessment models.  Different states may look at different indicators to evaluate a system's managerial capacity. When reviewing the examples, states should review the entire assessment as one state may include an indicator in the managerial capacity section and another state may include a similar indicator in their technical capacity or financial capacity sections.

Isolating any of the capacity components is counter- productive as they are an inter- related set of knowledge, skills and resources that should be employed together for a system to be successful. Managerial capacity indicators serve as the cornerstone of this relationship and many times a technical or financial capacity shortcoming is related to insufficient or poor management of a water system.

The approaches in the table below can be used alone, or in combination with each other or other approaches, depending on a state's program goals. While a state can use the approaches to assess TMF capacity, it should consider the role that managerial capacity plays as the state determines which one(s) to use.

## THREE APPROACHES FOR ASSESSING TECHNICAL, MANAGERIAL AND FINANCIAL CAPACITY

| | Maintaining a Statewide Baseline and Evaluating Performance | Identifying Assistance Needs for Individual PWSs | Completing DWSRF Capacity Assessments |
|---|---|---|---|
| **POTENTIAL BENEFITS** | Identifying a method to evaluate baseline performance measures, that can be updated and used to measure improvements, can:<br><br>• Highlight assistance activities and approaches that work and those that do not work.<br>• Provide a snapshot so that types of assistance most needed can be targeted, allowing for more strategic allocation of resources.<br>• Give the ability to collect standardized data across multiple systems.<br>• Be used as a means to prioritize individual systems for assistance. | Identifying the assistance needs for an individual public water system can:<br><br>• Pinpoint the specific types of assistance needed by a particular system.<br>• Provide an opportunity to clarify the state's expectations to systems and convey long- term system sustainability goals.<br>• Help systems recognize the importance of being aware of, and accountable for, their operations.<br>• Help identify those systems that chronically fail to attain or maintain TMF capacity. | Completing capacity assessments for potential DWSRF recipients can:<br><br>• Help meet SDWA requirements for granting DWSRF loans by documenting the procedure used to evaluate the TMF capacity of systems applying for DWSRF funds.<br>• Assist in increasing the institutional knowledge of the TMF capacity for a subset of the state's systems - those who are applying for DWSRF loans. |
| **POTENTIAL ACTION ITEMS** | When updating the original statewide baseline or creating a new baseline:<br><br>• Develop and distribute hardcopy or online assessments.<br>• Consider using scoring metrics to aid comparability across multiple systems.<br>• Follow- up with systems to boost participation.<br>• Implement a data management system to organize data.<br>• Look at other state baseline approaches for ideas.<br>• Measure the impact of efforts through year- by- year data comparison. | When identifying systems in need of TMF capacity assistance and their assistance needs:<br><br>• Utilize knowledge through direct contact with systems, recommendations from public water supply assistance providers, and/or funding agencies (DWSRF, etc.).<br>• Follow up with information and assistance targeted at the needs highlighted in the assessment. Explain that continued failure to meet TMF standards can jeopardize potential future DWSRF funding. | When evaluating the capacity of systems seeking DWSRF assistance:<br><br>• Use a standard capacity assessment form, list or questionnaire for every system applying for DWSRF funds.<br>• If a system is found to lack TMF capacity, incorporate language into DWSRF loans detailing the "feasible and appropriate" changes in operations that must be made to improve TMF capacity.<br>• Incorporate post- award assessments to measure the effectiveness of the DWSRF assistance in maintaining or improving a water system's capacity. |

# DEVELOPING AND USING MANAGERIAL INDICATORS IN CAPACITY ASSESSMENTS

*Once states have identified which approach or combination of approaches meets their needs, it is important that they identify the key information that will allow them to assess a system's strengths and weaknesses. In this document, EPA refers to these pieces of information as indicators. This section provides example indicators that can be used when looking at the managerial capacity of a water system.*

## Things to Consider as States Use Managerial Capacity Indicators

As outlined in the previous section, different approaches can help states address different scenarios and solve different problems. As states develop indicators, they may want to consider the following:

**Where to start?** When beginning to think about managerial indicators, a good approach is to start with what is readily known. State staff can examine the range of systems in their state, and their strengths and weaknesses. What data is available to assess managerial capacity? Does "institutional" knowledge about certain types of systems exist that can achieve assessment goals?

**What is the best way to collect the information?** Are special surveys needed? Can questions be incorporated into the state's Sanitary Survey program? Are other state- wide agencies already collecting data for other purposes that may be accessible for improving managerial capacity? Can a data specialist bring together information that already exists?

**How easy is the indicator to measure?** Can a simple question be asked to get a concrete answer? Or, are there many aspects to the indicator? For example, asking if a system uses and regularly updates an asset management plan is different from asking if the system has inventoried the parts of its system. Both questions can be useful.

**Is the indicator more objective or subjective?** Asking on a capacity assessment questionnaire for the rate a system charges is objective. Asking if rates cover the full costs of providing water is less objective. Asking if a system believes it has strong financial capacity is subjective. Each can serve a purpose in helping states determine system managerial capacity.

**What type of ownership structure is used?** When using indicators to assess the managerial capacity of water systems, the ownership structure of the systems and the regulatory environment that they operate under should be considered. Government- owned water systems may operate under different financial regulatory requirements than privately- owned water systems or not- for- profit systems, and there are varying forms of ownership structures within these broad categories. The different types of ownership structures provide varying strengths and challenges for system administration, and sometimes may impose restrictions on what systems can do due to the laws that govern these systems.

## Example Managerial Capacity Indicators

Indicators are used to help identify strengths and weaknesses of systems and can be used to measure improvements in water system capacity. The indicators below represent what the workgroup thinks are some of the most important indications of managerial capacity, but are by no means all- inclusive. These indicators include:

- Governing Body Transparency and Accountability
- Governing Body Training
- Water System Staff Training
- Water System Planning
- Asset Management Programs
- Budgeting

- Rates
- Reserve Accounts
- Water System Policies
- Compliance
- Water Loss (Non- revenue Water)
- Customer Education/Support

While these indicators extend through the inter- related concepts of TMF capacity, their roots can be found in managerial capacity. The indicators selected for this chapter are cross- referenced with the three managerial capacity elements found in the *Guidance on Implementing the Capacity Development Provisions of the Safe Drinking Water Act Amendments of 1996* (July 1998).

The Safe Drinking Water Act encouraged flexibility in implementing the Capacity Development program and promoted the notion that the program can be implemented in various ways to achieve the overall goal of providing safe and reliable drinking water now and into the future.

### Ownership accountability
- Governing Body Transparency and Accountability
- Water System Policies
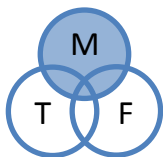
### Staffing and organization
- Water System Staff Training
- Governing Body Training

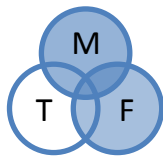### Effective external linkages
- Customer Education/Support
- Water System Planning
- Asset Management
- Budgeting
- Rates
- Reserve Accounts
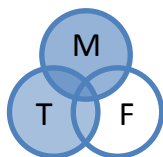- Compliance
- Water Loss (Non-revenue Water)
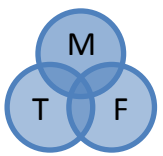
These examples can help provide an indication of the managerial capacity that a system has. The examples can be used to begin a discussion about which indicators will be helpful in determining the systems that may benefit from capacity development assistance.

Under each of these indicators, there are sample ways of how the questions could be asked to get the full "story" of the system. It is also important to remember the following when looking at the indicators:

➢ Follow up with water systems on the actions of each indicator to build on their strengths and use as examples for other systems;

➢ Help develop a plan of action for the moderate capacity indicators;

➢ Provide technical assistance for the systems with weak indications of managerial capacity as those are the systems most in danger of being non- viable. If states are unable to provide direct assistance, they may want to consider referring systems to third- party technical assistance providers; and

➢ The knowledge and experience of state staff will be helpful in complementing the indicators that are used to assess managerial capacity.  Those who are assessing managerial capacity should consider that there can be exceptions to the rule.
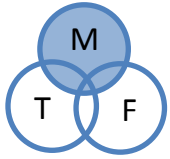
### Governing Body Transparency and Accountability

The governing body of a water system must be both transparent and accountable. A governing body is the group of people who formulates and/or approves policy and directs a water system (e.g., board, commission, council). Information flows from the governing body to the customers and staff, and from the customers and staff to the governing body. This two- way communication is crucial to good decision- making.

| | ASSESSMENT | | |
|---|---|---|---|
| | *Strong Managerial Capacity* | *Moderate Managerial Capacity* | *Weak Managerial Capacity* |
| **INDICATOR** | | | |
| *Customer participation in governing body meetings* | The governing body holds regular meetings that customers can attend. | The governing body holds meetings on an as- needed basis. | The governing body does not hold meetings. Not all seats on the governing body are filled. |
| *Open meetings held by governing body* | Meetings of the governing body are open to customers and staff. Advanced notice of meetings is provided. | The governing body has procedures for open meetings, but does not follow them. Notice of meetings is inadequate. | The governing body does not hold open meetings. |
| *Staff communication with governing body* | An operational and financial report are presented by staff and reviewed by the governing body each meeting. | Operational and financial information is provided by staff to the governing body upon request. | There is poor communication between the governing body and staff. |
| *Customer communication with governing body* | There is a public comment period on the agenda at all meetings of the governing body. | There is a public comment period at some but not all meetings of the governing body. | There is no public comment period at any of the meetings of the governing body. |
| *Open records provided by governing body* | Meeting minutes and other records required by law are accessible to customers and staff. | Meeting minutes and other records required by law are inconsistently maintained, or not accessible to customers and staff. | Meeting minutes and other records required by law are not maintained. |

**Examples of questions for use in a questionnaire:**

Are regular meetings held by the governing body and are they open to the public?

Are meeting minutes and other records made available to customers and water system staff?

Is there an organizational chart for the governing body with clearly defined job duties?

Does the governing body review and update policies/ordinances related to water system operations regularly?

**Potential follow- up actions**

If the system is not following a state's open records and/or open meetings regulations, provide them with specific information regarding these laws. Encourage both the governing body and the management staff to communicate more formally and frequently.
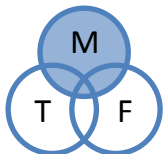
## Governing Body Training

A properly- trained governing body understands the water system it oversees, and its roles and responsibilities as a governing body. Even individuals who have served on the governing body for a long time can benefit from continuing education on water system management, since treatment technologies, regulations and management best practices change over time.

Training can take many forms with materials utilized at an onsite location or online methods. The suggested indicators for governing body training can be tailored to include a defined number of credit hours, a time frame (e.g., the last 3 years), or specific topics (e.g., SDWA regulations, applicable state laws and regulations, financial management).

| ASSESSMENT | | |
| --- | --- | --- |
| ***Strong Managerial Capacity*** | ***Moderate Managerial Capacity*** | ***Weak Managerial Capacity*** |
| **INDICATOR** | | |
| ***Governing body training*** <br> At least a majority of governing body members have attended training on water system management. | Less than a majority of governing body members have attended training on water system management. | No governing body members have attended training on water system management. |

**Examples of questions for use in a questionnaire:**

How many members of the current governing body have attended training on water system management?

If at least one member of the current governing body has attended water system management training, when was the most recent training attended?

What does the water system management training consist of? What topics are the members of the governing body being trained on?

**Potential follow- up actions**

State staff can offer to deliver presentations on governing entity responsibilities and drinking water basics at regular meetings. If states know of opportunities for members to attend relevant trainings offered by others, registration information can be provided to them.
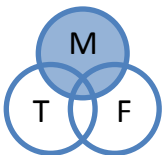
**Water System Staff Training**

All of the water system staff associated with owning, managing, operating and maintaining a public water system have a responsibility to keep up with changes in drinking water regulations and changing water quality science. Without adequately trained personnel, the most advanced technology and regulatory compliance cannot reliably deliver safe drinking water. Educational opportunities are offered by a variety of organizations with training courses ranging from entry- level courses to specific topics. Classroom training such as seminars, workshops and certification- specific curriculum are typically available as well as site- based, hands- on training that is tailored to the needs of the water system.

The suggested indicators below can be tailored to include a defined number of credit hours, a time frame (e.g., the last 3 years), or specific topics (e.g., SDWA regulations, applicable state laws and regulations, financial management).

| ASSESSMENT | | |
|---|---|---|
| **Strong Managerial Capacity** | **Moderate Managerial Capacity** | **Weak Managerial Capacity** |
| INDICATOR | | |
| **Staff training** — Guidelines and funding are in place for all staff at a water system to have regular training at defined time intervals. | Staff attend job-related training that they specifically request and training requests are granted sporadically. | Training is generally not requested or granted. |

**Examples of questions for use in a questionnaire:**

Describe how on- going training is handled for operators and other staff. How are appropriate trainings communicated?  Who suggests the trainings – the managers or the operators?  How often do operators, managers or other staff go to training?  Who are the typical trainers used and where are the trainings usually held?

Is the level of on- going training for personnel adequate?

Does the system plan for staff training costs on an annual basis?

**Potential follow- up actions**

If a system could benefit from additional operator training, state staff may want to consider coordinating with colleagues in the state Operator Certification program to identify possible training opportunities. Staff can also reach out to local technical assistance providers regarding opportunities for training, if needed.
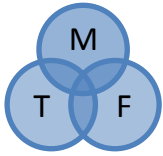
## Water System Planning

Short- and long- term planning is central to building a system's capacity. Comprehensive planning includes many standards of practice (SOP) elements such as an operations and maintenance plan, source/wellhead protection plan, emergency plan, and water security and resiliency plan. Some of the information contained in the plans below is required for systems serving greater than 3,300 customers. However, it is important for systems of all sizes to plan for their daily activities as well as emergency situations.

This indicator is primarily managerial since the governing body is responsible for planning and/or approving activities, but since planning is a comprehensive process that involves the operations and financing of the system, technical and financial capacity concepts are closely tied to this indicator.

| | ASSESSMENT | | |
|---|---|---|---|
| | *Strong Managerial Capacity* | *Moderate Managerial Capacity* | *Weak Managerial Capacity* |
| **INDICATOR** | | | |
| *Operations and maintenance (O&M) planning* | System has a complete, up- to- date O&M plan that another certified operator could follow if the operator leaves or is unavailable. | System has an O&M plan, but it's not complete or up- to- date. | System has not documented any O&M activities. |
| *Water resources management planning* | Water supply and demand are regularly monitored. Long- term supply and demand projections are updated regularly, and upcoming capacity issues are being addressed. | Water supply and demand are occasionally evaluated. Projections for supply and demand are several years old. | System is unaware of current water demand or supply levels. System has no projections for supply and demand, or projections are more than 10 years old. |
| *Source/ wellhead protection planning* | System actively uses an up- to- date plan that addresses source and/or wellhead protection. | System has developed a plan, but it is out of date or not fully used/understood. | System has not done any planning in this area. |

*(Continued on next page)*

| | ASSESSMENT | | |
|---|---|---|---|
| **INDICATOR** | *Strong Managerial Capacity* | *Moderate Managerial Capacity* | *Weak Managerial Capacity* |
| *Emergency and disaster preparedness planning* | System has a governing body- approved written plan addressing how to ensure continuity of service and business continuity during or how to resume service soon after an emergency or natural disaster.<br><br>Considerations may also include:<br><br>• How to plan for reserve equipment<br>• Mutual aid<br>• Personnel and communications with critical customers and the public | System has an informal plan that is not written or approved by the governing body. | System does not have a plan addressing service during emergencies or natural disasters. |
| *Water shortage (drought management) planning* | System has a governing body- approved written plan identifying steps to take to encourage water conservation during water shortage periods (e.g., droughts). The plan is tied to measureable water supply levels. | System has an informal plan addressing water shortage periods, but it is not written, approved by the governing body or communicated to the customers. | System does not have a plan addressing water shortage periods. |

**Examples of questions for use in a questionnaire:**

Does the system have an up- to- date Operations and Maintenance (O&M) Plan that someone else can follow to carry out day- to- day operations and maintenance activities in the event the operator leaves or is unavailable?

Does the system have an up- to- date Wellhead Protection (WHP) Plan that includes the following?

• A susceptibility assessment (vulnerability assessment).

- An inventory of potential contaminant sources in the wellhead protection area.
- Documentation showing the water system sent assessment and inventory findings to required entities.
- Contingency plans if contamination occurs.
- Coordination with local emergency responders for appropriate spill or incident response measures.

Does the system have an up- to- date Source Water Protection (SWP) Plan that includes the following?

- Watershed description and inventory, including location, hydrology, land ownership and activities that could adversely affect drinking water quality.
- Inventory of all potential surface water contamination sites and activities located within the watershed.
- Watershed control measures (such as land ownership, relevant written agreements, monitoring and documentation of activities and water quality trends).
- System operations, including emergency provisions.

Does the system have a written Emergency Plan to handle the following emergencies?

- Flooding
- Major line leak
- Electrical failure
- Drought
- System contamination
- Equipment failure
- Hurricanes, tornadoes, ice storms, snow storms, earthquakes, tsunamis, volcanic eruptions
- Intentional vandalism or other damage
- Cyber denial of service or hacking
- Epidemics/pandemics

Does the system have an up- to- date contact list?

Has the system adequately assessed the condition of and remaining service life of existing facilities and identified critical facilities that if inoperable, would result in a water outage and/or water quality failure (in other words a Vulnerability Assessment)?

## Potential follow- up actions

A system demonstrating strong managerial capacity for this indicator could serve as a learning model for other systems. States may want to request permission to use exemplary systems' planning documents as examples for other systems to follow. Local technical assistance providers may also have reference materials and relevant training available. Additionally, states could explore funding options for systems to acquire necessary computer equipment and software to implement stronger planning practices.
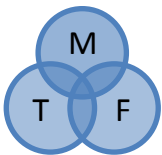
## Asset Management Programs

A system practicing comprehensive asset management (the 5 Core Questions of an Asset Management framework) knows what assets they have, the condition, criticality and value of each asset, when maintenance will be needed and when replacement of the asset should be considered and how maintenance and replacement will be financed. Assets can include pipes, pumps, filters and other treatment components, tanks, intakes, etc. An Asset Management Plan (AMP) can inform Capital Improvement Plans (CIP) by providing a projection of asset maintenance and replacement expenditures. In addition to minimizing emergency repair or replacement incidents, AMPs and CIPs can be used to bolster budgets and potentially justify rate increases. States may encounter systems that have the beginnings of an AMP, but need assistance in identifying additional components which will comprise a well- rounded and complete plan.

| ASSESSMENT | | |
|---|---|---|
| *Strong Managerial Capacity* | *Moderate Managerial Capacity* | *Weak Managerial Capacity* |
| **INDICATOR** | | |
| *Asset Management Program* | System has a comprehensive AMP which includes asset inventory, criticality analysis, condition assessment protocols, criteria and timeline for replacement, O&M and funding source(s) considered. | System has several components of a comprehensive AMP, but is missing others. | System does not have a comprehensive AMP. Maintenance log may be only record. System asset replacement is reactive (as failures occur). |

**Examples of questions for use in a questionnaire:**

Is the system implementing asset management practices (5 Core Question framework)?

What time period does the AMP cover?

When was it last updated?

**Potential follow- up actions**

A system demonstrating strong managerial capacity for this indicator could serve as a learning model for other systems.  The state may want to request permission to use AMPs as an example for other systems to follow. For a system with moderate managerial capacity, follow- up actions may begin with identifying deficiencies in their AMP.  Software such as the Check Up Program for Small Systems (CUPSS) or other tools can assist systems in implementing asset management practices. State staff can work with systems to determine if these tools are appropriate and can assist with installation. Systems with weak managerial capacity will require more follow-up actions.  State staff can begin emphasizing the need for a comprehensive AMP and help systems explore funding options for systems to acquire necessary computer equipment and software to implement their AMP.
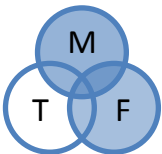
### Budgeting

Budgeting is crucial to effective management of water system finances. Budgeting consists of managing the water system's revenues and expenditures and is typically considered an indicator of financial capacity. However, it is also an important managerial capacity indicator, because the water system governing body plays an important role in the budget process. Although the draft budget may be prepared by water system staff, it should be approved by the governing body. The governing body should also get a status report each month comparing budget projections to actual revenue and expenditures. With this information, it can monitor financial trends, provide oversight, and ensure that the allocation of funds reflects the goals of the water system.

| ASSESSMENT | | |
|---|---|---|
| **Strong Managerial Capacity** | **Moderate Managerial Capacity** | **Weak Managerial Capacity** |
| **INDICATOR** | | |
| **Budgeting**<br><br>System has both annual operating and capital budgets that are approved by the governing body. The governing body reviews a budget comparison each month. | System has an annual operating budget that is approved by the governing body. System lacks a capital budget or multi- year capital improvement plan. | System does not have an annual operating budget. |

**Examples of questions for use in a questionnaire:**

Are water system expenses budgeted on at least an annual basis?

Does the budget include projected capital costs? If so, how many years are costs projected for?

Does the budget include funds for operator certification and training?

Does the governing body formally approve the annual budget?

**Potential follow- up actions**

If a system demonstrates moderate managerial capacity with respect to any of these indicators, providing relevant guidance documents and tools may help it to further improve its approach to budgeting, rate- setting and determining appropriate reserves. Educate systems that have weak managerial capacity in these areas on the value of financial planning. States can also consider referring these systems to group training, or offer them one- on- one assistance.
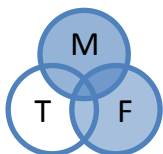
**Rates**

Management of water systems is very dependent on the revenues received from their customers. Water (and sewer) rates should be regularly evaluated and adjusted if necessary to ensure that sufficient revenue is raised to pay for the short- and long- term costs of operating and investing in the system. Rates alone are a poor indicator of managerial and financial capacity, but the comparison of revenues to costs, the frequency of adjusting rates, and rate structure design choices reflect the ability of the water system staff and governing body to manage and plan for the short- and long- term sustainability

of the system. This includes understanding the full cost of providing service, now and into the future and educating customers about those costs. It also includes the development of a rate structure that best supports the system's priorities and objectives (such as conservation, affordability, revenue stability, etc.), preserving the system's source and reducing energy costs and wear and tear on the system.

| | ASSESSMENT | | |
|---|---|---|---|
| INDICATOR | **Strong Managerial Capacity** | **Moderate Managerial Capacity** | **Weak Managerial Capacity** |
| **Ratio of revenues to expenses of the past few years** (Note: there are several variations of this ratio, with varying degrees of difficulty in extracting the data) | Revenues consistently cover the full costs of providing safe, reliable water, including capital costs. | Revenues cover daily expenses, but do not also cover debt payments and/or do not contribute to future capital costs. | System doesn't know the full cost of service. Revenues do not cover daily expenses. |
| **Rate conditioning index** (how often rates are increased) | System knows the full cost of service, and increases rates regularly to keep up with costs. Customers are accustomed to rate increases and understand the full cost of service. | Rates are increased only when emergent needs arise. Customers don't understand the full cost of service. | Customers/ governing body make it a high priority to keep rates low, not considering costs of inflation, deferred maintenance, etc. |
| **Relevance of rate structure design** | System has recently identified their priorities and objectives, and selected a rate structure design (base fees, uniform rates, block rates, seasonal rates, etc.) that supports these priorities (i.e., is fair or equitable, not discriminatory to a class of customers, etc). | System is using a rate structure design that has not been reviewed in many years, or that contradicts its priorities or objectives (e.g., using decreasing block rates when the system is operating near full capacity). | System does not charge customers based on metered use. |

**Examples of questions for use in a questionnaire:**

Do rate revenues cover the current and future costs of providing service?

How many times has the water system's rates been adjusted in the past 10 years?

Are the majority of customers rates based on *metered* water use?

When was the last time the rate structure design (base charges, uniform rates or block rates, seasonal rate structures, etc.) was evaluated against the objectives and priorities of the water system?

How does the water system's rate structure design support the objectives and priorities of the system?

**Potential follow- up actions**

If a system demonstrates moderate managerial capacity with respect to any of these indicators, providing relevant guidance documents and tools may help it to further improve its approach to budgeting, rate- setting, and determining appropriate reserves. Educate systems that have weak managerial capacity in these areas on the value of financial planning. Refer these systems to group training, or offer them one- on- one assistance.

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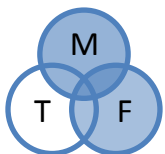
## Reserve Accounts

Knowing how much a water system has saved can provide an indication of how well positioned they are to address monthly cash flow changes, emergencies and future investments into the system. Since complexity, age of infrastructure and unique needs can vary between systems, it's difficult to set a standard reserve target amount. To understand a system's reserve needs, it is important to also take into account the system's inventory of assets and approximate age of infrastructure.

Reserve accounts or other savings accounts are often considered a financial indicator but adoption of these accounts relies on a system's managerial capacity.  Note that this indicator may not be applicable in some systems where reserve accounts are not allowed by a governing body and that these systems may save in different ways.

| | ASSESSMENT | | |
|---|---|---|---|
| **INDICATOR** | *Strong Managerial Capacity* | *Moderate Managerial Capacity* | *Weak Managerial Capacity* |
| *Operating cash reserve* | System has enough set aside to cover expenses that occur before all payments come in. | System sometimes does not have cash available to cover expenses that occur before payments come in. | System does not have cash available to cover expenses that occur before payments come in. |
| *Emergency reserve* | System has enough funding available to cover the most expensive or vulnerable component of the system. | System has some funding available, but not enough to cover the most expensive or vulnerable component of the system. | System does not have any funding available to respond to an emergency. |
| *Short-lived asset (components that last 5-6 years) reserve* | System has funding available to replace short-lived assets over the next 5-6 years. | System has some funding available to replace short-lived assets over the next 5-6 years. | System does not have funding available to replace short-lived assets over the next 5-6 years. |
| *Capital reserve* | System has a plan in place to finance long-term capital investments to the system. | System will be able to finance some, but not all long-term capital investments to the system. | System does not have a plan to finance long-term capital investments. System indicates they need a grant to cover future costs. |

**Examples of questions for use in a questionnaire:**

Note: Financial questions can make systems uneasy. While management may be reluctant to share actual dollar figures, it is possible to phrase questions in a manner that will provide relevant information, if not an actual number. Accuracy of state assessments relies on system staff being honest in their answers.

Does the water system have enough cash to cover monthly expenses before all payments come in?

Does the water system have enough savings or an emergency loan agreement in place to cover the system's most expensive component if it should fail?

Does the system have enough savings to cover anticipated costs over the next 6 years for short- lived assets?

If long- term capital improvements were made to the system, which source would be <u>most</u> relied on? (Water system funds, private loan, government loan, government grant.)

Is there a plan that identifies projects and funding for long- term capital improvements?

**Potential follow- up actions**

If a system demonstrates moderate managerial capacity with respect to any of these indicators, providing relevant guidance documents and tools may help it to further improve its approach to budgeting, rate- setting and determining appropriate reserves. Systems that have weak managerial capacity in these areas can be educated on the value of financial planning, and can be referred to group training or offered one- on- one assistance.
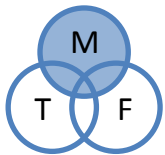
## Water System Policies

Policies enable a water system to establish its business practices regarding personnel, contracts and customer service (e.g., billing).  Policies provide a consistent way for a system to respond to recurring situations or unusual conditions.  They provide guidance for staff as well as provide information for customers so expectations and responsibilities are clear. Policies should be adopted by the governing body or delineated in an ordinance and distributed to staff and made available to customers.  The size of the system and number of staff will determine the number and complexity of the policies.  Policies do not have to be elaborate or lengthy, but they should be clear.  The indicator of capacity is how well the system does with regard to each of these issues.  It is important to measure both the system's policies and the achieved business practices.

| | ASSESSMENT | | |
|---|---|---|---|
| **TYPE OF POLICY** | *Strong Managerial Capacity* | *Moderate Managerial Capacity* | *Weak Managerial Capacity* |
| *General policies* | Clearly written policies distributed to staff and customers. Policies enforced consistently and fairly. | Some written policies but not everyone is aware of them; lax application or enforcement of policies. | Very few or no policies. |
| *Personnel* | Written job descriptions with clearly understood job expectations; clear policies on training, use of water system cell phones vehicles, and other property. | Some personnel policies, but not consistent or fairly applied. | No job descriptions or job expectations. |
| *Contracts* | Written contracts for operations with clearly defined responsibilities. | Loosely worded written contracts, expectations unclear. | Only verbal contracts. |
| *Customer Service – Billing* | Clear information on procedures for:<br><br>• new service;<br>• payment procedures;<br>• late payments;<br>• termination of service for non-payment;<br>• collection of past due accounts;<br>• restoration of service. | Some polices but not enforced consistently or fairly. | No policy on late payments, past due accounts or termination of service; poor collection rate. |

**Examples of questions for use in a questionnaire:**

Is the system staffed while water is being treated or produced? How is this handled (on- site or on- call)? Is there an alarm system to call an operator if an emergency occurs after hours?

Do all of the positions have a written job description?

If contractors are used, what services are they used for and what are their duties?

How often are customers invoiced? How are bills distributed?

Does the system have a computerized billing system? Is there back- up billing data?

Does the system have a written customer service disconnection or shutoff notice?

**Potential follow- up actions**

Systems that lack capacity in this area can be educated on the advantages of having written policies and applying those policies uniformly. Guidance can be offered on items that should be addressed in policies. Develop and provide example policies for small systems that they can tailor for their own use.
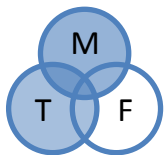
## Compliance

Compliance is often considered a technical capacity indicator. However, a system's compliance status and compliance history are good indications of the strength of their managerial capacity. A system that has frequent monitoring and reporting violations is one in which there may be a lack of training or understanding.  A system with long- term unresolved sanitary survey deficiencies may show a lack of regard for the regulations and a lack of understanding of the actions it will take to correct the deficiencies.  A system lacking a certified operator at the appropriate level is not demonstrating proper support for operator training, recruitment and retention.  A system that is not in compliance for a particular contaminant does not possess sufficient managerial capacity to change operations to fix the problem or to obtain the funding necessary to remedy the situation. In addition, management should support operator training and certification to ensure that the system is run by competent and qualified individuals.

| | ASSESSMENT | | |
|---|---|---|---|
| | *Strong Managerial Capacity* | *Moderate Managerial Capacity* | *Weak Managerial Capacity* |
| **INDICATOR** | | | |
| *Compliance with drinking water regulations* | No compliance issues for previous (x) years.* | A few violations over previous(x) years,* but no chronic issues. | Many compliance problems in previous (x) years.* |

*(Continued on next page)*

| | ASSESSMENT | | |
|---|---|---|---|
| | *Strong Managerial Capacity* | *Moderate Managerial Capacity* | *Weak Managerial Capacity* |
| **INDICATOR** | | | |
| *Certified operator(s)* | Certified and correctly licensed operator(s). | Certified operator(s) with inadequate experience/license, but working to achieve appropriate experience/license. | No certified operator(s). |
| *Sanitary survey deficiencies* | Sanitary survey deficiencies addressed or plan in place to address them. | Some sanitary survey deficiencies addressed, or on a schedule to be addressed, but not all. | Either none or a few sanitary survey deficiencies addressed. |

*\* Determine the most appropriate timeframe.*

**Examples of questions for use in a questionnaire:**

Have there been any compliance issues in the last (x) years and is the water system meeting all applicable drinking water standards?

Is the operator familiar with the water system's current monitoring and reporting requirements and schedule?

Are monitoring results on file?

Are there a sufficient number of certified operators for the water system operations?

Is the operator in responsible charge certified at the appropriate grade for the water treatment and distribution?

Is management familiar with the most recent sanitary survey?

Are there any items on the most recent sanitary survey which have not been addressed or on schedule to be addressed?

**Potential follow- up actions**

The capacity assessment can be used to probe into why the system has chronic violations, lacks a certified operator or has outstanding sanitary survey deficiencies. This information, in coordination with the compliance section of the state's drinking water program, will help identify appropriate capacity assistance for the system.
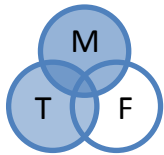
## Water Loss (Non- revenue water)

Managerial capacity can be strengthened through the understanding and management of water loss. Drinking water systems may experience water loss in a variety of ways, some under their control, others not. Non- revenue water (NRW) reflects the distributed volume of water that is not reflected in customer billings. NRW, however, is specifically defined as the sum of Unbilled Authorized Consumption (water for firefighting, flushing, etc.) plus Apparent Losses (customer meter inaccuracies, unauthorized consumption and systematic data handling errors) plus Real Losses (system leakage and storage tank overflows).

Water that has been conveyed from the source, treated to drinking water standards then not sold equals lost revenue for the system. The loss of finished water also puts increased pressure on the source, as additional water will be withdrawn to make up for that which has been lost. Some NRW is inevitable and necessary (e.g., fire suppression, hydrant flushing); however, systems should become concerned if water loss exceeds reasonable minimal levels. At a bare minimum, systems should track water loss monthly.

| | ASSESSMENT | | |
| --- | --- | --- | --- |
| | *Strong Managerial Capacity* | *Moderate Managerial Capacity* | *Weak Managerial Capacity* |
| INDICATOR | | | |
| *Water Loss (Non- revenue water (NRW))* | NRW is accurately tracked monthly and is below reasonable minimal levels, or, if above reasonable minimal levels, a plan to reduce is underway. Considerations may include:<br><br>• Hydrant flushing is metered;<br><br>• Other departments (Parks, Fire, etc.) are billed for their water usage;<br><br>• Leak detection equipment is available and utilized. | NRW is accurately tracked monthly and is above reasonable minimal levels; however, a plan to reduce has not been developed. | NRW is not tracked or improperly tracked. |

**Examples of questions for use in a questionnaire:**

Does the water system have a master meter upon entry to the distribution system?

Does every home and business have a meter; are they properly billed according to their metered use?

Does the water system have a regular meter replacement schedule?

Has a water audit been performed?

What percentage of water is lost to leaks?

Is a leak detection program in place? Does the water system track NRW monthly? Is NRW being tracked properly?

What steps are being taken to address leaks in the distribution system?  If NRW exceeds reasonable minimal levels, is there a plan in place to reduce NRW?

**Potential follow- up actions**

Systems can be encouraged to share their best practices for achieving an appropriate range of water loss.  An opportunity for a system to mentor a nearby system that lacks expertise in the water loss area could be a great learning experience for both systems. For systems demonstrating moderate managerial capacity, state staff can assist with identifying a plan of action to reduce NRW. Directing these systems to available funding sources for, and give priority to, projects that address line leaks or meter calibration/replacement could be very beneficial in their efforts to reduce water loss.  For systems displaying weak managerial capacity in water loss, states can help to increase by emphasizing the need to track NRW, provide a tracking spreadsheet or other tool for use by system and relate back to actual dollar amounts lost using the formula:

Monthly NRW in gallons x cost to produce per 1000 gallons/1000) x 12 = annual value of NRW
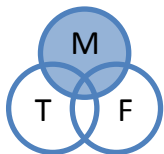
## Customer Education/Support

It is important for customers to understand the service being provided by the water system.  Customer support is the foundation upon which the system builds support for rate increases, system upgrades, infrastructure replacement and others. The system is also responsible for educating customers on important issues such as compliance with new regulations, the need for water conservation and other issues.

Consumers have a right to know what is in their drinking water and where it comes from. The SDWA established provisions to increase customer education and these are regulated using the Consumer Confidence Report (CCR) rule and the Public Notification (PN) rule.  Efforts to solicit customer support and provide customer education is one indication of strong managerial capacity.

| | ASSESSMENT | | |
|---|---|---|---|
| | **Strong Managerial Capacity** | **Moderate Managerial Capacity** | **Weak Managerial Capacity** |
| **INDICATOR** | | | |
| **Public notification*** | All required public notifications are completed and distributed, such as: Consumer Confidence Reports, violations, boil water notices, etc. | Some required public notifications are not completed or not distributed effectively. | Required public notifications are not completed; system does not know or understand requirements. |

*(Continued on next page)*

| ASSESSMENT | | |
|---|---|---|
| *Strong Managerial Capacity* | *Moderate Managerial Capacity* | *Weak Managerial Capacity* |
| **INDICATOR** | | |
| *Communication methods* — System has developed effective methods of communicating with customers such as: bill stuffers, newsletters, website, radio announcements, etc. Other considerations include if the system participates in community events such as health fairs, water fairs, etc. | Some communication with customers, with limited use of methods. | No or rare communication with customers. |
| *Customer Service – Complaints* — Complaints are recorded and responded to within a specified time frame by assigned staff. | Minimal logging of complaints; no staff specifically tasked with responding so response in inconsistent. | No recording of complaints; very inconsistent response or no response at all. |

*\* Public Notification (PN) and Consumer Confidence Reports (CCRs) are required under drinking water regulations. CCR Rule requirements only apply to community water systems.*

**Examples of questions for use in a questionnaire:**

Are customers notified prior to shutting down the system for scheduled repairs? If so, how are they notified?

What are the typical customer complaints that the system receives? Approximately how many complaints are there per month?

How are customer complaints handled?  Are they recorded?

Have there been any CCR or PN violations?

**Potential follow- up actions**

Provide training/assistance to help systems comply with the PN and CCR requirements in drinking water regulations. Consider sharing notable or creative approaches to customer communication and education by, for example, posting them on the state's Capacity Development web site.

# MANAGERIAL CAPACITY RESOURCES

*State programs do not have to reinvent the wheel when deciding which indicators to use to measure water system managerial capacity. States can consider the approach they would like to use and then look at how other states have structured their assessment questionnaires. Reviewing what questions are used and how they are worded, and what types of indicators are placed in the TMF sections of the questionnaire can help states develop or modify their questionnaires. Experience and knowledge should be leveraged to best assess managerial capacity for systems while keeping in mind that some indicators might be better than others depending on the system. Access to examples of capacity assessment questionnaires that were provided by members of this workgroup can be found in this section.*

## CapCert Connections Document Library

State programs may find it helpful to see how other states have designed their capacity assessments. Regardless of the intended purpose, capacity assessments are generally organized by TMF categories with questions listed under each that are used to gauge whether a system has capacity in a particular area. The differences between capacity assessments include what questions are asked in what sections, how particular questions are worded and if a scoring mechanism is being used.

CapCert Connections, hosted through the Association of State Drinking Water Administrators (ASDWA), is an online (password protected) resource for Capacity Development and Operator Certification state coordinators.  CapCert Connections contains a Document Library that houses different state capacity assessment questionnaires. This library arranges these questionnaires by the purposes they are used for – maintaining and evaluating a capacity baseline, identifying assessment needs for individual public water systems and completing DWSRF assessments. Many times a questionnaire is used for multiple purposes. Each questionnaire contains a narrative explaining how it is used as well as contact information if for the state coordinator who uses the questionnaire.

The capacity assessment questionnaires can be found on [ASDWA's CapCert Community](). From the CapCert Connections page, click on either the Capacity Assessment Questionnaires logo to go directly to the Questionnaires page or click on the Document Library logo and look for "Capacity Assessment Questionnaires."

## Capacity Development Contacts

[EPA's Headquarters and Regional Capacity Development contacts]() are available.