Chapter 11 - Capacity Development and Standard Operation Procedures

Editor's Note: For questions on updates, please call the MassDEP Drinking Water Program in Boston, MA at 617-292-5770, or e-mail Program.Director-DWP@state.ma.us Attn: Guidelines

Acronyms used in this chapter:

ACO – Administrative Consent Order
AWWA - American Water Works Association
CCCP – Cross Connection Control Program
CIP – Capital Improvement Plan
CMR – Code of MA Regulations
CR – Current ratio
CUPPS – Check-up Program for Small Systems
DCVA – Double check valve assembly
DOR – Dept. of Revenue
DTE – Dept. of Telecommunications and Energy
DR – Debt ratio
DWP – Drinking Water Program
DWSRF - Drinking Water State Revolving Fund
DWINSA –
EPA – Environmental Protection Agency
GAAP – General Accepted Accounting Principles
GASB – Governmental Accounting Standards Board
MassDEP – MA Dept. of Environmental Protection
MGL – Massachusetts General Laws
MWRA – Massachusetts Water Resources Authority
NCPPP – National Council for Public-Private Partnerships

NEWWA – New England Water Works Association
NTNC – Non-transient non-community
O & M – Operations and maintenance
OR – Operations ratio
PR – Per capita revenue ratio
PWS – Public water system
RPBP – Reduced pressure backflow preventer
RR – Account Receivable Ratio
SCADA – Supervisory control and data acquisition
SDWA – Safe Drinking Water Act
SOP – Standard operating procedure
SR – Sales ratio
UAW – Unaccounted for water

Chapter 11
Capacity Development and Standard Operation Procedures

This guidance is designed to provide public waters systems (PWS) with methodologies to establish and maintain the "technical, managerial, and financial capacity" to sustain operations as required by the Federal Safe Drinking Water Act (SDWA). In accordance with MGL Chapter 111 Section 160, https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXVI/Chapter111/Section160. MassDEP may require certain systems in noncompliance to follow particular aspects of this guidance in order to achieve or return to compliance. Not all parts of Chapter 11 are applicable to all systems.

11.1 Synopsis of Capacity Development Process

In accordance with EPA guidance on capacity, public water system capacity is the ability of a public water system to plan for and maintain compliance with applicable federal and state drinking water standards. Capacity has three components hereinafter referred to as TMF:

- technical capacity
- managerial capacity
- financial capacity

Adequate capability in all three areas is necessary for a system to have "capacity". In evaluating system capacity, MassDEP requires the demonstration of effective controls in all three areas of capacity.

In accordance with EPA guidance on capacity, public water system Capacity Development is the process of a water system acquiring and maintaining adequate technical, managerial, and financial capabilities to enable it to consistently provide safe drinking water.

As part of the Safe Drinking Water Act Amendments of 1996 (SDWA), each state had to submit a Capacity Development Strategy to EPA. MassDEP's Strategy was submitted and accepted. The Strategy outlined ways in which MassDEP would work together with water systems to ensure that the PWSs acquires and maintain the technical, financial and managerial capacity needed to meet the SDWA public health objectives. The preceding chapters of these guidelines primarily discuss the minimum criteria used by MassDEP to demonstrate adequate technical capacity. Therefore, this chapter will address the minimum guidelines that demonstrate financial and managerial capacity and delineate the processes that are necessary to plan for, achieve, and maintain capacity.

MassDEP will use the following three processes to assist public water systems to achieve capacity:

1. Education and Technical Assistance – In addition to information on technical issues MassDEP will provide PWSs with financial and managerial reference material, training, and technical assistance.

2. Prevention – MassDEP will provide PWSs with capacity guidelines that the PWS can use to forestall a technical, financial or managerial breakdown that could result in violation of a drinking water standard, in poor drinking water quality and/or in a public health emergency. Corrective Action – Drinking water records indicate and MassDEP recognizes the fact that some violations of MassDEP's "technical" requirements are often the result of a "financial" or "managerial" breakdown. When MassDEP makes such a determination, it will use these guidelines in conjunction with its Enforcement Strategy to improve the financial and managerial health of the system.

The following managerial and financial capacity guidelines can be used by the PWS to enhance its system capacity. Please note that many of these guidelines may not be applicable to all systems, as much of the language is geared to larger systems. However, they may be used by small systems to develop simplified documentation appropriate to their system size.

11.2 Management Capacity

Management capacity is the ability of a water system to operate in compliance with SDWA requirements. It refers to the system's institutional and administrative capabilities - including ownership, accountability, staffing, organization, documentation, and planning. The following items in Section 11.2 are generally used to demonstrate that a PWS has adequate managerial capacity.

11.2.1 Statement of Purpose

Every water system shall have a written document that clearly states its primary mission including how the success of the organization in fulfilling that mission will be measured, and provides guidance on decision making. It should define: the mission, the customer, and the product standards for safe drinking water for delivery and for payment process. This written statement of purpose document provides a common basis for management and employees to work together within the organizational structure to meet objectives. Management and employees should be familiar with this document and it should be reviewed every 5 years.

11.2.2 Legal Components

11.2.2.1 The Entity

Every public water system shall understand what type of legal entity it is and how that type of entity is required to operate on delivering water. It shall keep a copy of its Articles of Incorporation, enabling legislation, or the state law under which it operates in a safe, permanent file. Each new manager (responsible party, owner, selectmen, board member, supervisor, etc.) should receive a copy of this document. Refer to the *Model Water and Sewer Commission Reorganization Act, Chapter 40N of the Massachusetts General Laws*, https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40N, for guidance on developing an appropriate legal authority for a new or existing water system.

11.2.2.2 Documents and Filings

All court orders, deeds, easements, long term contracts or leases, bylaws, inter-municipal agreements, official maps of the service area, and similar documents shall be stored in a permanent file in a safe location that is known to system managers.

11.2.2.3 Authority and Responsibilities

Each manager (responsible party, owner, selectmen, board member, supervisor, etc.) should review the documents that outline the power, authority, duties, and responsibilities of management (board of water commissioners, selectmen, supervisors, etc.). A PWS should develop an informational package for new management that includes key documents, a map of the system, an organization chart, a rate chart, and other information. Managers (responsible party, owner, selectmen, board member, supervisor, etc.) should receive basic training on the duties and responsibilities of managing a PWS.

11.2.2.4 Meeting Records and Minutes

Official action shall be recorded in writing and saved in a record book. Minutes shall include votes, any changes to bylaws, and other legal actions of the PWS. This ensures an historical and documented record of actions.

11.2.2.5 Bylaws, Rules and Regulations

Bylaws, rules, and regulations of the PWS shall be written and changed only by a recorded vote. These documents should be updated periodically to include amendments and deletions. The cover page should include the effective date and a note on revisions, such as *contains all revisions through 31 October 2011*. Copies of bylaws, rules, and regulations should be available to qualified parties upon request. Standard operating procedures (SOPs, as noted below) may be considered as bylaws and/or regulations.

11.2.2.6 Organizational Structure

Each PWS should have a formal organization chart that clearly shows the chain of command within that PWS. The chart should start at the highest level (mayor, selectmen, and water commissioners) and include all employees, contract help, and part time staff including primary and secondary operators.

The ownership of the PWS should be clear to the service population, the local community, and local, state, and federal agencies. Adequate personnel policies should be in place to retain and compensate personnel and to provide appropriate training as needed or recommended.

11.2.2.7 Duties and Responsibilities

A job description should be created for each position on the organization chart.

Job descriptions are an important part of organizing the work within the water system. A job description should define a person's duties and responsibilities, supervisor, and staff supervised. These may serve as a basis for the person's salary and duties. In the process of developing job descriptions, gray areas may be defined, and areas of conflict identified.

11.3 Standard Operation Procedures (SOPs) and Policies

Generally, SOPs and policies are included with the bylaws and regulations of the organization. These should all be *written* documents.

11.3.1 Operational Policy

Management should define the operation and maintenance of the PWS; for example, *Policy Describing the Flushing Program Required by the PWS*. If a board oversees the PWS, one board member should be designated as the link between the board and the certified operator in charge of the PWS. The certified operator should file monthly written reports with the board or its designee. The monthly reports should include at a minimum, water quality test results, maintenance performed, and recommendations for improvements.

Manuals for every piece of equipment should be kept in a central location in a bound book or file. Log books should be kept of all repairs and maintenance. There should be a policy that sets the maximum amount of money that the operator may spend without obtaining the board's permission.

11.3.2 Personnel/ Professional Improvement/ Hiring Policy

Each PWS should have a written personnel policy. It should state the holidays and vacation policy, limitations, or approvals required for time off/overtime, and operation during emergencies and off-duty time. The process for handling employee grievances should be clearly stated. A written personnel policy is needed to protect the rights of the individual employee and the PWS.

The amount of money involved in sick and vacation time accrued should be recorded and reported to the employee at regular intervals. A dedicated account is recommended for deposit of wages for accrued sick and vacation time.

The PWS commitment to continuing education should be defined in this policy. It should include requirements for professional memberships and training. It should clearly state criteria for training, approval of training requests, payment of fees and mileage, and use of the PWS's vehicles. All staff should be adequately trained prior to starting their jobs.

For PWSs that have a board of water commissioners or a similar structure, the policy should specify the method for filling board vacancies, attendance requirements for commissioners, and training of board members. It should address completing tasks in a timely manner. Policy should include provisions for removing a commissioner from office (e.g., continued absence at meetings). Positions such as the treasurer and superintendent should not be part of the control structure (e.g., board of commissioners) wherever feasible to avoid conflict of interest.

11.3.3 Conflict of Interest and Ethics Policy

Preventing conflict of interest is an important consideration when organizing work within the water system. Although the state law covers what constitutes a conflict of interest for municipal and district employees, the PWS should have a written policy that defines acceptable and unacceptable activities.

Specific policies should be in place to ensure ethical business practices and to reinforce organizational values related to ensuring transparency of business transactions, conflicts of interest, and confidentiality of employee and customer information. Policies should be oriented to building and maintaining employee and public trust and confidence.

Generally, a conflict of interest refers to a matter in which a public employee's private interests conflict or appear to conflict with his public duties or responsibilities. Refer to Massachusetts State Ethics Commission for more information at: http://www.mass.gov/ethics/laws-and-regulations-/conflict-of-interest-information/

11.3.4 Water Rates Policy

Every PWS shall have a written policy on water rates and other charges. At a minimum it shall address the following:

1. What the rates cover. Does the rate cover capital and operating expenses? Does the PWS receive subsidies or other income sources?

2. Rate classifications and how rates are changed.

3. An explanation on fees and charges such as seasonal connections, shut-off/turn-on fees, impact and connection fees, emergency water ban violation fines, and fees for various size services or meters.

The policy should state the rationale for the rate, fee structures, and the procedures for establishing rates. Rate procedures outlined in the enabling legislation for the PWS may be repeated in this policy.

The PWS shall have printed rate information available to all customers and potential customers. It shall include all water rates. Often this is printed on the back of the water bill.

Every PWS user should be metered. Refer to MassDEP Guidelines Chapter 9.12.1 Service Meters (http://www.mass.gov/eea/docs/dep/water/laws/a-thru-h/glchpt9.pdf). Each user should receive a water bill based on actual readings (quarterly or more frequent bills are suggested). Parks, public buildings, and other community facilities may be exceptions to this quarterly billing rule, but they should be metered and monitored.

Refer to: *Setting Small Drinking Water System Rates for a Sustainable Future*, Office of Water (4606M) EPA 816-R-05-006 January 2006 (http://water.epa.gov/infrastructure/drinkingwater/pws/cupss/upload/guide_smallsystems_final_ratesetting_guide.pdf) This guide is designed to help owners, operators, and managers of community water systems (CWSs) serving 3,300 or fewer persons understand the full costs of providing a safe and adequate supply of drinking water to their customers and how to set water rates that reflect those costs. Systems that will find this guide useful are small publicly or privately owned entities whose primary business is providing drinking water.

The 2006 Massachusetts Water Conservation Standards require PWSs to develop a 100% metering program for all public and private users. The PWS operations plan should include regular meter reading of all users.
http://www.mass.gov/eea/docs/eea/wrc/watercons-standards.pdf

The PWS should keep an inventory of all its meters and should systematically check meters for accuracy. There should be an active and ongoing program to replace aged and broken meters.

Refer to Section 11.5.2.6 for typical useful life of fixed assets. The normal life expectancy of water meters ranges from 7 to 15 years.

11.3.5 Connections and Main Extensions Policy

There shall be a written policy outlining conditions for new connections to the water system. The connection policy should include the following:

1. The responsibility of the PWS
2. The responsibility of the potential customer
3. Conditions for the denial of a connection to the system
4. The materials and methods to be used when installing the service line
5. Method for establishing the fee for connection to the system
6. Who owns (and is responsible for repair to) what component of the connection to the main

In some cases, the PWS will install the service connection and bill the customer for the cost of the installation from the curb cock to the building. In other cases, the potential customer is responsible for installing the service connection. It is important to state the responsibility of the customer in regard to the connection. The PWS should not allow any connections that would result in the system exceeding the safe yield of its sources or the hydraulic capacity of its distribution system.

There shall be a written policy regarding the extension of water mains to serve new areas both inside and outside the current service area. Often (if the water main extension is to serve a new housing or industrial development), the developer is required to pay the costs of installing the pipe to the specifications of the water system. If it is desirable to install a larger main than required by the development, the policy should clearly state who pays the difference for the larger sized pipe. The type of pipe, depth, bedding material, and other related specifications should be noted in the policy. MassDEP also requires a Cross-Connection Control Program Plan (See Chapter 9.10, *Distribution System Piping and Appurtenances*. http://www.mass.gov/eea/docs/dep/water/laws/a-thru-h/glchpt9.pdf)

11.3.6 Water Conservation and Drought Emergency Policy

Each PWS should work with local officials to adopt a drought emergency bylaw or health regulation that authorizes increasingly stringent mandatory water conservation measures with escalating penalties for failure to comply. A *Model Water Use Restriction Bylaw/Ordinance* is available on MassDEP's web site:

http://www.mass.gov/eea/agencies/massdep/water/regulations/model-water-use-restriction-bylaw-ordinance-2009.html.

The drought emergency bylaw is only one part of a water conservation policy. The policy should also include the following components:

1. "Increasing block rate" pricing or conservation pricing
2. Education of users to reduce water use
3. A series of increasingly stringent voluntary measures to reduce water use
4. Assistance to the largest water users on how to save money by reducing water use
5. Reducing the amount of "unaccounted-for" water (UAW)
6. Methods to monitor the success of the program

For more information on water conservation standards, drought, and emergency planning review the following resources:

1. *Water Conservation Standards for the Commonwealth of Massachusetts, MassDEP's Policy 87-05,* http://www.mass.gov/eea/docs/dep/water/laws/numeric/8705.pdf
2. *Declaration of a Water Supply Emergency,* the provisions of *MGL Chapter 40, section 41A, Water Emergency,* https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40/Section41A
3. *Chapter 10* of these Guidelines, http://www.mass.gov/eea/docs/dep/water/laws/a-thru-h/guidch10.pdf
4. American Water Works Association (AWWA) Website http://www.awwa.org/
5. New England Water Works Association (NEWWA) Website http://www.newwa.org/
6. Massachusetts Water Works Association (MWRA) Website http://mwwa.memberclicks.net/

A PWS may impose voluntary water use restrictions at any time without MassDEP's approval. However, a PWS may not impose a mandatory ban without MassDEP's approval. A PWS may impose a mandatory ban only if it has a Water Use Restriction Bylaw/Ordinance approved by MassDEP. MassDEP can declare a *Declaration of Water Supply Emergency* only after the water system petitions MassDEP. MassDEP can attach conditions to the Declaration as required. A Declaration remains in effect for 6 months unless revoked by MassDEP.

11.3.7 Leak Detection and Unaccounted for Water (UAW)

Each PWS should adopt a policy for leak detection and determining the source of "unaccounted-for" water" (UAW). All service connections, including public buildings, should be metered, (See Section 11.3.4, *Water Rate Policy*). A full leak detection survey of the distribution system should be completed every three years unless UAW % surveys warrant more frequent surveys; identified leaks should be repaired as soon as practicable. The PWS shall calibrate its master meters annually, (at a minimum), to ensure water meter accuracy. There should be a program to calibrate and, if necessary, repair or replace water meters for each service on a 10-12 year cycle. The policy should include a requirement that all large (bigger than two inch) quantity water users calibrate their meters each year at their expense.

For a well-run PWS, the amount of unaccounted water should be below 10% of total finished water distributed into the system. Water systems should implement a leak detection program to monitor tanks, water mains and service lines for leaks.

Refer to MassDEP worksheet form titled: *Water Management Act Program Guidance Document and Forms for a Water Audit* which identifies how much water is lost and what that loss costs the PWS: http://www.mass.gov/eea/docs/dep/water/approvals/year-thru-alpha/e-thru-l/guidance.pdf

PWSs should encourage their customers to conduct *on-site* leak detection. By reducing the amount of "unaccounted-for" water, the system PWS may:

1. Reduce costs of operation by reducing electricity and pumping cost
2. Reduce impacts on drinking water sources and the environment by pumping less
3. Delay the need to add sources, add storage, increase pipe sizes, or increase treatment capacity
4. Increase the life span of equipment.

Note: The 10% UAW performance standard is included in Water Management Act permits. Permit holders are required to meet the 10% UAW standard or take actions considered to be functionally equivalent to 10% UAW (leak detection, meter replacement program, etc.). (See Chapter 10, *Water Management Act Requirements* at http://www.mass.gov/eea/docs/dep/water/laws/a-thru-h/guidch10.pdf.) If a water supply source requires an Interbasin Transfer Act approval, the water conservation plan must meet the *Interbasin Transfer Act Performance Standards* adopted by the Water Resource Commission in 1999. Performance standards for the Interbasin Transfer Act are available at http://www.mass.gov/eea/agencies/dcr/water-res-protection/interbasin-transfer-act/.

11.3.8 Service Shut Off and Restoration Policy

Each PWS should have and enforce a delinquent account policy which specifies how past due accounts of water customers will be handled. It is important that this policy be uniformly applied. Many water systems experience cash shortages because customers do not pay their bills. The delinquent account policy sets forth the steps the system will take, and the customer's options. Often the procedure includes a second billing with interest and perhaps a penalty; a third billing with interest and a shut off warning; a final shut off warning; and an onsite visit with a doorknob hanger explaining the shutoff (often the shutoff will leave trickle running for public health purposes); and then shutoff. Some water systems use other methods, such as small claims court. For a district or municipality, a lien may be placed on the property as specified in the MGL Chapter 40 Sections 42A through 42F.
https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40

The policy should state in a clear, step-by-step process:

1. What constitutes a delinquent (or past due) account

2. How the shut-off/turn-on is accomplished

3. Conditions for restoration of service

4. Exceptions to the policy

Additional guidance may be found at *MGL Chapter 40N, Section 9(d).* https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40N/Section9. The provisions of *MGL Chapter l65 Sections 11A through 11E* explain the procedure to be used by a private water company for shutting off water:
https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXXII/Chapter165.

Note: Privately owned PWSs are required to follow the billing and termination policy as listed in the Massachusetts Department of Telecommunications and Energy's (DTE) regulation 220 CMR 25.00 titled: Billing and Termination Procedures of the Department of Telecommunications and Energy. This policy can be used as a model for publicly owned water systems. http://www.mass.gov/eea/docs/dpu/cmr/220cmr2500.pdf.

11.3.9 Billing Policy

Each PWS shall have a written billing policy.
The water billing policy is often included in the rules and regulations or bylaws. The written policy should state:

1. Frequency of billing

2. Dates when water bills should go out

3. Provision for estimating the bill when the meter cannot be read. (Every effort should be made to avoid use of estimated bills. If necessary, estimated bills should be clearly marked as estimated).

4. Provision for handling absentee and seasonal customers

5. Procedure a customer follows in contesting the amount billed

6. Provisions for deferral of charges as allowed by MGL Chapter 40 Section 42J: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40/Section42J

7. Special policies on the elderly, handicapped, veterans, or other groups

8. Procedures for abatements or refunds

Billing should follow shortly after the filing of the meter readers' report. More frequent billing such as quarterly and monthly may make payments easier for customers.

Every water system user should be metered and receive a water bill based on readings. There should be a plan developed to install meters for all non-metered connections. Install outside-meter readers, mobile or "drive-by" meter reading, smart meters which enable two-way communication between the meter and the PWS central system, or fixed network (wireless) meter reading wherever possible.

Note: Privately owned PWS are required to follow the billing and termination policy as listed in the DTE's regulation 220 CMR 25.00 titled: Billing and Termination Procedures of the Department of Telecommunications and Energy. This policy can be used as a model for publicly owned water systems. http://www.mass.gov/eea/docs/dpu/cmr/220cmr2500.pdf.

11.3.10 Customer Comment Policy

Each PWS should have a written policy regarding complaints, comments, and compliments. It should contain:

1. A complaint/comment/compliment logbook

2. Procedures for PWS to follow up complaints/comments

3. Procedures to inform customers of complaints/comments investigation results

4. Filing system for information collected and record of resolution

Note: Tracking complaints may seem arduous; however, gathering and reviewing this data may uncover seasonal or intermittent problems with the system that would not have been discovered.

Tracking comments may result in system improvements. Tracking compliments will improve staff morale and encourage positive attitudes.

11.3.11 Bidding and Purchasing Policy

Each PWS should develop its own written Bidding and Purchasing Policy so that the steps and procedures are clear and understood by all parties. The policy should cite the contracting agency, and the method of recording and filing quotes and bids. Refer to the *Guide for Local Government Procurement of Supplies, Services, and Real Property* that is available from the state bookstore. http://www.sec.state.ma.us/spr/sprcat/catidx.htm

State Bookstore, State House, Room 116, Boston, MA 02133 617-727-2834

Western Office of the Secretary of the Commonwealth 436 Dwight Street Springfield, MA 01103 413-784-1376

District and municipal water systems (and in certain cases, privately owned water systems receiving public grant or loan money) are required to comply with the MGL Chapter 30B *Massachusetts Uniform Procurement Act*, https://malegislature.gov/Laws/GeneralLaws/PartI/TitleIII/Chapter30b; or MGL Chapter 30, *Public Bidding Laws*, especially Section 39M, https://malegislature.gov/Laws/GeneralLaws/PartI/TitleIII/Chapter30/Section39m. These laws are fairly complex and in certain circumstances allow several alternative courses of action.

11.3.12 Accounts /Receivable/Payable/Segregation Policy

Each PWS shall have a written policy on handling of accounts payable, accounts receivable, and the segregation of duties. This policy should spell out the approval process for routine bills, special provisions for approval of large bills, required paper trail, person responsible for the tasks, filing system, and documentation needed for the bill payment. Note the importance of separating duties to ensure accuracy and honesty. Policy should require bonding of staff responsible for the money.

11.3.13 Bonding and Insurance Policy

Each PWS should have a written policy that sets out the amount of bonding required for officers and employees that handle money and the amount of property damage and liability insurance needed. The water commissioners might wish to have an insurance policy for oversight and omissions. This policy is usually not needed for municipalities that already have such coverage.

11.3.14 Management Information Systems Policy

A management information systems policy outlines procedures for informing managers of the financial and operational status of the system. The management informational system should have a standard periodic report that includes:

1. Summary of expenditures by category
2. Revenues received by category
3. Cash available for paying bills
4. Status of delinquent rate payers by age of account
5. Status of actual versus budgeted expenses and revenues
6. Deviation of year-to-date budget from year-to-date expenses by line item
7. Brief outlook for the future

The report should also include an operational summary of accomplishments, complaints and resolution, a summary of short-term, midterm and long-term operational plans, and other matters of interest to management. Develop a standard format for these reports.

11.3.15 Land Management Policy

Each PWS should have a written land management policy that states the public water system's commitment to land management, including:

1. Activities that are allowed
2. Management philosophy/future plans
3. Specific requirements such as forest management plans and maps, wildlife management plans, and watershed management plans
4. Management conditions such as sign postings and marking of boundaries every 10 years
5. Closure conditions
6. Patrolling of streams and boundaries
7. Enforcement
8. Plan to work with local conservation commissions

9. Providing maps to customers identifying Zone II's and land ownership

11.3.16 Water Theft Policy for Stealing Water

Each PWS shall have a written water theft policy that sets the public water system's policies for stealing water without payment including:

1. Establish penalties and/or fines for stealing water

2. Develop a new bylaw or ordinance or amend existing bylaws/ordinances

3. Fines and penalties may be enforced criminally or non-criminally

4. Does not apply to private water suppliers or PWS that do not have billing meters

5. Refer to MGL Chapter 165, Section 11 for more information: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXXII/Chapter165/Section11. In 2010 state law was changed to increase the fines for interference with water (company) meters by changing the language in Section 11 of Chapter 165 to allow for fines that would be triple the amount of damages or $1,000 whichever is greater (previous fine could only be $100).

11.3.17 Health and Safety Policy

Each PWS must demonstrate that it has in place policies and performance standards for managing employee health and safety.

Each PWS shall have in place a structure process for investigating and evaluating the cause of workplace injuries and for identifying corrective actions (for example, additional and/or improved training, engineering controls, and changes to equipment). The impact of corrective actions shall be evaluated once implemented to ensure their effectiveness.

11.3.18 Risk Management Policy

Each PWS should identify the business risks or threats of potential events or actions that would adversely affect the organization's ability to achieve its business objectives and execute its strategies successfully. The risk identification and assessment shall also include management's estimate of the consequences for each risk.

11.4 Water System Planning

The U.S. drinking water industry faces many key challenges in the 21st century, such as replacing aging infrastructure and retiring operators, addressing security concerns, and complying with new regulations. All systems need to anticipate and prepare for making changes to the operation of your system. Planning is a management concept that can help you address and prepare for both anticipated and unexpected problems by evaluating your system's current physical situation, as well as your financial and managerial needs.

A lack of planning can lead to many problems including an inability to respond to drinking water emergencies. MassDEP expects all systems to adequately plan and has the authority under MGL Chapter 111 Section 160 and 310 CMR 22.04(1) to require systems to plan. All water systems shall have written long and short-term plans which can identify present and future needs and set forth a means for addressing those needs. The results of proper planning will help ensure the efficient use of available resources and the orderly growth of the water system, while maintaining reliable and safe delivery of high quality water. Based on a systems non compliance status and/or inadequate capacity to provide safe water MassDEP may require an updated system's plan. Many of the items described in Chapter 11 are components of various useful planning formats including Master Plan, Strategic Plan, Capital Improvement Plan, Asset Management Plan and others. At a minimum MassDEP expects a good planning effort to include a Strategic Plan, Capital Improvement Plan, and Asset Management Plan. An Asset Management plan may be sufficient for some small systems. Below is a short description and links to some of the planning tools that are available.

11.4.1 Strategic Plan

A strategic plan is a long-range plan that documents a mission statement and outlines the goals and objectives to achieve the mission. Objectives are specific, achievable, and measurable means to reach the goals. Together the goals and objectives provide guidance and a baseline to develop the work breakdown structures. Strategic Planning tools include (but are not limited to) the following publication which provides the framework for strategic planning; EPA publication # 816-R-03-015 entitled *Strategic Planning: A Handbook for Small Water Systems* and available at http://www.epa.gov/ogwdw/smallsystems/pdfs/guide_smallsystems_stratplan.pdf.

11.4.2 Capital Improvement Plan

A Capital Improvement Plan (CIP) is a document that thoroughly outlines, for a specified period, all necessary capital projects, the reasons for each project, and their costs. It should consider expanding service, upgrading water treatment, replacing worn-out equipment, adequacy of storage/ pressure, and compliance with the SDWA and amendments. A CIP should contain a financial estimate for each year of the specified period and possible sources of financing for these improvements.

1. EPA: Infrastructure Needs Survey (DWINSA)
   http://water.epa.gov/infrastructure/drinkingwater/dwns/index.cfm
   http://www.mass.gov/eea/agencies/massdep/water/drinking/water-systems-ops.html#3

2. MassDEP: Capital Improvement Planning Guidance Document
   http://www.mass.gov/eea/docs/dep/water/laws/a-thru-h/cipform.pdf

11.4.3 Asset Management Planning

Asset management **(**as outlined in EPA publication entitled: Asset Management: Best Practices Guide, http://water.epa.gov/infrastructure/sustain/asset_management.cfm) is a planning process that ensures that you get the most value from each of your assets and have the financial resources to rehabilitate and replace them when necessary. The Five Core Framework questions of asset management are:

1. What is the current state of system's assets?

2. What is the required level of service?

3. Which assets are critical to sustained performance?

4. What are the minimum life cycle costs?

5. What is the best long-term funding strategy?

11.4.3.1 Asset Management Planning Tools

Asset Management Planning tools include (but are not limited to) the following publication and guidance materials;

1. EPA: Asset Management: A Best Practices Guide
   http://water.epa.gov/type/watersheds/wastewater/upload/guide_smallsystems_assetmanagement_bestpractices.pdf

2. EPA: Simple Asset Inventory for Very Small Systems (VSS)
   www.epa.gov/ogwdw/smallsystems/pdfs/final_asset_inventory_for_small_systems.pdf
   EPA publication # 816-R-03-015

3. MassDEP: Asset Management Worksheet for Very Small Systems
   http://www.mass.gov/eea/docs/dep/water/drinking/alpha/a-thru-h/assetmgt.pdf

4. EPA: Asset Management: A Handbook for Small Water Systems
   http://www.epa.gov/ogwdw/smallsystems/pdfs/guide_smallsystems_asset_mgmnt.pdf
   EPA publication # 816-R-03-016

5. EPA: Check Up Program for Small Systems (CUPSS)
   http://water.epa.gov/infrastructure/drinkingwater/pws/cupss/index.cfm

11.4.4 Annual Operating Plan or Budget

An annual operating plan or budget is a plan to estimate income and expenses for a future time period. Typical expense categories are annual debt service, salaries or personnel costs, office utilities, operations/maintenance, office supplies, chemicals, equipment leases, insurance, contract and professional services, telephone, and travel.

Operating revenue is derived from the sale of water, connection fees, late payments, penalties, and reconnection fees. Non-operating revenue is derived from meter deposits or interest on checking or reserve accounts.

Rate increase, drought, uncollected bills, and new and lost customers affect revenue. Gains occur when revenues exceed expenses; losses occur when revenues are lower than expenses.

11.5 Financial Capacity

Financial capacity is the water system's ability to acquire and manage sufficient financial resources to achieve and maintain compliance with SDWA requirements. Financial capacity refers to the financial resources of the water system, including but not limited to the revenue sufficiency, credit worthiness, and adequacy of fiscal controls. The following items in Section 11.5 –11.7 are generally used to demonstrate that a PWS has adequate financial capacity.

11.5.1 Revenue Sources

11.5.1.1 Rates

In order to be successful, a water system should operate in accordance with sound business principles. It is generally recommended that a PWS charge a fair price for the services it provides. The rate should support the operational and maintenance cost of treating and delivering water to the customers, the system's debt service and meet future needs. MassDEP may require the PWS to do a cost of service review and/or a rate study.

PWS should review and adjust their water rates based on the projected revenue needed the following year. The system should provide upon request a copy of their water rate structure and fee schedule for drinking water services. Rate adjustment in small yearly increments creates less

resistance than large rate increases every few years. All PWS shall review and adjust their water rates as needed at least once every 5 years.

Note: Systems regulated by DTE require that agency's approval prior to any rate changes, as required by M.G.L, Chapter 164, section 94: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXXII/Chapter164/Section94, and M.G.L, Chapter 165, section 2: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXXII/Chapter165/Section2

11.5.1.2 Rate Structures

There are five basic rate structures:

1. Unmetered or flat rates
2. Uniform rates
3. Ascending/increasing block rate
4. Descending/declining block rates
5. Seasonal rates

Note: Although commonly used throughout the United States, descending/declining block rates are illegal for municipalities and water supply districts in Massachusetts according to MGL Ch. 40, Section 39 L.
https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40/Section39L
Private water supplies regulated by the Department of Telecommunications and Energy are not currently subject to this law.

Ascending/increasing block rates are the preferred rate structures because they provide a reliable source of income, promote conservation, and are more equitable to residential users if structured properly.

11.5.1.3 Charges

1. Service Charge
   Service charges recover the costs associated with the daily operation of the water system, regardless of a customer's usage. They include meter reading and service, billing, and administrative expenses. Usually, the service charges are based on meter size.

2. Hydrant and Fire Protection Charge
   Water systems are designed to provide water at peak hourly flows, and to provide sufficient fire protection to extinguish a fire over a minimum two-hour period. The costs

associated with fire protection should be charged to the customer who will benefit from the protection. This includes public and private fire hydrants and sprinklers.

11.5.1.4 Fees

1. Connection Fee

   Connection fees, usually based on service line size, are charged for connecting new users to the PWS. The fee should equal or exceed the actual cost of materials, labor, and equipment required for the connection.

2. Backflow Prevention Device Testing Fee

   All reduced pressure backflow preventers (RPBPs) must be tested semi-annually and the double check valve assemblies (DCVAs) must be tested annually. Other testable device such as the pressure vacuum breakers (PVBs) and spill resistant PVBs, MassDEP strongly recommends that these types of devices be tested at least once a year. The testing frequency is found in the Cross Connection Control Program (CCCP) regulations, 310 CMR 22.22 Cross Connections Distribution System Protection. http://www.mass.gov/eea/docs/dep/water/ccdefreg.pdf

   Fees charged for testing backflow preventers is a local matter, and MassDEP does not have any guidance or recommendation. There are PWSs that charge for testing the above mentioned devices and assemblies, and there are others that do not charge any fees.

3. Other Fees

   The system may establish fees, based on actual cost, for duties performed at the request of the customer. These include, but are not limited to, fees for a final meter reading, meter test, and turn-on or turn-off service. Hourly fees should be set for service calls, including equipment. Fees should be reviewed annually. The PWS may impose late payment charges. Generally (see note below), a late payment charge is a penalty plus interest for a payment that is over 30 days late.

Note: DTE does not permit the water companies that it regulates to charge residential customers interest on late payments**.**

11.5.1.5 Other Revenue Sources

Water systems should seek income from other sources when appropriate and when it does not interfere with the primary function of delivering safe water. These income sources may include: rental of unused buildings or land for compatible farming or other uses; forest management activities such as timber harvesting, firewood cutting, and collection of nuts, berries, other products and user fees.

11.5.2 Accounting

Systems regulated by the Department of Telecommunications and Energy (DTE) must adhere to DTE's accounting requirements.

11.5.2.1 Billing

Billing frequency should be reviewed annually and adjusted annually if necessary. The PWS should consider computerizing the billing process via a software program so that the process is more accurate and efficient. Quarterly or monthly billing is recommended.

11.5.2.2 Accounts Receivable

PWSs should consider computerizing the process of recording accounts receivable, as these should be recorded and tracked. Customers that are 30 or more days late should be sent dunning letters, and in some cases, termination notices for continued failure to pay water bills.

PWSs should have a written accounts receivable aging policy. A list of aged accounts receivable should be prepared periodically. Past due notices should be sent to delinquent customers with outstanding bills past certain days and shut-off notices should follow if a customer fails to respond to the past-due notices.

11.5.2.3 Accounts Payable

The payment process should require valid documents (invoices) to pay bills and avoid duplicate payments. Each payment invoice should be approved and signed by the designated responsible party (e.g., superintendent/commissioners). Any contract-related invoice should be verified against the contract document before payment.

11.5.2.4 Financial Accounting and Record Keeping

General Accepted Accounting Principles (GAAP) should be adopted in preparing financial statements. For good management practices, trial balance and treasurer's report should be prepared on a monthly basis for review and operations evaluation. Balance sheet, income and expenditure statement, cash flow statement, and a management letter should be prepared annually as part of the audit report. The annual report should be prepared no later than three months after the end of fiscal year. Deficiencies and/or recommendations from the annual audit should be reviewed and addressed in a timely manner.

Audited financial statements of local governments must conform to the standards in Statement No. 34. Refer to *A Practical Guide for Implementation of Governmental Accounting Standards Board Statement #34 For Massachusetts Local Governments* for more information at http://www.mass.gov/dor/docs/dls/publ/misc/gasb-34.pdf.

The Governmental Accounting Standards Board (GASB) is the independent private sector organization, formed in 1984, that establishes and improves financial accounting and reporting standards for state and local governments. http://www.gasb.org/

All municipal systems are strongly encouraged to use an enterprise account for the PWS to ensure adequate capacity. The system should maintain financial books and records for auditing and financial planning purposes.

11.5.2.5 Enterprise Account

All municipal public water systems are strongly encouraged to use an enterprise account. MGL, Chapter 44, S. 53F1/2 allows municipalities to establish a separate account for a drinking water system. Enterprise accounting gives the PWS the ability to demonstrate which drinking water costs are recovered through user charges. A complete enterprise funds accounting guidebook is available at Mass Department of Revenue (DOR) Division of Local Services website at: http://www.mass.gov/dor/docs/dls/publ/misc/enterprisefundmanual.pdf.

Enterprise accounting also allows the surplus or retained earnings generated by the PWS to remain within the fund rather than closing out at year's end and becoming part of free cash in the general fund. A community can establish an enterprise fund by adopting Chapter 44 Section 53F1/2, or by enacting special legislation.
https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter44/Section53F1~2

No later than March 1 each year, the appropriate enterprise officer or board should submit to the mayor or board of selectmen the estimated costs and revenues for the next fiscal year. Revenue estimates should be prepared for user charges, investment income, and any other enterprise revenues. Enterprise available funds should also be considered. This information is recorded on the tax recapitulation sheet.

The water department can appropriate reserve funds or retained earnings for operating costs to:

1. Offset the need to increase user charges
2. Fund capital improvements
3. Reimburse the general fund for previous water department funding
4. For enterprise revenue deficits (operating loss).

Accounting for enterprise funds is similar to accounting for the private sector. Revenues are recognized when earned and expenses are recognized when incurred (full accrual basis of accounting). Enterprise accounting also requires the establishment of fixed assets. No separate bank account is needed; however, enterprise fund monies should be listed separately in the general ledger.

11.5.2.6 Fixed Assets Review

Fixed asset accounting (Capital Asset Inventory / Asset Management) is required of all enterprise funds. Any new fixed asset should be recorded upon acquisition and depreciated over its useful life. A fixed asset can be defined as a specific piece of property that has a tangible nature, a life longer than the current fiscal year, and a significant value. Generally fixed assets are land, buildings, improvements, machinery, and equipment. For assistance in managing your assets refer to guideline sections 11.4.2 Capital Improvement Planning, 11.4.3 Asset Management Planning and 11.4 Asset Management Planning Tools.

11.5.2.7 Budgeting

A formal budget system should be in place and should be updated annually. For cities, towns, and districts a formal budget system shall be in place and shall be updated annually. Periodically compare budget estimates with expenditures and determine balances. Reports should be presented to the higher management for review and approval. Budgets for the following fiscal year should be started in the spring to allow sufficient time for management and public review.

Generally, expenditures for a public water system can be grouped into seven main categories:

1. Personnel - salaries, over-time, payroll taxes, employee health insurance premiums, worker's compensation, and training.

2. Supplies - includes the cost of small tools, chemicals if needed, and office supplies.

3. Operating Expenses - cost of electricity, utility expenses, water quality testing, vehicle and equipment expenses, all insurance costs, including liability insurance, physical damage insurance, vehicle insurance, board liability insurance, and bonding of employees.

4. Contracting Services - costs of contracting with engineers and utility consultants, certified operators, certified contract operators, lawyers, accountants, and financial advisors.

5. Repairs - Includes the cost of pipe and repair parts required.

6. Debt Service - Include annual payments on bonds and annual payments on loans principal and interest).

7. Direct/Indirect Costs - Systems with enterprise funds should identify both direct and indirect costs. Direct costs are associated to the water department. Indirect costs are prorated among departments, and cannot be assigned directly to the water department.

Note: A healthy PWS generally has a positive cash flow for the next 5 years, adequate capital to finance equipment replacement, an operating cash reserve, a policy requiring that long-term debt

will not be utilized to finance current operations, and an emergency cash reserve greater than or equal to the cost of replacing the most expensive piece of equipment.

11.6 Internal Controls

11.6.1 Collection Policies

Specific rules on dates of billing, deadlines for payments without interest, deadlines before disconnection and reconnection charge shall be part of the policy or bylaws and should be strictly enforced.

11.6.2 Bidding and Purchasing

Cities, towns, and districts in Massachusetts shall adhere to the public procurement process, MGL Chapter 30B Uniform Procurement Act, when contracting for services or supplies. (https://malegislature.gov/Laws/GeneralLaws/PartI/TitleIII/Chapter30b) It includes procedures for choosing contractors, purchasing and disposing of property. The PWS should have a *Bidding and Purchasing Policy* that adheres to Chapter 30B requirements. A list of pre-qualified bidders for common type of services and suppliers should be maintained.

Procedures to allow for timely acquisition of materials and services to respond to emergencies shall be clearly identified and communicated. PWS shall determine in advance what exceptions, informalities, and irregularities on procurement transactions may be waived and what may not be waived.

11.6.3 Contracting and Work Projects

Policies should be established for bidding procedures that insure the system gets quality work at the best price. Standard operations procedures should include proper procedures to assure that only valid and authorized invoices are submitted for payment. Any increase beyond the contract amount should be subject to review and approval by higher management.

In contract services carried out for the purposes of operations and maintenance, a public partner, such as a federal, state, or local government agency or authority, contracts with a private partner to provide and/or maintain a specific environmental service or other service. The public partner has the option of retaining ownership and overall management of the public facility or system under this type of contracting arrangement. Under some contract service agreements for operations and maintenance, the risk of operations is shared with the private partner or even transferred to them entirely. Example of the types of service provided through this type of partnership include lab testing, auditing, the collection of water billing fees, certified operator, and the operation and maintenance of water facilities.

http://www.mass.gov/eea/agencies/massdep/water/drinking/contracted-massachusetts-certified-operators.html
Refer to: The National Council for Public-Private Partnerships (NCPPP) Website: http://www.ncppp.org/.

11.6.4 Insurance Coverage

The PWS should have sufficient insurance coverage for structures, equipment, vehicles, boiler and machinery, and worker compensation.

11.6.5 Cash Receipts

Standard operating procedures shall be in place for cash transactions, from date stamping to recording of bills, receipts, and payments for cities, towns, and districts. Whenever possible, no single person should be responsible for processing payments and posting accounts.

11.6.6 Payroll

Standard accounting procedures for payroll should be used in payroll operations such as signing time cards and calculating gross wages. Payroll functions should be computerized.

11.6.7 Abatements

Abatements are issued when an incorrect charge results in an over charge to the customer. The treasurer should use a formal abatement policy when handling abatement requests from customers. Any abatement request should be subject to review and approval by the commissioners. Official records should be kept for all abatement decisions.
https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40/Section42E

11.6.8 Change in Personnel

To insure secure operations, any employee leaving employment must turn in all PWS issued keys and identification badges to their supervisor with a dated receipt signed by both parties kept. Any computer passwords including supervisory control and data acquisition (SCADA) systems and lock combinations used or known by the leaving employee should also be changed to help to reduce potential threats to the system. Any locks vital to operations used by departing employee should be changed.

11.7 General Financial Indicators

11.7.1 Eight Financial Ratios

Financial ratios are used to gauge the financial health of water systems. There are eight simple ratios to help determine the financial stability of the system. Data is analyzed from 8 areas: operations, revenue, liability, sales, expenses, assets, debts, and accounts receivable:

1. Operating Ratio (OR) = Total Operating Revenue / Total O & M Expenses

   Generally, an operating ratio below 1.176 or 1.15 including debt is considered to be an indicator of weak financial health, and **ratios above 1.5, not including debt, are preferable.**

2. Per Capita Revenue Ratio (PR) = Utility Revenues / Current Population

   Generally, the ratio will change over time, based on population size and changes to revenues and expenses. The ratio also reflects the need for operating and capital revenue. If the ratio increases over time, management might consider how to reduce the need for revenue, such as seeking more efficient operations, outsourcing and contracting, and receiving contributed capital.

3. Current Ratio (CR) = Current Assets / Current Liabilities

   Generally, for many business enterprises and operations a current ratio of 2.0 or higher indicates a strong financial condition. Many successful water utilities have a Current Ratio greater than 1.0. To accomplish this, you might use a cash budget, an amount of money budgeted in excess of operating expenses for cash management purposes. It is recommended to have a cash budget of 1.5 months worth of operating expenses. Management should adjust the budget if the ratio's trend line is moving below 1.0 over time.

4. Sales Ratio (SR) = Usage Charges / Total Revenue

   Generally, the Sales Ratio measures user charges as a percent of total revenue. A Financially healthy utility should have a ratio close to 1, such as 0.7. The ratio's range is 0-1. A ratio of zero suggests revenue is coming from non-operating revenue other than user charges. This suggests utility management may be over reliant on outside revenue sources. A high ratio or a ratio close to 1 indicates that revenue is coming from usage charges. A high ratio combined with low receivables indicates users are accustomed to supporting the water system by paying their bills on time.

5. Expense Ratio = Operating Expenditures / Total Expenditures

Generally, the Expense Ratio measures the percent of operating expense that makes up total expense. Lower ratios are favorable, indicating utility infrastructure is being maintained adequately. A high ratio shows that most of the revenue is being used for operations and little remains for capital replacement and renewal. The ratio's range is 0-1. An Expense Ratio of 0.5 indicates operating expenditures make up at least 50 percent of total expenditures.

6. Assets Quick Ratio = (Current Assets-Inventory-Prepaid Expenses) /Current Liabilities

   Generally, The Quick Ratio (QR) measures the liquidity of the utility based on its most liquid assets, including cash, accounts receivable, short-term notes receivable and short-term investments in marketable securities. A ratio greater than 1 suggests sufficient liquidity. The ratio's range is greater than 0. The ratio excludes inventory. The ratio of 1 is acceptable. If your ratio is less, you may need to increase revenues and/or collections.

7. Debt Ratio (DR) = Total Liabilities / Total Assets

   Generally, the Debt Ratio measures to what extent a utility's assets are financed through loans. A low ratio is most favorable. The ratio's range is 0-1. A Debt Ratio of 0.25 indicates only 25 percent of a utility's assets are debt financed, while 75 percent remains as equity. When a utility's debt ratio is high (close to 100 percent), meaning that total liabilities and assets are equal, this implies a significantly higher proportion of revenues are needed to repay debt. A low debt ratio is likely if a system's capital improvements are financed through grants, other transfer payments and/or contribution of capital.

8. Account Receivables Ratio (RR) = Accounts Receivable / Usage Charges

   Generally, the Receivables Ratio measures the percent of user charges that still need to be collected. This ratio helps explain the effects of unpaid utility bills. A low ratio suggests that receivables are collected in a timely manner. The ratio's range is 0-1. A low ratio indicates a timely collection of user charges. A ratio of 0.2 shows 20 percent of the utility's invoices still need to be collected. If viewed in a trend analysis, the goal should be to lower this ratio over time.

Ratio 8 is a financial assessment tool that can help systems identify potential problems and monitor their financial situation. It analyzes data from eight areas: operations, revenue, liability, sales, expenses, assets, debts, and accounts receivable.

11.8 Capacity Assessment

MassDEP's Drinking Water Program evaluates the technical, managerial, and financial capacity of all public water systems with priority given to systems with significant violations or public health problems, systems with a history of non-compliance, systems experiencing major changes in operations and systems requesting Drinking Water State Revolving Fund (DWSRF) loans. As a result of these evaluations, MassDEP provides technical assistance and education, prevention measures, and corrective action plans to systems in accordance with the system's compliance with federal and state drinking water requirements and MassDEP compliance and enforcement strategy.

11.8.1 Drinking Water State Revolving Fund

In accordance with the SDWA any public water system receiving Drinking Water State Revolving Fund (DWSRF) loans (http://www.mass.gov/eea/docs/dep/water/wastewater/o-thru-v/srfhowto.doc) must demonstrate capacity.

MassDEP generally uses its sanitary survey program to evaluate each system's capacity. The capacity ranking of each PWS is based on information gathered through sanitary surveys and a review of the system's historical file. http://www.mass.gov/eea/docs/dep/water/laws/i-thru-z/sansurvy.pdf

11.8.2 Capacity Assessment Language

The capacity of a PWS is assessed by its degree of compliance with the SDWA and MassDEP requirements including the capacity indicators that were discussed in these guidelines. Systems are categorized as having adequate, conditional, or inadequate capacity. These categories generally have the following meaning:

11.8.2.1 Adequate Capacity

1. Complies with all major MassDEP's drinking water regulations and is expected to comply well into the future.

2. Demonstrates a willingness and ability to plan for the future, including capital improvement plans, emergency funds, enterprise accounting, employee training, and updated master plans.

11.8.2.2 Conditional Capacity

1. Currently complies with all MassDEP's drinking water regulations, but has issues that are being monitored and rectified.

2. Currently complies but may not have addressed a foreseeable major need that will have to be addressed within the next five years.

3. Is not in compliance with drinking water regulations, but has demonstrated good faith in remedying issues through an enforceable agreement such as an Administrative Consent Order (ACO) and remains in compliance with the enforcement order.

4. Is not in compliance, but the deficiencies can and will be corrected within 12 months.

11.8.2.3 Inadequate Capacity

1. Is not in compliance with drinking water regulations or cannot be expected to meet them in the future.

2. Does not plan ahead for future impacts (e.g., growth and aging infrastructure) which could greatly impair their ability to provide water that meets state and federal standards.

3. Substantial technical assistance is required in order to improve system performance.

Note: Systems with inadequate capacity are not generally eligible to receive Massachusetts Drinking Water State Revolving Fund (DWSRF) loans.
http://www.mass.gov/eea/agencies/massdep/water/grants/drinking-water-state-revolving-loan-fund-fact-sheet.html

11.8.3 New PWS - Water Supply Business Plan

An applicant to develop a new public water system (community or NTNC) must demonstrate managerial, technical, and financial abilities to comply with the SDWA and other drinking water requirements pursuant to 310 CMR 22.00.
http://www.mass.gov/eea/docs/dep/service/regulations/310cmr22.pdf

The applicant must submit a business plan in a format approved by MassDEP. The documents must demonstrate the systems proficiency in all three capacity areas: technical, managerial, and financial. The plan must be submitted during initial stages of the new source approval process. (See Chapter 1, *Submission of Public Water System Designs, Plans, and Reports*, http://www.mass.gov/eea/docs/dep/water/laws/a-thru-h/glchpt1.pdf.) If a water system is part of a larger enterprise, only the water supply portion of the enterprise needs to be included in the business plan. Visit our Web site for a detailed water supply business plan titled: *Massachusetts Department of Environmental Protection Drinking Water Program Water Supply Business Plan for New Community and Non-Transient Non-Community Public Water Systems Note:* This does not apply to existing systems that are developing a new source.
http://www.mass.gov/eea/agencies/massdep/water/drinking/water-systems-ops.html
http://www.mass.gov/eea/agencies/massdep/water/drinking/water-systems-ops.html#3
http://www.mass.gov/eea/docs/dep/water/drinking/alpha/i-thru-z/sysmngt.pdf
http://www.mass.gov/eea/docs/dep/water/drinking/alpha/i-thru-z/tncguide.pdf

11.8.4 Public Water Systems Applying for Variances and Exemptions

An applicant for a variance or exemption must demonstrate managerial, technical, and financial abilities to comply with the SDWA and other drinking water requirements pursuant to 310 CMR 22.00 (http://www.mass.gov/eea/docs/dep/service/regulations/310cmr22.pdf). The applicant must demonstrate the system's proficiency in all three capacity areas: technical, managerial, and financial.

11.9 Suggested Additional References

1. ANSI/AWWA G410-09 Standard for Business Practices for Operation and Management:
   http://www.awwa.org/store/productdetail.aspx?productid=6928
   http://www.awwa.org/store/productdetail.aspx?productid=21698

2. MassDEP Drinking Water System Management Handbook:
   http://www.mass.gov/eea/docs/dep/water/drinking/alpha/i-thru-z/sysmngt.pdf

3. MassDEP Guidelines Chapter 10: Water Management Act Requirements:
   http://www.mass.gov/eea/docs/dep/water/laws/a-thru-h/guidch10.pdf

4. EPA Small Public Water Systems and Capacity Development:
   http://water.epa.gov/type/drink/pws/smallsystems/index.cfm

5. Boise State University is the site of the Environmental Finance Center for EPA Region 10:
   http://sspa.boisestate.edu/efc/

6. Guidebook of Financial Tools: Paying for Sustainable Environmental Systems
   EPA-205-R-08-001:
   http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100179D.txt