



State of Vermont
Capacity Development Strategy
for
Public Water Systems

Prepared by
Drinking Water and Groundwater Protection Division
Department of Environmental Conservation
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VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION



**DRINKING WATER
CAPACITY DEVELOPMENT PROGRAM**



Helping water systems improve their technical, managerial, and financial capabilities

Introduction

This report presents the results of the Vermont Agency of Natural Resources (ANR), Drinking Water and Groundwater Protection Division's (DWGWPD) efforts to meet the capacity development provisions of the Safe Drinking Water Act (SDWA). Section 1420(c)(1)(C) of the 1996 Amendments to the SDWA directs the Environmental Protection Agency (EPA) Administrator to withhold a portion of a State's annual Drinking Water State Revolving Fund (DWSRF) allotment unless the State develops a strategy to help all new and existing public water systems (PWSs) achieve and maintain technical, managerial, and financial (TMF) capabilities.

Technical Capacity refers to a system's physical and operational abilities.

Managerial Capacity refers to a system's administrative and organizational abilities.

Financial Capacity refers to a system's abilities to generate or obtain enough money to maintain the system and pay for future improvements.

The DWGWPD determined that the overall goals of the capacity development strategy would be to determine the reasons for lack of TMF capacity within our water systems, identify solutions, and effectively allocate resources to improve the TMF capacity of those systems most in need. The DWGWPD has been helping systems increase their capabilities for years by working with our water systems and responding to their specific needs. The State's capacity development strategy is based on existing drinking water programs and activities and new programs and activities that will allow the State to meet its goals.

Components of the Capacity Development Strategy - New Systems

Section 1420(a) of the SDWA requires the state to ensure that all new Community Water Systems (CWS) and Non-Transient Non-Community water systems (NTNC) beginning operations after October 1st, 1999, demonstrate the capacity to comply with regulations. Vermont's legal authorities to implement this requirement are in statute (10 V.S.A. § 1685) and rule (Environmental Protection Rules, Chapter 21 Water Supply Rule).

The Water Supply Rule (WSR) (Environmental Protection Rules, Chapter 21) prohibits a new CWS or NTNC from operating before demonstrating that it has adequate technical, managerial, and financial capacity. The DWGWPD makes a formal determination as to whether a system has adequate capacity at two junctures – before issuing the construction permit and before issuing the operating permit.

Capacity Development Strategy - New Systems

The goal of the DWGWPDP's capacity strategy for new public NTNC and Community water systems is to verify that the water systems can maintain over the long term adequate technical, managerial, and financial capacity. The DWGWPDP believes the best way to accomplish this is to ensure potential new water system owners understand the rules and requirements of being a public water system. The Capacity Review Process begins with the requirement that the Public Water System (PWS) owner meet with the Capacity Program and submit a budget and certified operator plan prior to receiving *any* drinking water permits from DWGWPDP. This ensures that an owner does not become financially committed to becoming a public water system before appreciating the TMF commitment needed to own a public water system. Following this initial approval process, the DWGWPDP refers to the Water Supply Rule for the criteria to demonstrate capacity. The Rule includes several control points – places where the DWGWPDP can exercise its authority to ensure a new system will have adequate capacity – and each control point marks a significant milestone in demonstrating capacity. These control points are: Source Protection Plan Approval, Source Permit Issuance, Construction Permit Issuance, Long Range Plan Approval, Operation & Maintenance Manual Approval, Sampling Plan Approvals, Operator Certification, and Operating Permit Issuance. The formal capacity determinations are made before issuing the construction permit and before issuing the operating permit. This Capacity Review Process ensures that all new CWSs and NTNCs drinking water systems have demonstrated the TMF capacity to provide a sufficient quantity of safe water in a cost-effective manner now and into the future.

In addition to the SDWA requirements to ensure all new Community and NTNC water systems have TMF, the DWGWPDP is also committed to ensuring all new Transient Non-Community (TNC) water systems also demonstrate TMF capacity. The TNC Program staff ensure that all newly constructed TNC water systems have adequate TMF capacity by conducting a phone consultation with the water system representative, providing the contact with an on-boarding letter, and prioritizing a sanitary survey inspection.

Components of the Capacity Development Strategy - Existing Systems

In developing a capacity development strategy for existing systems, SDWA §1420(c)(2) requires the State to consider, solicit public comment on, and include as appropriate:

- The methods or criteria that the State will use to identify and prioritize the PWSs most in need of improving TMF capacity.
- A description of the institutional, regulatory, financial, tax or legal factors at the Federal, State, or local level that encourage or impair capacity development.

- A description of how the State will use the authorities and resources of this title (SDWA) or other means to assist PWSs in complying with National Primary Drinking Water Regulations (NPDWR), encourage the development of partnerships between PWSs to enhance the TMF capacity of the systems, and assist PWSs in the training and certification of operators.
- A description of how the State will establish a baseline and measure improvements in capacity with respect to NPDWRs and State drinking water law.
- An identification of the persons that have an interest in and are involved in the development and implementation of the capacity development strategy (including all appropriate agencies of Federal, State, and local governments, private and non-profit public water systems, and public water system customers).

In addition, America's Water infrastructure Act of 2018 (AWIA) amended this section of the SDWA to include:

- A description of how the state will, as appropriate—(i) encourage development by public water systems of asset management plans that include best practices for asset management; and (ii) assist, including through the provision of technical assistance, public water systems in training operators or other relevant and appropriate persons in implementing such asset management plans.

Capacity Development Strategy - Existing Systems

Vermont is unique in that 72% of its CWSs are very small (i.e., serve 500 or fewer people). According to the EPA, only about 56% of CWSs nationwide are this small (EPA Document 816-R-10-022, July 2011). Most small systems in Vermont were created when regulatory standards were less stringent than they are today. For example, most of Vermont's small CWSs were created between 1975 and 1987. The smallest systems are often run by part-time or volunteer staff with limited time and experience. Many do not generate enough revenues to cover the system's full costs because they have a small customer base and inadequate rates. Too often rates have been kept low by relying on volunteers or underpaid staff, and deferring infrastructure maintenance, repairs, and replacement.

Lacking strong capacity, specifically managerial and financial capacity, indicates to the Division that systems need the tools and training to help them operate in a more sustainable manner. Prioritizing systems for technical assistance is not necessary in VT because assistance can be offered to all PWSs that request assistance. The DWGWPD is aware of systems needing technical assistance from sanitary surveys, compliance monitoring, and other frequent contacts

with the systems, and staff respond to those needs and notify technical assistance providers when appropriate.

In the future, if the need for technical assistance exceeds DWGWPD staff or contract assistance resources, DWGWPD will prioritize systems using the following factors:

1. DWSRF Priority List Status
2. System Ownership (municipal, private non-profit, private for-profit)
3. System Type (CWS, NTNC, TNC)
4. System Size (design population)
5. Permanent Residents

In developing a description of how the State will help existing systems gain or maintain capacity, the DWGWPD looked at all the current authorities and resources, the factors that encourage and impair capacity, and discussed possible tools that could be developed to help water systems achieve or increase capacity. The DWGWPD will continue and expand the use of all current authorities and resources to carry out an effective strategy.

Resources that Encourage or Impair Capacity Development

As a community minded state, the citizens of Vermont provide our water systems with many tools that encourage and support TMF capacity in public water systems. This focus on community support and individual attention is the backbone of the DWGWPD's mission to, "protect human health and the environment for this and future generations by managing Vermont's drinking water supplies." The DWGWPD staff knowledge and understanding of our water systems and operators is an invaluable tool. Our dedication to effective communication both within the Division and with the Public is critical to helping our water systems develop and maintain TMF capacity.

The Division's thorough knowledge of our water systems allows the DWGWPD to identify those systems that need additional technical assistance. Vermont public water systems have access to many technical assistance programs around the state. Vermont Rural Water Association and Green Mountain Water Environment Association provide training for water system operators and employees. The DWGWPD manages an operator certification committee to ensure that operator certification training is useful and effective. The Rural Community Assistance Partnership and other technical assistance providers provide technical assistance, training, resources, and support to rural communities throughout the state. The DWGWPD has a Memorandum of Agreement with the Vermont Department of Health Food and Lodging Program for the inspection of TNC water systems when they coincide with the licensing and inspection of food and lodging establishments. In addition to outside technical assistance, the Division, through its sanitary survey program, provides water systems with guidance to encourage the long-term capacity of a water system.

The Vermont Groundwater Protection Rule requires the State of Vermont to protect its groundwater resources to maintain high quality drinking water by managing its groundwater resources through all existing regulations. These regulations must minimize the risks of groundwater quality deterioration by limiting human activities that present unreasonable risks to the groundwater in the vicinities of such activities. The Interim Enhanced Surface Water Treatment Rule and Federal Ground Water Rule allows the Division to offer the designation of “outstanding performer” to any community water system who has not had any deficiencies for the last two survey cycles. This designation encourages community water system to maintain TMF capacity from year to year. In addition, other state and local agencies offer benefits to Vermont municipalities for maintaining managerial capacity. For example, the Vermont Agency of Commerce and Community Development’s Downtown Designation program offers tax credits, prioritization for local grants, as well as fee exemptions to towns that take steps to enact long term change, while also implementing short term, inexpensive activities that attract people to the downtown. These types of incentive programs encourage and support water system capacity development.

There are many financial assistance programs including the Department of Agriculture Rural Development program, the Community Development Block Grant program, the DWSRF, the Planning Loan program, and the Source Protection Loan program that are available to support the financial success of PWSs. These programs provide funds to PWSs needing to repair or replace infrastructure, expand to meet demand growth, protect a source of supply, or for other activities to improve their TMF capacity.

Just as there are factors that encourage and enhance TMF capacity, there are factors that impair the capacity of water systems in the State. As drinking water infrastructure continues to age and degrade, public water systems will continue to struggle to be sustainable and remain in compliance with safe drinking water standards and regulations. Feeling pressure to keep user rates low, many communities have not been making the investments needed to properly maintain, repair, rehabilitate, and replace their drinking water infrastructure. Consequently, more pipes, pumps, storage tanks, and water treatment plants continue to exceed their engineer’s assessment for remaining useful life. The EPA estimates that Vermont needs to invest more than \$510 million in public drinking water infrastructure in the next twenty years to ensure the health, security, and economic well-being of our communities (Drinking Water Infrastructure Needs Surveys and Assessment, Fifth Report to Congress, April 2013). This estimated infrastructure expense does not include money for on-going operations and maintenance, expenses incurred to comply with new regulations, or expenses associated with expanding water systems.

Economy of scale makes cost increases per user for small systems excessive. The static user base of small systems will result in higher than average cost increase. Many Vermont operators are part-time, volunteer employees with little time to manage and operate the system. In addition to the lack of time and financial assistance, operators often struggle to get the

managerial support and understanding necessary to ensure their water system is fully prepared for all the challenges it may face. The operators of TNC water systems are typically business owners who have no knowledge or experience operating or maintaining a water system. Many Owners/Boards' members are unaware of the complexities of running a PWSs and lack the engagement needed to develop capacity. Ancillary water systems (e.g. systems that are part of another business such as a day care, mobile home park, office complex) may not even recognize that they are a regulated PWSs. In addition, many citizens are often unaware of the drinking water regulations or even who is supplying their drinking water.

Requirements and rule explanations can be complex and administrative and reporting requirements can be onerous. The overall cost of compliance for all systems will rise as additional federal and state regulations become effective. In addition, the Vermont Public Service Board procedures for rate increases for private water systems are complex, long, and difficult for these water systems.

While nationwide the consolidation of water systems may increase regulatory compliance and improve overall capacity, the rural nature of Vermont and its water systems make consolidation impractical. Water Systems often are not close enough to each other to allow an interconnection of any sort. In the areas where interconnection is plausible, the failing infrastructure of the water system distribution pipes discourage larger water systems from taking over smaller systems.

Emergency preparedness and capability of responding to long term changes in the environment is an area that water systems do not place an adequate emphasis on. While Vermonters are used to the harsh weather, the costs of emergency planning and backup power supplies, and a lack of secondary water sources, put VT water systems in danger from the ever increasingly volatile environment.

Vermont's Approach - A Cohesive Strategy

The DWGWPD is committed to encouraging, supporting and policing TMF capacity in Vermont's water systems. Vermont uses its authority and resources of the SDWA and the Vermont Water Supply Rule to achieve this goal. While the Division focuses on the technical, managerial and financial capacity of all Community and NTNC water systems, the main focus for TNC water systems is on technical and managerial capacity, as their financial capacity is often linked to the success of their business.

All public water systems are required to obtain a Source Permit from the Division before serving the public from that source. This permit protects the public health and groundwater quality and quantity available to all Vermonters. In addition to a Source Permit, Community and NTNC water systems are required to develop Source Protection Plans, which must be updated every three years. This plan addresses the actions the public water system will perform to minimize

the contaminant risks to their drinking water supply source(s). The DWGWPD works with water systems to avoid contamination and to make plans to minimize the impact of contamination, should it occur.

All existing systems must obtain Construction Permits for modifications, improvements, or expansions to the system. The DWGWPD reviews plans and specifications, engineering reports, and O&M manuals to ensure the water system has the technical and managerial capacity to meet the requirements of the Rule. Operating Permits are issued to all Vermont water systems. These Operating Permits include ongoing requirements that ensure the water system has the capability of providing safe drinking water to their users, as well as technical specifications the water system must continue to meet to remain in compliance.

The Vermont Water Supply rule requires all water systems to be operated by a certified operator of the appropriate class. The class of operator required depends on the type of water system (TNC, NTNC, Community), degree of treatment and size of the population served. All operators, except class 1A operators, are required to obtain ongoing education credits to ensure the continued technical capacity of our operators and the Division uses DWSRF set-asides to fund these training opportunities. The Operator Certification program is managed by the Division and one of the main goals of the program is to safeguard the technical and managerial capacity of Vermont water systems. The DWGWPD provides tailored trainings to interest groups and associations whose members are regulated as public water systems or are key points of contact for representatives of public water systems, such as daycares, campgrounds, Town Health Officers, and real estate agents.

In order to provide the public with as much support as possible, the DWGWPD provides many documents to the drinking water industry to update owners and operators on regulations and policies and to help systems plan for the future. Some of these documents include the WSR, IUP, DWSRF Guidance Documents, State Statutes, SDWA, EPA Regulations and Guidance, and fact sheets. The Division takes a hands-on approach to enable drinking water systems to better understand drinking water regulations via YouTube videos and in-person trainings.

Due to Vermont's small size and community-minded approach to everyday life, the commitment to individual attention and support is a high priority for the DWGWPD. Public water systems in Vermont know that the best way to get technical, managerial or financial assistance is by reaching out to Division staff. Whether it is water quality monitoring compliance questions, different treatment approaches available, or long-term planning options, the Division staff consistently offer high quality, one-on-one support to water systems. This tradition of an "open-door" policy allows for honest communication and reminds the water systems that DWGWPD wants what's best for Vermont's citizens and their water systems.

The Division conducts sanitary surveys on each water system every three to five years. As part of each survey, staff review with other Division staff the system's compliance with regulatory standards; the source, construction, and operating permits; other technical assistance

consultations; and source water assessments to provide the water system with guidance on how to improve operations and management.

TNC water systems requiring technical or managerial assistance are managed by the TNC Program staff or external technical support services. The TNC Program maintains a contract with a professional engineer to provide as-needed technical assistance to TNC water systems for assessments, bacteriological contamination, treatment evaluations, and general operation and management of the water system infrastructure. If a Community or NTNC system is identified as needing technical, managerial, and/or financial capacity assistance, the surveyor refers them to the Capacity Development Program. While historically the VT sanitary survey program has focused on technical and managerial capacity, the Division is transitioning to more comprehensively evaluating the financial capacity of water systems as well.

The DWGWPD is cognizant of each of the water system's strengths and weaknesses. This knowledge is gained through sanitary survey reports, the review of system planning documents, analytical testing, and personal contact with the system's owners and operators. The DWGWPD routinely reviews non-complying water systems and determines the appropriate action to take against those systems. Numerous attempts to provide assistance and support are provided. Should enforcement be necessary, DWGWPD staff refer the system to the ANR litigation section. Enforcement options include an Assurance of Discontinuance or an Administrative Order, both of which are signed and ordered by the State Environmental Court, creating an enforceable order to return to compliance. These orders often include financial penalties.

The Division considers Asset Management one of the best ways to achieve the maximum TMF capacity within the limited resources that VT water systems possess. An Asset Management Program uses; level of service goals, system maps, a detailed asset registry, risk assessments, life cycle costing, risk and cost reduction strategies, and financial planning to help set priorities and meet customers' expectations in a cost-effective manner. It can help systems: operate more efficiently, prolong the life of assets, make informed decisions, justify needs and decisions, plan and pay for future repairs and replacements, and become more resilient and sustainable. The Division offers Asset Management Training Workshops to encourage the development of Asset Management Programs. During these workshops, participants learn how to develop the components of an Asset Management Plan and gain the knowledge and confidence to grow their water system's Asset Management Program over time. The DWGWPD utilizes DWSRF monies to support the creation of Asset Management Plans through grants and planning loans. In addition, water systems with an approved DWGWPD Asset Management Plan receive priority points for the funding of projects that are a result of implementing the Asset Management Program. The Division has also been directing DWSRF set-asides to asset maintenance programs such as water loss control programs, valve condition and location assessments, and stand-by power evaluations to support these Asset Management Programs.

Becoming financially solvent now and into the future is a major concern for Vermont Water Systems. The Division, and other service providers, offer rate training courses, rates dashboards, and other educational services to improve financial capacity. Since most of the water systems in Vermont need financial support to upgrade infrastructure, the DWSRF fund provides financial assistance primarily in the form of below market loans to municipalities and other eligible PWSs. The funds can be used to improve or construct additional sources of water, water treatment, storage, and distribution systems that will improve drinking water infrastructure and allow the system to achieve and maintain compliance. To address Lead and Copper and other emerging contaminants issues, the DWGWPD offers technical and financial assistance through DWSRF set-asides as well. The Division is committed to ensuring that, when feasible, water system consolidation is encouraged to improve the TMF capacity of our consecutive water systems. By encouraging water systems to develop Asset Management Programs and improve infrastructure utilizing DWSRF and other funding services, the Division is encouraging Vermont Water Systems to improve their TMF Capacity for the immediate and long term.

The overall goals of the DWGWPD capacity development strategy are to help systems improve their current abilities by continuing to implement all existing programs and beginning to implement a series of new initiatives. Through proactive communication and outreach, in collaboration with water systems, partners, and other stakeholders, the DWGWPD will seek innovative approaches to Asset Management and new technologies to ensure Vermont's water systems have the TMF capacity to demonstrate long-term sustainability

DWGWPD considers this strategy to be a work in progress. The Division will periodically evaluate the strategy and adjust it to improve it based on the needs of the PWSs in the State. DWGWPD will continue to solicit ideas from the water systems themselves. This will be accomplished through a capacity survey as well as one-on-one and group interactions between Division staff and water system representatives.

Monitoring the Results of the Capacity Development Strategy

The DWGWPD has identified potential information and methods that will be used to establish a baseline and measure improvements. This information provides the tools that the DWGWPD needs to produce and submit a report to the Governor on the efficacy of the capacity development strategy and the progress made toward improving the capacity of PWSs in the State, including efforts to encourage development of asset management plans and assisting public water system personnel in training on implementing such asset management plans. (SDWA Section 1420(c)(3)).

In 2014, the Capacity Development Program developed a Capacity Survey for all Community Water Systems to take, which asks the water systems to report on their TMF capacity and areas they would like more support in. This survey will be sent out every few years and the results will be used to monitor the changes in the TMF capacity of our water systems and allow the

Capacity Development Program to develop targeted programs to help Vermont water systems improve their TMF capacity. Over time this survey may be expanded to incorporate NTNC and TNC water systems.

In addition, the DWGWPD will review the following on a yearly basis to measure improvements in capacity.

1. Regulatory Activities

- Number of significant deficiencies in Permits to Operate (PTO)
- Number of significant deficiencies in PTOs corrected during the previous year
- Number of systems with approved O&M manuals
- Number of systems with approved SPP
- Number of systems with approved Revised Total Coliform Rule Sampling Plans
- Number of systems with approved Lead & Copper Sampling Plans

2. Compliance Data

- Number of systems out of compliance with water quality monitoring and reporting requirements and the number of systems out of compliance with water quality monitoring and reporting requirements in the current year that were not out of compliance in the previous year
- Number of systems out of compliance with Consumer Confidence reporting requirements and the number of systems out of compliance with Consumer Confidence reporting requirements in the current year that were not out of compliance in the previous year
- Number of systems with Groundwater Rule (GWR) or Interim Enhanced Surface Water Treatment & LT2 Rule violations

3. Operator Certification

- Number of systems with certified operators of appropriate class

4. Other Indicators of Capacity

- Number of systems requiring facility improvements and number of systems that require improvements this year that did not require improvements last year
- Number of systems on "Do Not Drink" orders during the year
- Number of systems with DEC approved Asset Management Plans
- Number of systems that had to use an emergency source or bulk water haul

Communication with the Public Drinking Water Community and the Public at Large

Prior to developing the updated capacity development strategy, the DWGWPD created a Capacity Survey for Community Water Systems. This survey asked the water systems to clarify what support they needed from the DWGWPD in order to improve their TMF Capacity. The DWGWPD utilized the answers to this survey to update our strategy and develop more comprehensive Asset Management training and funding for Asset Management Plans. The DWGWPD will present the capacity development strategy to interested organizations, such as Vermont Rural Water Association and USDA, as well as the public, via public presentations and IUP meetings, presentations at industry conferences, and through the Division website and trainings. This strategy will be shared with EPA as well as other Divisions in VT ANR. Feedback from these presentations, as well as future Capacity Surveys, will be utilized to continue to enhance the DWGWPD's capacity development strategy to support the TMF capacity of Vermont's water systems.

List of Acronyms

<u>Acronym</u>	<u>Meaning</u>
ANR	Agency Of Natural Resources
AWIA	America’s Water Infrastructure Act of 2018
CWS	Community Water System
DEC	Department of Environmental Conservation
DWGWPD	Drinking Water and Groundwater Protection Division
DWSRF	Drinking Water State Revolving Fund
EPA	Environmental Protection Agency
GWR	Federal Ground Water Rule
IUP	Intended Use Plan
NPDWR	National Primary Drinking Water Regulation
NTNC	Non-Transient Noncommunity Water System
O&M	Operation and Maintenance
PTO	Permit to Operate
PWS	Public Water System
SDWA	Safe Drinking Water Act
SPA	Source Protection Area
SPP	Source Protection Plan
TMF	Technical, Managerial, and Financial Capabilities
TNC	Transient Noncommunity Water System
VTRWA	Vermont Rural Water Association
WSR	Water Supply Rule