NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

CAPACITY DEVELOPMENT REPORT TO THE GOVERNOR

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REPORT PURPOSE

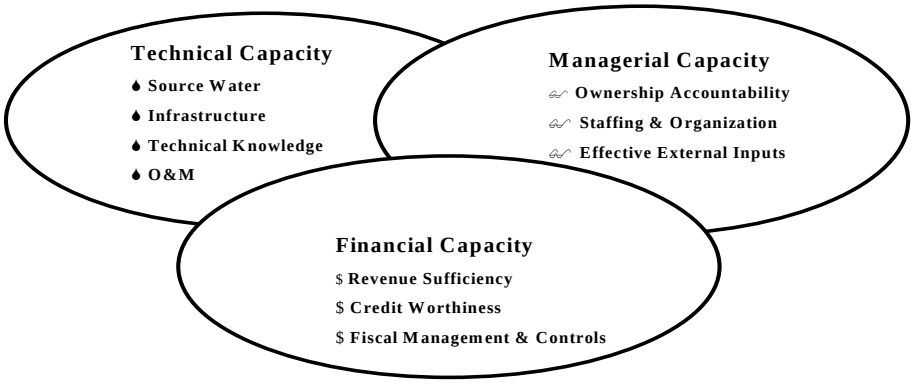
The Safe Drinking Water Act, Section 1420(c)(3), requires that not later than two years after the date on which a State first adopts a capacity development strategy, and every three years thereafter, the head of the State agency that has primary responsibility to carry out this title shall submit to the Governor a report that shall also be available to the public on the efficacy of the strategy and progress made toward improving the technical, managerial, and financial capacity of public water systems in the state. This report is intended to fulfill the requirement of Section 1420(c)(3).

INTRODUCTION

Congress, in the 1996 Amendments to the Safe Drinking Water Act, ratified a philosophy that capable water systems are better positioned to consistently comply with applicable standards and provide safe and reliable water service. Congress recognized that protection of the public's drinking water supply requires ongoing vigilance in the operation and maintenance of public water system facilities. The term "capacity development" was used by Congress to describe capability. The fundamental goals of capacity development are (i) to protect public health by ensuring consistent compliance with drinking water standards; (ii) to enhance performance beyond compliance through measures that bring about efficiency, effectiveness, and service excellence; and (iii) to promote continuous improvement through monitoring, assessment, and strategic planning.

Capacity has three components: technical, managerial, and financial as shown in Figure 1. Adequate capacity in all three areas is necessary for a system to have "capacity".

Figure 1
Water System Capacity



Technical capacity refers to the physical infrastructure of the water system, including but not limited to the adequacy of source water, infrastructure adequacy (source, treatment, storage, and distribution), and the ability of system personnel to implement the requisite technical knowledge. *Managerial capacity* includes the ownership accountability, staffing and organization, and effective external linkages. *Financial capacity* refers to the financial resources of the water system, including but not limited to the revenue sufficiency, credit worthiness, and fiscal management and controls.

Section 1420 of the Safe Drinking Water Act (SDWA) requires that states develop and implement a strategy to assist public water systems in acquiring and maintaining technical, managerial, and financial capacity. States failing to develop and implement capacity development programs will have up to 20% of their Drinking Water State Revolving Fund allotment withheld. The Drinking Water State Revolving Fund is a loan program to help public water systems finance the infrastructure needed to achieve or maintain compliance with SDWA requirements and to achieve the public health protection objectives of the Act.

Objectives of Nevada's Capacity Development Strategy

Nevada's Capacity Development Strategy was approved by the U.S. Environmental Protection Agency in September 2000. The Strategy is based on information that emerged from the deliberations of a Stakeholders Working Group which consisted of members from Federal, State, and local governments; private and public water systems; system customers; and drinking water organizations and associations. Nevada's Capacity Development Strategy provides a framework to identify and prioritize water systems most in need of assistance for enhancing their technical, managerial, and financial capacity. Having identified and prioritized systems most in need, Nevada can then effectively target systems in need of technical and financial assistance.

The major objectives of Nevada's Capacity Development Strategy are:

1. Prioritization of systems most in need.
2. Assessment of system capacity.
3. Developing programs to assist systems with SDWA compliance.
4. Encouraging partnering between systems.
5. Measuring success.

Nevada revisited the Capacity Development Strategy in 2006 by holding a workshop at the Annual Nevada Rural Water Association Conference. Many of the attendees at the workshop had received technical assistance through the Capacity Development program. NDEP attempted to determine from the attendees if the program was addressing their needs or if changes to the program were needed. The feedback received was overwhelmingly positive that the assistance has been

beneficial. No major shortfalls were identified. Based on this feedback, NDEP determined it was not necessary to revise the Capacity Development Strategy.

ACCOMPLISHMENTS

Several tools are being utilized to implement the capacity development strategy. These tools, which are discussed below, include data collection, technical assistance, funding, operator training and wellhead protection.

Data Collection

An extensive data collection effort to evaluate the capacity of small water systems was conducted in 2003. Although much good and useful information about each system's capacity was collected, it was discovered that the scoring system did not provide information about the real need for technical assistance. The method of data collection was revised in 2007 to a format that has more of a focus on technical assistance needs. The new survey format is interactive providing the water system an opportunity to think about and evaluate their capacity. With the revised data collection method, a second data collection effort was initiated in mid 2007 with the hopes of having the data available for the 2008 Governor's Report. Unfortunately, this data collection effort experienced delays and the data collection and validation is not yet complete.

Initial data analysis has revealed the following common deficiencies among small water systems:

- No backup power
- Undersized mains in Mobile Home Parks
- No fire flow
- No maps of water system pipes
- Routine maintenance lacking
- Lacking plans for Operation & Maintenance, Emergency Response, Cross Connection Control and Capital Improvement

Technical Assistance

Helping water systems develop and maintain capacity is the backbone of the Capacity Strategy. Many water systems throughout Nevada have increased their capacity through the technical assistance program. This program provides "targeted" assistance by focusing on specific issues or problem areas. Some of the highlights of technical assistance are described below.

Financial Planning Training

Financial Planning training curriculum was designed in a collaborative effort between NDEP's technical assistance provider, Farr West Engineering and the Nevada Rural Water Association. The intent of the Financial Planning training is to provide participants with a solid understanding of the key components of financial planning including the following.

- Elements of an effective budget
- Capital improvement planning and financing
- Rate structure options for the small water system
- How to calculate capacity fees
- Process for raising rates
- Asset management
- Demonstration of financial tools

In addition to training on the above topics, practical approaches and useful tools were provided and demonstrated.

Water Rate Studies
Analysis of the data collected during the capacity evaluation effort revealed many water systems are weak in financial capacity. Assistance has been provided to help water systems evaluate their budgets and water rates. Each utility has unique needs whether declining population, growing population, operating deficit or paying for arsenic treatment. Since many small water systems are facing rate deficiencies, the technical assistance provider identifies options for rate increases or reduction of expenses or rate restructuring. The water system is provided with various methods for calculating base rate, capacity fees, and connection fees. Assistance is also provided in presenting the information supporting a rate increase to customers at public hearings and to the governing board.

Conservation Plans
Being the driest state in the nation, conservation is an important concept for water utilities to embrace. Technical assistance providers have assisted communities in preparing comprehensive conservation programs including the following.

- Identify conservation goals
- Develop water use profile and forecast
- Evaluation of planned facilities
- Identify and evaluate conservation measures
- Identify and assess conservation incentives
- Analyze benefits and costs
- Select conservation measures and incentives
- Implement conservation plan
- Monitor, evaluate and revise program as needed

Energy
With rising energy costs and small water systems already having difficulty with financial capacity, a new area of technical assistance has emerged in developing strategies to reduce energy costs. Reducing energy costs includes optimizing the use of the most efficient wells and pumps and developing pumping schedules that will allow the water system to pump during off peak periods at reduced rates. The

use of a variable frequency drive, and/or well rehabilitation, and/or other equipment modifications may also be recommended if energy consumption can be reduced.

Funding

Since 1991, the Nevada State Legislature continues to support a program that provides grants to water purveyors for costs of capital improvements to publicly-owned community water systems in order to meet the requirements of the Safe Drinking Water Act. Eligible projects include any water infrastructure project that is made necessary by the state health requirements. This grant program has assisted small rural communities in Nevada address their infrastructure problems thereby increasing the capacity. When a water system receives a state grant, they are required to raise their water rates to a reasonable rate and to put money in a depreciation account. Receiving a grant, raising water rates and setting aside money for depreciation all help to improve the water system's financial capacity.

In addition to the state grant program, the Drinking Water State Revolving Fund (DWSRF) provides low interest loans to both publicly and privately owned water utilities. As part of the DWSRF, Nevada has created a disadvantaged program to address the low income areas that have infrastructure deficiencies that pose a health threat. Water systems that qualify for the disadvantaged program may be eligible for zero percent interest or even principal forgiveness.

Operator Training and Certification

NDEP has funded the University of Nevada to provide operator training using remote video-conferencing. This method of offering training has been very successful, in part because it meets the needs of a very specific audience, the very small system operators (those that serve between 25-100 customers). The sessions are broadcast from Reno to sites all over the state and offer the advantage of being essentially local classes that are cost-effective extensions of the University that require minimal travel for the participants.

Wellhead Protection

Groundwater is the source of drinking water for approximately 90% of Nevada's water systems. To assist in protecting groundwater from contamination, Nevada has successfully implemented a multi-faceted, voluntary Wellhead Protection Program (WHPP). It is Nevada's belief that effective wellhead protection must be developed and administered by local government in conjunction with the water supplier. A local WHPP should be a long-term commitment on the part of the community to protect its drinking water sources.

Since the program's inception in 1994, the primary focus has been for community public water systems to develop and implement local Wellhead Protection Plans (WHP Plans) to protect their drinking water resources. These plans delineate the sensitive areas above ground where various activities may adversely impact the

quality of the underground drinking water supply; and strategically plan for managing these areas appropriately to prevent a contamination event.

Over the years, public water systems have acquired technical assistance and non-match grant funding from NDEP to voluntarily develop and implement their plans. To date, the number of Nevadans served by public drinking water wells is estimated to be 1,960,000 people. Of that, approximately 604,000 people are currently served by public drinking water systems which have developed WHP Plans to protect the drinking water supply. There are approximately 571 public water systems in Nevada. 115 of those systems have developed WHP Plans (of which 112 are endorsed by the State) and 66 of those plans have been implemented and are moving forward with various management strategies including developing ordinances which restrict and/or regulate activities that could pose a threat to the ground water supply.

This year, the WHPP will undergo an extensive review and update process to refocus the program in moving forward with protecting ground water into the future. NDEP has recognized a need to enhance source water protection efforts through increased public education and outreach and the encouragement of community ownership of local WHP Plans. As a result, NDEP has contracted with a private consulting firm to partner with NDEP to effectively evaluate and update the State's WHPP and to assist communities to develop and implement local WHP Plans into the future.

Sustainable Infrastructure

The U.S. Environmental Protection Agency's (USEPA) *Clean Water and Drinking Water Infrastructure Gap Analysis (2002)* estimated that if capital investment and operations and maintenance remained at current levels, the potential funding shortfall for drinking water and wastewater infrastructure could exceed $500 billion by 2020. The Water Infrastructure Network puts the costs of building, operating and maintaining drinking water and wastewater facilities over the next 20 years at $2 trillion. To address the funding gap, USEPA has launched the *Sustainable Water Infrastructure Initiative*. USEPA is committing to promote sustainable practices that will help to reduce the potential gap between funding needs and spending at the local and national level. The Sustainable Infrastructure Initiative will guide efforts in changing how the nation views, values, manages, and invests in its water infrastructure. Many of the efforts of Nevada's Capacity Development Program support sustainable infrastructure. USEPA has identified the following four sustainable infrastructure priority areas:

1. Better Management
2. Full Cost Pricing
3. Water Efficiency
4. The Watershed Approach

Nevada's Capacity Development Program addresses, to some degree, all four of

these areas. Nevada has recognized that good management of a utility is critical to well functioning utility. Nevada offers technical assistance in the form of Board training to assist in better management. In terms of full cost pricing, Nevada's technical assistance providers have completed a number of rate studies for water systems and presented the findings to the governing board and the public. Being the driest state in the U.S., Nevada has long recognized the value of water. The Nevada Division of Water Resources requires that every water system submit a Conservation Plan. Technical Assistance providers have helped a number of communities prepare these plans as described above. Finally, although the concept of "Watershed Approach" is more focused on management of pollution sources, Nevada's wellhead protection program also fits into this concept.

CHALLENGES

Despite the evolution and maturing of Nevada's Capacity Development Program, the greatest areas of weakness in rural Nevada continue to be in managerial and financial capacity. Information gathered by technical assistance providers shows that the capacity of a water system is heavily tied to two key factors:

1. The ability and competence of the manager and/or governing board.
2. The financial condition and financial practices of the water system.

Managerial capacity is directly affected by the individual water system operators, managers and board members. Nevada has some very small water systems (31% of the community water systems in Nevada serve a population less than 100 people) and often times there is not even one full time employee. Finding and retaining qualified and experienced water system operators, managers and board members is limited in rural areas and may be attributed to the following causes:

1. Aging Workforce. There have been several published reports regarding the aging workforce in the water industry and the lack of qualified professionals to succeed those that are retiring. In Nevada there have been many water system managers and operators that have or soon will be retiring. This situation has been exacerbated by recent legislative changes made to the Public Employees' Retirement System of Nevada which have caused many in the water industry to take early retirement this year.
2. Salaries. Due to the competition in the marketplace, rural water systems typically do not offer enough money to attract experienced operators and managers. They will usually settle for someone less qualified that will work for a lower wage. This in turn affects the managerial capacity of the water system.
3. Declining Pool of New Professionals. Educational programs that promote the water industry and adequately prepare new professionals seem to be lacking in Nevada. Many operators and managers learn on the job and start at the entry level with little or no formal education or preparation. Some water systems are functioning without a certified water operator or continue to use a

contract operator that provides minimal local service. The implementation of the new arsenic rule will make matters more challenging since the installation of arsenic treatment systems will require higher levels of certification.

4. Board Members without Utility Backgrounds. In rural communities, water systems are fortunate to find enough individuals to serve on a board. Many board members in rural areas lack a fundamental understanding of water system operations, finance and management. This can be overcome where an experienced water system manager is in place, but when the manager is lacking experience, this situation can be problematic. Unfortunately, some boards tend to micro-manage water systems and when they lack the appropriate background or experience this can lead to a serious decline in the capacity of a water system.

The experience, training and background of water system managers, operators and board members are directly linked to the capacity of a water system and are likely to be the greatest single factor. Water systems that are led by a capable, experienced manager, who are supported by a competent and progressive governing board, tend to have high capacity in all areas. On the other hand, water systems that are led by managers with little experience or technical ability who report to an unsupportive or uninformed board tend to struggle with capacity in many areas.

FUTURE RECOMMENDATIONS

As the program grows and evolves, there have been many lessons learned which have resulted in a program that continues to improve and better serve the needs of Nevada's water systems. From the beginning of the capacity development program, Nevada has maintained that the Capacity Development Strategy is a 'living' document and will be revised as needed. Although the Strategy document itself has not been revised, the method of implementation of the Strategy has evolved.

While all systems are unique, the vast majority of water systems in Nevada still need assistance with managerial and financial principles and planning. Full cost pricing is required in order for a water system to fully function, as it should. Operation and maintenance activities, such as valve exercising, are also important to extending the life of the infrastructure.

Proper management of infrastructure assets is critical. Although the concept of managing assets is relatively simple, many water utilities don't understand how to design and implement an effective asset management program. Managing a utility effectively requires a proactive approach to managing infrastructure assets. The primary objective of asset management is to manage system assets in a way that meets long-term service requirements reliably and cost-effectively. The numbers of water systems that have applied for state grant funding demonstrates the need for effective asset management and capital improvement planning in Nevada. Future technical assistance efforts will include asset management training and assistance.

Asset Management can be defined as “a process for maintaining a desired level of customer service at the best appropriate cost.” In response to a clear need from communities and trainers nationally to consolidate and package asset management materials in an easy-to-use, clear and update-to-date fashion, USEPA developed “Check Up Program for Small Systems” or CUPSS. Over the next year or more, Nevada plans to utilize technical assistance providers and in-house staff to train water systems in the use of CUPPS and provide initial data entry. CUPSS will help water systems with following.

- develop a record of their assets
- schedule required maintenance tasks
- understand their financial situation
- tailored asset management plan

There are certain specific, critical issues that will challenge many Nevada water systems in the coming years. Among those issues are the new Arsenic Rule, the upcoming Disinfection Byproducts Rule, the upcoming Long Term 2 Enhanced Surface Water Treatment Rule, the upcoming Groundwater Rule, impacts caused by growing populations, the need to conserve the State’s precious water resources, and finding qualified professionals in the potable water industry.

The focus of technical assistance over the near term will be on the critical issues that are identified above. Concrete plans and strategies are already in place to make sure Nevada’s water systems will continue to successfully meet new challenges and build capacity. Certainly other challenges will surface as time passes. The Capacity Strategy will continue to evolve, but will always focus on the following statement:

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

APPENDIX A

STATUTORY DEFINITIONS

NRS 445A.817 "Financial capability" defined. "Financial capability" means the ability of a public water system to:

1. Pay the costs related to maintenance, operations, depreciation and capital expenses;
2. Maintain creditworthiness; and
3. Establish and maintain adequate fiscal controls and accounting methods required for the operation of the system.

NRS 445A.827 "Managerial capability" defined. "Managerial capability" means the ability of a public water system to conduct its administrative affairs in a manner that ensures compliance with all applicable standards based on:

1. The accountability, responsibility and authority of the owner or operator of the system;
2. The personnel and organization of the system; and
3. The ability of the persons who manage the system to work with:
   a) Jurisdictional, regulatory and other governmental agencies;
   b) Trade and industry organizations; and
   c) The persons served by the system.

NRS 445A.847 "Technical capability" defined. "Technical capability" means the ability of a public water system to:

1. Obtain an adequate and reliable source of water that is necessary to provide the quantity and quality of water required by the system;
2. Establish and maintain an adequate infrastructure for the treatment, storage and distribution of the quantity and quality of water required by the system; and
3. Employ operators who have technical knowledge and ability to operate the system.