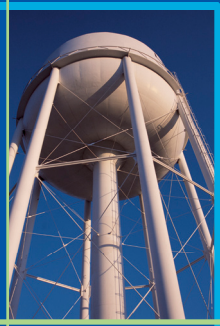
Consolidation Efforts:
Pros, Cons, Options and Perceptions



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Introduction

The overall mission of community water systems is to provide safe, adequate, and affordable drinking water to its customers. With the numerous challenges that water systems face, it is becoming more difficult to accomplish this goal. A number of water systems are faced with aging infrastructure and find it difficult to afford the necessary improvements and upgrades. Many small rural water associations have difficulty finding customers that are willing to serve on the Board of Directors to assist with managing their systems. New legal mandates and regulations often create new testing and analysis expenses, which affect smaller systems more than larger systems because they have fewer customers to share the added expenses. Some rural areas are experiencing growth as people move from the cities into less populated areas, but some rural systems can not afford the expansions needed to serve those new customers.

Consolidation is often suggested as an approach that can be used to solve or relieve these and other challenges. Although it would seem that water systems would readily consider consolidation as a solution for problems, many systems are not taking advantage of consolidation opportunities. This may be due to a lack of understanding or misconceptions. The purpose of this report is to neither advocate, nor discourage consolidation, but rather to educate decision-makers. This report defines consolidation, identifies its advantages and disadvantages, and discusses the various consolidation options and factors for decision-makers to use when considering consolidation. The report also includes perceptions about consolidation from various entities associated and involved with water systems. The report concludes with a case study involving two actual water systems that are considering consolidation.

Consolidation Defined

Consolidation has been widely defined and often referred to using various terminologies. 'Consolidation' is often used interchangeably with the terms restructuring, regionalization, and cooperation. In a recent survey conducted by the Mississippi State University Extension Service, 33 percent of the responding community water system board members and certified operators agreed that consolidation only occurs when multiple systems physically interconnect. This is a frequent misconception, and consolidation actually has a much broader meaning. Consolidation activities can range from multiple water systems developing an agreement to share an operator to one water system acquiring the ownership and control of another. Although it is not always the end result, consolidation can lead to multiple systems physically interconnecting their infrastructures.

Consolidation has been defined as "one community water system being absorbed into, combined with, or served by other utilities to gain the resources they lack otherwise."[1] A committee organized by the American Water Works Association defines regionalization, in a more complex manner, as "…a creation of an appropriate management or contractual administrative organization or a coordinated physical system plan of two or more community water systems in a geographical area for the purpose of utilizing common resources and facilities to their optimum advantage.[2]

1 Source: Raucher, Robert, Megan Harrod and Marca Hagenstad. "Consolidation for Small Water Systems: What are the Pro's and Con's?" National Rural Water Association. June 2004.

2 Source: Grigg, Neil S. "Regionalization In Water Supply Industry: Status and Needs." *Journal of Water Resources Planning and Management* 115:3:367. 1989.

"Decision-makers of small community water systems should be open-minded to consolidation options which may help to improve customer service, efficiency, and the ability to remain compliant with ever-increasing regulations. Due to a number of factors, those community water systems, which do not consider consolidation, may experience increasing difficulty in distributing affordable water to their customers that meets their expectations as well as all federal and state drinking water standards. Because of the difficulty in leveraging grants to upgrade or replace the deteriorated infrastructure that exists in many small communities today, consolidation options could be exercised in order to receive additional priority and ultimately funding. With the creation of a myriad of drinking water regulations since the introduction of the Safe Drinking Water Act in 1974, small community water systems, which consolidate with other communities often, increase their technical capacity to conform with these regulations. And finally, due to economies of scale, small community water systems which consolidate will spread operational expenses among a larger pool of customers which will improve efficiency and keep water rates affordable while increasing financial capacity."

Tommy Ricks
State Coordinator
Community Resource Group

Regionalization, or consolidation, has also been defined as an administrative or physical combination of multiple water systems as a way to improve planning, operation, and/or management.[3] For the purposes of this report, consolidation is defined as any form of cooperation between multiple water systems including, but not limited to, activities resulting in a change in ownership. Throughout this report, consolidation may be referred to as restructuring, regionalization, or cooperation.

Advantages of Consolidation

Consolidation is often a suggested remedy for many of the challenges that community water systems face. Water systems participating in some type of consolidation activity can receive economical, financial, and operational benefits. Water system customers and state regulators can also benefit from water systems developing partnerships and working together. Listed below are some advantages and incentives for participating in consolidation activities.

- Consolidation efforts can create and increase economies of scale. Fixed capital, operation, and maintenance costs will be spread over a larger population base lowering the per customer costs which can potentially lower water rates.

- Systems will have greater access to capital making it easier to borrow funds to make the necessary improvements including those required to comply with mandated regulations. With a fewer number of water systems, funding agencies, such as the USDA Rural Development, will be able to fund a greater percentage of systems.

- A larger customer base will be created leading to greater access of grant and public funding. This is especially true when adding a more diverse customer base.

- Duplicated services can be eliminated which can save money and lead to greater efficiency of personnel, equipment, operation and maintenance, billing, and management.

- Consumers will have a more reliable water source. Systems that may only have one water source will have access to an additional source in the case of emergencies. This is also an important factor in growth areas. By consolidating, systems may be able to add customers and growing subdivisions to the system that otherwise they would not be able to do.

- Systems will have access to more skilled employees, which increases the level of expertise.

3 Source: SMC Martin, Inc. "Regionalization Options for Small Water Systems." Washington, DC: U.S. Environmental Protection Agency. 1983.

- State regulators will have fewer systems to regulate meaning that they can spend their time assisting a greater percentage of systems.

- Consolidation can provide a low cost means for complying with regulations.

Disadvantages of Consolidation

Consolidation can be a useful tool for solving problems, but consolidation is not the answer for all problems and challenges water systems face. There are some barriers that cause systems to use consolidation only as a last resort. Costs often associated with restructuring can hinder systems from pursuing it. Many rural water associations are hesitant to pursue any of the consolidation strategies because of the fear of losing community independence and identity. Listed below are some of the barriers and disadvantages associated with consolidating.

- Consolidation creates the potential for communities to lose their autonomy and independence.

- Debt can be acquired when a water system merges or acquires a system that has pre-existing debts.

- Some consolidation options may cause a loss of jobs.

- Customers may get confused about who actually provides their water service.

- Political barriers, such as local jealousy and mistrust, can hinder consolidation efforts.

- Cost and benefit inequities may occur. Some communities may bear a disproportionate share of the costs involved with consolidation while receiving equal benefits.

- It is sometimes impossible for water systems to physically interconnect due to hydraulics and other design issues with the systems involved.

- The management goals of the systems involved may differ causing conflict and tension.

Approaches to Consolidation

There are a variety of approaches to consolidation. Consolidation activities can be considered non-structural or structural. Non-structural approaches involve creating partnerships with other entities, typically in the form of managerial or administrative arrangements. Structural approaches create a new management or political entity and have a more direct impact on the water supplier.

"Due to operation and maintenance cost constantly rising as well as regulatory demands, funding cuts and the reality of poverty, the ability to provide services to un-served rural areas is greatly impacted. This extremely burdens the financial and managerial capabilities of smaller systems. In order to help these community water systems meet the needs related to general maintenance, upgrades and compliance with regulatory requirements, I believe that mergers or consolidation of water systems are a wave of the future. By decreasing the number of poorly managed water systems in our state, we help to ensure that the limited financial, technical and managerial resources are available to all of our citizens."

Bettye W. Oliver
Program Director, Community Programs
USDA Rural Development

Non-structural approaches result in "procedural" changes rather than organizational changes. While these procedural changes may sometimes lead to organizational changes, structural approaches result in the reorganization of the entities involved. Non-structural approaches tend to be less expensive to implement than structural approaches and have less affect on community autonomy and independence. [4]

Research into this topic has shown various options for each of these approaches. For the purpose of this report, the various consolidation options will be categorized as shown in Figure 1.

Figure 1. Consolidation Options.

Increasing Transfer of Responsibility

Non-structural			Structural
Informal Cooperation	**Contractual Assistance**	**Joint Powers Agencies**	**Ownership Transfer**
Coordination with other systems but without contractual obligations	Contract with another system, but the contract is under the system's control	Creation of a new entity designed to serve the systems that form it	Takeover by an existing system to create a new system

Source: U.S. Environmental Protection Agency

Informal cooperation, a non-structural approach, is a voluntary agreement between systems to provide a service or share a commonly needed component without contractual obligations. These agreements can either be long-term or used on an as needed basis. The provided service can be paid for or exchanged for another service. These agreements are easy to create, implement, and terminate, but they are not legally enforceable. This form of restructuring may be useful for small systems that are viable and well managed but would still like to increase efficiency or reduce operating costs. Systems can benefit from this option by sharing knowledge and expertise, supplies and equipment, and purchasing power. Table 1 provides additional characteristics of this and other options.

Examples of informal cooperation activities:

- Systems developing mutual aid agreements such as making purchases together to buy in bulk
- Systems sharing laboratory facilities, storage facilities, billing equipment, or personnel
- Systems agreeing to provide water during emergencies

Contractual assistance, a non-structural option, is utilized when one water system develops a service contract with another system to provide them with professional support. Contractual assistance is often used when a system needs more assistance

4 Source: SMC Martin, Inc. "Regionalization Options for Small Water Systems." Washington, DC: U.S. Environmental Protection Agency. 1983.

than can be provided by an informal cooperation. This option also gives smaller systems access to specialized services that they cannot afford to provide themselves. Although a contract is required, the contract is under the system's control. This option is easy to create and terminate. The option to renew the contract is determined by the contracting system. Community autonomy and independence is not affected when implementing the contractual assistance option.

Examples of services often provided through contractual assistance:

- Routine system operation and maintenance
- Periodic monitoring
- On-call emergency assistance
- Wholesale purchasing
- Satellite management

Satellite management refers to an arrangement where a larger water system becomes responsible for specified management tasks of a nearby smaller system(s). The smaller systems are thought of as "satellites." This concept is applied differently in various portions of the country. This option is designed to encourage partnerships. Satellite management assists water systems in complying with rules and regulations and assesses technical, managerial, and financial capacity. Customers are provided with a safe, reliable, and affordable source of water. The systems involved are provided with cost-effective access to experienced managerial and financial assistance and engineering expertise. In a study examining the potential for satellite management based on the road distance between systems, nearly all of the small systems in the seventeen states included in the study had the potential to receive management services from neighboring systems.[5]

The formation of a *joint powers agency*, a non-structural option, occurs when multiple systems form a new entity while continuing to exist and operate independently. The participants are generally partners rather than contractors. This approach is often used when systems realize that they can do more by forming a partnership rather than standing alone. Systems utilize this option when joining together for the purpose of meeting a specific goal or completing a project. A joint governing body, which is representative of all entities involved, typically makes administrative decisions. The costs involved with joint activities are shared by all of the systems. A joint powers agency can remain in place as long as it is needed. This option is more complex than contractual assistance, and restrictions

"I believe consolidation of water systems is a necessity due to the economics and EPA regulations. If consolidating is managed properly, it would benefit a lot of small water systems and towns. It would also be an advantage to procuring funds and in the overall operation of the water system."

Pete Boone
Executive Director
Mississippi Rural Water Association

5 Source: Castillo, Eloise Trabka, Scott J. Rubin, Sally K. Keefe, and Robert S. Raucher. "Restructuring Small Systems." *Journal American Water Works Association* 89:1:65.1997.

"Consolidations or mergers can be of great benefit to the water systems involved. It allows them to combine their resources and finances giving them the opportunity to accomplish more jointly than they could do separately.

After having been involved in several consolidations, I have found that there are a couple of major things that should be considered.

(1) Make sure all parties involved are represented on the final Board of Directors so that each system will have equal representation.

(2) Make sure that the merger is beneficial to both parties and be able to explain the benefits to the members of the companies involved."

Doug Barker
Manager and Certified Operator
North Hinds Water Assn., Inc.

are placed on the participants. Although the systems continue to act independently, community autonomy may be affected.

Examples of activities for which joint powers agencies are created:

- Developing a new water source
- Sharing ownership of system facilities such as storage, labs, maintenance, or vehicles
- Exchanging or sharing service activities such as operation and maintenance, billing and collection

Ownership transfer, a structural option, occurs when a water system is acquired by an existing water system or a new entity is created. Through this option of consolidation, the management of multiple systems is combined. Ownership transfer can occur through various mechanisms. This option is often utilized when a system realizes that it is not viable if it remains an independent entity. While this is the most complex consolidation option, it is often the most recognized option. By consolidating, the new or larger systems will have access to more funding sources and more talented management and technical staff. This option allows systems to make needed improvements. This is a long-term option. Two of the major concerns with this option include systems losing their autonomy and independence and having to bear a disproportionate share of the cost involved to acquire or improve another system.

Examples of ownership transfer activities include:

- Merging to create a utility district
- Merging to create a larger non-profit cooperative
- Receivership or regulatory takeovers
- Satellite management (if assets are transferred from the satellite system to the new system)

New entities can be created through the merging of multiple systems. This would include merging management, assets, and debt. There are a variety of ways that water systems can merge. First, systems can merge by multiple systems joining together to create a utility district. By creating a utility district, a government entity will be created. A second way for systems to merge is by multiple water associations joining together to form an even larger non-profit cooperative in order to become more efficient. In many cases, when this approach is utilized, the Board of Directors consists of an equal number of members from each of the systems that joined together.

The management, and often ownership, of water systems can be transferred to another systems through receivership or a regulatory

takeover. This often occurs when a failing system is putting public health and safety at risk. Some states have the authority to do this. For example, the state regulatory agency may place a system that refuses to comply with regulations under the responsibility of a well managed system. Another form of a takeover exists through eminent domain or through the condemnation power of local governments.

A physical interconnection between multiple systems may be the end result of an ownership transfer. By physically connecting, systems will have a more reliable source of water especially in the case of an emergency. Interconnection is not always possible even when combining management. The distance between systems, terrain, and hydraulics are some of the factors that sometimes hinder systems from physically joining. Another important determining factor for a physical consolidation is the cost effectiveness of connecting water lines. One critical cost factor when joining a small system with a larger system is determining how the investment per new customer (small system) compares with the investment per existing customer (large system). This would be considered cost-effective if the incremental investment per new customer is no more than that of the investment per existing customer. This is important because it allows a smaller system to be absorbed without being subsidized by the larger system. Although a connection can occur without the investment per existing customer exceeding that of the new customer, additional legal, political, and cultural barriers may arise.

A study using data from seventeen states was conducted to determine the restructuring potential for small community water systems based on costs.[6] When analyzing the data from 90 percent of Mississippi's small[7] systems, it was determined that 23 percent of the systems had the potential to interconnect with a medium size system, and 13 percent had the potential to interconnect with a large system. Overall, the study found that it was economically feasible for up to 35 percent of all small community water systems to physically interconnect with a large water system.

Factors to Consider When Implementing Consolidation Efforts

As previously mentioned, the purpose of this report is to educate water system officials and customers on the topic of consolidation rather than encourage or discourage systems to participate in the process. When considering any form of consolidation, it is imperative to evaluate the specific situations of all involved entities

"Consolidation is a tool a water system may use in asset management. This tool may not be necessary for every water system. Home rule is generally best for a water system when good management, operational, and maintenance practices are in place. Water system decision-makers should carefully consider the benefits and consequences of consolidation. I think this tool should be used sparingly."

H.A. McMullen, Jr.
Manager and Certified Operator
Bear Creek Water Association

6 Castillo, Eloise Trabka, Scott J. Rubin, Sally K. Keefe, and Robert S. Raucher. "Restructuring Small Systems." *Journal American Water Works Association* 89:1:65.1997.

7 The size of water systems are defined as follows: small – Having a service population of 501-3,300; medium – Having a service population of 3,301-10,000 persons; large – Having a service population of 10,001-100,000 persons.

before making a final decision. When deciding which consolidation solution is best suited for a water system, it is imperative for decision-makers to consider the needs of their individual system. These needs depend on a variety of factors such as local water quality, nature and cost of required improvements, current user and customer ability to pay, geography and distance between systems, availability of grants and loans, availability of technical assistance, and local political considerations.[8] Below is a list of questions that decision-makers can use when considering a potential consolidation to help with the decision-making process.[9] These questions should be asked regarding all entities involved with the potential consolidation.

1) How do the systems' expenses compare to their income?

One measure used to compare income to expenses is the operating ratio. The operating ratio is found using the following formula: Operating Revenue/Operating Expenses = Operating Ratio. This ratio shows if a utility generates enough revenue to cover its expenses. A water system should have an operating ratio of at least 1.0 meaning that the system is just breaking even. An operating ratio of 1.10 is recommended meaning that revenues exceed expenses by 10 percent, or for each $1.00 spent, $1.10 in revenue is generated.

2) How much can the system afford to contribute to the costs of needed improvements?

Making improvements to water systems can be costly, especially in the circumstance where a system has neglected maintaining its infrastructure. Decision-makers must determine how much the needed improvements will cost and if the systems can contribute to repaying this debt. In some cases, systems with deficient infrastructure may appear financially viable because they have not spent the funds to make improvements over the years so they may be to contribute to the costs of improvements. On the other hand, some systems with debt may also have a deficient infrastructure. Although it may appear that they can not afford to contribute to much of the improvement costs, economies of scale may be created through a merger or acquisition, and the debt will be spread over a larger population making the debt less of a burden for one particular system involved in the consolidation. A long-range plan should also be developed to determine the future needs of the systems and how funds should be budgeted in order to become or remain financially viable while meeting those needs.

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8 Source: U.S. Environmental Protection Agency. "Helping Small Systems Comply With the Safe Drinking Water Act The Role of Restructuring." 1992.

9 These questions derived from a list of factors listed in the following publication: Cloud, Thomas A. "When a City Buys a Utility" *Water Engineering & Management* 141:10: 24-26. October 1994.

Table 1. Characteristics of Consolidation Options

	Type of Approach	Ease of Creation	Ease of Termination	Affect on ownership	Loss of Community Power and Independence	Impact on Operating Efficiency	Impact on Economic Efficiency	Expenses Involved
Informal Cooperation	Non-Structural	Easy to create and implement	Easy to terminate	Does not affect ownership	No potential loss of community power and independence	Duplicate services can be eliminated	System saves money by sharing facilities, equipment, etc.	Expenses tend not to become an issue
Contractual Assistance	Non-Structural	Easy to create	Easy to terminate	Does not affect ownership	No potential loss of community power and independence	System has access to specialized services it can not afford	Economies of scale created	Can potentially be expensive at times
Joint Powers Agency	Non-Structural	Easy to create	More difficult to terminate than contractual assistance	Does not affect ownership	Can potentially impact community power and independence somewhat	Duplicate services eliminated; more efficient use of personnel, facilities, etc.	Larger economies of scale	Sometimes difficult to distribute cost equally with other system(s) involved
Ownership Transfer	Structural	More difficult to create and implement	Difficult to terminate	Ownership is transferred through a merger, acquisition, or takeover	Impacts community power and independence	Duplicate services eliminated; more efficient use of personnel, facilities, etc.	Larger economies of scale	Sometimes difficult to distribute cost equally with other system(s) involved

3) How would you describe the systems' rate base?

The systems' rate base, or customer base, is a consideration when pursuing consolidation. A distinction must be made between the customers' willingness and ability to pay for water services. Some customers are financially strapped and have a difficult time paying for water, while other customers may be able, but not willing to pay. Systems with a majority of customers who are on a fixed or low income may tend to charge less for water than systems with higher incomes customers.

The rate bases for all systems involved with a potential consolidation should be taken into consideration. By acquiring a system that has a diverse customer base or that has customers with lower household incomes, it may become easier to receive federal and state funding for upgrades, expansions, or improvements. Some of the criteria used to prioritize grant applicants are low-income areas, critical needs including threat to public health or economic stability, extension of service to underserved households, and designated federal and state target areas. The number of residential versus commercial/industrial accounts must also be taken into account. In some cases, commercial/industrial users are charged a different rate than residential users.

4) What are the conditions of the infrastructure?

The conditions of the infrastructure are important. While some systems are properly maintained, other systems are in need of improvements. While decision-makers may tend to fixate on the debt of another system, the condition of the infrastructure is also pertinent. As mentioned earlier, systems that have debt may have a good infrastructure because they have spent the necessary funds to keep the system maintained. In other cases, systems that have little or no debt may look viable from a financial aspect, but they may have deficient infrastructure because the necessary improvements required for the system have not been made.

5) Are the price and terms reasonable?

When acquiring another water system through a purchase or when contracting services with another system, decision-makers need to determine whether the terms and price are reasonable. When developing a contract for services with another system, the contract should specify the frequency, duration, cost, and specific responsibilities of the services received.[10] Short-term and long-term impacts should also be considered.

6) How will the customers be impacted?

While consolidation may sometimes lead to communities losing some autonomy or customers paying increased water rates, consolidation may also provide customers with a safe, more efficient, and more reliable source of water. Customers will see short- and long-term impacts. Decision-makers must determine if the positive impacts outweigh the negative ones. When consolidating through mergers or acquisitions, an important key in making the consolidation successful is to make sure that customers from all systems are treated fairly and that the system works as one unit rather than competing with each other.

7) Are any additional investments required?

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10 Source: National Research Council. "Safe Water for Every Tap: Improving Water Service to Small Communities." 1997.

When acquiring or merging with another system, new debt is sometimes incurred to make improvements to the systems. There are also added capital expenditures when multiple systems physically interconnect. It is important to remember that although new debt may occur, some expenses will be reduced if duplicated services are eliminated. The debt incurred will be spread over a larger customer base making it less of a burden. Also, although a system may be incurring additional debt, they will also be adding assets.

8) Are there any other alternatives and what are the impacts of not pursuing consolidation?

Just as when making any decision that has lasting affects, a thorough evaluation of all factors must be made. There are a variety of ways that systems can increase income such as: conducting water audits to find unaccounted for water in the system, revising system policies so that customers are paying for the services that they receive, and reducing expenses to increase cash flow. Many of these methods are only short-term solutions to long-term problems, and decision makers must consider the long-term impacts of consolidation.

9) Is the current staff capable of operating the facilities of the combined system?

Not all water systems use the same type or brand of equipment, billings systems, etc. One consideration that should be taken into account is whether or not the systems involved use the same type of equipment, billing systems, etc. The water system operator and staff members may have to receive some training to learn how the new systems operate.

10) How does the public feel about a potential consolidation?

Many customers are hesitant about participating in consolidation effort because they are not fully informed about of the various consolidation options that exist. Customers may be unaware of how the various forms of consolidation can impact them (both positively and negatively). Customers may not realize all that is involved with managing and operating a water system and how consolidation can help to alleviate those difficulties. When exploring the various consolidation options, it is important to keep customers informed about what is taking place with the system. Educating customers and keeping them informed is one key to having a successful consolidation.

Decision-makers must decide which consolidation option is best for them to pursue. As shown earlier, consolidation can range from a simple agreement between systems to a transfer of ownership. Each option has varying long-term effects for different water systems. The option that decision-makers choose to pursue should have the following four characteristics:[11]

1) Economic Efficiency – The entity should be able to provide water at an affordable price to customers and should be able to benefit from economies of scale.

2) Fiscal Equity – The entity should be able to finance the service, be large enough to accommodate the benefits and costs, and equally distribute the costs among the users of the service

3) Political Accountability – The entity should provide a high level of citizenship

11 Source: SMC Martin, Inc. "Regionalization Options for Small Water Systems." Washington, DC: U.S. Environmental Protection Agency. 1983.

participation in the decision-making process and accountability to customers.

4) Administrative Effectiveness – The entity should have adequate authority to carry out the service and should be able to provide water in an administratively efficient and technically proficient manner.

Perceptions of Consolidation

When attempting to educate decision-makers (i.e., water system board members and operators) about consolidation, it is useful to identify what they already know about the subject and the views that they hold regarding it. This portion of the report shows how board members of community water systems and certified operators tend to view consolidation.

Perceptions of Consolidation from Water System Board Members

The Boards of Directors are the main decision-makers for water systems. In most cases, the board members will be the individuals that decide whether consolidation is the correct choice for their system. As decision-makers, board members should have access to accurate information about consolidation, especially since there are often misconceptions about its impacts. In order to gain a better understanding about how board members for rural water systems perceive consolidation, a survey was sent to board members that had completed the Public Water System Board Management Training Program within the past two years. Seventy-nine board members responded to the survey. The survey captured information regarding water system size and location, operator's role in decision-making, and past consolidation activities of the system.

Seventeen percent of those responding to the survey indicated that their water system had been offered the opportunity to consolidate with another water system within the past five years. Eight percent reported actually participating in the consolidation activity. Eleven percent of the respondents reported that their water system had approached another system about participating in some type of consolidation activity within the five past five years. Four percent of those systems approached agreed to participate. The types of consolidation activities in which the systems participated were acquisitions, mergers, annexations, and physically interconnecting neighboring systems.

When asked about the number of systems in their geographic area with which they could possibly consolidate, the average number reported was two. The average distance reported between the respondent's system and the service area of the neighboring system was 3.1 miles. Seventy-three percent of the board members agreed that individuals involved with water system management and/or operations need more education regarding consolidation.

The board members were also given twenty-eight statements in which to rate how much they agreed or disagreed (1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree). For the purposes of this report, the statements were divided in the four categories: consolidation defined, pros/advantages of consolidation, concerns/disadvantages of consolidation, and general feelings toward consolidation. Table 2 shows the average rating for each of these statements.

Regarding the meaning of consolidation, 35 percent of the board members agreed (somewhat or strongly) that consolidation only occurs when systems physically connect,

which is often a misconception. This is also the statement, which board members tended to disagree with the most. Sixty-one percent of the board members agreed that there are many forms of consolidation.

Of the statements that are commonly thought of as being advantages[12] of consolidation, the statement that the board members tended to disagree with the most was that consolidation provides ways for systems to work together to solve common problems, which can allow for greater efficiency, improved reliability, and enhanced, quality of service. Ninety-one percent agreed with this statement. Only 59 percent agreed that consolidation could lower per-household compliance costs. Based on the statements that board members agree with the most, it was determined that their top concerns with consolidation are assuming additional debt, loss of jobs, and the difficulty of deciding new management strategies. Ninety-two percent of those surveyed agreed that consolidation could cause systems to assume additional debt.

Perceptions of Consolidation from Certified Operators

Certified operators also play an important role in decision making for many water systems. Some boards rely heavily upon the advice of their operator when making decisions because operators are more familiar with the technical aspects of the system than anyone else. As found in the survey completed by board members, 57 percent of the board members reported that the certified water operator of their system is involved with the management decisions, and 79 percent reported that their operator reports to the board at least monthly and sometimes more often. It is imperative that operators also receive accurate information regarding consolidation. In order to gain a better understanding about how the operators for rural water systems perceive consolidation, a survey was also given to operators. One hundred eight operators participated in the survey. The survey asked the same type of questions as those in the board member survey.

Many operators are employed by multiple water systems. Twenty percent of the operators responding to the survey indicated that at least one of the water systems by which they are employed had been offered the opportunity to consolidate with another water system within the past five years. The average number of systems that they operate that have received an offer to consolidate within the past five years was 1.5. Ten percent of the respondents reported that at least one of the water systems they operate had approached another system about participating in some type of consolidation activity within the past five years. The average number of systems the operators operate that had approached another system was 1.5. The types of consolidation activities with which the systems participated were acquisitions, mergers, and physically interconnecting neighboring systems.

When asked the number of systems in their geographic area with which they could possibly consolidate, the average number reported was 2.6. The average distance between the respondent's system and the service area of the neighboring system was 1.9 miles. Fifty-seven percent of the operators responded that individuals involved with water system management and/or operations need more education regarding consolidation.

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12 Some of the statements that are categorized as "pros/advantages of consolidation" actually describe scenarios when systems should consolidate. This is because it is assumed that by consolidating, these bad situations will be reversed which is an advantage associated with the activity.

The operators were given the same twenty-eight statements in which they could agree or disagree. Regarding the meaning of consolidation, 31 percent of the operators agreed that consolidation only occurs when systems physically connect. Sixty-six percent agreed (somewhat or strongly) that many forms of consolidation exist. Both of these findings were similar to those of the board members. Table 3 shows the average rating for each of these statements.

Of the statements that are commonly thought of as being advantages to consolidation, the statement in which the operators tended to agree with the most was that a water system should consider consolidation when it faces the inability to generate a sufficient amount of revenue to cover the cost of the water it provides to its customers. Eighty-three percent of those surveyed agreed with this statement. Just as was found in the board member survey, the statement that was disagreed with the most regarding advantages of consolidation was that it lowers per-household compliance costs. Only 60 percent of those surveyed agreed. From identifying the statements that the operators agree with the most, it can be determined that their top concerns about consolidation are the distance between systems, additional debt, and the loss of jobs. Eighty-seven percent of those surveyed agreed that the distance between systems and characteristics of terrain could make consolidating difficult.

Summary

Water systems currently face many challenges, and consolidation of systems is often suggested as a remedy. Various forms of consolidation exist including non-structural and structural approaches. There are both advantages and disadvantages of consolidation. When pursuing any type of consolidation activity, decision-makers must decide which is the best option for their system while keeping the short- and long-term effects in mind. The option that decision-makers choose to pursue should have the following four characteristics: economic efficiency, fiscal equity, political accountability, and administrative effectiveness.

Table 2. Board Member Survey Results

(1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree)

Consolidation Defined	**Average**
Consolidation can be any form of cooperation between water systems to improve service and efficiencies.	3.11
Consolidation can be in the form of an informal cooperation such as sharing an operator.	3.03
Consolidation can also involve nonstructural approaches such as shared management.	2.88
Many forms of consolidation exist.	2.59
Consolidation only occurs when multiple water systems physically connect.	2.31
Pros/Advantages of Consolidation	**Average**
Consolidation can provide ways for water systems to work together to solve common problems, which can allow for greater efficiency, improved reliability, and enhanced quality of service.	3.36
A water system should consider consolidation when it faces the inability to generate a sufficient amount of revenue to cover the cost of the water it provides to its customers.	3.24
Water systems with low technical, managerial, and/or financial capacity are prime candidates for consolidation.	3.14
Water systems can benefit from a mutual agreement with another system to share the expense of larger ticket items such as capital equipment, salary of a licensed operator, or development of new water sources.	3.09
The inability to obtain financing for system improvements or to meet new standards is a valid reason for consolidation.	3.09
When a water system can no longer meet the demands of its customers either due to growth or increased usage, system consolidation should be a consideration.	3.08
By consolidating with another water system, smaller systems will be more able to attract and hire technically skilled labor.	3.04
Consolidation is a practical way to solve many of the sustainability problems faced by small community water systems.	2.88
It will be difficult for many small community water systems to survive under increased regulations and compliance requirements without consolidating with another system.	2.76
Consolidation can lower per-household compliance costs.	2.64
Concerns/Disadvantages of Consolidation	**Average**
Consolidation may cause some systems to assume additional debt.	3.35
Consolidating may cause some system employees to lose their jobs.	3.18
Deciding a new management strategy for systems that are going through or that have gone through consolidation can be difficult.	3.12
Distance between water systems and characteristics of terrain can make consolidating difficult.	3.10
Consolidation could cause disputes over who should pay for system improvements.	3.03
Consolidation, in the form of restructuring such as a direct transfer of ownership or receivership, could cause one of the boards to lose some local power or influence.	2.99
Physically connecting two separate water systems is often expensive and in the end may not provide economic savings.	2.99
Consolidation may cause an increase in water rates for some systems.	2.93
Some communities may bear a disproportionate share of costs relative to the amount of benefits received from consolidating with another water system.	2.86
General Feelings Toward Consolidation	**Average**
Individuals involved with water system management and/or operations need more education regarding consolidation.	3.25
It may be more economically feasible for two systems to share management and technical resources rather than physically connecting.	2.96
Rural water customers will be willing to support a merger with another system if it possibly means reducing their water bill.	2.84
Water systems would be more apt to consolidate by merging and creating a new entity rather than one system acquiring total ownership of another.	2.81

Table 3. Operator Survey Results

(1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree)

Consolidation Defined	Average
Consolidation can be any form of cooperation between water systems to improve service and efficiencies.	3.09
Consolidation can be in the form of an informal cooperation such as sharing an operator.	2.90
Consolidation can also involve nonstructural approaches such as shared management.	2.83
Many forms of consolidation exist.	2.68
Consolidation only occurs when multiple water systems physically connect.	2.13
Pros/Advantages of Consolidation	**Average**
A water system should consider consolidation when it faces the inability to generate a sufficient amount of revenue to cover the cost of the water it provides to its customers.	3.17
Consolidation can provide ways for water systems to work together to solve common problems, which can allow for greater efficiency, improved reliability, and enhanced quality of service.	3.16
Water systems can benefit from a mutual agreement with another system to share the expense of larger ticket items such as capital equipment, salary of a licensed operator, or development of new water sources.	3.14
When a water system can no longer meet the demands of its customers either due to growth or increased usage, system consolidation should be a consideration.	3.13
Water systems with low technical, managerial, and/or financial capacity are prime candidates for consolidation.	3.12
By consolidating with another water system, smaller systems will be more able to attract and hire technically skilled labor.	3.01
It will be difficult for many small community water systems to survive under increased regulations and compliance requirements without consolidating with another system.	2.96
The inability to obtain financing for system improvements or to meet new standards is a valid reason for consolidation.	2.96
Consolidation is a practical way to solve many of the sustainability problems faced by small community water systems.	2.90
Consolidation can lower per-household compliance costs.	2.65
Concerns/Disadvantages of Consolidation	**Average**
Distance between water systems and characteristics of terrain can make consolidating difficult.	3.21
Consolidation may cause some systems to assume additional debt.	3.17
Consolidating may cause some system employees to lose their jobs.	3.10
Deciding a new management strategy for systems that are going through or that have gone through consolidation can be difficult.	3.01
Consolidation, in the form of restructuring such as a direct transfer of ownership or receivership, could cause one of the boards to lose some local power or influence.	2.98
Consolidation may cause an increase in water rates for some systems.	2.98
Consolidation could cause disputes over who should pay for system improvements.	2.95
Physically connecting two separate water systems is often expensive and in the end may not provide economic savings.	2.94
Some communities may bear a disproportionate share of costs relative to the amount of benefits received from consolidating with another water system.	2.89
General Feelings Toward Consolidation	**Average**
Individuals involved with water system management and/or operations need more education regarding consolidation.	3.16
Rural water customers will be willing to support a merger with another system if it possibly means reducing their water bill.	3.02
Water systems would be more apt to consolidate by merging and creating a new entity rather than one system acquiring total ownership of another.	2.92
It may be more economically feasible for two systems to share management and technical resources rather than physically connecting.	2.88

CASE STUDY: Potential for the Consolidation of the ABC and XYZ Water Associations

History of the ABC Water Association

The ABC Water Association is a rural water system located on the outskirts of a large city. The association was originally established in the early 1970's and served approximately 475 customers (connections). Over the years, several small neighboring community water systems have merged with the ABC Water Association. The water system has also experienced growth from people moving away from the city into less populated areas. Today, the ABC Water Association serves approximately 3,000 customers in portions of two counties.

The first couple of neighboring systems that merged with the ABC Water Association did so for financial reasons through the Ownership Transfer consolidation option. The board members of the merging systems at the time felt that they could not be financially viable by remaining separate entities.

The last consolidation/restructuring activity that took place on the system began as an act of kindness. One of the neighboring systems unexpectedly had a well failure, and its customers desperately needed a source of water. The system quickly acquired a loan from the Farmers Home Administration (now known as USDA Rural Development) and received the funding required to physically interconnect the lines of the failed system to those of the ABC Water Association so customers would have water. Later, the ABC Water Association acquired the system through an Ownership Transfer. In order to keep the existing customers from being responsible for the failed system's debt, the customers of the newly adjoined system paid a higher rate for water than the existing customers. Later, the rates for the remainder of the system increased to equal that of the newly connected system.

The water system has a good infrastructure, which is probably because it is well maintained and operated. Although there are several agricultural users on the system, a majority of the customers are residential users. The ABC Water Association has an office where customers pay bills and request service. Currently, the water system has a decreasing block rate structure. Customers pay $14.00 for 2,000 gallons of water and a decreasing block rate for additional water consumed.

The consolidation efforts that have taken place with the ABC Water Association were welcomed and successful. Over time, all of the systems have been physically interconnected with the exception of one, which has discolored water. All of the communities, which once had individual systems, have representation on the Board of Directors so the loss of autonomy has not been a problem thus far. By consolidating into one system, the system has been able to afford an operator, tanks, and generators. Some parts of the system have installed fire hydrants, which provides added protection to its customers.

History of the XYZ Water Association

The office for the ABC Water Association receives water served from a small neighboring community water association, which serves between 30-35 customers. This system, XYZ Water Association, was practically built, managed, and operated by one

couple in the community. The couple paid for most of the repairs themselves allowing the system to maintain savings in the bank with no debt. After the couple got older, the system had to hire someone to maintain it, which depleted much of the savings. The system currently has no debt, but it is not financially able to borrow money from a lending agency to make any improvements because of low cash reserves.

Although the infrastructure is decent, the system does need meters, new lines, and well and tank maintenance. Most of the system users are residential customers. Rather than paying a fair share for the amount of water consumed, customers are charged a flat rate of $10.00 per month for an unlimited amount of water because they have no meters. Some customers are not current in paying their bills.

Talks of Future Consolidation

The ABC Water Association and XYZ Water Association have discussed consolidation through an Ownership Transfer, which in this case will include a physical interconnection of the two systems. Although some systems prefer not to obtain a small system, the ABC Water Association's Board of Directors is willing to help the XYZ Water Association as they have helped others in the past. The ABC Water Association is paying an engineer to determine the cost of acquiring the system. After receiving the results of the engineer's report, the ABC Water Association will approach XYZ Water Association with an offer.

To make the necessary improvements, such as installing meters and lines and repairing the well and tank, it will cost approximately $40,000. The ABC Water Association will help the former XYZ Water Association obtain the funds needed to make the necessary improvements, but the customers of the former XYZ Water Association will be responsible for repaying the loan. The water rates for the customers of the XYZ Water Association will increase, and they will begin paying the same as the customers of ABC Water Association.

Although most of the customers of the XYZ Water Association are in favor of the consolidation efforts, some do not like the idea. They feel that by consolidating they will be losing their community. The association is named after the community, and an acquisition will change the name of the system to reflect that of the ABC Water Association. As the result of a possible acquisition, the XYZ Water Association will no longer have their own Board of Directors. Although no one from their board will be added to the existing board of the ABC Water Association, one of the current board members for the ABC Water Association does live near the XYZ community.

Potential Advantages and Disadvantages of Consolidation

Once a report from the investigating engineer is received, the ABC Water Association will make an offer to XYZ Water Association regarding a potential consolidation. Consolidation will bring about changes for both entities involved. *What are some possible advantages and disadvantages that would be caused by ABC Water Association acquiring the XYZ Water Association?*

Advantages

- The former XYZ Water Association customers will have a safe, reliable source of drinking water including a backup source for water during emergencies.
- Greater economies of scale will result. The XYZ Water Association customers will feel the affects of this more than ABC Water Association.
- The ABC Water Association is more financially viable.
- By having greater access to capital, the ABC Water Association can make the necessary improvements needed by the former XYZ Water Association.
- The ABC Water Association will provide access to equipment and labor to make needed repairs on the system.
- The ABC Water Association will provide better management and administration.
- The customers of the former XYZ Water Association will have an office where they can pay their water bills.
- Since the former XYZ Water Association customers will be responsible for repaying any debts, the customers of ABC Water Association will not acquire any additional debt.
- The water rates for the existing customers of ABC Water Association will not increase.

Disadvantages

- The customers of the former XYZ Water Association will acquire debt when making the necessary improvements to the system.
- In order to repay any debts, the customers of the former XYZ Water Association will experience a rate increase to reflect the rates of the ABC Water Association.
- The customers of the former XYZ Water Association that have not been routinely paying their bills will have to begin paying or they will have their water cut off according to the cut off policy of the ABC Water Association.
- The Board of Directors for the former XYZ Water Association will lose their power.
- The name of the XYZ Water Association will be changed to ABC Water Association making the customers feel as if they are losing their community.

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