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# How Should We Regulate Small Water Utilities?

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***A New Kind of NRRI Paper***

*Compared to most NRRI publications, this paper is shorter and unfinished – by design. It is a work in progress – to be revised and updated through a continuing collaboration among state utility commissioners and their staffs.*

*NRRI is producing this paper in conjunction with the launch of NRRI's new Knowledge Communities < http://communities.nrri.org >. NRRI Knowledge Communities are on-line forums for economic regulators to explore issues, share best practices, give advice, offer words of encouragement, help improve the quality of economic regulation, and perhaps have a little fun along the way.*

*The Water Community within the NRRI Knowledge Communities is open to any current commissioner or employee of a state utility commission. We especially encourage water staff (accountants, rate analysts, engineers, lawyers, safety and compliance specialists, commissioners' assistants) to become involved. We need your experience and knowledge; we need to understand what works and what doesn't; and we need to help educate, acclimate and stimulate the constant flow of newcomers who will look to you for guidance.*

*This paper is the first of several "works in progress" that we will publish in the coming months to launch new topics in the Water Community. These papers will probe areas of discomfort – where improved regulation will lead to improved water service. We hope to expand the dialogue among commissioners and commission staff, benefit from your experiences, use your needs to guide future water research efforts and discussions, and get to know each other a little better, too.*

*So, please read, react, and respond – at the Water Community on NRRI's Knowledge Communities.*

This paper is available online at
www.nrri.org/pubs/water/NRRI_small_water_reg_nov09-16.pdf.

# Executive Summary

The challenges of regulating small water utilities are understood, but the ability to identify and implement solutions remains elusive. Some states have made progress in improving the financial health of small water utilities and ensuring those utilities' ability to provide safe and reliable service to the public at a reasonable price. Some states, however, face challenges that appear daunting. Most state regulators, however, have one thing in common: they are continually dealing with issues relating to the provision of water service by small businesses.

This paper suggests six steps that economic regulators can follow to help address the challenges of regulating small water utilities. These steps will not "solve" the problem; but they will put regulators on the path toward understanding the needs, prioritizing action, and evaluating progress. Briefly, the six steps can be summarized as follows:

Step 1: Understand the Water Industry in Your State. At its essence, there are three types of small water utilities: (1) those that should exist as independent companies and are currently sustainable; (2) those that should exist as independent companies but are not currently sustainable; and (3) those that should not exist as independent companies. In Step 1, you will develop methods and collect information to understand the utilities in your state and help determine whether they are independent, sustainable enterprises.

Step 2: Design the Goals. After you understand what you have, develop a plan for what you would *like* to have. To do this you will need information from the drinking water regulator, land use planners and zoning officials, demographers, economic development agencies, local government officials (including municipally owned water utilities) and others who are involved with development and population patterns in your state.

Step 3: Talk to People Who Can Help You Get There. Economic regulators cannot address the challenges of small water utilities by themselves. There are numerous people, businesses, and organizations that are directly affected by – and can directly impact the future of – small water utilities. Talk with them, understand their needs, and build coalitions to help address the challenges.

Step 4: Develop a Detailed Plan. The next step in the process could be called "don't bite off more than you can chew." We didn't create thousands of small water utilities overnight and we won't address all of their needs and problems instantly either. The key is to have a plan and make progress on it.

Step 5: Use Your Regulatory Tools. Economic regulators have a comprehensive "toolbox" that can be used to address small water utility challenges. Some of those tools are "carrots" that can be used to encourage "magnet" utilities to expand. Other tools are "sticks" that can be used to try to move unsustainable utilities to either improve their operations or combine with a capable operator. Another set of tools can be used to help improve the sustainability of systems. The key is to use those tools selectively where and when they can do the most good. "One size fits all" regulation simply does not work with small water utilities.

Step 6: Evaluate. One of the essential elements of any program – whether in business or government – is the evaluation process. You need to evaluate the way your program functions, measure the outcomes achieved, and use a feedback loop to continuously improve the program and its outcomes.

Finally, NRRI encourages you to share your results, experiences, knowledge, and important public documents. Please log on to the Water Community at NRRI's Knowledge Communities < http://communities.nrri.org > and share your knowledge and experiences.

# How Should We Regulate Small Water Utilities?

## I. Introduction

### A. Overview of the problem

In a recent interview, Dr. Michael McGuire, a nationally renowned water researcher and engineer, stated: "I have worked with operators and managers of small utilities who have accomplished extraordinary things with limited budgets. These successful small utilities have dedicated professionals who are committed to complying with the regulations. Unfortunately, the reverse situation is also true. I have seen small utilities flounder because of a lack of leadership and commitment."[1]

Dr. McGuire's experience has been replicated by nearly anyone who has worked with or studied small water utilities. Some small utilities provide their customers with high-quality service at a reasonable price; others have trouble keeping the water flowing or sending out accurate bills. This leads to an obvious question for economic regulators: How do we tell the difference between the good and bad small utilities and how should we regulate them?

At the outset, it is important to establish a common vocabulary. There is an important distinction between a *water system* and a *water utility* that is often lost in the discussion. A *water system* is a physical network that produces and delivers water to customers. A *water utility* is an organization that owns and operates one or more water systems. Water utilities can be owned by a unit of local government (such as a city, water district, or government authority), a non-profit entity (such as a homeowners' association), or a for-profit enterprise (such as a corporation).[2]

**Environmental** regulators, such as the U.S. Environmental Protection Agency (EPA) and state "primacy" agencies,[3] regulate *water systems* to ensure that each physical network for

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[1] "McGuire Receives 2009 A.P. Black Research Award," *Journal Amer. Water Works Assoc.*, 101:9:52-57 (Sept. 2009).

[2] For a good overview of the water industry, see David Denig-Chakroff, The Water Industry at a Glance (NRRI, 2008), available at: < http://nrri.org/pubs/water/Water_industry_at_a_glance.pdf >.

[3] All states have accepted "primacy" for the regulation of drinking water under the federal Safe Drinking Water Act. Primacy means that the state agrees to take the primary responsibility for enforcing federal drinking water regulations. To be granted primacy, a state must meet several requirements, including adopting drinking water regulations that are at least as stringent as the federal regulations and agreeing to enforce those regulations. 42 U.S.C. § 300g-2; 40 C.F.R. §§ 142.10 to 142.19. In exchange for accepting primacy, a state receives an annual federal grant to help pay for the regulation and enforcement of drinking water. 42 U.S.C. § 300j-2. State drinking water regulators go by various names, such as departments of health, environmental protection, environmental resources, environmental quality, or natural resources.

the treatment and delivery of water is providing a safe product to the public. **Economic** regulators, such as state public utility (or public service) commissions, regulate some (but not all) *water utilities* in a state to ensure that the public receives safe and reliable service at a reasonable price.

The distinction between water systems and water utilities must be remembered when using data from different sources. EPA maintains a database, known as the Safe Drinking Water Information System (SDWIS),[4] that provides data about the more than 50,000 *water systems* in the United States. SDWIS data appear in various EPA publications and are frequently cited to show the large number of small water systems in the United States (or in a particular state).

But SDWIS does not provide any information about the number of *water utilities*. It cannot be easily determined from SDWIS whether a water utility owns one water system or 100 water systems. As an example, one large water utility in Pennsylvania owns more than 30 water systems, ranging in size from fewer than 100 customers to more than 100,000 customers.[5] Each of those water systems is separately regulated by the Pennsylvania Department of Environmental Protection (the primacy agency in Pennsylvania), and each system has its own entry in SDWIS. But the Pennsylvania Public Utility Commission (the economic regulator) regulates the utility that owns those systems as a single enterprise.

In many parts of the country, small *water systems* must exist because physical constraints (such as mountains, rivers, and geology) limit the sources of water that can be used to provide water service to an area cost-effectively. Unlike other utility services, water is heavy. A typical home in a temperate climate (like the northeastern United States) might use 150 gallons of water each day. That daily water requirement weighs more than 1,200 pounds. The weight of water means that it is expensive, and energy-intensive, to move it over long distances. As a consequence, most water systems are built to use gravity to the greatest extent possible to move water from the source to customers.

The fact that small *water systems* are a physical and economic necessity, however, does not necessarily mean that small *water utilities* are an economically efficient or desirable form of organizing those small water systems. Some small water systems are owned by large governmental authorities or privately owned holding companies, while others are small, stand-alone operations. As noted at the outset of this paper, some small utilities are extremely well run, efficient operations, while others fail to adequately serve their customers. So while small systems must exist, economic, political, and regulatory forces ultimately should determine the most efficient way to organize those small systems into economically sustainable and efficient utilities. Economic regulators play an indispensable role in this process and must determine how to regulate (and organize into utilities) the small systems that are within their jurisdiction.[6]

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[4] A detailed description of SDWIS, and the ability to search it, can be found on EPA's web site: < http://www.epa.gov/enviro/html/sdwis/ >.

[5] Scott J. Rubin, "Current State of the Water Industry and Stimulus Bill Overview," in *Pennsylvania Public Utility Law* (Pennsylvania Bar Institute, 2009), pp. 569-578.

[6] In most states, economic regulators have jurisdiction only over water utilities that are privately owned by a for-profit enterprise. Five states have no economic regulation of water

Economic regulation, particularly as it applies to small water utilities, should be an active – not reactive – process. As the paper discusses below, regulators have many tools available to them that can be used to shape the structure and sustainability of the water industry, while meeting the overriding goal of ensuring the public has a safe and reliable supply of drinking water at a reasonable price. Regulators cannot simply wait for a small water utility to file something to which the regulators can react. Far too many small water utilities avoid calling attention to themselves, forego requesting rate increases when they are needed, and may even fail to file for expansions of service areas that could be beneficial to their sustainability. To address the challenges of small water utilities, regulators may need to go to the utilities, rather than wait for the utilities to come to them.

### B. Much has been written

During the past two decades, several books, and scores of papers, have been written about the challenges of regulating small water systems,[7] assessing the viability of small systems,[8] evaluating and developing regional groupings of small systems,[9] setting rates for small utilities,[10] and stopping the proliferation of new small utilities.[11] Indeed, two of the earliest comprehensive studies of the special concerns raised by small water systems are approaching their twentieth

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utilities, while a few states require (or permit) the economic regulation of at least some government-owned water utilities. Janice A. Beecher, How Water Compares, 30th Annual National Conference of Regulatory Attorneys 2007, available at: < http://www.psc.state.nd.us/divisions/counsel/ncra/presentations/07a%20Beecher-Water.pdf >.

[7] See, e.g., National Rural Water Association, *Critical Issues in Setting Regulatory Standards* (2nd ed. 2003); Melissa J. Stanford, Small Water Systems: Challenges and Recommendations, NRRI publication 08-02 (2008).

[8] See, e.g., Janice A. Beecher, et al., *Viability Policies and Assessment Methods for Small Water Utilities*, NRRI publication 91-17 (1992); several papers in *Proceedings of the Eighth NARUC Biennial Regulatory Information Conference, Volume IV: Water*, NRRI publication 92-23 (1992).

[9] See, e.g., Eloise Castillo, et al., *Feasibility of Small System Restructuring to Facilitate SDWA Compliance* (Amer. Water Works Assoc. Research Foundation, 1997); Robert S. Raucher, et al., *Regional Solutions to Water Supply Provision* (Amer. Water Works Assoc. Research Foundation, 2006); John Cromwell and Scott Rubin, *Estimating Benefits of Regional Solutions for Water and Wastewater Service* (Amer. Water Works Assoc. Research Foundation, 2008).

[10] See, e.g., U.S. EPA, *Setting Small Drinking Water System Rates for a Sustainable Future*, EPA 816-R-05-006 (2006); Amer. Water Works Assoc., *Manual M54: Developing Rates for Small Systems* (2004); Audrey Boe Nelson, North Dakota Small Community Water System's Handbook on Developing and Setting Water Rates (Midwest Rural Community Assistance Program, 1999) available at: < http://www.map-inc.org/pdf/pub_water_rates.pdf >.

[11] See, e.g., John E. Cromwell, et al., "Business Planning for Small System Capacity Development," *Journal Amer. Water Works Assoc.*, 89:1:47-57 (Jan. 1997); David Denig-Chakroff, *Certification Requirements as a Path to Improve Small Water Utility Operations: The Issues Facing Regulatory Commissions*, NRRI publication 08-09 (2008).

anniversary.[12] The most comprehensive study of the "small system problem" was published a dozen years ago by the National Academy of Sciences[13] (a study that led to some of the small system provisions in the Safe Drinking Water Act Amendments of 1996). But we're still talking about the "small system problem" and still wondering how best to regulate small water utilities.

Frankly, the last thing many of us need is another paper talking about small water utilities and how difficult it can be to regulate them. Given the wealth of information that has been published, it is fair to conclude that we understand the problem and at least some of the potential solutions.

We understand:

- Some small water utilities are well run and provide their customers with excellent service, while others don't measure up to any reasonable standard of serving the public; but it's difficult to craft policies that address the needs of all small systems;

- Regionalization approaches – including physical interconnection, common ownership, shared management, wholesale water purchase agreements, joint water resource development, and mutual aid agreements – can be effective in ensuring the long-term viability and sustainability of small water systems; but they also can be difficult to negotiate;

- Special ratemaking procedures – including automatic adjustment clauses, escrow accounts, and using an operating ratio (instead of rate base / rate of return calculations) – can enable small utilities to implement rate changes to ensure their financial viability; but they can be controversial (and even unlawful) in certain jurisdictions;

- Incentives for larger utilities to acquire small utilities – including single-tariff pricing, acquisition adjustments, and rate of return incentives – can be effective in reducing the number of small utilities; but special care must be taken to ensure that such combinations are economically efficient and equitable for both existing and new customers.

### C. Much work remains to be done

We understand the problem, but the implementation of solutions remains elusive. Small water utilities still exist, and some of them remain unable to provide safe and reliable service to the public at a reasonable price. Examples of regional cooperation and consolidation exist, but

[12] U.S. EPA, *Improving the Viability of Existing Small Drinking Water Systems*, EPA 570/9-90-004 (1990); Wade Miller Associates, *State Initiatives to Address Non-viable Small Water Systems in Pennsylvania* (1991).

[13] National Research Council, *Safe Water from Every Tap: Improving Water Service to Small Communities* (National Academy Press, 1997).

they are not commonplace. While we may think there are too many small water utilities, nevertheless every year utility commissions authorize the creation of new ones.

The purpose of this guide – and the on-line community that will follow its initial publication – is to help economic regulators learn from the collected experience of their peers and make further progress addressing the problems and challenges associated with small water utilities.

## II. A "Six-Step Program" for Improving the Economic Regulation of Small Water Utilities

### *Step 1: Understand the Water Industry in Your State*

As with any problem, the first step is to recognize that you have a problem and put some boundaries on it. As discussed above, the problems of small water utilities are well-documented and do not need further explication here.

Defining the boundaries of the problem, however, is often presented as a multi-factor matrix looking at different variables that influence the ability of a small water utility to serve the public reliably. With all due respect to those who have proposed such complicated formulations (including this author), the problem can be defined rather simply with two statements:

1. Some small water utilities should exist as independent companies and some should not.
2. Of those that should exist, some are currently sustainable and some are not.

So we have three types of small water utilities: (1) those that should exist as independent companies and are currently sustainable; (2) those that should exist as independent companies but are not currently sustainable; and (3) those that should not exist as independent companies.

**When should a small water utility exist as an independent company?** The primary factor is distance. When a water system, or group of water systems, is physically distant from other water systems, it usually is reasonable to have an independent utility own and operate the system or group of systems. A comprehensive study of the feasibility of small water system restructuring found that so-called satellite management (that is, combining operations without physically interconnecting systems) was feasible for water systems located within a one-hour drive of each other.[14] This distance might be approximately 60 miles in a rural area (or between an urban area and a rural area), but it could be considerably less in more congested areas or where highways do not connect the areas. If the driving distance is more than one hour, that study found, it was likely to be inefficient for operations and maintenance personnel to share their time between service areas.

The same study found that the economics of physical interconnection were much more limited: constrained by construction costs (which can be considerably higher in urban areas than

[14] Eloise Castillo, et al., *Feasibility of Small System Restructuring to Facilitate SDWA Compliance* (Amer. Water Works Assoc. Research Foundation, 1997)

in rural areas) and the number of customers. For example, those authors found that it would not be cost-effective to construct more than one mile of new water main to connect a small system with 100 customers to a larger system. A longer interconnection would require the larger utility's customers to subsidize the project (that is, to pay higher rates in order to serve the new customers). A follow-up to that study found that the average small water system in a rural area was more than eight miles away from the nearest medium-sized (or larger) water system.[15]

Similarly, a seminal study of the economies of scale[16] of water distribution found that even though there were tremendous economies of scale in the production of drinking water, there were limits to the economically efficient size of a water distribution system (that is, over a certain distance, the increased costs of distribution exceeded the cost savings in production).[17]

For purposes of determining whether it is feasible to have an independent water *utility*, however, physical interconnection is not necessary. The key factor is the ***distance over which it is feasible to operate separate water systems with common management and operations***. Technology (computers and telemetry) make it feasible to control and monitor water system operations over long distances; but certain functions (such as changing chemical tanks, taking water samples, oiling pumps, exercising valves, flushing hydrants, to name a few) continue to require on-site operations.

We can use the following rule-of-thumb: If a small water utility is located more than a one-hour drive from the nearest water utility, it is reasonable for the small water utility to be independent. If, however, there are other water utilities within an hour's drive, then it would not be necessary to have two (or more) independent utilities within that distance.

**How do we know if a utility is sustainable?** The standard definition of a sustainable utility is one that has the "technical, financial, and managerial capacity to meet current and future

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[15] Tom Ottem, et al., "Consolidation Potential for Small Water Systems — Differences Between Urban and Rural Systems," Whitepaper prepared for the National Rural Water Assoc. (2003), available at: < http://www.nrwa.org/whitepapers/risks/risks06/cons/raucher01.doc >. Medium- and larger-sized water systems are generally considered to be those that serve more than 3,300 people (or roughly 1,000 customers).

[16] "Economies of scale" (also known as "returns to scale") represent the relationship between increases in the inputs of production (such as raw materials, labor, or capital) and the amount of the product produced. A business exhibits economies of scale (or positive returns to scale) if, for example, a doubling of the inputs leads to more than a doubling of the output (such as potable water). Edwin Mansfield, *Microeconomics: Theory and Application* (2nd ed. 1975), pp. 142-144. Often, economies of scale are evaluated by measuring the unit cost of production (such as the cost to produce 1,000 gallons of water) for plants of varying size. Water production exhibits large economies of scale (the cost per 1,000 gallons declines as the size of the plant increases). Jhih-Shyand Shih, et al., "Economies of scale in community water systems," *Journal Amer. Water Works Assoc.*, 98:9:100-108 (Sept. 2006).

[17] Robert Clark and Richard Stevie, "A Water Supply Cost Model Incorporating Spatial Variables," *Land Economics,* 57:18-32 (1981).

performance standards."[18] Practically, this means that the utility has rates that simultaneously meet two criteria: (a) the rates are sufficient to recover the utility's costs and provide a reasonable return to investors, and (b) customers can afford to pay those rates (that is, the utility will be able to collect the revenue it needs to operate the business). In addition, a sustainable utility is in compliance with existing regulatory requirements and – as importantly – has managers who understand the long-term needs of the utility, including the knowledge to look ahead and anticipate additional regulations, capital requirements, population and demographic changes, and other factors to which the utility will need to respond in the future.

Too often, we have seen policies fail to distinguish between those utilities that should exist and those that should not, or between those that are sustainable and those that are not. On occasion, we even see policies that go out of their way to sustain utilities that are unsustainable. It is not a good use of regulatory resources to encourage a large utility to acquire a sustainable small utility that is hours away from the large utility's operations. Similarly, it can be a missed opportunity if regulators fail to help a sustainable small utility become a "magnet" for neighboring unsustainable utilities.

***Discussion Topics for the Water Community:***

*What are the barriers to understanding the water industry in your state?*

*Do you have any other categories of small water utilities?*

*What information do you need to properly categorize a utility?*

*What resources did you find that helped you?*

*What would you like to know more about?*

*Do you have maps (physical or GIS) of water utility service areas? How did you get them?*

*Just for fun: What's your best (or worst) "war story" about a small water utility?*

***Step 2: Design the Goals***

After you understand what you have, develop a plan for what you would *like* to have. In what parts of your state (because of geography and development patterns) do you need to have small water utilities? Where are regional water utilities feasible? Where is development occurring and likely to occur in the future? Are there sustainable water utilities in those areas that are capable of meeting the need?

To answer these types of questions, an economic regulator will need information from the drinking water regulator, land use planners and zoning officials, demographers, economic development agencies, local government officials (including municipally owned water utilities) and others who are involved with development and population patterns in your state.

[18] "Improving Small Water System Viability," *Journal Amer. Water Works Assoc.*, 87:3:25-34 (1995); see also Wade Miller Associates, *State Initiatives to Address Non-viable Small Water Systems in Pennsylvania* (1991).

***Discussion Topics for the Water Community:***

*Designing goals is more than just drawing circles on a map: how did you do it?*

*What sources of information / types of people were most helpful? Least helpful?*

*What gaps are there in your knowledge? How did you try to fill in those gaps?*

*How large are your water utilities today? Is that the "right" size (Too big? Too small? Too many? Too few?)*

*Should the water industry look like the electric or telephone industry (a handful of very large companies with a few – predominantly rural and municipal – providers in outlying areas)? Or is water different enough that a different industry structure is required?*

*Just for fun: Who is the most interesting person you met when trying to collect this type of information?*

### *Step 3: Talk to People Who Can Help You Get There*

Some of the same people who helped you understand the "lay of the land" so you could design your goals also can help you achieve those goals. A large number of people are involved with, or directly affected by, small water utilities; including, for example:

- People who design, build, or approve developments: builders, developers, realtors, architects, engineers, planners, and zoning officials;
- Companies that make it possible to build developments: banks, finance companies, credits unions, insurance companies;
- The water utility industry: municipal utilities, rural water association, investor-owned utilities, drinking water regulators, water resources regulators (such as river basin commissions and state water allocation agencies);
- Government officials: state and local legislators and executive branch officials; and
- The people who must drink the water and pay for it: consumer groups, public advocates, homeowners' associations.

***Discussion Topics for the Water Community:***

*Are these types of people / groups willing to talk with you?*

*Which were helpful? Which were not very helpful?*

*What are the best ideas you received? What are you going to do with them?*

*Just for fun: What's the funniest (strangest) thing someone said to you when you talked to them about helping with your plans?*

***Step 4: Develop a Detailed Plan***

The next step in the process could be called "don't bite off more than you can chew" or some other metaphor for developing a feasible action plan. We didn't create thousands of small water utilities overnight and we won't address all of their needs and problems instantly either. The key is to have a plan and make progress on it.

After you develop an understanding of what you have, as compared to what you would like to have, develop a plan to start making progress. Ask these types of questions to develop your detailed plan:

- Is there a particular area of the state that has a group of small water utilities in close proximity?
- Is there a particular type of small utility that is particularly problematic that needs to be addressed as a high priority?
- Do you have candidates for "magnet" utilities – small or mid-sized utilities that are particularly well run, but would be more sustainable if they could expand within their region?
- Are there water resource constraints or contamination problems in parts of the state that can (or should) drive regionalization efforts?

***Discussion Topics for the Water Community:***

*Are these the right categories?*

*What are the barriers to understanding the existing structure of the water industry in your state?*

*What information do you need to properly categorize a utility?*

*What resources did you find that helped you?*

*Did you meet resistance to trying to develop a plan? What did you do? Did you find a "champion" (someone who really got behind this effort) within your commission?*

*Just for fun: If we have gaggles of geese, colonies of ants, and herds of antelopes … What should we call a group of small water utilities?*

***Step 5: Use Your Regulatory Tools***

In 2008, NRRI published an excellent overview of the tools available to economic regulators to help address small water utility problems.[19]

Some of those tools are "carrots" that can be used to encourage "magnet" utilities to expand (for example, special ratemaking treatment, such as acquisition adjustments, plant improvement surcharges, and single-tariff pricing). Other tools are "sticks" that can be used to

[19] Melissa J. Stanford, *Small Water Systems: Challenges and Recommendations*, NRRI publication 08-02 (2008).

try to move unsustainable utilities to either improve their operations or combine with a capable operator (such as fines or penalties, revocation of a certificate of public convenience, or the denial of a rate increase). Another set of tools can be used to help improve the sustainability of systems that are otherwise needed (for example, placing conditions on certificates of public convenience, requiring periodic rate cases, using automatic rate adjustments, setting rates based on an operating ratio instead of rate base / rate of return).

The key is to use those tools selectively where and when they can do the most good. Regulatory action should be tailored to achieve a particular goal. "One size fits all" regulation simply does not work with small water utilities.

***Discussion Topics for the Water Community:***

*How have you used different regulatory tools to help "move the ball forward"?*

*What tools have been most effective (least effective) in achieving your goals?*

*Are there commission or court decisions that address the appropriate use of different tools?*

*Have you met resistance internally when trying to use certain approaches? What did you do?*

*Do you have examples of unintended consequences that you would try to avoid next time?*

*Just for fun: Crafts people have been known to give a pet name to their favorite tool … so, what's your favorite regulatory tool and what would you call it?*

***Step 6: Evaluate***

One of the essential elements of any program – whether in business or government – is the evaluation process. Its purpose is straightforward: to determine whether your program is succeeding, where its weaknesses lie, and how best to modify them. In business, the "process audit" has become popular – focusing on how work (and information) flows, where bottlenecks occur, and so on.[20] The process questions are important; for example: Where did the bottlenecks occur in trying to obtain data? What obstacles did you face in trying to coordinate with others inside your commission? Could different strategies improve your relationships with outside organizations?

Similarly, the same types of approaches can be used to measure the outcomes of the program – and to continuously evaluate the performance of each aspect of it. In order to do that, it is necessary to develop specific, quantifiable measures of performance. Measures could include, for example:

- The number of small water utilities (or the total number of water utilities);
- The number of small water utilities with service quality problems or customer complaints (or the total number of customer complaints dealing with small water utilities);

[20] See, e.g., Michael Hammer, "The Process Audit," *Harvard Business Review*, 85:4:111-123 (April 2007).

- The number of small water utilities with demonstrated financial problems (such as operating revenues less than operating expenses);

- The number of mergers, consolidations, operating agreements, purchased water agreements, or other measures of regional cooperation and consolidation.

In any evaluation process, care must be taken to measure potential unintended consequences. For example, if a utility commission were to adopt a policy that it would no longer grant certificates of public convenience to water utilities serving fewer than 500 customers, it would be important to understand what happened to those service areas. Did they become unregulated homeowners' associations with very little financial and technical capability, or did they become part of larger, capable utilities? Similarly, if a commission were to measure the number of consolidations without measuring the quality and sustainability of the small utilities that remained independent, it might be possible that only the best small utilities were the subject of consolidation.

Thus, the evaluation process also must include measurements and procedures to determine whether unintended consequences are occurring. The feedback loop, of course, then needs to evaluate why those consequences are occurring and determine whether and how the process can be changed to avoid them.

***Discussion Topics for the Water Community:***

*How do you evaluate progress?*

*What measures of performance do you use?*

*How do you identify and quantify unintended consequences?*

*How do you convince managers and commissioners to devote resources to data collection and performance measurement?*

*What is your "feedback loop" – that is, how do you take the results of performance measurement and use them to change the program?*

*Just for fun: One of the most popular corporate process audit protocols is called "Six Sigma" and experts in the process are called "black belts." What would you name your performance measurement program and what would your experts be called?*

## III. Share Your Results

NRRI encourages you to share your results, experiences, knowledge, and important public documents (policy statements, memoranda with other agencies, commission decisions, court orders, etc.). What worked and what did not work? What did you learn? What would you do differently during the next phase? Please log on to the Water Community at NRRI's Knowledge Communities < http://communities.nrri.org > and share your knowledge and experiences.