National Regulatory Research Institute

# The Small Water Company Dilemma: Processes and Techniques for Effective Regulation

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**October 2011**

**11–18**

# Acknowledgments

The authors thank Scott Hempling, Esq., former Executive Director of the National Regulatory Research Institute, for his guidance in framing this paper and for the insights and information he provided; the Honorable John W. Betkoski III, Vice Chairman of the Connecticut Public Utilities Regulatory Authority; the Honorable Philip Jones, Commissioner, Washington Utilities and Transportation Commission; the Honorable Erin O'Connell-Diaz, Commissioner, Illinois Commerce Commission; Michael Deane, Executive Director and Cade Clark, Director of Regulatory and Government Affairs of the National Association of Water Companies; David R. Monie, President of G.P.M. Associates, Inc. and Chairman of the NAWC Small Companies Committee; and the many other regulators and other industry professionals they have worked with on water matters over the years.

# Online Access

This paper can be accessed online at
http://www.nrri.org/pubs/water/NRRI_Small_Water_Dilemma_Oct11-18.pdf

# Executive Summary

When dealing with small water systems, the traditional regulatory model breaks down, for three main reasons. First, the primary tool employed by regulatory commissions to induce improved performance is the ability to reward or penalize shareholders, thereby focusing the attention of utility management on particular issues of importance to regulators. Because many small water systems have part-time, often absentee management and part-time employees, and because these systems contribute little or no compensation to the owners, that tool is ineffective. Second, most regulatory processes and tools, including filing requirements, templates, and timelines, require substantial utility staff, systems, and expertise that small systems do not have. Third, at the most basic level, many small systems do not have the scale to be viable operationally and financially; therefore, no amount of regulation, incentive or otherwise, will work in the long term.

This paper discusses the issues and problems associated with small water systems and proposes a menu of regulatory, legislative, local government, and other stakeholder options and tools to begin to address those problems. While there is no panacea, there are a variety of effective tools available. We focus not only on helping existing water systems but also on preventing the formation of new systems under conditions that will repeat the problems of existing ones.

The paper presents, at a practical level and with a recognition of the commission resources available, a series of processes, techniques, and tools for state regulatory commissions directed toward the types of problems, issues, and special needs of small water systems, which go well beyond setting rates and protecting ratepayers.

The recommended processes include the following:

- Developing a working inventory of the water systems;
- Assessing each system as to financial and operational viability;
- Assessing relevant statutes and regulations as they pertain to small systems;
- Assessing commissions' internal staffing, policies, procedures, and coordination with other state agencies;
- Developing a simplified and streamlined administrative approach;
- Implementing a ratemaking process which recognizes the realities of small systems; and
- Applying a methodology to prevent new systems from being built unless they are financially and operationally viable.

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# The Small Water Company Dilemma: Processes and Techniques for Effective Regulation

## *Part One: The Dilemma*

### I. Introduction: Regulation's Small-Water-System Problem

When we think of regulated utilities, we tend to think of recognizable entities, with attributes such as officers, boards of directors, shareholders, office buildings, trucks with names and logos emblazoned on their sides—all the trappings of successful ongoing companies.

Operating in the background or even under the radar are thousands of small, privately owned (e. g., nongovernmental) systems. Note that we use the term *systems* rather than *companies* deliberately, because a great many small systems are lacking most, if not all, of the company attributes mentioned above. And, unlike traditional telecommunications, electric, and gas companies, small water systems dramatically outnumber the larger ones. In many jurisdictions those small systems are, in theory if not in practice, regulated by state public utility commissions.

Following are a few anecdotes of situations encountered by the authors and, with minor variations, recounted by various other commissioners, staffers, lawyers, and consultants:

- A commission chair pleaded with staff to move small-water-company matters off the regular agenda of the commission's public meetings so they would not take up valuable commission time during that forum.

- A commission staff included a technician with a truck and tools working as a circuit rider repairing small systems. Occasionally, commission engineers would roll up their sleeves and join him in the trenches.

- An elderly widow of the developer handed commission staff a shoebox of receipts, a checkbook register, and the keys to the pump house when staff showed up on site.

- A commission did not have a working inventory of the known water systems subject to its jurisdiction.

- Certain professional disciplines at one commission refused to assign staff to small-water-company cases, citing a lack of staff time to handle those matters.

Collectively, the examples cited above illustrate the small-system dilemma: a large number of small systems with significant financial and operating deficiencies in a regulatory environment that was not designed to deal with them, and little hope for improvement on the horizon.

Rather than express shock at hearing stories such as these, many regulators nod in agreement and add their own anecdotes. What these stories illustrate collectively is the breakdown of the traditional regulatory model as applied to small systems. Fundamentally, traditional regulation operates through economic incentives and disincentives, by rewarding or penalizing shareholders based on company performance. In the case of small systems, the equivalent of a single shareholder is operating the water utility on a part-time basis, and there are no dividends. Add to that a few additional factors:

- Most commissions are funded through revenue-based assessments on utilities, but the revenues received from small systems are noncompensatory or nonexistent.

- Water issues are typically a commission's lowest priority, after telecommunications, electricity, and gas.

- The number of systems may appear daunting—there are typically many more small water systems than all other utilities combined.[1]

Yet in almost the same breath, regulators are quick to acknowledge the importance of water and water service and the fact that it is the only utility service ingested into the human body.

This paper presents, on a practical level, a series of processes and techniques for state regulatory commissions[2] to address the types of problems and issues illustrated above, as well as the special needs of small water systems, which go well beyond setting rates and protecting ratepayers. We are striving for the "sweet spot" on the sophistication spectrum, neither too simplistic to be effective nor more complex than necessary given the sizes of the systems and a reasonable level of regulatory resources. In summary, the recommended processes include the following:

- Developing a working inventory of the systems;

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[1] Some exceptions may apply. This excludes cable television companies and small wastewater systems, the latter sharing many of the same or similar issues as small water systems.

[2] As used here, the universe of commission extends beyond public utility commissions. Some jurisdictions have vested economic and other types of regulation in other state agencies.

- Assessing each system as to financial and operational viability;

- Assessing relevant statutes and regulations as they pertain to small systems;

- Assessing commissions' internal staffing, policies, and coordination with other state agencies; and

- Developing working processes to address each of the above.

In several places in this paper, we have inserted some of our own observations, clearly labeled as such. While admittedly based on a nonscientific sample, the themes recurred frequently enough to give us confidence that a significant number of commissions and staffers are experiencing the problems described.

## II. The Genesis of the Problems

The development of small water systems is usually unlike the development of other major utilities. When real estate developers build properties such as residential developments or strip malls, they connect to the local electric utility, the local telephone company, and the local gas utility if gas is available. They will also connect to the local water utility if there is one nearby and the costs are reasonable. It is highly unusual for developers to put in stand-alone telecommunications or electric utilities, and if natural-gas service is not available they will install propane or oil units, to be owned and maintained by the ultimate consumers. However, if the cost to run water from an existing system is too high, or if there are other obstacles to connecting to an existing system, the developers put in their own water systems.

Depending on the laws and regulations of the particular jurisdiction, there is a good chance that in doing so a developer becomes a regulated water utility, subject to the obligations and entitled to the benefits of regulation by the state utility regulatory commission. That is where many of the types of problems discussed in this paper begin. The developer did not set out to be a water utility, usually has no interest in being one, and wants to move on after building the property. He may not even know that he is a regulated water utility, or if so, he may not willingly accept regulation.

Nonetheless, many utility regulatory commissions have been delegated the statutory authority to regulate small systems. Sometimes the systems ended up under commission authority because of the very problems described, having been delegated that authority by well-intentioned legislators who believed that commission regulation would solve those problems.

So what is a regulator to do with these accidental utilities? Most regulators attempt to address the systems with the tools and devices at hand. This means that regulatory policies are often disproportionate to the special situations and needs of small systems. Few states have formal or informal policies on dealing with small water systems. For example:

- Filing requirements, such as for rate filings, are typically set up for larger entities.
- Commissions are not accustomed to going out hunting for companies to regulate.
- Larger companies recognize the legitimacy of commission regulation, regardless of their opinion of it. Small systems often exist under the commission's radar, whether deliberately or inadvertently.

Depending on the jurisdiction, regulators face several additional challenges:

- System design specifications and materials for a real estate development, whether or not it is destined to become a regulated utility, are frequently less stringent than those for a water utility.
- The cost of the water system is typically recovered in the sale price of the property. Initial water rates are often set using that assumption and provide for no capital recovery, as the initial rate base is considered as customer contributions.
- In some cases, commission staff has become the *contractor of last resort*. That is, while on site at a troubled system, they are pressed into service to perform physical repairs to the system to restore water service or maintain a failing system. And, while most of us would probably do the same thing in that situation, it is a classic enabling condition, and perpetuates the status quo.

## III. The Universe of Water Systems in the United States

As a frame of reference, we show below, in graphical form, total water systems, public and private, as estimated by the Environmental Protection Agency (EPA).[3]

[3] *National Characteristics of Drinking Water Systems Serving 10,000 or Fewer People*, US EPA, July 2011.

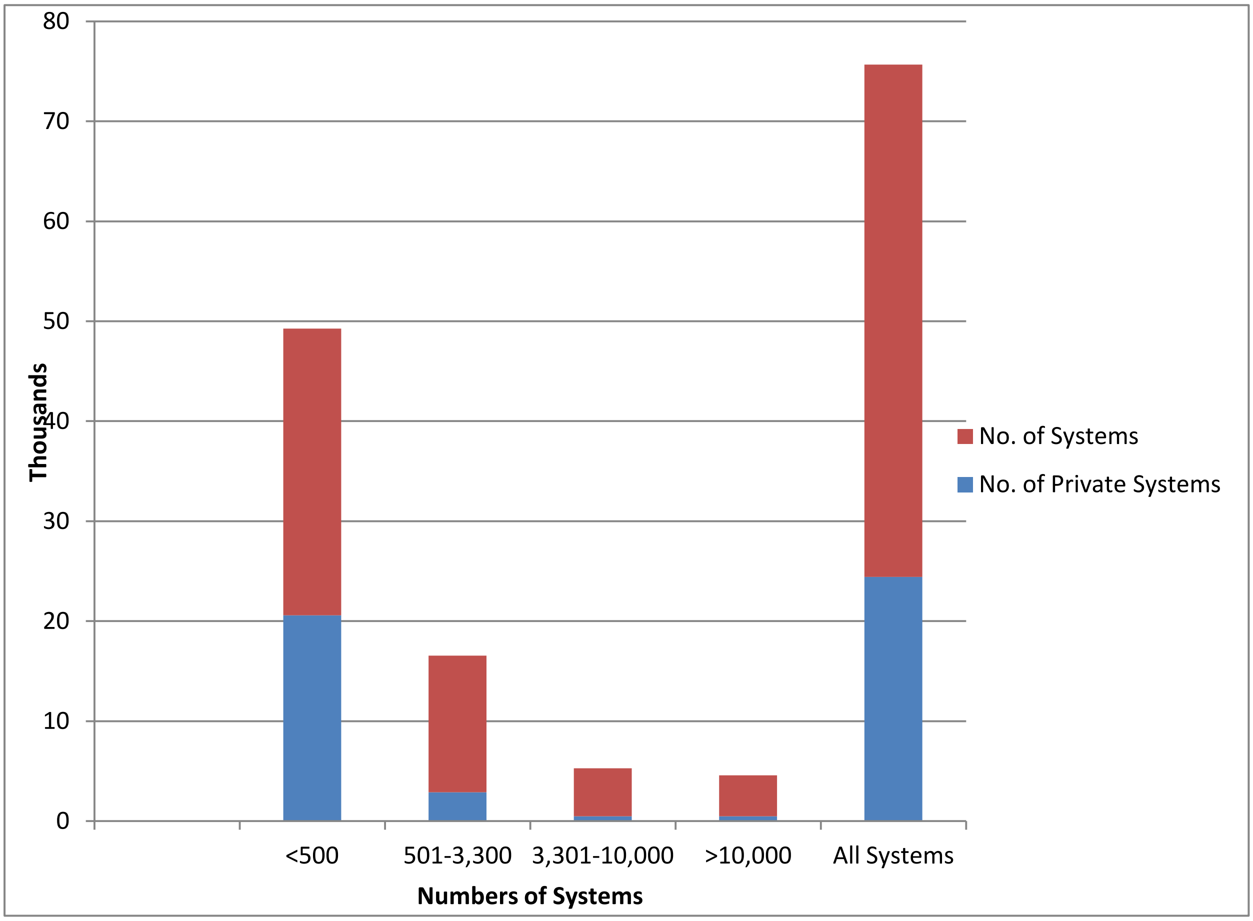


**Figure 1. Water Systems in the United States by Number of Customers Served**

Approximately 7,600 of those systems are regulated by 45 states, along with approximately 2,600 wastewater systems.[4]

While there is no precise definition for a *small system*, the EPA cutoff point of fewer than 500 customers for the smallest category of systems represents a reasonable demarcation point for

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[4] *Survey of Water and Wastewater Systems (Unpublished)*, Janice A. Beecher, Ph.D., Institute of Public Utilities, Michigan State University, 2009.

small versus medium to large systems. We will also refer to *very small systems*, which we will somewhat arbitrarily define as serving fewer than 100 customers.[5]

To convey a general idea of the differences between larger systems and very small systems, below are two generalized schematic diagrams of water systems. Figure 2 is a generic model of a medium to large system and Figure 3 is a model of a very small system. The medium to large system depicted in Figure 2 may have a variety of water sources, substantial physical plant, and serve a substantial number of different types of customers.

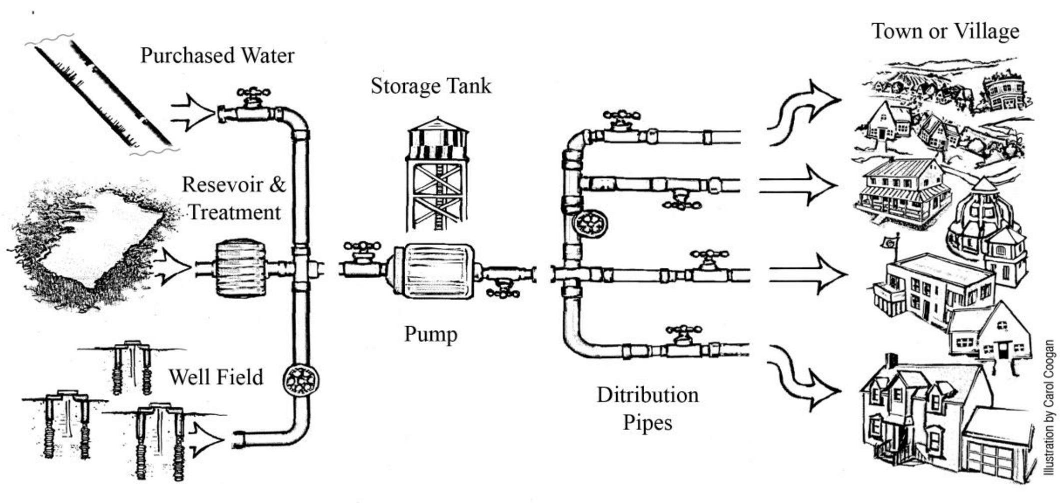


**Figure 2. Schematic of a Medium to Large Water System**

In contrast, Figure 3 below is a schematic of a very small system. It may have only a single well, a small pump house, and a handful of customers. Later in this paper, we illustrate such a system: a real-life example with 17 customers.

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[5] In recent publications, the EPA has defined small systems as those serving 10,000 or fewer people and very small systems as those serving 500 or fewer. Our working definitions, however, define *small* as serving 500 or fewer customers and *very small* as serving 100 or fewer.

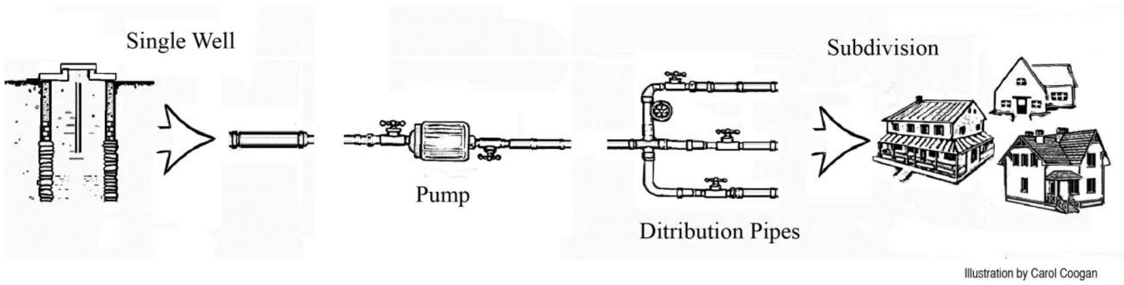


**Figure 3. Schematic of a Very Small Water System**

# *Part Two - Processes and Techniques*

Part Two of this paper presents a series of processes and techniques with which commissions can assess their particular situations and develop roadmaps for going forward. We also propose a menu of options that have enjoyed some level of success in various jurisdictions. On the one hand, there is no panacea, and the approach will vary with differing statutes, regulations, numbers and sizes of systems, and staffing and resource constraints. On the other hand, to quote Eric Thornburg, president and CEO of Connecticut Water Company and current president of the National Association of Water Companies (NAWC), "We know what to do; we just need the will to do it."

## IV. Assessing the Current State of Affairs

The first step in developing a regulatory strategy for a particular jurisdiction is the assessment phase. It involves assessing (a) the performance and needs of the regulated water industry in the jurisdiction, (b) the statutory requirements, and (c) the commission and staff's resources and readiness. While the three categories of assessment are presented in a particular order here, they can be done in whatever order best fits the needs of the commission. Ideally, assessment of the three categories should proceed more or less in parallel.

### A. Assessment phase

#### 1. Assessment of the water systems' performance

A commission should assess its water industry on several levels. On the basic level, assessment involves inventorying all jurisdictional water systems, gathering basic facts and statistics about each one. Basic facts and statistics include system name, location, name and address of the operator, number of customers, annual sales of volumes, plant in service, revenues, and expenses. This task does not require a sophisticated database; a simple spreadsheet database will do nicely. A sample format is included as Appendix 1. While it sounds simple, we have come across situations in which this information was available collectively from the staff—subject to evaporation if a crucial staff person retired—but was not aggregated in one place, ready for use.

The next level of assessment is the development of a sustainability rating for each system. We define a *sustainable system* as one that is both financially and operationally viable in both the short and foreseeable terms. Figure 4 below presents one way of looking at sustainability, using what we call the Sustainability Grid. It involves assessing each system using a scale and level of sophistication selected by staff to make a determination as to whether a system is sustainable as it currently exists, and if not, whether it can reasonably be made so.

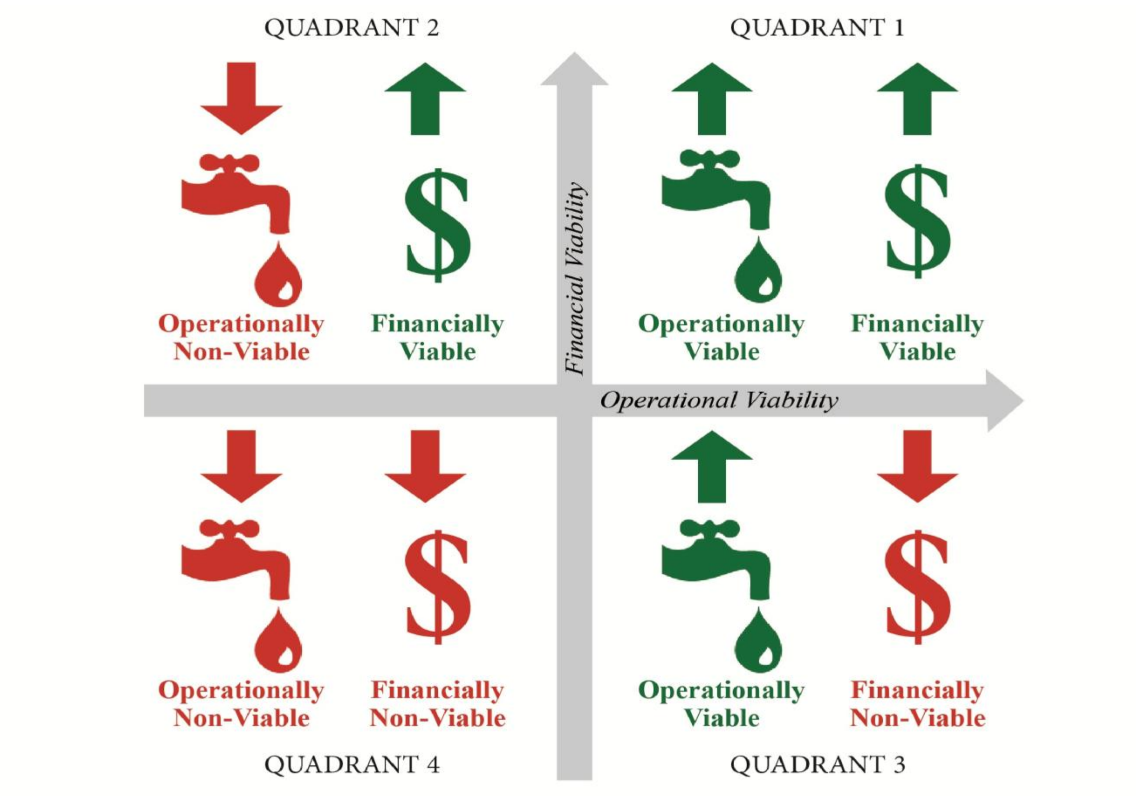


**Figure 4. Sustainability Grid**

As depicted in Figure 4, there are four possible states that a system can occupy:

- **Quadrant 1: Financially viable, operationally viable** – a system that has the financial resources to continue operations and provide a reasonable level of service, the condition that we wish all of our systems were in.
- **Quadrant 2: Financially viable, operationally troubled** – a system in reasonable shape financially but for various reasons providing an inadequate level of service.
- **Quadrant 3: Financially troubled, operationally viable** – a system under financial pressure but able to provide a reasonable level of service currently and into the future if the financial problems are addressed.

- **Quadrant 4: Financially troubled, operationally troubled** – a system under financial pressure and providing an inadequate level of service.

Depending on the detail and quality of the data available, the analysis performed, and the level of precision desired for the outcome, the ratings will range from very simple to highly refined. A basic analysis would be to have staff express informal opinions as to the ratings for the various systems. The reader should not underestimate the value of organizing into quadrants even general, unsophisticated information. The gathering process itself has value, because it is not unusual for an under-resourced staff to be unaware of the conditions at small systems that have not been before the commission for several years. If a system has not filed for rates in recent memory and has not had a noticeable number of customer complaints, there is a good chance this will be the case.

A suggested framework and model for assessing the sustainability of individual systems in order to plot them on the Sustainability Grid is included as Appendix 2.

Some of the basic elements to be considered in that framework include:

- ***Physical facilities*** – age, current performance, maintenance history, adequacy of capacity, and potential need for expansion.

- ***Management and operations*** – existence of, capabilities of, and performance of business manager, system operator, employees, or contractors.

- ***Financial condition*** – adequacy of rates to fund ongoing operations, availability of funds for current and future capital improvements.

Let's assume we have six known systems and have completed an initial assessment, not involving detailed analysis (i.e., a "ballpark approach"), with the following results:

System 1: A solid performer, in good shape financially and operationally.

System 2: A financially marginal system, but in good shape operationally, having good physical plant and a good operator.

System 3: A financially troubled system, but in good shape operationally.

System 4: A financially sound system that is poorly operated and in need of significant rehabilitation.

System 5: A financially sound system that is marginally operated and in need of some rehabilitation.

System 6: A financially and operationally troubled system.

Figure 5 depicts those systems plotted on the Sustainability Grid:

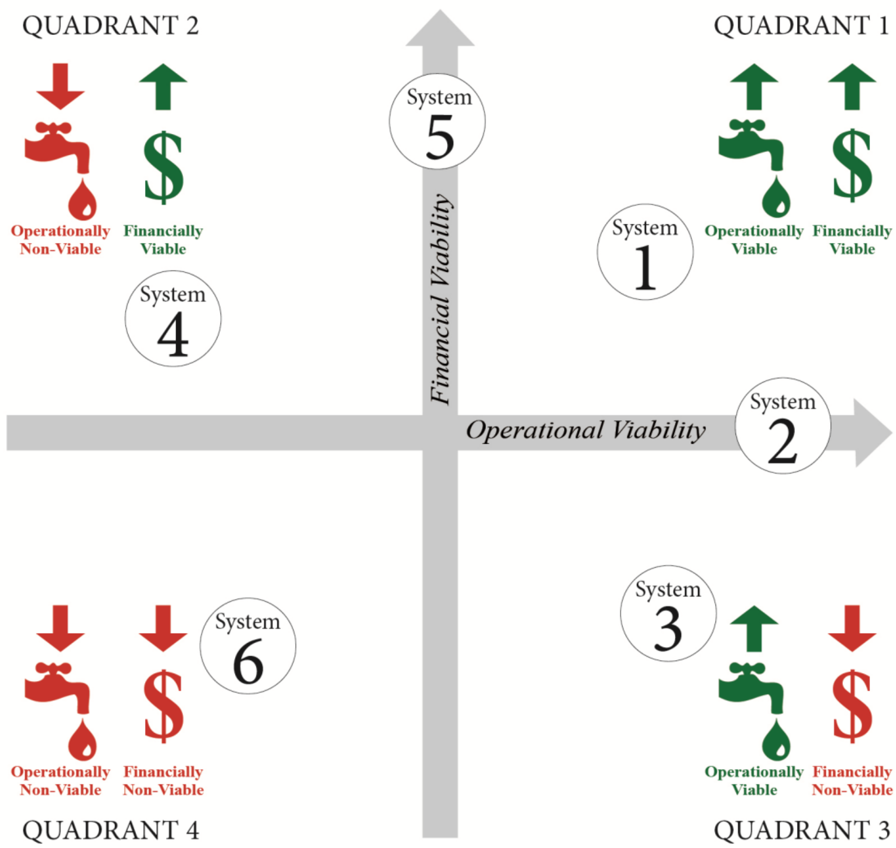


**Figure 5. Sustainability Grid with Systems Plotted**

Continuing on, we can populate the chart with all known systems in the jurisdiction. By the time this exercise is complete, we will have a good idea of the state of our knowledge about the systems in the jurisdiction, the conditions of those systems, and how much work we have ahead of us. If a higher level of precision for some or all of the systems is desired and reliable data is available, a second iteration should be performed using more refined metrics by substituting more specific criteria for the general rankings shown in Appendix 2.

***Observation:*** *The inventory and sustainability knowledge is available collectively from staff for most systems that have experienced recent regulatory activity (e.g., rate cases or financings), but does not exist in one place in a readily accessible format. For systems that have not had recent regulatory activity, the information and knowledge may not be in-house at the commission.*

After populating the Sustainability Grid, we should have a fairly good idea of what we need to do to get to a sustainable path for all of our systems. Quadrant 1 systems are obviously the preferred outcome. In our experience, most Quadrant 4 systems should not be in the business as stand-alone systems, either because they cannot reasonably be made sustainable or because the level of effort required to get them there is prohibitive. Quadrant 2 and 3 systems are somewhere in between, depending upon the severity of the operational or financial issues they face.

We now turn to developing the road map. Figure 6 depicts the decisionmaking path for dealing with the systems assessed.

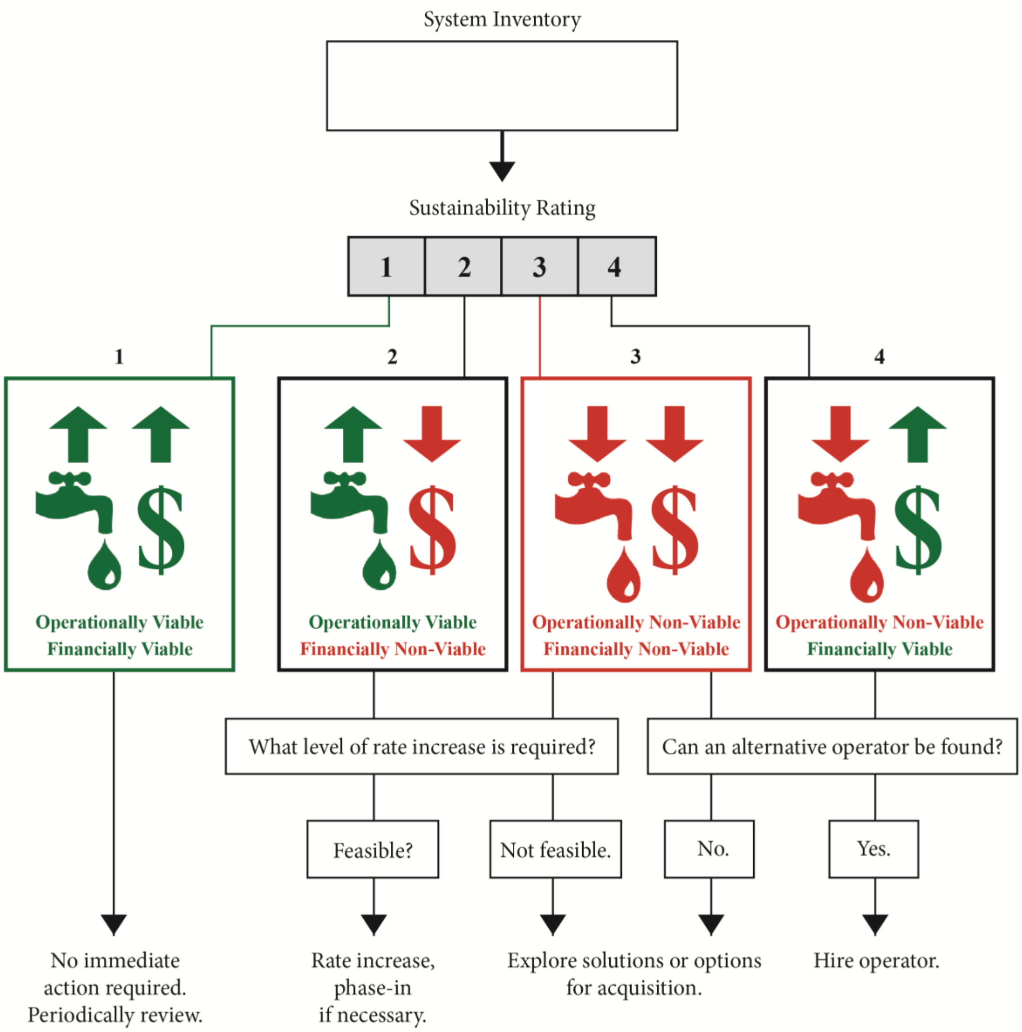


**Figure 6. Path to Sustainability**

### 2. Assessment of statutes and regulations

This assessment involves an examination of the statutes, rules, and regulations governing water systems in the jurisdiction. Ideally, it will include an assessment by not only the commission, but also the other agencies having oversight authority over water systems, typically departments of health and departments of environmental protection or similar.[6] The assessment includes an identification of the relevant statutes, a legal analysis of what those statutes require, a legal analysis of any precedents that have been set, and a legal interpretation in gray areas. A similar assessment should be performed for the relevant rules and regulations.

Although outside the direct control of the commission, the other regulatory agencies add to the complexity of the operating and regulatory environments. Thus, it is also useful for the *commission* to examine the related statutes of other agencies. Some statutes identify opportunities for early intervention in situations where the commission does not have final authority. This includes, for example, filing comments, participation in hearings, or discussions with staff.

The statutory and regulatory review should include authorities and requirements for new systems as well as existing systems. If a new system is planned and the expected number of customers puts it below the threshold of commission regulatory authority, as is the case in at least one jurisdiction we are aware of, there is a good chance that someday it will cross that threshold. The commission should look for an opportunity for early intervention—and seek statutory change to allow that intervention.

A sample format and outline for this assessment of statutes and regulations is included as Appendix 3.

Key parameters to look for include the following:

- The specific authority delegated to each involved agency.
- Whether agencies are statutorily empowered to set additional requirements for existing or new systems.
- Whether agencies are required or encouraged to consult with one another.

***Observation:*** *The knowledge is available collectively from staff, but is not aggregated in one place in a readily accessible format. Where the statutory review has been done, it is often ad hoc, dated, and not necessarily reflective of current legal thinking. Interpretations often change over the years.*

[6] See also Section VIII.A., below, where we recommend a multi-agency working group.

### 3. Commission internal assessment

This can be the most difficult of the three assessments because it involves a look in the mirror, an objective analysis of internal resources and capabilities. The end result is to determine what can be reasonably accomplished with existing resources and, if necessary, what additional resources are required—and available—to address the desired activities. Topics to be addressed include the following:

- ***Staffing*** – What are the staffing levels? Are staff members dedicated full-time or part-time to water matters? What is their level of experience and expertise? How flexible are they? Are small systems demanding too much staff time and thereby diverting staff resources from more effective and essential tasks? Is crisis response diverting staff from crisis prevention? These questions need to be asked with respect to engineering, accounting, financial, and legal skills.

- ***Commission policies*** – Does the commission have a policy statement addressing existing small water systems and the creation of new systems? Does the commission have internal procedures addressing matters involving small water systems? In both cases, are the staff members handling water matters familiar with them?

- ***Legal analysis*** – This flows from the earlier assessment of statutes and regulations. What explicit authority does the commission have? What explicit authority do the other agencies have? Is the commission exercising the full extent of its authority? Are other agencies exercising the full extent of their authorities? What are the gaps in statutory authority, and how can those gaps be eliminated?

- ***Interactions with other regulatory agencies*** – What influence does the commission have on the actions of other agencies, and vice versa? What is the frequency and content of the communications with the other agencies?

A sample format and outline for the commission internal assessment is included as Appendix 4. A more comprehensive approach could include evaluating commission staff and policies in a fashion similar to that recommended for evaluating systems, as illustrated in Figures 4 and 5.

***Observation:*** *Interagency communications, coordination, and cooperation represent one of the most significant opportunities for improvement. Agencies tend to focus on their own responsibilities, not those of other agencies. In fact, there are sometimes turf issues, and agencies are often reluctant to meddle in activities of others. For example, departments of health and environmental protection often set requirements and approve plans independent of costs. Then, at some point in the future, those costs come home to roost at the commission.*

## V. The Path to Sustainability

Having read this far, many regulators will find that they have much work ahead of them. The size of the task will appear daunting. Indeed, if that were not the case, this paper would not have been written. This is a good time to insert a few cautions:

- The above assessments may be performed in whatever level of detail is desired and feasible, from a single brainstorming session to a detailed analysis. The sophistication of the analysis will depend upon the staffing resources and quality and quantity of data available, balanced against the benefits to be derived. In some cases, data is so sparse and unreliable as to render any but the most basic analysis moot. But some action is better than no action.

- This process will be iterative. Each of the three assessments feeds into the other two. A commission that has a well-developed inventory of water systems it regulates and is aware of the specific issues associated with those systems will have a much easier time assessing and matching staffing resources and agency preparedness to the needs of the systems. At the other end of the spectrum, a commission less knowledgeable about the state of its small water systems may have to cycle through the process several times.

- Addressing the needs of *existing systems* (remediation), and ensuring that any *new systems* created are financially and operationally viable (prevention) are best considered as two discrete activities. We discuss remediation and prevention in Parts VI and VII, respectively, below.

- Sometimes the best option is to get the existing owner/operator out of the water business, using whatever means are available under the commission's authority. If a system is in Quadrant 4 of Figure 2, the odds are fairly good that this is the case. If a system is in Quadrant 2 or 3, it may or may not be salvageable as a standalone system.

- Similarly, sometimes the best option for a potential new system is to prevent that system from being built unless and until it can be demonstrated to be viable.

After the initial assessments are completed, or far enough along to begin working on solutions, there are some basic actions to move existing systems onto a sustainable path and ensure that any new system created is similarly on a sustainable path.

### A. Streamlined regulation

Fundamental to sustainability is the need for streamlined commission regulation for small systems. By "streamlined," we do not mean abandonment or reduction of regulatory responsibility. We mean size-appropriate regulation, regulation tailored to the size of the systems. Consider, for example, the cost of a basic rate filing. A small operator rarely has the skills to handle it and must hire a consultant. In our experience, $20,000 is a typical price to pay for consulting and legal services for a small-system rate case. For a 100-customer system, that works out to $200 per customer. If we assume an average annual bill of $700, that's a steep price for regulation. Even when amortized over three years, it is difficult to justify that cost.

As well, the timelines of rate cases are often unrealistic for small systems. A six- or nine- or eleven-month period for a system of fewer than 100 customers (and perhaps as few as 17, as in the example in the next section) is an artifact of a regulatory construct set up for large utilities, as opposed to a well-thought-out template for small systems.

Streamlined regulation also includes a more rational rate-setting policy geared toward small systems, as addressed in Part V.B below.

While this activity is state-specific and involves an investment of staff resources in the short run, it will provide substantial payback over the longer term. Some of the items for consideration include:

- ***Simplified filing requirements***, with templates provided, perhaps in tiers for systems with fewer than 100 customers, 100 to 500 customers, and so on, with revenue-level thresholds to address larger customers.

- ***Short time frames*** for small systems, on the order of two to three months.

- ***Standard allowances*** for management and operations expenses and professional services, provided that the operator meets certain requirements such as maintaining an operating reserve or escrow account.

***Observation:*** *Some states offer streamlined reporting and filing options for small systems, with varying degrees of success. Streamlined filings need to be coupled with a shorter time frame and sustainable rates.*

### B. Sustainable rates

Also fundamental to sustainability is the concept of sustainable rates. Let's consider a few examples of small-system economics, based on our experience with several real-life systems in the Northeast:

| System | No. of Customers | Annual Revenue Requirement | Average Cost Per Customer[7] |
|---|---|---|---|
| A | 415 | $136,271 | $328 |
| B | 70 | $34,744 | $496 |
| C | 17 | $14,511 | $854 |

System A is similar to the system we introduced in Figure 2, Schematic of a Medium-to-Large System. System C looks, schematically, something like the system in Figure 3, Schematic of a Very Small System.

Now let's apply some conventional rate-case logic to the numbers. We have seen, on numerous occasions, a staff analysis and logic similar to the following:

> *A $328 average annual residential rate, as applied by System A, is reasonable for water service. An annual rate of $496, as applied by System B, is on the high side, but within an acceptable range. A rate of $854 for System C, on the other hand, is too high and staff cannot recommend it. On a cost-per-customer basis, that rate includes:*
>
> | | |
> |---|---|
> | *Operations Expenses*[8] | *$555* |
> | *Variable Costs*[9] | *$215* |
> | *Depreciation, Return, Taxes* | *$84* |
> | ***Annual per-Customer Bill:*** | ***$854*** |
>
> *What can staff do to bring that $854 down to what it feels is a more reasonable level? Well, the system was built and is operated by a local real estate developer who generally works in the area, and whatever minor work needs to be done on the system is done by his crew. He recovered the capital costs of the system in the prices of the houses, so that's a double dip. Also, his wife is his bookkeeper, so administrative costs are not an out-of-pocket cost. Staff estimates those costs can be cut in half.*
>
> *In addition, a developer with a 17-unit residential development didn't set himself up to run a water company, and he recovered the cost of the system in the prices of the*

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[7] E.g., the calculated revenue requirement on a per-customer basis

[8] Operator fees, professional fees (e.g., accounting), rents, repairs, property taxes

[9] Chemicals, testing, purchased power, purchased water (if applicable)

*houses.*[10] *So he should not be allowed to take depreciation, and certainly not a return on his investment when he's already recovered it.*

*After making those adjustments, staff's calculation looks like this:*

| | |
|---|---|
| *Operations Expenses* | *$278* |
| *Variable Costs* | *$215* |
| *Depreciation, Return, Taxes* | *$0* |
| ***Annual per Customer Bill:*** | ***$493*** |

*That appears to be a much more reasonable annual rate per customer—$493. Staff recommends the commission approve an annual revenue requirement for System C that will result in that average rate.*

What we've just illustrated here, in this hypothetical but all-too-real example, is the creation of a non-sustainable system, a troubled system for the next generation of regulators. When the developer retires, or leaves the area, or dies and the spouse inherits the system, or the pump fails, or there is a problem with contamination, the system may fail immediately, because there was no provision for a management fee and no accumulation of a capital or emergency reserve.

In our view, System C rates should be set at the fully compensatory average annual rate of $854. That is the sustainable rate. In the alternative, the system should be acquired by a larger system. If that level of rates was not acceptable at the time the development was planned, the water system should not have been approved.

Equally important here is what we have not said. We have not said that the difference between the $854 and the $493, or $361 per customer, should go into the developer's pocket. We describe how to deal with that in Part VI below.

## VI. Regulatory Options for Remediating Existing Systems

This section includes a variety of options for addressing troubled systems. They are not mutually exclusive, and they involve parallel paths. We stress that there is no one-size-fits-all solution and that not all options are applicable to all systems.

[10] The equivalent of customer-contributed capital, on which utilities are typically not allowed to earn a return.

## A. Ratemaking tools

As we have previously discussed what we believe to be the proper level of rates in Section V.B. above, we will not repeat it here, other than to emphasize that sustainable rates are critical to existing systems as well as new systems

This sometimes poses a dilemma for staff. Regulators are reluctant to allow a return on the capital investment and recovery of that investment through depreciation when in all likelihood the developer was fully compensated for that investment through the sale of the properties and when he may put the additional funds not required immediately to run the business in his pocket. However, there are a number of well-established mechanisms for collecting and administering the funds and for ensuring that they are reserved for the intended purposes—that is, for replacement of infrastructure, emergency repairs, and similar uses. New systems undergoing development as part of a multiyear construction project may also require special treatment, depending upon the costs involved.

Following is a brief discussion of a variety of special mechanisms for addressing the issues associated with small water systems.[11, 12]

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[11] Further information about these mechanisms is available from a variety of sources. See, e.g., *How Should We Regulate Small Water Utilities?* Scott J. Rubin, J.D., NRRI Publication #09-16, November 10, 2009; *Small Water Systems: Challenges and Recommendations*, Melissa J. Stanford, NRRI Publication #08-02, February 2008; *Water Policy Forum for State Public Utility Commission Staff*, National Association of Water Companies Summary Report, December 2010.

[12] Although most of the systems that are the focus of this paper are not members of trade associations and will likely never become members, the National Association of Water Companies (NAWC) and other organizations also can be valuable resources. For example, NAWC has assembled a comprehensive listing of regulatory practices together with a state-by-state assessment of a number of important state regulatory practices, including infrastructure-improvement charges, test years, acquisition adjustments, treatment of construction work in progress, revenue decoupling, pass-through adjustments, rate consolidation, mediation and settlement procedures, and time frames for rate cases. Further, NAWC has assembled a list of regulatory contacts on the preceding topics and a number of other regulatory practices. NAWC also maintains a variety of other documents, publications, and other resources either on or available from its web site.

### 1. Rate-setting mechanisms

As we discussed in Section V.B., conventional ratemaking often breaks down for small systems. Below are a number of special mechanisms to be considered in those cases:

a. Allowing an operating cushion or development of an operating reserve in the ratemaking calculation, such as through use of an equivalent rate base calculation.[13]

b. Allowing the equivalent of depreciation expense, even where the initial investment for plant in service is considered customer-contributed capital, and putting those funds into a reserve account.

c. Allowing the equivalent of a return on investment, even where the initial investment for plant in service is considered customer contributed capital, and putting those funds into a reserve account.

d. Surcharges on bills to fund specific activities or to build up a reserve.

e. Infrastructure adjustment clauses or similar—a mechanism to allow for recovery of non-revenue-producing investments to replace aging infrastructure.

### 2. Administration and tracking mechanisms

If the funds are collected using one of the above or some other mechanism, following are some potential ways to track them and control their uses:

a. Escrow accounts—rather than a simple bookkeeping entry, this involves setting up a separate bank account from which funds are withdrawn only for specified purposes. The commission may elect to require the operator to receive commission approval, notify the commission, or certify as to the use of the funds withdrawn.

b. Operating reserve accounts—similar to an escrow account without the dedicated bank account.

[13] The rate base that would be calculated if the plant were funded by debt and equity (as is typical of most utility plant in larger utilities) rather than recovered in the price of the houses.

### 3. New-system phase-ins

A new system may be phased into rate base along with a deferral mechanism for investment not recovered during the deferral period. For example, assume a 100-unit development is being built in stages over five years, and the first stage includes ten houses. Most of the common plant (e.g., wells, pumps and pump house, and primary mains) would be built in the initial stage, but it would not be reasonable to load all those costs on the first 10 houses until others are built and sold. This may be addressed by developing a full build-out rate and deferring some of the cost components contributing to that rate, such as the capital recovery and depreciation components related to common plant, until a predetermined number of units have been completed and sold.

## B. External financing tools

The primary *potential* source available to small systems is the Clean Water State Revolving Fund (SRF), established under amendments to the Clean Water Act in 1987. Each state operates an SRF, funded through federal-government grants (80%) and state matching funds (20%). Administration is by the states. Twenty-seven states have issued tax-exempt revenue bonds to further increase the funds available. General information is available from the EPA,[14] with applications specific to each state.

However, while large systems typically are equipped to handle it, the application process can be daunting for small and very small systems. This is an area in which coordinated state-agency action and trade-organization action can provide some assistance, in terms of preparing a simplified application system and assistance in applying. It is also an opportunity to include, as conditions for approval of loans, requirements or incentives for consolidation of systems and for sustainable rates.

## C. Incorporation into a larger water system

In our experience, and for the reasons discussed throughout this paper, many systems are too small to succeed. They do not have the critical mass, in terms of numbers of customers, revenues, and dedicated operators, to operate and maintain small water systems on an ongoing basis. Many are accidental utilities, as we described in Part II above, and the owners would be pleased to get out of the business. Again, in our experience, most, if not all, of the systems in Quadrant 4 of Figures 4 and 5 and some of those in Quadrants 2 and 3 are in that category.

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[14] *Clean Water State Revolving Fund*, US EPA, http://water.epa.gov/grants_funding/cwsrf/cwsrf_index.cfm

If, in fact, the sustainability analysis illustrated in Figure 6 leads to a conclusion that an owner should get out of the business, there is the *mandatory* option, where allowed by statute or regulation, and the *encouragement* option. In some jurisdictions, the commission has the statutory authority to mandate that a system be taken over by another system. While this is an attractive solution, it comes with its own set of caveats. The problems don't go away; they must be addressed by the acquiring system. While some of the incremental costs of bringing the system up to par are in a sense absorbed by the economies of scale of the acquiring system, there may be an acquisition premium involved or the new system may need an infusion of capital. The commission must recognize those costs and allow them in the cost structure of the acquiring system, or the process of improving the small, acquired system will be offset by a deterioration, albeit much smaller in scale, of the acquiring company.

For example, if the 17-customer system in our rate example in Section V.B. were to be acquired, it would likely result in the reduction in rates to its customers, and a potential increase in rates for the existing customers of the acquiring company to handle any needed capital infusion as well as an acquisition premium, if allowed.[15] The consequences to the acquiring system, when looked at in isolation, are not very appealing. But over the long term, as consolidation occurs, fixed costs and associated rates of the acquiring system decline on a unit basis as they are spread over a larger customer base.

If the mandatory option is not available statutorily, commissions have a variety of incentive and penalty mechanisms to encourage acquisitions. Potential incentives include recognition of an acquisition premium, as well as incentive rate of return, zone rates, or phase-ins of rate increases.

***Observation:*** *Most commissions have an aversion to allowing recovery of an acquisition premium by the acquiring entity. Many jurisdictions will allow recovery of an acquisition premium in special cases. A classic special case in which premiums are allowed is the commission-mandated or commission-encouraged takeover of a troubled system.*

*Such a premium is typically not allowed in a takeover of a well-performing system. We would call this a* perverse incentive. *Small systems present an interesting conundrum that we think mandates a revisitation.*

[15] This assumes that the rates of the acquiring system were lower than those of the 17-customer system.

### D. Alternative manager and operator

Among the alternatives to acquisition by a larger system are:

1. ***Contract management and operations*** – An external entity is hired by the owners to operate or manage and operate the small system. For medium to large systems, there are many examples of situations in which this has been successfully employed. For small to very small systems, it's a somewhat different animal. Rather than a large utility system with a contract operations subsidiary, it may be a plumbing contractor or, for a very small system, even a local handyman. This requires a flexible outlook on the part of the system owner and the commission.

2. ***Homeowners' associations*** – A homeowners' association manages the water system either directly or through hiring a contract manager and operator. This option has pros and cons. On the one hand, the customers live there, provide their own funding, set their own rates, and have nobody to pass the buck to. On the other hand, they may suffer from lack of continuity on their boards, lack of the requisite managerial skills, and internal disagreements.

## VII. Regulatory Options for New Systems

To prevent the small-system dilemma from perpetuating itself, it is critical to ensure that any new small systems are sustainable when created. This section proposes several options toward that end. Many of these options are similar to those for existing systems. Where that is the case, we will not repeat the sections, but merely highlight the differences.

### A. Assessing initial capabilities

The EPA has provided guidelines for systems to acquire and maintain technical, managerial, and financial (TMF) capabilities for water-system management.[16] While a discussion of those specific capabilities is beyond the scope of this paper, they are readily available from EPA and provide a solid basis for the state regulatory agency with authority over establishment of new systems to make the decision as to whether to allow a new system to be created.[17]

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[16] See, e.g., *National Characteristics of Drinking Water Systems Serving 10,000 of Fewer People*, July 2011; National Capacity Development Strategic Plan, January 2008 www.epa.gov/safewater

[17] EPA's primary enforcement tool in this regard is tied to the granting or withholding of State Revolving Fund monies available to states for the small systems. Our focus is not on the

### B. Sustainable initial rates

We have covered rate policies with respect to existing systems. The logic for new systems is identical, with the clear intent that initial rates support a sustainable system.

### C. Turning over the completed system to an existing system

In Part III of this paper, we discussed a typical example of how a small system originated. While an existing private or public entity may not be interested in building a system, it may have an interest in owning and operating the system, particularly if the unit costs of serving the new system are in line with or lower than the public entity's costs. Privately owned systems are often built because the cost of connecting to a public entity is too expensive. Once the system is built and operational, however, the existing system may find it acceptable to take over the new system, particularly when the developer or owner has no interest in operating the system and has recovered his cost through the sales prices of the properties.

### D. Outreach and education

Also in Part III, we discussed developers' lack of awareness of or ambivalence toward commission regulation. On the other hand, developers are business people capable of understanding the business and regulatory environment when it is presented to them at the initiation of a project. We recommend preparing specifications, fact sheets, and copies of EPA TMF requirements and providing them to developers. This will provide developers the opportunity to do it right the first time, a far easier step than making changes after the fact.

Once the inventory of systems (Appendix 1) is complete, it could be made available on the commission website, accessible to all or limited to those who demonstrate certain credentials as specified by the commission. Small-system owners could then see where they stand among their peers, and larger companies would have ready access to systems' contact information and financial and operational data. The ready access to data should facilitate opportunities for mergers and acquisitions.

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funds per se, but rather that the heavy lifting has been done by the EPA in terms of having developed a set of criteria that may be relied upon by state commissions.

## VIII. Governmental Options for Improving Regulation of Existing and New Systems

### A. Assessing initial capabilities

This paper has recommended against allowing any system to go into operation unless it has all the prerequisites for financial and operational viability. In concept, this is fairly simple. The EPA has provided the TMF playbook we described above.

However, the three dimensions of viability—technical, managerial, and financial—are often within the purview of several different agencies. Further, in some states, the commission is not even at the table when a system is being approved.[18]

In jurisdictions where the commission does not have approval authority over the startup of a new system, some statutes or regulations provide opportunities for intervention. Further, the agencies in which approval authority is vested may be able to seek commission advice and assistance in evaluating financial and operational viability, if those parameters are outside their core expertise. This ties back to our earlier discussion of communication and coordination among agencies.

With respect to existing systems, individual agencies are frequently unaware of directives or mandates to systems until they are confronted with them in emergency situations, e.g., the utility regulatory commission does not learn about the health department's mandate to install a treatment facility until the system needs a large rate increase to support it.

We recommend a multi-agency group, which would meet periodically, to discuss common issues, such as problem systems, pending changes in statutes and regulations, enforcement issues, and applications for new or expanded systems.

### B. Requiring installation of high-quality physical plant

All water-supply systems are not created equal. There are different grades of material and different installation practices. Utilities tend to install long-lived physical plant, generally superior in quality to homeowner-grade plant. If a system is to be considered a utility and function as one, the facilities should be utility-quality and built to utility standards.

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[18] Consider, for example, one state in which by statute the commission does not regulate systems below a statutorily specified number of customers or rate level; when one of those categories is exceeded, however, the system falls under commission regulation.

This is a candidate for regulations, where allowed by statute, or potential legislation, as well as outreach and education to developers, municipal planning boards, and other entities involved in approving construction activities.

### C. Regionalization

In many cases, annexation by municipal or county systems is an attractive option, to be pursued through outreach and education by commission staffs to county and municipal boards and employees via presentations, briefings, informational brochures, and other avenues.

### D. Legislation

Commissions sometimes have the opportunity to prepare and submit proposed legislative initiatives. At some commissions, it is an annual event. This presents opportunities to provide for commission authority to order takeovers by larger systems, deny approvals to non-viable new systems, and set requirements for new systems. Commission staff may provide background information to legislators, develop draft legislation and supporting materials, and develop support for proposals.

## Conclusion

Many small water systems present unique challenges to regulators because they are not responsive to traditional regulatory processes and tools, have minimal numbers of management and operating personnel, and do not have the scope or scale to be viable operationally or financially. This paper has outlined a practical approach to identify troubled systems, develop and apply regulatory policies and procedures tailored to the issues and problems associated with small systems, and prevent the development of non-viable new systems. While it requires an additional level of staff resource commitment in the short term, it will improve regulatory effectiveness and minimize the number of troubled small systems over the longer term.

## Basic Inventory of Regulated Systems

| System Name | System Location | Class | Owner/Primary Contact: Name, Address, Phone | Operator: Name, Address, Phone | No. of Customers | Annual Operating Revenues | Annual Operating Expense | Average Annual Bill | Net Income | Most Recent Rate Case |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
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Appendix 2

# Small System Sustainability Assessment Criteria

Operational Viability as Currently Owned, Operated and Maintained:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Nature of physical facilities ............................................ *(homeowner grade - utility grade)* | | | | | |
| 2. Age of the system .......................................................... *(old =1, new =5)* | | | | | |
| 3. How well has system been maintained? .......................... *(poor = 1, well = 5)* | | | | | |
| 4. System performance ....................................................... *(poor = 1, well = 5)* | | | | | |
| 5. Expansion needed? ......................................................... *(now = 1, 10 years + = 5)* | | | | | |
| 6. Immediate operational needs? ......................................... *(significant needs - 1, none = 5)* | | | | | |
| 7. Does system have a business manager? .......................... *(no = 1, yes = 5)* | | | | | |
| 8. Does system have an operational manager? .................... *(no = 1, yes = 5)* | | | | | |
| 9. Rate business management performance ........................ *(poor = 1, good = 5)* | | | | | |
| 10. Rate operations performance? ..................................... *(poor = 1, good = 5)* | | | | | |

Financial Viability as Currently Owned, Operated and Maintained:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Are rates fully cost compensatory? .............................. *(1 = no, 5 = yes)* | | | | | |
| 2. Do rates cover operating expenses? ............................. *(1 = no, 5 = yes)* | | | | | |
| 3. Can system pay for capital improvements? ................. *(1 = no, 5 = yes)* | | | | | |
| 4. How do rates compare with other systems? ................. *(1 = lower, 5 = higher)* | | | | | |
| 5. Date of last rate increase? ............................................ *(1 = > 10 years ago, 5 = within last year)* | | | | | |

Overall System Sustainability as Currently Owned, Operated and Maintained:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| • Operational Viability? .................................................. *(1 = no, 5 = yes)* | | | | | |
| • Financially Viability? .................................................. *(1 = no, 5 = yes)* | | | | | |

**Appendix 3**

# Statutory and Regulatory Assessment

| Regulatory Authority | PSC | DOH | DEC | Other Agencies |
|---|---|---|---|---|
| **Who Has Authority Over:** | | | | |
| • Thresholds for New and Existing Systems | | | | |
| ○ Minimum number of customers specified? | | | | |
| ○ Rate levels | | | | |
| ○ Revenues | | | | |
| • Water Supply | | | | |
| • Water Quality | | | | |
| • Physical Facilities - Adequacy and Quality | | | | |
| • Rates | | | | |
| • Service Quality | | | | |
| • Ability to Impose Additional Requirements | | | | |

Appendix 4

# Commission Internal Assessment

*Rate assessment between 1 (lowest rating) to 5 (highest rating) in each category.*

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| I. Inventory of Systems | | | | | |
| II. Staff | | | | | |
| A. Level of resources | | | | | |
| B. Areas of expertise | | | | | |
| a. Engineering | | | | | |
| b. Accounting | | | | | |
| c. Financial | | | | | |
| d. Legal | | | | | |
| C. Experience level | | | | | |
| D. Flexibility | | | | | |
| III. Policy and Legal Assessment | | | | | |
| A. Policy statement on small systems | | | | | |
| B. Knowledge of statutory requirements | | | | | |
| C. Working knowledge of statutes and regulations | | | | | |
| D. Legal interpretations | | | | | |
| E. Legal precedents | | | | | |
| IV. Strength of Regulation Oversight | | | | | |
| A. Commission | | | | | |
| B. Department of Health | | | | | |
| C. Department of Environmental Protection/Conservation | | | | | |