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CONSOLIDATED WATER RATES: Issues and Practices in Single-Tariff Pricing

September 1999

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Consolidated Water Rates: Summary

Purpose

Consolidated rates or single-tariff pricing is the use of a unified rate structure for multiple water (or other) utility systems that are owned and operated by a single utility, but that may or may not be contiguous or physically interconnected. The purpose of this report is to provide policymakers and other stakeholders with an overview of consolidated ratemaking and an appreciation of the complex trade-offs involve in its implementation.

The report provides a review of historical, theoretical, and practical issues related to consolidated ratemaking, implementation data, and key decisions by the state public utility commissions. A detailed survey of state public utility commission staff regarding single-tariff pricing is presented. General commission policies are summarized, along with citations of specific regulatory decisions concerning single-tariff pricing.

How Consolidated Pricing Works

Under consolidated pricing, all customers of the corporate utility pay the same rate for the same service, even though the individual systems providing service may vary in terms of operating characteristics and stand-alone costs. In many respects, consolidated rates are the conceptual opposite of "zonal" or spatially differentiated rates.

Single-tariff pricing is used by many investor-owned water utilities, with the approval of state regulators, but it also can be implemented by publicly owned utilities. Single-tariff pricing can be an incentive for larger water utilities to acquire small water systems that lack capacity because it makes it possible to spread costs over a larger service population and maintain more stable and affordable rates for customers of some smaller and more expensive systems. Single-tariff pricing can be used by publicly owned or nonprofit water utilities that operate satellite systems, but few examples are readily available.

Unfortunately, the literature on utility ratemaking, which leans heavily toward the conditions and experiences of the energy and telecommunications industries, yields little theoretical insight or empirical evidence on the implications of single-tariff pricing. Much of the understanding of this issue is derived from case-specific regulatory proceedings. However, an analysis of historical and theoretical perspectives suggests that single-tariff pricing is not necessarily inconsistent with the prevailing principles of ratemaking.

The Tradeoffs

Single-tariff pricing is a provocative issue precisely because of the tradeoffs involved in its application, including possible tradeoffs among different types of efficiency. Single-tariff pricing might lessen some kinds of efficiency (such as those related to spatial allocation of costs and price signals to customers), while improving other kinds of

efficiency (such as those related to management and innovation). Of particular importance, but hardest to gauge, is whether single-tariff pricing and related restructuring can lead to long-run efficiency improvements in the water industry. Water utilities and policymakers must consider and weigh the evidence and trade-offs prior to implementing or approving single-tariff pricing.

A variety of theoretical and practical arguments in favor and against the use of single-tariff pricing can be made. Single-tariff pricing tends to stabilize rates and revenues, mitigate rate shock, and make rates more affordable for the customers of the smallest and more expensive systems. While achieving certain capacity-development, affordability, and operation efficiency goals, however, single-tariff pricing also might trade a degree of economic efficiency by ignoring spatial differences in costs and diluting price signals. A 1996 survey of commission staff members identified several arguments in favor of and against single-tariff pricing were identified.

Summary of Select Arguments in Favor and Against Single-Tariff Pricing

Select Arguments in Favor of Single-Tariff Pricing	Select Arguments Against Single-Tariff Pricing
❒ Mitigates rate shock to utility customers (17)	❒ Conflicts with cost-of-service principles (14)
❒ Lowers administrative costs to the utilities (16)	❒ Provides subsidies to high-cost customers (12)
❒ Provides incentives for utility regionalization and consolidation (15)	❒ Not acceptable to all affected customers (10)
❒ Physical interconnection is not considered a prerequisite (13)	❒ Considered inappropriate without physical interconnection (8)
❒ Addresses small-system viability issues (13)	❒ Distorts price signals to customers (7)
❒ Improves service affordability for customers (12)	❒ Fails to account for variations in customer contributions (6)
❒ Provides ratemaking treatment similar to that for other utilities (10)	❒ Justification has not been adequate in a specific case (or cases) (6)
❒ Facilitates compliance with drinking water standards (9)	❒ Discourages efficient water use and conservation (4)
❒ Overall benefits outweigh overall costs (9)	❒ Encourages growth and development in high-cost areas (4)
❒ Promotes universal service for utility customers (8)	❒ Undermines economic efficiency (3)
❒ Lowers administrative cost to the commission (8)	❒ Provides unnecessary incentives to utilities (2)
❒ Promotes ratepayer equity on a regional basis (6)	❒ Not acceptable to other agencies or governments (2)
❒ Encourages investment in the water supply infrastructure (5)	❒ Insufficient statutory or regulatory basis or precedents (2)
❒ Promotes regional economic development (3)	❒ Overall costs outweigh overall benefits (2)
❒ Encourages further private involvement in the water sector (2)	❒ Encourages overinvestment in infrastructure (1)
❒ Other: Can be consistent with cost-of-service principles (1) and found to be in the public interest (1)	

Source: Author's construct. See Tables E3 and E4. Numbers in parentheses represent number of mentions (out of 21 applicable survey responses).

State Commission Policies

The public utility commissions have provide the central forum in which single-tariff pricing has been evaluated. Single-tariff pricing is a relevant regulatory policy issue only for the thirty (30) state public utility commissions with jurisdiction for multi-system utilities. Given this context, a clear majority of affected state commissions have allowed regulated water utilities to implement single-tariff pricing (22 state commissions).

Based on the commission survey and subsequent updates, single-tariff pricing is generally accepted in eight (8) states. A few states (such as Connecticut, Pennsylvania, and Texas) have recognized single-tariff pricing as a policy tool. Staff members at seventeen (17) commissions characterized the policies of their commissions as "case-by-case," indicating that the single-tariff pricing must be justified for every specific application (even when the policy is "generally accepted"). Numerous exemplary decisions can be cited.

Summary of State Public Utility Commission Policies on Single-Tariff Pricing for Water Utilities

Commission Policy	State Commissions	
Generally Accepted (8)	Connecticut	Pennsylvania
	Missouri	South Carolina
	North Carolina	Texas
	Oregon	Washington
Case-By-Case (17)	Single-Tariff Pricing Has Been Approved (14)	
	Arizona	New Hampshire (d) (f)
	Delaware (a)	New York
	Florida	New Jersey (e) (f)
	Idaho (not an issue)	Ohio
	Illinois	Vermont
	Indiana (b) (f)	Virginia
	Massachusetts (c) (f)	West Virginia
	Single-Tariff Pricing Has Not Been Approved (3)	
	California (g)	
	Maryland (not an issue)	
	Mississippi (not an issue)	
Never Considered (5)	Iowa	Maine
	Kentucky	Wisconsin
	Louisiana	
Not Applicable – No Multi-System Water Utilities (15)	Alabama	Nevada
	Alaska	New Mexico
	Arkansas	Oklahoma
	Colorado	Rhode Island
	Hawaii	Tennessee
	Kansas	Utah
	Montana	Wyoming
	Nebraska	
No Jurisdiction for Water Utilities (6)	Georgia	North Dakota
	Michigan	South Dakota
	Minnesota	Washington, D.C.

Source: Author's construct. See Table 12 for notes.

Guide for Readers

1. Introduction. The introductory section defines consolidated ratemaking, discusses general advantages and disadvantages of this approach, and provides the policy and regulatory context in which rate consolidation is considered.

2. Background. This section contemplates single-tariff pricing in light of an historical perspective and the prevailing economic regulatory literature. The concept of spatially differentiated pricing (or "zonal rates") also is considered.

3. Spatial Pricing and Ratemaking Theory. Principles of ratemaking and tradeoffs among efficiency, equity, and other policy goals, are considered. Goals unique to the water industry are identified. The section also contrasts pricing in theory with pricing in practice.

4. Structural Issues in the Water Industry. This section identifies ways in which pricing policies will shape the structural character of the water industry and the future of small water systems.

5. Cost Profile of the Water Industry. This section considers the cost profile of the water industry, including the relevance of economies of scale, the challenge of maintaining affordable water service for consumers, and the means to enhancing water system capacity.

6. Examples of Single Tariff Pricing. Numerical illustrations of rate consolidation are provided here, including examples from two recent cases in Indiana and New Hampshire.

7. Public Utility Commission Role. The role of the state public utility commissions is reviewed in this section, with an emphasis on how commission policies will affect the structure of the industry through consolidation.

8. Commission Survey. Results of a 1996 survey of commission staff members are presented. Based on a database derived from the survey, this section also identifies the characteristics of utilities that have implemented consolidated rates.

9. Arguments in Favor and Against Rate Consolidation. Commission staff views about the advantages and disadvantages of single-tariff pricing are presented.

10. Commission Policies on Rate Consolidation. This final section summarizes commission policies on rate consolidation and provides an overview of several key cases, including regulatory decisions from West Virginia, Pennsylvania, Massachusetts, Florida, Illinois, New Jersey, Missouri, Indiana, New York, and Connecticut. This section also considers legal challenges to the authority of regulators to approve consolidated rates.

1. Introduction

Definition

Consolidated rates or single-tariff pricing is the use of a unified rate structure for multiple water (or other) utility systems that are owned and operated by a single utility, but that may or may not be contiguous systems or physically interconnected. Under a system of single-tariff pricing, all customers of the utility pay the same rate for service, even though the individual systems providing service may vary in terms of the number of customers served, operating characteristics, and stand-alone costs. Single-tariff pricing essentially allows for allocating the average costs of combined systems in the course of ratemaking. In addition to the term "consolidated rates," the terms “single-rate structure,” “uniform rates,” “standard-tariff rates,” “unified rates,” and “rate equalization” sometimes are used in connection with the concept of single-tariff pricing.[1] For the purposes of this report, the terms consolidated rates and single-tariff pricing are used interchangeably.

Single-tariff pricing *de*-emphasizes spatial distinctions in costs. One of the best examples of a single tariff across an expansive and multicentric “service territory” is the single rate used in the United States for first-class postage. Indeed, consolidated rates sometimes are called “postage-stamp” rates. Conventional wisdom holds that uniform postal rates historically facilitated the extension of service to rural areas and that they continue to serve the national interest, provide equity and accessibility, and lower transaction costs.[2]

Examples of uniform pricing also can be found in the other public utility sectors. Long-distance, cellular-phone, and cable television services typically are priced according to the single-tariff concept (although the same terminology might not be used). Historically, at least, energy prices were established for a regional enfranchised service territory, regardless of the physical proximity of customers to specific utility facilities.[3] The other public utility sectors generally price across larger regional territories than water utilities, although facilities in the other sectors tend to be physically interconnected through transmission and distribution networks.

Use of single-tariff pricing by U.S. water utilities continues to be debated in regulatory policy circles, although many states have approved consolidated rates for one or more jurisdictional utilities and a few states have actively promoted the use of single-tariff pricing. A very prominent example of single-tariff pricing in the water sector comes from “across the pond.” All of Great Britain’s privatized regional water and wastewater utilities,

[1] The concept of uniformity is useful, but the term “uniform rates” probably should be reserved for rate structures that do not vary usage (or volumetric) charges by quantities (or blocks) of water usage.
[2] For a provocative discussion of both sides of the issue, see Ronald H. Coase, “The Economics of Uniform Pricing Systems,” *Manchester School of Economics and Social Studies* Vol. 15 (May 1947): 139-56.
[3] In the context of restructuring and partial deregulation, methods for aggregating customers, allocating costs, and setting prices are changing dramatically. Spatial considerations might become less important in some instances, as in the purchase of electricity from a far-away generating facility. But market forces might also tend to group customers with similar cost profiles and undermine the goals of cost averaging.

and most of the smaller water companies, impose uniform rates for measured (metered) service, for both household and nonhousehold customers. A summary of recent British water tariffs is provided later in this report.

Single-tariff pricing can be absolute, applicable to all of the systems comprising the water utility. However, utilities also sometimes establish rates for regional zones consisting of subsets of water systems within the larger service territory. Rate consolidation sometimes is used for water systems that are contiguous but not interconnected, as well as noncontiguous noninterconnected systems, based on various criteria. Partial rate consolidation can be a compromise between individualized tariffs and complete single-tariff pricing, or part of a phase-in plan leading ultimately to a single tariff for the entire utility and all of its service territories. Figures 1 through 4 provide simple illustrations of the basic issues involved in rate consolidation for water utilities. A glossary of terms appears in Appendix A of this report.

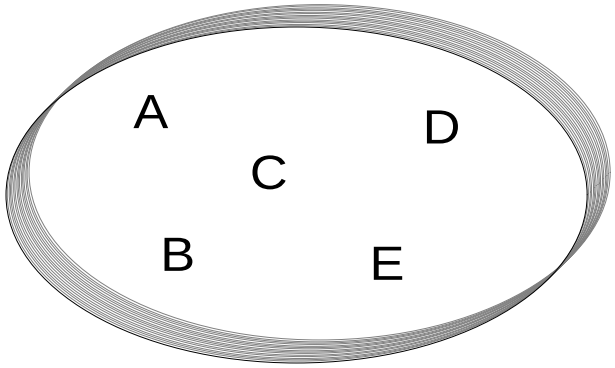

Figure 1. Water Systems without Physical Interconnection

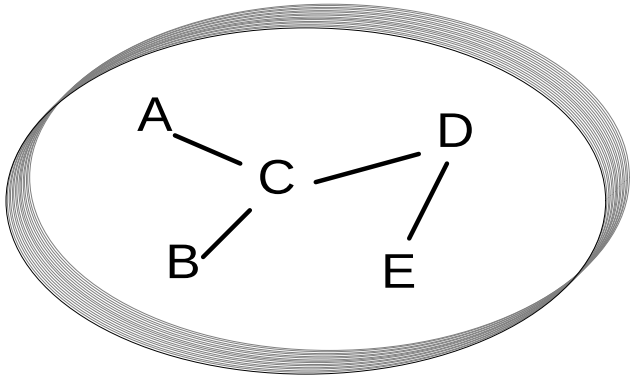

Figure 2. Water Systems with Physical Interconnection

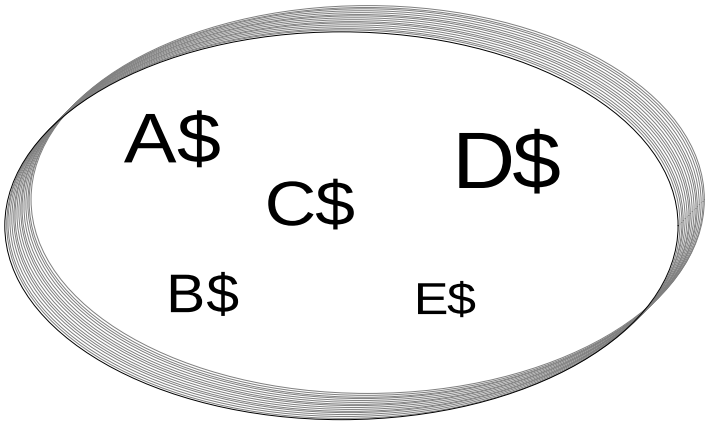

Figure 3. Water Systems with Stand-Alone Pricing

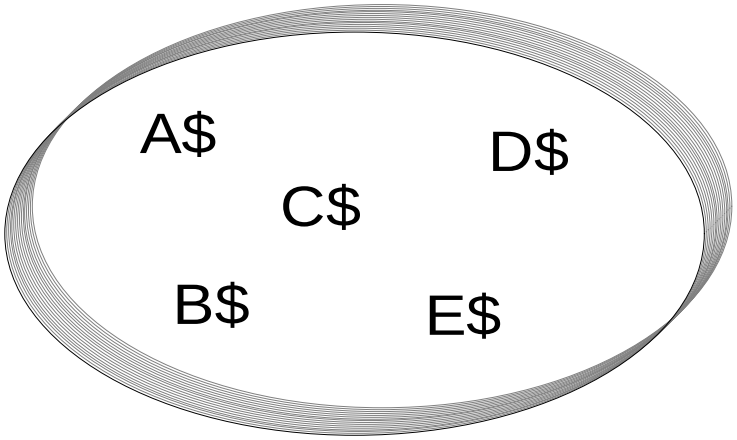

Figure 4. Water Systems with Consolidated Pricing

Key Advantages and Disadvantages

The primary advantages of single-tariff pricing are that it can lower administrative and regulatory costs, enhance financial capacity and capital deployment, achieve rate and revenue stability, and improve service affordability for customers of very small (or extremely small) water systems. The water industry's rising investment needs correlate with the interest in rate consolidation. A leading argument for single-tariff pricing made by multi-system water utilities is that each individual system eventually will require an infusion of capital for renovations and improvements; only the timing varies. Equalizing rates smoothes the effect of discrete cost spikes across systems and over time, much like insurance pooling. Single-tariff pricing also achieves equity to the extent that all customers of a given utility company pay the same price for comparable service.

Importantly, single-tariff pricing is a *pricing* strategy, not a *costing* strategy. Single-tariff pricing can appear to *lower* costs when in reality it simply *allocates* costs differently. In fact, one of the chief benefits of single-tariff pricing is that it greatly simplifies the allocation of common costs across separate facilities. Many water utilities believe that single-tariff pricing is more reflective of the consolidated cost of service. By itself, single-tariff pricing may not provide significant economies of scale because only the costs associated with the pricing process itself (including analytical, administrative, and regulatory costs) can be considered. Economies of scale in water production and management are achievable, irrespective of the rate structure implemented by the utility. Separating the cost side from the price side is crucial to understanding the true nature of the single-tariff pricing issue.

However, single-tariff pricing can lead to economies of scale in the water industry through secondary benefits. The secondary advantages are that single-tariff pricing can encourage industry consolidation, common management of smaller systems, and overall technical, financial, and managerial capacity. If regionalization *eventually* includes physical interconnection among some or all systems managed by a utility, more significant economies of scale can be realized. Larger utilities view consolidated rates as an incentive to engage in acquisitions because it can expedite the process and simplify ratemaking. The single-tariff price also can provide a powerful incentive for small communities as they contemplate selling their systems to larger utilities.

Other secondary advantages of consolidated rates include improved regulatory compliance by water utilities, the provision of universal service to customers who desire and need water service, and coordinated water resource protection, management, and planning. Even without physical interconnection, regional utilities can play a role in defining regional communities within which environmental services are provided. A consolidated rate for a larger community of customers will be more sustainable over time than stand-alone rates for smaller communities.

Consolidated rates also can improve the overall operational efficiency of a utility. Absent single-tariff pricing, the utility might be induced to invest in the system facing the highest

rates, even if this is a suboptimal choice from the standpoint of total system operations and economic value to the customer base as a whole. In other words, the utility might feel pressure to lower *prices* instead of lowering total system *costs*. With single-tariff pricing, utilities are induced to invest their available resources in the functional areas where the greatest improvement can be achieved at the lowest cost, to the benefit of all customers.

The primary disadvantages of single-tariff pricing are that it appears to undermine economic efficiency, distort price signals to customers, and manifest an inconsistency with traditional cost-of-service principles.[4] Although subsidies through some societal policy instruments (namely, taxes) are widely accepted, subsidies through utility rates generally are not.[5] Another potentially important equity concern is whether consolidated rates result in subsidies from the low-income customers in the low-cost area to higher-income customers in a high-cost area. This effect is mitigated to the extent that water use by low-income customers tends to be relatively low. Various aspects of the rate design also can lessen this type of subsidy.

Some communities and large-volume water users have opposed single-tariff pricing because they believe it is merely a means of subsidizing high-cost users at the expense of low-cost users. For this reason, single-tariff pricing also seems to be at odds with water conservation, in that it appears to weaken price signals and thus undermine efficient production and consumption. If rate consolidation involves a price decrease for some customers, one concern is that water consumption could increase.[6]

Secondary disadvantages are that—*absent other incentives or safeguards*—single-tariff pricing can provide some water utilities with incentives to overinvest in individual systems, disincentives for cost control, and a competitive advantage in the course of acquisitions. The latter concern applies only if one potential acquirer can offer consolidated rates and another cannot.[7]

These concerns are fundamental to utility economics, pricing, and regulation. However, any differences between single-tariff pricing and spatial pricing in terms of efficiency and other effects have not been well established from either a theoretical or empirical standpoint. Evaluating the *net* efficiency effects is especially difficult. Single-tariff pricing might lessen some kinds of efficiency (such as those related to spatial allocation of costs and price signals to customers), while improving other kinds of efficiency (such as those related to management and innovation). Of particular importance, but hardest to gauge, is whether single-tariff pricing and related restructuring can lead to long-run efficiency

[4] Steve H. Hanke, "On Water Tariff Equalization Policies," *Water Engineering and Management* 128 (August 1981): 33-34.

[5] The appropriateness of rate differentiation continues to be debated today in the context of both regulation and *de*regulation of public utility industries. The potential movement away from cost averaging for some services will affect customers, as well as the utilities that serve them.

[6] The price elasticity literature, however, is clearer about the usage effects of price increases than the usage effects of price decreases.

[7] In realty, competition for acquisitions is less a problem in the water industry than finding a single capable and willing buyer.

improvements in the water industry. Single-tariff pricing also has been underevaluated in terms of ratemaking criteria other than economic efficiency.

Single-Tariff Pricing as a Policy Issue

Single-tariff pricing is a public policy issue because it involves tradeoffs among competing policy objectives. Traditional cost-of-service principles and economic efficiency arguments, adhered to in the U.S. model of economic regulation as applied by the states to public utility monopolies, can lead to the conclusion that spatially-differentiated (or allocated) costs should be used as the basis for pricing utility services. Single-tariff pricing as a matter of public policy in this context requires an explicit recognition of the tradeoffs involved.

Specifically, single-tariff pricing involves a tradeoff between conventional ideas about cost-based rates, economic efficiency, and other legitimate ratemaking goals. These other goals include, for example, small-system capacity, rate and revenue stability, universal service, and compliance with environmental standards. A fine-tuned price signal that appears to be economically efficient, for example, can result in considerably less rate and revenue stability. Likewise, a conservation-oriented rate may not be affordable to customers. Evaluating ratemaking trade-offs can be complex. The decisionmaking process can be greatly enhanced by information and analysis, and decisions can be made more rational, but a certain degree of judgment ultimately is required in determining whether a particular option is in the public interest.

The short-term goals of single-tariff pricing tend to focus on enhancing the financial capacity of water systems and making rates more affordable for water customers. The long-term goals, however, are related to structural change in the water industry. Specifically, single-tariff pricing is regarded as a means to consolidating the management and operation of water systems, or "regionalization," to achieve multiple policy goals.

The Regulatory Context

Single-tariff pricing has received more attention in the context of economic regulation by the state public utility commissions than in context of public ownership (where regulation is limited or nonexistent). A compilation of citations to selected commission orders on the issue can be found in Appendix B of this report. As discussed later in this report, the issue is not equally relevant in every jurisdiction. Not all states regulate water utilities, and for those that have jurisdiction, multi-system water utilities may not be present. Single-tariff pricing also has not been raised as an issue for every multi-system water utility

Single-tariff pricing was placed on the regulatory policy agenda by the investor-owned water industry. Some water industry officials have made a strong case for single-tariff pricing before regulators. Several of the regional affiliates of the American Water Works

Company have taken the lead in advocating this method of pricing before the state public utility commissions, including the commissions in Illinois, Indiana, New Jersey, and Pennsylvania. However, other multi-system utilities (not affiliated with American Water Works), commission staff members, and other stakeholders also have raised the potential use of single-tariff pricing.

The many proceedings (and sequences of proceedings within certain jurisdictions) in which the issue of single-tariff pricing has been raised is suggestive of the *case-by-case* manner by which single-tariff pricing policy has largely developed. This is due in part to the nature of commission decisionmaking: regulators must rule on the record of evidence put before them in a given proceeding and each individual utility generally must make its own case for implementation. However, some commissions have explicitly encouraged the movement toward single-tariff pricing and a few have incorporated this approach into general policies and specific policies dealing with acquisitions of smaller systems.

Opponents have argued forcefully before the commissions that single-tariff pricing contradicts fundamental regulatory principles and conventions, as well as undermines the commission oversight responsibility:

> Tariff consolidation, sometimes called Single Tariff Pricing (STP), breaks the connection between costs and rates. It is a fundamental tenet of utility ratemaking policy that the cost causer should also be the cost payer. STP runs counter to this principle. Under and STP scheme, customers who receive no service from the core system would receive a considerable subsidy. Likewise, customers who do not impose a load on the [noncore systems] would be forced to pay a portion of the cost of providing that service indefinitely. A customer located in the core system would be encouraged to conserve water to an excessive degree. Conversely, a [noncore customer] would bear a smaller economic penalty for using more water than necessary.
>
> It is also important to note that once a regime of subsidies has been initiated, it is very difficult to discontinue this practice due to customer impact considerations, even if it has been found to create undesirable consequences. Subsidies are understandably popular among those who receive them, and it is equally understandable that they will resist their being terminated. Conversely, subsidies are understandably unpopular among those who pay them….
>
> If rates were to be consolidated, there would be no reason to maintain separate books and records for each of the [systems]…[8] However, this loss of operating and financial data would destroy the ability to evaluate the effectiveness and efficiency of the Company's operation of the [systems]. As a result, the [public utility

[8] This point seems somewhat overstated. Most consolidated utilities maintain detailed cost and other data on their operating units for planning and management purposes. Under single-tariff pricing, the need for an acceptable method to allocate *common* costs across distinct systems for ratemaking purposes is lessened or eliminated.

> commission] would lose its ability to exercise regulatory oversight and control as it pertains to these systems.[9]

Most of the commissions historically shared this predilection for "cost-based" rates. In numerous recent decisions involving a variety of utilities and issues, however, many of the state public utility commissions have found that single-tariff pricing is *in the public interest* and that it comports with prevailing standards concerning just, reasonable, and nondiscriminatory rates. Some commissions have found that single-tariff pricing is not inconsistent with cost-of-service principles or with commission ratemaking authority.

A variety of specific rationales (or combinations thereof) have been put forth by some of the commissions to justify approval of single-tariff pricing: it addresses pragmatic concerns affecting utilities and customers (namely, revenue stability and mitigation of rate shock); it is consistent with consolidated management, operations, financing, and corporate structures; it reduces regulatory caseload and costs; and it results in comparable prices for comparable services produced from comparable facilities. Many investor-owned utilities have strongly urged regulators to recognize that these companies provide all of their customers the same brand-name product (a safe and reliable supply of potable water) and that single-tariff pricing will also make the product more affordable. Essentially, single-tariff pricing makes it possible for all customers to share in the total economies of scale and scope achieved by the utility corporation.

Asserting regulatory authority to approve single-tariff pricing in some jurisdictions has not been an easy task. The issue often arises in the context of other complex regulatory issues related to water utility rates, management, operations, and acquisition practices. Regulatory rulings must be within the scope of commission authority and the boundaries set by state legislatures and the courts; if not, commission decisions can be legally challenged. Nevertheless, as explored later in this report, the state public utility commissions have approved the use of single-tariff pricing for many multi-system water utilities. Several specific regulatory determinations involving single-tariff pricing are reviewed later in this report.

[9] Ernest Harwig, Direct Testimony before the New Hampshire Public Utilities Commission in DR 97-058, Pennichuck Water Works, Inc. (1997).

2. Background

With few exceptions, the literature on public utility economics and ratemaking–including ratemaking for the water industry–sheds little direct light on the issue of single-tariff pricing. The leading scholarly work on utility economics mainly considers the economic characteristics of telecommunications and energy industries, where private ownership prevails, regionalization is pervasive, physical interconnection is the norm, and costs of transmission are low.[10] The leading manuals on water utility ratemaking published by the American Water Works Association convey little (if any) information about the single-tariff pricing method, a fact that probably undermines the method's institutional acceptance.[11] A cursory review of other promising bodies of literature, such as economic geography, does not readily yield information on this apparently understudied issue.

The limited discussion of the spatial dimension of utility ratemaking appears mainly within the literature on legal doctrine and in the consideration of zonal pricing.

The Municipal-Unit Doctrine

In the adolescent years of the public utility industries, legal scholars debated whether costs of providing service should be allocated spatially. Specifically, the debate centered on the cost differences associated with providing service to urban and rural areas, the latter of which can be more expensive to serve because of the cost of service-line extensions and lack of economies of scale (for example, numerous users at the end of the line). The known result of strictly cost-based pricing would have been to discourage the extension of "modern" services to rural areas. Based on the essential nature of utility services, the consequence would have been marked differences in the quality of life between urban and rural dwellers, as well as underdevelopment of rural communities.

A series of legal precedents seemed to establish municipalities as ratemaking units for utilities serving multiple cities. The "municipal-unit doctrine" refers to the treatment of a municipality as a distinct service territory and unit for cost allocation and ratemaking purposes (that is, "city-based" rates). In a 1934 review, however, Robert D. Armstrong passionately rejected the "municipal-unit doctrine," primarily on economic-development grounds:

> System utilities have made service available to the entire public, both urban and rural, within large areas. This development serves a sound social policy. Any regulatory policy or rule of law which would curtail it or rob it of its just reward would be unfortunate and unwise. If each locality were required to stand upon

[10] See Charles F. Phillips, Jr., *The Regulation of Public Utilities* (Arlington, VA: Public Utilities Reports, Inc., 1993).

[11] American Water Works Association, *Water Rates (M1), Water Rates and Related Charges (M26),* and *Alternative Rates (M34)* (Denver, CO: American Water Works Association, 1983, 1983, and 1992, respectively).

> its own bottom, so to speak, rural and village extension and development would be discouraged, and in many cases existing service abandoned.
>
> This would hurt the larger communities as well as the rural localities. It would tend to eliminate the rural and village patrons, who now contribute something to system overhead and return, and thus lessen its burden upon city and town patrons. It would reverse the process by which large scale production and distribution have been made possible, with more dependable service and lower rates for all. It might ultimately require higher rates within the larger municipalities in order to produce a reasonable unit return.
>
> Moreover, anything that would discourage the development and prosperity of the tributary rural and village territory would react unfavorably on its economic center and business capital.[12]

Armstrong also cites addresses by Governor (and President-to-be) Franklin D. Roosevelt in 1929 and Harvard Professor Philip Cabot in 1932, both of whom advocated "greater uniformity in public utility rates despite differences in cost on broad grounds of public policy."[13] At the 1929 State Fair, Roosevelt "attacked the inequality and lack of standardization" of utility rates and declared the situation "manifestly unfair":

> Now, I am sorry to say that the principle of reasonably equal service at reasonably equal cost to all the people of the State has not been carried out with regard to the two latest forms of public service—the telephone and electricity. For some reason (the history of which it is unnecessary to go into) the original telephone companies were allowed to charge different kinds of rates, and now, when practically all telephones are controlled by the greatest of all American mergers, we do not insist on either uniform service or uniform rate. . .
>
> The other example, and one which is even more glaring in its unfairness, is that of the use of electricity in the homes. The railroad principle of fairly uniform rates has been thrown to the winds even by the public regulating body known as the Public Service Commission. Is it [now] time to stop and ask the question: "Why does electricity in the home, the electric lights, electric refrigerator, electric sewing machine, the home machinery, cost as high as from 15 to 20 cents per kilowatt hour in some localities and as low as from 4 to 6 cents per kilowatt hour in other localities." Why should families in one section be so grossly penalized over families in another section?

[12] Robert D. Armstrong, "The Municipality as a Unit in Ratemaking and Confiscation Cases, *Michigan Law Review* 32 No. 3 (January 1934), footnotes omitted. Armstrong served as a hearing examiner with the Indiana Commission and thereafter with the Interstate Commerce Commission.
[13] Armstrong (1934), 292n.

> This difference in charges is true not merely in its application to regions as large as counties, but is true in respect to towns adjoining each other and houses separated only by a mile or two. This is perhaps one reason why even today nearly two-thirds of all the farm houses in the State of New York have no electricity. I am wondering whether it is not time for the people of this State to ask for the application of a more uniform rate and a more uniform system of charging for installation.[14]

Utility regulators have a considerable degree of discretion in ratemaking, but their authority is derived from state legislatures and checked routinely by the courts. In 1933, for example, the Supreme Court upheld a decision by the Indiana commission to treat municipalities as separate ratemaking units pursuant to state law. In response, however, the legislature expressly authorized the commission to prescribe uniform rates on a regional basis. This section continues to hold a place in the Indiana Code:

> Every public utility is required to furnish reasonably adequate service and facilities. The charge made by any public utility for any service rendered or to be rendered either directly or in connection therewith shall be reasonable and just, and every unjust or unreasonable charge for such service is prohibited and declared unlawful. The commission, in order to expedite the determination of rate questions, or to avoid unnecessary and unreasonable expense, or to avoid discrimination in rates between classes of customers, or, whenever in the judgment of the commission public interest so requires, may, for ratemaking and accounting purposes, or either of them, consider a single municipality and/or two (2) or more municipalities and/or the adjacent and/or intervening rural territory as a regional unit where the same utility serves such region, and may within such region prescribe uniform rates for consumers or patrons of the same class. . .[15]

The policy theory deployed to reject the municipal-unit doctrine accepts a fairly sizable subsidy of rural services in the interest of achieving societal policy goals. Historically, and for public policy reasons, rural utility services also were subsidized through governmental grant and loan programs. In the public sector, local governmental subsidies related to water and wastewater services are relatively common.[16]

Following the apparent demise of the municipal-unit doctrine, most investor-owned telecommunications and energy services seemed to price their products on a service-territory basis. Today, this issue has been eclipsed by the trend toward competitive pricing. Price theory suggests that competitive firms will offer the same price, based on marginal cost, at all locations. Unregulated monopolists will maximize profits by engaging in price discrimination among markets. According to B. Peter Pashigian, the net

[14] Ibid.

[15] Indiana Code §8-1-2-4 Sec. 4.

[16] Another violation of efficiency occurs when subsidies flow *from* the water system to the municipal budget.

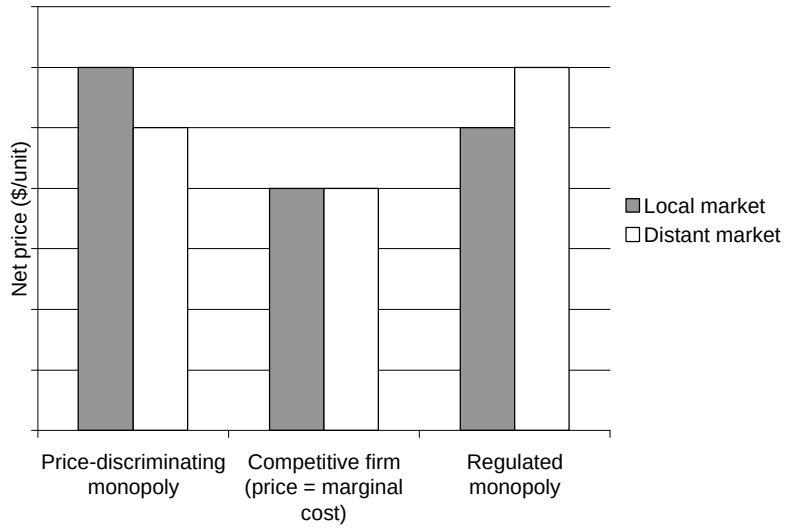

Figure 5. Illustration of Pricing Practices by Firms

Source: Adapted from B. Peter Pashigian, *Price Theory and Applications* (New York: McGraw Hill, 1994), 467.

price will be *lower* in the distant market under geographic price discrimination because the price-discriminating monopolist absorbs the freight costs associated with distant sales.[17]

Of course, economic regulation tends to reverse this finding, resulting in higher prices to higher cost areas (namely, distant or rural markets). Pricing theory suggests, however, that consolidated rates may be consistent with the behavior of competitive firms. The generalized disparity in pricing among different types of firms is illustrated in Figure 5.

Competition places a greater emphasis on overall efficiency as a determinant of price levels, rather than on allocating costs according to space or other criteria used in monopoly ratemaking. Competitive pricing also shifts some attention away from the cost of service toward the value of service. Pricing flexibility can help firms respond to competitive forces, focus on service, and improve overall efficiency. When left to their discretion, many multisystem utilities will opt for the competitive advantage of a consolidated rate. Absent competition, however, the rate will not achieve efficiency.

[17] B. Peter Pashigian, *Price Theory and Applications* (New York: McGraw Hill, 1994), 467.

Spatial Pricing

Analysts seem to agree that utility costs vary *spatially;* that is, the cost of serving one area generally is not matched by the cost of serving another area. For water utilities, differences in elevation, climate, physical terrain, the age of the infrastructure, the density of the service population, and a host of other factors will tend to affect costs even for service territories that otherwise appear similar. Differences in the proximity to water sources, the type of source (surface water versus groundwater), the quality of source water, and implemented treatment methods will tend to produce substantial cost differences.

Assumptions about efficiency and concerns about equity in cost allocation also can lead to zonal pricing, by which utilities vary prices according to spatial variations in costs among customer groups that are grouped into zones, districts, or service areas. Zonal pricing recognizes that the location of consumers within a larger service area can affect the cost of providing service.[18]

With zonal pricing, rates are differentiated according to substantial differences in the cost of serving different areas. Zones generally are defined in spatial terms and represent geographic clusters of customers with similar cost characteristics. Differences in costs among zones may be attributed to differences in distribution system costs, which may be due to differences in the physical plant serving the zones (including age). A more frequently cited reason for spatially differentiated pricing, however, is the variation in pumping costs caused by differences in the proximity to facilities, density of the service population, and particularly elevation. For practical purposes, and as used in this report, zonal pricing is essentially the same as spatially differentiated pricing.

The zonal price can reflect not only the proximity of groups to source and treatment facilities, and differences in terrain, but also the different peaking characteristics that service areas might present. Economist Robert Greene describes a situation in which three zones present alternative distance and peaking characteristics that can be used to guide the efficient allocation of capacity costs for each zone.[19] In this case, customers assume a greater cost burden when they are further from the treatment plant and when they contribute to the peak period of water usage. Greene's example of the cost allocation based on zonal differences appears in Table 1. The cost allocation reflects the fact that users impose different capacity costs on water systems based on their location, well as their contribution to the system's peak loads.

According to Greene:

[18] Janice A. Beecher, Patrick C. Mann, and John D. Stanford, *Meeting Water Utility Revenue Requirements: Financing and Ratemaking Alternatives* (Columbus, OH: The National Regulatory Research Institute, 1993).

[19] Robert Lee Greene, *Welfare Economics and Peak Load Pricing* (Gainesville, FL: University of Florida Press, 1970).

Table 1
Cost Allocation Under Zonal Pricing

Zone	Distance from the Treatment Plant	Peak Period of Usage	Efficient Allocation of the Zone's Capacity Costs
Zone A	1 mile	Period I	All users in Zones A, B, and C
Zone B	1-2 miles	Period II	All Period II users in Zones B and C
Zone C	2-3 miles	Period I	Period I users in Zone C

Source: Adapted from Robert Lee Greene, *Welfare Economics and Peak Load Pricing* (Gainesville, FL: University of Florida Press, 1970), 60.

> The importance of zone pricing rests not only in the proper allocation of resources in water use. There is considerable significance with respect to land use and other objectives. In a discussion of improper pricing policies tied to marginal rents and the constraints imposed by these rents. . . A zone pricing solution can be used for rate differentials in both seasonal and daily peak load problems. . . Zone pricing can also be used to adjust rates in accordance with cost differentials arising from such factors as geographical characteristics and population density. . .[20]

The key issue in implementing zonal rates is one of cost justification. If substantial cost differences exist within a service area, then zonal rates may be an appropriate form of rate unbundling that ostensibly attains more efficient water rates.

The efficiency gain assumes that the zonal rate is cost-based and that the transaction costs associated with unbundling are justified by the efficiency gains. Zonal rates that are arbitrary (for example, rates that bear no relationship to cost variations or rates that are based solely on geopolitical boundaries) will introduce inefficiencies. The expense of developing zonal cost data probably has limited the application of zonal pricing. A prerequisite to efficient zonal pricing is the capability to accurately calculate the cost differences associated with providing service to different zones within a utility's service territory.

Economic and engineering arguments against zonal pricing can be made.[21] Capital-intensive utility systems should be designed for optimal performance of all utility functions (supply, treatment, distribution, and so on) within a service territory. Spatial differentiation within the service territory might subvert this general optimum. In other words, the utility

[20] Ibid., 61-62.
[21] Beecher, et al. (1993).

does not deploy resources in the most economically beneficial manner. Another potential disadvantage of zonal pricing is that it can accentuate the problem of localized cost and rate shock associated with infrastructure replacements. By broadening the customer base, a uniform or average rate will cushion the shock and temper its adverse effects (such as revenue instability).

Zonal rates also raise concerns about equity and perceptions of equity. Obviously, zonal rates usually will be met with considerable resistance from the groups of consumers asked to pay higher water rates. In some contexts, zonal pricing might constitute an undesirable form of price discrimination.

Zonal pricing is used by the water industry to some degree, although not necessarily by that name. Wholesale water rates might qualify as an example because they typically reflect spatial differences in costs. Utilities that set different retail prices for districts served include the California-American Water Company and the Los Angeles Suburban Water Company.[22] A more common form of zonal pricing used by publicly owned utilities is the rate differentiation for service inside and outside municipal boundaries. Fairfield, California provides an example of spatially differentiated pricing, both within the city and between residents and nonresidents (see Table 2). As a generalization, municipal utilities are more likely to use inside-city/outside-city pricing and investor-owned utilities are more likely to seek approval for rate uniformity across service territories.

Table 2
Example of Municipal Zonal Rates for Residential Water Customers

Residential Water Charges	**Rate**
Service charge	$0.50 per day
Water-use charge	$1.35 per 100 cubic feet
Zone 3 (200 feet and over)	$1.67 per 100 cubic feet
Zone 5 (400 feet and over)	$2.00 per 100 cubic feet
Pneumatic Pump Zones	
Zones 1 and 2	$1.57 per 100 cubic feet
Zones 3 and 4	$1.89 per 100 cubic feet
Zone 5	$2.22 per 100 cubic feet
Outside City Charge	
Service charge	$0.75 per day
Water-use charge	$2.02 per 100 cubic feet

Source: City of Fairfield California Utility Rates, as of January 1, 1999. 100 cubic feet = 748 gallons. (http://www-e-v.com/fairfield/government/public_works/rates.htm).

[22] Raftelis Environmental Consulting Group, *1996 Water and Wastewater Rate Survey* (Charlotte, NC: Raftelis Environmental Consulting Group, 1996).

For a variety of reasons, zonal pricing does not appear to be the prevailing model for retail water pricing. Importantly, costs can vary *within* physically interconnected service territories by magnitudes as great as they might vary between noninterconnected systems. By and large, many cost differentials associated with spatial considerations are essentially disregarded in the ratemaking process for public utility systems.

Spatial Pricing and the Telephone Industry

The rejection of zonal pricing in the debate over statewide telephone rates seems to come closest to providing a rationale for single-tariff pricing by multi-system water utilities. According to Charles Phillips:

> While each exchange is a distinct unit for rate-quoting purposes, the former Bell System companies have generally established rates on a statewide basis. Essentially, the statewide basis provides that the total costs of furnishing telephone service and the resulting revenue requirements are considered for the state as a unit. This practice recognizes that telephone service, both exchange and intrastate toll, furnished by a given company through a state, is, in reality, an integrated whole, all portions of which are interdependent. The objective is to apply throughout the state a well-balanced and coordinated pattern of rate treatment, providing rates that are uniform under substantially like conditions and producing, in the aggregate, reasonable earnings on the company's total telephone operations within the state.
>
> The statewide basis has five important advantages over consideration of individual exchanges. First, the statewide basis permits more people to have better service at a reasonable price. Some small areas, if forced to pay their own way, might have no service at all. Needed plant replacements or additions might be postponed if local customers had to cover their full costs, resulting in deterioration of local service within the exchange and of toll service to and from it. Second, on the statewide basis, customers pay like charges for like amounts of service. If each exchange had to stand on its own feet, customers' charges would vary with physical characteristics of the exchange areas, age of plant, type of equipment and other factors affecting costs, but not necessarily affecting the service rendered. The statewide basis averages out such factors.
>
> Third, customers seem better satisfied with statewide rates, since the application of uniform schedules avoids any questions of discrimination or unfair advantage to pressure groups in individual exchanges. Fourth, the statewide basis tends to stabilize rate levels by providing a broad rate basis. Risks are shared so that a community suffering from flood, storm or other natural disaster or from some local economic difficulty (e.g., the removal of a major industry) need not pay higher telephone rates such as would be required if telephone operations in that exchange had to meet these conditions single-handedly. Finally, the statewide basis is more workable and makes the regulatory process less cumbersome and expensive to both

> the public and the company involved. It avoids multiplicity of rate cases for each individual exchange. It simplifies handling of questions and complaints by the regulatory commissions and administration by the companies.
>
> At the same time, it should be pointed out that the statewide basis results in some subscribers subsidizing other subscribers. Because exchange telephone service is more valuable to customers in the larger service areas, they are willing to pay more for their service. Since their average cash incomes are greater, they are able to pay more. Lower rates in the small towns and rural areas, where average money incomes are relatively low, encourage telephone use and development in these places. Once again, this is an example of how rate discrimination has been used to achieve a socially desirable objective, in this case the widespread development of telephone usage through the country.[23]

Phillips also discusses how "nationwide averaging has been used in establishing interstate toll rates, under which toll rates are the same for equal distances throughout the continental United States, despite differences in the costs involved"[24] A nationwide rate, he acknowledges, has "all of the advantages of statewide rates, but it results in internal subsidization" and raises a variety of competitive issues as well.

Counterpoint

In a direct and provocative treatment of the "uniform pricing" issue, economist Ronald Coase acknowledged that the key arguments favoring uniformity are founded on the view that certain services (namely, utility services) are considered essential and that the undertaking as a whole can be "self-supporting."[25] However, Coase notes the intellectual disagreement among early postmasters (also economists) over whether postage stamp rates actually served the interests of rural communities.

Absent a governmental subsidy, according to Coase, a uniform price actually might cause a provider to avoid or delay extending service to high-cost areas, *even if the customers in high-cost areas are willing to cover the additional costs through rates (or surcharges).* Adding high-cost customers to the mix increases the average cost of production and decreases the economic well-being of the utility. The magnitude of this effect depends on the relative mix of high-cost and low-cost service. Coase makes, and then relaxes, a number of assumptions that may or may not be valid but he does not consider the role of economic regulation. In practice, a forward-looking ratesetting process that accounts for the total cost of service throughout the consolidated service territory neutralizes the disincentive Coase identifies. Indeed, the primary and practical purpose of rate consolidation had been to extend service *while* maintaining the utility's financial health.

[23] Phillips (1993), 517-518.
[24] Phillips (1993), 522.
[25] Coase, "The Economics of Uniform Pricing Systems."

3. Spatial Pricing and Ratemaking Theory

Theoretical Issues

The defining engineering, economic, structural, and institutional characteristics of the water industry generally are not contemplated in the literature establishing the basic principles of utility ratemaking. The central issue of whether physical interconnection should be required for single-tariff pricing by multi-system water utilities is not well addressed. Because other utility infrastructures—electricity, electricity, natural gas, telecommunications—have a high degree of interconnection through transmission grids, the acceptability of cost averaging for non-interconnected systems is a theoretical problem unique to the water and wastewater industries. Although energy and telecommunications providers experience spatial differences in cost, these differences are generally not reflected in prices.

In the prevailing theories used in ratemaking and regulation, the concepts of "due" (or just and reasonable) and "undue" (or unjust and unreasonable) price discrimination are contemplated with regard to customers classes but not with regard to spatially defined systems. Separate prices for separate systems owned by a common entity reflect assumptions about the implications of the cost allocation for efficiency. It can be argued that water costs are allocated (and prices are charged) on a spatial basis primarily because they *can be,* rather than that they *should be* for unequivocal theoretical or empirical reasons. In other words, the costs of providing utility service can be approximated for individual operations (with corporate common costs allocated among them), but the benefits and desirability of doing so are contingent on other considerations.

A logical (if not well documented) argument can be made that spatial pricing comports with cost-of-service principles and enhances allocative efficiency: customers of systems with higher costs pay higher rates and customers of systems with lower costs pay lower rates. The degree of subsidy or inefficiency introduced with single-tariff pricing, and whether or not it is acceptable, depends in part on the differential in costs among systems. A small differential with a minimal rate impact will be less controversial than a large differential with a substantial rate impact. Little guidance is available on to what extent of cost averaging through single-tariff pricing would constitute an inappropriate level of subsidy, undue price discrimination, or more generally an abuse of monopoly power.

However, with or without single-tariff pricing, utility rates can be more or less efficient depending on other features of the rate (such as the mix of fixed and variable charges, the number of rate blocks, rate-block differentials, and seasonal differentials). These features can promote efficient water use and can do so when used in conjunction with single-tariff pricing. Moreover, and perhaps more importantly, the cost of service is not the only guiding principle and efficiency is not the only goal of public utility ratemaking and policymaking, as discussed later in this report.

In reality, virtually all methods of utility rate design require a considerable degree of cost averaging. The obvious example is in the establishment of rates by customer classes (for example, residential, commercial, industrial, and wholesale). But many utility costs are associated with common operational and management functions. Common costs are allocated to customer groups according to one of several available methodologies. For multi-system utilities that do not use single-tariff pricing, common costs must be allocated spatially as well. Allocating common costs requires the analyst to make assumptions about underlying cost drivers and establish yet another layer of averaging. The entire process of cost allocation and rate design is as much art as it is science, and has at least as much to do with equity as it does efficiency.

In many jurisdictions, the *status quo* presents a challenge for utilities. Based on the prevailing theoretical assumptions, the burden of proof has rested on water utilities to justify the use of single-tariff pricing. In other words, the prevailing assumption is that deviations from spatial allocation of costs (such as the movement toward consolidated rates) must be justified. An alternative approach would be to begin with a single tariff and specify the circumstances under which spatial allocation of costs is justified because of concerns about efficiency, equity, subsidies, undue discrimination, or other ratemaking or policy concerns. This might shift attention to the use of extra-tariff instruments, such as surcharges, to make price adjustments needed to encourage efficiency and accomplish other purposes.

Evaluation Issues

The appropriateness of reflecting spatial differences in cost in prices can be evaluated according to traditional and modern ratemaking criteria. The general criteria for many public policies, and for utility ratemaking, often emphasize competing goals. Although it always seems desirable to achieve public policy goals efficiently, efficiency itself is not the only goal of policymaking:

> Of course, efficiency is not the only societal value. Human dignity, economic opportunity, and political participation are values that deserve consideration along with efficiency. On occasion, public decision makers or ourselves, as members of society, may wish to give up some economic efficiency to protect human life, make the final distribution of goods more equitable, or promote fairness in the distribution process. As analysts we have a responsibility to confront these multiple values and the potential conflicts among them.[26]

The emphasis on, concept of, and assumptions about efficiency shape views about what is just, fair, or equitable. Political philosophers offer alternative perspectives. The Rawlsian theory of justice, which holds that public policies should be used to

[26] David L Weimer and Aidan R. Vining, *Policy Analysis: Concepts and Practice* (Englewood Cliffs, NJ: Prentice-Hall, 1989), 31.

provide the greatest benefit to society's least advantaged, is perhaps the best example of a countervailing philosophy.[27]

Ratemaking Criteria

Ratemaking and rate design are guided by certain fundamental principles that are well established and well accepted in the regulatory community. These principles provide guidance, but are not decisive because each involves a degree of subjectivity and some principle might directly clash with others.

Most ratemaking analysts rely substantially on James Bonbright's eight criteria for a sound or desirable rate structure:

1. The related, "practical" attributes of simplicity, understandability, public acceptability, and feasibility of application.
2. Freedom from controversies as to proper interpretation.
✓3. Effectiveness in yielding total revenue requirements under the fair-return standard.
4. Revenue stability from year to year.
5. Stability of the rates themselves, with a minimum of unexpected changes seriously adverse to existing customers.
✓6. Fairness of the specific rates in the appointment of total costs of service among the different consumers.
7. Avoidance of "undue discrimination" in rate relationships.
✓8. Efficiency of the rate classes and rate blocks in discouraging wasteful use of service while promoting all justified types and amounts of use:
(a) in the control of the total amounts of service supplied by the company;
(b) in the control of the relative uses of alternative types of service (on-peak versus off-peak electricity, Pullman travel versus coach travel, single-party telephone service versus service from a multi-party line, etc.[28]

As indicated by check mark (✓), Bonbright considered three criteria—revenue sufficiency, fairness, and efficiency—to be especially important.[29] Despite the passage of time, Bonbright's criteria remain quintessential. Table 3 presents a qualitative analysis of the consistency of single-tariff pricing with Bonbright's traditional criteria (items 1 though 8). Five additional policy criteria that are especially relevant to modern water pricing also are presented (items a through e).

Consolidated rates generally seem to meet the test of Bonbright's first five criteria. If practicality depends in part on customer acceptance, then acceptance becomes a

[27] John Rawls, *A Theory of Justice* (Cambridge, MA: Belknap Press of Harvard University Press, 1971).
[28] Phillips (1993), 434-435. Based on James C. Bonbright, *Principles of Public Utility Rates* (New York: Columbia University Press, 1961).
[29] Phillips (1993), 434-435.

determinant. Other aspects of practicality, namely simplicity, understandability, and feasibility of application (or implementation) seem very compatible with single-tariff pricing. The last three criteria are labeled as indeterminate because their compatibility with rate consolidation depends on other policies or practices, or on the subjective judgment of the evaluator. While single-tariff pricing is not necessarily consistent with these criteria, neither is it clearly inconsistent. On the issue of fairness, single-tariff pricing might be considered unfair on the basis of subsidization, but fair on the basis of sharing burdens at a reasonable cost. On the issue of efficiency, other features of a tariff also affect the accuracy of price signals.

The five additional criteria included represent a select group of other potentially relevant policy goals in relation to single-tariff pricing for the water industry. Resource planning is considered indeterminate because planning incentives and outcomes probably are more heavily influenced by the structural character of the water industry than by rate design. However, single-tariff pricing seems rather consistent with four other criteria—standards compliance, customer affordability, industry restructuring, and institutional legitimacy. The last criterion, institutional legitimacy, is somewhat of a composite indicator. The assertion of consistency reflects the generally positive support for single-tariff pricing by the state public utility commissions and the courts.

Table 3
Consistency of Single-Tariff Pricing
With Ratemaking Criteria

Criterion	Consistency of Single-Tariff Pricing with Criterion
Bonbright Criteria	
1. Practicality	Generally consistent (if accepted)
2. Interpretability	Generally consistent
3. Revenue recovery	Generally consistent
4. Revenue stability	Generally consistent
5. Rate stability	Generally consistent
6. Fair cost allocation/equity	Indeterminate
7. Discrimination avoidance	Indeterminate
8. Efficient resource use	Indeterminate
Additional Criteria	
a. Resource planning	Indeterminate
b. Standards compliance	Generally consistent
c. Customer affordability	Generally consistent
d. Industry restructuring	Generally consistent
e. Institutional legitimacy	Generally consistent

Source: Author's construct. Criteria 1 through 8 are from James C. Bonbright, *Principles of Public Utility Rates* (New York: Columbia University Press, 1961).

Directly or indirectly, these criteria figure prominently in the consideration of rate consolidation. Other analysts surely could raise other relevant considerations. No attempt is made here to weight the criteria according to perceived importance; this is a task left to policymakers. In reality, the efficiency criterion is assigned considerable weight in ratemaking, as well as in policymaking in general. In other words, divergence from efficient solutions (or solutions that are perceived to be efficient) must be well justified.

The Efficiency Criterion

Economic theory argues for utility pricing that promotes overall *efficiency* for society. An efficient price signal leads consumers to consume, and producers to produce, an appropriate amount of a good or service. Prices that are too low can lead to overconsumption (and underproduction); prices that are too high can lead to underconsumption (and overproduction). The mismatch of supply and demand, and the "welfare loss" associated with it, has rippling effects throughout the economy because in using excessive resources to produce a good, or spending too much for that good, society foregoes opportunities to use those resources or make those expenditures elsewhere.

Economic theory also argues for utility pricing that is *equitable* in terms of allocating costs to those responsible for those costs.[30] In this conception, equity essentially serves efficiency goals. Three kinds of equity can be considered. Horizontal equity suggests that those who impose similar costs should pay the same rate. A related ratemaking principle is that rates should be "nondiscriminatory." Vertical equity suggests that those who impose different costs should pay different rates that reflect those cost differences. Ratemaking allows for "due discrimination" when costs among customer groups vary substantially. Finally, intergenerational equity considers equity along a temporal dimension, suggesting that one generation of customers should not be forced to cover costs imposed by another generation of customers.

Economists long have argued for prices that reflect costs and against subsidies that distort price signals. Modern pricing theory more specifically calls for pricing based on marginal costs; that is, prices should reflect the incremental cost of producing an additional increment of a good. Prices based on long-term marginal costs will help achieve long-term efficiency in deploying resources. Efficiency is a fundamental goal but it is not the only goal of utility pricing. Pricing also must help achieve a delicate balance between the interests of the utility and the interests of ratepayers, and in doing so satisfy the public interest standard.

[30] Of course, other theoretical perspectives will argue for different kinds of equity, such as social and political equity.

Other Criteria

Another vitally important ratemaking principle centers on the avoidance of "undue" price discrimination. An important issue for regulators is whether the level of price discrimination under either single-tariff pricing or stand-alone pricing is "due or undue," that is, whether or not it is justified. According to Charles Phillips:

> Price discrimination occurs when a seller establishes for the same product or service different rates that are not justified entirely by differences in cost, or the same rate where differences in cost would justify differences in price. . . [I]t would be theoretically possible for a firm to charge each customer a different rate. . .[31]

The often-cited legal standard of "undue discrimination" does not point regulators or the courts to particular solutions, as articulated by Richard J. Pierce:

> Most regulatory statutes forbid "undue discrimination" in the relationship among the rates charged different customers or classes of customers. This statutory standard is almost completely devoid of meaning, however. By using the adjective "undue," the standard obviously authorizes some forms of price discrimination, but it says nothing that would help an agency or a court distinguish between permissible and impermissible rate differentials.
>
> Much of the case law purporting to distinguish between due and undue discrimination is affirmatively misleading. . .
>
> [The Supreme] Court's holding in *Hope* applies with equal force to rate design decisions. An agency's decision has a "presumption of validity," and anyone seeking to overturn it has "the heavy burden of showing that it is invalid." The agency is "not bound to the use of any single formulae in determining rates."[32]

A closely related and equally complex regulatory standard is whether resulting rates are "just and reasonable." Phillips explains:

> [D]iscrimination is accepted in the rate structures of public utilities, but. . . such discrimination must be "just and reasonable." Discrimination is both unintentional and purposeful. It is unintentional in that some discrimination results from the efforts of utilities and commissions to simplify the rate structures by grouping customers into a limited number of classifications. It is purposeful in that discrimination may be the only way in which service can be provided to some customers. Low-density routes may be subsidized by high-density routes (even

[31] Phillips (1993), 69-70.
[32] Richard J. Pierce, *Economic Regulation: Cases and Materials* (Cincinnati: Anderson Publishing Co., 1994), 122.

> under competition), small towns by large cities. Rather than preventing discrimination, regulation merely seeks to control what discrimination takes place.[33]

In sum, regulatory agencies have considerable discretionary authority, and have exercised that authority, to determine whether rates and rate structures are within acceptable boundaries. Many state public utility commissions have found that rate consolidation by multi-system water utilities is within these boundaries.

Pricing in Practice

Despite the hallowed status of economic efficiency in ratemaking, pricing in practice often violates pricing in theory. Many sources of distortion (governmental grants and subsidies, differences in ownership, ill-defined markets for alternative water uses, and a variety of past public policies) distort price signals for water. The considerable "noise" in the real world of assigning monetary values to water undermines the efficiency of the price signal sent by utilities. Practical applications of marginal-cost pricing, when used at all, deviate substantially from the theoretical construct. One key reason is that strict adherence to the marginal-cost model could allow utility monopolies to receive excess revenues and earn excess profits (in the case of investor-owned utilities).

Averaging costs to one degree or another is an accepted practice in utility ratemaking. For example, rate regulators generally do not accept "vintage" rates that distinguish "old" customers from "new" customers even though old and new customers impose different costs on the utility system.[34] Ratemaking also tends to ignore the reality that older and newer parts of a water system will require capital investments at different times and at different costs; these improvement costs instead are averaged across the entire system and all of the utility's customers.[35]

In rate design, economic theory often gives way—at least somewhat—to practical and public policy concerns. An example that has some relevance for the single-tariff pricing debate is the provision of budget-payment plans for customers that equalize payments over a year, making the utility bill during the peak period of use (such as the winter heating bill or the summer cooling bill) more affordable. A disadvantage of the budget plan in terms of economic efficiency is that it undermines the price signal to customers, which may lead them to overconsume (and pay a higher annual bill than they otherwise would pay). But the advantages of convenience and affordability for customers, as well as avoidance of costly and potentially dangerous disconnections, generally outweigh these theoretical considerations.

[33] Phillips (1993), 70, footnotes omitted.
[34] John Guastella, "Single Tariff Pricing and Conservation Rates," a discussion paper prepared for the Rates and Revenue Committee of the National Association of Water Companies (1994).
[35] Guastella (1994).

The budget-payment plan is an imperfect analogy to single-tariff pricing, however, in that it is customer-specific and does not involve subsidization from one customer to another. Subsidization will occur, however, with lifeline rates that provide a minimal block of usage at a price below the cost of service and lenient disconnection practices. Such policies introduce equity and fairness considerations beyond those narrowly defined by economic theory.

4. Structural Issues in the Water Industry

The U.S. water industry is complex and diverse. The U.S. Environmental Protection Agency and the state primacy agencies, count noncommunity and community water systems. According to the EPA's *Community Water System Survey* (1997), about 50,289 community water systems operate in the United States. A community water system is a system serving a population of 25 or more people with at least 15 service connections.

The data confirm both the large number of water systems in the United States, as well as the large proportion of smaller systems within that total. Relatively small systems, defined as systems serving communities with a population under 3,300 persons, comprise about 85 percent of total systems and provide water to approximately 12 percent of the connections served by community systems. Conversely, about 15 percent of community water systems are larger in size and provide water to approximately 88 percent of connections.

Systems v. Utilities

Community water *systems*, which the EPA inventories, can be distinguished from water *utilities.* Water utilities are governmental, nonprofit, or private corporate entities engaged in providing water service to one or more service territories. Water *utilities* can operate more than one water *system.* Multi-system utilities are particularly apparent in the private segment of the water industry. Many of the larger investor-owned utilities actually operated several distinct water systems. In some cases, none of the systems operated by the utility are physically interconnected; in other cases, two or more of the systems may be connected to common water source, transmission, or treatment facilities.

The state public utility commissions typically count the number of regulated water *utilities* but not necessarily water *systems.* In 1995, the number of commission-regulated water *utilities* was about 8,537 and the number of commission-regulated water *systems* was about 11,064.[36] Thus, the commissions regulate approximately 20 percent of all water systems, although the number and percentage of commission-regulated systems probably is somewhat underestimated because of the difficulty in counting regulated systems.

In some states, the number of regulated utilities is equivalent to the number of regulated systems. However, the distinction between utilities and systems is important in that many jurisdictional water utilities encompass multiple community water systems. The presence of numerous multi-system utilities is, and will continue to be, an important feature of the U.S. water industry.

[36] Janice A. Beecher, *1995 Inventory of Commission-Regulated Water and Wastewater Utilities.* (Indianapolis, IN: Center for Urban Policy and the Environment, 1995).

Multi-System Water Utilities

A multi-system water utility is a utility comprised of several distinct water systems. Physical interconnection among systems can help utilities achieve economies of scale in production and enhance service reliability. Common management of physically separate systems, however, also can help systems realize operational, management, and financing (cost-of-capital) savings.

Even without physical interconnection, the utility still can achieve economies of scale and scope through certain operational and administrative functions. Operating multiple noninterconnected systems within close physical proximity, for example, might allow the utility to save labor costs by using a circuit rider approach to system operations. A specialized maintenance team might also be used to address ongoing programs for maintenance, replacements, and improvements. Shared operations and management also can enhance the ability of water systems to respond to water emergencies. Consolidated meter reading, billing, and customer relations functions also can produce savings.

At the management level, planning, financing, regulatory relations, and other areas of decisionmaking can be consolidated on a utility-wide basis. Managers with greater expertise can be retained at the utility level than at the smaller system level. While managers with greater expertise will command higher salary and benefit packages, the investment in their expertise can yield savings that individual systems could not otherwise achieve. Ample anecdotal evidence supports the assertion that smaller systems benefit from access to expert technical knowledge. Using this expertise, multi-system utilities can exploit efficiencies and improve effectiveness by deploying a unified workforce, rather than having each individual utility maintain separate capability for various utility functions.

The potential advantages of utility-wide management may extend beyond the immediate efficiency payoffs. Planning for multiple systems, as compared to individual systems, allows for a more comprehensive approach. Better planning, in turn, should enhance the utility's capacity to respond to regional economic and environmental issues. Effective watershed management and source-water protection programs, for example, require a regional perspective that is not easily achieved by isolated systems.

Another appreciable benefit of common management is lowering the cost of capital. A consolidated utility with a broader customer and revenue base is expected to pay lower financing costs than individualized systems. This is a particularly important benefit for very small water systems.

Multi-system utility operations can be linked to the broader and more long-term policy concerns related to structural change in the water industry through regionalization. Multi-system utilities generally serve regional areas. Many have the potential to combine operations, with or without physical interconnection, with other nearby water systems (many of which are small in size). Water utility mergers and acquisitions reflect a very gradual trend toward regionalization and, in some cases, privatization of water services.

Existing utilities also can be used to provide service as an alternative to the creation of new water utilities. Indeed, many states will not certify a new water system if service from an existing provider is feasible. In addition to expanding regional water operations, some water utilities have diversified by entering the wastewater industry. Likewise, some private energy utilities providing electricity and natural gas have ventured into the water business. The formation and expansion of multi-system utilities and multi-sector utilities are part of potentially fundamental structural changes occurring in the water industry.

Pricing and Structural Change

Pricing is intrinsically related to structural change in the water industry. For example, a utility's level of interest in a merger or acquisition opportunity may depend on anticipated price effects. A negotiated sale of a utility might include limitations on near-term pricing practices or even price caps or freezes for a fixed period of time. Larger utilities often are reluctant to consider acquiring smaller, nonviable systems unless reliable means of cost recovery can be identified and secured. An acquisition candidate often presents substantial infrastructure needs but its service community lacks the ability to pay for improvements through higher rates. As mentioned already, the acquisition will yield some economies but not usually economies of a magnitude great enough to offset the diseconomies associated with the smaller system's operations. Some argue that more acquisitions would occur if acquiring companies were provided incentives, including the ability to spread costs throughout the utility's multiple service territories.

Although the dilemmas of small water systems have been extensively studied, the issue of pricing probably has received considerably less attention than viability assessment, capacity building, and related approaches. Pricing policies ultimately will play a role in shaping the future structure of the water industry, including but not limited to the future of small water systems.

Incentives for Restructuring

Single-tariff pricing has the potential to encourage economic industry consolidation and regionalization, as well as privatization.[37] Averaging costs mitigates rate shock for customers and enhances revenue stability for utilities; it also is relatively simple to administer. Some investor-owned utilities have sought rate equalization in direct connection with small system acquisitions.[38] According to one industry representative,

[37] Janice A. Beecher, G. Richard Dreese and John D. Stanford, *Regulatory Implications of Water and Wastewater Utility Privatization* (Columbus, OH: The National Regulatory Research Institute, 1995), 141.
[38] Patrick Mann, G. Richard Dreese, and Miriam A. Tucker, *Commission Regulation of Small Water Utilities: Mergers and Acquisitions* (Columbus, OH: The National Regulatory Research Institute, 1986); Raymond W. Lawton and Vivian Witkind Davis, *Commission Regulation of Small Water Utilities: Some Issues and Solutions* (Columbus, OH: The National Regulatory Research Institute, 1983).

single-tariff pricing "could help solve the dilemma of other nonintegrated small water systems."[39]

The focus of this report is on single-tariff pricing by regulated investor-owned utilities because the issue has emerged primarily within these parameters. Rate consolidation can be used as easily by publicly owned utilities as by investor-owned utilities.[40] Many of the larger metropolitan water systems could acquire numerous contiguous small systems and employ single-tariff pricing with a negligible customer-bill impact.[41] In the context of public utility regulation and mandated takeovers, it appears that the burden of acquiring troubled systems seems has fallen more to privately owned than to publicly owned water utilities. This is because many small systems are privately owned and regulated, the larger investor-owned systems do not confine their service territories to local political boundaries and regulators can provide acquisition incentives to jurisdictional utilities. In the few states where a takeover can be mandated, it may be easier to impose this responsibility on a private system.

Unfortunately, little systematic evidence on the use of single-tariff pricing in the public sector is available. Also, most municipal utilities and many public authorities appear to operate single water systems only. However, one example of the use of single tariff pricing in the nonprofit context can be found in Clark County, Washington. Clark Public Utilities is a customer-owned district that provides water service (and other services) to 24,000 customers throughout Clark County and also operates several small "satellite" systems for small groups of homes throughout the county.[42] All customers pay the same monthly customer charge and uniform volume rate.

Some municipalities do impose zonal rates that reflect differences in elevation and pumping costs. Generally, however, municipal water utilities impose a single pricing structure for all citizen-ratepayers served within municipal boundaries; ratepayers outside of municipal boundaries often pay a higher rate.[43] Higher "outside" rates are justified on the grounds that "inside" customers bear more risks and burdens associated with financing capital improvements through municipal funding instruments. However, the rate differential often appears to be somewhat arbitrary. In a few states, charging a different rate to outside customers can trigger economic regulation by the state (Pennsylvania is an example).

Some insights can be gained from two states where state economic regulation applies both the privately and publicly owned water systems. In Wisconsin, state law *mandates* single-

[39] Edward M. Limbach, "Single Tariff Pricing," *Journal American Water Works Association* 75 no. 9 (September 1984): 52.
[40] Limbach (1984).
[41] Cities may lack adequate incentives or opportunities or acquisitions. In contrast, regulatory agencies can offer investor-owned utilities with rate-of-return and other incentives. Some commissions have the authority to mandate takeovers of smaller, nonviable water systems.
[42] Clark Public Utilities (http://clarkpud.com/Default.htm).
[43] The interest of many investor-owned utilities in single-tariff pricing clearly stands in contrast to the apparent interest of many municipally owned utilities in spatially differentiated pricing.

tariff pricing for municipalities.[44] In West Virginia, where economic regulation applies to public service districts, as well as investor-owned utilities, single-tariff pricing has been an issue because of the needs of the state's rural areas. Single-tariff pricing is approved on a case-by-case basis and both single tariffs and multiple tariffs are used throughout the state.

Many of the state commissions have broadly supported the idea of consolidating water utilities and specifically approved valuation, costing, and pricing practices that encourage larger and healthier utilities to acquire smaller and less healthy utilities. The Pennsylvania Public Utility Commission, in its policy statement regarding acquisitions, explicitly mentions single-tariff pricing. These regulatory policies are being adopted within the larger context of structural change in the water industry. These structural changes may include reconsideration of traditional methods of regulation and ratemaking, as is taking place in many jurisdictions for the other utility industries.[45]

[44] Wisconsin S. 66.069 (1) (a) (1971).

[45] In the increasingly competitive electric and natural gas industries, for example, the interest in regulatory alternatives is high. These alternatives include price caps and flexible rates, which essentially deregulate rate design by giving utilities greater discretion in setting rates within broad parameters.

5. Cost Profile of the Water Industry

Water utilities remain one of the more tried and true monopolies in terms of basic economic characteristics. In general, water service can be provided efficiently by a vertically integrated supplier; two or more suppliers (or redundant distribution systems) in the same service area would greatly increase costs and rates. The technology of water supply clearly demonstrates economies of scale, meaning that average unit costs decrease with the quantity of water provided. The prevalence of many small utilities undermines the industries' overall efficiency in terms of achieving economies of scale.

Even in comparison to other fixed utilities, water utilities require substantial investment in fixed assets relative to the variable costs of production (including the cost of raw water, energy, and treatment chemicals).[46] Using the standard of capital investment per revenue dollar, water supply is among the most capital-intensive of all utility sectors. Capital investment in water supply mainly is a function of the need to establish production capacity; maintain a complex storage, transmission, and distribution network; and meet both fire-protection specifications and peak demands. In general, the water supply industry has high fixed costs and low capital-turnover rates. However, the capital intensity of the water supply industry also can be explained by the industry's relatively low variable (operating) costs, which translate into relatively low operating revenues.

Reflecting these cost characteristics, water rates typically take the form of a fixed charge that does not vary with usage and a variable charge that varies with usage. Traditional cost-of-service principles can lead to very high fixed charges and very low variable charges for water utilities. Efficiency-oriented rates, however, tend to accentuate the variable component of the water bill in order to affect consumption behavior.

Trends in Water Costs

Water supply clearly is a *rising-cost* industry. Water supply utilities, and their regulators at the federal, state, and local levels, are increasingly aware of the water supply industry's changing revenue requirements. Three key forces affecting the industry's costs are (1) the need to comply with regulatory provisions of the Safe Drinking Water Act (SDWA), (2) the need to replace and upgrade an aging water delivery infrastructure, and (3) the need to meet population growth and promote economic development. In addition, water utilities face a variety of secondary cost forces. These include the often high cost of borrowing to finance capital projects (especially for small systems) and the shift to nonsubsidized, self-sustaining operations (especially for publicly owned systems).

[46] For a comparison of the water industry to the electric, natural gas, and telecommunications industries, see Janice A. Beecher, *The Water Industry Compared: Structural, Regulatory, and Strategic Issues for Utilities in a Changing Context* (Washington, DC: National Association of Water Companies, 1998).

The concurrent and mutually reinforcing impact of these forces on many water utilities presents a substantial pressure on both capital and operating costs, a pressure not previously experienced by the water supply industry. In response, water utilities are reexamining their cost allocation and rate design practices. The interest in alternative ratemaking methods for the water sector is on the rise.

Rising costs, along with structural and regulatory changes in this industry is placing new demands on utility regulators. However, rising costs should not be taken for granted but closely scrutinized. Moreover, the water supply industry must be held accountable for making prudent decisions in response to its changing cost profile. The industry must be able to fully justify the use of alternative approaches to meeting revenue requirements (including automatic cost-adjustment mechanisms, pass-throughs, and special surcharges, as well as cost-allocation and rate-design methods).

Water utility regulators generally are open to the consideration of policy alternatives but also vigilant about whether these alternatives are within the scope of regulatory authority and consistent with accepted regulatory principles. Regulators will want to be especially cautious about affecting the incentives that determine whether utility costs are effectively managed. Thus, the industry perspective on rising costs and how to address them should be tempered by a reasoned regulatory perspective.

Economies of Scale

Although an arbitrary threshold, water systems serving under 3,300 (or approximately 1,000 service connections) generally lack economies of scale in production and other aspects of service.[47] As a result, many small water systems are prone to capacity problems and difficult to sustain over time.

Economies of scale in water supply, particularly in the areas of source development and treatment, make it difficult for smaller water utilities to perform as well as larger water utilities. Declining unit costs of production indicate scale economies; as the volume of water "produced" (that is, withdrawn and treated) increases, the cost per gallon or cubic foot decreases. At lower unit costs, production is less costly in the aggregate and more efficient at the margin.

Very small water systems underperform primarily because they simply are not large enough to achieve economics of scale. Scale economies in the water sector explain why smaller utilities tend to have less capacity in financial, managerial, and technical terms.[48] Rising

[47] U.S. Environmental Protection Agency, *Affordability of the 1986 SDWA Amendments to Community Water Systems* (Washington, DC: U.S. Environmental Protection Agency, 1993).
[48] Janice A. Beecher, G. Richard Dreese, and James R. Landers. *Viability Policies and Assessment Methods for Water Utilities* (Columbus, OH: The National Regulatory Research Institute, 1992).

costs over the past decade have exacerbated the condition of smaller systems.[49] Capacity-development problems often are manifested in higher rates for water service.

Scale economies (or lack thereof), thus become an important determinant of how much people pay for water service. As a generalization, assuming comparable system characteristics and cost-based pricing, larger systems should be able to provide service at a lower price than smaller systems. In reality, of course, many factors other than system size (such as the quality of source water and treatment methods required) influence ultimate water costs and prices. But as a generalization, it is widely held that smaller water systems must charge customers much higher rates for water service comparable to service provided by larger water systems.

Importantly, the economies of scale in water production are associated with the *volume* of water produced (not simply the number of service connections). Even smaller systems that are fortunate enough to have one or two large-volume customers will enjoy some economies of scale. Two utilities can have a comparable level of investment per customer and cost-of-service for the same number of residential customers, but if one also serves a large industrial firm and economies of scale are achieved, everyone in that community will enjoy lower water bills. In other words, when *controlling* for large-volume use, the level of investment and the cost of service can be quite comparable from system to system. One of the arguments in favor of single-tariff pricing is that it allows all customers to benefit from the location of large customers anywhere in the composite service territory.[50]

Some evidence about the effect of utility size on water prices is available. A 1996 survey, summarized in Table 4, found that median prices decline as system size increases for different classes of customers served (residential, commercial, and industrial). The implication is that small-systems customers pay more for roughly the same level of service as large-system customers. As a consequence, the affordability of water service is a greater threat for small systems. "Rate shock" is another problem for many smaller systems because increasing costs must be spread over a smaller customer base.

In some respects, rate consolidation is similar to "aggregation," a tool emerging in the context of electric industry restructuring. Aggregation is used to group customers according to similar characteristics, usage patterns, or service requirements. Aggregation can provide access to services and a degree of purchasing power to disadvantaged customers. In effect, multi-system utilities are aggregators for the customers in the various systems they manage. Both aggregation and rate consolidation can promote the broader goal of universal service.

[49] Janice A. Beecher, Patrick C. Mann, and John D. Stanford, *Meeting Water Utility Revenue Requirements* (Columbus, OH: The National Regulatory Research Institute, 1993).
[50] Conversely, large-volume users in the larger service territory might complain that single-tariff pricing forces them to subsidize customers in outlying areas.

Table 4
Monthly Water Bills by System Size and Customer Class

Customer Class	Group A Systems Producing >75 MGD *(n=34)*	Group B Systems Producing 15 to 75 MGD *(n=61)*	Group C Systems Producing < 15 MGD *(n=47)*
Residential			
Median monthly charge for 1,000 cubic feet (7,480 gallons)	$13.19	$14.64	$15.61
Commercial			
Median monthly charge for 50,000 cubic feet (374,000 gallons)	$486.82	$530.92	$578.96
Industrial			
Median monthly charge for 1,000,000 cubic feet (7,480,000 gallons)	$7,926.97	$8,747.06	$10,292.34

Source: Raftelis Environmental Consulting Group, *1996 Water and Wastewater Rate Survey* (Charlotte, NC: Raftelis Environmental Consulting Group, 1996), Exhibit 2.
MGD = million gallons daily. *n* = number of systems in the sample.

Capacity Development

Federal policymakers and state regulators, including both drinking water primacy agencies and public utility commissions, have long been concerned about how to check the emergence of new nonviable water systems, how to improve the performance capacity of existing systems, and how to maintain safe and affordable water service.[51] The 1986 Safe Drinking Water Act triggered substantial attention to small-system issues and the problem of keeping rates affordable in light of the newly enacted standards.

Regulators continue to seek out ways to balance the equally legitimate fiscal concerns of water utilities (that is, financial capacity) and utility customers (that is, affordability). The 1996 Safe Drinking Water Act codified capacity-development policies for new and existing water systems and elevated the capacity-affordability conundrum to a higher place on the policy agenda.

Capacity in this context is defined in terms of a utility's financial, managerial, and technical well being. Financial capacity carries particular importance because a financially healthy utility will have the resources needed for professional management and technically appropriate operations. Many (but not all) small water systems struggle with significant capacity problems. These problems are manifested by the small water utility's poor performance in many areas, including regulatory compliance.

[51] Beecher, Dreese, and Landers (1992).

Traditionally, both economic and public health regulators have been very focused on small-system capacity issues. Policymakers have paid considerable attention to smaller water systems and the tradeoffs between ensuring a financially healthy system and maintaining affordable rates for safe and reliable water service. One manifestation of capacity problems is noncompliance with drinking water standards. For small systems, these violations often include failure to meet monitoring and reporting requirements. Small systems also have difficulty complying with public utility commission regulations. For very small systems, meeting the procedural mandates of economic regulation (such as rate filing requirements) can be difficult.

Small water systems have long troubled state economic regulators. Many (but certainly not all) of the commission-regulated water systems are small in size, which poses certain public policy problems. Particularly problematic are the very small systems that were the product of unchecked real estate development and lax local zoning policies. Many of these systems are geographically isolated, which often precludes interconnection with another system. Lacking economies of scale, smaller water systems typically must charge a much higher rate for service than larger systems. Higher rates make water service less affordable for customers of smaller water systems.

As a utility monopoly, water supply demonstrates substantial economies of scale. Larger water systems enjoy these economies, meaning that they can spread certain costs over a larger customer base. Lower production costs are reflected in lower prices to customers. Smaller systems must recover revenue requirements over a smaller customer base. In general, smaller systems are more likely to encounter capacity and affordability problems.

Consumer Affordability

Economic theory argues strongly for cost-based utility rates, that is, rates based on the true cost of providing a service. An efficient (cost-based) rate should sustain the water system; however, if the rate is unaffordable to the service population and customers cease to pay for and/or receive the service, the water system itself may cease to exist. This solution may achieve a degree of economic efficiency, while sacrificing other fundamental public health, safety, and quality-of-life purposes.

For many water customers, the affordability of water service is a growing problem. The problem of affordability affects customers in terms of increased arrearages, late payments, disconnection notices, and actual service terminations. Affordability affects utilities in terms of expenses associated with credit, collection, and disconnection activities; revenue stability and working capital needs, and bad debt or uncollectible accounts that other customers must cover.

Other ramifications of the affordability issue also are becoming apparent. If a customer base cannot support the cost of water service, potential lenders may be concerned about the utility's financial health and ability to meet debt obligations. Moreover, disconnecting

residential water customers can present a public relations nightmare for utilities, particularly because essential services are involved. Increasingly, problems of bad debt also extend to nonresidential utility customers. Financial distress and bankruptcies in the commercial and industrial sectors can leave utilities holding the bag. However, the larger issue of affordability is primarily a concern with respect to low-income residential consumers.

For low-income customers, who have little choice but to buy service from the local utility, paying more for basic water service means going without less essential and more discretionary products and services. Thus, rising water prices can contribute to deterioration in the quality of life for low-income utility customers. While larger systems can spread the cost of providing assistance to low-income customers, a small system with an impoverished customer base has no opportunities for even limited subsidization.

6. Examples of Single-Tariff Pricing

All utility pricing involves some form of *averaging.* Utility systems do not establish a rate for Customer A based on the cost of serving Customer A, a rate for Customer B based on serving Customer B, and so on. Doing so might be considered efficient and equitable, but it also would be extraordinarily costly from an administrative standpoint (that is, the transaction costs would be astronomical). Instead, utility systems tend to group customers into customer classes—residential, commercial, and industrial—based on similarities in the cost of serving customers in those categories. Occasionally, a unique customer (often a large-volume customer, such as a food-processing plant) might be able to negotiate a special rate based on unique cost-of-service characteristics, but most customers pay a rate based on cost averaging.

Basic Single-Tariff Pricing

Single-tariff pricing basically is the conceptual "opposite" of zonal or spatially differentiated pricing. Single-tariff pricing suggests that ratemakers should de-emphasize spatial differences in costs; costs are aggregated rather than disaggregated. One of the chief advantages of single-tariff pricing, from the utility's standpoint, is simplification. Single-tariff pricing does not negate the need to determine the revenue requirement and to allocate the revenue requirement among customer classes. It may still be necessary for the utility to maintain cost data for separate facilities and services in accordance with accepted accounting practices and regulatory reporting standards. Once revenue requirements are established, however, the *allocation* process is greatly simplified because it is unnecessary to spatially allocate common costs (that is, costs that are not site-specific). Total costs simply are spread over the consolidated customer base and only one rate is designed for each class of customers or service.

A sample calculation of a single-tariff price is provided in Table 5. In this very simple illustration, the cost of service and total water sales are varied for three separate service territories (A, B, and C). A relatively modest amount of water usage (5,000 gallons per month or 60,000 gallons per year) is assumed. The number of residential connections and the annual cost of service are varied to reflect differences in costs and economies of scale. For simplicity, only residential customers are considered.

Service Territory A is in the most favorable position, in terms of economies of scale (number of customers and sales volume); Service Territory C is in the least favorable position, which accounts for the higher costs per connection and per sales. A stand-alone tariff results in a cost of service equivalent to $1.94, $2.08, and $2.78 per 1,000 gallons of water service in the three respective service territories. The transition to single-tariff pricing would result in a rate of $2.11 per 1,000 gallons for all customers in all three service territories.

The illustration reveals the resulting shift in cost responsibility from the customers in the larger Service Territory A to the smaller Service Territory C. However, the *decrease* in rates to customers in Service Territory C of 67 cents per 1,000 gallons (24.1%) is offset

Table 5
Sample Calculation of Single-Tariff Pricing

Service Territory A	
Total residential connections	6,000
Total annual water use per connection	60,000
Total annual water sales (gallons)	360,000,000
Total annual cost of service	700,000
Annual cost per connection	$116.67
Cost per 1,000 gallons sold	$1.94
Service Territory B	
Total residential connections	2,000
Total annual water use per connection	60,000
Total annual water sales (gallons)	120,000,000
Total annual cost of service	250,000
Annual cost per connection	$125.00
Cost per 1,000 gallons sold	$2.08
Service Territory C	
Total residential connections	1,500
Total annual water use per connection	60,000
Total annual water sales (gallons)	90,000,000
Total annual cost of service	250,000
Annual cost per connection	$166.67
Cost per 1,000 gallons sold	$2.78
Combined Service Territory	
Total residential connections	9,500
Total annual water use per connection	60,000
Total annual water sales (gallons)	570,000,000
Total annual cost of service	1,200,000
Annual cost per connection	$126.32
Cost per 1,000 gallons sold	$2.11

Rate Impact of Single Tariff	**Per 1,000 Gallons**	**Percentage Change**
Service Territory A	+17 cents	+8.8%
Service Territory B	+3 cents	+1.4%
Service Territory C	-67 cents	-24.1%

Source: Author's construct. For simplicity, only residential customers are considered and a price-elasticity adjustment (that is, a usage response to the change in price) is not included in the illustration.

primarily by the relatively smaller *increase* in rates to customers in Service Territory A of 17 cents per 1,000 gallons (8.8%). The larger number of customers in Service Territory A lessens the impact of the rate adjustment on a per customer basis. Customers in Service Territory B are least affected, experiencing an increase of 3 cents per 1,000 gallons (1.4%) in rates. The lower cost-of-service in Service Territory B (relative to the number of connections served) in comparison to Service Territory C accounts for the difference in the rate impact.

In practice, rate design for public utilities is far more complex.[52] (See Appendix C.) Utilities must analyze the cost of service, including the cost of capital, and determine revenue requirements for the period over which rates will be set (the "test year"). A utility's costs will be allocated according to customer groups (or classes) and the demand characteristics of those groups. Typically, residential customers are distinguished from nonresidential customers, the latter of which are further divided into commercial and industrial classes.

Variations of Single-Tariff Pricing

Utility tariffs, or rate structures, actually have various components. These components make it possible for utilities to approach single-tariff pricing in different ways depending on system cost characteristics and the nature of the current rate structure. Table 6 illustrates three variations. In the first, uniformity is established only for the fixed charge portion of the utility bill. In the second variation, fixed charges vary and uniformity is established for the variable portion of the utility bill. The third variation is the more complete example of single-tariff pricing, where both fixed and variable charges are made uniform.

These variations can be used to phase-in single-tariff pricing over time, as illustrated in Table 7. A phase-in plan reflects the principle of gradualism in ratemaking. A significant change in rate levels or rate design can be implemented in phases, rather than at once, in order to reduce rate shock to customers and revenue instability to the utility. In this example, the utility first consolidates fixed charges and gradually consolidates the variable rate. Many utilities have used a phased approach to implementing single-tariff pricing, with the encouragement and approval of regulators.

At least three other variations of single-tariff pricing can be identified. First the utility can retain current rate differentials and equalize future rate increases. This addresses the rate shock issue while maintaining rate differences based on historical differences in costs. Second, the utility can use rate "bands" to establish tariffs for groups of systems with similar cost characteristics. Third, the utility can combine rate equalization with the strategic use of short-term or mid-term surcharges to pay for extraordinary costs associated with blending the operations of multiple systems. Each of these methods has been implemented on at least one occasion.

[52] Beecher and Mann (1990).

Because of rising costs, and the need for rate customers to gradually become accustomed to higher rates, it may not be desirable to lower rates at all for any customer group. Rather, it may be advisable to "cap" higher rates in the higher-cost areas and gradually increase rates in the lower cost areas. Although customers should be educated about changes in the rate structure, a phased approach and a price-cap approach might help mitigate complaints about cost shifting.

Table 6
Pricing Variations for Fixed and Variable Water Charges

	Before Implementation		After Implementation	
	Fixed Charge	**Variable Rate**	**Fixed Charge**	**Variable Rate**
Variation 1: Change to Single Fixed Charge Only				
Service Territory A	$6.00 per month	$1.95 per 1,000 gallons	$7.50 per month	$1.95 per 1,000 gallons
Service Territory B	$9.00 per month	$2.15 per 1,000 gallons	$7.50 per month	$2.15 per 1,000 gallons
Variation 2: Change to Single Variable Rate Only				
Service Territory A	$6.00 per month	$1.95 per 1,000 gallons	$6.00 per month	$2.05 per 1,000 gallons
Service Territory B	$9.00 per month	$2.15 per 1,000 gallons	$9.00 per month	$2.05 per 1,000 gallons
Variation 3: Change to Single Tariff for Fixed Charges and Variable Rates				
Service Territory A	$6.00 per month	$1.95 per 1,000 gallons	$7.50 per month	$2.05 per 1,000 gallons
Service Territory B	$9.00 per month	$2.15 per 1,000 gallons	$7.50 per month	$2.05 per 1,000 gallons

Source: Author's construct.

Table 7
Phase-In Approach to Single-Tariff Pricing

	Before Implementation		After Implementation	
	Fixed Charge	**Variable Rate**	**Fixed Charge**	**Variable Rate**
Phase 1: Change to Single Fixed Charge				
Service Territory A	$6.00 per month	$1.95 per 1,000 gallons	$7.50 per month	$1.95 per 1,000 gallons
Service Territory B	$9.00 per month	$2.15 per 1,000 gallons	$7.50 per month	$2.15 per 1,000 gallons
Phase 2: Adjust Variable Rates				
Service Territory A	$7.50 per month	$1.95 per 1,000 gallons	$7.50 per month	$2.00 per 1,000 gallons
Service Territory B	$7.50 per month	$2.15 per 1,000 gallons	$7.50 per month	$2.10 per 1,000 gallons
Phase 3: Equalize Variable Rates				
Service Territory A	$7.50 per month	$2.00 per 1,000 gallons	$7.50 per month	$2.05 per 1,000 gallons
Service Territory B	$7.50 per month	$2.10 per 1,000 gallons	$7.50 per month	$2.05 per 1,000 gallons

Source: Author's construct.

Two Recent Cases

In 1997, the Indiana Utility Regulatory Commission approved a hard-won plan by the Indiana-American Water Company to consolidate rates. Figure 6 illustrates the difference in revenue requirements per equivalent residential customer for stand-alone pricing, common-management pricing, and single-tariff pricing.[53] Stand-alone pricing reflects the costs that a commonly owned or managed water system would incur if it replicated the same services and functions on a basis completely independent of the parent utility and other systems. Common-management pricing reflects costs that are incurred on the basis of the joint operation of multiple systems. Costs under common management, given management economies of scale and scope, should be less for the utility than the sum of stand-alone costs for all of the operated systems.

[53] In this illustration of single-tariff pricing, the use of equivalent customers produces a comparable but not identical level of revenues per customer across all service territories because of differences in water usage.

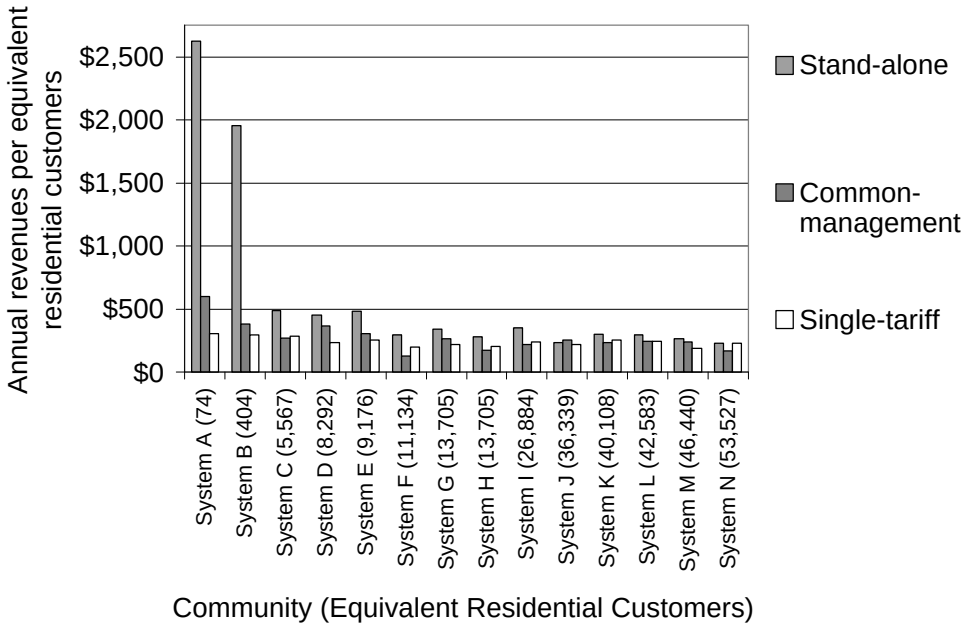

Figure 6. Revenue Requirements per Equivalent Residential Customers for Stand-Alone Costs, Common-Management Costs, and Single-Tariff Pricing

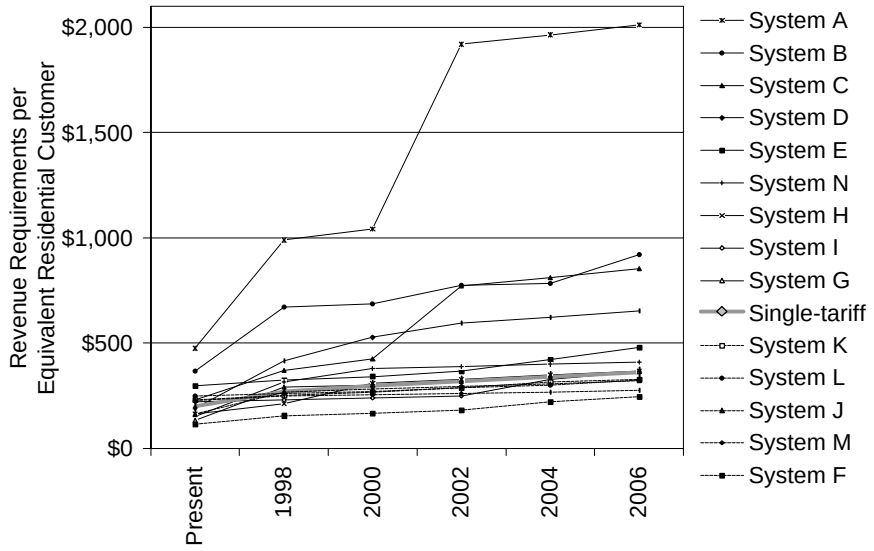

Figure 7. Forecast Revenue Requirements per Equivalent Residential Customers Including Capital Improvements

Source: John F. Guastella, Testimony in Cause No. 40703 before the Indiana Utilities Regulatory Commission, Indiana-American Water Company (1997), Exhibits JFG-5, JFG-R-1, and JFG-R-3.

For each community served, the economies of scale and scope achieved by common management are obvious. Left to their own devices, none of the communities could replicate the same level of service at the same cost. In other words, each community's true stand-alone cost would be much higher than their share of costs under consolidated operations. These cost savings are achieved independent of the pricing structure.

The additional benefits of single-tariff pricing are fairly obvious. The smaller, very high cost systems at the low end of the spectrum clearly have much to gain through rate consolidation. Both common-management and consolidated rates are a fraction of what the system would pay on a stand-alone basis. The impact of the single-tariff price on customers at the middle and higher end of the spectrum is not necessarily substantial.

The rate stabilizing effect of single-tariff pricing is illustrated by the revenue requirements forecast for the same group of utilities (Figure 7). Over time, the single-tariff provides considerable rate (and revenue) stability and, once again, the benefits for the smaller systems are clear. In this particular case, substantial rate hikes associated with planned capital improvements for four systems can be mitigated. The timing of capital expenditures will play a role in determining perceptions about the benefits of single-tariff pricing to individual communities. The obvious affordability benefits to small systems, as well as the general "smoothing" effect on revenue requirements, are among the leading rationales for single-tariff pricing.

Similar results were achieved in another recent case involving a New Hampshire utility, Pennichuck Water Works, Inc. Without rate consolidation, some water customers would face annual water bills as high as $1,200, as illustrated in Figure 8. In its decision, the New Hampshire commission directly addressed subsidy and affordability issues, as well as the anticipated benefits of adopting the single tariff:

> We do not believe it would be in the public interest to impose annual rates in the range of $800 to $1200, as would be the case here, when a reasonable alternative is available. By consolidating the community systems with the core system for ratemaking purposes, all customers would face a uniform tariff which, for the average residential customer, would be approximately $253 per year. The rates for the average residential customer in the core system would increase less than $1.00 per month, for a total of $8 per year, under the rate consolidation proposal which, in light of the alternative, we find to be acceptable. We consider a single tariff rate of approximately $253 per year for the core residential customer to be just and reasonable. A consolidated rate will ensure affordability and the continued viability of many of Pennichuck's community systems. It will also enable Pennichuck to operate in a more administratively efficient manner by eliminating separate general ledgers for each system, thereby reducing administrative costs.[54]

[54] New Hampshire Public Utilities Commission, Order in Docket DR 97-058, Pennichuck Water Works, Inc. (1998).

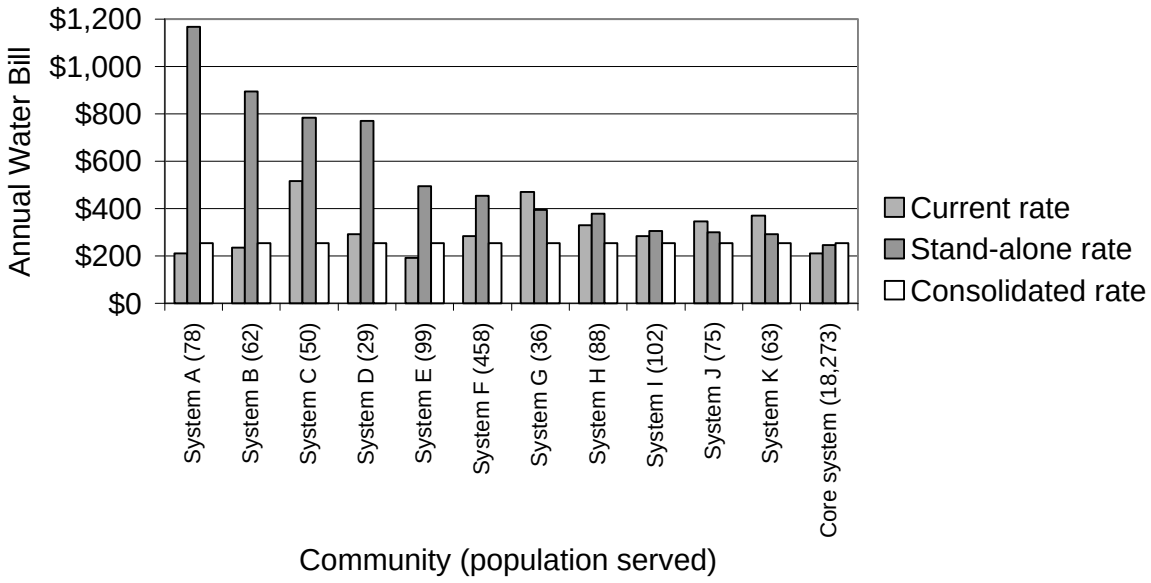

Figure 8. Stand-Alone and Consolidated Rates for Pennichuck Water, New Hampshire

Source: New Hampshire Public Utilities Commission, Order in Docket DR 97-058, Pennichuck Water Works, Inc. (1998).

Single-Tariff Pricing in Great Britain

Great Britain provides a "real life" example of the use of single-tariff pricing on a very large scale. In 1989, Great Britain's ten large regional water, wastewater, and stormwater service providers (shown in Figure 9) were transformed from nationalized to investor-owned utilities. Since privatization, the tariffs established for *measured* (metered) service within each of the regional systems have been uniform. In other words, single-tariff pricing is implemented along with metering. Each of the water utilities provides a metering option, although a large proportion of British households is not metered. For *unmeasured* service, standing charges are uniform. However, variable charges are based not on water volumes but on the "rateable" value of properties served. These charges vary according to geographic zones for the Severn Trent and Thames water utilities, but not for the other utilities.

Tariffs for residential water service for 1995-1996 are reported in Table 8. Metered rates for large users are comprised of standing (fixed) charges that vary by meter size, plus a volumetric charge. Standing and volumetric charges are uniform for large-volume customers throughout the company service territories.

In addition to the larger privatized utilities, another twenty-one water service companies also serve somewhat smaller service territories in Great Britain, although in terms of population served almost all seem quite substantial in size when compared to many U.S. water systems. For the most part, these companies also employ single-tariff pricing. All of the twenty-one companies use a uniform standing (or fixed) charge; four have different volumetric rates for different geographic areas served.[55]

[55] For one of these companies (Three Valleys), two of three areas have comparable metered rates, suggesting a gradual move toward uniform pricing. A fifth water company (North East) adopted single-tariff pricing in the 1993-94 rate period for its two areas (each of which also is subdivided).

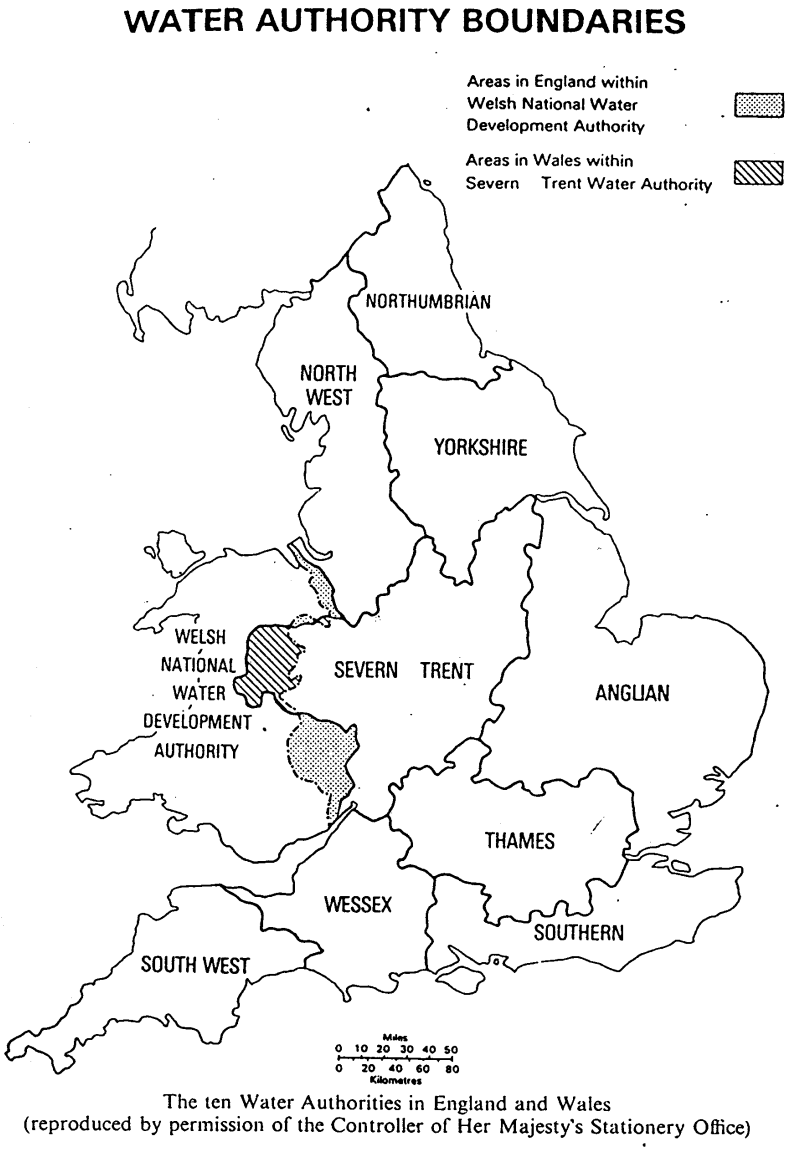

Figure 9. Regional Water Utilities in Great Britain.

Source: Daniel A. Okun, *Regionalization of Water Management: A Revolution in England and Wales* (London: Applied Science Publishers, 1977).

Table 8
Metered Water Tariffs for British Water Companies, 1995-1996 (Household Customers)

Company	Service Characteristics			Tariffs for Water Service			
				Unmetered		Metered	
	Area Served	Households Served	Metered Households				
	km^2	(000)	(%)	Standing charge (pounds)	Rateable Value Charge	Standing charge (pounds)	Volumetric Charge p/m^3
Anglian	22,000	1,510	16.8	37.35	50.69	27.00	69.62
Dwr Cymru	20.400	1,081	2.8	81.28	38.72	33.00	75.39
North West	14,415	2,643	4.9	29.00	35.20	32.00	60.10
Northumbrian	3,850	470	0.6	52.00	27.15	31.20	53.43
Severn Trent	19,745	2,804	8.2				
Zone 1				none	45.85	27.00	62.90
Zone 2				"	41.29	"	"
Zone 3				"	40.04	"	"
Zone 4				"	41.81	"	"
Zone 5				"	48.08	"	"
Zone 6				"	50.02	"	"
Zone 7				"	50.38	"	"
Zone 8				"	40.04	"	"
East Worcester				"	41.29	"	"
South West	10.300	585	9.1	40.00	49.43	27.20	74.63
Southern	4,450	879	11.8	21.00	33.70	31.00	52.10
Thames	8,200	3,022	5.4				
Area 1				14.00	25.41	20.00	48.14
Area 2				"	25.85	"	"
Area 3				"	19.45	"	"
Area 4				"	23.29	"	"
Area 5				"	29.90	"	"
Area 6				"	25.90	"	"
Area 7				"	35.63	"	"
Wessex	7,350	435	9.7	24.00	45.45	30.50	67.78
Yorkshire	13,900	1,729	6.0	22.00	56.60	25.00	64.20

Source: Office of Water Services, *1995-96 Report on Tariff Structure and Charges* (Birmingham, UK: Office of Water Services, 1995

7. The Public Utility Commission Role

Regulation of the water industry, like the water industry itself, is fragmented and pluralistic. All community water systems, regardless of their ownership, are subject to federal and state drinking water regulations pursuant to the federal Safe Drinking Water Act. Drinking water standards focus on public health concerns. Water systems in many states also are subject to water quantity regulations, meaning that water withdrawals are regulated through registration or permitting mechanisms. Economic regulation of water utility prices and rates of return is the domain of the state public utility commissions. The commissions play a quasi-administrative, quasi-legislative, and quasi-judicial role in terms of overseeing the utility industries.

Although their jurisdiction for the water industry is not comprehensive, and generally applies only to investor-owned water systems, the state public utility commissions have specific authority and expertise in the area of pricing. Moreover, many commission-regulated systems are small in size. Thus, pricing practices in general, and commission policies in particular, are worth considering when crafting solutions for small systems.

Forty-five commissions presently have authority to regulate investor-owned water utilities. In some of the states, commission regulation extends to other types of water utilities under certain circumstances. For example, some states regulate municipal water utilities if they provide service outside of municipal boundaries. In Florida, counties can opt to regulate water systems; in Indiana, municipal water utilities can opt to be regulated. In terms of commission jurisdiction and authority, many variations among the states can be found.

Not all water utilities are subject to commission regulation. Most water utilities in the United States are publicly owned and not subject to state economic regulation. The state public utility commissions do not regulate water utilities in Georgia, Michigan, Minnesota, North Dakota, South Dakota, or Washington, D.C.

Number of Regulated Utilities

Periodic surveys have been conducted for the purpose of counting the number of regulated water and wastewater systems. As noted earlier, for 1995 the total number of commission-regulated water utilities in the United States was approximately 8,537.[56] Approximately 4,095 regulated water utilities are classified as investor-owned water utilities.[57] Table 9 summarizes the 1995 inventory of commission-regulated water and wastewater utilities.

[56] Beecher (1995).

[57] These data include 15 investor-owned utilities and 3 homeowners' associations that no longer are regulated in Michigan.

Table 9
Commission-Regulated Water and Wastewater Utilities

Utility Ownership	Water Utilities		Wastewater Utilities	
	Number of Commissions	Number of Utilities	Number of Commissions	Number of Utilities
Investor-owned or private	46	4,095	28	1,233
Municipally-owned	11	1,547	6	649
Districts	7	1,300	4	205
Cooperatives	4	1,436	2	50
Homeowners' associations	6	85	1	0
Nonprofits	1	73	1	15
Other	1	1	0	0
Totals	46	8,537	28	2,152

Source: Janice A. Beecher, *1995 Inventory of Commission-Regulated Water and Wastewater Utilities* (Indianapolis, IN: Center for Urban Policy and the Environment, 1995). Includes data for Michigan, which ceased regulating 18 systems in 1996.

Leading states in terms of the number of regulated water utilities are Texas (3,300), Mississippi (740), Wisconsin (573), West Virginia (421), Arizona (354), and New York (354). For investor-owned water utilities, leading state jurisdictions are Texas (1,200), Arizona (354), New York (334), North Carolina (226), Florida (210), California (199), and Pennsylvania (190).

Between the 1989 and 1995 surveys, the number of regulated investor-owned utilities declined by 445 utilities (10 percent); the total number of regulated utilities declined by 1,398 utilities (14 percent).

States in which the number of regulated water utilities (including investor-owned utilities) declined by a substantial amount include Arizona, Connecticut, Indiana, New York, North Carolina, Pennsylvania, and Texas. Commission sources suggest that mergers and acquisitions were the leading cause of the decline. Systems rarely cease operations altogether. However, transfers to unregulated ownership forms and changes in commission jurisdiction also can contribute to the decline in the number of regulated utilities. A few states, including Mississippi and Oregon, had substantial increases in the number of utilities under their jurisdiction. Nebraska's gain is noteworthy because jurisdiction for the water industry was initiated in 1994.

The decline in the number of regulated utilities is consistent with an anticipated trend in industry consolidation. Mergers and acquisitions within both the public and private segments of the industry will gradually reduce the number of regulated utilities. However, the population served by regulated utilities will not necessarily decline as a result of reductions in the total number of regulated utilities.

Despite the decline in the number of regulated water utilities, water utility regulation continues to rise in importance on the agendas of many state commissions.[58] Economic regulation of water utilities is important given monopoly power, rising costs, structural change, and a degree of uncertainty about the industry's future.

Capacity-Development Policies

The commissions, which are well aware of the precarious condition of many small water systems, can and have addressed capacity development through three basic strategies. The first strategy involves slowing the creation of new water systems. State regulations can create substantial barriers to entry for new water systems. Many of the state commissions, as well as the state drinking water agencies, are tightening the certification process and more carefully scrutinizing the financial, managerial, and technical competencies of proposed new systems.

The second strategy involves procedural simplification for small water systems to lower the administrative cost of regulation and enhance regulatory compliance. This strategy includes simplifying filing and reporting procedures. In some cases, commission staff members directly assist managers of small water utilities in meeting procedural requirements. Some of the commissions have used alternative regulatory methods, such as operating ratios, to further simplify the process and address the unique needs of small systems. Regulatory simplification treats one of the primary symptoms of small-system capacity problems (that is, regulatory compliance), but it does not necessarily treat the underlying capacity problem (that is, lacking economies of scale).

The third strategy involves structural change in the water supply industry. As noted in a report of the National Regulatory Research Institute, the least-cost solution to regulatory compliance and other problems for many systems can be found only through structural change, namely consolidation.[59] The downward trend in the number of water systems suggests that ownership consolidation may be occurring in the industry. Consolidated systems may or may not be physically interconnected. While physical interconnection yields significant economies of scale, common management of noninterconnected systems directly addresses financial, managerial, and technical capacity issues and can yield significant economies.

Many of the commissions have played an active role in this area by encouraging and approving mergers and acquisitions. Some of the commissions provide specific incentives, such as acquisition adjustments. Certain ratemaking practices, including single-tariff pricing, also can provide incentives for acquisitions and, perhaps, the formation of regional water systems. Larger systems interested in acquiring smaller systems tend to favor rate consolidation (sometimes with surcharges).

[58] In the late 1990s, however, water issues must compete for the attention of regulators with major restructuring issues in the energy and telecommunications sectors.
[59] Beecher, Dreese, and Landers (1992).

In general, modern public policies affecting the water-supply industry, including regulatory policies, appear to support the consideration of structural options (including consolidation) that will help water systems achieve economies of scale. The emphasis on water system capacity at the federal, state and local levels will make it harder for providers to get operating certificates, water-supply permits, and special financing. Explicitly or implicitly, growth management policies in some states are calling for consolidation of water supply through interconnection with existing systems. Public policy also appears to emphasize the importance of establishing and maintaining water systems for which the population served can support the cost of water service. Thus, institutional factors also are playing a role in reducing the number of water systems.

8. Commission Survey

State public utility staff members at all of the state public utility commissions with jurisdiction for water utilities (that is, forty-five state commissions), were surveyed about the issue of single-tariff pricing in early 1996. This research was conducted by Dr. Janice Beecher on behalf of the Florida Public Service Commission. The survey was first sent by telefax in January and follow-up telephone calls were made in late January and early February to ensure the completeness and accuracy of the survey. The commission staff members who completed the survey are knowledgeable about water utility regulation and competent to complete this particular questionnaire. A copy of the survey questionnaire is attached as Appendix D. Detailed findings can be found in Appendix E.

Additional follow-up contacts were made in 1997 and 1998 to update findings on specific cases that were pending at the time of the original survey, as well as to check for any major shifts in regulatory policy. Although no significant changes were detected, updated information is noted throughout the findings.

Relevance of Single-Tariff Pricing

Single-tariff pricing for water utilities is not necessarily a policy issue for every state public utility commission. Jurisdiction for water utilities and the presence of multi-system utilities are necessary but not sufficient conditions for consolidated rates to be an issue for a given commission. Single-tariff pricing does not become an issue until a utility or the commission initiates the use of this method. Utilities with systems that are viable on a stand-alone basis, by virtue of size and other factors, may not need or want single-tariff pricing. Even when considered or implemented, single-tariff pricing may not be considered "an issue" if it is noncontroversial.

The consideration of single-tariff pricing policy can benefit from the perspective provided in Table 10. The relevant sample for considering commission policy with regard to single-tariff pricing is comprised not of all fifty-one public utility commissions (including the District of Columbia). It is more accurate and reasonable to evaluate commission policies with regard to this issue in the context of the twenty-five commissions where multi-system water utilities operate and where the issue has been considered (including the states where single-tariff pricing had been rejected or considered but not approved). Given this context, a clear majority of affected state commissions have allowed regulated water utilities to implement single-tariff pricing (22 state commissions).

Of the remainder, the California commission has allowed partial rate consolidation. For two commissions (Maryland and Mississippi), single-tariff pricing had not been an issue but staff characterized commission policy as "case-by-case." It also is noteworthy that in one of the state's approving a single-tariff pricing structure (Idaho), the matter was "not an issue when proposed." No regulatory commission has steadfastly opposed single-tariff pricing, although many continue to review the merits on case-by-case basis.

TABLE 10
RELEVANT SAMPLE OF STATE PUBLIC UTILITY COMMISSIONS REGARDING THE ISSUE OF SINGLE-TARIFF PRICING POLICY

All state public utility commissions:	**51**
Commissions without jurisdiction for water utilities:	-6
Subtotal	**45**
Commissions without multi-system water utilities:	-15
Subtotal	**30**
Commissions for which single-tariff pricing has never been considered:	-5
Total	**25**

Source: Author's construct. Includes reclassification of Delaware as having a multi-system utility based on a 1999 survey. The total number of commissions includes the District of Columbia.

Pending cases at the time of the original survey in Massachusetts and New Jersey were decided in favor of single-tariff pricing. Soon after, in two significant cases, the Indiana and New Hampshire commissions approved rate consolidation proposals (in 1997 and 1998 respectively). Since the original survey, the Delaware commission approved single-tariff pricing in conjunction with an acquisition that created the state's only multi-system utility (as reflected in Table 10 and elsewhere).

General Findings

The detailed results of the original survey are reported in Appendix E (Tables E1 through E4). The data are reasonably complete for all fifty-one public utility commissions (including the District of Columbia commission). Detailed data on specific utilities are incomplete from a few states because of the difficulty in compiling these data.

As noted in the tables, six public utility commissions do not have jurisdiction for water utilities ("NJ"). In sixteen (16) of the states with jurisdiction for water utilities, staff had observed that no multi-system water utilities were in operation (including Delaware at the time of the original survey). This finding also was established in the *1995 Inventory Report*, which was used to supplement this survey. For the remainder of the survey, responses for these sixteen states were recorded as "NA," or "not applicable."

Thirty (30) state commissions regulate multi-system water utilities, where single-tariff pricing is a potential issue. Of the thirty (30) commissions with multi-system water utilities, twenty-two (22) have approved single-tariff pricing for one or more utilities, including partial consolidation. California regulators have allowed partial consolidation

subject to further deliberations. Seven commissions (7) have not directly addressed this issue. As already noted, these findings have been revised since the original survey to update the findings for five states (Delaware, Indiana, Massachusetts, New Hampshire, and New Jersey) where pending and recent cases have been decided in favor of single-tariff pricing (in Massachusetts, partial consolidation already had occurred).

Of the twelve (12) commissions that had not approved single-tariff pricing at the time of the original survey, three explanations were provided: single-tariff pricing had not been an issue (7 commissions), a proposal for single-tariff pricing was rejected (1 commission), and single-tariff pricing had been considered but not specifically approved (4 commissions). The Indiana commission reportedly rejected single-tariff pricing because of cost-of-service concerns. No commission staff member reported that a statute or policy expressly prohibited single-tariff pricing. However, the Florida survey response indicated that legislation had been proposed to limit the use of rate consolidation to interconnected systems; the legislation was not adopted.

Specific Findings

Data were provided for 213 multi-system utilities, of which 129 had implemented a full version of single-tariff pricing and 20 had implemented partial rate consolidation (that is, single-tariff pricing for all but a few systems or single-tariff pricing for groups of systems within the utility but not for the utility as a whole). Partial rate consolidation in some cases is used to phase-in the single tariff. The survey does not include the multi-system utilities in Texas (estimated at 200 to 300 utilities) or all of the multi-system utilities in Florida (estimated at 60 to 70 utilities) because these data were not readily available. Other states also may have some additional multi-system utilities for which data were not reported. The survey also excludes publicly owned water utilities, with the exception of West Virginia for which data were available for commission-regulated public service districts.

Several states have jurisdiction for only one multi-system water utility. States with more than ten multi-system utilities are Connecticut, Florida, Louisiana, North Carolina, Texas, Washington, and West Virginia. Of these states, only Louisiana has not approved single-tariff pricing.

Based on the available data from the original survey, the number of systems managed by the multi-system utilities ranges from 2 to 201. The average number of systems reported is 11; the median number of systems was 4. The number of connections for the smallest system ranged from 2 to 30,000 with a mean value of 751 and a median value of 30 (based on data for 115 systems). The number of connections for the largest system ranged from 18 to 329,000, with a mean value of 11,615 and median value of 257 (based on data for 115 utilities). The earliest date reported for adopting single-tariff pricing was 1958; the most recent date was 1995 (disregarding the pending or subsequent cases). The average and median time frame for adopting single-tariff pricing was the early 1980s.

At the time of the survey, rate consolidation had been partially implemented for several utilities. In some cases, all but a few systems had been placed under a single tariff; in other cases, the single tariff was being phased-in gradually over time. Only one commission reported that monitoring and evaluation of single-tariff pricing had occurred in the form of reexamining past rate cases (West Virginia).

Characteristics of Single-Tariff Utilities

Single-tariff utilities appear to have some distinguishing features in comparison to multi-system utilities that do not use single-tariff pricing. Data were provided for 213 utilities, of which 129 implemented single-tariff pricing or partial rate consolidation. Data on the approximate number of systems were provided for 203 utilities (149 single-tariff utilities and 54 multi-system utilities without single-tariff pricing). Data on the smallest and largest systems in terms of service connections were available for 115 utilities (81 single-tariff utilities and 34 multi-system utilities without single-tariff pricing). All available data were used to preserve as much information as possible for the analysis. For data reported as a range of values, an average was used (for example, "8 to 9" was replaced with 8.5). For data reported as "<5," a value of 4.5 was used.

The sample is incomplete and nonrandom, so findings based on the available data are not generalizable. Substantial missing data will affect the results of any analysis. However, the data represent a sizable portion of the multi-system utilities regulated by the state commissions. Also, many states reported a mixture of systems with and without single-tariff pricing. Certain observations can be drawn from the data that should lead to further consideration and analysis.

As reported in Table 11 (and Table E2), single-tariff systems and multi-system utilities appear to differ in terms of the number of systems that comprise them, smallest connections, and largest connections. For single-tariff systems, the median number of systems was 5 (average value of 13); for multi-system utilities without single-tariff pricing the median number of systems was 4 (average value of 6). The connection data reveal more striking patterns. Along every measurement (except for the minimum of 2 connections for the smallest systems for both utility types), single-tariff utilities appear to be much smaller in terms of both smallest and largest systems based on connections.

This finding is very consistent with the perception that single-tariff pricing is most needed, and perhaps most justified, when numerous very small water systems are involved. These data may indicate that commission approval of single-tariff pricing takes into account these basic descriptive characteristics. This is not to suggest, however, that single-tariff pricing only has been (or should be) approved for utilities made up of very small systems. In fact, some of the more recent decisions affirming single-tariff pricing have involved utilities with systems that are fairly substantial in size.

Table 11
Comparative Analysis of Multi-System Utilities With and Without Single-Tariff Pricing

Utilities	Number of Utilities Reported		Approximate Number of Systems				Smallest System (N Connections)				Largest System (N Connections)			
	Approx. Systems	Connec-tions	Mini-mum	Maxi-mum	Aver-age	Median	Mini-mum	Maxi-mum	Aver-age	Median	Mini-mum	Maxi-mum	Aver-age	Median
All Multi-System Utilities	203	115	2	201	11	4	2	30,000	751	30	18	329,000	11,615	257
Multi-System Utilities With Single-Tariff Pricing	149	81	2	201	13	5	2	2,400	122	20	18	97,000	5,651	193
Multi-System Utilities Without Single-Tariff Pricing	54	34	2	32	6	4	2	30,000	2,251	82	26	329,000	25,824	1,254

Source: Table E1. Not adjusted for cases pending at the time of the survey or subsequent cases in which consolidated rates were approved for individual utilities in Delaware, Indiana, Massachusetts, New Hampshire, and New Jersey.

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Arguments in Favor of Single-Tariff Pricing

In the course of the survey, regulatory commission staff members were asked to consider key arguments for and against the adoption of single-tariff pricing. Various reasons for commission approval of rate consolidation were provided in the survey. Table E1 provides the primary reasons for approval. Cost savings were frequently mentioned. As reported in Table E3, commission staff members also were asked to identify the arguments that influenced their commissions' deliberations or policies regarding rate consolidation.

These data reflect only staff member views, not necessarily the views or policies of the commissions. Twenty-one (21) commission staff members responded to this portion of the survey. The data exclude thirty commissions where, at the time of the survey, single-tariff pricing had not been an issue and staff views were not elicited. [60] Staff could cite more than one argument and no weighting or ranking of arguments was required. In decreasing order of mentions (indicated in parentheses), commission staff indicated agreement with the following arguments in favor of single-tariff pricing:

- Mitigates rate shock to utility customers (17)
- Lowers administrative costs to the utilities (16)
- Provides incentives for utility regionalization and consolidation (15)
- Physical interconnection is not considered a prerequisite (13)
- Addresses small-system viability issues (13)
- Improves service affordability for customers (12)
- Provides ratemaking treatment similar to that for other utilities (10)
- Facilitates compliance with drinking water standards (9)
- Overall benefits outweigh overall costs (9)
- Promotes universal service for utility customers (8)
- Lowers administrative cost to the commission (8)
- Promotes ratepayer equity on a regional basis (6)
- Encourages investment in the water supply infrastructure (5)
- Promotes regional economic development (3)
- Encourages further private involvement in the water sector (2)
- Other: Can be consistent with cost-of-service principles (1) and found to be in the public interest (1)

Staff members also noted that single-tariff pricing could be consistent with cost-of-service principles (New York), that separating small-system costs may not always be cost-effective (Virginia), and that the genesis for the issue was regulatory simplification (California). Mitigating rate shock also was equated with "rate stability" (Indiana). Vermont regulators found that single-tariff pricing addressed small system viability issues and generally was in the public interest, approving the method over the objections of staff

[60] Excluded were 6 commissions without jurisdiction for water utilities, 16 commissions without jurisdiction for multi-system water utilities ("not applicable"), and 8 commissions that regulate multi-system utilities but where single-tariff pricing has not been an issue (including the Idaho commission, where single-tariff pricing was approved for one utility but not an issue of significance).

members concerned about subsidization issues. Typically, more than one argument affects commission deliberations regarding rate consolidation.

Arguments Against Single-Tariff Pricing

Commission staff members also evaluated the key arguments against rate consolidation. Various reasons for commission disapproval of single-tariff pricing were provided. Table E1 provides the primary reason for the disapproval. Cost-of-service issues were frequently mentioned, although some staff also indicated that single-tariff pricing could be consistent with cost-of-service principles. As reported in Table E4, commission staff members also were asked to identify the arguments that influenced their commissions' deliberations or policies regarding rate consolidation.

These data reflect only staff member views, not necessarily the views or policies of the commissions. As mentioned earlier, twenty-one (21) commission staff members responded to this portion of the survey based on their experience with the issue of single-tariff pricing for multi-system utilities. Staff could cite more than one argument and no weighting or ranking of arguments was required. In decreasing order of mentions (indicated in parentheses), commission staff indicated agreement with the following arguments against single-tariff pricing:

- Conflicts with cost-of-service principles (14)
- Provides subsidies to high-cost customers (12)
- Not acceptable to all affected customers (10)
- Considered inappropriate without physical interconnection (8)
- Distorts price signals to customers (7)
- Fails to account for variations in customer contributions (6)
- Justification has not been adequate in a specific case (or cases) (6)
- Discourages efficient water use and conservation (4)
- Encourages growth and development in high-cost areas (4)
- Undermines economic efficiency (3)
- Provides unnecessary incentives to utilities (2)
- Not acceptable to other agencies or governments (2)
- Insufficient statutory or regulatory basis or precedents (2)
- Overall costs outweigh overall benefits (2)
- Encourages overinvestment in infrastructure (1)

Regarding unacceptability to other agencies or governments, the California staff member noted that opposition to single-tariff pricing had come from other utilities.

9. Commission Policies on Rate Consolidation

As already noted, twenty-two (22) state commissions have allowed regulated water utilities to implement single-tariff pricing. Single-tariff pricing is generally accepted in eight (8) states, as summarized in Table 12 and Figure 10 (and detailed in Table E1). Texas commission staff members noted that single-tariff pricing was accepted "and preferred." In fact, the Texas commission provides a simplified procedure for merging the rates of acquired systems with the rates of the acquiring utility. While the regulated water utility usually requests consolidated rates, at least one commission (New York) has imposed its use. Pennsylvania staff noted that the use of single-tariff pricing has evolved from its application on the basis of physical interconnection to its application on the basis of common ownership.

Based on the updated survey findings, staff members at seventeen (17) commissions characterized the policies of their commissions as "case-by-case," indicating that the use of single-tariff pricing must be justified for every specific application (even when the policy is "generally accepted"). In many states, only some of the multi-system utilities under commission jurisdiction are implementing single-tariff pricing. In fourteen (14) of the case-by-case commissions, single-tariff pricing has been approved (including the five recent cases decided in favor of single-tariff pricing). In California, regulators have approved partial rate consolidation. In the two (2) other case-by-case commissions, single-tariff pricing has not been approved or considered in the context of a regulatory proceeding.

Commission Decisions

The experience of West Virginia-American Water Company stands as one of the least controversial and most enduring examples of single-tariff pricing. Implementation of single-tariff pricing has played a role in the company's expansion. A case study of the West Virginia experience appeared in a 1984 issue of the *American Water Works Association Journal*.[61]

In its order, the West Virginia Public Service Commission considered the consistency of single-tariff pricing with the commission's general regulatory obligations and operating principles, finding that:

1. The company's single tariff pricing proposal resulted in a just, reasonable, sufficient and nondiscriminatory rate for all the customers of the company.
2. Each customer will pay the same rate for a like and contemporaneous service made under the same or substantially similar circumstances and conditions.

[61] Limbach (1984).

Table 12
Summary of State Public Utility Commission Policies on Single-Tariff Pricing for Water Utilities

Commission Policy	State Commissions	
Generally Accepted (8)	Connecticut	Pennsylvania
	Missouri	South Carolina
	North Carolina	Texas
	Oregon	Washington
Case-By-Case (17)	Single-Tariff Pricing Has Been Approved (14)	
	Arizona	New Hampshire (d) (f)
	Delaware (a)	New York
	Florida	New Jersey (e) (f)
	Idaho (not an issue)	Ohio
	Illinois	Vermont
	Indiana (b) (f)	Virginia
	Massachusetts (c) (f)	West Virginia
	Single-Tariff Pricing Has Not Been Approved (3)	
	California (g)	
	Maryland (not an issue)	
	Mississippi (not an issue)	
Never Considered (5)	Iowa	Maine
	Kentucky	Wisconsin
	Louisiana	
Not Applicable – No Multi-System Water Utilities (15)	Alabama	Nevada
	Alaska	New Mexico
	Arkansas	Oklahoma
	Colorado	Rhode Island
	Hawaii	Tennessee
	Kansas	Utah
	Montana	Wyoming
	Nebraska	
No Jurisdiction for Water Utilities (6)	Georgia	North Dakota
	Michigan	South Dakota
	Minnesota	Washington, D.C.

Source: Author's construct based on survey of state public utility commission staff members, January-February 1996 and subsequent contacts with the commissions (including a follow-up survey in early 1999).

(a) Reclassified from "not applicable" following an acquisition with approval of consolidated rates.
(b) Since the original survey, a case was decided in favor of single-tariff pricing (previously rejected).
(c) A pending case at the time of the original survey was decided in favor (partial consolidation previously).
(d) Since the original survey, a case was decided in favor of single-tariff pricing.
(e) A pending case at the time of the original survey was decided in favor.
(f) Characterization of commission policy as "case-by-case" was unchanged following the recent decisions.
(g) Partial consolidation with possible phase-in of single-tariff pricing. A case was pending in 1999.

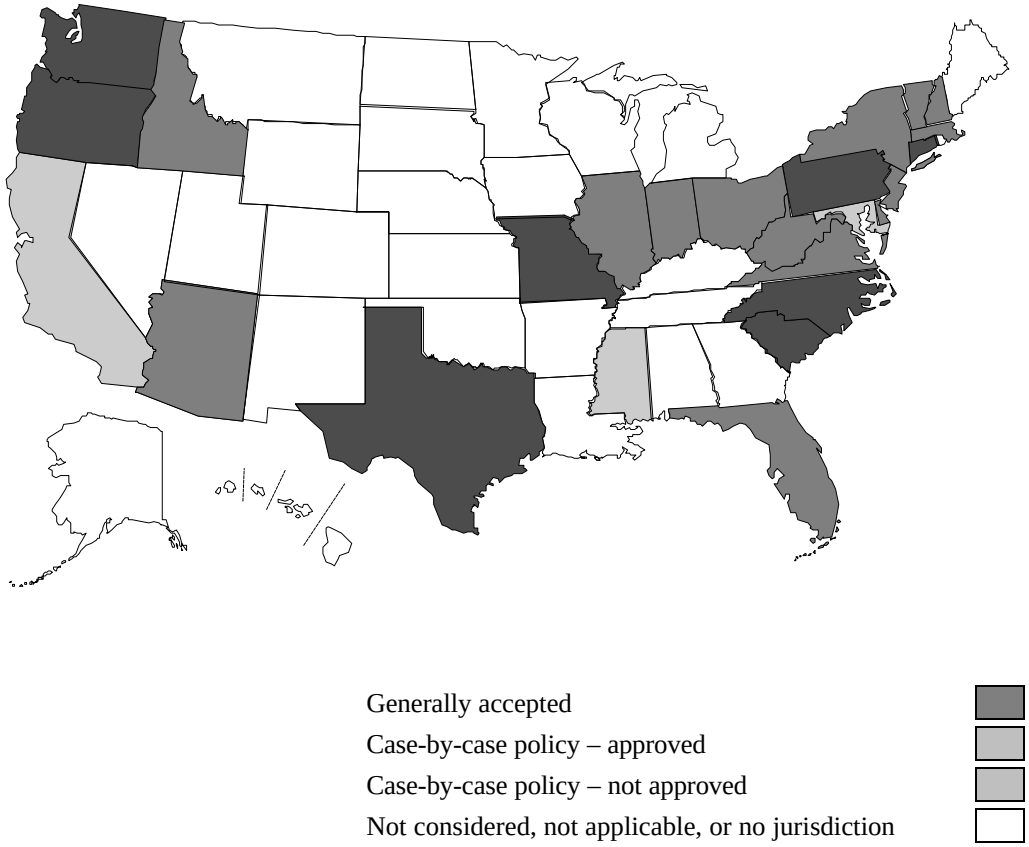

Figure 10. Summary of Commission Policies on Rate Consolidation.

3. The approval of the company's proposal was in compliance with the commission's duty to regulate utilities of this state in order to provide the availability of adequate, economical, and reliable utility services to encourage the well planned development of the utility resources in a manner consistent with the state needs and in a way consistent with the productive use of the state's energy resources.
4. Single tariff pricing strikes a reasonable balance in the interest of current and future water consumers, the general interest of the state's economy, and the interest of West Virginia Water Company.[62]

[62] Order of the West Virginia Public Service Commission as cited in Limbach (1984), 55.

In a 1986 order, the Pennsylvania Public Utility Commission approved single-tariff pricing for Western Pennsylvania Water Company (1986) and provided several pragmatic reasons for approving this pricing strategy.[63] First, a larger rate and revenue base ameliorates the impact of major capital additions needed from time to time in every service area. Second, a larger revenue base promotes flexibility in timing and financing major capital additions. Third, the impact of instability resulting from changes in sales volumes is mitigated when the effect of such volumetric factors is spread over a larger economic base. Finally, the reduction of the number of accounting units and the number of individual rate filings result in administrative efficiency with a potential to reduce costs to ratepayers.

Ten years later, in a general proceeding on acquisition policy, the Pennsylvania Commission stated its belief "that every system and every ratepayer in the Commonwealth will eventually be in need of specific service improvements and at that point, the true benefits of single tariff pricing will be realized by all citizens in the Commonwealth."[64] The Commission now views single-tariff pricing as a central component of acquisition incentives provided to jurisdictional utilities.

Although single-tariff pricing has been approved without much consternation in some jurisdictions, in others the level of controversy has been much more pronounced. Consumer advocates, local governments, large-volume users, and commission staff members (even within agencies) have at times been deeply divided on this issue.

The regulatory commissions have struggled in particular with whether or not *physical interconnection* among water systems should be a prerequisite for single-tariff pricing.[65] As noted by the Massachusetts Department of Public Utilities, physical interconnection is not necessarily required: "[S]everal factors (viz., the contiguity of the communities served in that zone; the commonality of personnel for meter-reading, operations, maintenance, and construction duties; and administrative convenience) are decisive in favor of treating the [two communities] as a single zone . . ."[66]

Similarly, the Florida Public Service Commission once concluded that state law supports the view that multi-system utilities can be considered a single system because the utility's facilities and land are *functionally related* (in administrative, operational, and managerial terms); even without physical interconnection.[67] An analogy provided in the case was that the multi-system utility operations were like a "wagon wheel," where the separate service territories are the spokes and utility management is the rim holding them together.

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[63] Pennsylvania Public Utility Commission, Order in Docket R-850096, Western Pennsylvania Water Company (1986), 148.
[64] Pennsylvania Public Utility Commission, Order in Docket M-00950686, Policy Statement Re: Incentives for the Acquisition and Merger of Small, Nonviable Water and Waste Water Systems (1996).
[65] Physical interconnection in the other industries may be the reason why pricing across larger regions tends to prevail.
[66] Massachusetts Department of Public Utilities, Order in Docket No. 90-146, Massachusetts-American Water Company (1990), 3-4. See also MA DPU 95-118 (1996).
[67] Florida Public Service Commission, Order No. PSC-96-1320-FOF-WS, Docket No. 950495-WS, Southern States Utilities (1996).

Following an appeal of the Florida order, however, the District Court held that rate consolidation need not be conditioned on a finding by the commission that the systems involved are functionally related. "Because we decide that the determination of functional relatedness is not controlling on the issue of whether uniform rates can be set," noted the Court, "we express no opinion on whether the utility systems involved in this rate case were 'functionally related.'"[68]

In a 1993 case, the Illinois-American Water Company articulated the variety of ways in which the systems of a multi-system utility are *operationally related:*

> All operation and maintenance and construction activities are performed on a uniform basis throughout the five districts. . . All five districts utilize similar facilities, such as pumping stations and purification plants, transmission and distribution mains, storage reservoirs, service lines and meters. . . All five districts utilize the same engineering and construction standards, maintenance programs, operating procedures, inspection programs, budgeting and accounting procedures, types of materials and supplies and management structure. . . All five districts utilize the services of the American Water Works Service Company (the "Service Company"), which provides, pursuant to a contract with the Company, support to Illinois-American personnel in the areas of accounting, engineering operations, rate design, regulatory practices, finance, water quality, information systems, personnel information and training, purchasing, insurance, safety and community relations.[69]

The company also argued that the evolving *corporate* structure of the multi-system utility is germane to these issues, as described in Illinois Commerce Commission's order:

> According to Illinois-American, another important factor supporting the adoption of single tariff pricing are the many steps the Company has taken in recent years to centralize and consolidate its operations. . . Illinois-American, as it presently exists, is the result of two mergers. Pursuant to the mergers, which were approved by the Commission. . . water systems once operated as five separate companies were merged to form a single integrated unit, rather than as five independent, stand-alone systems.[70]

Staff members of the Illinois Commerce Commission found that "Commission practices in Illinois. . . support the uniform rate concept."[71] In this particular proceeding, the commission approved partial rate consolidation and ordered Illinois-American to submit a proposal for company-wide single-tariff pricing.

[68] District Court of Appeal, First District, State of Florida, Decision in Case No. 96-447 (June 10, 1998), 1.
[69] Illinois Commerce Commission, Order Docket No. 92-0116, Illinois-American Water Company (1993).
[70] Ibid., 85.
[71] Ibid., 87.

In a parallel proceeding, Indiana-American Water Company argued before the Indiana Utility Regulatory Commission that single-tariff pricing is justified in part on the grounds that the company's districts are managed by a single corporate structure and financed through a common capital structure.[72] The Indiana Office of Consumer Counselor opposed this reasoning and the Indiana Commission rejected that particular bid for single-tariff pricing, but the company prevailed in a 1997 proceeding (discussed below).

Another rationale in the regulatory context is that rate consolidation can help reduce the frequency and complexity of rate filings by regulated firms. According to John Guastella, regulatory acceptance of single-tariff pricing as a matter of policy reduces costs associated with preparing separate cost-of-service studies to allocate common costs among the separate systems, and thus significantly reduces the cost of utility rate filings.[73] A related point is that rates under a single tariff are easier to communicate to customers (lowering administrative costs) and easier for customers to understand.

In some deliberations, the focus is shifted from differences in the *cost of service* to comparability in the *value of service* that utility customers receive regardless of their spatial location. Indiana-American Water Company has argued that, "The single tariff pricing concept is supported by the fact that any one of the Company's customers, regardless of where that customer is located, expects, is entitled to and receives essentially the same service as the customers in any other district."[74]

In a recent regulatory proceeding involving the New Jersey-American Water Company, the administrative law judge echoed this argument:

> Inasmuch as all customers of New Jersey-American, be they New Jersey Commonwealth or Monmouth customers, receive comparable service on a comparable basis, it seems only appropriate that all customers be charged similarly. . . By distributing the burden of system improvement to all customers, the relative impact is decreased. All Company customers in the three operating groups are benefiting by the relative economics [sic] of scale and system integration and administration the unified company produces. Likewise, all customers should equally shoulder the costs involved.[75]

The New Jersey Board of Public Utilities agreed with the administrative law judge in adopting a statewide (single-tariff) price for the New Jersey-American Water Company in this particular proceeding.

[72] Richard E. Hargraves, Direct testimony in Cause No. 39595 before the Indiana Utility Regulatory Commission, Indiana-American Water Co., Inc. (1993).
[73] Guastella (1994).
[74] Hargraves (1993).
[75] New Jersey Board of Public Utilities, OAL Docket No. PUC 520795, Agency Docket No. WR-95040165, New Jersey-American Water Company (1996), 14-15.

Several of the commissions have implemented variations of single-tariff pricing or partial forms of rate consolidation. The Missouri Public Service Commission, for example, once reasoned that rate shock is the result of rate *changes* not rate *levels.* Thus the commission ordered the company in question to maintain existing rate differentials while equalizing future rate increases. By maintaining current rate differentials and equalizing rate increases, rate shock is minimized, subsidization is limited, and the company is afforded greater flexibility in timing plant additions.[76] The commission later found, for another company, that the movement toward rate consolidation was in the public interest.[77] But in a subsequent rate case, and to the understandable chagrin of the utility, the commission reiterated "that it is not committed to a specific position regarding cost recovery for capital plant additions by means of [single-tariff pricing]."[78]

In a phased approach, implementation of single-tariff pricing may occur over several commission decisions involving the same multi-system utility. According to a former regulator, a phase-in plan may be especially justified when differences in rates are "extreme."[79] A phased approach "facilitates the goal of single tariff pricing, but does not negate the requirement for future commission approval of its full implementation."[80]

Interestingly, zonal rates for *groups* of systems can be used in conjunction with a phased approach to rate consolidation. The Florida commission recently advanced a "capband" approach establishing rates for groups of systems with similar cost characteristics, reasoning that:

> First, the capband structure represents a greater move toward the long term goal of a uniform rate. It eliminates the need for separate rate structures for each individual service area under the cap. The number of rates would decrease from 56 to eight for the water facilities under the cap, and from 23 to six for the wastewater facilities. Second, as noted above, the capband structure reduces subsidies in terms of deviation from stand-alone rates. This is true both in terms of number of service areas and number of customers. Uniform rates within the band mitigate the subsidy within the band. . . [The capband rate structure] embraces all of the advantages of the modified stand-alone rate structure and adds the additional advantages of simplifying the rate structure by moving the utility closer to a uniform rate.[81]

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[76] Missouri Public Service Commission, Order in Case No. 90-236, Missouri Cities Water Co. (1990).
[77] Missouri Public Service Commission, Order in Case Nos. WR-95-205 and SR-95-206, Missouri-American Water Company (1995).
[78] Missouri Public Service Commission, Order in Case Nos. WR-97-237 and SR-97-238, Missouri-American Water Company (1997).
[79] Wendell F. Holland, "Acquisition Incentives Encouraging Regionalization in the Water Industry" a speech made at the Great Lakes Conferences of the National Association of Regulatory Utility Commissioners in Greenbrier, West Virginia (July 11, 1995).
[80] Pennsylvania Public Utility Commission, Western Pennsylvania Water Company, 72 PUR 4th (1986), 154.
[81] Florida Public Service Commission, Order No. PSC-96-0549-PHO-WS, Docket No. 950495-WS, Southern States Utilities (1996), 78-79.

The Florida decision was appealed on a variety of grounds. As noted earlier, the Court of Appeal held that the commission need not determine that utility facilities are "functionally related" prior to approving consolidated rates. In the same decision, the Court also found that "no statute prohibits resort by the Public Service Commission (PSC)—in an appropriate case—to so-called "capbands" to fix rates that are just, reasonable, compensatory, and not unfairly discriminatory."[82] Specifically:

> Nothing inherent in the capband methodology runs afoul of the statute. The order under review sets rates [footnote omitted] so that no ratepayer's rates exceed by more than seven per cent what they would have been if each system's rates had been set on a stand alone, cost of service basis. This modest deviation from a pure cost of service basis for individual rates pales by comparison to the magnitude of inevitable intra-system subsidization. Nor is a pure cost of service basis as to each individual ratepayer mandated by a statute which directs that "the commission shall consider the value and quality of service and the cost of providing service." § 367.081(2), Fla. Stat. (1997). See *Occidental Chem. Co. v. Mayo*, 351 So. 2d 336, 340 (Fla. 1977) ("Given the multiplicity of methods suggested by the experts to allocate expenses between various users, we cannot say that the Commission departed from the essential requirements of law in relying on a range of criteria for this purpose."). A shift in the direction of "affordability" takes the value of service into account. Although using stepped rates or "capbands" requires offsetting increases and does not spread offsets perfectly evenly among households paying less than maximum rates, such use need not lead to unfairly discriminatory rates.[83]

The Indiana Utility Regulatory Commission articulated the pragmatic rationale for single-tariff pricing in the recent Indiana-American case.[84] The press release accompanying the commission's order asserts that the company's movement toward single-tariff pricing is "in the best interest of all of the customers" and that all areas will benefit in the long term by increased rate stability and mitigation of construction cost impacts. The order found that single-tariff pricing was consistent with pricing for other utility and nonutility services and that it would help the company meet demands associated with environmental compliance, infrastructure replacement, and service adequacy for customers.[85] The commission also addressed the issue of price discrimination:

> There will always be customers who over a given period of time will be required to pay higher rates than would result if they were included in some smaller or different customer group. But this does not mean undue discrimination exists so long as they are paying an equivalent price for an equivalent product. Moreover, we must not forget that all of the customers today are the beneficiaries of water facilities

[82] District Court of Appeal, First District, State of Florida, Decision in Case No. 96-447 (June 10, 1998), 1.
[83] Ibid., 13.
[84] Indiana Utility Regulatory Commission, Order in Cause No. 40703, Indiana-American Water Company (1997).
[85] Ibid., 77.

> built in the past, and the cost of developing these facilities was borne in large part by earlier generations of customers.[86]

As a general rule, individual water utilities must make the case for single-tariff pricing before regulators, who consider the merits on a case-by-base basis. The Indiana-American decision also is instructive on this point because the case was made by the utility several times—and the arguments rejected—before regulators were persuaded that single-tariff pricing was in the public interest. As with many initiatives by utilities, regulatory approval often requires more than one attempt, as well as modifications to the proposed method to address the legitimate concerns of regulators and consumer advocates.

A few commissions have explicitly recognized single-tariff pricing as a policy tool. As already noted, Pennsylvania regulators have placed single-tariff in the broader context of regulatory policies to promote regionalization and specifically the acquisition of smaller, nonviable systems.[87] The general provisions of the commission's policy, appearing in Table 13, provides for the application of single-tariff pricing to the rates of acquired water systems "to the extent that is reasonable."[88]

Similarly, New York Public Service Commission staff members expect acquiring utilities to include a plan for "rate equalization" (with phase-in provisions as appropriate) as part of petitions for acquisition incentive mechanisms. [89]

Connecticut regulators have interpreted state statutes to authorize rate equalization in connection with mandated takeovers.[90] The commission also recognizes the potential use of annual price caps (to avoid rate shock) and surcharges ("so that customers of the acquiring company are not always obligated to assume full responsibility for the cost of ordered improvements to the acquired company").[91]

Implementation Strategies

Utility regulators can consider several implementation strategies if they find that rate consolidation is in the public interest. Implementing the single tariff can be accomplished in conjunction with acquisition proceedings. Utilities can phase-in single-tariff pricing for all or part of their service territory. A partial form of single-tariff pricing is to adopt a

[86] Indiana Utility Regulatory Commission, Order in Cause No. 40703, Indiana-American Water Company (1997), 81.
[87] Holland (1995), 10.
[88] Pennsylvania Public Utility Commission, Order in Docket M-00950686, Policy Statement Re: Incentives for the Acquisition and Merger of Small, Nonviable Water and Waste Water Systems (1996).
[89] New York Public Service Commission, Order in Case 93-W-0962, Investigation of Incentives for the Acquisition and Merger of Small Water Utilities (1993), Appendix E.
[90] Connecticut General Statutes, 16-262o. According to Connecticut Statutes (16-262r), rate equalization also can be used in connection with satellite management of a smaller by a larger system.
[91] Connecticut Department of Public Utility Control, Order in Docket No. 96-03-31, DPUC Review of Water Companies Acquisitions and Transfer Processes (January 8, 1997), 27.

common fixed or customer charge for all utility customers, and alter variable charges based on variations in the cost of service. Utilities can use surcharges or other mechanisms to differentiate prices based on extraordinary costs and send customers a very specific price signal. A partial approach to single-tariff pricing is to develop tariffs based on groupings of systems or "zones" with roughly similar cost or service characteristics. Another partial approach, mentioned earlier, is to use a phased method of implementation by which rates are made more uniform over several rate adjustments.

Innovative pricing options and implementation strategies for water utilities can emerge in the context of regulatory proceedings, dispute resolution processes, and a continuing dialog among utilities, consumers, consumer advocates, and other interested stakeholders.

Related Strategies

Commissions may want to consider implementing specific regulatory strategies in conjunction with single-tariff pricing. First, regulators could use auditing or other evaluation techniques to establish that utilities are meeting efficiency and other performance goals. Second, the commission could coordinate with other regulatory agencies to promote compliance with water quality standards. Third, regulators could evaluate the long-term strategic plans of water utilities for serving customers throughout their service territories. Fourth, features of the consolidated rate could be assessed in terms of their effectiveness in promoting efficient water use and discouraging waste. Fifth, the commissions could implement a monitoring and evaluation system to assess the effects of consolidated rates on all systems and customer groups. Sixth, alternative dispute resolution could be encouraged to provide parties with a forum for participation and an opportunity to reach a settlement agreement on single-tariff pricing issues. Finally, regulators could assess utility efforts to communicate with customers about the value of water and build understanding of the rate structure.

Commission Authority

Commission authority to approve consolidated rates has been met with legal challenges in some jurisdictions. Obviously, single-tariff pricing policy must be consistent with a state's legislative framework and legally sustainable. Regulatory and legal doctrine generally seem to permit this pricing method. Legislative, judicial, or other constraints on rate consolidation would be undesirable from a public policy standpoint and undermine the ability of the regulatory commissions to craft effective policies for the water industry.

In a recent case, the New Hampshire Public Utilities Commission acknowledged the absence of a clear regulatory standard for, or prohibition of, the use of single-tariff pricing. The commission essentially asserted its policymaking authority to approve rate consolidation based on a public-interest standard:

> While New Hampshire law is replete with references to the appropriate standard for establishing a utility's rate base and rate of return, there appears to be no specific guidance on the point of rate consolidation or single tariff pricing. Thus, in the absence of any legal impediment to utilizing single tariff pricing, our decision essentially becomes one of policy that is bound only by our statutory constraints that rates be just and reasonable and that we act in the public interest. See RSAs 374:2 and 378:28.
>
> Opponents of rate consolidation in this case argue that we should adhere to our traditional ratemaking policy of cost causation. We find their position unpersuasive in this case for two reasons. First, traditional cost of service regulation already includes some measure of rate averaging in that customers are not charged the true costs of serving them on an individual basis. Second, and perhaps more important, stand alone rates in this case produce results for some customers that are well beyond the zone of "just and reasonable." One needs only to look at the stand alone rates that would result from the settlement Agreement to see just how extreme the results are when significant investments are required in a very small system. Most of the community systems are simply too small to absorb the magnitude of investments mandated by environmental enactments. However, without these investments, it is clear that the small community systems would have been unable to provide safe and adequate water service to their customers.[92]

Single-tariff pricing evolved as a legitimate policy tool and is used by a clear majority of the states that regulate multi-system water utilities. Rate consolidation is a tool that can be used on a case-by-case basis, where regulators carefully weigh the evidence before them, and as a general policy tool to encourage acquisitions and regionalization. The precarious condition of very small water systems merits the consideration of alternative regulatory approaches, including consolidated rates.

Rate consolidation will continue to focus attention on some fundamental regulatory issues: Does it result in a measurable “subsidy”? Does the subsidy constitute a form of price discrimination? Are the resultant rates just and reasonable? Do the long-term benefits of implementing single-tariff pricing, including subsidization, outweigh the costs? Regulators must be satisfied with the answers to these questions before approving a rate consolidation strategy. Generally, however, the commissions are arriving at conclusions that support the use of single-tariff pricing.

The commissions have demonstrated their policymaking authority to approve consolidated rates, as well as their capacity to consider and weigh the complex ratemaking and policy tradeoffs involved. Only the commissions can specify the circumstances appropriate for single-tariff pricing in their jurisdictions. Water utilities should continue to advance innovative pricing strategies. The commissions should continue to exercise due diligence in approving water rate structures that serve the public interest.

[92] New Hampshire Public Utilities Commission, Order in Docket DR 97-058, Pennichuck Water Works, Inc. (1998).

Table 13
Pennsylvania Public Utility Commission
Policy Statement on Acquisition Incentives

Title 52, Part I, Chapter 69

Incentives for Acquisition and Merger of Small Nonviable Water Utilities--
Statement of Policy

§ 69.711. ACQUISITION INCENTIVES

(a) General

To accomplish the goal of increasing the number of mergers and acquisitions to foster regionalization, the Commission will consider the acquisition incentives at subsection (b). However, the following parameters must first be met in order for Commission consideration of a utility's proposed acquisition incentive. It should be demonstrated that:

(1) The acquisition services the general public interest;

(2) The acquiring utility meets the criteria of viability which will not be impaired by the acquisition; that it maintains the managerial, technical, financial capabilities to safely and adequately operate the acquired system, in compliance with the Public Utility Code, the Sate Drinking Water Act, and other requisite regulatory requirements on a short and long term basis;

(3) The acquired system has less than 3300 customer connections; the acquired system is not viable; it is in violation of statutory or regulatory standards concerning the safety, adequacy, efficiency or reasonableness of service and facilities; and that it has failed to comply within a reasonable period of time, with any order of the Department of Environmental Protection or the Public Utility Commission;

(4) The acquired system's ratepayers should be provided with improved service in the future, with the necessary plant improvements being completed within a reasonable period of time;

(5) The purchase price of the acquisition is fair and reasonable and the acquisition has been conducted through arm's length negotiations; and

(6) The concept of single tariff pricing should be applied to the rates of the acquired system, to the extent that is reasonable. Under certain circumstances of extreme differences in rates, and/or affordability concerns, consideration should be given to a phase-in of the rate difference over a reasonable period of time.

Table 13 (continued)

(b) Acquisition Incentives

In its efforts to foster acquisitions of suitable water and sewer systems by viable utilities when such acquisitions are in the public interest, the Commission seeks to assist these acquisitions by permitting the use of a number of regulatory incentives. Accordingly, the Commission will consider the following acquisition incentives:

(1) Rate of Return Premiums - Additional rate of return basis points may be awarded for certain acquisitions and for certain associated improvement costs, based on sufficient supporting data submitted by the utility within its rate case filing;

(2) Acquisition Adjustment - In cases where the acquisition costs are greater than the depreciated original cost, that reasonable excess may be included in the rate base of the acquiring utility and amortized as an expense over a 10-year period;

(3) Deferral of Acquisition Improvement Costs - In cases where the plan improvements are of too great a magnitude to be absorbed by ratepayers at one time, rate recovery of the improvement costs may be recovered in phases. There may be a one time treatment (in the initial rate case) of the improvement costs but a phasing-in of the acquisition, improvements and associated carrying-costs may be allowed over a finite period; or.

(4) Plant Improvement Surcharge - Collection of a different rate from each customer of the acquired system upon completion of the acquisition could be implemented to temporarily offset extraordinary improvement costs. In cases where the improvement benefits only those customers who are newly acquired, the added costs may be allocated on a greater than average level (but less than 100%) to the new customers for a reasonable period of time, as determined by the Commission.

(c) Procedural Implementation

The appropriate implementation procedure for the acquisition incentives listed would be to file the request during the next filed rate case. In the case of the first incentive, for example, the rate of return premium, appropriate supporting data should be filed within the rate of return section in order for Commission evaluation of its applicability. The rate of return premium as an acquisition incentive may be the most straightforward and its use is encouraged.

Other appropriate incentives may be considered by this Commission, provided they meet the parameters listed at subsection (a). Acquisition incentive requests will be considered on a case by case basis. In acquisition incentive filings, the burden of proof rests with the acquiring utility.

Source: Pennsylvania Public Utilities Commission, Incentives for Acquisition and Merger of Small Nonviable Water Utilities: Statement of Policy (February 28, 1996).

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APPENDIX A
GLOSSARY OF TERMS

Block rate. A billing rate applied to water usage that varies according to blocks of water usage (measured in gallons or cubic feet). See *uniform rate, decreasing-block rate,* and *increasing block rate.*

Common-management costs. Costs that are incurred on the basis of the joint operation of multiple systems. Costs under common management, given management economies of scale and scope, should be less for the utility than the sum of **stand-alone** costs for all of the operated systems.

Decreasing-block rate. A *variable rate* that decreases with additional blocks of water usage. See *uniform rate and increasing-block rate.*

Equity. A condition under which costs have been fairly allocated among customer groups consistent with cost-of-service and *efficiency* criteria. See *horizontal equity, vertical equity,* and *subsidy.*

Efficiency. A condition under which prices charged, and quantities produced and used, are optimal (that is, not too low or too high).

Fixed charge. The portion of a customer's water bill that does not vary with water usage. Fixed charges often are used to recover administrative and other recurring costs that are not determined by water usage. The fixed charge may include a minimal water allowance, above which a *variable rate* is applied.

Horizontal equity. A condition under which customers that impose similar costs on the utility system pay similar prices for comparable utility services. See *vertical equity.*

Intergenerational equity. A condition under which one generation of customers does not pay for costs imposed on the utility system by another group of customers. See *horizontal equity* and *vertical equity.*

Increasing-block rate. A *variable rate* that increases with additional blocks of water usage. See *uniform rate* and *decreasing-block rate.*

Investor-owned (or privately owned) utility. A utility owned and operated by a private firm on a for-profit basis. See *publicly owned utility.*

Just and reasonable. A concept used to evaluate utility rates related to the concept of **undue discrimination.**

Multisystem utilities. Public or private utilities that operate two or more water systems serving distinct service territories; systems may or may not be physically interconnected.

Municipal-unit doctrine. The treatment of a municipality as a distinct service territory and unit for cost allocation and ratemaking purposes (that is, "city-based" rates).

Phase-in (rates). Implementation of a significant change in rate levels or rate design in phases, rather than at once, in order to reduce rate shock to customers and revenue instability to the utility. Reflects the principle of gradualism.

Physically interconnected systems. Water systems joined by a system of pipes and pumps for transporting water (usually treated water) from one system to another.

Primacy agency. A state agency responsible for regulating community and noncommunity water systems to ensure compliance with federal drinking-water standards established under the Safe Drinking Water Act.

Privately owned (or investor-owned) utility. A utility owned and operated by a private firm on a for-profit basis. See *publicly owned utility.*

Public Utility Commission (PUC). A state agency responsible for regulating the rates and profits of public utility monopolies.

Publicly owned utility. A utility owned and operated by a governmental agency, such as a municipality, on a nonprofit basis. See *privately owned utility.*

Safe Drinking Water Act (SDWA). The federal statute that establishes drinking-water standards for community and noncommunity water systems. Substantial amendments to the SDWA were enacted in 1986 and 1996.

Service territory. The geographic area served by a public utility; a utility's service territory may or may not correspond to geopolitical boundaries.

Single-tariff pricing. Single-tariff pricing is the use of a unified rate structure for multiple water (or other) utility systems that are owned and operated by a single utility, but that may or may not be physically interconnected. Under single-tariff pricing, all customers of the utility pay the same rate for service, even though the individual systems providing service may vary in terms of operating characteristics and stand-alone costs.

Stand-alone pricing. Pricing based on the costs that a commonly owned or managed water system would incur if it replicated the same services and functions on a basis completely independent of the parent utility and other systems.

Subsidy. A transfer of welfare from one group of customers to another that is not based on differences in the cost of serving the different customer groups.

Tariff. The official rate schedule document specifying all of a utility's rates and charge; the tariff must be approved by appropriate state or local governing bodies.

Undue discrimination. Price differentiation that is not based on variations in the cost of service.

Uniform rate. A *variable* rate that does not change with the total amount of water usage.

Variable rate. The billing rate applied on a per gallon or per cubic foot basis to the amount of water used by customers

during the billing period. The variable rate multiplied by water usage determines the portion of a customer's water bill that varies with water usage.

Vertical equity. A condition under which customers that impose different costs on the utility system pay different prices for utility services based on the relevant cost differences. A related concept is **undue discrimination.**

Water system. An infrastructure system for withdrawing, transporting, treating, storing, and distributing water to a defined service territory.

Water utility. A public or private entity that owns and operates one or more *water systems* and typically charges customers for the cost of providing water service. In *multi-system* utilities, two or more water systems are owned and operated by the utility and they may or may not be *physically interconnected.*

Zonal Pricing. Differentiation in rates according to substantial differences in the cost of serving different areas. Zones generally are defined in spatial terms and represent geographic clusters of customers with similar cost characteristics.

APPENDIX B
SELECT COMMISSION ORDERS ON SINGLE-TARIFF PRICING

California

California Public Utilities Commission. Decision No. 89-06-007. Hillview Water Company, Inc. June 7, 1989.

Connecticut

Connecticut Department of Public Utility Control. Docket No. 86-12-08. Connecticut-American Water Company. June 2, 1987

_____. Docket No. 89-03-22. Connecticut-American Water Company. September 21, 1987.

Florida

Florida Public Service Commission. In re Rate Setting Procedure and Alternatives for Water and Sewer Utilities. 1989.

_____. Docket No. 920100-WS. Southern States Utilities, Inc. November 2, 1993.

_____. Docket No. 930880-WS. Southern States Utilities, Inc. September 13, 1994.

_____. Docket No. 930892-WU. Venture Associates Utilities Corp. December 30, 1994.

_____. Docket No. 931122-WU. Lakeside Golf, Inc. February 9, 1995

Hawaii

Hawaii Public Utilities Commission. Docket No. 6434. GASCO, Inc. April 3, 1992.

Illinois

Illinois Commerce Commission. Docket No. 92-0116. Illinois-American Water Company. February 9, 1993.

_____. Docket No. 94-0481. Citizens Utilities Company of Illinois. September 13, 1995.

_____. Docket No. 95-0076. Illinois-American Water Company. December 20, 1995.

Indiana

Indiana Utility Regulatory Commission. Cause No. 36483. Northern Indiana Fuel & Light Company, Inc. October 1, 1981.

_____. Cause No. 36427. Terre Haute Water Works Corp. November 13, 1981.

_____. Cause No. 38880. Indiana-American Water Company. September 26, 1990.

_____. Cause No. 39595. Indiana-American Water Company. February 2, 1994.

_____. Cause No. 40703. Indiana-American Water Company. December 11, 1997.

Iowa

Iowa Utilities Board. Docket No. RPU-94-2I. ES Utilities, Inc. June 30, 1995.

Maine

Maine Public Utilities Commission. Docket Nos. 91-193 and 93-027. Michael McGovern v. Portland Water District. February 28, 1994.

Maryland

Maryland Public Service Commission. Case No. 8643. Chesapeake Utilities Corp. August 17, 1994.

Massachusetts

Massachusetts Department of Public Utilities. D.P.U. 95-118. Massachusetts-American Water Company. May 31, 1996.

Missouri

Missouri Public Service Commission. Case No. 90-236. Missouri Cities Water Company. October 12, 1990.

_____. Case Nos. WR-95-205 and SR-95-206. Missouri-American Water Company. November 21, 1995.

_____. Case Nos. WR-95-205 and SR-95-206. Missouri-American Water Company. November 21, 1995.

_____. Case Nos. WR-97-237 and SR-97-238. Missouri-American Water Company. November 6, 1997.

New Hampshire

New Hampshire Public Utilities Commission. Docket DR 97-058. Pennichuck Water Works, Inc, Request for Permanent Rates. March 25, 1998.

New Jersey

New Jersey Board of Public Utilities. Docket No. WR95040165. New Jersey-American Water Company. March 3, 1996.

New York

New York Public Service Commission. Case No. 93-W-0962. Order Instituting Proceeding and Soliciting Comments, Investigation of Incentives for Acquisition and Merger of Small Water Utilities. November 10, 1993.

Ohio

Ohio Public Utilities Commission. Case Nos. 88-716-GA-AIR et. all, 88-1011-GA-CMR. Columbia Gas of Ohio, Inc. October 17, 1989.

Pennsylvania

Pennsylvania Public Utility Commission. Order in Docket R-850096, Western Pennsylvania Water Company (January 29, 1986).

_____. Order in Docket No. M-00950686. Policy Statement Re: Incentives For The Acquisition And Merger Of Small, Nonviable Water And Waste Water Systems. February 23, 1996.

Rhode Island

Rhode Island Public Utilities Commission. Docket No. 2216. Narragansett Bay Water Quality Management District. March 24, 1995.

Texas

Texas Public Utility Commission. Docket No. 4240. Texas-New Mexico Power Company. June 2, 1982.

West Virginia

West Virginia Public Service Commission. Case No. 81-126-W-42A. West Virginia Water Company. May 26, 1982.

_____. Case No. 89-498-W-42T. West Virginia-American Water Company. May 4, 1990.

_____. Case No. 89-498-W-42T. West Virginia-American Water Company. May 24, 1990.

_____. Case No. 93-0279-W-42T. West Virginia-American Water Company. January 23, 1994.

Source: Adapted and updated from Daniel W. McGill, "Memorandum on Single-Tariff Pricing" (correspondence dated December 31, 1996).

APPENDIX C
DETAILED EXAMPLE OF SINGLE-TARIFF PRICING

Table C1
Cost-of-Capital Determination

Source of Capital	Issuance Cost ($)	End-of-year Capitalization ($)	Capitalization (percent)	Cost Rate ($)	Weighted Cost ($)
Short-term bank debt		4,800,000	7.47	14.00	1,046
Long-term debt bonds					
First-mortgage bonds					
5 3/8% series due 3/1/82	2,040	2,500,000	3.90	5.427	0.211
9 3/4% series due 5/1/95	40,544	3,000,000	4.67	9.884	0.462
10% series due 10/1/96	229,017	16,800,000	26.17	10.116	2.647
9 3/8% series due 8/1/96	83,423	7,840,000	12.21	9.474	1.157
Total long-term debt		30,140,000	46.95	9.54	4.477
Preferred stock					
10 percent	31,781	2,940,000	4.58	10.092	0.462
9 1/2 percent	19,067	1,368,000	2.13	9.602	0.204
7 1/2 percent	21,926	1,920,000	2.99	7.692	0.230
Total preferred stock		6,228,000	9.70	9.24	8.896
Common equity					
Common stock		986,073			
Capital surplus		7,172,538			
Earned surplus		14,875,670			
Total common equity		23,034,281	35.88	15.00	5.381
Total capitalization		64,202,281	100.00		11.800

Source: Adapted from Edward M. Limbach, "Single Tariff Pricing," *Journal American Water Works Association* 75 no. 9 (September 1984).

Table C2
Allocation of Expenses by District and Under Single-Tariff Pricing

Expense Per 1 Million Gallons of Pumped Water	District A	District B	District C	District D	Single-Tariff Pricing
Fuel and power	49	91	115	102	57
Chemicals	15	31	76	17	20
Total operation cost	374	2,136	2,443	789	513
Total maintenance cost	103	499	277	94	116

Source: Adapted from Edward M. Limbach, "Single Tariff Pricing," *Journal American Water Works Association* 75 no. 9 (September 1984).

Table C3
District Revenue Requirements and Effect on Average Residential Water Bill

Cost and Service Characteristics	District A	District B	District C	District D
Ratebase ($)	52,231,951	211,630	351,510	2,320,677
Rate of return (percent) ◆	11.80	11.80	11.80	11.80
Utility operating income ($)	6,163,370	24,972	41,466	273,840
Operation & maintenance expense ($)	5,835,260	173,506	139,624	806,709
Depreciation & amortization ($)	806,306	5,931	9,750	32,509
Taxes other than federal income tax ($)	1,789,540	16,527	18,728	131,035
Provision for federal income tax ($)	1,057,772	2,919	2,944	45,127
Total revenue requirement ($)	15,652,248	223,855	212,512	1,289,220
Percentage of revenue assigned to residential customers	53.03	70.86	66.4	64.67
Number of residential customers	51,651	534	558	5,180
Average residential water bill ($)◆◆	12.01	27.70	24.21	13.30
Impact of $50,000 investment on average residential bill	0.12 (1%)	15.16 (55%)	$13.59 (56%)	$1.43 (11%)

Source: Adapted from Edward M. Limbach, "Single Tariff Pricing," *Journal American Water Works Association* 75 no. 9 (September 1984).

◆ From Table C1. ◆◆ Based on 4,500 gallons per month.

Table C4
Comparison of Tariffs for Selected Districts Before and After Implementation of Single-Tariff Pricing

Usage Charge	District A ($)	District B ($)	Single-Tariff Pricing ($)
Minimum charge			
17-mm (5/8-inch) meter or smaller	6.62	13.11	7.35
20-mm (3/4-inch) meter	9.78	19.67	11.06
25-mm (1-inch) meter	16.30	32.78	18.40
40-mm (1 1/2-inch) meter	32.59	65.56	36.80
50-mm (2-inch) meter	52.15	104.91	58.90
80-mm (3-inch) meter	97.78	196.70	110.40
100-mm (4-inch) meter	162.96	327.85	184.00
150-mm (6-inch) meter	325.92	655.69	368.00
200-mm (8-inch) meter	521.47	1,049.11	568.80
Variable charge (per 1,000 gallons)			
First 2000 gallons/month	--	--	--
Next 28,000 gallons/month	2.597	4.526	2.74
Next 970,000 gallons/month	1.562	3.147	1.56
Next 9 million gallons/month	1.107	3.147	1.14
All more than 10 million gallons/month	0.858	3.147	0.902

Source: Adapted from Edward M. Limbach, "Single Tariff Pricing," *Journal American Water Works Association* 75 no. 9 (September 1984).

APPENDIX D

Date: 1996

_____

(_____) _____
Dr. Janice A. Beecher, Director of Regulatory Studies
University

Re:

Happy New Year! Can you help me by taking a moment to fill out this quick survey and faxing it

will make the results available to everyone.

is used to implement a single rate structure for multiple water (or other) utility

the utility pay the same rate for service, even though the individual systems providing service may

Water utilities with multiple systems are not necessarily found in every state.

1. Do any of the water **utilities** regulated by your commission have multiple water **systems** (☑)**?** **Yes** ❒ **No** ❒

   If No, the remaining questions are not applicable to your state. Please return the first page of the questionnaire so that your state will be represented in the survey.

2. If you answered **Yes** to Question 1, please name the multi-system water utilities, the number of systems they operate, and the approximate number of connections for the smallest and largest system operated by the utility. Use an additional sheet if necessary.

3.

Utility Name	*Total Number of Systems*	*Approximate Number of Connections for the: Smallest System*	*Largest System*
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

3. Has your commission **approved** single-tariff pricing for any of the utilities named in Question 1 (☑)? **Yes** ❒ *Go to Question 4* **No** ❒ *Go to Question 5*

4. If your answer to Question 3 was **Yes**, please name the utilities and when the tariff was first approved. Use an additional sheet if necessary.

Utility Name	*When was the tariff first approved?*
_____	_____
_____	_____
_____	_____

5. If your answer to Question 3 was **No**, please check all of the following that apply (☑):

- ❒ Single-tariff pricing has not been an issue.
- ❒ Single-tariff pricing has been considered but not specifically approved.
- ❒ A proposal for single-tariff pricing has been rejected.
- ❒ Other: _____

6. Has single-tariff pricing been explicitly **prohibited** in your state by statute (☑)? **Yes** ❒ **No** ❒

When was the statute passed? _____

Please describe the nature of the prohibition: _____
_____
_____

7. Has your commission put any monitoring and/or evaluation systems in place for single-tariff pricing in cases where it has been implemented (☑)? **Yes** ❒ **No** ❒

If **Yes,** please describe: _____
_____

8. If your commission **approved** single-tariff pricing, what was the **primary** reason for the approval? _____

9. If your commission **rejected** single-tariff pricing, what was the **primary** reason for the rejection? _____

10. Please characterize your commission's policy position on single-tariff pricing (☑)? ✓

- ❒ Generally accepted
- ❒ Generally not accepted
- ❒ Decided on a case-by-case basis
- ❒ Never considered

11. If single-tariff pricing has been an issue in your state, whether or not it has been implemented, please review the following arguments in favor and against single-tariff pricing and check all that have influenced your commission's deliberations or policies on the issue. Check (☑) all that apply:

Arguments in Favor of Single-Tariff Pricing

✓

- ❒ Provides incentives for utility regionalization and consolidation
- ❒ Mitigates rate shock to utility customers
- ❒ Promotes universal service for utility customers
- ❒ Promotes ratepayer equity on a regional basis
- ❒ Improves service affordability for customers
- ❒ Addresses small-system viability issues
- ❒ Facilitates compliance with drinking water standards
- ❒ Provides ratemaking treatment that is similar to that for other utilities
- ❒ Lowers administrative costs to the utilities
- ❒ Lowers administrative costs to the commission
- ❒ Promotes regional economic development
- ❒ Encourages further private involvement in the water sector
- ❒ Encourages investment in the water-supply infrastructure
- ❒ Physical interconnection is not considered a prerequisite
- ❒ Overall benefits outweigh overall costs
- ❒ Other: _____

Arguments Against Single-Tariff Pricing

✓

- ❒ Conflicts with cost-of-service principles
- ❒ Undermines economic efficiency
- ❒ Provides subsidies to high-cost customers
- ❒ Distorts price signals to customers
- ❒ Discourages efficient water-use and conservation
- ❒ Encourages growth and development in high-cost areas
- ❒ Encourages overinvestment in infrastructure
- ❒ Fails to account for variations in customer contributions
- ❒ Provides unnecessary incentives to utilities
- ❒ Considered inappropriate without physical interconnection
- ❒ Not acceptable to all affected customers
- ❒ Not acceptable to other agencies or governments
- ❒ Justification has not been adequate in a specific case (or cases)
- ❒ Insufficient statutory or regulatory basis or precedents
- ❒ Overall costs outweigh overall benefits
- ❒ Other: _____

Please provide any additional comments on another sheet. Thank you again for your assistance. I look forward to working with you in 1996.

APPENDIX E
DETAILED FINDINGS FROM COMMISSION SURVEY ON SINGLE-TARIFF PRICING

TABLE E1
Commission Policies on Single-Tariff Pricing for Water Utilities

State	Multi-System Utilities in the State (Q1)	Number of Multi-System Utilities (Q2)	Commission Approval of Single-Tariff Pricing (Q3)	Number of Utilities with Single Tariff Pricing (Q4)	Reasons for No Single-Tariff Pricing (Q5)	Has Single-Tariff Pricing Been Prohibited by Statute (Q6)	Monitor or Evaluate Single-Tariff Pricing (Q7)	Reason for Approval (Q8)	Reason for Rejection (Q9)	Commission Policy (Q10)
Alabama	No	0	NA	NA	NA	NA	NA	NA	NA	NA
Alaska	No	0	NA	NA	NA	NA	NA	NA	NA	NA
Arizona	Yes	9	Yes	2	NA	No	No	Viability of systems	NA	Case-by-case
Arkansas	No	0	NA	NA	NA	NA	NA	NA	NA	NA
California	Yes	3	No (a)	0 (a)	Considered but not approved	No	No	NA	NA	Case-by-case
Colorado	No	0	NA	NA	NA	NA	NA	NA	NA	NA
Connecticut	Yes	12	Yes	10	NA	No	No	Mitigate rate shock	NA	Generally accepted
Delaware (b)	No	0	No	NA	NA	NA	NA	NA	NA	NA
Florida	Yes	60 to 70	Yes	20	NA	No (c)	No	Affordability; revenue stability; rate normalization for construction projects; simplified bookkeeping; reduced rate case expense.	NA	Case-by-case
Georgia	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Hawaii	No	0	NA	NA	NA	NA	NA	NA	NA	NA
Idaho	Yes	1	Yes	1	NA	No	No	Not an issue when proposed	NA	Case-by-case
Illinois	Yes	4	Yes	2	NA	No	No	Reasonably consistent costs and source of supply.	Difference in source-of-supply costs	Case-by-case

NA = Not applicable; NR = Not reported; NJ = No jurisdiction

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Commission Policies on Single-Tariff Pricing for Water Utilities

State	Multi-System Utilities in the State (Q1)	Number of Multi-System Utilities (Q2)	Commission Approval of Single-Tariff Pricing (Q3)	Number of Utilities with Single Tariff Pricing (Q4)	Reasons for No Single-Tariff Pricing (Q5)	Has Single-Tariff Pricing Been Prohibited by Statute (Q6)	Monitor or Evaluate Single-Tariff Pricing (Q7)	Reason for Approval (Q8)	Reason for Rejection (Q9)	Commission Policy (Q10)
Indiana	Yes	2	No	0	Rejected (later approved)	No	NA	NA	Cost-of-service; cost-based rates	Case-by-case
Iowa	Yes	1	No	0	Not an issue	No	NA	NA	NA	Never considered
Kansas	No	0	NA	NA	NA	NA	NA	NA	NA	NA
Kentucky	Yes	1	No	0	Not an issue	No (d)	NA	NA	NA (d)	Never considered
Louisiana	Yes	10	No	0	Not an issue	No	NA	NA	NA	Never considered
Maine	Yes	1	No	0	Not an issue	No	NA	NA	NA	Never considered
Maryland	Yes	2	No	0	Not an issue	No	NA	NA	NA	Case-by-case
Massachusetts	Yes	1	No (a)	0 (a)	Considered but not approved*	No	No	Contiguity of communities; commonality of personnel; administrative convenience.	Need for further post-merger experience.	Case-by-case
Michigan	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Minnesota	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Mississippi	Yes	1	No	NA	Not an issue	No	NA	NA	NA	Case-by-case
Missouri	Yes	2	Yes	2	NA	No	No	Cost savings	NA	Generally accepted
Montana (b)	No	0	NA	NA	NA	NA	NA	NA	NA	NA
Nebraska	No	0	NA	NA	NA	NA	NA	NA	NA	NA
Nevada	No	0	NA	NA	NA	NA	NA	NA	NA	NA
New Hampshire	Yes	4	No (a)	0 (a)	Considered but not approved*	No	NA	NA	NA	Case-by-case

NA = Not applicable; NR = Not reported; NJ = No jurisdiction

TABLE E1
Commission Policies on Single-Tariff Pricing for Water Utilities

State	Multi-System Utilities in the State (Q1)	Number of Multi-System Utilities (Q2)	Commission Approval of Single-Tariff Pricing (Q3)	Number of Utilities with Single Tariff Pricing (Q4)	Reasons for No Single-Tariff Pricing (Q5)	Has Single-Tariff Pricing Been Prohibited by Statute (Q6)	Monitor or Evaluate Single-Tariff Pricing (Q7)	Reason for Approval (Q8)	Reason for Rejection (Q9)	Commission Policy (Q10)
New Jersey	Yes	3	No	0	Considered but not approved*	No	NA	NA	NA	Case-by-case
New Mexico	No	0	NA	NA	NA	NA	NA	NA	NA	NA
New York	Yes	5	Yes	1	NA	No	No	Acceptable cost-of-service differentials	Cost-of-service differentials	Case-by-case
North Carolina	Yes	50	Yes	46	NA	No	No	More economical for utility and customers; less tracking required.	NA	Generally accepted
North Dakota	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Ohio	Yes	3	Yes	2	NA	No	No	Company request, cost savings, customer benefits.	NA	Case-by-case
Oklahoma	No	0	NA	NA	NA	NA	NA	NA	NA	NA
Oregon	Yes	1	Yes	1	NA	No	No	Public interest	NA	Generally accepted
Pennsylvania (e)	Yes	11	Yes	7	NA	No	No	Economies of scale; mitigate rate shock associated with improvements; lessen bookkeeping and reporting.	NA	Generally accepted; case-by-case
Rhode Island	No	0	NA	NA	NA	NA	NA	NA	NA	NA

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TABLE E1
Commission Policies on Single-Tariff Pricing for Water Utilities

State	Multi-System Utilities in the State (Q1)	Number of Multi-System Utilities (Q2)	Commission Approval of Single-Tariff Pricing (Q3)	Number of Utilities with Single Tariff Pricing (Q4)	Reasons for No Single-Tariff Pricing (Q5)	Has Single-Tariff Pricing Been Prohibited by Statute (Q6)	Monitor or Evaluate Single-Tariff Pricing (Q7)	Reason for Approval (Q8)	Reason for Rejection (Q9)	Commission Policy (Q10)
South Carolina	Yes	4	Yes	4	NA	No	No	Uniform cost allocation; lower billing costs; base charge covers most fixed costs.	NA	Generally accepted
South Dakota	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Tennessee	No	0	NA	NA	NA	NA	NA	NA	NA	NA
Texas	Yes	200 to 300	Yes	Most	NA	No	No	Regionalization, lower administrative cost	NA	Generally accepted and preferred
Utah	No	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vermont	Yes	1	Yes	1	NA	No	NA	Viability of systems; public interest	Staff rejected based on cross subsidies	Case-by-case
Virginia	Yes	4	Yes	4	NA	No	No	Spreads costs; separating small-system costs not always effective.	NA	Case-by-case
Washington	Yes	30	Yes	25	NA	No	No	Economies of scale for small systems	NA	Generally accepted

NA = Not applicable; NR = Not reported; NJ = No jurisdiction

TABLE E1
Commission Policies on Single-Tariff Pricing for Water Utilities

State	Multi-System Utilities in the State (Q1)	Number of Multi-System Utilities (Q2)	Commission Approval of Single-Tariff Pricing (Q3)	Number of Utilities with Single Tariff Pricing (Q4)	Reasons for No Single-Tariff Pricing (Q5)	Has Single-Tariff Pricing Been Prohibited by Statute (Q6)	Monitor or Evaluate Single-Tariff Pricing (Q7)	Reason for Approval (Q8)	Reason for Rejection (Q9)	Commission Policy (Q10)
West Virginia (f)	Yes	26	Yes	17	NA	No	Yes (g)	Promotes regionalization; ratepayer equity; ratemaking treatment similarity (f).	Cost-of-service principles; customer contribution inequities (f).	Case-by-case
Wisconsin (h)	Yes	1	No	0	Not an issue	No	NA	NA	NA	Never considered
Wyoming (b)	No	NA	NA	NA	NA	NA	NA	NA	NA	NA
D.C.	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ

NA = Not applicable; NR = Not reported; NJ = No jurisdiction

TABLE E1
Commission Policies on Single-Tariff Pricing for Water Utilities

State	Multi-System Utilities in the State (Q1)	Number of Multi-System Utilities (Q2)	Commission Approval of Single-Tariff Pricing (Q3)	Number of Utilities with Single Tariff Pricing (Q4)	Reasons for No Single-Tariff Pricing (Q5)	Has Single-Tariff Pricing Been Prohibited by Statute (Q6)	Monitor or Evaluate Single-Tariff Pricing (Q7)	Reason for Approval (Q8)	Reason for Rejection (Q9)	Commission Policy (Q10)

(a) Partial rate consolidation has been approved; single-tariff pricing may be phased-in for some utilities (for regulatory simplification).
(b) Response by phone or derived from *1995 Inventory of Commission-Regulated Water Systems;* no multi-system water utilities.
(c) Proposed legislation would require physical interconnection of systems for single-tariff pricing.
(d) Farmers Home Administration debt requirements prohibit, but the issue did not come before the commission.
(e) May be more multi-system water utilities in the state.
(f) The commission regulates public service districts. These data reflect primarily the views of staff involved in regulating the districts.
(g) Reevaluation of rate cases where single-tariff pricing has been implemented (for public service districts).
(h) Response applies to regulated investor-owned utilities only. The Commission also regulates municipal water utilities and state law requires single-tariff pricing throughout municipalities.
* Pending or later cases were decided in favor of single-tariff pricing.

NA = Not applicable; NR = Not reported; NJ = No jurisdiction

TABLE E1
Commission Policies on Single-Tariff Pricing for Water Utilities

State	Multi-System Utilities in the State (Q1)	Number of Multi-System Utilities (Q2)	Commission Approval of Single-Tariff Pricing (Q3)	Number of Utilities with Single Tariff Pricing (Q4)	Reasons for No Single-Tariff Pricing (Q5)	Has Single-Tariff Pricing Been Prohibited by Statute (Q6)	Monitor or Evaluate Single-Tariff Pricing (Q7)	Reason for Approval (Q8)	Reason for Rejection (Q9)	Commission Policy (Q10)
Summary Data										
Yes	29	--	17	--	--	0	1	--	--	--
No	16	--	13	--	--	29	17	--	--	--
NA	0	--	15	--	33	16	27	27	38	16
NJ	6	--	6	--	6	6	6	6	6	6
Not an issue	--	--	--	--	7	--	--	--	--	--
Rejected	--	--	--	--	1	--	--	--	--	--
Considered but not approved	--	--	--	--	4	--	--	--	--	--
Generally accepted	--	--	--	--	--	--	--	--	--	8
Generally not accepted	--	--	--	--	--	--	--	--	--	0
Case-by-case	--	--	--	--	--	--	--	--	--	16
Never considered	--	--	--	--	--	--	--	--	--	5
Total	51	193	51	145	51	51	51			51

NA = Not applicable; NR = Not reported; NJ = No jurisdiction

TABLE E2
Multi-System Water Utilities and Single-Tariff Pricing

State	Name of Multi-System Water Utility (Q2)	Approximate Number of Systems (Q2)	Smallest System (N Connections) (Q2)	Largest System (N Connections) (Q2)	Single-Tariff Pricing Approved (Q4)	Approximate Date of Approval (Q4)	Notes
Alabama	NA	NA	NA	NA	NA	NA	
Alaska	NA	NA	NA	NA	NA	NA	
Arizona	Wilhoit Water Company	4	47	140	Yes	1993	
	Water Utility of Greater Tonopah, Inc.	7	4	67	Yes	1994	
	Arizona Water Company	20	176	8,120	No	NA	
	Big Park Water Company	3	10	1,400	No	NA	
	Citizens Utilities Company	5	416	20,000	No	NA	
	Congress Water Company	2	48	434	No	NA	
	Cordes Lakes Water Company	3	600	2,977	No	NA	
	Marana Water Service, Inc.	2	88	600	No	NA	
	United Utilities	12	22	1,229	No	NA	
Arkansas	NA	NA	NA	NA	NA	NA	
California	Cal Water Service Company	19	485	3,400	Partial	1990s	Phasing-in tariff, subject to cost analysis (a).
	Southern California Water Company	21	1,000	96,000	Partial	1990s	Phasing-in tariff, subject to cost analysis (a).
	California-American Water Company	5	7,000	40,000	No	NA	
Colorado	NA	NA	NA	NA	NA	NA	
Connecticut	Bridgeport Hydraulic Company	7	66	97,000	Yes	1986	
	Connecticut Water Company	16	42	27,000	Yes	1988	
	Connecticut-American Water Company	5	43	16,000	Partial	1985	Phasing-in rate.
	Crystal Water Company	3	480	2,204	Yes	1995	
	Eastern Connecticut Regional Water Co.	25	<5	249	Partial	1993	Six tariffs; phasing-in rate.
	Gallup Water Service Company	4	36	574	No	NA	

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TABLE E2
Multi-System Water Utilities and Single-Tariff Pricing

State	Name of Multi-System Water Utility (Q2)	Approximate Number of Systems (Q2)	Smallest System (N Connections) (Q2)	Largest System (N Connections) (Q2)	Single-Tariff Pricing Approved (Q4)	Approximate Date of Approval (Q4)	Notes
	Jewett City Water Company	4	20	1,331	Yes	1986	
	Olmstead Water Company	4	31	121	Yes	1995	
	Rural Water Company	20	2	244	Yes	1973	
	Topstone Hydraulic Company	3	41	237	Yes	1975	
	Tyler Lake Water Company	4	27	90	No	NA	
	United Water Connecticut Inc.	4	136	2,919	Yes	1993	
Delaware	NA	NA	NA	NA	NA	NA	Since the survey, a multi-system utility was created (acquisition); consolidated rates were approved.
Florida (b)	Arredondo Utility Company	2	NR	NR	Yes	NR (b)	
	Clay Utility Company	2	NR	NR	Yes	NR (b)	
	Consolidated Water Works, Inc.	2	NR	NR	Yes	NR (b)	
	Florida Cities Water Company (Lee County)	2	NR	NR	Yes	NR (b)	Single-tariff for water only.
	Gulf Utility Company	2	NR	NR	Yes	NR (b)	Interconnected water; noninterconnected wastewater.
	Heartland Utilities, Inc	2	NR	NR	Yes	NR (b)	
	Holiday Utility Company, Inc.	2	NR	NR	Yes	NR (b)	
	Jacksonville Suburban Utilities Corp., Inc.	21	NR	NR	Partial	NR (b)	Three tariffs.
	Lake Utility Services, Inc.	11	NR	NR	Partial	NR (b)	Two tariffs.
	Lenvil H. Dicks	4	NR	NR	Yes	NR (b)	
	Mad Hatter Utility, Inc.	3	NR	NR	Yes	NR (b)	Noninterconnected water; interconnected wastewater.

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TABLE E2
Multi-System Water Utilities and Single-Tariff Pricing

State	Name of Multi-System Water Utility (Q2)	Approximate Number of Systems (Q2)	Smallest System (N Connections) (Q2)	Largest System (N Connections) (Q2)	Single-Tariff Pricing Approved (Q4)	Approximate Date of Approval (Q4)	Notes
	Marion Utilities, Inc.	23	NR	NR	Partial	NR (b)	Two tariffs.
	Neighborhood Utilities, Inc.	5	NR	NR	Yes	NR (b)	
	Ocala Oaks Utilities, Inc.	9	NR	NR	Yes	NR (b)	
	Pine Island Utility Corporation	2	NR	NR	Yes	NR (b)	
	Poinciana Utilities, Inc.	4	NR	NR	Yes	NR (b)	
	Rainbow Springs Utilities, Inc.	2	NR	NR	Yes	NR (b)	
	Seven Rivers Utilities, Inc.	3	NR	NR	Yes	NR (b)	
	Sunshine Utilities of Florida	20	NR	NR	Partial	NR (b)	Excludes 2 systems.
	Utilities, Inc.	16	NR	NR	Partial	NR (b)	Three tariffs.
Georgia	NJ	NJ	NJ	NJ	NJ	NJ	
Hawaii	NA	NA	NA	NA	NA	NA	
Idaho	Hayden Pines Water Company	10	12	646	Yes	1985	Not an issue when proposed.
Illinois	Citizens Utilities Company of Illinois	22	114	8,400	Partial	1965	Some exceptions based on source of supply differences.
	Illinois-American Water Company	5	1,700	65,200	Partial	1993	Phasing-in one system.
	Northern Illinois Water Corporation	4	4,000	40,200	No	NA	
	Consumers Illinois Water Company	8	200	19,200	No	NA	
Indiana	Indiana-American Water Company	16	NR	NR	No	NA	
	Hoosier Water	4	NR	NR	No	NA	
Iowa	Iowa-American Water Company	2	10,400	43,700	No	NA	
Kansas	NA	NA	NA	NA	NA	NA	
Kentucky	Southeastern W.D.	3	837	1,278	No	NA	
Louisiana	A.T.S.	NR	NR	NR	No	NA	
	Acadian Water & Sewer	NR	NR	NR	No	NA	

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TABLE E2
Multi-System Water Utilities and Single-Tariff Pricing

State	Name of Multi-System Water Utility (Q2)	Approximate Number of Systems (Q2)	Smallest System (N Connections) (Q2)	Largest System (N Connections) (Q2)	Single-Tariff Pricing Approved (Q4)	Approximate Date of Approval (Q4)	Notes
	Baton Rouge Water Company	NR	NR	NR	No	NA	
	Capital Utilities	NR	NR	NR	No	NA	
	Coast Water System	NR	NR	NR	No	NA	
	Hunstock Hills	NR	NR	NR	No	NA	
	Ascension Water Company	NR	NR	NR	No	NA	
	Louisiana Water Company	NR	NR	NR	No	NA	
	Parish Water Company	NR	NR	NR	No	NA	
	Utilities Data, Inc.	NR	NR	NR	No	NA	
Maine	Consumers Maine Water Company	7	408	7,192	No	NA	
Maryland	Utilities, Inc.	5	75	1,010	No	NA	
	Facilities Services, Inc.	7	31	130	No	NA	
Massachusetts	Massachusetts-American	3	2,400	11,000	Partial	1990	Two tariffs under a settlement agreement; a case is pending (a).*
Michigan	NJ	NJ	NJ	NJ	NJ	NJ	
Minnesota	NJ	NJ	NJ	NJ	NJ	NJ	
Mississippi	Johnson Utility Company	32	12 to 15	600 to 750	No	NA	
Missouri	Missouri-American Water	7	500	2,800	Yes	1995	
	KMB Utilities	6	200	600	Yes	1995	
Montana	NA	NA	NA	NA	NA	NA	
Nebraska	NA	NA	NA	NA	NA	NA	
Nevada	NA	NA	NA	NA	NA	NA	

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TABLE E2
Multi-System Water Utilities and Single-Tariff Pricing

State	Name of Multi-System Water Utility (Q2)	Approximate Number of Systems (Q2)	Smallest System (N Connections) (Q2)	Largest System (N Connections) (Q2)	Single-Tariff Pricing Approved (Q4)	Approximate Date of Approval (Q4)	Notes
New Hampshire	Consumers New Hampshire Water	24	40	5,000	Partial	NR	Three tariffs; may be moving toward single tariff (a).
	Pennichuck Water Works	12	35	19,000	No	NA	
	Lakes Regional Water Company	11	30	200	No	NA	
	Carleton Water Company	4	30	175	No	NA	
New Jersey	New Jersey-American	2	272	329,000	No	NA	A case is pending.*
	Elizabethtown Water Company	2	10,928	181,100	No	NA	
	Consumers New Jersey	7	422	28,652	No	NA	
New Mexico	NA	NA	NA	NA	NA	NA	
New York	Jamaica Water Supply	2	30,000	90,000	No	NA	Operated as one system until disconnected and extreme cost differentials became apparent
	South County Water	4	2	270	No	NA	Smallest serves two industrial customers.
	Rand Water	2	148	158	No	NA	
	Northwood Water	2	49	220	No	NA	
	Forest Park Water	6	30	60	Yes	1987	Commission imposed single-tariff pricing.
North Carolina	Alpha Utilities	11	18	121	Yes	1986	
	Bess Brothers	11	16	78	Yes	1971	
	Bogue Banks Water Company	3	80	3,830	Yes	1991	
	Bradshaw Water Company	5	10	41	Yes	1974	
	Brookwood Water Corporation	15	32	5,345	Yes	1974	

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TABLE E2
Multi-System Water Utilities and Single-Tariff Pricing

State	Name of Multi-System Water Utility (Q2)	Approximate Number of Systems (Q2)	Smallest System (N Connections) (Q2)	Largest System (N Connections) (Q2)	Single-Tariff Pricing Approved (Q4)	Approximate Date of Approval (Q4)	Notes
	Carolina Water Services of NC	72	13	2,790	Yes	1978	
	Clear Meadow Water	2	24	50	Yes	1981	
	Coastal Plains Utility Company	3	36	542	Yes	1967	
	Community Water Works	2	26	51	Yes	1975	
	Corriher Water Service	22	13	193	Yes	1968	
	Crabtree Water Systems	3	10	26	No	NA	
	Cross State Development Company	3	9	140	Yes	1974	
	CWS Systems	16	12	1,211	No	NA	
	D&W Water Systems	2	17	96	Yes	1987	
	Environmental Maintenance	3	20	132	No	NA	
	Fairways Utilities	3	9	296	Yes	1990	
	Fisher Utilities	18	13	184	Yes	1973	
	Fox Run Water Company	6	21	60	Yes	1989	
	Goss Utility Company	7	19	131	Yes	1976	
	Grandfather Golf and Country	2	45	156	Yes	1982	
	Heater Utilities	150	10	2,475	Yes	1972	
	Wayne M. Honeycutt	3	15	40	Yes	1978	
	Huffman Water Systems	10	11	83	Yes	1964	
	Hydraulics, Ltd.	85	4	191	Yes	1966	
	HydroLogic	4	15	64	No	NA	
	Kings Grant Water Company	7	96	850	Yes	1968	
	Knob Creek Utility	3	24	151	Yes	1984	
	Language Water Works Corp.	22	62	678	Yes	1969	
	Ira D. Lee & Assoc.	2	41	145	Yes	1986	

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TABLE E2
Multi-System Water Utilities and Single-Tariff Pricing

State	Name of Multi-System Water Utility (Q2)	Approximate Number of Systems (Q2)	Smallest System (N Connections) (Q2)	Largest System (N Connections) (Q2)	Single-Tariff Pricing Approved (Q4)	Approximate Date of Approval (Q4)	Notes
	Lewis Water Company	14	6	80	Yes	1980	
	Lincoln Water Works	2	21	122	Yes	1972	
	William K. Mauney	2	19	24	Yes	1976	
	Mercer Environmental	10	47	479	Yes	1965	
	Mid South Water Systems	201	7	429	Yes	1981	
	Giles E. Mullis	2	20	20	Yes	1983	
	Norwood Beach Water System	4	10	36	Yes	1995	
	Piedmont Construction & Water	47	7	147	Yes	1970	
	Prior Construction Company	2	11	184	Yes	1988	
	Quality Water Supplies	14	37	257	Yes	1967	
	Rayco Utilities	10	12	104	Yes	1987	
	Scientific Water & Sewage	5	106	537	Yes	1964	
	Scotland Water	4	39	91	Yes	1983	
	Scotsdale Water & Sewage	15	7	205	Yes	1990	
	Setzer Brothers Well Boring	3	30	72	Yes	1972	
	Spring Water Company	2	17	139	Yes	1977	
	Surry Water Company	30	8	206	Yes	1972	
	Turner Farms	4	20	127	Yes	1982	
	Water Resources	2	9	81	Yes	1993	
	West Wilson Water Company	6	15	74	Yes	1988	
	Woods Water Works	4	5	18	Yes	1981	
North Dakota	NJ	NJ	NJ	NJ	NJ	NJ	
Ohio	Ohio-American Water	8 or 9	300	15,000	Yes	1975 to 1983	

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Multi-System Water Utilities and Single-Tariff Pricing

State	Name of Multi-System Water Utility (Q2)	Approximate Number of Systems (Q2)	Smallest System (N Connections) (Q2)	Largest System (N Connections) (Q2)	Single-Tariff Pricing Approved (Q4)	Approximate Date of Approval (Q4)	Notes
	Citizens Utilities	6	278	3,023	Yes	1975 to 1983	
	Consumers Ohio Water	4	7,516	25,254	No	NA	
Oklahoma	NA	NA	NA	NA	NA	NA	
Oregon	Avion Water Company, Inc.	4	52	5,750	Yes	Early 1970s	
Pennsylvania	Pennsyvania-American Water Company	27	NR	NR	Yes	1970s & 1980s	Interconnected systems (1970s); noncontiguous systems (1980s).
	United Water Pennsylvania, Inc.	22	NR	NR	Partial	1992	Excludes one system.
	Consumers Pennsylvania Water Company	10	NR	NR	Partial	NR	Three rate zones.
	Citizens Utilities Water Company of PA	20	NR	NR	Partial	NR	Five rate zones.
	National Utilities, Inc.	21	NR	NR	Partial	NR	Three rates and four systems with their own tariffs.
	Philadelphia Suburban Water Company	15	NR	NR	Partial	NR	Most acquisitions adopt the single tariff; excludes two systems.
	Newtown Artesian Water Company	2	NR	NR	Yes	1994	Merger of two companies.
	Redstone Water Compnay, Inc.	3	NR	NR	No	NA	Three rate zones and four systems with separate tariffs.
	Frank Sargent	4 to 5	NR	NR	No	NA	May be moving toward single tariff.
	Blaine Rhodes	5	NR	NR	No	NA	May be moving toward single tariff.

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Multi-System Water Utilities and Single-Tariff Pricing

State	Name of Multi-System Water Utility (Q2)	Approximate Number of Systems (Q2)	Smallest System (N Connections) (Q2)	Largest System (N Connections) (Q2)	Single-Tariff Pricing Approved (Q4)	Approximate Date of Approval (Q4)	Notes
	Carl Kreisge	2 to 3	NR	NR	No	NA	May be moving toward single tariff.
Rhode Island	NA	NA	NA	NA	NA	NA	
South Carolina	Carolina Water Service Inc.	53	18	1,500	Yes	1987	
	Heater Utilities, Inc.	38	5	250	Yes	1990	
	Blue Ribbon H2O Corporation	34	5	300	Yes	1995	
	Upstate Heater Utilities Inc.	21	20	50	Yes	1994	
South Dakota	NJ	NJ	NJ	NJ	NJ	NJ	
Tennessee	NA	NA	NA	NA	NA	NA	
Texas	*Data not easily available*	----------*Not reported*----------					*Single-tariff pricing is preferred; a special procedure is used to implement the tariff in conjunction with acquisitions.*
Utah	NA	NA	NA	NA	NA	NA	
Vermont	Sunshine Water Company	4	12	40	Yes	1985	
Virginia	Alpha Water Corporation	28	10	200	Yes	1984	
	Heritage Homes of Virginia	8	11	29	Yes	1994	
	New River Water Company	14	7	126	Yes	1993	
	Pocahontas Water Works	2	60	68	Yes	1958	
Washington (c)	Alderton-McMillin Water Supply, Inc.	8	NR	NR	Yes	NR	
	Aquarius Utilities, Inc.	4	NR	NR	Yes	NR	
	Arcadia Utilities	11	NR	NR	No	NA	
	Bethel Water Company	3	NR	NR	Yes	NR	

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Multi-System Water Utilities and Single-Tariff Pricing

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	Evergreen Land & Water, Inc.	6	NR	NR	Yes	NR	System under receivership.
	Gamble Bay Water, Inc.	10	NR	NR	Yes	NR	
	H & R WaterWorks, Inc.	8	NR	NR	Yes	NR	
	H2O Company, The	2	NR	NR	No	NA	
	Harbor Water Company, Inc.	79	NR	NR	Yes	NR	
	Iliad Water Services, Inc.	12	NR	NR	No	NA	
	Lara Lee, Inc.	6	NR	NR	Yes	NR	
	Mainland View Manor Maintenance Co.	5	NR	NR	Yes	NR	
	Marvin Road Water Company	4	NR	NR	Yes	NR	
	Mirrormont Srevices, Inc.	2	NR	NR	Yes	NR	
	Monterra, Inc. (Washington Water Systems)	2	NR	NR	Yes	NR	
	Northwest Water Systems, Inc.	13	NR	NR	Yes	NR	
	Pattison Water Comapny	4	NR	NR	Yes	NR	
	Point Fosdick Water Company, Inc.	4	NR	NR	Yes	NR	
	Rainier View Water Company, Inc.	4	NR	NR	Partial	NR	Excludes 1-2 systems.
	Sanderson & Associates, Inc.	13	NR	NR	Yes	NR	
	Satellite Water Systems	25	NR	NR	No	NA	
	S-K Pump & Drilling	39	NR	NR	Yes	NR	
	Soren Pedersen Water Company	2	NR	NR	No	NA	
	Sound Water Company, Inc.	4	NR	NR	Yes	NR	
	South Bainbridge Water System, Inc.	2	NR	NR	Yes	NR	
	South Sound Utility Company, Inc.	35	NR	NR	Yes	NR	
	Stroh Water Company	5	NR	NR	Partial	NR	Excludes 1-2 systems.
	Sunshine Acres Water System	4	NR	NR	Yes	NR	

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	Thomas Water Service, Inc.	2	NR	NR	Yes	NR	
	Washington Water Supply, Inc.	9	NR	NR	Yes	NR	
West Virginia (d)	West Virginia-American	13	571	68,636	Yes	1982	Formerly 12 to 14 districts.
	Arbuckle	2	NR	NR	Yes	Prior to 8/85	
	Central Hampshire	2	NR	NR	No	NA	
	Friendly	2	NR	NR	Yes	Prior to 4/88	
	Gilmer County	2	NR	NR	Yes	Prior to	
	Grant County	2	NR	NR	Yes	Prior to 9/83	
	Green Valley-Glenwood	2	NR	NR	Yes	Prior to 6/80	
	Hammond	2	NR	NR	Yes	1982	
	Hardy County	2	NR	NR	No	NA	
	Jefferson County	3	NR	NR	No	NA	
	Kopperston	2	NR	NR	Yes	1981	
	Logan County	5	NR	NR	Yes	1995	
	Mannington	2	NR	NR	Yes	Prior to 3/82	
	Mason County	3	NR	NR	No	NA	
	McDowell County	6	NR	NR	No	NA	
	Oakland	2	NR	NR	Yes	Prior to 5/84	
	Ohio County	3	NR	NR	Yes	Prior to 1/81	
	Pendleton County	4	NR	NR	No	NA	
	Preston County #1	2	NR	NR	Yes	Prior to 2/81	
	Preston County #2	2	NR	NR	Yes	Prior to	
	Raleigh County	3	NR	NR	No	NA	
	Red Sulphur	2	NR	NR	Yes	Prior to 8/83	

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	South Putnam	2	NR	NR	No	NA	
	Van	2	NR	NR	No	NA	
	Washington Pike	2	NR	NR	Yes	Prior to 7/80	
	Wyoming-Glover	2	NR	NR	Yes	Prior to 2/85	
Wisconsin	Wisconsin Power & Light	2	2,661	13,752	No	NA	
	Several towns with two or three systems	----------*Not reported*----------					*Single-tariff pricing is required for municipal utilities.*
Wyoming	NA	NA	NA	NA	NA	NA	
D.C.	NJ	NJ	NJ	NJ	NJ	NJ	

(a) Single-tariff pricing has not been explictly approved, but some rate consolidation has occurred (three states; four systems).

(b) Only utilities with single-tariff pricing for all or some systems are reported. These rates were approved over time, dating back to at least the early 1980s. Data were not reported for all multi-system utilities in the state.

(c) Flat rates and metered rates may exist within the same tariff; mobile home parks and multi-dwelling units may have a separate rate within the same tariff.

(d) Only West-Virginia is investor-owned; the rest are public service districts. Only multi-system utilities are reported;interconnected systems and single-systems with multiple tariffs are not included.

* Pending cases were decided in favor of single-tariff pricing.

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Multi-System Water Utilities and Single-Tariff Pricing

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Summary Data for All Utilities							
Yes		--	--	--	129	--	
Partial		--	--	--	20	--	
No		--	--	--	64	--	
Total	--	--	--	--	213	--	
Minimum		2	2	18	--	--	
Maximum		201	30,000	329,000	--	--	
Average		11	751	11,615	--	--	
Median		4	30	257	--	--	
Utilities reported		203	115	115	--	--	

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Summary Data for Single-Tariff Utilities							
Yes		--	--	--	129	--	
Partial	--		--	--	20	--	
No		--	--	--	0	--	
Total		--	--	--	149	--	
Minimum		2	2	18	--	1958	
Maximum		201	2,400	97,000	--	1995	
Average		13	122	5,651	--	1982	
Median		5	20	193	--	1984	
Utilities reported		149	81	81	--	80	
Summary Data for Non-Single-Tariff Utilities							
Yes		--	--	--	0	--	
Partial		--	--	--	0	--	
No		--	--	--	64	--	
Total		--	--	--	0	--	
Minimum		2	2	26	--	--	
Maximum		32	30,000	329,000	--	--	
Average		6	2,251	25,824	--	--	
Median		4	82	1,254	--	--	
Utilities reported		54	34	34	--	--	

Note:
For reponses reported as a range of values, averages were used (for example, "8 to 9" was averaged to "8.5").
For the response "< 5" a value of 4.5 was used.

TABLE E3
Arguments in Favor of Single-Tariff Pricing (a)

State	Regionalization Incentives	Mitigates Rate Shock	Universal Service	Regional Ratepayer Equity	Service Affordability	Small-System Viability	Compliance with Standards	Similar Ratemaking to Other Utilities	Lowers Admin. Costs to Utility	Lowers Admin. Costs to Commission	Regional Economic Development	Encourages Private Involvement	Encourages Investment	Interconnection Not Required	Overall Benefits Outweigh Costs	Other	Number of "Yes" Responses
Alabama	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alaska	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arizona	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No	8
Arkansas	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
California	No	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	4
Colorado	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Connecticut	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	14
Delaware	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Florida	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	13
Georgia	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Hawaii	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Idaho	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Illinois	Yes	Yes	No	No	No	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	6
Indiana	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	2
Iowa	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Kansas	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kentucky	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Louisiana	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Maine	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Maryland	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Massachusetts	No	No	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No	No	3
Michigan	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Minnesota	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Mississippi	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Missouri	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	No	No	Yes	Yes	No	No	7
Montana	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = Not applicable; NR = Not reported; NJ = No jurisdiction

TABLE E3
Arguments in Favor of Single-Tariff Pricing (a)

State	Regionalization Incentives	Mitigates Rate Shock	Universal Service	Regional Ratepayer Equity	Service Affordability	Small-System Viability	Compliance with Standards	Similar Ratemaking to Other Utilities	Lowers Admin. Costs to Utility	Lowers Admin. Costs to Commission	Regional Economic Development	Encourages Private Involvement	Encourages Investment	Interconnection Not Required	Overall Benefits Outweigh Costs	Other	Number of "Yes" Responses
Nebraska	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nevada	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
New Hampshire	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	4
New Jersey	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	No	No	8
New Mexico	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
New York	No	No	No	No	No	No	No	No	Yes	No	No	No	No	Yes	No	Yes (b)	3
North Carolina	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	No	Yes	No	No	Yes	Yes	No	9
North Dakota	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Ohio	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes	No	No	6
Oklahoma	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oregon	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	No	12
Pennsylvania	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Yes	No	11
Rhode Island	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
South Carolina	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	4
South Dakota	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Tennessee	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Texas	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	No	6
Utah	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vermont	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	Yes (c)	1
Virginia	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	No	No	No	No	No	No	6
Washington	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	14
West Virginia	Yes	No	No	Yes	Yes	No	No	Yes	No	No	No	No	No	Yes	Yes	No	6
Wisconsin	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Wyoming	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D.C.	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ

NA = Not applicable; NR = Not reported; NJ = No jurisdiction

TABLE E3
Arguments in Favor of Single-Tariff Pricing (a)

State	Regionalization Incentives	Mitigates Rate Shock	Universal Service	Regional Ratepayer Equity	Service Affordability	Small-System Viability	Compliance with Standards	Similar Ratemaking to Other Utilities	Lowers Admin. Costs to Utility	Lowers Admin. Costs to Commission	Regional Economic Development	Encourages Private Involvement	Encourages Investment	Interconnection Not Required	Overall Benefits Outweigh Costs	Other	Number of "Yes" Responses
Summary Data																	
Yes	15	17	8	6	12	13	9	10	16	8	3	2	5	13	9	2	--
No	6	4	13	15	9	8	12	11	5	13	18	19	16	8	12	19	--
Not an issue	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	--
Not applciable	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	--
No jurisidction	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	--
Total	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	--

(a) These findings reflect staff views about the arguments affecting commission deliberations or policies.
(b) Can be consistent with cost-of-service principles.
(c) The board determined that single-tariff pricing was in the public interest and approved it over the objections of staff concerns about subsidies.

NA = Not applicable; NR = Not reported; NJ = No jurisdiction

TABLE E4
Arguments Against Single-Tariff Pricing (a)

State	Conflict with Cost-of-Service	Undermines Economic Efficiency	Subsidies to High-Cost Customers	Distorts Price Signals	Discourages Efficient Water Use	Encourages Growth in High-Cost Areas	Encourages Overinvestment	Fails to Account for Contributions	Unnecessary Incentives	Inappropriate Without Interconnection	Not Acceptable to All Customers	Not Acceptable to Agencies	Not Justified in a Specific Case	Insufficient Precedents	Overall Costs Outweigh Benefits	Other	Number of "Yes" Responses
Alabama	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alaska	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arizona	Yes	No	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No	No	No	No	5
Arkansas	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
California	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	No	No	No	No	7
Colorado	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Connecticut	Yes	No	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	6
Delaware	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Florida	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	15
Georgia	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Hawaii	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Idaho	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Illinois	Yes	No	No	No	No	No	No	No	No	No	No	No	Yes	No	Yes	No	3
Indiana	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	Yes	No	No	No	4
Iowa	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Kansas	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kentucky	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Louisiana	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Maine	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Maryland	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Massachusetts	Yes	No	No	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No	3
Michigan	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Minnesota	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Mississippi	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Missouri	Yes	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No	No	No	No	No	5
Montana	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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TABLE E4
Arguments Against Single-Tariff Pricing (a)

State	Conflict with Cost-of-Service	Undermines Economic Efficiency	Subsidies to High-Cost Customers	Distorts Price Signals	Discourages Efficient Water Use	Encourages Growth in High-Cost Areas	Encourages Overinvestment	Fails to Account for Contributions	Unnecessary Incentives	Inappropriate Without Interconnection	Not Acceptable to All Customers	Not Acceptable to Agencies	Not Justified in a Specific Case	Insufficient Precedents	Overall Costs Outweigh Benefits	Other	Number of "Yes" Responses
Nebraska	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nevada	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
New Hampshire	Yes	No	Yes	No	No	No	No	Yes	No	Yes	Yes	No	No	No	No	No	5
New Jersey	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	0
New Mexico	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
New York	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	No	Yes	No	No	No	9
North Carolina	Yes	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	3
North Dakota	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Ohio	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	0
Oklahoma	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oregon	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	0
Pennsylvania	Yes	No	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	No	3
Rhode Island	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
South Carolina	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	0
South Dakota	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Tennessee	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Texas	No	No	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	No	2
Utah	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vermont	No	No	Yes	Yes	No	No	No	No	No	Yes	Yes	No	No	No	No	No	4
Virginia	Yes	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	No	No	3
Washington	No	No	No	Yes	Yes	No	No	No	No	No	Yes	No	No	No	No	No	3
West Virginia	Yes	No	No	No	No	No	No	Yes	No	No	No	No	Yes	No	No	No	3
Wisconsin	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Wyoming	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D.C.	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ

NA = Not applicable; NR = Not reported; NJ = No jurisdiction

TABLE E4
Arguments Against Single-Tariff Pricing (a)

State	Conflict with Cost-of-Service	Undermines Economic Efficiency	Subsidies to High-Cost Customers	Distorts Price Signals	Discourages Efficient Water Use	Encourages Growth in High-Cost Areas	Encourages Overinvestment	Fails to Account for Contributions	Unnecessary Incentives	Inappropriate Without Interconnection	Not Acceptable to All Customers	Not Acceptable to Agencies	Not Justified in a Specific Case	Insufficient Precedents	Overall Costs Outweigh Benefits	Other	Number of "Yes" Responses
Summary Data																	
Yes	14	3	12	7	4	4	1	6	2	8	10	2	6	2	2	0	--
No	7	18	9	14	17	17	20	15	19	13	11	19	15	19	19	21	--
Not an issue	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	--
Not applciable	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	--
No jurisidction	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	--
Total	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	--

(a) These findings reflect staff views about the arguments affecting commission deliberations or policies.

NA = Not applicable; NR = Not reported; NJ = No jurisdiction