TABLE OF CONTENTS

I. ACKNOWLEDGEMENTS ...................................................................................................................... 4
II. PREFACE ........................................................................................................................................ 5
III. 2012 NAWC WATER POLICY FORUM PARTICIPANTS ............................................................ 6
IV. THE FUNDAMENTALS OF THE PRIVATE WATER INDUSTRY .................................................... 8
  A. The Regulatory Compact .................................................................................................................. 8
  B. The Industry is Fragmented ............................................................................................................. 9
  C. Capital Intensive Industry ............................................................................................................... 9
  D. The National Association of Regulatory Utility Commissioners (NARUC)’s Best Practices ...... 10
V. THE COST IMPACT OF THE NEW DRINKING WATER STANDARDS ........................................... 12
  A. Regulatory Process ........................................................................................................................ 12
  B. Unregulated Contaminants .......................................................................................................... 12
    1. Contaminant Candidate List (CCL) ......................................................................................... 12
    2. Unregulated Contaminant Monitoring: UCMR 2 ................................................................. 13
    3. UCMR 3 ................................................................................................................................. 13
    4. Hexavalent Chromium (Cr) ..................................................................................................... 13
  C. CCL Regulatory Determinations .................................................................................................. 13
    1. Regulatory Determination for Perchlorate .......................................................................... 14
  D. Existing Standards ....................................................................................................................... 15
    1. Six Year Review ....................................................................................................................... 15
    2. Revised Total Coliform Rule ............................................................................................... 16
    3. Lead and Copper Rule ........................................................................................................... 16
VI. REGULATORY PRACTICES TO PROMOTE CAPITAL INVESTMENT AND COST EFFECTIVE RATES ........................................................................................................... 18
  A. Pennsylvania PUC – Reducing Regulatory Lag and Facilitating Timely Recovery of Capital .... 18
    1. Distribution System Investment Charge (DSIC) ................................................................... 18
    2. Combined Water and Wastewater Revenues ....................................................................... 20
    3. Fully-Projected Future Test Year ......................................................................................... 20
  B. Other Effective Regulatory Practices to Promote Investment and Cost Effective Rates ........ 22
    1. Surcharge or Automatic Adjustment Mechanism for Non-Capital Costs ......................... 22
    2. Surcharges for Significant Capital Investments ................................................................. 23
    3. Use of Construction Work in Progress (CWIP) ................................................................. 23
    4. Single Tariff Pricing ............................................................................................................. 24
    5. Customer Assistance Programs ............................................................................................ 24
  C. Effective Regulatory Practices in Streamlining Rate Case Processes ...................................... 25
    1. Mediation and Settlement Procedures ................................................................................. 25
    2. Establish or More Clearly Define Rules and Procedures ..................................................... 25
    3. Specific and Enforceable Time Limits on the Length of Rate Cases .................................. 25
    4. Rate Case Filing Cycles ....................................................................................................... 26
    5. Expedited Rate Case Procedures for Small Companies ..................................................... 26
VII. CAPITAL MARKETS PERSPECTIVE .......................................................................................... 27
  A. Factors that Impact the Cost of Capital .................................................................................... 27
    1. Risk/Return ............................................................................................................................ 27
    2. Sector Loses Positive Momentum ....................................................................................... 28
    3. Investment Concerns ............................................................................................................. 28
    4. Regulatory Practices in the Spotlight .................................................................................. 28
    5. Rate of Return on Equity (ROE) .......................................................................................... 29
VIII. EFFECTIVE ECONOMIC DEVELOPMENT: SOUTH CAROLINA DEPARTMENT OF COMMERCE .................................................................................................................. 30
IX. SUSTAINABILITY AND CUSTOMER IMPACTS ....................................................................... 31
  A. Sustainability and Consolidation ............................................................................................... 31
    1. Compliance with Environmental Standards ....................................................................... 31
    2. Costs of Infrastructure Replacement ..................................................................................... 32
    3. Need to Consolidate ............................................................................................................. 33
  B. Types of Consolidation ............................................................................................................. 35
    1. Mergers and Acquisitions ..................................................................................................... 35
    2. Regulatory Policies to Promote Consolidation and Acquisition ........................................ 36
    3. Public Private Partnerships ................................................................................................... 37
  C. Other Challenges to Sustainability .......................................................................................... 39
X. CONSERVATION, DECLINING CONSUMPTION, AND SUSTAINABILITY

A. Conservation Initiatives
B. Conservation Rates
C. Cost Benefit Analysis Models
D. Revenue Impacts and Solutions
E. Reuse

XI. SMALL WATER COMPANY CONSIDERATIONS AND SOLUTIONS

A. Issues and Arrangements Relating to Rates
   1. Simplified Rate Proceedings
   2. Single Tariff Pricing (STP)
   3. Alternatives to Rate Base/Rate of Return Regulation
   4. Use of Future “Prospectively Relevant” Test Years and Expedited Rate Proceedings
B. Issues and Arrangements Relating to Return on Investment
C. Issues and Arrangements Relating to Compliance
   1. Use of Infrastructure System Replacement Charge
   2. Relief from Fines and Penalties
   3. Insulating Purchaser from Former Owner Violations
D. Issues and Arrangements Relating to Purchase Price
   1. Reducing Purchase Price of a Small Utility for Penalties
   2. Acquisition Adjustments
E. Issues Related to New System Formation

XII. NEXT STEPS TO STATE IMPLEMENTATION OF EFFECTIVE REGULATORY PRACTICES

XIII. NARUC RESOLUTION

XIV. CONTACT LIST

California Water Action Plan
Conservation
Consumer Education
Customer Assistance Programs
Decoupling
Rate Setting Process
Reduction of Regulatory Lag and Timely Recovery of Capital
Regionalization, Consolidation, Coordination with Municipals and Troubled Systems Solutions
Single Tariff Pricing
Small System Best Practices
Sustainable Water Infrastructure
I. ACKNOWLEDGEMENTS

The National Association of Water Companies (NAWC) extends its sincere appreciation to all of the participants and presenters at the NAWC 2012 Water Policy Forum. NAWC also thanks the authors of the issue papers discussed and presented herein.

Special thanks to the Honorable Butch Howard, Commissioner, South Carolina Public Service Commission, and Chair of the National Association of Regulatory Utility Commission’s (NARUC) Committee on Water.

NAWC also recognizes and thanks the three members of NARUC leadership, as well as the consumer advocates, who attended the Forum and provided valuable insight and comment into the discussion.
II. PREFACE

The 2012 NAWC Water Policy Forum was held April 22-24, 2012, in Charleston, South Carolina. Participants in this Forum represent the water industry, state economic and environmental regulators, consumer advocates, and the capital market industry.

The purpose of the Forum is not to reach consensus amongst the participants, but rather to share thoughts, information, and ideas in the form of effective regulatory practices that can be used to build a common understanding of the issues that impact water companies, the customers they serve, and the respective regulatory agencies. The ultimate goal is that each state adopts or promotes those effective regulatory practices. Therefore, this report provides a summary of the topics discussed at the 2012 Water Policy Forum in hopes that it will facilitate additional discussion on these issues, a greater understanding of the importance of effective regulatory practices, and result in greater implementation of effective regulatory practices.
III. 2012 NAWC WATER POLICY FORUM PARTICIPANTS

Ms. Shellie Chard-McClary
Division Director
Water Quality Division
Oklahoma Department of Environmental Quality

The Honorable David C. Coen
Commissioner
Vermont Public Service Board
(Past NARUC President)

Mr. Dennis Doll
President & CEO
Middlesex Water Company

Ms. Dianne Dusman
NASUCA Water Committee
Senior Assistant Consumer Advocate
Office of Pennsylvania Consumer Advocate

Mr. Paul Foran
Vice President-Regulatory Programs
American Water

The Honorable Kate Giard
Commissioner
Regulatory Commission of Alaska

The Honorable Kevin D. Gunn
Chairman
Missouri Public Service Commission

Mr. Walton Hill
Sr. Vice President, Regulatory Relations
United Water

The Honorable Kenneth Hill
Chairman
Tennessee Regulatory Authority

The Honorable Mary-Anna Holden
Commissioner
New Jersey Board of Public Utilities

The Honorable John E. “Butch” Howard
Chairman
South Carolina Public Service Commission

Mr. John Hoy
Chief Operating Officer
Utilities Inc.

The Honorable Philip B. Jones
Commissioner
Washington Utilities & Transportation Commission
(NARUC First Vice President)

Mr. Steve Klick
Executive Policy Manager
Pennsylvania Public Utility Commission

Mr. Walter Lynch
President
American Water

The Honorable Carolene R. Mays
Commissioner
Indiana Utility Regulatory Commission

Mr. David Monie
President
SB Water Company

The Honorable David Noble
Commissioner
Nevada Public Utilities Commission

Mr. Philip Oshida
Deputy Director, Standards & Risk Mgmt Division
Office of Ground Water & Drinking Water
U.S. Environmental Protection Agency

The Honorable Erin O’Connell-Diaz
Commissioner
Illinois Commerce Commission

Mr. David Parker
Senior Utility Analyst
Robert W. Baird & Company

The Honorable T.W. Patch
Chairman
Regulatory Commission of Alaska

The Honorable Robert F. Powelson
Chairman
Pennsylvania Public Utility Commission

Mr. Danilo Sanchez
California Public Utilities Commission
Division of Ratepayer Advocates
IV. THE FUNDAMENTALS OF THE PRIVATE WATER INDUSTRY

Forum Participant Eric Thornburg led this discussion and provided an overview of the private water industry. Interesting to note and to provide context from the beginning, were the responses to the question he posed to the Forum Participants: “What does water mean to you? Responses ranged from: “a commodity that is essential and if not provided correctly, can be dangerous to health” to “a rate case every year.”

A necessity of life, water is the only utility service that is physically ingested. Water service provided by a utility company must be safe and adequate, with little regard for the cost of providing that service. Not only is water subject to increasingly stringent standards of quality by regulators, but customers demand a high level of reliability as well. Therefore, participants are correct: the essential nature of water service is intrinsically related to quality and reliability. There is no substitute.

The discussion that follows will outline the fundamentals of water from the importance of quality of service to the requirement of cost recovery. In that regard, the discussion must begin with the fundamentals of regulation still applicable and relevant today.

A. The Regulatory Compact

The need to reconcile the competing interests of the public and investor-owned utilities has resulted in “The Regulatory Compact,” well-articulated in case law and regulations. Customers and regulated industries benefit from the application and adherence to the Regulatory Compact: utilities rely on consistent effective ratemaking to achieve adequate capital and consumers are protected by regulators who ensure essential services are provided at just, fair, and reasonable rates. The Regulatory Compact remains in place today. Simply stated, a fair return should be allowed and earned so that the industry has the ability to attract capital. By the same token, the industry should ensure a long-term quality water supply to existing and new customers by maintaining and replacing aging infrastructure. The industry should comply with quality water standards, extend water service to those who need it, and have the opportunity to earn a fair return on its investment.  

...the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and attract capital.  

---


2 Hope at 591.
B. The Industry is Fragmented

The private water industry is a fragmented industry. With more than 52,000 community water systems in operation and 83% of the water systems serving less than 3,300 people, Mr. Thornburg noted that there are too many water systems and that they are too small and too inefficient. As further demonstration of fragmentation, less than 1% of the water systems serve more than 100,000 people and over 80% of the market share is controlled by the government.

Compared to other regulated utility industries, the water industry is the only utility that has not been “deregulated.” With a key role in fire protection, the provision of water is the least expensive to consumers, yet the water industry is heavily regulated by environmental and economic regulators. Contrary to the belief that water is “free” or not expensive to provide, the water industry is actually a rising cost industry with high capital needs, the longest capital recovery period, and declining per capita revenue. These factors contribute to the industry’s negative cash flow making the industry less attractive to investors.

C. Capital Intensive Industry

According to the United States Environmental Protection Agency (USEPA), it is estimated that $335 billion are needed over the next 20 years for infrastructure related expenses. The cost drivers and risk considerations include infrastructure replacement needs (supply, treatment, and distribution), increasingly stringent Safe Drinking Water Act (SDWA) requirements, increasing testing sensitivity, tort liability, rising costs of production and declining per capita revenue (conservation efforts are working), growth-related needs, pressure on critical water supplies, rising security concerns, and regulatory lag. While the cost drivers and risk considerations will be discussed in greater detail later in the Forum Report, the charts immediately below demonstrate the differences between the regulated industries as it relates to capital investment and recovery.

---

As the chart above indicates, the water utilities require more capital invested per dollar of revenue than any other regulated industries. To complicate the economics further, thus making it more difficult to attract capital, the water industry has the lowest depreciation rates as the chart below demonstrates. Low depreciation rates and long recovery periods are viewed negatively by Capital Market analysts. These are factors that negatively influence the industry’s ability to attract capital.

**Low Depreciation Rates**

- Historic cost recorded is lower than replacement cost
- Water industry has longest capital recovery period, which is viewed negatively by Wall Street

Source: 2009 AUS Utility Reports

D. The National Association of Regulatory Utility Commissioners (NARUC)’s Best Practices

As stated earlier, the purpose of the Water Policy Forum is to bring stakeholders together to share effective regulatory practices with one another. Several important regulatory tools are increasingly used by regulators to address the previously discussed unique needs of the regulated water industry. NARUC recognized a leadership role for it to promote regulatory practices and facilitate the use thereof. Therefore, on July 27, 2005, the NARUC Board of Directors passed a Resolution, sponsored by the NARUC Water Committee, supporting consideration of those regulatory policies considered to be “Best Practices.” The Resolution identified many of the practices discussed in this Summary Report. A copy of the Resolution is attached and is also available on the NAWC website: http://www.nawc.com. Many states have embraced one or more of the NARUC Best Practices. For example, see Pennsylvania and North Carolina for acquisition policies and Pennsylvania for their implementation of the Distribution System Infrastructure Charge (DSIC). Best Practices will be discussed in greater detail below.

**Participant Reaction**

Industry Forum Participants noted that major capital investment and rising costs of water will lead to more rate cases and greater need for efficiency. Communicating “the
value of water” will continue to be a challenge. Mr. Thornburg commented that while the industry needs to do more, there is some improvement. For example, the New York chapter of NAWC has an organized communication strategy and materials that it uses to communicate the “value” of water. Initiated after a May 2009 Board meeting, the message materials do not result in additional costs to member companies; but rather, the effort is funded from Chapter dues. Some key consistent messages include that:

- Water is essential to life;
- Water is an exceptional value;
- Water costs less than a penny a gallon; and
- For that penny, customers receive water that meets or exceeds all drinking water standards, reliable water service around the clock, highly-trained professionals and certified operators, sound infrastructure investments, and a commitment to customer service.

Forum Participant David Wright noted that customers are still confused about the water industry. Fragmentation creates confusion. The conservation message creates confusion. In South Carolina, for example, water is provided by wells, municipalities, and private industry. What goes into the cost of providing water is still confusing to the customer and the perception continues to be that water is not expensive. Forum Participant O’Connell-Diaz noted the importance of accurate communication and messaging with customers, the Legislature, and regulators. As an example, it was noted that Chicago’s Mayor has been open in communicating the expectation that water rates will have to increase in the short term to address infrastructure concerns.

Effective regulatory practices and policies, adhering to the regulatory compact, and capital markets all influence the ability to attract capital on reasonable terms; and therefore, increasing the likelihood that infrastructure development and growth opportunities occur (sustainability).
V. THE COST IMPACT OF THE NEW DRINKING WATER STANDARDS

Philip Oshida provided the Forum Participants with a regulatory update on behalf of USEPA (also referred to as the “Agency”). He also explained the process used by USEPA to determine contaminants and the procedures by which stakeholders participate.

A. Regulatory Process

The flow chart below demonstrates the general flow of regulatory processes at USEPA. At each stage of the process, there is a greater specificity and confidence in the type of supporting data used, for example, health and occurrence. Mr. Oshida notes that the process also allows for participation by stakeholders including state commissions, NARUC, and NAWC, in the form of comments, stakeholder workshops, and meetings.

Generalized Flow of Regulatory Processes

At each stage, need increased specificity and confidence in the type of supporting data used (e.g. health and occurrence).

B. Unregulated Contaminants

1. Contaminant Candidate List (CCL)

The 1996 SDWA Amendments require USEPA to publish a list of unregulated contaminants every five (5) years. Specifically, these are the unregulated contaminants that may require regulation and are known or anticipated to occur in public water supplies. The CCL was published in the Federal Register on October 2009. The USEPA evaluated more than 7,000 potential contaminants and identified 104 chemicals and 12 microbes. Mr. Oshida notes that USEPA will evaluate contaminants in groups, as well as individually, to make regulatory determinations for chemicals with the greatest public health concern.
At this time, USEPA is giving priority consideration to CCL4 contaminants. Mr. Oshida expects to publish the Draft CCL4 for public review and comment by Summer 2013. The final CCL4 is expected in October 2014.

2. Unregulated Contaminant Monitoring: UCMR 2

The Final Rule on UCMR 2 was published on January 4, 2007. The Agency provided oversight to the UCMR 2 monitoring, which took place from January 2008 through December 2010, on 25 contaminants, including: brominated flame retardants, nitrosamines, explosives, insecticides, pesticides, and degradates. The results from UCMR 2 have been submitted to the National Contaminant Occurrence Database (NCOD) and are available at the following website:

http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/data.cfm

The final data was posted by USEPA in February 2012.

3. UCMR 3

The Proposed Rule on USEPA proposed UCMR 3 was published March 3, 2011, and the comment period closed May 2, 2011, with the submission of 53 comments from stakeholders. The Final Rule is expected this Spring. The monitoring is planned for 2013-2015. Consistent with the Proposal, the Agency will monitor for 28 contaminants and 2 pathogens. The monitoring will include hormones, perfluorinated compounds (e.g., PFOS/PFOA), volatile organic compounds (VOCs), metals, and pathogens.

4. Hexavalent Chromium (Cr)

Established in 1991, the drinking water standard for Total Chromium (Cr\(^{+3}\) & Cr\(^{+6}\)) MCL is 0.1 mg/L (100 ppb). In September 2010, the USEPA released a draft review of hexavalent Cr health effects. When the final toxicological review is complete, USEPA will review the conclusions and other up-to-date scientific findings and determine if a new standard (for hexavalent chromium and/or total chromium) should be set. The USEPA is working with state and local officials to learn about the prevalence of hexavalent chromium. In January 2011, the USEPA issued guidance on sampling and analyzing for hexavalent chromium. The Agency anticipates that a revised draft assessment for Cr\(^{+6}\) will be released for public comment and external peer review in 2013, and that a final assessment will be completed by 2015.

C. CCL Regulatory Determinations

The SDWA also requires USEPA to publish a Maximum Contaminant Level Goal (MCLG) and promulgate National Primary Drinking Water Regulations (NPDWR) for a contaminant if the Administrator determines that.\(^4\)

\(^4\) SDWA Section 1412(b)(1)
• The contaminant may have an adverse effect on the health of persons;
• The contaminant is known to occur or there is substantial likelihood that the contaminant will occur in public water systems with a frequency and at levels of public health concern; and
• In the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by public water systems.

The status of CCL Regulatory Determinations may be found in the Appendix of this Summary Report.

1. Regulatory Determination for Perchlorate

In October 2008, USEPA made a preliminary determination “not to regulate” perchlorate. Subsequently, in response to this preliminary determination, the USEPA received comments from nearly 33,000 individuals and/or organizations. On August 19, 2009, the Agency published its Supplemental Request for Comment where USEPA asked for comments on a re-evaluation of perchlorate exposure to sensitive life stages, including infants, children, and the fetuses of pregnant women. USEPA received over 6,000 comments. In February 2011, after considering all of the public comments, the Agency decided to regulate perchlorate in drinking water. According to Mr. Oshida, this is the first contaminant that USEPA has decided to regulate from the CCL. The decision to regulate perchlorate is a reversal of the 2008 Preliminary Determination and is, in part, a result of the consideration of the input of almost 39,000 commenters.

USEPA has determined that perchlorate meets SDWA’s three criteria for regulating a contaminant:

1. Perchlorate may have adverse health effects. Scientific research indicates that perchlorate can disrupt the thyroid’s ability to produce hormones needed for normal growth and development;

2. There is a substantial likelihood that perchlorate occurs with frequency at levels of health concern in public water systems. Monitoring data show over four percent of public water systems have detected perchlorate; and

3. There is a meaningful opportunity to reduce risk for 5.1 to 16.6 million people who may be served drinking water containing perchlorate.

As it relates to perchlorate, the next steps at USEPA are to:

• Continue to evaluate the science on perchlorate health effects and occurrence in developing a proposed rule;
• Evaluate the feasibility and affordability of treatment technologies to remove perchlorate and examine the costs and benefits of potential standards;

• Consult with the National Drinking Water Advisory Council;

• Publish the proposed regulation and analyses for public review and comment no later than February 2013; and

• SDWA requires a final regulation within 18 months of the proposal (unless the Administrator extends the deadline up to 9 additional months).

D. Existing Standards

1. Six Year Review

USEPA is required to review and, if appropriate, revise existing regulations every six years. Any revision must maintain or provide for greater protection of public health. The Agency completed the 1st Six Year Review in 2003. During that process, the Agency made the decision to revise the Total Coliform Rule (TCR) after reviewing 67 standards. USEPA completed the 2nd Six Year Review in 2010. During this process, USEPA reviewed 71 existing standards. The Agency determined that it will not take action as it relates to 67 of the standards. However, the four candidates for revision are acrylamide, epichlorohydrin, tetrachlorethylene (PCE), and trichloroethylene (TCE). TCE and PCE are being considered as part of the group under the Drinking Water Strategy. Regulatory revisions for Epichlorohydrin and Acrylamide will be initiated at a later date.
2. Revised Total Coliform Rule

USEPA published the proposed revisions to the Total Coliform Rule in the *Federal Register* on July 14, 2010. It provides a more proactive approach to public health protection. The proposal was based on the Agreement in Principle signed by the Federal Advisory Committee in September 2008. USEPA expects to promulgate the final rule in 2012.

3. Lead and Copper Rule

A 2004-2006 National Review identified issues that reduce the effectiveness of the Lead and Copper Rule. Short-term revisions were issued in October 2007 to clarify monitoring requirements, strengthen the long-term treatment change evaluation, assure customer notification of results, clarify lead service line “test out” provisions, and improve public education requirements.

Stakeholder meetings were held in the November 2010 and March 2011 to start to address “long-term” issues that remained with the Lead and Copper Rule. The USEPA expects to publish the proposed Lead and Copper Rule long-term revisions in early 2013. Issues under consideration include partial lead service line replacement, sample site selection, tap sampling issues such as pre-stagnation flushing and maximum stagnation time, consecutive systems, and particulate lead.

Participant Reaction

The USEPA regulatory update generated Forum discussion around costs and recognition around the fact that these costs are borne by utility ratepayers. In that regard, it was noted that interagency coordination and communication is critical to a good process and appropriate cost recovery. Forum Participant Sanchez noted that collaboration between the state environmental agency and its federal counterpart is an effective regulatory practice. The environmental agencies should have a better understanding of the impact to costs. Some Forum Participants commented that the USEPA should further account and appreciate the cost impact from its regulation. Forum Participant Foran noted that costs should be considered before a contaminant is targeted for review. For example, today, we now know that the costs associated with the arsenic review are much higher than originally anticipated. In answering a question from Forum Participant Mays, Mr. Oshida agreed that USEPA does not recommend certain treatment over others for the sake of keeping costs down. Utilities are encouraged to work with the state environmental agencies to determine the best treatment alternative. He reminded the Forum Participants that public comments include information on costs and the Agency does consider those comments. Moreover, the USEPA does conduct a cost-benefit analysis as part of its review and evaluation. Mr. Foran questioned how the USEPA uses or relies upon the cost-benefit analysis and Mr. Oshida clarified that it is used to make adjustments related to the level to which USEPA will regulate a particular contaminant. Forum Participant Foran
cautioned that USEPA ought to give greater attention to actual harms and results, as well as cost effectiveness of all regulations.
VI. REGULATORY PRACTICES TO PROMOTE CAPITAL INVESTMENT AND COST EFFECTIVE RATES

With a policy paper written by Forum Participant Foran as the foundation, the overall discussion of effective regulatory practices was led by Forum Participants Powelson and Lynch.

As mentioned previously, the challenges of infrastructure replacement and compliance with water quality requirements under the Safe Drinking Water and Clean Water Acts are increasing. Therefore, if these challenges are to be met in a cost effective manner, it is incumbent upon utilities and their regulators to identify and implement, as appropriate, regulatory practices to facilitate capital attraction, economies of scale, and efficient operations. In their presentation, the Forum Participants outlined a number of practices designed to achieve these three goals.

A. Pennsylvania PUC – Reducing Regulatory Lag and Facilitating Timely Recovery of Capital

Pennsylvania’s infrastructure is over 70 years old; therefore, concerns over safety and reliability of systems must be addressed timely. An accelerated replacement schedule would be a massive and expensive undertaking. Traditional ratemaking does not allow utilities to recover replacement costs in a timely manner and infrastructure replacement is not revenue-producing. As already mentioned, timely recovery of invested capital is critical to the ability to attract capital. Moreover, in order to minimize rate impacts on consumers, the industry must be able to recover invested capital at the most cost-effective rates, thereby facilitating construction and capital investment in the most efficient manner possible.

State legislation gives the Pennsylvania PUC the authority to approve ratemaking methods that will better address the challenges the utility industry faces today. Those methods include the allowance of: 1) the distribution system investment charge; 2) a fully-projected future test year; and 3) combined revenue requirements for water and wastewater.

1. Distribution System Investment Charge (DSIC)

First implemented in 1996 in Pennsylvania, the DSIC, an infrastructure surcharge initially used for water companies, is effective in promoting more timely recovery of capital; and therefore, facilitates capital attraction and investment in the industry. Eliminating the need for a full general rate proceeding and regulatory lag, utilities use these surcharges as programs to pass through to customers the revenue requirement associated with a return on (rate of return) and return of (depreciation expense) capital invested to replace water and wastewater infrastructure. DSIC programs differ from

---

5 Act 11 of 2012, Pennsylvania Statutes
state to state. However, common elements include allowing the utility to begin earning a return on necessary infrastructure replacement outside of a general rate proceeding coupled with limits on the surcharges and some form of reconciliation procedures to protect ratepayers.

Similar programs have now been implemented in at least eight other states (Illinois, Missouri (St. Louis County), Ohio, Delaware, Indiana, New Hampshire, New York, and Connecticut. The California PUC has approved a pilot DSIC program. Supporters of the DSIC note the benefits of the program include more efficient and timely investment of capital, significant progress in replacing aging infrastructure, enhanced service quality, reduction of water lost through leaks, and avoidance of rate shock. As water supplies become more stressed in the future due to many factors, reducing water lost through replacement of aging infrastructure becomes more important. Proponents of DSIC also note that these programs include many consumer protections. Moreover, generally speaking, the DSIC has served to promote economic development, decrease traffic disruption, and facilitate structure repair projects. Chairman Powelson notes that all of these benefits have resulted in direct benefits to ratepayers as infrastructure replacement has improved customer service and job creation.

Consumer protections include: limits on the amount of incremental revenues that can be collected, exclusion of capital projects that are revenue producing, and a true-up reconciliation requirement. When DSIC was first implemented in Pennsylvania, surcharges were limited to 5% of revenues between rate cases. Due to the success of the program in promoting replacement of infrastructure and noting the lack of customer complaints, the Pennsylvania PUC increased the limit to 7.5% of revenues between rate cases. At the time of a general rate case, these surcharges are reconciled into base rates. Due to the timing of infrastructure replacement between rate cases, and the fact that the surcharges are eventually rolled into base rate, the actual percentage surcharge is usually significantly less than the limit.

DSIC-type mechanisms have proven to be effective vehicles for capital investment related to replacement of aging infrastructure. Forum Participant Mr. Foran notes that in the last 10 years, these programs have been utilized for over $800 million of investment in the American water system alone in those states where the programs are in place. Moreover, recent comments by water industry analysts have noted the positive impact infrastructure replacement surcharge programs have on capital attraction:

> [f]irms can also reallocate capital to projects with more timely return periods and take advantage of regulatory mechanisms that recover investment more quickly. Pennsylvania’s distribution system infrastructure charge (DSIC), which allows a monthly customer surcharge for pipe repair costs, is an example of this.\(^6\)

The Pennsylvania Legislature has extended the use of the DSIC mechanism to wastewater companies and to other industries. The Pennsylvania Commission

\(^6\) Janney Montgomery Scott, LLC; Water Industry Report; October 30, 2008.
supported this legislation as they believe it will encourage investment in the state, accelerate aging infrastructure replacement, and result in greater rate stability for customers.

Critics of the DSIC argue that the infrastructure costs should be reviewed in a general full-blown rate case setting. Moreover, Consumer Advocate Dusman noted that the Pennsylvania Consumer Advocate’s Office did not support the expansion of the DSIC into wastewater or in the other industries. They believe the Commission will look only at plant additions without considering the offsetting plant reductions. They fear the legislation does not require adequate oversight of utility expenditures. Further, opponents believe that it would permit a utility to propose, and the Commission to approve, a future test year that begins after the rate case is complete and after the new rates go into effect when results are highly speculative and difficult to predict. However, as Forum Participant Powelson notes, there are consumer protections built into the Pennsylvania DSIC surcharge model. He notes that DSIC is unavailable if the last allowed rate of return is exceeded. Companies cannot overearn with a DSIC. As stated earlier, the surcharge is limited to a maximum of 5% or 7.5% of the total bill. Finally, an annual reconciliation audit is conducted whereby over-collections are refunded with interest and under-collections are billed into future rates without interest recovery. For the Pennsylvania DSIC, the additional consumer protections include:

- The state commission audits the DSIC filings on a periodic basis;
- The surcharge is reset to zero at time of new base rates;
- Customers receive notice of all changes;
- All charges reflect used and useful plant;
- Companies are not eligible for a DSIC if they have not had a rate case in 5 years; and
- Charges reflect additions placed in service during the prior three-month period before the DSIC effective date.

2. **Combined Water and Wastewater Revenues**

The same Pennsylvania legislation that expanded the DSIC in 2012 also allowed utilities that provide water and wastewater services to combine their revenue requirements and to spread the increasing costs of wastewater treatment and collection across a larger group of customers.

3. **Fully-Projected Future Test Year**

In a rising cost industry with heavy capital investment requirements, the use of historic test years assures there will be no return on or recovery of capital that is invested during the test year and thereafter, until the utility files another rate case. This practice discourages necessary investment during these periods and skews construction and investment timing based on artificial test year issues rather than system needs and
efficient construction planning processes. Forum Participant Lynch noted that regulatory lag from strict historical test years can virtually assure that the utility does not earn its allowed rate of return, thereby increasing risk and the cost of capital. From a regulatory and public policy perspective, Mr. Lynch believes that the touchstone for selection of a test year should be, “whether they produce rates that are prospectively relevant, that is, that the rates most accurately reflect the costs during the period the rates are most likely to be effective.” This may or may not involve use of future test years.

As the chart below indicates, regulatory lag, or the time between when an investment is made and its recognition in rates, can be a significant problem in a capital intensive industry. This is due to the time it takes to process rate cases, commission regulatory policies such as test years, and extended construction times for major capital projects. As Participant Parker stated, financial analysts follow closely and assess the issue of regulatory lag. “We analyze the issue of ‘regulatory lag’ in a comprehensive manner and not just as a matter of efficiency of the regulator in completing rate cases. As part of this analysis, we evaluate the timeliness of rate decisions, coupled with an evaluation of the test year.”

A sound regulatory practice in this area would provide the utility with the obligation to identify the most prospectively relevant test year and the choice to use that test year in a rate proceeding. The utility would have the choice of utilizing a historic, current, or future test year and would have the burden of demonstrating the propriety of that choice in the rate proceeding. Mr. Lynch acknowledges that using a future test year would create additional filing and proof requirements to assure that any projections are

---

reasonable. Any party could, of course, challenge the utility’s choice of test year. By way of example, in Illinois, a historic test year is defined as “any consecutive 12-month period beginning no more than 24 months prior to the date of the utility’s filing for which actual data is available at time of filing (adjusted for certain known and measurable changes). A future test year is defined as “any consecutive 12-month period of forecasted data beginning no earlier than the date new tariffs are filed and ending no later than 24 months after new tariffs are filed.”

Allowing the utility a choice of test years is a process that has been followed successfully for many years in Illinois. As a variation, California requires a 3-year rate case cycle. This allows utilities to project capital investment requirements over the 3-year period and allows for adjustment of rates during each of those three years to reflect invested capital, subject to certain review requirements to assure that the capital has actually been invested. Participant Powelson also notes that a fully-projected future test year ensures utilities’ rates and costs match the 1st year new rates are in effect. It reduces regulatory lag and encourages fewer rate case filings, saving utilities and customers millions of dollars in rate case expenses.

B. Other Effective Regulatory Practices to Promote Investment and Cost Effective Rates

1. Surcharge or Automatic Adjustment Mechanism for Non-Capital Costs

Surcharges or automatic adjustment mechanisms for non-capital items, such as extraordinary expenses or cost increases that may be beyond the utility’s control, have been utilized in a number of states to mitigate regulatory lag. Such programs provide a better opportunity to the utilities to actually earn the return the commission allowed in a general rate proceeding, during the time between rate cases, in the face of cost increases over which it may have little effective control. These mechanisms can enhance revenue stability and maintenance of allowed returns, thereby promoting capital attraction. They also promote rate moderation for ratepayers by allowing rates to increase more incrementally as unavoidable costs rise, rather than requiring much larger increases at the time a general rate case is filed. Examples of states that allow surcharges or automatic adjustment mechanisms for purchased water include Virginia, Kentucky, West Virginia, Tennessee, and Illinois.

a. California Water Revenue Adjustment Mechanism (WRAM)

Each water utility in California is on a three-year rate case filing cycle that allows for certain increases each year based on projected capital and operating expenses. In addition, the California PUC provides for a number of mechanisms, such as balancing accounts, memorandum accounts and tracker programs, designed to keep the utility whole during the rate case cycle for unusual costs, costs related to conservation, and costs over which the utility has little control. Forum Participants Sandoval and Sanchez noted that California uses Modified Cost Balancing Accounts for certain purchased
water and purchased power costs, and for use of the WRAM. The WRAM tracks changes in the recovery of authorized fixed costs due to variations in water sales because of conservation or other issues affecting sales. Surcharges are possible when the combined affect of these programs exceeds 2.5% of revenue.

Other cost tracking mechanisms used in California include memorandum accounts for catastrophic events, such as earthquakes, floods, and for extraordinary expenses, such as Endangered Species Act compliance, water rationing, and water contamination litigation costs. Surcharges are possible for catastrophic contamination costs, while a general rate case is necessary to pass costs to ratepayers for certain accumulated Endangered Species Act compliance costs. Other examples of memorandum accounts that allow the utility to track costs for later recovery in a rate case include costs for major water supply projects such as American Water’s San Clemente Dam and Coastal Water projects.

Virtually all of these surcharge or adjustment mechanisms contain provisions for true-ups or reconciliations to protect ratepayers and/or reporting requirements to ensure that the utility does not exceed its allowed return.

b. Long Island American: Revenue and Property Tax Reconciliation Mechanism

This surcharge (or credit) is based on the difference between actual net revenues for the preceding year and the net revenue target as estimated in the most recent rate cases. The difference is refunded or surcharged over the next year.

2. Surcharges for Significant Capital Investments Required to Comply with Certain SDWA Monitoring or Treatment Requirements

The maximum contaminant level (MCL) established by USEPA for arsenic pursuant to the SDWA will entail huge arsenic removal costs in some states, such as Arizona. In response to this challenge, the Arizona Commission has authorized one utility (Arizona Water Company) to implement an Arsenic Cost Recovery Mechanism (ACRM). The ACRM would essentially allow utilities to recover gross return, depreciation, and recoverable O&M upon commercial operation of arsenic removal facilities, outside of the context of a general rate proceeding. This program facilitates prompt compliance with SDWA mandatory requirements, improves water quality for customers and mitigates rate shock. The program has been supported by the Consumer Advocate in Arizona. Similar to a DSIC concept, this regulatory mechanism is used to allow selected recovery of large, costly items that result from government mandates.

3. Use of Construction Work in Progress (CWIP) vs. Allowance for Funds Used During Construction (AFUDC)
New major treatment facilities or development of long-term sources of supply may take a number of years before they become operational. Typically, these costs have been accounted for in one of two ways – the use of CWIP in rate base or AFUDC. In his policy paper, Mr. Foran puts forward his opinion that CWIP should be recognized as an effective regulatory practice in a rising cost, capital-intensive industry. AFUDC does not provide any current cash flow to the utility to fund a major project, thereby adversely affecting the company’s financial condition. Moreover, Mr. Foran believes that AFUDC ultimately and substantially increases the cost to customers due to the accumulation of carrying charges on invested capital that are ultimately rate-based when the project becomes used and useful and it can result in rate shock. CWIP, on the other hand, mitigates these negative impacts.

4. Single Tariff Pricing

Single tariff pricing has been recognized as the norm for electric, natural gas and telephone utilities. These utilities often serve large territories wherein costs of service can be substantially different from region to region within the service territory. For example, costs of service for urban customers will be different from rural customers and differing geographic terrains impose different costs. Yet all customers in a particular class enjoy the same rates. This has allowed these industries to spread the benefits of economies of scale to all of their customers and to mitigate rate shock effects and affordability concerns. Although single tariff pricing has been controversial for water utilities, the industry Forum Participants identified it as a good regulatory practice because of the economic challenges facing the industry. From a financial industry perspective, Forum Participant Parker also believes it to be an effective regulatory tool. The inability to charge uniform rates inhibits the acquisition of troubled utilities and can result in rate shock or unaffordable rates to customers in certain areas. All of that significantly increases the complexity and cost of regulatory proceedings much to the detriment of ratepayers and the utility.

5. Customer Assistance Programs

Despite increasing costs to replace aging infrastructure and comply with SDWA, CWA, and other national and local mandates, water service remains, on the average, the lowest cost of all utility services. However, there is no question that meeting the challenges necessary to continue providing high quality, reliable service to customers will increase the financial burdens on these customers even more significantly in the future. Of course, the impacts on low income, fixed income and otherwise economically disadvantaged customers will be the greatest. In light of the current global economic downturn, Forum Participant Lynch believes that utilities and commissions should consider the implementation or expansion of appropriate customer assistance programs.

American Water currently has some form of customer assistance program operating in nine of its largest utility subsidiaries. These programs differ from state to state but in
general provide for some combination of grants, discounts, conservation programs and customer education, including the following:

- Hardship programs: grants applied directly to customers bill;
- Discount program: percentage off monthly bill or service charge;
- Payment assistance: forgiveness based on timely payments;
- Repair: coordination of repairs to reduce high usage;
- Education: outreach and promotion focused on conservation and program availability; and
- Direction to other sources of assistance.

American Water programs are funded through a combination of customer and company contributions and are generally administered in conjunction with a social service agency. One example of such an agency is the Dollar Energy Fund, which partners with water, gas and electric utilities in multiple states to administer hardship programs. This agency can help design the program and it also has a fully staffed customer service center with call support in 160 languages. It can provide assistance with regard to data management and records maintenance and other support services. As outlined by Participant Lynch, customer assistance programs should preserve cost-based rates, appropriate price signals, and promote recognition of the value of water, its efficient use, and appropriate supply planning. The concept of targeted direct assistance rather than blanket grants has been endorsed by the National Drinking Water Advisory Council. In addition, in a March 2004 resolution, NARUC recommended consideration of targeted low-income assistance programs similar to the LIHEAP programs for energy use.

C. Effective Regulatory Practices in Streamlining Rate Case Processes

In his Forum policy paper, Mr. Foran lists other regulatory practices that could reduce the cost rate cases, as well as, enhance the clarity and control the scope of the proceedings.

1. Mediation and Settlement Procedures

Regulatory practices in this area include establishment and encouragement of procedures for mediation and settlement in order to both settle cases as a whole and to narrow issues that need to be litigated and resolved.

2. Establish or More Clearly Define Rules and Procedures

Civil Court rules are designed to narrow the scope of contested issues and eliminate unnecessary litigation. Examples of such procedures include requests to admit; mandatory stipulations as to questions of law and/or fact; requirements that parties stipulate witness’s justification of any inordinately long estimates for cross examination; and more extensive use of prehearing conferences to narrow issues.
3. Specific and Enforceable Time Limits on the Length of Rate Cases

Time limits would help impose a desirable discipline in presenting and litigating proceedings. Moreover, Mr. Foran believes this discipline would improve the opportunity of the utility to actually earn its allowed return, reduce the costs of rate proceedings, and facilitate capital recovery, and investment.

4. Rate Case Filing Cycles

Mr. Foran suggested that state commissions could implement required filing cycles with future capital investment annual rate adjustments. Similar to California’s 3-year rate cycle concept, the use of “step” or “phase-in” rates could also reduce the number of rate case filings and the administrative burden on commissions and their staffs, as well as substantially reduce the cost of rate proceedings.

5. Expedited Rate Case Procedures for Small Companies

The expense and time requirements for normal rate case processes are issues for all utilities, but can be especially onerous for small companies that lack substantial technical and operating resources and where the cost of the rate case could even exceed the expected incremental revenues. This can result in disincentives for these systems to file for necessary rate relief, thus exacerbating their viability challenges and can also result in disproportionate costs imposed on customers. Expedited procedures for such companies can help mitigate these impacts and facilitate more financially stable companies.

Participant Reaction

The water industry faces enormous capital attraction challenges and is the most capital intensive of all the traditional utility industries. Regulatory lag poses a significant challenge in terms of attracting capital at rates that are cost effective. Forum Participants recognize that all of the regulatory tools when applied consistently and with the appropriate consumer protections do result in achieving the goals of capital attraction, cost effective rates, and industry investment. Regulatory policies such as infrastructure replacement programs, revenue stability mechanisms, and flexible test year rules can significantly mitigate the impacts of regulatory lag. Effective regulatory policies benefit both the utility and the consumers in assuring the long-term viability of the utility, as well as efficient quality customer service.
VII. CAPITAL MARKETS PERSPECTIVE

David Parker of Robert W. Baird & Company led this discussion and provided insight into the relevant factors for capital market analysis. With the trillions of dollars in U.S. infrastructure investment anticipated, access to capital markets will be crucial for capital-intensive sectors like water, electric, and natural gas. Access to capital markets at reasonable cost is a crucial factor for the water industry as the industry must invest into infrastructure development and address growth opportunities. As a byproduct or value-add, access to capital is also important to job creation. Access to capital at a reasonable cost is equally important to the consumer to keep rates as low as possible. Mr. Parker noted that the current investor realities are such that:

- The weak global economy has investors laser-focused on risk;
- Analysts and markets hate uncertainty;
- Less regulatory activity is better; and
- Recent state regulatory decisions to deny rate requests fuel investor fears that regulatory practices could turn less constructive.

A. Factors that Impact the Cost of Capital

1. Risk/Return

Investor interest wanes as risk and reward diminishes and the sector direction becomes less predictable. Mr. Parker notes that no one expects regulators to guarantee returns for the industries nor is a guaranteed return necessary. However, good opportunities to earn fair returns are essential. Investors want to see that capital is available at a reasonable cost. In that regard, uncertainties have to be minimized where possible. Prolonged economic weakness, a fragile banking system, pressured credit metrics, persistently high unemployment, and volatile commodity and stock markets escalate uncertainty and fuel political risk. Political interferences and regulatory instability that interfere with the opportunities to earn fair returns are viewed negatively by capital market analysts.

Global competition for capital has increased. Countries, states, utility sectors, and different companies are competing for the same capital. Mr. Parker notes the best expected risk and corresponding reward wins at the lowest cost and not the highest "coupon" rate. Analysts believe that regulators can assist in working with stakeholders to lower risk. Mr. Parker suggests ways to lower risk include: 1) the definition of or establishment of an infrastructure policy; 2) consistent regulatory practices; 3) enhanced regulatory recovery mechanisms; and 4) "smooth" cost investment recovery to avoid rate shock. On this general point, Mr. Parker stated that all stakeholders benefit from
more predictable results. Reactionary infrastructure policy only drives up costs to consumers. Reactionary policy creates volatility, instability, and only increases risk.

2. Sector Loses Positive Momentum

Mr. Parker made the observation that the water industry had the best regulatory mechanisms among peers. Increased water quality standards helped drive the consensus outlook for the water sector. The increase in regulated investments doubled the earnings per share (EPS) growth rate. The investors’ expectations for sustainable EPS growth increased to 5-7% annually from prior growth of 1-2%. However, the utility sector underperformed. Utility infrastructure investment slowed, including politically popular “green” infrastructure options. Investors see limited visibility for infrastructure investment in the near-term. Consumers are financially limited with the economic downturn and regulators are taking a "wait and see" approach before approving new infrastructure investment. Slowed infrastructure investment means lower than expected total returns that pressure stock prices. This lost momentum may take years to regain.

3. Investment Concerns

Investors are concerned that a positive catalyst does not exist. The absence of a clear national infrastructure policy means there is no positive catalyst. The regulators are hesitant to approve anything that increases rates. With consumers' (and states’) budgets stretched, investors are concerned that ratepayers cannot pay for any new infrastructure. By the same token, with lower demand, the question becomes whether or not new infrastructure is needed. With energy infrastructure investment stalled, uncertain environmental policy, declining residential energy demand, and accelerating political risk as we enter an election year, most utilities are hunkering down to face the headwinds. The conditions described above by Mr. Parker resulted in a disappointing past two years from a capital markets perspective. However, Mr. Parker expects 2013 to be a transition year from stalemate to accelerated investment. He believes that certainty in the evolving environmental policy and corresponding timely cost recovery will likely lead to acceleration of infrastructure investment.

4. Regulatory Practices in the Spotlight

Investors understand that differing regulatory practices can substantially impact earned returns. As a result, state regulatory practice is of critical concern to the capital markets. Effective general rate practices, level of authorized returns, mandatory rate case timelines, flexible test years, interim rate procedures, step increases, retroactive effective dates, flexible rate design, decoupling, single tariff pricing, and cost recovery mechanisms are viewed favorably in capital market assessment. The DSIC, riders, pre-approval of major projects, consistency in regulatory practices, and absence of political pressure are also viewed favorably. The bottom line, per Forum Participant Parker, is that reduced regulatory lag is a positive as infrastructure investment accelerates, helping to enhance access to capital at a reasonable cost, therefore keeping the cost to consumers as low as possible.
5. Rate of Return on Equity (ROE)

Allowed returns send a strong, positive message to potential investors. While it is difficult to determine the “right” ROE, getting the wrong one can be very costly. Earned ROE provides good insight into the effectiveness of recovery mechanisms and the review process. Decisions to deny rate cases or disapprove ROEs might make good headlines, but are problematic for long-term planning and investment into infrastructure. As already stated, regulatory practices significantly impact long-term investment potential. Improved consistency of returns lowers cost of capital and improves access to capital. Allowed ROEs currently range from 8.75% to 12% with the national average around 10.2%. Mr. Parker noted that flexibility with earned ROE creates stock upside for water companies.

Participant Reaction

Forum Participants noted that state commissions are also graded by the Capital Market for their use (or lack thereof) of best practices and effective regulatory practices that promote infrastructure investment. For example, it was noted that Pennsylvania and Texas are currently ranked as “constructive” regulatory commissions by analysts. Mr. Parker notes that a constructive regulatory environment is a key factor in valuing the total return potential of a regulated utility investment.

In providing his view of “constructive regulatory decisions,” Mr. Parker stated that analysts focus on three key items: consistency of regulatory decisions, authorized ROE, and regulatory practices utilized to minimize regulatory lag. Effective regulatory practices viewed favorably include those mentioned above, as well as, rate settlements, mediation, future test years, cost recovery clauses, pass throughs, and single tariff pricing. Forum Participant Ken Hill noted that “consistent application of effective regulatory practices” is critical to encouraging investment and infrastructure replacement. While regulatory policy does not mean a “one size fits all” state scenario, he noted that having and using all of the regulatory tools in the regulatory toolbox will make for effective regulatory decision-making.
Jonathan W. Yarborough with the South Carolina Department of Commerce (DOC) made a presentation to the Forum regarding South Carolina’s practices to facilitate job creation in the state including the State’s efforts to recruit large industry into South Carolina. As part of his presentation, he emphasized how critical the water industry has become to make these state initiatives come to fruition. The South Carolina water industry has provided the necessary infrastructure to facilitate growth. The electric and water industries have provided the appropriate pricing and rate structures to make it economically feasible for large companies to move into South Carolina. All of these efforts, applied collaboratively, have improved South Carolina’s economics.

The South Carolina Department of Commerce has been tasked with recruiting business and industry to either expand or relocate in South Carolina. To do this effectively, the DOC helps identify a site that will meet the needs of the company, makes an assessment of the infrastructure required and its availability, and determines if financial incentives and/or grants are necessary. In determining appropriate financial assistance, the South Carolina DOC reviews the corresponding information on job creation numbers. If it determined that job creation will be a direct result of assistance, programs like the community development block grants are used to offset infrastructure costs. Logistically, the grants are awarded to local governments who then work with the water industry (water districts) to address infrastructure concerns.

Mr. Yarborough notes that “infrastructure is key to economic development.” In so stating, he encourages collaboration between agencies, regulators, political bodies, and the water industry. Job creation and economic development are goals all of the mentioned groups share; and there is more benefit and opportunity for success in achieving the goals by working together. An example of collaboration in South Carolina between the Legislature, the industry, local and state government is the “utility tax credit.” That approved credit allows $300,000 to another taxpayer company for providing infrastructure. According to Mr. Yarborough, the Legislature has pending legislation to increase that amount to $400,000. Finally, with regard to staff training, South Carolina promotes the Ready South Carolina project, which applies money to train personnel and displaced workers so they can be hired by the new companies coming into South Carolina.

Participant Reaction

Forum Participants commented on the level of success achieved by South Carolina to attract automobile and airline manufacturers. Intra and inter-agency coordination and collaboration are an effective practice. Providing the appropriate tax credits, grants, incentives and the personal involvement of Governors, legislators, and local government officials are all critical factors. Most importantly, utility companies are viewed as vital to economic development.
IX. SUSTAINABILITY AND CUSTOMER IMPACTS

The World Commission on Environment and Development defines “sustainability” as “...meeting the needs of the present without compromising the ability of future generations to meet their own needs.” Forum Participant Dennis Doll, presenter of this topic, notes that there are challenges to sustainability in the water industry. The challenges are outlined below.

A. Sustainability and Consolidation

The fundamental challenges in the water industry are: 1) the need to attract huge amounts of capital to fund aging infrastructure replacement; 2) compliance with federal drinking water and clean water standards; and 3) the need for consolidation and a more integrated approach to water resource management in order to achieve economies of scope and scale, enhance technical and operating expertise, and facilitate capital attraction at a reasonable cost.

Forum Participant Foran provided a white paper that elaborates on each of these challenges. Some of the discussion in Mr. Foran’s paper is incorporated below.

1. Compliance with Environmental Standards

Two primary drivers of cost in the drinking water and wastewater industries are the Safe Drinking Water Act (SDWA) and the Clean Water Act (CWA). Congress first enacted the SDWA in 1974 with the goal of improving the quality of the nation’s drinking water and, to the extent feasible, detecting and removing contaminants that are potentially carcinogenic or could otherwise adversely affect human health. A significant feature of the SDWA is that it charges USEPA with ongoing responsibilities to identify additional contaminants that could be harmful to health and to set monitoring and treatment standards for them, thus effecting continuous improvement in the nation’s drinking water supplies.

Currently, drinking water service providers must monitor and/or treat for over 90 potential contaminants, including inorganic and organic chemicals, microbiological agents and by-products of disinfection techniques. As Mr. Oshida noted, in the next few years, major new requirements are expected relating to groundwater and enhanced surface water treatment, disinfection by-products, radon, radionuclides, methyl tert-butyl ether (MTBE), perchlorate, and endocrine disruptors. In recent years, there has also been an increasing focus on the potential health impacts of trace (parts per trillion) elements of pharmaceuticals and personal care products detected in certain water supplies. USEPA and others are conducting further research into potential health effects of the presence of these contaminants in such low levels in water supplies.

By any measure, the nation's commitment to continuous improvement in the quality of drinking water supplies and precious water resources imposes huge capital investment
challenges to those who are responsible for providing service and protecting these resources, as well as cost burdens on the public who must ultimately pay for it. The issue, however, is not simply one of capital investment. It is primarily one of public health. The ever-increasing quality standards require development of increasingly complex monitoring and treatment techniques that require greater operator training and expertise. In addition, the SDWA is a moving target, requiring the USEPA to publish a CCL to screen possible contaminants for future regulatory decision.

Water quality and increasing supply constraints add another major dimension to the challenges of sustainability in addition to infrastructure replacement. In 2001, despite over 35 years of effort and much progress, USEPA estimated that the quality of approximately 40% of our rivers, streams, and lakes still did not support their designated uses. In addition, supply constraints continue to grow as populations increase and the impacts of global climate change increase, and demands from competing uses, such as agriculture, habitat and ecosystem protection, industrial, and recreational uses also increase. In 2002, the Young People’s Trust for the Environment noted that of all the water on the planet, only about one hundredth of one percent of the planet’s fresh water is easily accessible to humans. Similarly, in 1999, the Worldwatch Institute estimated the amount of water available per person from the hydrologic cycle (evaporation and rain) would fall by 73% between 1950-2050. Mr. Foran notes that the precise accuracy of these predictions is not important; they are indicative of a wide consensus that water quality and quantity issues are crucial to the sustainability of water resources in the future.

For both Forum Participants Doll and Foran, the bottom line is that, the cost implications of treating contaminants and ensuring all regulations are complied with in an ever-changing regulatory environment could be substantial.

2. Costs of Infrastructure Replacement

The 2002 USEPA Clean Water and Drinking Water Infrastructure Gap analysis estimated that the capital needs for drinking water over a 20-year period ending in 2019, range from $154 billion to $446 billion with a point estimate of $274 billion. This analysis estimated the capital needs for clean water over a 20-year period to range from $331 billion to $450 billion with a point estimate of $388 billion. Thus, in 2002, the combined capital needs of the water and wastewater industries in the U.S. were estimated to be between $485 billion to $896 billion through 2019, with a point estimate of $662 billion. However, a more recent estimate for drinking water alone indicates that approximately $334.8 billion will be required over the next 20 years to replace aging infrastructure and achieve compliance with expanding water quality requirements under the SDWA. Therefore, in the last 8 years, estimated costs to replace aging drinking water infrastructure alone for the next 20 years have increased over 100%. The combined capital needs for drinking water and clean water remediation now approach or exceed $1 trillion.
3. **Need to Consolidate**

The fragmented structure and regulation of the water and wastewater industries in the United States are not conducive to meeting the challenges of sustainability in an efficient and cost-effective manner. As stated earlier, the drinking water industry is highly fragmented. Many of these systems are neither financially nor technologically viable to meet current, let alone future, infrastructure and quality requirements. Similarly, there are approximately 16,000 wastewater systems providing service. This can be compared to approximately 3,700 electric service providers and 2,700 natural gas systems where the ratio of public to private ownership is just about reversed.

Therefore, the potential for greater consolidation exists. For example, over 90% of small systems (serving less than 10,000 people) are located within 5 miles of another system and 100% are located within 20 miles of another system. However, such consolidation cannot occur without a more integrated approach to water policy, regulation, and the participation of stakeholders.

The water industry is fragmented, not only with regard to the number of providers and ownership structures, but also in terms of various factors that can and do affect the delivery and cost of water service to end use customers. For example, economic regulation by state public utility commissions, where it exists, is separate from water quality regulation (USEPA and state primary agencies). According to Mr. Foran, the SDWA and CWA themselves are good examples of this fragmentation. Although both reflect strong national policies to protect the quality of water resources and clearly impact each other, there appears to have been little effort to coordinate their provisions and enforcement to support achievement of their stated goals. For example, protecting water quality for drinking purposes is not specifically identified as a goal in the CWA and few CWA efforts are specifically directed toward drinking water concerns. Likewise, although the 1996 Amendments to the SDWA required source water assessment programs (SWAPs) by each state, there are no explicit protection activities indicated.

In addition, the source of supply, treatment and distribution chain, as well as the cost to end use customers, is directly affected by other water resource-related issues, such as watershed protection and management, reuse, wastewater treatment, storm water control and disposal, and competing uses—such as for agriculture, habitat and ecosystem protection, human consumption and recreation. Each of these areas is often affected by oversight from numerous government entities and the competing interests of many stakeholders, which usually operate with little cohesion or consistent policy. Unlike the energy and telecommunications industries, there is no national, integrated transmission network in the water industry, nor is there a national economic regulatory authority, such as the Federal Communications Commission (FCC) for the telecommunications industry or the Federal Energy Regulatory Commission (FERC) or the Department of Energy (DOE) for the energy industry. The development of a coherent and integrated water policy is more difficult absent a national entity designed to address long-term policy issues of sustainability.
Forum Participants Doll and Foran believe that all of these issues related to fragmentation of the industry point to a need for consolidation and a more integrated approach for the water and wastewater industries. Consolidation would assist to achieve economies of scale and facilitate capital attraction, as well as enhance technological and financial viability. It also places greater responsibility on existing stakeholders to do their part in promoting a more holistic and rational approach to water resource management.

In that regard, consolidation should be viewed in a broad context that includes more than just acquisition or merger of systems or regionalization of authorities. Consolidation should be viewed as a policy that facilitates leveraging use of the resources of all service providers, regulatory authorities and other stakeholders, regardless of ownership structure or whether they are regulated or unregulated by state public utility commissions. The importance of leveraging all available resources to meet these challenges is underscored by the fact that the use of water resources has unique public health implications in relation to other public utility services. First and foremost, as stated earlier, water is essential for human existence and is the only public utility service that is actually ingested by human beings. If those who are responsible for delivering these services safely, including regulators, government or investor-owned systems, regulated or unregulated, do not "get it right," fatalities can and do occur. The 1993 outbreak of cryptosporidium in Milwaukee, Wisconsin, is one example that claimed the lives of more than 100 people. The more recent outbreak in 2000, in the small Canadian community of Walkerton, Ontario, that claimed at least seven lives and sickened thousands more, is another. The inability to effectively identify potential pathogens, carcinogens and other contaminants, as well as appropriate treatment techniques pursuant to the SDWA, can have long-term adverse effects on health. In this regard, it is interesting to note that in the case of the municipally-owned Milwaukee system, initial difficulty was encountered in identifying the cause of the illness. The city eventually turned to the Belleville, Illinois, labs of investor-owned American Water, which correctly identified the contaminant as cryptosporidium. This best demonstrates that "[w]e are all, or should be, in this together."

Investor-owned water and wastewater systems have much to offer in terms of promoting consolidation, operating efficiencies, and technological expertise. A number of companies, such as American Water, United Water and Aqua American, have regulated utility operations that span numerous states. American Water operates regulated water and wastewater systems in 20 states and Aqua America serves customers in about 15 states. In addition, a number of these companies conduct unregulated operations that can provide a host of water-related services bearing directly on the quality and cost of water services. These operations include, for example, engineering and planning, operations management, design-build-operate scenarios, underground rehabilitation, and residuals management.

The geographic reach and resources of such companies create the potential for consolidation and economies of scale that few government service providers can match. Although municipalities and other government providers predominate in the industry,
because of jurisdictional, political and other factors, they are not necessarily in a position to make major contributions to consolidation outside of their local or regional purviews. Large investor-owned companies that operate in many states and possess extensive capabilities to address diverse issues and challenges related to water resource management can facilitate economic efficiencies, as well as technical and operating expertise over areas that transcend local or regional boundaries.

For example, although the transmission and distribution facilities of such companies in various states may not be interconnected, they can nonetheless minimize redundant management, facilitate mass purchasing and procurement, consolidate business support services, and promote knowledge-sharing with best practices that can help hold down costs and improve service.

B. Types of Consolidation

1. Mergers and Acquisitions

Consolidation and restructuring began to occur in the investor-owned water utility industry in the 1990’s. In large part, mergers and acquisitions occurred to promote growth, to achieve economies of scale and financial stability, and to support capital attraction necessary to fund infrastructure replacement needs and water quality requirements. At various times, different investor groups, such as energy companies, foreign corporations, or equity groups, manifested interest in the water sector based on their own circumstances and perceptions of the water industry. This interest waned based on their actual experience in the water sector and changes in their own industry structures or business strategies. Forum Participant Parker notes that while the profile of investors in the water industry may change over time, the need for attraction of immense amounts of capital has not, and will not change, in the foreseeable future. In this regard, the need to seek growth and economies of scale through consolidation remains strong, both to attract capital and to continue providing sustainable, cost effective service to customers, and to improve the quality and efficiency of service to customers.

Larger investor-owned systems can and do play a role in consolidating small, troubled systems. Forum Participant Foran notes that American Water alone has acquired about 148 of these systems in the last 15 years and other companies have made similar acquisitions as well. Acquisition of such systems is complicated by a number of challenges that often confront these systems and any potential acquirer, such as:

- Lack of adequate records with regard to property and distribution systems;
- Unrealistic expectations from sellers that demand premium prices;
- Unqualified management;
• Historic failures to invest, resulting in current non-compliance with regulatory requirements, fines and penalties, and the consequent need for immediate substantial rate increases to fund required improvements;

• Regulatory, environmental, and other liabilities (known, unknown, and unknowable); and

• Potential risk exposure to the acquirer’s customers and shareholders.

2. Regulatory Policies to Promote Consolidation and Acquisition

The extent to which the investor-owned industry can address the small-company challenge depends on the existence of positive regulatory policies. Application of rigid codes of conduct and affiliate rules naturally designed to restructure the energy and telecommunications industry and facilitate competition, new market entrants, and retail customer choice may be counterproductive to solving real problems and meeting challenges in the regulated water and wastewater industries. Concepts such as: 1) asymmetric pricing; 2) time-consuming, expensive, and uncertain pre-approval requirements; 3) after the fact extraction of perceived economic benefits for regulated customers regardless of business risks assumed by unregulated entities; and 4) unreasonable restrictions on the joint use of utility employees, can prevent harnessing the full potential of the investor-owned industry to solve problems and meet the challenges of the future.

Instead, regulatory flexibility to promote the ability of a utility to leverage both regulated and unregulated capabilities for the purpose of structuring the most cost-effective deal, can result in cost savings for customers and the company. The Forum Participants noted that Pennsylvania and North Carolina are examples of states that have addressed consolidation and regionalization, particularly as it concerns small non-viable systems through both administrative and legislative remedies. For example, single tariff pricing gave larger companies the opportunity to spread the required non-revenue producing capital invested in small non-viable water systems over a larger base of customers, thus improving service levels to the statutory requirement of “safe and adequate,” while at the same time producing “just and reasonable rates.” Legislation was passed permitting recovery of positive acquisition adjustments if the acquiring company fixed the troubled status of the acquired small company.

The Pennsylvania Commission’s efforts to improve system viability is accomplished in many ways, including its ongoing coordination with the Pennsylvania Department of Environmental Protection, PennVest (the low-interest revolving loan program), and other stakeholders. For over a decade, the Commission has permitted acquisition incentives, including rate of return “bonus points,” deferral of acquisition improvement costs, plant improvement surcharges and acquisition adjustments. The most common incentive, the acquisition adjustment, can be approved when a viable system purchases a smaller system that is not meeting regulatory standards. The acquisition adjustment may be appropriate when the acquisition costs are greater than the depreciated original
cost. In such situations, that reasonable difference in costs, as determined by the Commission, may be added to the rate base of the acquiring utility and amortized as an addition to expense over a reasonable period of time with corresponding reductions in the rate base.

Supporters of acquisition adjustments believe that consideration of acquisition adjustments to promote consolidation and economies of scale is appropriate whether or not the systems involved are small and non-viable. Mergers or acquisitions involving larger, financially, and technologically viable systems can involve synergies, best practice transference, and other benefits that can result in more efficient and cost-effective services to customers. Therefore, Mr. Foran put forward that a general standard for considering whether acquisition adjustments are appropriate could be the following:

*If and to the extent a business combination produces identifiable savings, service improvements or other benefits to customers, shareholders should have the opportunity to recover and earn a return on the investment required to produce those benefits.*

The underlying rationale for such a policy is that investments in premiums that produce such benefits should be treated no differently than investments in plants and equipment that insure continued provision of reliable and cost-effective customer service. For example, if a utility replaces a pump with a more efficient and cost-effective version, there would be little question that the new pump would be added to rate base and earn a fair return. The same principal should apply if a utility makes an investment in a system that exceeds depreciated original cost, but produces benefits to ratepayers. Other methods to recognize investments that produce benefits could include savings-sharing programs and fair value vs. depreciated original cost in rate base.

The North Carolina Utilities Commission has coupled recovery of acquisition adjustments with the further acquisition of small troubled water companies. Under this approach, as the acquiring company buys and fixes a troubled company (as approved by the staff), one dollar of acquisition adjustment is moved to rate base for every dollar of acquisition cost and fix-up expended by the additional “troubled” acquiring company. This solution is not an overnight fix, but it does help ensure that, over time, the troubled companies in North Carolina will be absorbed by the operationally and financially stronger companies. Therefore, as many industry Forum Participants mentioned, customer service should improve, rates will be uniform and reasonable, and the acquiring company will be compensated for the risk in its efforts to fix troubled companies.

3. **Public Private Partnerships**

Broadly speaking, consolidation includes the investor-owned industry partnering with municipalities or other government-owned systems to leverage the resources of both to solve problems, extend quality service to those that do not have it, attract cost-effective
capital, improve service quality and efficiency, and achieve economies of scale. Partnering arrangements can take many forms. They can involve the actual purchase of the water service assets, which the municipality or other government provider owns, such as Pennsylvania American Water Company’s purchase of the City of Coatesville water system. Among other benefits, this transaction brought to the citizens of Coatesville a source of capital and operating expertise to assure that the water system was capable of meeting the future challenges of providing high quality and reliable service. For the city, it brought financial resources to help meet its broader, and ever more costly, civic responsibilities to its citizens.

Consolidation also occurs through the acquisition of small, financially and/or technologically challenged water or wastewater systems by large investor-owned companies. For example, in 2008 alone, American Water purchased 10 such systems, none of which served more than 2,100 customers. In fact, from 1996-2009, American Water has purchased approximately 148 such systems. Other large investor-owned companies have made similar purchases. It is important to note that acquisition of small, financially, and technologically non-viable systems can involve special problems and challenges and the extent to which the larger investor-owned companies can help resolve the small company problem will depend on whether regulatory policies in a state are conducive to such acquisitions. This will be discussed in greater detail below in the section addressing small water companies.

Consolidation through leveraging the resources of investor-owned and government suppliers can also occur through a myriad of partnering arrangements that do not involve the sale of assets to the investor-owned company. These include, for example:

- Design, build, and operate arrangements where the private entity performs any or all of the services necessary to design, build, and operate a major new treatment facility, but the government entity retains ownership of the asset;
- Operation and maintenance agreements where the private entity contracts with the government entity to maintain and operate existing or future facilities; and
- Other flexible partnering relationships with government utilities.

Mr. Foran points to West Virginia American Water’s program of partnering with governmental entities as an example of how such arrangements can take advantage of the resources of both sides to expand and improve service to customers. Over the last approximately 15 years, West Virginia American Water has partnered with many public service districts, county authorities, regional development authorities, municipalities and others in a number of arrangements tailored to meet the specific challenges involved. Such arrangements have included joint funding of projects where the utility makes a direct investment in the project and the public entity leverages its access to low cost financing; the use of capital leases and usage fees to support public sector contributions; operating agreements; water sales agreements and other mechanisms. Over the last 15 years, these arrangements, as well as West Virginia American Water’s
acquisition of small, non-viable systems, have resulted in utility investment in excess of $450 million, which leveraged public sector investment in excess of $130 million, for a combined utility/public sector investment in excess of $550 million benefiting a population in excess of 150,000. Such benefits included extending reliable water service that complies with all quality standards to people that did not have such service at all and enhancing service where it was deficient.


As previously mentioned, the industry’s fragmentation is not only with regard to the number of systems and ownership structure, but also in terms of regulation, jurisdiction, planning, and policy development. Tens of thousands of state and federal statutes, regulations, political subdivisions, and agencies impact to some extent the development, use, and sustainability of water supplies. Statutory goals and policies can be, and often are, inconsistent and contradictory. Stakeholder interests are as diverse and divergent as one might expect, given the fact that access to water resources is essential to virtually every significant aspect of human activity and interest. From human consumption, to habitat and ecosystem protection, to recreational, agricultural and industrial uses, and numerous other areas, stakeholders have legitimate interests in the development and use of these resources.

Integrated water resource management is simply recognition of the legitimacy of all stakeholder interests and the need to manage the hydrologic cycle to achieve coherent water resource policies that balance all reasonable needs in a sustainable way. Consolidation is a facet of a more integrated approach to water resource management. Managing water resources on a watershed basis is another example of a primary approach to more integrated management. This concept also can involve a number of approaches. For water service providers it can mean long-term planning incorporating concepts of reuse, watershed protection, and wise use, as well as customer education and greater communication and outreach to local communities and stakeholders. For public utility commissions, it can mean pursuing statutory and regulatory policies that promote greater interaction and coordination among state agencies that directly impact the quality, cost, and sustainability of water resources, such as public health and environmental agencies.

C. Other Challenges to Sustainability

1. The Energy/Water Nexus

The Forum Participants noted that critical industry interdependencies create challenges to sustainability. Providing reliable and high quality water and wastewater service requires massive amounts of energy and the production of energy requires huge amounts of water. Nationwide, it is estimated that about 4% of all domestic electric energy is utilized in some way to treat and deliver water service. In some states the

---

8 World Commission on Environment and Development
amount is much higher. In California, for example, about 20% of all energy utilized in the state is for these purposes. Similarly, about 39% of all water withdrawals in the country are utilized in the production of thermoelectric energy, which also accounts for about 3% of all actual consumption of water.

By far, water pumping facilities needed to treat and transport water over long distances, and maintain appropriate pressure, account for the greatest energy use, between 85-99%, depending on terrain and other factors. This is primarily because water is heavy – 8 pounds per gallon and cannot be compressed for transportation like natural gas. An important element in sustainability, therefore, is investment in infrastructure to reduce water lost through aging, leaky pipes, and in more energy efficient pumping and treatment facilities. Both Forum Participants Foran and Doll note that virtually all of the technologically advanced treatment techniques that may be needed to address supply constraints and comply with new quality standards are more energy intensive than traditional approaches.

The fact that providing high quality, reliable water and wastewater service involves the use of large amounts of energy obviously also means that providing these services impacts the carbon footprint of service providers, with implications on issues related to greenhouse gas (GHG) emissions and global climate change. One approach to these issues is the USEPA’s Climate Leaders Program, which is a voluntary partnership between the agency and companies to develop long-term, comprehensive climate change strategies. Participants in the Climate Leaders Program agree to inventory corporate GHG emissions, set corporate-wide GHG reduction goals and measure and report GHG emissions to the USEPA. Forum Participant Foran noted that American Water was accepted into the program in January of 2006, and the results of the system wide American Water analysis of GHG emissions indicated that approximately 93% of all system emissions resulted from the use of energy versus other sources, such as boilers, generators, fleet vehicles, and refrigerants.

a. Protecting Water Resources – Marcellus Shale Issues: Pennsylvania PUC Best Practice

Pennsylvania Chairman Powelson shared with the Forum that in Pennsylvania, in the next 10 years, Marcellus Shale is likely to become the leading supplier of natural gas in the United States. The Pennsylvania Marcellus Shale could produce approximately ¼ of America’s natural gas by 2020. Therefore, Pennsylvania is proactively and preemptively placing controls and safeguards to protect water resources. For example, Marcellus operators are only permitted to withdraw water pursuant to an approved water management plan. Marcellus Shale drillers are to cease taking wastewater to facilities that do not remove dissolved solids such as bromide. Additionally, prior to drilling a well, operators are required to develop a casing and cementing plan that shows how the well will be drilled and completed.

The Pennsylvania Legislature has enacted legislation, Act 13, that has setback provisions that Marcellus Shale operators must follow. The Legislation:
extends setback distance for unconventional wells from 200 feet to 500 feet from existing buildings or water wells, unless consent is received; establishes a 1,000-foot setback for an unconventional well from a water supply extraction point used by a water purveyor, unless written consent is received; and extends setback distance for wells from 100 feet to 300 feet from any solid blue line stream, spring, or body of water or wetland greater than one acre in size.

2. Buried Infrastructure – the Challenge of Leaky Pipes

In the United States, approximately 7 billion gallons of treated drinking water are “lost” each day primarily due to system leaks. This number equates to approximately 16% of the nation’s total drinking water production. Effective solutions have included the use of technology, discussed below, for leak detection.

3. Declining Water Use

The industry has carefully monitored trends that indicate declining water use by customers. Such decline in residential water use is a result of several factors including: high efficiency plumbing fixtures and appliances, elasticity to rate increases, economic conditions, decreasing average household size, consumer conservation ethics and awareness, and conservation efficiency programs. These challenges will be discussed in greater detail below. However, for purposes of this discussion, it is worthy to note that declining usage translates to declining revenues, thereby creating challenges for financial sustainability and investment in infrastructure.

D. Keys to Ensuring Sustainability

1. Technology and Innovation

Technology will play a key role in meeting current and future water quality and supply challenges. For example, use of advanced water treatment technologies will become even more important in order to comply with expanding SDWA quality standards, especially if it becomes necessary to treat water to remove contaminants detected at levels in the parts per trillion. Examples include ultraviolet and ozone disinfection techniques and various forms of membrane filtration, such as nano, reverse osmosis, ultrafiltration, and microfiltration.

Similarly, desalination is becoming increasingly important to supplement dwindling water supplies and desalination technology is becoming increasingly cost effective as constraints on traditional water supplies increase. American Water operates a desalination facility in Tampa Bay and, through California American, is participating in a project to construct desalination facilities that will augment constrained supplies in the

---

9 American Society of Civil Engineering: 2009 Infrastructure Report Card
Monterey peninsula. Worldwide, the desalination market increased from $2.5 billion in 2002 to $3.8 billion in 2005 with a growth rate of 25% per year. The key issues related to desalination continue to be: brine disposal, pretreatment, energy conservation, productivity levels, and finding employees with operational experience.

The expanded use of water reuse will play a key role in addressing current and future sustainability issues. The potential for water reuse is vast. About 32 billion gallons per day of municipal effluent exists today in the U.S. However, approximately 8% of that effluent is reclaimed. As with other areas of water treatment, technology will play an important role in expanding reuse. One example of such technology is the use of membrane bioreactors. These units utilize membrane technology to remove suspended solids and ultra-violet light to kill pathogenic bacteria to provide on site treatment of wastewater for apartment buildings, sports stadiums, and other applications. An example of application of this technology is the Solaire Green Building in Battery Park City, New York, a 293 unit apartment building. Treated effluent is reused for toilets, make-up cooling tower water, and landscape irrigation. The treatment plant utilizes an advanced membrane bioreactor system to separate water from the waste, providing the high quality effluent. Mr. Foran notes that use of bioreactor technology in this building has resulted in a 53% reduction in wastewater discharge and a 40% reduction in potable water consumption.

2. **Promote Conservation and Wise Use**

The investor-owned utilities and state commissions provide customers with information on control of water use, which includes information about water audits and conservation practices. The passage of plumbing and building codes mandating the use of low flow fixtures has also promoted conservation and wise use policies. Rate design structures (inclining block rates for example) have been used to stimulate water conservation. All of these programs and consumer education practices are effective at reducing water consumption, but as mentioned earlier have to be considered in conjunction with the potential impact on utility financial viability, customers, and economic development. Reducing per capita water use can have significant impacts on the utility’s ability to cover fixed costs and maintain revenue stability necessary to attract capital and provide reliable service. Forum Participant Foran points to American Water’s situation as an example. There, as a result of conservation and consumer education efforts and new building codes, per capita consumer consumption declined an average of about 1.6% annually over the last five years. Moreover, inclining block rates can cause industrial customers to leave the utility system, which negatively impacts the general body of ratepayers who then bear those portions of cost.

3. **Regulatory Policies That Incent Cost-Effective Capital Attraction**

As discussed in greater detail earlier in the “Regulatory Practices” section of this Forum Report, the result of increasing challenges to sustainability is a greater need (and push) for regulatory practices that encourage conservation, adequate rates, regulatory
stability, rate structures, and cost recovery mechanisms that promote conservation and wise use practices without bringing financial harm to the very industry responsible for providing such a critical service. These mechanisms assist in achieving revenue stability; and therefore, work to ensure sustainability.

**Participant Reaction**

Industry Forum Participants note that sustainability with regard to the ability of a utility to provide high quality, reliable service to customers, whether the utility is government or investor-owned, rests on the financial and technological viability of the utility. Without financial viability, utilities will be unable to attract the massive amounts of capital or support the operating expertise needed to replace aging infrastructure and comply with increasingly stringent water quality standards. Moreover, utilities will not be able to engage in the type of long term, integrated approaches to water resource management essential to sustainability of this essential resource.
X. CONSERVATION, DECLINING CONSUMPTION, AND SUSTAINABILITY

This portion of the Forum was presented by Robert Sprowls, President and CEO of Golden State Water Company.

As the chart below indicates, water withdrawal for public supply equates to only 11% of all water withdrawals. However, with that said, among the greatest challenges facing the water industry today is the need to implement sustainable conservation programs without negatively impacting the financial viability of the utility.

**WATER WITHDRAWALS BY SECTOR**

The water industry has been forced to make the shift towards promoting water use efficiency as population growth, drought, and environmental concerns impact water supply availability. Western states such as Arizona, Texas, New Mexico, Nevada, and California face frequent regional droughts. Growing populations in Texas and similar states put added pressure on often limited supplies. Eastern states, traditionally seen as water-rich, faced similar supply deficiencies in 1999. Florida has gone through a constant cycle of water shortages due in part to limited storage facilities. Finally, environmental constraints on supplies in areas like California have forced wholesale agencies to significantly reduce deliveries to their utility customers.

Increased conservation efforts coupled with declining sales can lead to negative impacts on revenue. Revenue stability is a constant concern for water utilities who must balance fair and equitable rate structures against the need to cover increasing infrastructure and supply costs. As demand lowers, the difficulty in covering fixed costs
increases, and, short of innovative revenue recovery mechanisms, utilities may not meet their revenue requirement.

Many water utilities across the United States and elsewhere are experiencing declining water sales among households. While ‘water conservation’ is normally seen as positive, this gradual erosion in residential consumption may force utilities to raise rates to provide sufficient revenues…

A. Conservation Initiatives

Initial utility responses to droughts and other water supply constraints usually involve customer messaging and customer education campaigns aimed at encouraging voluntary customer participation in conservation. Messaging efforts are generally effective; however, they may not have a consistent impact across all customer profiles, and demand reductions can erode over short periods of time without constant reinforcement. Customer surveys and water use analysis show that certain customer classes respond better to conservation messaging than others, and place a higher burden on those that are more likely to already have an efficient lifestyle. Higher economic classes tend to not be responsive to the calls for reductions, whereas customers who already have an inclination for environmental issues or costs will respond effectively.

Credibility plays an increasingly important factor in customer response. The messages must be clear and the goals equitable among customer classes. Utilities need to be seen by community leaders as effective in managing the system and supplies such that calls for reductions are taken seriously. In addition to the soft (public relations and education) programs, certain federal, state and local mandates are becoming more popular to ensure sustained water use efficiency. For example, driven by the droughts across the nation in the late 1980’s and early 1990’s, the 1992 Federal Energy Policy Act included new product standards for ultra-low-flush toilets flushing 1.6 gallons per flush, low flow showerheads (2.5 gallons per minute), and low-flow aerators (2.2 gallons per minute). These standards provide significant reductions from existing products, cutting the average volume of these devices in half.

At the state level, several states including Florida, Nevada, Colorado, Texas, and Georgia have enacted drought and water supply management policies to ensure continued water savings. In California, Senate Bill x7-7 was passed in part to meet the Governor’s call to reduce demand 20 percent by the year 2020 and adopts a statewide requirement to reduce per capita demand based on regional use and utility specific per capita demand calculations. Because urban landscape water use accounts for as much

---

as 60 percent of residential water demand, California also adopted regulatory schemes such as the Model Landscape Ordinance (AB 1881) in 2006 that requires all cities and planning agencies to regulate new construction and landscape planning with dedicated irrigation meters, limits on turf and slopes, and specific irrigation system designs.

California utilities are also expected to be in compliance with the Best Management Practices (BMP) developed since 1991 by the California Urban Water Conservation Council (CUWCC), which is made up of more than 300 water providers, environmental groups, and other interested parties including the Department of Water Resources and United States Bureau of Reclamation. BMP’s have been incorporated into state regulations and now utilities who do not comply with CUWCC’s BMPs are not eligible for state and federal loans, grants or other state-run financing for various programs and system upgrades. Pressure also comes from communities themselves, and Non-Governmental Organizations, who expect utilities to provide conservation programs as part of its core services. BMP’s are currently being adopted in several other states driving models to respond to various water conservation needs.

As stated previously, national and state plumbing codes have changed such that new, water saving technology is required in new building starts, and can account for significant and permanent drops in water use. For example, the construction of new homes implementing new plumbing codes and fixtures since 1992 has resulted in reduced usage overall by 35%. The Metropolitan Water District of Southern California (MWDSC) manages imported supplies for the southern California region, serving nearly 20 million people. In their 2010 update of their Integrated Resource Plan, MWDSC attributes the effects of plumbing code changes as a major influence in holding down overall demand over time as illustrated in the figure below.

![Figure A.2.10 Historical and Projected Conservation Savings](image)

The code changes that have been implemented over the past 25 years account for significant changes in demand, and will be sustainable as high water use devices are no longer available.

Technology improvements in water saving devices are also driving sustainable water use efficiency. The effectiveness of these technologies is indisputable. The City of Los Angeles’ overall and per capita demand is less now than it was in 1990 even though the population has increased by nearly 1 million people. Starting in 1992, the Los Angeles Department of Water and Power (LADWP) initiated the Ultra Low Flush Toilets distribution and rebate programs. By 2006, 1.3 million of these toilets had been installed, representing approximately 90% of the toilets in the LADWP service area (City of Los Angeles Water Supply Action Plan, 2008). This measure alone accounts for 14 billion gallons of water saved each year, with each toilet having an economic life of 20 years.

B. Conservation Rates

Rate-based approaches, or conservation rates, are becoming more common to send price signals to influence customer use. Inclining block rates are increasingly popular with utilities to address the possible need for more cost effective demand reduction, and to target specific usage classes. In California, inclining block rates were established as a Best Management Practice in 1991, and have become a fairly standard rate model. The California Public Utilities Commission (CPUC) now requires all large water utilities to implement tiered rates on residential customers to encourage water conservation. The rate design includes a service charge based on meter size and a series of tiered or inclining block rates. This results in moving a large share of fixed costs from monthly charges to variable quantity charges. The subsequent reduced demand does not reduce the fixed costs and adjustment mechanisms must be put in place in order to recover those costs. Explained in more detail below, the CPUC has allowed Golden State Water Company a Water Revenue Adjustment Mechanism (WRAM) that allows for adjustments that decouple revenue from sales.

As an example, the table below outlines San Jose Water Company’s tiered rate structure, authorized by the CPUC in 2009.

<table>
<thead>
<tr>
<th>Type of Meter</th>
<th>Usage</th>
<th>Rate as of January 1, 2009 Per ccf (748 gallons)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Residential Meters</td>
<td>Usage from 0 to 13 ccf</td>
<td>$2.2082</td>
</tr>
<tr>
<td>Meters Smaller Than 1.5-inch</td>
<td>Usage greater than 13 ccf</td>
<td>$2.4282</td>
</tr>
<tr>
<td>Large Residential Meters</td>
<td>Usage from 0 to 26 ccf</td>
<td>$2.2082</td>
</tr>
<tr>
<td>Meters Sizes 1.5 &amp; 2 inch</td>
<td>Usage greater than 26 ccf</td>
<td>$2.4282</td>
</tr>
</tbody>
</table>
Some municipal rate structures are extremely complicated and take into account individual use patterns. For example, Irvine Ranch Water District established an allocation-based conservation rate structure in the early 1990's. Customer allocations are set based on specific dwelling unit size, lot size and landscaping. The program requires a unique, integrated billing and database system that incorporates GIS and weather data. Customer bills include clear, specific messages of how each customer compares to their individual allocation.

In 2008, Golden State Water Company instituted tiered rates, authorized by the CPUC. Penalty rates were also implemented during the drought in order to account for changes in allocations and increases in supply costs from wholesale agencies. As a result, the 2010 through 2011 period experienced drops in demand between 13% and 27%, depending on the service area. It is assumed that this success was due to a combination of messaging, active conservation programs, and responses to the new rate structure. There is also a likely effect of economic issues as well. The chart below illustrates a downward trend in overall demand in Golden State Water Company's Northern District from 2006 to date. This is an area of relatively inexpensive water but has been hit particularly hard by the housing crises.
Independent studies have shown such price signals can be effective in reducing demand. In the Olmstead and Stavins Report referenced earlier, U.S. residential water price elasticity is determined in the range of -0.3 to -0.4, meaning that a ten percent increase in the marginal price of water can reduce demand in the residential sector by 3 to 4 percent. Behavior adjustments by higher economic class customers may not last as they may tend to choose to pay a higher price for higher water use. Conversely, depending on how the rate is structured, conservation rates can have an effect on hardening the use by customers who are more sensitive to price (i.e., low income) or have a conserving lifestyle.\textsuperscript{13} The rate can become punitive to those already implementing water use efficiency. Forum Participant Sprowls notes that experience shows that there are economic classes of customers that will not respond to price at all, but who are likely the best candidates for water efficiency because they may represent the most waste.

\section*{C. Cost Benefit Analysis Models}

Before implementing efficiency programs, cost benefit modeling is typically done to determine if a program or combination of programs will be cost effective to the utility and

\textsuperscript{13} Hardening represents the concept of Demand Hardening. This concept has issues with what is actually hardening but the simple definition is: “As a service area becomes more efficient, it becomes more difficult to save increased amounts of water during shortage or drought.” In this context, customers who respond sensitively to price and who may also have implemented best available technologies reducing household use to minimums may be penalized because they cannot respond further as the pricing model may have intended.
to the customers. Costs of implementing conservation programs can vary greatly based on the technology used and how the programs are delivered. Savings attributed to these programs can also be influenced by the opportunities across the customer base (i.e., number of households with high volume toilets, in ground irrigation systems with controllers) and the potential acceptance by customers. Costs and benefits are typically measured against an avoided cost model. Conservation programs primarily impact the purchase of the highest margin cost of water, or defer the construction of facilities such as storage and wells.

There are also additional, less quantifiable, benefits associated with conservation. Some of these benefits have been modeled to assist with an economic valuation of the benefit. For example, the CUWCC Benefit/Cost Calculators attempt to apply the three primary perspectives of the utility, the customer, and the environment when determining the cost/benefit of particular conservation programs. Some programs are given a greater value if they reduce urban demands for water from the State Water Project Bay/Delta system as opposed to other sources.

The Water Research Foundation has developed a more universal calculator model that applies many of the same assumptions drawn from a cross section of end-use studies for indoor and outdoor uses and technology applications. Published in 2007, the report and model incorporates results from studies of technologies deployed in the 1990’s such as:

- Ultra Low-Flow Toilets (1.6 gpf);
- Low-flow showerheads (2.5 gpm);
- High-efficiency clothes washers (HECW);
- Early weather-based irrigation controllers; and
- Metering/sub metering

Since that time, new technologies have emerged such as the high-efficiency toilet (HET) flushing 1.28 gpf or less and high-efficiency clothes washers (< 9 gals. per load). Even though their costs are similar to less efficient models, their performance associated with EPA WaterSense® certification improves the savings to cost ratio and needs to be accounted for in modeling.

One last popular model called “The Least-Cost Planning Demand Management Decision Support System” (DSS), accounts for many variables to predict the costs and benefits of particular measures. In the study describing the program (Maddaus and Maddaus, 2004), the outputs present a detailed analysis that includes community costs and benefits. Table 2 below is an example of the benefit/cost results from both the utility and the community perspective.
In this table, a Benefit Cost ratio greater than 1 indicates that the measure is cost effective based on the costs and time value of the measure against the marginal or deferred cost of the utility. For instance, installation of a HET that replaces a pre-1992 high volume toilet will realize daily savings over an economic life of 20 years.

### D. Revenue Impacts and Solutions

As noted earlier, declining consumption creates declining revenue. Typical rate structures tend to capture approximately 30% – 40% of fixed costs with monthly and/or meter charges. The remaining fixed costs, and variable costs, are covered through the commodity rate. Given this imbalance between fixed costs/fixed revenue and variable costs/commodity rates, utilities are at risk for not meeting their revenue requirements when sales decline due to mandated conservation.

In “Revenue Effects of Conservation Programs: The Case of Lost Revenue” (Chesnutt and Beecher, 2004), the greatest benefit accrues when the full cost of service drives behavior changes for both the producers and the consumers. The short term impacts of reduced demand effect systems that recover portions of their fixed costs (including conservation programs) through variable rates. Chesnutt and Beecher conclude with the points noted below:

1. The utility is not harmed by beneficial conservation behavior in the short term or the long term and therefore not discouraged from implementing the programs;

2. Costs and prices are kept in alignment, promoting efficient production and consumption; and
3. Cash flow is maintained for the financial health of the utility and the support of vital programs, including conservation programs.

Chesnutt and Beecher also explain that from the utility perspective, the short-term revenue loss can result in a cost to the utility and cascade into cost-cutting measures including conservation. An effective revenue adjustment mechanism is important to avoid more significant problems. Long-term impacts are mitigated by the fact that most programs provide savings over time that can reduce costs in other areas of the utility operations and investment. Proper planning and rate setting for full cost recovery are keys to mitigating effects of conservation programs and reduced demand.

The CPUC has implemented forward thinking, innovative approaches to ensure water utilities remain financially viable while implementing significant conservation programs. First, the WRAM has been implemented to decouple revenues from sales. In short, the WRAM tracks the difference in actual sales against authorized sales used to determine the revenue requirement. Any sales decline is then adjusted to ensure revenue neutrality due to the effects of conservation. The WRAM is coupled with a Modified Cost Balancing Account that tracks the commodity costs, which in part ensures reduced water supply costs due to reduced sales are credited back to the customer. These modern revenue schemes ensure utilities can boldly encourage water conservation while remaining financially strong.

The following two slides demonstrate the impact from the WRAM mechanism. WRAM, a decoupling of revenues and sales, necessitates a creation of a balancing account to allow the companies to record the differences between adopted sales/revenues and the actual sales/revenues. The accounting is shown below.
E. Reuse

Once thought of as a method of effluent disposal, reuse is now considered a source of water. Reuse customers include golf courses, nurseries, and residential customers. Water reuse involves taking domestic wastewater, giving it a high degree of treatment, and using the high-quality reclaimed water for a new, beneficial purpose. Extensive treatment and disinfection insure that public health and environmental quality are protected.

State commissions must recognize the costs and benefits of reuse in promoting its continued use. State commissions cannot price the commodity at a level that would discourage its use or negatively impact the utility’s ability to dispose of its effluent. Reuse rates must be lower than potable water rates. By way of example and as a “best practice,” Florida law encourages reuse and gives the state commission the flexibility to address cost recovery: “[a]ll prudent costs of a reuse project shall be recovered in rates. The Commission shall allow a utility to recover the costs of a reuse project from the utilities water, wastewater or reuse customers or any combination thereof as deemed appropriate by the Commission.”

Participant Reaction

Conservation and demand management are vital roles for utilities as they ensure the long term sustainability of the communities served. Numerous studies have shown that as utilities invest in more conservation efforts, both with soft (public relations and

---

14 Section 367.0817(3), Florida Statutes
education) and hard (technology and rates) programs, water use efficiency is sustainable. In areas that have active conservation programs, water demand remains lower than demand projections, even though populations have increased. For example, New York City reported that while their population has grown from 7.4 million in 1990 to 8.4 million in 2010, their water production dropped from 1,325 MGD to 1,039 MGD, a 22 percent reduction. The City of Los Angeles reported similar drops in their 2008 Water Supply Action Plan, showing that despite an increase in population of 1 million people, their water production is essentially the same as it was 25 years ago. This new operating environment needs to be supported by a regulatory regime that provides full cost recovery of conservation investments, rate structures that encourage conservation and revenue and regulatory mechanisms that ensure healthy utilities. By decoupling cost recovery from sales, a utility can provide for longer term stability to its system and customers. Through the combined efforts of utilities and their regulatory partners, water use efficiency is sustainable. A utility that is allowed to remain whole, with stable revenues and full cost recovery is positioned to provide the best service to its customers.

Industry Forum Participants believe state commissions will need to establish methods to set revenues that promote conservation while preserving the viability of the industry. Forum Participants pointed to Florida’s use of a repression adjustment as an effective regulatory approach to promoting conservation and allowing the utility to recover resulting revenues loss.
XI. SMALL WATER COMPANY CONSIDERATIONS AND SOLUTIONS

Forum Participant David Monie presented this portion of the discussion. Based upon his own experiences successfully operating a small water company, Mr. Monie observed that a small water and wastewater utility is viable with two basic requirements: 1) an owner who cares; and 2) access to capital. According to Mr. Monie, if the owner does not care, the only solution is an acquisition by a responsible utility owner. With a caring owner, access to capital is a consequence of having adequate rates. The following is a discussion of tools or effective regulatory practices that regulators can use to have small systems become or remain viable.

A. Issues and Arrangements Relating to Rates

1. Simplified Rate Proceedings

In most jurisdictions, the cost of processing a rate increase for a small utility is extremely high on a per customer basis. For instance, if a water system serving 100 customers processes a rate increase at a cost of just $20,000, the per customer cost is $200. In many jurisdictions, it is not uncommon for a very small system to have rate case costs of over $300 per customer. A number of jurisdictions have "simplified rate cases" for small systems. However, in some jurisdictions, no such procedure exists or the simplified procedures are not all that simple and still can cost a small system too much money to process. Rate case costs of over $100 per customer do not benefit anyone as the likely "savings" to the customer by the careful review built into most rate case procedures are not likely to reduce the ultimate rate by more than the rate case costs even when amortized. As a comparison, if a company that served 50,000 customers were to have rate case expenses of $1,000,000, the per customer cost would be $20.

The high cost and the complexity of rate case filings prevent many small systems from seeking the rates necessary to attract the required capital for the system to become or remain viable. Mr. Monie notes that truly simplified rate cases designed to both significantly reduce the per customer cost and to allow for significant time between cases, would be a big benefit to the small utility’s customers. He believes one possibility is a simplified rate case procedure with automatic cost of living increases for some period of time following the implementation of the new rates. The many benefits include keeping subsequent rate increases small, avoiding rate shock, and allowing the utility to attract capital so it can become or remain viable.

Given adequate rates, Mr. Monie believes that even the smallest utilities can attract the necessary capital in order to remain viable. Mr. Monie suggests that an effective regulatory practice would include Commission staff proactive contact of small systems that report losses on annual reports and/or to those that have not submitted rate filings in quite some time.
2. **Single Tariff Pricing (STP)**

When a small, non-viable system is acquired by a larger system, the improvements necessary to bring the non-viable system into regulatory compliance or to provide reliable service often result in a rate increase that is prohibitive if applied against the small, non-viable system by itself. This can make acquisition by a larger water company difficult. According to Mr. Monie, single tariff pricing could spread these costs over a wider customer base. This is effectively the way prices have been set for many years for the electric, natural gas, and telecommunications companies where large service territories can cover diverse geographic locations but all customers in the same class basically pay the same rates. Many jurisdictions currently allow single tariff pricing for commonly owned water systems (sometimes restricted to geographical areas in a state) and others are considering rate applications that would allow for STP rates.

Mr. Monie notes that whatever rate structure is approved, it should provide sufficient revenue to the purchaser to cover the full cost of providing water service, including O&M, capital investments, and a competitive rate of return (i.e. full cost of service rates).

3. **Alternatives to Rate Base/Rate of Return Regulation**

In the case of many small, nonviable systems, there may be little remaining original cost rate base as the result of accumulated depreciation or large amounts of contributed plant (CIAC). This could make viability difficult and acquisition of the system financially unfeasible for an acquiring entity because there is little, or no, rate base left upon which a return can be earned. In such cases, alternate methodologies for setting rates may be necessary, such as the use of operating ratios, instead of rate base. Properly regulated operating ratios, in use in some jurisdictions, can allow the otherwise nonviable system to attract capital for needed capital expenditures. If single tariff pricing is not allowed in a jurisdiction, a larger company that may acquire the small system would not be able to recover capital improvements necessary to bring the system into compliance if there is a negative rate base without an alternative regulatory process like the use of operating ratios. Since in many small systems the amount of CIAC was arbitrarily set by the Commission to keep rates down, the transfer of CIAC to Equity may be a simpler method to facilitate an acquisition without the need of an acquisition adjustment.

4. **Use of Future “Prospectively Relevant” Test Years and Expedited Rate Proceedings**

The use of historic test years and the length and cost of rate proceedings can be a real deterrent to the ability of a small system to either remain viable or become viable. According to Mr. Monie, the use of a future test year, coupled with an expedited procedure, is an important small system viability tool. In addition, these mechanisms help an acquiring system make the capital investments necessary to bring a nonviable system into compliance. Basically, without a future test year, the acquiring company
would need to wait to file for any rate relief until it had already made the capital
investments necessary to bring the nonviable system into compliance, and then it would
be faced with a rate-setting process that could take up to a year or more. Likewise,
without the use of a future test year the small utility, on its own, is not likely to be able to
attract the capital needed for the capital improvement. The use of future test years and
expedited rate proceedings could mitigate these disincentives. Another possibility for
small systems facing a significant capital improvement would be to allow quarterly
construction work in progress (CWIP) rate increases that would allow the small utility to
earn on the investment shortly after it is made and would greatly help in its ability to
attract the necessary capital for the project.

Many small systems do not experience maintenance expenses at a constant level from
year to year. Therefore, traditional ratemaking policies that require expenses to have
occurred in the test year to be recognized in rates should be modified to assure that the
small system will have enough funds to pay for required maintenance when needed. In
that regard, the use of averaging methods and, in some cases, the allowance in rates
for annual contributions to a maintenance/capital investment fund is a possible method
to help small companies become, or remain, viable.

B. Issues and Arrangements Relating to Return on Investment

When the acquisition of a troubled utility is encouraged or ordered by a state
commission, the overall acquisition must be structured to assure the purchaser has a
good chance of earning a competitive return. For this to happen not only must the
maximum allowable rate of return set by the state commission be competitive but also
the rate structure that is approved must provide sufficient revenues so the purchaser
has a good chance of realizing that maximum return.

Absent this, from a purely business perspective, there is little incentive for a successful
utility to take over a troubled utility. While an emergency takeover of a troubled utility
may be necessary in circumstances where the situation is so dire that public health is
being jeopardized, ultimately the acquiring utility must be made whole on the takeover,
or its own financial health and potentially the public’s health could be jeopardized.

C. Issues and Arrangements Relating to Compliance

1. Use of Infrastructure System Replacement Charge to Bring
Non-Viable Systems into Compliance

Connecticut has adopted the Water Infrastructure and Conservation Adjustment
(WICA), similar to legislation in California, Missouri, Pennsylvania, Illinois, Delaware,
Indiana, New York, and Ohio, to provide for recovery of capital investments to replace
aging infrastructure, outside of the confines of a general rate proceeding. In the case of
many small, nonviable systems, there is an immediate need to make capital
investments to bring the system into regulatory compliance. Mr. Monie believes that
some form of the WICA concept for this purpose could facilitate the necessary capital
investment by helping in the acquisition of capital by the small system, as well as by making acquisition of the non-viable system more feasible for the acquiring company.

2. Relief from Fines and Penalties

Existence of outstanding fines and penalties against a system, from either federal or state agencies, poses significant obstacles to acquisition. This is especially true where local health authorities, primacy agencies, or enforcement authorities may have been holding off enforcement activities against the nonviable operator but then insist on immediate compliance by the acquiring entity. State legislation may be necessary to assure that responsible operators who acquire nonviable systems with outstanding fines and penalties will have such penalties waived and a reasonable compliance schedule established.

3. Insulating Purchaser from Former Owner Violations

Past and current violations of standards or regulations should not be attributable to the purchasing utility unless it fails to correct the violations in a timely fashion. State and USEPA enforcement records should clearly identify that the utility’s previous owner is responsible for the occurrence of any violations existing at the time of purchase. The new owner should be classified as being in compliance, provided he is correcting the violations in accordance with the terms agreed to by all the parties. The purchasing company should be given a grace period to correct the violations. The amount of the grace period should be a function of what must be done to correct the violations.

Finally, according to Mr. Monie, USEPA and state officials should provide documentation to the purchasing company explaining the above circumstances so the company can provide it to anyone who questions its compliance record (such as a potential client). To accomplish the above measures, the state commission may need to enter into agreements with the state primacy agency and the relevant USEPA regional office that would establish a protocol for implementing the details, including how to document and oversee the commitments of all the parties.

D. Issues and Arrangements Relating to Purchase Price

If ordered to purchase a troubled utility, the purchaser has little leverage to get a fair price and may have to pay an inflated price with consequences to his rate of return.

If a state commission requires or encourages a utility to purchase an ailing utility and a premium price must be paid to acquire the utility, the state commission should provide an acquisition or some comparable adjustment so the purchasing utility will not be financially penalized in its return on the investment due to paying an excessive purchase cost. Transfer of CIAC to Equity may be a relatively simple way to increase the rate base for the acquiring system, especially if CIAC was arbitrarily set by the commission to keep the initial rates lower than they would need to be for a sustainable system. Mr. Monie noted that care should be taken to assure that well managed and
financed small utilities are not penalized with policies favoring only troubled small systems. His point will be discussed in greater detail below.

1. Reducing Purchase Price of a Small Utility for Penalties

As Mr. Monie discussed above, the elimination of penalties against the system, if it is acquired by a larger system that agrees to a time schedule for upgrading the system to meet standards, is a very helpful way of reducing the purchase price and, therefore, the ultimate rates to ratepayers.

2. Acquisition Adjustments

Granting acquisition adjustments with regard to small water systems can raise issues of concern. All things being equal, Mr. Monie believes that it would be appropriate not to provide incentives for unscrupulous operators of non-viable systems to profit from their failure to properly maintain them. On the other hand, a properly structured policy with regard to acquisition adjustments can play an important role in addressing not only the small company problem, but also issues of fragmentation and lack of economies of scale in general in the water industry. Not all small system owners are irresponsible. Even owners of non-viable systems may simply not be in a good position to meet the daunting challenges of quality compliance and infrastructure replacement in the future. Their systems have value and any purchase price is likely to include some increment over depreciated book value. Recognizing an acquisition adjustment in these cases is appropriate. For example, Pennsylvania has enacted legislation that provides for possible recognition of premiums for systems with less than 3,300 service connections, subject to certain conditions. In addition, premium recovery is possible for systems in excess of 3,300 service connections if they are “non-viable.” However, if acquisition adjustments are allowed into rate base for small systems, Mr. Monie believes it is clearly unfair to only allow acquisition adjustments for non-viable systems. This would punish the responsible owners of small, but viable systems that have kept their utilities in compliance with all applicable standards and could encourage owners to give poor service if they are contemplating a sale in order to have the acquiring company qualify for an acquisition adjustment and, therefore, be willing to pay a higher purchase price.

Recognition of acquisition adjustments, even where systems are not small or nonviable, may also be an effective tool in addressing the small company issues. For example, enlarging the footprint of a financially viable, competent system operator through acquisition of other competent systems could place the responsible operator in closer proximity to non-viable systems, thus making it more economically viable to acquire and operate them. Texas has explicit provisions and standards for recovery of positive acquisition adjustments. Likewise, California provides for valuing rate base at fair market value for rate setting purposes.

When American Water acquired the water assets of Citizens Utilities in 2001, the company made a proposal in three states whereby the commissions would agree to consider some form of premium recognition if the company could demonstrate value to
ratepayers. The basic principle is that if, and to the extent, a business combination produces identifiable savings, service improvements, or other benefits to customers, shareholders should have the opportunity to recover and earn a return on the investment (i.e., the premium) required to produce those benefits. The principle is no different than what is involved when a utility invests in a more efficient pump that produces savings. Generally, that investment is allowed in rates. In California and Illinois, such proposals resulted in the ability of the company to partially retain quantifiable and proven savings resulting from the acquisition. In Arizona, it resulted in an acquisition order that recognizes the possibility of retaining certain quantifiable and proven synergy savings.

E. Issues Related to New System Formation

USEPA requires that new water systems demonstrate that they have the technical, managerial, and financial capacity to remain a viable water system, capable of providing safe, adequate, and proper service to their customers for the foreseeable future. Many state commissions work collaboratively with the state environmental regulator to prevent the creation of new systems that have not demonstrated the technical, managerial, and financial capabilities.

However, if a new system is approved, Mr. Monie suggests that the initial rate structure provide sufficient revenue to the purchaser to cover the full cost of providing water service, including O&M, capital investments, and a competitive rate of return (i.e. full cost of service rates). Adequate capitalization should be allowed that will provide enough rate base that capital can be attracted sufficient to operate and maintain the system. Forum Participant Monie notes that it is counterproductive to require large percentages of the cost of the utility plant to be classified as Contributions in Aid of Construction, thus assuring that the system will not be able to have earnings suitable for attracting capital and to replace the utility plant when needed.

Participant Reaction

Facts: 1) all water companies are held to the same standard for quality service; and 2) all water companies need access to capital. The likelihood of achieving access to capital is greater with adequate rates and regulatory stability. Mr. Monie notes that states like Pennsylvania have designated, experienced staff to work on small company issues. From a cost perspective, this is helpful to the small water companies as unnecessary discovery is avoided and sometimes, costly litigation is mitigated. Other states like Missouri have truncated staff assisted rate cases. It was noted that the hiring of an attorney is still required. Forum Participant Gunn mentioned that Missouri has begun a small system “watch list” wherein, if a concern is identified by Commission staff, the utility is proactively contacted. Forum Participant Mays discussed Indiana’s “Small System Plan.” Indiana, as a matter of policy, has begun the process of holding small system training workshops for regulatory matters for the small system owners and operators.
XII. NEXT STEPS TO STATE IMPLEMENTATION OF EFFECTIVE REGULATORY PRACTICES

The NAWC Water Policy Forum is very useful in promoting education and dialogue amongst the industry stakeholders. Traditionally, the Forum Participants comment, as they did here as well, that the topics are relevant and the information provided by the industry, consumer advocates, and their state counterparts, is always helpful. However, over the years, it has become abundantly clear that more needs to be done in assisting state commissioners with navigating the process of implementing regulatory practices required to facilitate capital attraction at cost effective rates, thereby creating a conducive environment for infrastructure improvements and consistent provision of quality service. The Forum also provides the industry participants an opportunity to hear from regulators and consumer advocates about their perspective on effective consumer communication.

For some state regulators, the sharing of effective regulatory practices is so helpful that they immediately return to their state and begin implementing what they have learned. For example, Forum Participant Noble noted that his state has now adopted some of the effective regulatory practices the Commissioners learned from the Forums and from NARUC discussions. As a result of this particular Forum, he noted a commitment to understanding more about the use of repression adjustments and how that regulatory tool can be used to address the impact from conservation policy.

To inspire others and to continue the promotion of effective regulatory practices, the Forum Participants were asked what each was prepared to do in his/her state to facilitate the further implementation of effective regulatory practices. What follows is a summary of those comments.

Forum Participant Klick made two comments. First, greater emphasis on “relevance” may be necessary when discussing “test year” or when discussing mechanisms to mitigate regulatory lag. While Pennsylvania leads the way in innovation and effective regulatory practices in its regulation of water, he noted that it may be time to put more emphasis on what is the “relevant” test year. Second, Mr. Klick suggests that it may be time for another NARUC Best Practices panel. With new commissioners, new innovations to address sustainability issues, and additional best practices to share, he believes the dialogue must continue.

Forum Participant Mays suggests that NAWC make its best practices readily available as it relates to the success achieved in the consumer education message. For example, the New Jersey Chapter of NAWC produced brochures and materials that are useful in communicating the “value” of water. Commissioner Mays will also discuss with her staff the use of various revenue recovery mechanisms and the appropriateness of repression adjustments.
Forum Participant Howard noted that he uses the Agenda from this Forum and the information to meet with his staff to determine what regulatory tools can be added to the South Carolina regulatory toolbox as appropriate. Of particular interest to him were: the discussions related to creating proactive staff “watch lists” for troubled utilities so that regulatory staff can preemptively address major issues, Florida-like conservation block rates, California forecasting models, and the corresponding requirement that California companies file rate cases every three years.

As a result of Chairman Powelson’s presentation on the Pennsylvania DSIC, Chairman Gunn noted that the DSIC could be a useful infrastructure and economic development tool in Missouri. He is encouraged to have the appropriate conversations with the Legislature about the effectiveness of that regulatory tool in Missouri.

Forum Participant Holden noted the need for greater emphasis on water in her state. Because of other priorities, her state has focused on energy issues. With equal focus on the water issues, her commission could better assess and implement effective regulatory practices. She heard two areas of particular interest and identified next steps: 1) finding better strategies to communicate with the public including “water wise” discussions; and 2) what her Commission can do to move the DSIC conversation forward.

Industry Participants have committed to continue to work diligently to communicate the message about the “value” of water. They recognize that working together to communicate with the ratepayers, the Legislature, and other agency participants will enhance the regulatory process. NAWC leadership will participate in this process by working with NARUC and respective NAWC chapters to refine the consumer message and to continue to identify effective regulatory practices for state commissioners. NAWC will also look into the energy “best practices” to determine if replication of those practices is appropriate.

Forum Participant Walton Hill noted that the industry can be helpful in fostering better communication with the respective state legislatures so that they better understand the regulatory model and perhaps that understanding will eliminate the likelihood of political pressure.

NARUC leadership - Participants Jones, Wright, and Coen – continue to believe that NARUC has a critical role in identifying opportunities for the water industry to share these effective regulatory practices. Forum Participant Jones shared his interest to review more carefully the nexus between energy and water. Consumer Advocate Sanchez is equally interested in learning more about the energy/water nexus and the impact to service, rates, and sustainability.
XIII. NARUC RESOLUTION
SUPPORTING CONSIDERATION OF REGULATORY POLICIES AND BEST PRACTICES

WHEREAS, A number of innovative regulatory policies and mechanisms have been implemented by public utility commissions throughout the United States which have contributed to the ability of the water industry to effectively meet water quality and infrastructure challenges; and

WHEREAS, The capacity of such policies and mechanisms to facilitate resolution of these challenges in appropriate circumstances supports identification of such policies and mechanisms as “best practices”; and

WHEREAS, During a recent educational dialogue, the “2005 NAWC Water Policy Forum,” held among representatives from the water industry, State economic regulators, and State and federal drinking water program administrators, participants discussed (consensus was not sought nor determined) and identified over 30 innovative policies and mechanisms that have been summarized in a report of the Forum to be available on the website of the Committee on Water at www.naruc.org; and

WHEREAS, As public utility commissions continue to grapple with finding solutions to meet the myriad water and wastewater industry challenges, the Committee on Water hereby acknowledges the Forum’s Summary Report as a starting point in a commission’s review of available and proven regulatory mechanisms whenever additional regulatory policies and mechanisms are being considered; and

WHEREAS, To meet the challenges of the water and wastewater industry which may face a combined capital investment requirement nearing one trillion dollars over a 20-year period, the following policies and mechanisms were identified to help ensure sustainable practices in promoting needed capital investment and cost-effective rates: a) the use of prospectively relevant test years; b) the distribution system improvement charge; c) construction work in progress; d) pass-through adjustments; e) staff-assisted rate cases; f) consolidation to achieve economies of scale; g) acquisition adjustment policies to promote consolidation and elimination of nonviable systems; h) a streamlined rate case process; i) mediation and settlement procedures; j) defined timeframes for rate cases; k) integrated water resource management; l) a fair return on capital investment; and m) improved communications with ratepayers and stakeholders; and

WHEREAS, Due to the massive capital investment required to meet current and future water quality and infrastructure requirements, adequately adjusting allowed equity returns to recognize industry risk in order to provide a fair return on invested capital was recognized as crucial; and

WHEREAS, In light of the possibility that rate increases necessary to remediate aging infrastructure to comply with increasing water quality standards could adversely affect the
affordability of water service to some customers, the following were identified as best practices to address these concerns: a) rate case phase-ins; b) innovative payment arrangements; c) allowing the consolidation of rates (“Single Tariff Pricing”) of a multi-divisional water utility to spread capital costs over a larger base of customers; and d) targeted customer assistance programs; and

WHEREAS, Small water company viability issues continue to be a challenge for regulators, drinking water program administrators and the water industry; best practices identified by Forum participants include: a) stakeholder collaboration; b) a memorandum of understanding among relevant State agencies and health departments; c) condemnation and receivership authority; and d) capacity development planning; and

WHEREAS, The U.S. Environmental Protection Agency’s “Four-Pillar Approach” was discussed as yet another best practice essential for water and wastewater systems to sustain a robust and sustainable infrastructure to comprehensively ensure safe drinking water and clean wastewater, including: a) better management at the local or facility level; b) full-cost pricing; c) water efficiency or water conservation; and d) adopting the watershed approach, all of which economic regulators can help promote; and

WHEREAS, State drinking water program administrators emphasized the following mechanisms which Forum participants identified as best practices: a) active and effective security programs; b) interagency coordination to assist with new water quality regulation development and implementation, such as a memorandum of understanding; c) expanded technical assistance for small water systems; d) data system modernization to improve data reliability; e) effective administration and oversight of the Drinking Water State Revolving Fund to maximize infrastructure remediation, along with permitting investor owned water companies access in all States; f) the move from source water assessment to actual protection; and g) providing State drinking water programs with adequate resources to carry out their mandates; now therefore be it

RESOLVED, That the National Association of Regulatory Utility Commissioners (NARUC), convened in its July 2005 Summer Meetings in Austin, Texas, conceptually supports review and consideration of the innovative regulatory policies and practices identified herein as “best practices;” and be it further

RESOLVED, That NARUC recommends that economic regulators consider and adopt as many as appropriate of the regulatory mechanisms identified herein as best practices; and be it further

RESOLVED, That the Committee on Water stands ready to assist economic regulators with implementation of any of the best practices set forth within this Resolution.

Sponsored by the Committee on Water
Adopted by the NARUC Board of Directors July 27, 2005
XIV. CONTACT LIST

The National Association of Water Companies hosts an annual Water Policy Forum for the purpose of sharing thoughts, particularly information and ideas on regulatory practices, that can be used to build a common understanding of the issues that impact water companies, the customers they serve, and the respective regulatory agencies. The NARUC Resolution on Best Practices serves as the starting point for the Forum discussion on this issue.

To further in these efforts, NAWC has created a contact list of commissioners and commission staff who have experience with the regulatory practices discussed during these Forums. The contacts for this list will grow as participants in future Water Policy Forums are invited to add their names for reference. Additional regulatory practices will also be added through future Forum dialogue.

Those listed below have agreed to be a contact to others who would like more information on how these practices have been used in their respective states. Additional information on best practices along with a listing of states that have implanted various regulatory practices can be found at NAWC’s website: nawc.org.

**California Water Action Plan**

Contacts: California Public Utilities Commission
Stephen St Marie, Advisor on Policy and Planning, 415-703-5173, sst@cpuc.ca.gov
Rami Kahlon, Water Director, 415-703-1837, raminder.kahlon@cpuc.ca.gov

**Conservation**

Contacts: California Public Utilities Commission
Stephen St Marie, Advisor on Policy and Planning, 415-703-5173, sst@cpuc.ca.gov
Rami Kahlon, Water Director, 415-703-1837, raminder.kahlon@cpuc.ca.gov

**Consumer Education**

Contacts: California Public Utilities Commission
Stephen St Marie, Advisor on Policy and Planning, 415-703-5173, sst@cpuc.ca.gov
Rami Kahlon, Water Director, 415-703-1837, raminder.kahlon@cpuc.ca.gov
Customer Assistance Programs

Contact: Tom Geddis, Administrator, Aqua America’s Helping Hand, 610-645-4201, TGeDDis@aquaamerica.com

Decoupling

Contacts: California Public Utilities Commission
Stephen St Marie, Advisor on Policy and Planning, 415-703-5173, sst@cpuc.ca.gov
Rami Kahlon, Water Director, 415-703-1837, raminder.kahlon@cpuc.ca.gov

Contacts: New York State Public Service Commission
James Evensen, Chief, Water Rates Section, 212-417-2321, jee@dps.state.ny.us
Michael Pankowitz, Utility Supervisor, 212-417-3140, mcp@dps.state.ny.us

Rate Setting Process

• Mediation and Settlement Procedures

Contacts: North Carolina Utilities Commission,
Bliss B. Kite, Deputy Operations Director, 919-733-0854, kite@ncuc.net
Ron Brown, Commission Staff – Operations Division, 919-733-0845, brown@ncuc.net

• Establish or More Clearly Define Rules and Procedures

Contact: Anne-Marie Cuneo, Director of Regulatory Operations, Nevada Public Utilities Commission, 775-687-6101, amcuneo@puc.nv.gov

Contact: North Carolina Utilities Commission,
Bliss B. Kite, Deputy Operations Director, 919-733-0854, kite@ncuc.net
Ron Brown, Commission Staff – Operations Division, 919-733-0845, brown@ncuc.net

• Specific and Enforceable Time Limits on the Length of Rate Proceedings

Contact: Andrea Maucher, Public Utilities Analyst, Delaware Public Service Commission, 302-736-7547, andrea.maucher@state.de.us

Contact: North Carolina Utilities Commission,
Bliss B. Kite, Deputy Operations Director, 919-733-0854, kite@ncuc.net
Ron Brown, Commission Staff – Operations Division, 919-733-0845, brown@ncuc.net
Rate Case Filing Cycles

- Expedited, Streamlined Rate Proceedings for Small Companies
  
  Contact: Anne-Marie Cuneo, Director of Regulatory Operations, Nevada Public Utilities Commission, 775-687-6101, amcuneo@puc.nv.gov

- Reduction of Regulatory Lag and Timely Recovery of Capital
  - Distribution System Investment Charge (DSIC) for Water and Wastewater Systems

  Contact: Steve Klick, Executive Policy Manager, Pennsylvania Public Utility Commission, 717-772-0695, stklick@state.pa.us

  Contact: Andrea Maucher, Public Utilities Analyst, Delaware Public Service Commission, 302-736-7547, andrea.maucher@state.de.us

- Surcharge or Automatic Adjustment Mechanisms for Non-Capital Costs

  Contacts: California Public Utilities Commission
  Stephen St Marie, Advisor on Policy and Planning, 415-703-5173, sst@cpuc.ca.gov
  Rami Kahlon, Water Director, 415-703-1837, raminder.kahlon@cpuc.ca.gov

  Contacts: New York State Public Service Commission
  James Evensen, Chief, Water Rates Section, 212-417-2321, jee@dps.state.ny.us
  Michael Pankowitz, Utility Supervisor, 212-417-3140, mcp@dps.state.ny.us

- Use of Prospectively Relevant Test Years

  Contact: Steve Klick, Executive Policy Manager, Pennsylvania Public Utility Commission, 717-772-0695, stklick@state.pa.us

  Contacts: New York State Public Service Commission
  James Evensen, Chief, Water Rates Section, 212-417-2321, jee@dps.state.ny.us
  Michael Pankowitz, Utility Supervisor, 212-417-3140, mcp@dps.state.ny.us

- Surcharges for Significant Capital Investments Required to Comply with Certain SDWA Monitoring or Treatment Requirements

  Contact: Steven Olea, Director, Arizona Corporation Commission, 602-542-7270, S0lea@azcc.gov
Use of Construction Work in Progress (CWIP) vs. Allowance for Funds Used During Construction (AFUDC)

Contact: Andrea Maucher, Public Utilities Analyst, Delaware Public Service Commission, 302-736-7547, andrea.maucher@state.de.us

Contacts: California Public Utilities Commission
Stephen St Marie, Advisor on Policy and Planning, 415-703-5173, sst@cpuc.ca.gov
Rami Kahlon, Water Director, 415-703-1837, raminder.kahlon@cpuc.ca.gov

Regionalization, Consolidation, Coordination with Municipals and Troubled Systems Solutions

Contact: Freda H. Hilburn, Senior Financial Analyst, North Carolina Utilities Commission, 919-733-0847, hilburn@ncuc.net

Contact: Steve Klick, Executive Policy Manager, Pennsylvania Public Utility Commission, 717-772-0695, stklick@state.pa.us

Contacts: New York State Public Service Commission
James Evensen, Chief, Water Rates Section, 212-417-2321, jee@dps.state.ny.us
Michael Pankowitz, Utility Supervisor, 212-417-3140, mcp@dps.state.ny.us

Single Tariff Pricing

Contact: Steve Klick, Executive Policy Manager, Pennsylvania Public Utility Commission, 717-772-0695, stklick@state.pa.us

Small System Best Practices

- Simplified Rate Proceedings

  Contact: Dana Lynn, Utility Analyst, Indiana Utility Regulatory Commission, 317-232-2750, DLynn@urc.IN.gov

  Contact: Stanley Brown, Assistant Counsel, Pennsylvania Public Utility Commission, 717-782-3968, stabrown@state.pa.us

  Contact: Bart Fletcher, Public Utilities Supervisor, Florida Public Service Commission, 850 413-7017, bfletche@psc.state.fl.us
Alternatives to ratebase/rate of return regulation

Use of future “prospectively relevant” test years and expedited rate proceedings

Sustainable Water Infrastructure

Contacts: California Public Utilities Commission
Stephen St Marie, Advisor on Policy and Planning, 415-703-5173, sst@cpuc.ca.gov
Rami Kahlon, Water Director, 415-703-1837, raminder.kahlon@cpuc.ca.gov
The National Association of Water Companies is the voice of the private water industry and the only organization that represents this group of quality water service providers, innovation drivers and responsible partners.

In conjunction with our members, we engage with others looking for fresh and powerful solutions to water-related challenges such as aging water infrastructure, increasing pressure on existing sources of water supply, and economic shortfalls that are preventing much-needed investment in the people, tools and facilities required to help ensure reliable water and wastewater service.

*Together, we are moving water forward.*