ENVIRONMENTAL FINANCIAL ADVISORY BOARD

April 25, 2019

Mr. David P. Ross
Assistant Administrator for Water
United States Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Assistant Administrator Ross:

The Environmental Financial Advisory Board (EFAB) is pleased to submit our report, "Financing Strategies to Promote System Regionalization." We offer our recommendations on strategies that EPA might undertake to support local decision-makers' consideration and implementation of beneficial regionalization or consolidation options.

EFAB was issued a charge from EPA's Office of Water in January 2018 to "identify and evaluate financing strategies that have been designed to assist and or incentivize systems to implement governance strategies that may include system consolidation, regional projects and/or shared service arrangements."

To address this charge, a workgroup convened a series of conference calls as well as participated in a day-long in-person workshop to discuss and formulate our findings and recommendations. Our dialogues highlighted the following:

- There are multiple forms of regionalization and consolidation, each with distinct advantages and disadvantages depending on local circumstances and conditions.
- There are critically important differences between urban, suburban and rural systems in terms of opportunities for, and implications of, regionalization or consolidation.
- There are likely differences in the extent to which many water service providers and decision-makers have access to, or familiarity with, sound and objective information related to regionalization and consolidation opportunities.

The workgroup's discussions were supported by EPA staff who offered key insights into the scope of EPA authority, program operations, and available tools and techniques to disseminate information and engage key stakeholders.

The workgroup believes that EPA-sponsored funding programs may incrementally impact the financial landscape supporting beneficial regionalization/consolidation options; its capacity development and information dissemination efforts may provide important, objective information to local decision-makers.

Specific recommendations to EPA:

1. Promote and incentivize consideration of beneficial regionalization and consolidation alternatives through the Safe Drinking Water Act and Clean Water Act permitting processes, and through EPA controlled funding programs including the state revolving funds, Water Infrastructure Finance and Innovation Act, and other grant programs. Facilitate funding for projects that address new or expanded drinking water and wastewater management needs through regionalization and consolidation alternatives.

2. Promote the use of "Safe Harbor" provisions to protect systems that absorb troubled systemsfrom regulatory penalties for a reasonable period of time, consistent with existing statutes and regulations.

3. Examine the impact EPA's Public Water System Supervision grant allocation formula has on creating disincentives for state governments that actively promote beneficial consolidation of water systems to determine if the formula should be changed.

4. Review capacity development policies and programs at the state level to ensure consideration of cost-effective and beneficial regionalization and consolidation options.

5. Enhance the scope and structure of EPA's guidance and support for objective evaluation of regionalization options through EPA's information tools (e.g., the Water System Partnership website) and active engagement of key stakeholders.

6. EPA should facilitate informed decision-making by providing state and local officials, as well as other stakeholders, with objective information resources about legislative and regulatory initiatives and policy tools related to potentially beneficial regionalization or consolidation of water and wastewater systems.

The workgroup's discussions were supported by EPA staff who offered key insights into the scope of EPA authority, program operations, and available tools and techniques to disseminate information and engage key stakeholders.

Our diverse perspectives on the structure and dynamics of the water sector provided context for our recommendations. In particular, we find that:

- The large number and configuration of water, wastewater and stormwater utility service systems present opportunities to enhance efficiencies and improve both the accessibility and quality of services. While communities developed systems to serve their own best interests, in many cases regionalization or consolidation may facilitate more effective water service delivery prospectively.

- The water services sector faces several imperatives to invest in critical infrastructure and service delivery capacity that may be facilitated by regionalization and consolidation initiatives that are oriented toward protecting the public health and economic interests of customers and communities.

- Address prevailing water quality issues, as well as new regulatory initiatives including contaminants of emerging concern, will amplify economic, labor resource and service delivery challenges facing the water services sector.

- Water utility service systems represent major community assets about which information and decision-making authority generally rests with local/community decision-makers.

- The availability and accessibility of sound and objective information about the relative advantages and disadvantages of different regionalization and consolidation options for building system capacity and improving service delivery may be limited.

- Though credit rating agencies are precluded from structuring or advising, their respective criteria capture potential benefits to credit quality by way of economies of scale.

- EPA-sponsored funding programs may incrementally impact the financial landscape with respect to supporting beneficial regionalization and consolidation options; the Agency's capacity development and information dissemination efforts may provide sound and objective information to local decision-makers.

Both our characterization of sector attributes with respect to regionalization and consolidation opportunities, as well as our findings largely align with several noteworthy related studies. Our effort is distinct insofar as our recommendations focus on EPA's prospective roles.

We are pleased to provide you our review and recommendations in the enclosed report on a subject that we collectively believe to be of heightening relevance to the water sector, particularly given system reinvestment, water quality and water affordability challenges. We hope that you and the Agency find our review and recommendations valuable. **We ask that you distribute the report and findings to relevant staff throughout the Agency, including staff working on water programs at both headquarters and regional offices**.

Thank you for the opportunity to assist EPA through our work on this important charge. Finally, we again acknowledge the extraordinary support of EPA Office of Water staff for their insights and tireless efforts.

Sincerely,

Joanne M. Throwe, Chair
Environmental Financial Advisory
Board

Enclosure
cc: Edward H. Chu
Andrew D. Sawyers

Environmental Financial Advisory Board

Financing Strategies to Promote System Regionalization

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FINANCING STRATEGIES TO PROMOTE SYSTEM REGIONALIZATION

Environmental Finance Advisory Board

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Financing Strategies to Promote System Regionalization

Environmental Finance Advisory Board Charge

Environmental Finance Advisory Board Charge and Primary Concerns

The U.S. Environmental Protection Agency (EPA) has charged[1] its Environmental Finance Advisory Board (EFAB) to address "*Financing Strategies to Promote System Regionalization*" with designated goals to:

- Identify and evaluate the various financing options developed to support regionalization.
- Investigate the value of shared governance or alternative governance strategies as potentially effective tools to address deferred investment and maintenance.
- Examine different governance models (public or private) and how they can be used to improve system management, including centralized management of dispersed systems and decentralized systems.
- Through examples, highlight potential advantages and disadvantages of shared governance or alternative governance strategies to drinking water and wastewater utilities of increased operational efficiencies in reducing capital and operating costs.

These goals reflect a number of primary concerns regarding the effectiveness, efficiency and sustainability of the U.S. water sector in terms of providing universal access to safe, reliable service that is compliant with regulatory requirements designed to protect public health and safeguard the environment.

These concerns derive from the demographic characteristics of the sector noted, concerns about compliance and prevailing economic trends that challenge the affordability of service. Sector restructuring[2] may be needed to address:

- **Industry structure** – The sector is characterized by many smaller utilities with too few customers to safely and cost-effectively deliver services in compliance with applicable regulations.
- **Utility resistance** – Voluntary acceptance and pursuit of structural options that may advance sector restructuring is limited, often despite evidence of potential cost savings, service improvements, improved capacity utilization and other benefits. This resistance may derive from

Regionalization and Consolidation Defined:

Regionalization of water and wastewater services involves structural and non-structural methods of capturing scale economies and improving operational performance among geographically proximate systems.

Consolidation does not require geographic proximity, but is also oriented toward performance improvements.

All forms of regionalization are consolidations; not all forms of consolidation are regionalization.

[1] A copy of the full text of the EFAB charge: "Financing Strategies to Promote System Regionalization" is provided as Appendix I.
[2] "Restructuring" refers to the reorganization of system populations to promote efficiency, effectiveness and sustainability of services and is agnostic as to the specific structural options employed to advance this outcome.

vested interests, use of utility enterprise funds to subsidize other governmental services or simply a predilection for local control.

- **Multiplicity of responsibilities** – Development and expansion of the sector is characterized by a broad array of actors involved in siting, permitting, developing and operating utility facilities to support economic development. This disparate group, often with competing objectives and business processes, has the potential to sub-optimize system development and confound realization of efficiencies.
- **Economies of scope** – Integrated planning and One Water[3] management initiatives underscore the sector's realization that efficiency and effectiveness improvements may be achieved by integrating management of water, wastewater, stormwater and reuse functions. These functions may be more readily effectuated through sector restructuring.
- **Regulatory incentives** – The regulatory agencies overseeing the sector, through permitting programs, funding measures and enforcement activities may motivate utilities to consider regional options as a means of achieving compliance and improving technical, managerial, and financial capacity.

U.S. Water Sector Demographics and Challenges

The United States has approximately 50,000 community water systems (CWSs), but just 8.7 percent of the systems serve 84.8 percent of the population. Approximately 81.3 percent of CWSs serve fewer than 3,300 people, and half of all CWSs (54.5 percent) serve fewer than 500 people.[4] Note that multiple systems may be owned by a utility company or managed by a common entity. From a financial perspective, the median annual revenue of systems serving fewer than 500 people is about $25,000.

There are approximately 14,500 permitted wastewater systems in the U.S. Many systems exist in communities that face challenges of low income, high unemployment and loss of population — all characteristics that can challenge sustainability.[5]

The large number of EPA-regulated CWSs (shown in the map) presents a significant administrative burden on regulators at both the state and federal level. Many small systems have problems maintaining technical, managerial and financial capacity to provide safe drinking water on a sustained basis. [6]

While the number of wastewater systems is significantly less than the number of drinking water systems, many of the same problems apply. In addition, many small wastewater systems face greater technical challenges than drinking water systems without a support system like the Safe Drinking Water Act's Capacity Development Program.

[3] The One Water approach envisions managing all water in an integrated, inclusive, and sustainable manner to secure a bright, prosperous future for our children, our communities, and our country. One Water is a transformative approach to how we view, value, and manage water—from local communities to states, regions, and the national scale. http://uswateralliance.org/one-water

[4] See Appendix III: *Structural Profile of Community Water Systems* in the U.S. based on EPA SDWIS data for 4th Quarter 2018.

[5] Non-sustainable water systems are water resource utility systems that are not able to provide potable water or wastewater services in compliance with applicable regulations under a viable economic model that enables continued compliant, reliable, service delivery.

[6] The data cited in this paragraph comes from an EPA preliminary report *Compendium of Full-Cost Pricing Issue Papers: Covering the Basics 2009.* This report was not finalized.

The large number of water and wastewater systems in the U.S. also complicates responding to a number of acute challenges facing the industry, including aging infrastructure[7], emerging water quality issues[8] and workforce development needs. The scale and diversity of system configurations preclude simple, uniformly applicable solutions. At the same time, the inherent economic inefficiencies of the sector make system restructuring (through regionalization, consolidation and other measures) all the more essential as the sector faces enormous reinvestment needs[9] and associated concerns regarding low income customer impacts and water affordability. Many small systems, both public- and privately-owned, struggle with capacity and compliance.

Local Decision-Making

The large number and diversity of water and wastewater systems throughout the U.S. reflects the character and history of individual communities' development. These systems, perhaps more so than any other utility service, are fundamental to the character and vitality of the areas they serve, impacting public health, environmental conditions and economic development.

Decisions regarding ownership, governance, rate-setting authority and other aspects of utility management must therefore honor and respect local values and concerns while addressing the challenges of ensuring safe, reliable and affordable service delivery. Effective engagement of diverse, local stakeholder interests—based on objective information—will be imperative to secure politically acceptable and sustainable sector restructuring. In so doing, each of the industry's primary governance structures for service delivery (and various derivatives thereof) may be customized to underwrite regionalization or consolidation of service providers.

However, local decision-makers may lack objective information regarding both the sustainability of their current systems, as well as the range of viable options to transition to a different structural and governance model. Without objective information, local decision-makers will be unprepared to make decisions regarding new structural options for water resource management.

Supported by this information, local decision-makers tasked with evaluating new structural options for water resource utility management may identify opportunities to engage with historically disenfranchised community stakeholders, many of whom have been economically or environmentally disaffected by prior capital and operating decisions. Potential incentives to advance beneficial restructuring may thereby also support efforts to enhance inclusiveness in utility system governance.

[7] In the U.S., there are more than one million miles of pipe that convey water. Each year, about 20 percent of treated water is lost due to leaks and main breaks generally caused by infrastructure well beyond its useful life. There are approximately 700,000 miles of wastewater pipes in the U.S. Each year about 900 billion gallons of untreated sewage makes its way into rivers and streams. The American Society of Civil Engineers' (ASCE) latest Report Card for America's Infrastructure recently gave the nation's drinking water systems a D grade and wastewater systems a D+ grade.

[8] There are more than 146 million identified chemicals registered with the American Chemical Society. Emerging contaminants research, solutions and collaboration is critical to water treatment and management.

[9] According to the American Water Works Association, as much as $1 trillion is needed from 2011 to 2035 to upgrade existing water systems and meet the drinking water infrastructure needs of a growing population. Published in March 2018, EPA's *6th Drinking Water Infrastructure Needs Survey and Assessment* shows $472.6 billion is needed to maintain and improve the nation's drinking water infrastructure over the next 20 years.

Regionalization and Consolidation Structural Options[10]

Structural options for regionalization or consolidation and associated forms of governance might yield benefits to many smaller and potentially non-sustainable water utilities. Changing structures typically involves tradeoffs and may have intended and unintended consequences. The predominant structural options for water utilities are summarized and compared here, and fuller descriptions are provided in Appendix II.

Regional Public Authorities and Districts

Public authorities are typically established by local, state or federal action, whereupon they may become separate and independent governmental entities that serve a region. Approval actions will convey powers required for water resource utility asset development and operation, and will typically define the entity's scope and governance structure. Authorities and districts operate autonomously and may have the ability to make tax assessments subject to voter approval. They are subject to laws, rules and regulations applicable to local government finance.

Municipal Services (Wholesale & Retail)

Urban communities have developed water infrastructure to serve their citizens and businesses. Many municipalities also provide water service to suburban communities, leveraging their engineering, capacity development, operations and management capabilities. Service to these suburban areas is typically structured on either a wholesale basis, with the suburban community maintaining responsibility for its local distribution network, or on a retail basis with the core city having singular responsibility for service to end-use customers throughout its service area. Municipal service rates within the local government jurisdiction are typically approved by the local municipal government; outside jurisdictional rates may be appealed to public utility commissions or local district courts.

Private and Investor-Owned Companies

Private and investor-owned utilities are generally subject to economic regulation and oversight by a state's public utility commission. Larger water utilities (including multi-state holding companies) have access to capital (debt and equity) and may be able to achieve economies of scale by supplying and treating water for multiple communities on a regional basis. In fully owning, managing and operating a water system or in working with municipalities via contractual public-private partnerships, these utilities can help meet local needs by designing, building rebuilding system facilities and infrastructure and operating community water and wastewater systems.

Member Cooperatives

Cooperative water systems (like electric cooperatives) are member-owned and usually serve local regions in rural areas, including agricultural communities. Members own the utility assets and will typically elect a governing board and retain a management team. Cooperatives are subject to laws, rules and regulations applicable to not-for-profit organizations. Cooperative systems are sometimes subject to state public utility commission regulation.

These regionalization and consolidation options are distinguished by different assignments of responsibilities for critical utility service roles that can have substantial implications for the communities served.

[10] In addition, inter-system cooperation, either by formal written contracts or by informal agreements, provides a practical way of addressing problems when regionalization or consolidation is not feasible. Inter-system arrangements are of two major types: (1) provision of a service from one system to another; and (2) a joint action agreement between two or more systems for a specific function.

Responsibility assignments deemed to be of particular importance for local decision-makers to understand and appreciate include:

- **Governance –** The structure of decision-making authority including how the applicable board or commission is selected, how voting rights are exercised and how customers are represented.
- **Compliance Management –** The responsibility to ensure that all system operations and construction programs are in full compliance with all applicable laws and regulations. These responsibilities are incorporated into applicable permits and contract documents, are critical for the protection of public health and the environment and carry important liabilities.
- **Rate Setting Authority –** The parties are assigned responsibility for setting or approving revenue requirements and retail and wholesale rates within and outside individual communities' jurisdictions as well as mechanisms for rate or service challenges**.**
- **O&M Expense Management –** The assignment of responsibility for managing system operations across the spectrum of individual utility systems and functions where options may differ in terms of who performs operating functions, how responsibilities may be shared regionally and how efficiencies and scale economies may be realized.
- **Capital Improvement Planning/Asset Management –** The assignment of responsibility for planning system investments and reinvestments across individual utility systems in which options may differ in terms of who conducts system planning and asset management, how responsibilities may be shared regionally and how efficiencies and scale economies may be realized.
- **Capital Financing –** The party or parties that are responsible for structuring financing of infrastructure investments through combinations of debt issues and use of equity (including current system revenues). The respective parties are typically required to pledge revenue streams and make other covenants in applicable indentures. Different structural options may contemplate different credit issuers and borrowing terms.

Provided on the following page is a comparison of the primary structural options with respect to these key responsibilities.

Summary of Structural Options

Structural Option	Governance	Compliance Management	Rate Setting Authority	O&M Expense Management	CIP Planning / Asset Management	Capital Financing
Regional Public Authorities and Districts	• Independent board with local governmental authority	• Singular permit/ compliance responsibility	• Authority governing board	• Direct authority and control	• Direct authority and control	• Credit ratings and access to tax-exempt financing and governmental loans
Municipal Services (Wholesale and Retail)	• Service provider as defined in the utility service agreements	• Service provider and in some cases the local entity	• Local government approval subject to PUC or district court review for outside rates	• Designated municipal public utility	• Designated municipal public utility	• Designated municipal public utility • Access to tax-exempt financing and governmental loans
Private and Investor-Owned Companies	• Independent board elected by the shareholders of publicly traded companies • Governance varies for private companies	• Full compliance management, subject to EPA regional review • Integrated systems may employ centralized compliance management tools	• Economic regulation by state PUCs	• Designated private entity with incentives for cost control and potential to leverage economies of scale	• For larger systems, greater capacity and incentives, subject to PUC review of prudence	• For larger systems, access to debt and equity, with capital structure subject to PUC approval
Member Cooperatives	• Member designated board	• Singular responsibility – multiple permits	• Governing board	• Direct board control	• Direct board control	• Need assistance by government agency • Access to tax-exempt financing and eligible for government loan program funding

These differences underscore that different attributes of regionalization or consolidation options may be employed in response to a broad spectrum of circumstances. Local decision-makers have considerable

discretion in tailoring their approaches to their unique situations, and options continue to evolve as technical, social and environmental challenges develop.

Structural Options Evaluation Criteria

For local decision-makers that are interested in pursuing regionalization or consolidation options for their communities, several criteria for evaluating which attributes best fit local circumstances may be employed to effect sound decision-making consistent with goals related to:

- **Water quality compliance –** As protection of public health and the environment is of paramount concern, the extent to which the options may facilitate compliance with applicable water quality regulations is central—and not uniform across options. For some communities, local retention of authority and responsibility for system operations and facility development may help ensure attention to local water quality concerns, while in other communities necessary expertise may not be resident.
- **Financial transparency and rate setting–** The composition, responsibilities and authorities, as well as related oversight of respective governing boards across structural options hold the potential for substantial differences in financial transparency and rate setting practices. For example, under regional wholesale configurations, suburban users typically have more limited opportunities to challenge rates imposed by a municipal utility delivering service by contract, whereas they might hold seats on the governing board of a regional authority. Privatization transfers rate-setting authority from the local government to state PUCs. These differences in decision-making authority over rate setting have historically been a primary determinant in the selection or structuring of forms of regionalization.
- **Operational efficiency –** Different operational challenges and system configurations across geographical expanses mean different structural options lend economic advantage. Where one group of systems may achieve efficiencies through relatively simple cooperative agreements, others may require system investments and expertise that call for more formal and substantial forms of regionalization or consolidation.
- **Asset management and infrastructure reinvestment –** Similarly, the extent to which capital investment and infrastructure reinvestment may be optimized over the long term may be as much a function of the line of sight of the regional system, and bases for collaboration across its component parts, than the physical attributes of individual systems and facilities.
- **Environmental and resource management –** These opportunities for optimization also translate to the potential to achieve improved environmental and resource management outcomes under alternative forms of regionalization or consolidation.
- **Access to financing on favorable terms –** Common potential benefits of regionalization or consolidation of systems are the capture of economies of scale, leveraging of system optimization opportunities and dedicated governance. Across local circumstances, different structural options may provide more or less assurance of these outcomes, and more or less risk of failure.
- **Customer affordability –** Structural options have different implications for rates and affordability; some options might improve performance but increase rates. Different options may be more or less

feasible in terms of legal constraints, administrative capacities, cost of service, and economic regulation to advance water affordability through both rate and customer assistance programs.

- **Stakeholder engagement –** As suggested with the criteria related to financial transparency, the different structural options may operate under entirely different protocols with respect to customer communications and stakeholder engagement, particularly across non-owners of the regional system.

Relative Advantages and Disadvantages

The performance of specific regionalization or consolidation options with respect to evaluation criteria is, in many respects, a matter or subjective judgment across local decision-makers. Opportunities for economic gain may overwhelm some loss of autonomy under one structural option yet may be insufficient under another option. While these perceptions are unique across local decision-makers, some of the more commonly cited relative advantages and disadvantages of the primary structural options are highlighted in the table below:

Structural Option	Relative Advantages	Relative Disadvantages	Notes
Regional Public Authorities and Districts	Independent governmental entity and debt issuer may optimize O&M and capital spending, with singular responsibility for compliance.	Involves establishing a separate layer of government, ceding of existing authorities and defining new stakeholder engagement processes.	May involve wholesale only, or full-service delivery for regional or consolidated service areas.
Municipal Services (Wholesale and Retail)	Direct governmental control and accountability to customers; services provided at cost; access to SRFs and other funding mechanisms with potential for low- or no-interest rates based on distressed community status.	Susceptible to political pressures which may influence rate setting or delay needed capital investment; borrowing capacity will vary depending on the size of municipality.	There are several different ways to organize municipal systems that can benefit from regionalization, although they may impact the pros and cons outlined herein; may involve public-public partnerships.
Private or Investor-Owned Companies	For larger systems, shareholder board governance and transparency; investment incentives. Access to private capital; water quality management capabilities; ability to leverage scale and oversight by PUCs.	Limited access to clean water state revolving funds; transfers local ownership to private sector subject to PUC regulation. Costs include taxes and returns to equity shareholders; reliance on effective state regulation.	May involve contractual arrangements (public-private partnerships).
Member Cooperatives	Regional not-for-profit corporation with board elected by members. Singular responsibility for compliance.		

As local decision-makers consider these relative advantages and disadvantages of given structural options to effect cost-effective, beneficial regionalization or consolidations, it is important to note that those decisions and the decision-making process potentially impact a wide array of stakeholders.

Key Stakeholders

In developing findings and recommendations for EPA programs and procedures, EFAB identified the stakeholder listing below as those primarily and directly impacted by potential changes to its programs and policies.

- Environmental Finance Centers
- Local and regional chambers of commerce
- Non-governmental organizations
  - National offices for broad recommendation implication
  - Local for specific consolidation examples
- National Governors Association
- National water associations
- Regional planning authorities
- Rural Utilities Service (USDA)
- State public utility commissions
- State water quality regulators (primacy agencies)
- State water quantity regulators (permitting agencies)
- State SRF administrators
- U.S. Conference of Mayors
- Water and wastewater customers
- Water utility operators and managers
- Water contractors and consultants

This listing does not account for the even broader array of additional stakeholders impacted by EPA policies and programs that might become engaged in the exploration of beneficial regionalization initiatives.

Key Findings

Given the importance and breadth of potential stakeholder impacts, EFAB workgroup members concluded that outlining a set of key findings would be important to provide appropriate context for its recommendations. These key findings include that:

- The large number and configuration of water, wastewater and stormwater utility service systems present opportunities to enhance efficiencies and improve both the accessibility and quality of services. While communities developed systems to serve their own best interests, in many cases regionalization or consolidation may facilitate more effective water service delivery prospectively.

- The water services sector faces several imperatives to invest in critical infrastructure and service delivery capacity that may be facilitated by regionalization and consolidation initiatives that are oriented toward protecting the public health and economic interests of customers and communities.

- Address prevailing water quality issues, as well as new regulatory initiatives including contaminants of emerging concern, will amplify economic, labor resource, and service delivery challenges facing the water services sector.

- Water utility service systems represent major community assets about which information and decision-making authority generally rests with local/community decision-makers.

- The availability and accessibility of sound and objective information about the relative advantages and disadvantages of different regionalization and consolidation options for building system capacity and improving service delivery may be limited.

- Though credit rating agencies are precluded from structuring or advising, their respective criteria capture potential benefits to credit quality by way of economies of scale.

- EPA-sponsored funding programs may incrementally impact the financial landscape with respect to supporting beneficial regionalization and consolidation options; the Agency's capacity development and information dissemination efforts may provide sound and objective information to local decision-makers.

Utility Size and Credit Profile

- Credit rating agencies (CRAs) are precluded from structuring or advising.
- CRAs recognize efficiencies, declining marginal operating costs and economies of scale in their respective assessments. CRAs' determinations of credit quality may have a material impact on the costs of borrowing and thereby the economic impacts of regionalization or consolidation options.

These findings underscore a general assessment that EPA specifically, and more generally federal regulatory and funding programs, have a limited role in state and local decision-making regarding water systems regionalization and consolidation.

How, and by whom, a community chooses to receive water-related services is partly a function of history, circumstances and culture. EPA does, however, serve an important role through a number of its policies and programs. The EFAB workgroup's recommendations are oriented toward enhancing and amplifying EPA's role in advancing beneficial regionalization and consolidation initiatives.

Recommendations

Recommendation #1

Promote and incentivize consideration of regionalization and consolidation alternatives through the Safe Drinking Water Act (SDWA) and Clean Water Act (CWA) permitting processes, and through EPA-controlled funding programs including the state revolving funds (SRF), Water Infrastructure Finance and Innovation Act (WIFIA) and other grant programs. Facilitate funding for projects that address new or expanded drinking water and wastewater management needs through regionalization or consolidation alternatives.

Description

New and expanded drinking water and wastewater facilities are often permitted and ultimately constructed when viable alternatives exist within the area but are not within the control of the permittee. The result is excess capacity is constructed, often with the financial assistance of EPA through the SRF or WIFIA, potentially wasting valuable federal resources. Ultimately the decision to pursue new or expanded water/wastewater capacity is a local decision. However, it is recommended that federal funding should not be applied to projects where viable alternatives exist—even when the applicant has received all required permits.

The proposed measures are grouped in two categories: those related to both permitting and funding, and those related exclusively to funding.

Permitting and Funding Measures

1. EPA should develop guidance that will clearly authorize, promote and allow funding for purchase and use of existing capacity in water/wastewater systems where such purchase would eliminate the need to expand or build new water/wastewater facilities. The guidance should allow a broad suite of eligible costs including the funding of required interconnections as well as required modifications to the existing facilities (not owned or operated by the applicant) in addition to the purchased capacity.

2. EPA should work with the state permitting agencies and the SRF program administrators to develop guidelines for applicants that require submittal of an Analysis of Regional Alternatives (ARA) with all permit applications and funding requests for new or expanded water/wastewater facilities. The ARA should address whether the objectives of an applicant's project could be met through a partnership or contract to use existing capacity at another facility as well as restructuring ownership and operational responsibility. This analysis should include a triple bottom line benefit analysis to compare all aspects of the alternatives considered. All ARAs should be certified as true, complete and accurate by a licensed professional engineer.

3. EPA should require all SRFs' Intended Use Plan (IUP) submissions include a condition that any non-compliant system seeking SRF funding must prepare and submit an ARA.

    Discussion

    Permitting regulations are focused on the specific environmental impact of the new or expanded facility and cannot typically be withheld to force a permittee to use available capacity outside of their control. Incorporating ARA requirements in permit applications would provide permitting authorities with additional information to discuss and explore as part of the permitting process.

Additionally, SRF administrators are often under pressure to fund permitted projects and have limited tools to address consideration of existing capacity that is not under the applicant's control. The ARA process would provide supplemental information to the SRF administrators, beyond the permit, that may facilitate leveraging the SRF funding to achieve a more effective and efficient regional solution.

Funding Measures

State Revolving Funds

1. EPA should encourage an interest rate incentive discount for SRF projects that meet the applicant's objectives through the use of existing capacity within the applicant's region. In addition, each state may propose in the IUP, additional incentives for such projects recognizing that each state is different and the type of incentive(s) offered must fit individual state circumstances.
2. Where the funding applicant and the regional existing capacity owner have different economic characteristics and financial stress factors, the lowest applicable interest rate should be applied to all SRF funds, regardless of which system the funds are applied.

Water Infrastructure Finance and Innovation Act

1. EPA should modify WIFIA project selection criteria within existing legal authority to add greater priority to projects that meet the applicants' needs through use of existing capacity within the applicants' service area or achieve consolidation or regionalization. Specifically, EPA should apply a project ranking multiplier to projects that promote regionalization and other forms of consolidation or coordination between systems and watersheds. This ranking multiplier, relative to other project ranking categories, recognizes that promoting regionalization is a priority in the WIFIA legislation and will ensure that regionalization projects continue to be ranked near the top of projects submitted during the application ranking and funding allocation process.

External Grant Programs

1. **Grant Program Coordination –** EPA should develop a template, possibly in the form of an memorandum of agreement between the affected departments within the agency, that facilitates notice to and execution of grant applications/receipts and SRF funding for projects that promote efficiency and optimize the delivery of water services through regionalization and other forms of consolidation and/or coordination. In this way, EPA will be able to maximize the impact of the annual grant funds appropriated by Congress.

   Discussion
   In addition to the direct WIFIA and indirect SRF programs, EPA receives annual appropriations for and oversees several other grant programs. Some of these programs are long-standing programs, like the SRF. Some programs are appropriated to EPA as temporary "pilot" programs or even one-time grant programs. Leveraging separate sources of funds for a particular project is almost always a net positive for the separate programs that are providing the funds. The incentives provided by each program can combine to produce an all-in, lower cost of funds for the project sponsor, thereby increasing the probability that the project sponsor will undertake and complete the project.

Much like the EPA's current initiative to provide a framework for SRFs to work with FEMA to expedite and facilitate the financing of critical environmental infrastructure in the aftermath of a disaster, EPA should consider developing a framework that facilitates combining its grant programs with the SRF program. Given that such a framework regarding EPA's various grant programs and the SRF program would be solely within the jurisdiction of EPA given existing legislative constraints, EPA could develop a framework that leverages its grant program appropriations to prioritize the efficient and optimal operation of the nation's water systems including regionalization and consolidation.

2. **Grant Program Promotion through the Water Infrastructure & Resiliency Finance Center (WIRFC) –** EPA's Clean Water SRF and Drinking Water SRF programs should each develop annually a synopsis of all available grant programs received by EPA and make the synopsis broadly available through EPA's WIRFC system. The synopsis should identify opportunities within each grant for systems to utilize the grant funds to partially finance projects

   Discussion

   Broad promotion of EPA's annual grant appropriations to eligible systems should be a primary objective of the Administrator. Providing information on the grants (e.g. availability of funds, project and recipient qualifications, deadlines) to the broadest number of qualified recipients is critical to ensuring that EPA successfully administers each grant program in a fair and expeditious manner.

   To the extent that EPA grant funds are eligible to be combined with SRF financing as part of an individual project's funding stack, and that such a project promotes system optimization through regionalization or other forms of consolidation and/or coordination as recommended in the previous paragraph, financing coordination between the SRF and the grant program should be encouraged.

Implementation Considerations

The permitting and funding measure contemplates EPA's formalization and distribution of a policy to the state DWSRF and CWSRF programs clarifying that all one-time fees related to accessing available service and/or capacity be considered allowable – as well as any expenses that would otherwise be considered ineligible. This policy should be promoted through EPA's regional offices, specifically through the liaisons that represent the agency's administration of the SRFs and the individual SRFs.

EPA should include USDA in the development of the ARA guidelines and encourage the use of the ARA or similar process in the USDA RD funding process.

Guidance should be developed under an expeditious schedule. The schedule outlined below reflects the approximate time frames required:

- Develop guidance that allows the use of SRF and/or WIFIA to fund purchased capacity by October 1, 2020.
- Develop the *Analysis of Regional Alternatives Guidelines* by October 1, 2020 subject to EPA approval.
- Develop permitting guidance that requires an ARA with all permit applications for new or expanded facilities by October 1, 2021.

- Two new or expanded water/wastewater projects are replaced by use of regional capacity through the ARA process and funding incentives by 2025.

WIFIA Program Concerns

During our review concerns regarding the WIFIA program surfaced and are addressed below:

a. Transparent Allocation Process – The methodology which the EPA Administrator employs to allocate the available WIFIA funds is neither a public nor transparent process, in contrast to two of EPA's successful funding programs, the SRF program for Clean Water and Drinking Water respectively. Under each of these programs, states are required to propose a ranking methodology for project applications, notice to the public of the opportunity to provide comment on the proposed methodology and then submit the proposed methodology to EPA for final approval as a prerequisite to receipt of the annual SRF grant funds. Allowing the public to comment on the methodology as well as the state's policy priorities can provide invaluable feedback regarding the methodology policy as well as logistics in the implementation of the program. EPA should seek formal public comment on its WIFIA ranking methodology prior to final adoption.

b. Reporting – The WIFIA statutory authority requires that EPA report to Congress on the program during the 2019 fiscal year. The WIFIA program and EPA might benefit from having an outside, independent review of that report. Such review would offer objective insights and feedback and make non-binding recommendations to WIFIA and EPA as to Program improvements.

Recommendation #2

Promote the use of "Safe Harbor" provisions to protect systems that absorb troubled systems from regulatory penalties for a reasonable period of time, consistent with existing statutes and regulations.

Description

Healthy utility systems may be hesitant to consolidate with non-healthy systems out of concern that the system to be absorbed may have existing regulatory issues related to meeting permits or existing enforcement obligations that would transfer to the absorbing utility upon consolidation. Additionally, the absorbing system may discover compliance issues that were not disclosed or enforced prior to consolidation. Provision of some protection from enforcement penalties and existing compliance cost obligations through a "safe harbor" (hold harmless) mechanism is needed to encourage consideration of consolidation by healthy, viable systems through a reasonable transition period.

Two of the challenges to regionalization/consolidation are the unwillingness of a larger system to assume the regulatory liabilities of other systems and the lack of financial resources to address both immediate and longer term corrective actions. Utilities that have consolidated and absorbed troubled systems highlight consolidations where they were immediately held to higher standards and subjected to stringent enforcement with short compliance periods and no relief from existing permit limits that could not be achieved by the existing system. This recommendation addresses both issues by establishing standard guidelines for regulatory transition and a pool of funding to address corrective actions.

Implementation Considerations

1. EPA should work with the state water/wastewater permitting authorities to develop guidelines for a consolidation ***Regulatory Transition Program***. The focus of these guidelines is to provide a standard approach to address the assumption of regulatory liability by a utility assisting with consolidation. Existing permit(s) should be revised or a friendly consent order/decree entered to provide a reasonable, cooperative structure for the assisting utility to resolve new or existing compliance issues associated with the troubled utility to be consolidated in a reasonable period of time.

   The regulatory transition program guidelines should at a minimum address these key elements:

   a. **Existing permits:** Should be revised or a friendly consent order/decree put in place to resolve new or existing compliance issues associated with the system to be consolidated.
   b. **Interim permit limits:** Where the consolidated system is not capable of meeting permit limits when operated in a professional and workmanlike manner, interim limits should be established to reflect the capability of the system to be consolidated.
   c. **Existing orders – *consolidated system*:** Orders should be reviewed and terminated or revised as appropriate to avoid any successor liability or for new liability post-consolidation for the assisting utility.
   d. **Existing orders – *assisting utility***: Orders should be reviewed and consideration given to collaborative revisions in recognition of the additional compliance efforts being assumed by the assisting utility (reopener in Consent Decree terminology).
   e. **Time:** Regulatory transition should be allowed a reasonable period of time to complete corrective action and achieve compliance without risk of enforcement.

f. **Protection from third party actions:** Appropriate regulatory tools should be employed to provide shielding from third party actions with a commitment from EPA to assist with the defense of assisting utilities.

2. EPA should work with state SRF program administrators and a broad range of stakeholders to develop a defined funding pool under the SRF in each state for corrective actions required by the regulatory transition program.

   a. **Immediate corrective actions:** To the extent corrective actions are required immediately for protection of public health and/or the environment, funds should be provided in the form of grants or principal forgiveness loans to the assisting utility.

   b. **Longer-term corrective actions:** Where corrective actions can be planned and programed by the assisting utility and the compliance period provides adequate time to minimize financial impact to the assisting utility, funds should be provided at the appropriate interest rate based solely on the financial capability of the troubled utility's customer base, restricted to use by the assisting utility for compliance actions at the troubled utility.

Recommendation #3

Examine the impact EPA's Public Water System Supervision (PWSS) grant allocation formula has on creating disincentives for state governments that actively promote beneficial consolidation of water systems to determine if the formula should be changed.

Description

States rely on EPA's PWSS grants to cover a significant portion of their water system regulatory and oversight responsibilities. In 2017, EPA distributed approximately $100 million in grants to tribes and states following an allocation formula that has been in place since at least 2008.

The amount of funds each state receives is based on the total annual appropriation for a particular year and on four factors. For each of the factors, a state's allocation is dependent on how the state compares to the rest of the country as follows:

- Number of community water systems and non-transient non-community water systems in the state relative to the total nationwide (56 percent of total)
- Number of transient non-community water systems in the state relative to total nationwide (14 percent of total)
- Population of state relative to national population (20 percent of total)
- Geographic area relative to national area (10 percent of total)

The number of different types of systems and the state's population may change from year to year, resulting in a different percent of allocation. For example, if a state's population and number of systems increases faster than other states, they will see their allocation increase. Conversely, if a state encouraging consolidation successfully reduces the number of systems, their allocation may decline relative to states that have not promoted consolidation.

The fact that 70 percent of what a state receives is directly proportional to the number of systems they have relative to other states could provide an unintended disincentive for a state to actively support beneficial consolidation. Such an approach could lead to a reduction in funding.

It is important to note that the formula is also designed to allocate funds in proportion to the costs different states incur in running their programs, so an analysis should also examine whether a reduction in number of systems substantially reduces the costs of a state supervision program.

Implementation Considerations

- Study the impact of the current PWSS grant allocation formula on states that have implemented (e.g. Alabama and Kentucky) or are in the process of implementing a major beneficial consolidation initiative (California or North Carolina).
- If the current allocation formula is determined to have a significant negative impact on states that have reduced or would like to reduce the number of their systems, consider modifying the formula.
- Carry out a similar assessment for other EPA allocations such as funds allocated for supervision of wastewater systems and facilities.

Recommendation #4

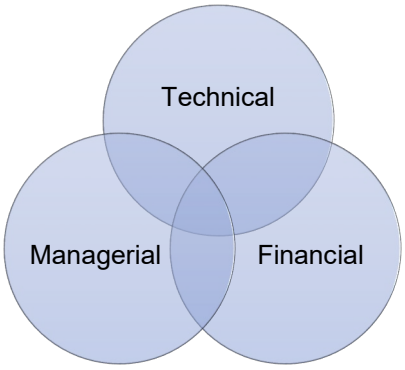
Review capacity development policies and programs at the state level to ensure consideration of beneficial regionalization and consolidation options.

Description

The 1996 Amendments to the federal Safe Drinking Water Act (SDWA) require states to (1) ensure that all new community water systems have adequate technical, managerial, and financial capacity, and (2) develop a capacity development strategy for existing water systems. The fundamental goal of capacity development under the SDWA is to ensure consistent compliance with drinking water standards. Water system capacity is widely understood to be, at least partly, a function of scale. Regionalization offers scale opportunities that are especially beneficial to very small systems (those serving fewer than 1,000 connections or 3,300people).

With the SDWA mandated capacity development framework, each state has a ready policy and toolset with which to consider regionalization options. Some states have used these tools very effectively. Despite progress, the full potential of the capacity development framework has not necessarily been realized. Revisiting and revising capacity development strategies could be a means to promoting beneficial regionalization.

Capacity (or "capability") development aims to address deficiencies in and make improvements to system performance. The capacity development provisions are found in §1420 of the SDWA (as detailed in Appendix IV, Part II). States are required to ensure that new systems have adequate technical, managerial, and financial capacity and to develop capacity development strategies for existing systems.



Technical, managerial and financial capacity are understood as highly interrelated and interdependent. In other words, strength or weakness in one area has implications for the others. The particular elements of capacity (provided in Appendix IV, Part III) were defined through an EPA-led and stakeholder-based process. They can be used for evaluation and planning purposes.

Strategies for capacity development include methods or criteria to identify and prioritize: water systems that lack capacity; factors that encourage or impede capacity; and the authority and resources needed to promote training and certification; provide assistance for compliance and encourage partnerships. States may withhold SRF funding to ensure that public funds are well invested and, ideally, leveraged to build adequate system capacity.

Implementation Considerations

EPA could provide specialized assistance to support state programs that are interested in strengthening how their state capacity development program addresses regionalization. A first step would be to develop an inventory of policies and programs (original and updated) and an evaluation of their use and impact based on compliance and consolidation criteria. A second would be to develop guidance on means of integrating regionalization into state policies and programs, focusing on opportunities and barriers as well as tools and incentives allowed for by law.

Even within the capacity development framework, the role of the federal and state government in requiring or even encouraging consolidation is limited. Authority in this area is mainly to cases of noncompliance with

the SDWA. Economic considerations are generally under the purview of state public utility commissions, whose jurisdiction is mainly limited to privately-owned utilities.

Recommendation #5

Enhance the scope and structure of EPA's guidance and support for objective, well-informed evaluation of regionalization options through EPA's information tools (e.g. Water System Partnership website) and active engagement of key stakeholders.

Description

Utilities and local governments lack a well-recognized, centralized repository for information and guidance on regionalization and consolidation opportunities and experiences. At the same time, EPA has a familiar and established framework to gather information, educate stakeholders regarding regionalization and consolidation opportunities, and disseminate objective, factual information. This recommendation calls on EPA to enhance and amplify its resources, tools and activities to help inform and educate the water sector.

Implementation Considerations

- EPA should establish a single landing page on its website that would provide information on regionalization for water and wastewater utilities. The information could be organized by subject matter and presented in a searchable database. Currently, EPA's website has useful information, however, the information is scattered across various landing pages.

- EPA should consider engaging in an information gathering exercise to obtain information about best practices regarding regionalization strategies. This information should be provided on the subject landing page. The information gathering exercise will also serve as an initial outreach effort to inform local jurisdictions, utilities and consultants of EPA's efforts to provide guidance regarding regionalization (EPA routinely engages in a similar process when preparing Effluent Limitation Guidelines applicable to industry categories).

- EPA should develop a strategy for promoting regionalization and consolidation options through state revolving fund requirements. Information gathered by EPA should help to shape those requirements.

- EPA should include information on best practices for both water and wastewater utilities. Whereas decisions by local utilities to regionalize, or how to regionalize, will be based upon the unique conditions they face, best practices implemented by other utilities can inform local decisions. Information may include both technical and financial practices.

- EPA should also consider providing information regarding state or local legislation that has impacted regionalization strategies. This helps to provide local governments information as to legislative tools to advance their strategies.

- EPA should develop an outreach program to inform stakeholders of the information made available on its website. EPA could engage in "train the trainer" sessions with state officials, local governments or consultants.

Recommendation #6

EPA should facilitate informed decision-making by providing states and local officials, as well as other stakeholders, with objective information about legislative and regulatory initiatives and policy tools related to potentially beneficial regionalization or consolidation of water and wastewater systems.

Description

Increased knowledge of state legislation, regulations and other policies related to regionalization and consolidation will allow states and water and wastewater system managers to make informed decisions and policy development. A repository of legislative and regulations will allow governmental decision-makers to be able to evaluate and compare policy options and adopt approaches consistent with their mandates and priorities. Water and wastewater system managers will be better positioned to evaluate and compare structural options for their systems. The repository could be integrated with EPA resources on capacity development. Utilities and other water and wastewater managers with this information may also be able to make more informed decisions around regionalization/consolidation and obtain greater access to financial assistance.

Implementation Considerations

EPA should create an information repository regarding state water sector policy related to regionalization and consolidation, possibly through the Water Infrastructure and Resiliency Finance Center, and integrated with available resources on capacity development, to facilitate evaluation and comparison of regionalization and consolidation policies.

States would be able to use this information to enhance their enforcement, financing and capacity development programs by including consideration of structural options and related incentives that are consistent with the goals of compliance with federal and state drinking water and clean water standards. States might also use this information to examine legislative and regulatory actions used by other states to bring non-compliant systems into compliance and examine financial incentives offered through these state actions to assist regionalization efforts.

The repository could include legislation, regulations, rules or other policies from governmental sources, such as drinking water and resource agencies, public service commissions and regional and local governing bodies. Legislative topics in the repository should be linked to EPA guidance, reports and trainings. This includes asset management, capital investment, security, operations and maintenance and accountability.

Resources in the repository could relate to such areas as:

- Regionalization options for promoting technical, managerial and financial capacity.
- Regional approaches to asset evaluation, management and planning.
- Regional approaches to water resource management and protection.
- Review and approval of mergers and acquisitions, including privatization.
- Asset valuation and ratemaking treatment of utility acquisition costs.
- Consolidated rates (single tariff) for multi-system regional utilities.
- State fair market value legislation and regulations on utility asset valuation and acquisition
- Methods for evaluating customer impacts, public benefits and tradeoffs.

- State-ordered (mandatory) takeovers in the context of system failures.
- Regional collaboration and mutual aid for security and resilience.
- Enforcement and financing incentives tied to regional solutions.
- Rules and incentives connecting regionalization to SRF and state loan and grant programs financing eligibility and use.
- Case studies in regionalization including public-public and public-private partnerships.

Conclusions

The recommendations for EPA policies and programs are grounded in the recognition that decisions regarding water system governance are generally local and influenced by subjective factors as well objective information. The recommendations also reflect recognition that many systems, including many small and rural systems, have established records of fully compliant and efficient service delivery. Conversely, there is potential for implementation of regionalization and consolidation options to go awry, resulting in poor service delivery or higher cost outcomes. From a broad policy perspective, there is no question that the water sector could benefit greatly from sound regionalization or consolidation initiatives. Collaborative and mutually beneficial models may be implemented using any one of a number of structural options ranging from formal creation of a regional public authority to simple cooperative agreements across systems.

Mutual benefits may derive in a number of forms related to technical, financial and managerial and capacity. Technical benefits may include enhanced capacity to ensure compliance with all applicable regulatory requirements and to optimize system operations (using regionally deployed advanced technologies). Managerial benefits may derive from enhanced capacity to attract, develop and retain highly qualified personnel, to organize and staff with singular accountability to regional system owners (under any one alternative structural option). Financial benefits may derive from realizing operating efficiencies, regional optimization and development of built infrastructure and more favorable terms for capital financing.

Nevertheless, EFAB workgroup members noted that there are substantial barriers to regionalization that have historically impeded beneficial sector consolidation and persist today. Paramount are political concerns about changes in governance that may alter or diminish local control over infrastructure development, service delivery and rates for services. While opportunities exist for structure regionalization or consolidation options to allay these concerns (and obtain objective information on potential public health and economic gains), neither federal nor state regulatory or funding programs have focused specifically on incentivizing regionalization or consolidation initiatives. Other barriers include state and community specific legal frameworks that limit options to spread costs regionally or divest system assets.

Insofar as the potential economic and public health protection gains that may be realized through consolidations will be all the more important in the face of new challenges (including, for example, financing of full lead service line replacements) and continuing infrastructure reinvestment needs, it is critically important that EPA help advance beneficial, cost-effective regionalization and consolidation initiatives. EFAB recommends that EPA do so by modifying its permitting and funding programs to incentivize local and state decision-makers and by enhancing and amplifying its information services and support programs to help ensure that key decision-makers are guided by complete, accurate, and unbiased information.

Appendices

Appendix I: EFAB Charge

Title: Financing Strategies to Promote System Regionalization

Client: Office of Water

The Office of Water (OW) requests that the Environmental Finance Advisory Board (EFAB) identify and evaluate financing strategies that have been designed to assist and or incentivize systems to implement governance strategies that may include system consolidation, regional projects and/or shared service arrangements.

Goals:

- Identify and evaluate the various financing options developed to underwrite regionalization.
- Investigate the value of shared governance or alternative governance strategies as effective tools to address deferred maintenance.
- Examine different governance models (public or private) and how they can be used to improve system management including centralized management of dispersed systems and decentralized systems.
- Through examples, highlight potential benefits and/or disadvantages of shared governance or alternative governance strategies to drinking water and wastewater utilities of increased operational efficiencies in reducing cost, maintaining rates and increasing funds available for capital projects.

Problem to Be Addressed:
Small and mid-size water systems face unique challenges in providing affordable drinking water and wastewater services that meet federal and state regulations. These challenges include aging infrastructure, increasing costs and declining rate bases, and limited technical and managerial capabilities. Water systems may overcome these challenges by developing partnerships with other systems.

A defining characteristic of the United States' water sector is its size. The U.S. has approximately 52,000 community water systems (CWSs), but just 8 percent of the systems serve 82 percent of the population. Approximately 83 percent of CWSs serve fewer than 3,300 people. Over half of all CWSs (56 percent) serve fewer than 500 people. From a financial perspective, the median annual revenue of systems serving fewer than 500 people is about $25,000. This large number of regulated CWSs presents a significant administrative burden on regulators at both the State and Federal level. Over half of the regulated entities have limited annual incomes and are likely to have problems maintaining financial, managerial and technical capacity to provide safe drinking water on a sustained basis. [11]

There are approximately 14,500 permitted wastewater systems in the United States. While the number of wastewater systems is significantly less than the number of drinking water systems many of the same

[11] The data cited in this paragraph comes from an EPA preliminary report *Compendium of Full-Cost Pricing Issue Papers: Covering the Basics 2009*. This report was not finalized.

problems apply. In addition, many small wastewater systems face greater technical challenges than drinking water systems without a support system like the Safe Drinking Water Act's Capacity Development Program.

Regionalization, cooperation, and differing governance models could potentially yield benefits to many communities. Alternatively, some of these models could have unintended impacts within some communities and must be appropriately understood before implementation. Systems must be able to able to quantify the real benefits or lack there-of, of cooperative agreements and how they impact each individual system or the combined systems' technical, managerial and financial capacity. Identifying the specific areas where improvement can be expected and developing ways to quantify improvement are critical steps in helping systems evaluate alternative governance structures. For example, when two or more systems partner, the individual utilities sometimes have different rates that are driven by each utility's individual operating expenses and debt structures. Resolving rate structure issues will be a significant problem that must be addressed for shared governance to be successful. In particular, small systems merging with larger systems are concerned about adverse rate impacts.

Many systems exist in communities that face challenges of low income, high unemployment, and loss of population – all characteristics associated with non-sustainable system operations. These communities deserve adequate water and sewer services. Regionalization and cooperation have the potential to help these communities provide needed water services

Charge Questions:

1. What are some examples of alternative governance within and outside the United States and their potential impacts (if quantifiable)?
2. What financial incentives have been used or have the potential to successfully incentivize utilities to adopt or participate in regional solutions?
3. Do alternative governance approaches help utilities provide the same if not better services?
4. Can we measure a linkage between funding/financing options used and combined utilities ability to address outstanding deferred maintenance deficits?
5. How have different governance models impacted the ability of utilities in meeting compliance requirements, achieving operational efficiencies and financial viability?
6. How does alternative governance influence rate structures?
7. Does alternative governance help water utilities address affordability issues? Are there lessons learned that can be identified and shared?
8. How can co-funding be successfully used to spur successful alternative governance including capital projects needed to support regional solutions?

Appendix II: Structural Options

Public Authorities and Districts

Public authorities are typically established by local, state or federal action, whereupon they act as separate and independent governmental entities. Approval actions will convey powers required for water resource utility asset development and operation and will typically define the entity's scope and governance structure.

- **Governance Structure:** Public authorities are distinct governmental entities requiring legislative authorization that will typically prescribe a governance structure defining community representation and decision-making powers.
- **O&M Expense Management:** Public authorities have singular responsibility to efficiently manage O&M expenses across a prescribed area with or without regard to political jurisdiction.
- **Capital Financing:** Public authorities tend to enjoy unfettered access to credit based primarily, if not solely, on the attributes of the system, customer base and utility operating conditions within their control.
- **Workforce Management:** Public authorities as independent entities are employers with direct responsibility to attract, develop and retain personnel. They establish compensation and employee incentive systems, training and safety programs and have direct connectivity to organized labor.
- **Water Affordability:** Public authorities may address water affordability challenges across service area(s), potentially providing for universal access to service as a "common-to-all" expense that may be spread and shared regionally as a component of system revenue requirements. As regional utilities, public authorities may leverage the operations of component systems and social service agencies.
- **Regulatory Compliance Responsibility**: Public authorities that are responsible for service delivery in a given region will have responsibility for regulatory compliance. If a wholesale provider, these responsibilities align to wholesale service functions. In general, creation of a public authority will involve assignment of permits to the newly designated utility services provider.

GREAT LAKES WATER AUTHORITY

- Federal mediated agreement in conjunction with Detroit bankruptcy filing. GLWA provides wholesale water and sewer services to communities in SE Michigan.
- 6 member governing board with supermajority voting provisions for key decisions.
- GLWA leases regional system assets from the City of Detroit for $50 million per year.
- Regionally funded low-income customer assistance program.
- Cost savings derived from GLWA re-financing of Detroit Water and Sewerage Department debt and system optimization.

Potential Incentives: Because public authorities require legislative action granting governmental authorities, processes are state-specific and often politically charged. Flexible legislative authority would clearly facilitate establishment of such authorities where such legislation is not in place. More generally, providing access to capital on relatively favorable terms, through the municipal debt markets, governmental lending and explicit recognition of relative advantages in municipal credit ratings could accelerate establishment of regional public authorities.

Supporting EPA Initiative Options: EPA could help accelerate the creation of regional public authorities through both incentives and enforcement actions.

Municipal Services (Wholesale & Retail)

Suburban communities surrounding core cities began to grow and develop in the 1960s. Since most core cities had developed the water infrastructure to serve citizens and businesses, it was common for core cities to provide water service to the growing suburban communities, leveraging their engineering, capacity development, operations and management capabilities. Service to these suburban areas were structured on either a wholesale basis with the suburban community maintaining responsibility for its local distribution network or on a retail basis with the core city having singular responsibility for service to the individual customers.

With the enactment of the Clean Water Act and the associated Construction Grant Program in the mid 1970s, development of wastewater treatment systems providing regional service was promoted by EPA. As such, many core cities became the regional provider of wastewater, treatment and disposal and sometimes collection service.

- **Governance Structure:** The authority for municipalities to provide regional water and/or wastewater services may be subject to state legislative actions. Municipalities in home rule states are typically granted wide-ranging authority and the provision of utility service beyond its municipal boundaries are not subject to state legislative approval. Municipalities in Dillon's Rule states, however, require legislative or regulatory authorization to provide services beyond municipal boundaries. Utility service agreements between the service provider and the political entity receiving service are sometimes necessary.
- **O&M Expense Management:** In situations in which a municipality provides wholesale regional service, the municipality is responsible for the management of the backbone elements of the utility system. Entities receiving the wholesale service are responsible for the management of their local distribution and/or collection system operations. When a municipality provides retail service outside its boundaries, the municipality is responsible for the management of all aspects of the utility system to the individual retail customer.
- **Capital Financing:** Providers of either wholesale or retail regional service are responsible for capital financing. The economic strengths of the region can be considered by credit rating agencies and the investment community. Municipal utilities tend to enjoy unfettered access to the credit based primarily on the attributes and performance of the enterprise funds used for regional system financing. The entities receiving wholesale utility service will be responsible for the financing of their individual local systems.

BALTIMORE METROPOLITAN WATER AND WASTEWATER

- Authorized by actions of the Maryland General Assembly.
- Baltimore provides retail service in the city and Baltimore County and wholesale services regionally under service agreements.
- Baltimore manages the systems through enterprise funds established in 1979.
- Funds are supported solely by system ratepayers without profit or loss to other funds of the city. Funds cannot be siphoned to the city's general fund.
- Partnering counties contribute their fair share of capital investments based on their percentage of usage of these facilities and systems.

- **Workforce Management:** The municipality providing the regional service has direct responsibility for attracting, developing and retaining personnel. The municipality establishes compensation and employee incentive systems, training and safety programs, and has direct connectivity to organized labor.
- **Water Affordability:** Typically, water affordability challenges for systems providing or receiving wholesale service are addressed at the local level rather than through a shared cost to all users.
- **Regulatory Compliance Responsibility:** The individual municipal utility that is responsible for service delivery in a given region has responsibility for regulatory compliance. If a wholesale provider, the municipality will typically hold responsibility for wholesale service functions and be entitled to returns for assumption of associated risks. In general, compliance liabilities are aligned to the municipality's enterprise funds without recourse to the community's general fund.

Private and Investor-Owned Companies

Larger private and investor-owned companies are able to take advantage of access to capital and economies of scale and are subject to state public utility commission (PUC) oversight. In fully owning, managing and operating a water system or in working with municipalities via public-private partnerships, some utilities can meet regional needs by designing, rebuilding and operating local water and wastewater systems. Privately owned systems may also offer strong accountability in water management, particularly if subject to state regulatory oversight and review.

Large investor owned companies are similar to many electric and gas utilities with contiguous service territories. Electric and gas utilities have experienced consolidation over the last two to three decades, mainly in geographical regions. Privately owned utilities have incentives to make investments to remediate aging infrastructure build resiliency and meet safety, environmental and renewable resource requirements while leveraging synergies obtained from consolidation.

- **Governance Structure:** Private and investor-owned water and wastewater utilities are generally governed by boards of directors elected by the shareholders that work to ensure proper governance and accountability at various levels of the organization. Publicly traded utility companies must comply with Securities & Exchange Commission requirements over corporate governance and disclosures.
- **Rate Setting Authority:** Most private, investor-owned utilities are regulated by state PUCs and are required to take part in formal, public hearings and proceedings to set rates. Whereas publicly owned systems generally set their own rates, most private utilities must undergo state PUC approval processes that allow the ability to recover prudently incurred investments and operating costs. Rate oversight by PUCs is intended to assure that customer rates are as low as possible, consistent with high-quality and reliable service, while also allowing the utility to attract the capital necessary to invest in infrastructure.

- **O&M Expense Management:** By operating on a larger scope and serving multiple communities, regional water and wastewater providers can take advantage of economies of scale, utilizing a central staff for billing, engineering, operations, water quality research and administrative needs. This provides bargaining power when it comes to paying for goods and services. Reduction of administrative costs may help to preserve customer-generated revenue headroom for much-needed infrastructure investments.
- **Capital Financing:** The majority of publicly traded water and wastewater utilities have strong credit ratings and balance sheets, allowing access to capital from lenders on relatively favorable terms. These entities' costs of capital are impacted by their capital structures, allowed rates of return on internal equity, and interest rates on borrowings.
- **Workforce Management:** Privately owned systems carry responsibilities for attracting, retaining and developing utility staffs. This includes providing the training necessary to meet increasingly complex regulations. Partnership agreements and acquisitions may be structured to prioritize hiring of incumbent utility staff. Private companies' regional or consolidated area operations may help address challenges in staffing related to smaller systems.
- **Low-Income Affordability:** Private water systems' potential ability to spread infrastructure costs over large service areas (particularly in states that allow single-tariff pricing) and obtain approvals for customer assistance programs (without the same constraints on use of rate revenues that apply to publicly owned systems in many states) may help ensure access to services. Public utility commission approval is required for all rate-related matters.
- **Regulatory Compliance Responsibility**: Contracting with a private water service provider may, subject to permitting provisions, enable communities to transfer primary responsibility for regulatory compliance to the private service provider. In partnering with large private water and wastewater utilities, municipalities can benefit from the companies' expertise[12] and compliance monitoring resources.

DANA / LONG POINT / READING / ANCONA PUBLIC WATER DISTRICT

- District obtained $1.2 million loan to construct 21 miles of pipeline
- Customers charged $45/month to pay off loan. Average water bill $90, twice that of surrounding communities
- District discussed benefits of acquisition with Illinois American Water
- Illinois Water System Viability Act utilized to set value of system
- District received $1.075 million, enough to retire loan
- Customer bills cut 50% by eliminating debt service
- Customers placed on Illinois America Water rate structure
- Customers receive high-quality service at no additional cost

Privately owned systems face a fundamentally different system financing landscape relative to publicly owned systems. While requirements to earn returns for private shareholders are an inherent financing obligation, some changes in access to financing resources could help level the playing field in support of private investment in regional or consolidated systems, for example, by:

[12] Many large private water and wastewater service companies have developed expertise of scientists, engineers and public health professionals to address multiple regulatory compliance challenges. For example, they have developed capacity to identify and develop solutions for new threats to source water quality. Communities can also benefit from collaborations with governmental entities, including EPA, consultants, universities, other utilities and national water research agencies.

- Ensuring municipalities' access to private activity bonds to facilitate public-private partnership financing.
- Expanding privately owned systems access to Clean Water State Revolving Funds for wastewater system investments when acquiring non-compliant municipal systems.

Supporting EPA Initiative Options:

- EPA support is needed for privately owned utilities to gain expanded access to Clean Water State Revolving Funds for wastewater.
- EPA should impose and ensure consistent standards and enforcement of regulations, including, for example, source water monitoring for contaminants, such that compliance mandates include consideration or public-private partnership options that could facilitate sharing of expertise and knowledge.

Member Cooperatives

Cooperatives are typically created by individuals desiring to join together to meet their common needs through a jointly owned and democratically controlled entity. Typically, not-for-profit cooperatives are member-owned. Membership is required to receive service and is by individual customer with a single vote. Cooperatives are formed under state statutes, usually not specific to water, that define incorporation procedures, powers and limitations.

- **Governance Structure:** Cooperatives are distinct corporations governed by a board elected by the membership. The incorporation documents require by-laws (or similar self-governing policies) that define purpose, membership eligibility as well as governance process. These typically require member approval to establish and amend. Cooperative board members are most often uncompensated volunteers.
- **O&M Expense Management:** Shared responsibility among members to deliver services at cost (not-for profit). The board determines budget and rates required to recover costs.
- **Capital Financing:** Cooperatives in the U.S. are generally distributed among rural and suburban communities and usually access capital through USDA Rural Development program as well as tax-exempt financing
- **Workforce Management:** Cooperatives as independent entities are employers with direct responsibility for attracting, developing and retaining personnel. They establish compensation and employee incentive systems, training and safety programs. Very small cooperatives may not have employees, relying on contracted services or "volunteer" labor by board members.
- **Water Affordability:** The cooperative model is based on people helping people. To that extent, cooperatives may address water affordability challenges across their membership through their cost recovery model, building in "low-income" assistance. The cooperative model is more flexible in developing such programs as they are member-owned and member-governed and can avoid some of legal equity-based restrictions placed upon traditional public utilities.

Potential Incentives: Creating or joining existing cooperatives may be challenging for an established utility based on the entity joining. State laws governing creation of cooperatives need to be explored and some

grant dollars may be needed to navigate the legal issues may assist in getting existing utilities to consider the cooperative model. Access to capital may be the greatest incentive.

Supporting EPA Initiative Options: EPA could help accelerate creation of cooperatives through both incentives and enforcement actions.

Other Options

Inter-System Cooperation Agreements

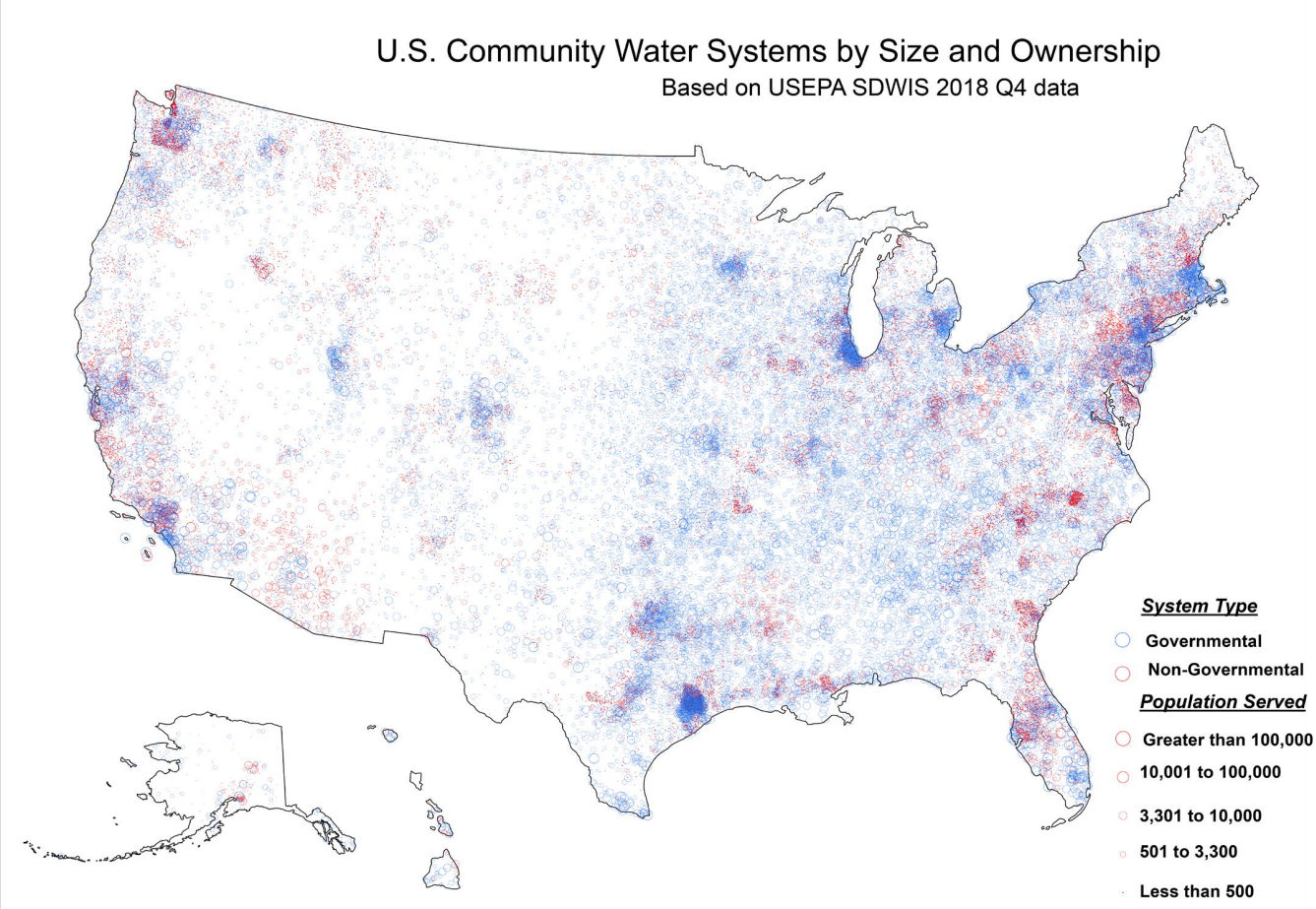
Inter-system cooperation, either by formal written contracts or by informal agreements, provides a practical way of addressing problems when regionalization or consolidation is not feasible. Intra-system arrangements are of two major types: (1) provision of a service from one system to another; and (2) a joint action agreement between two or more systems for a specific function. Examples of intra-system cooperation agreements include:

- **Contract Management and Operations:** Contracts for management, operation or maintenance are used between systems when one system has the technical, financial and managerial capacity to provide services to other systems. Some contracts are limited to specific services such as sampling or meter reading, while others are more extensive to include the complete operation, maintenance and management of a system.
- **Mutual Aid and Assistance Agreements:** A mutual aid and assistance agreement provides a method for systems affected by natural or human-caused incidents to provide and receive emergency aid and assistance in the form of personnel, equipment, materials and other services.
- **Cooperative Purchasing:** A cooperative purchasing agreement allows systems to conduct procurement activities for each other. Systems can increase their purchasing power by pooling their needs for common goods and services.

Potential Incentives: Formal and informal arrangements to cooperate have been around for many years, however, there are little to no incentives from public funding authorities at the federal or state level. When systems decide to cooperate formally, they can be recognized for taking advantage of economies of scale through more favorable terms in governmental lending programs.

Supporting EPA Initiative Options: Federal funding agencies for water and wastewater systems could encourage consideration of cooperative arrangements as part of the feasibility review for projects.

Appendix III:
Structural Profile of Community Water Systems in the U.S. based on EPA SDWIS data, 2018 Q4



*Finest level of geographic resolution is within the county served

Source: Institute of Public Utilites (MSU) 2019
http://ipu.msu.edu/

	Number	% of Total	Pop. (mil.)	% of Total
Total community water systems	49,711	100.0%	310.1	100.0%
Governmental systems	25,764	51.8%	269.2	86.8%
Local government (municipal, townships, counties, districts, authorities)	24,227	48.7%	261.0	84.2%
Tribal government	716	1.4%	1.0	.3%
State government	454	0.9%	4.7	1.5%
Federal government	367	.7%	2.5	.8%
Nongovernmental systems	22,718	45.7%	36.4	11.7%
Private companies				
Not-for-profit (associations, cooperatives, mutual companies)				
Ancillary (mobile home parks, schools, hospitals)				
Not classified (recorded as "public-private")	1,229	2.5%	4.5	1.4%
Wholesale water sales				
Wholesale own water	938	1.9%	27.4	8.8 %
Wholesale purchased water	238	0.5%	3.8	1.2%
Do not wholesale	48,535	97.6%	279.0	90.0%
Production or purchase				
Produce own water	40,351	81.2%	237.4	76.6%
Purchase water	9,335	18.8%	72.7	23.4%
Not reported	25	.1%	9,690	.0%
Community water systems by size				
<=100 (included in <500)	11,174	22.5%	0.7	0.2%
<=500	27,045	54.4%	4.6	1.5%
501-3,300	13,339	26.8%	19.2	6.2%
3,301-10,000	4,992	10.0%	29.3	9.5%
10,001-100,000	3,901	7.8%	112.5	36.3%
>100,000	434	0.9%	144.6	46.6%
Top 50 systems (included in >100,000)	50	0.1%	65.8	21.2%

Source: Compiled by the Institute of Public Utilities, Michigan State University based on unverified data reported in the U.S. Environmental Protection Agency, Safe Drinking Water Information System (SDWIS).

Appendix IV: Capacity Development – SDWA Provisions and Elements

I. SDWA (1996)

The following provisions of the 1996 Amendments of the Safe Drinking Water Act suggest consideration of structural solutions to improve compliance with standards:

- Capacity development (§1420)
- Consolidation Incentive - Enforcement (§1455)
- Variances (§1415)
- Exemptions (§1416)
- State Revolving Fund (§1452)
- Research (§1420)

II. Capacity Development Provisions of the SDWA (1996)

The Capacity Development Program was created under the Safe Drinking Water Act (SDWA) Amendments of 1996. The three major components of the Capacity Development Program are:

1. Section 1420(a) New Systems

Under penalty of Drinking Water State Revolving Fund (DWSRF) withholding, states must have a program established to:
"ensure that all new community water systems and non-transient, non-community water systems commencing operations after October 1, 1999 demonstrate technical, managerial, and financial capacity with respect to each national primary drinking water regulation in effect, or likely to be in effect, on the date of commencement of operations."

1. Section 1420(c) State Capacity Development Strategies
2. Under penalty of DWSRF withholding, the State must develop and implement a:
   "strategy to assist public water systems in acquiring and maintaining technical, managerial, and financial capacity."

3. Section 1452(a)(3) Assessment of Capacity

States may not provide DWSRF loan assistance to systems

- Which lack the technical, managerial, and financial capability to ensure compliance; or
- If the system is in significant noncompliance with any drinking water standard or variance.

However, states may provide assistance if the:

- Use of such assistance will ensure compliance; and
- System has agreed to make the necessary changes in operation to ensure that it has the technical, managerial, and financial capacity to comply over the long term.

Source: U.S. Environmental Protection Agency accessible at www.epa.gov/dwcapacity/information-states-about-building-capacity-drinking-water-systems

III. Elements of Water System Capacity

Technical capacity is defined as the physical and operational ability of a water system to meet SDWA requirements, including the adequacy of physical infrastructure and the technical knowledge and capability of personnel.

The key elements of technical capacity are:

- Source-water adequacy and protection
- Infrastructure adequacy and improvement
- Technical knowledge and implementation

Managerial capacity is defined as the ability of a water system to conduct its affairs in a manner enabling the system to achieve and maintain compliance with SDWA requirements, including institutional and administrative capabilities.

The key elements of managerial capacity are:

- Ownership accountability
- Staffing and organization
- Effective external linkages

Financial capacity is defined as the ability of a water system to acquire and manage sufficient financial resources to allow the system to achieve and maintain compliance with SDWA requirements.

The key elements of financial capacity are:

- Revenue sufficiency
- Credit worthiness
- Fiscal controls

Case Studies

Case Study #1: Facilitating Legislation

Regionalization Achievements Under the Pennsylvania Municipality Authorities Act

A primary barrier to regionalization and consolidation of water systems (collectively, entities providing drinking water, wastewater, stormwater, water reuse and other water related services) has been the focus on maintaining local control of such services by local governments, municipalities and communities. Having thousands of local government units, second in number only to Illinois, Pennsylvania has been a bastion of local control. Despite that widely held view, the Pennsylvania Municipality Authorities Act (MAA) has become a primary vehicle to create regional water approaches in the commonwealth.

The MAA allows one or more municipalities to create an "authority" to provide one or more specified public services in a designated area, which area can be broadly or narrowly defined. Although there is no comprehensive registry, the Pennsylvania Municipal Authorities Association estimates that as many 1,900 authorities have been created, however many of these are inactive because the authority project debt financing has been retired, the authority responsibility has been assumed by the parent municipality or the authority has been consolidated, merged or acquired by another entity. Authorities can be structured as "full service" providers, be limited to only a subpart of the public service or a combination of the two approaches. For example, an authority might provide only regional wastewater treatment, only wastewater collection in a single municipality and/or drinking water supply both to retail and wholesale customers. Two features of the MAA, coupled with the multiple layers of Pennsylvania local government units have produced regional water systems and facilitated consolidation of existing systems.

The first feature of MAA allows two or more municipalities to jointly create an authority, known as a "joint authority" to provide some specified function. Under this structure, each participating municipality is a partner in creating the authority and is represented on the governing board of the authority. Once created, the authority owns all of the assets including all of the facilities, obtains financing and is responsible for operation of the system and providing service to the customers.

A joint authority avoids duplication of effort, captures economies of scale, assures consistent service across a region, achieves a larger and more diversified customer base and captures higher level technical, managerial and financial capacity than would occur if each municipality acted independently. Among the joint authorities in Pennsylvania are the North Penn Water Authority, Lancaster Area Sewer Authority, Wyoming Valley Sewer Authority, Greater Hazleton Joint Sewer Authority, University Area Joint Authority and Wilkinsburg-Penn Joint Water Authority.

The second feature of MAA capitalizes on the nature of Pennsylvania's local government structure. There are four basic local government units – cities, boroughs, first class townships and townships of the second class. These units provide many of the governmental services needed by residents, however all units are located within a county, not as a subservient unit of government but to allow provision of more effective services to all municipalities and residents within the larger area of a county. Historically, these services included the courts system, maintaining public records and other functions delegated by the Commonwealth. As time has

passed, the mix of county services has grown and has expanded significantly legislatively and has even gone beyond the legislated county code as a result of counties adopting "Home Rule" charters. This growth of the counties' role has led to the creation of dozens of authorities by counties, many for environmental purposes.

Several of these county authorities have been tasked with providing one or more of the water services needed by the public, often to areas of a county where those services were unavailable and where growth and development drove the need for those services. Municipalities in those areas, for the most part, had no established entity to provide service nor any similar service or environmental responsibility upon which to build. Moreover, because the residents and local officials are not only citizens of the local municipality, but also the county, they have a sense of ownership and control that would otherwise be absent with an entity from outside the community.

As time has passed, these county authorities have grown by expanding service to areas adjacent to or nearby the initial or current service area, sometimes in adjacent counties, and acquiring, upgrading and interconnecting preexisting systems within and outside the service area. An important element of this has often been to be integrated into the development processes of the local municipality so the system planning for current and future needs can be reflected in land use planning decisions, effectively creating a partnership with local municipalities.

Examples:

- Westmoreland County Authority
- Delaware County Regional Authority
- Bucks County Water and Sewer Authority
- Lehigh County Authority*
- Lycoming County Water and Sewer Authority
- Schuylkill County Municipal Authority*
- Indiana County Authority *

*Systems serve multiple separate service areas that are remote from the core service area or system; in such case economies related to capital assets may be unavailable, but operational and administrative economies are still realized.

Case Study #2: Regional Wholesale Authorities

Great Lakes Water Authority

Overview:

The Great Lakes Water Authority (GLWA) provides wholesale potable water and wastewater services to communities throughout southeast Michigan. The GLWA was established through U.S. federal court mediation conducted as part of the negotiation of the City of Detroit bankruptcy plan of adjustment. The GLWA leases regional treatment and transmission assets of the Detroit Water and Sewerage Department (DWSD) to provide wholesale services for communities serving four million retail users.

Governance Structure

GLWA involved the bifurcation of DWSD, which prior to January 2016 served as the regional wholesale service provider as well as retail service provider in the City of Detroit, into separate entities. GLWA assumed responsibility for wholesale operations and system development under a public authority established pursuant to State of Michigan legislation (Act 233 of 1955) that provides for the incorporation of authorities by municipalities. The process involved U.S. federal bankruptcy court sponsored mediation of an agreement between the City of Detroit, State of Michigan, Detroit's Emergency Manager, and Macomb, Oakland and Wayne counties (in which most of DWSD's wholesale customers were located.) Subsequent to the filing of a memorandum of understanding between these parties, asset lease and water and sewer service agreements were negotiated and executed between GLWA and the City of Detroit, and plans for GLWA's operational effectiveness completed.

GLWA is governed by a six-member board of directors appointed by the mayor of the City of Detroit (two seats), county executives (one seat each for Macomb, Oakland and Wayne Counties) and Michigan's governor (one seat). A five-sixths super-majority vote is required for appointment of GLWA's Chief Executive Officer, approvals of operating budgets and capital improvement plans, adoption of service rates and issuance of debt obligations.

System Demographics and History

GLWA includes 127 communities served through 87 wholesale water service contracts as well as DWSD that now has responsibility solely for retail operations within the City of Detroit. GLWA's wholesale water customers now include the City of Flint, Mich. The GLWA potable water system service area is approximately 1,760 square miles and serves a population of approximately 3.8 million. The GLWA wastewater system includes 76 communities served through 18 wholesale sewer service contracts as well as DWSD. Its wastewater service area is 944 square miles and serves an estimated population of nearly 2.8 million.

GLWA is a co-permittee with DWSD with respect to the regional system treatment plants and combined sewer overflow facilities – and has a strong history of compliance since its January 1, 2016 operational effectiveness date. As with other public entities in the State of Michigan, regulatory oversight is largely with respect to permit compliance; rate setting is the purview of GLWA's Board of Directors.

Prior to the establishment of GLWA, several enforcement actions underscored DWSD's difficult relationships with its suburban customer communities and regulators. DWSD was subject to a federal wastewater consent decree between 1977 and 2014, and was a party to water and wastewater service rate litigation resulting in a 1999 settlement agreement.

Financial Performance

Prior to the establishment of GLWA, in part as a result of regulatory compliance requirements, DWSD imposed annual service rate increases averaging approximately 9 percent over the preceding 20 years. GLWA's originating agreements contemplate a 4 percent per annum limitation on increases to system revenue requirements. Operating budgets and capital plans approved by the GLWA Board since inception have been consistent with these provisions. GLWA's financial performance metrics reflect financial strength notwithstanding the origination of the authority in the wake of Detroit's historic bankruptcy.

Capital Financing

The relative strength of GLWA's financial performance, institutional structure and governance was recognized by the credit markets with the financial transactions involved in the authority's creation. In 2016, GLWA completed a $1.3 billion bond issue to refinance outstanding DWSD debt obligations assigned to GLWA under the system lease agreements. The transaction yielded present value savings of an estimated $309 million.

By effectively assuming DWSD's debt portfolio, GLWA is relatively highly leveraged as is characteristic of many communities placed under federal wastewater consent decrees. GLWA's capital structure after 2 years since its operational effective date of January 1, 2016 was over $5.7 billion in long-term debt relative to total assets of just under $7 billion, which has prompted financial planning for less reliance on bonded indebtedness

Low-Income Affordability

GLWA's originating documents provided for the establishment of the Water Residential Assistance Program (WRAP) funded at 0.5% of the revenues of the combined GLWA-DWSD system. The WRAP program is a "common-to-all" expense included in GLWA system revenue requirements and available to low-income customers in participating communities' retail service areas.

Regional System Optimization

GLWA has demonstrated the benefits of a regional perspective in system planning. Water system master planning has identified opportunities to decommission one of its water treatment facilities and reconfigure how other assets will be employed to meet changing regional water demand patterns. Similarly, wastewater system master planning is to examine opportunities to manage wet weather flows using regionally integrated facilities.

Resources

On its website, GLWA posts organizational documents including its Articles of Incorporation, water and sewer facilities leases, and water and sewer services agreements; information on the WRAP program; and a wide array of other documents. GLWA is a model of transparency and stakeholder engagement in the water and wastewater industry.

- http://www.glwater.org/board/organizational-documents/
- http://www.glwater.org/wholesale-customers/water-residential-assistance-program-wrap/

Case Study #3: Regional Retail Authorities

McLean County Regional Water Commission

Project Background

McLean County Regional Water Commission (MCRWC) in Kentucky is a unique partnership between McLean County Fiscal Court, the county's four cities (Calhoun, Island, Livermore and Sacramento), and the North McLean Water District. The county's 9,500 residents are currently served by five separate water systems with aging facilities that struggle to meet EPA operating standards. Some of those plants must also rely on adjacent counties to provide their water, placing residents at the mercy of price fluctuations outside of their control. In 2009, an interlocal task force came together to plan the future of McLean County's potable water supply.

The biggest initial challenge: Finding funding for project design. Thus, the Fiscal Court and communities enlisted the assistance of the Kentucky Infrastructure Authority (KIA). KIA granted the group $150,000 to pay for engineering services. The small grant enabled the project design to be completed. Additionally, it was critical to securing the needed funding and advancing the project.

After aggressively pursuing and securing $10.9 million in state and federal funding, MCRWC is now constructing a centralized regional water system that will allow the county to control the production, capacity, and cost of their drinking water.

In 2009, McLean County's judge/executive and mayors from the county's four cities (Calhoun, Island, Livermore and Sacramento) began meeting regularly to discuss the county's drinking water needs as a whole. Most of the individual systems' water plants are approaching their functional life expectancies, including Livermore whose facility is more than 80 years old. Rather than addressing needs in a piecemeal fashion, MCRWC decided to unleash the power of regional collaboration. They contracted with an engineering firm to help develop a comprehensive plan and then set about the work of acquiring necessary funding—speaking with one voice to officials in Frankfort and Washington.

Project Funding

$7.4 million	U.S. Dept. of Agriculture (USDA) Rural Development (RD) grant/loan	(68%)
$2.5 million	Kentucky Infrastructure Authority (KIA) loan	(23%)
$1 million	Community Development Block Grant (CDBG)	(9%)
$10.9 million	TOTAL	

Project Impact

MCRWC will positively impact McLean County residents for generations to come. It will help absolve individual systems of their outstanding debt and prevent them from having to plan expensive upgrades (or even replacement facilities). The new 2 million-gallon capacity centralized plant and its accompanying infrastructure will allow water rates to remain low—a vital consideration in a county with a median household income 10 percent below the Kentucky average (and more than 25 percent below the national average). Additionally, the success of MCRWC has infused a renewed spirit of cooperation and pride among the citizenry of McLean County, setting the table for collaborative, creative problem solving on other common challenges that may arise.

One of the exciting aspects of this project is that it can be duplicated virtually anywhere. The Green River flows through the heart of McLean County, providing a reliable and accessible source from which to draw drinking water. Kentucky has more miles of running water than any other state except Alaska. So, if a region has a sufficient raw water supply and individual communities have a sufficient desire to partner with their neighbors, projects like this are possible. In an era of constrained public funding, MCRWC representatives have been told consistently by state and federal decision makers that their interlocal teamwork was the key to their success.

MCRWC is a true regional success story! Rather than having a parochial, myopic focus upon their individual communities, elected officials across McLean County chose to engage in an open dialogue and to join forces to advocate for a comprehensive solution that was best for the entire county. As a result, they are now in the process of constructing new state-of-the-art infrastructure that will provide the 9,500 residents of McLean County with a safe, reliable, and cost-effective water supply for decades to come.

Entities involved in the effort:

- McLean County Fiscal Court
- City of Calhoun
- City of Island
- City of Livermore
- City of Sacramento
- North McLean Water District

Case Study #4: Non-Profit Partnerships

Delaware's Clean Water Solutions

Background

From July 2015 to July 2016, representatives from a wide variety of funders, non-profits and government agencies met, under the aegis of USDA to discuss an on-going problem in Delaware – failing septic "cluster" wastewater systems in private communities not served by a government-owned system. Lot assessments, the annual charges paid by each property owner, are usually the only source of funding for these utility operations and it often takes all the revenue collected just to run the utility, while other common areas may suffer. As the group continued to meet, it came to be known as the Larger Committee.

Eight systems had originally been identified as having problems that threatened their sustainability, endangered the environment and public health. Most of these communities are comprised of low or moderate income (LMI) residents. They are usually governed by a Homeowners' Association (HOA), and are often ineligible for funding programs that would help to upgrade their systems, so issuing debt is their main option for repairs and upgrades. The Larger Committee's consensus was that some form of system takeover would relieve the HOA's of the responsibility for operating the systems, reduce their debt liability and help keep the systems in compliance and protect the environment. USDA issued a Request for Information (RFI) to non-profits to gauge interest and capabilities. The committee chose three entities whose expertise related to one or more aspects of the problem. Thus was born the Clean Water Solutions (CWS) partnership consisting of Eden-Delmarva, Diamond State Sustainability Corporation (DSSC) and the Southeast Rural Community Assistance Project (SERCAP).

The goal of this partnership is to identify failing "cluster" systems, evaluate their needs, and negotiate a turnover of their assets to the non-profit for operation, then to improve the systems to make them compliant and sustainable. Operating as a non-profit with grants as the primary funding source will allow user rates to be kept affordable, and the technical expertise of DSSC will keep the systems compliant. The first eight systems identified by the Larger Committee are all located in Sussex County, which has experienced an enormous growth spurt in the past several years. The population has grown an average of 38 percent vs. the statewide average of 21 percent. The need to keep utility rates affordable is clear, given Sussex County's average salary of $37,339 vs. the state average of $53,991. Also, the number of county residents over the age of 60 has risen by 60 percent in the same period, giving a clear picture of LMI and fixed income communities overall. The primary objective of this collaboration is to enable the operation of these cluster systems in a compliant, sustainable fashion at affordable user rates. Concurrent objectives are to ensure sustainability ofthe systems and to protect the environment, groundwater and drinking water.

Strategies

Conceptually, the CWS partnership has never been done before. A non-profit takeover of failing utility systems is unusual for Delaware, but a partnership of three non-profits, spurred by government agencies is even more unusual. This is a combined effort to bring the best available services and sometimes, best available technology to distressed areas, while keeping the user rates as low as possible. CWS strategy is embodied by a vision of how the process might work. A step-by-step protocol for asset assumption has been developed. In essence, the process starts with an evaluation of needs. Then discussions with the HOA Board will include the option of assigning assets and responsibilities to DSSC, and terms and conditions will be negotiated. DSSC will apply for planning grants from USDA or the Delaware State Revolving Fund as

applicable. These grants will fund the Preliminary Engineering Reports precedent to grant applications for capital upgrades.

As improvements are made the system can be brought back into compliance and become self-supporting through its own user fees as asset management practices are put into place. Lack of debt service will result in more affordable rates than takeover by a for-profit utility.

Target Population and Locations

The initial eight systems identified are all in Sussex County, which has the largest proliferation of these "cluster" systems. Of the initial eight, four will be targeted in the first year - Grants Way, Pintail Pointe, Morningside Village and Country Glen. These systems serve a total of 183 homes. The Sussex County MHI is about 11 percent below the state average and its average salary is about 30 percent lower than the statewide figure. That data alone makes Sussex County the most likely target for CWS efforts.

Benefits:

Each community will benefit by having licensed professional operators run their wastewater utilities, relieving their homeowners' associations of the associated financial and management burdens. Improvements will be made as they are identified and funding is available, and at the least cost possible passed on to the residents and property owners. Property assessments can be used to make other improvements to the community such as paving streets, rather than using every penny collected on the operation of the utility. Given the demographics of Sussex County, keeping user rates affordable is essential. Growth in population, in the population over 60 and the below average salaries and MHI indicate that charges levied by a for-profit operator would not be affordable. The systems will be more sustainable, and more environmentally sound if run by a non-profit professional, thereby protecting the groundwater and drinking water in the areas.

Partners' Roles

Eden-Delmarva, Inc.:

- Identify sources of funding
- Meet with funding resources
- General Financial Management of the partnership

Southeast Rural Community Assistance Project:

- Technical assistance and advice to the HOA's, promoting transfer of system assets
- Advise CWS on operations, maintenance, asset management and sustainability

Diamond State Sustainability Corporation:

- Acquire system assets and implement sustainable solutions
- Secure planning and capital project funding
- Provide for customer billing, collections, operational costs, and debt service
- Conduct long term infrastructure planning and coordination with local regulatory agencies
- Operate cluster systems on a non-profit basis until such time that public system connection is available and economically feasible (if ever)

The Larger Committee will use its connections and influence to promote and help secure the maximum grant funding possible to keep rates affordable.

Evaluation Methods

Success can be measured by the number of utility systems assumed by DSSC, their return to compliance and the affordability of end user rates. Affordability is measured by the percentage of household income expended per year by an average customer, usually 5,000 gallons of water use monthly, and generally considered to be from 1.5 percent to 3 percent of household income. Maximum grant funds and minimum debt service should keep rates in that range. The "Larger Committee" is also expected to weigh in on the success of CWS efforts in its advisory capacity. Regulatory inspection reports can be compared to evaluate operations improvements. The quality of effluent discharged may be tested and measures such as number of breakthroughs in the drain field, number of gallons pumped, gallons of inflow or infiltration, or increase in flow during wet weather can be measured before and after CWS gets involved. Success can also be evaluated using the form SERCAP uses to assess a system's technical, managerial, and financial (TMF) needs. This proprietary tool identifies critical concerns and is used to measure capacities initially, identify the most critical needs, and can measure progress as CWS takes over. The same tool can be used to measure TMF capacities at any point during a project and to prioritize activities according to greatest or most critical need. Other measures would be number of people served, amount of funding obtained, dollars saved by the system and residents, and amount of funds in reserve.

Sustainability Plan

The CWS sustainability plan is based on the idea of building on success. For user rates to be affordable, yet sufficient to recover costs and reserves, grants rather than loans will be critical. The ability to secure subsequent grants will be highly dependent on success with the first systems addressed. As systems are assumed and returned to sustainable, compliant operations, user rate revenue and reserves will help to fund takeover of other cluster systems, and successful operation of the previous systems will help to demonstrate a track record for this innovative business model. CWS expects to address four cluster systems in the first year. As those systems are returned to compliance, CWS will identify additional systems that need help, in consultation with DNREC, USDA-Rural Development and the Larger Committee. Judicious use of planning grant programs through USDA will help make the most efficient use of capital program funding when improvements are needed. Grant funding for upgrades and process improvements will be more accessible with the plan of action and recommendations produced during the planning stage. Grants again will be critical to keeping the user rates affordable. If a publicly-owned system connection ever becomes available at rates favorable to the LMI communities, a public system connection may be the final, sustainable answer. If, however, this cannot be done without considerable cost to the customers, DSSC can continue to operate the systems indefinitely.

Current funding for the program is $200,000 and is provided through Discover Bank CRA funding in the amount of $100,000 and in-kind donations from SERCAP and Tidewater Utilities, Inc. totaling $100,000. It is expected that USDA will contribute as the project moves along and private foundation grants will be sought as the project evolves. The initiative is so new that all funding sources have not been fully explored.

Case Study #5: Public to Private

Pennsylvania American Water Acquisition of Scranton Sewer Authority

In late 2016, Pennsylvania American Water completed the acquisition of the wastewater system assets of the Scranton Sewer Authority (SSA). The system provided wastewater service to approximately 31,000 customers in Scranton and Dunmore. Pennsylvania American Water already provided drinking water service to residents and businesses in bothcommunities.

Pennsylvania American Water offered long-term rate stabilization by applying the provisions of Act 11, legislation enacted in 2012 that enables regulated utilities to combine water and wastewater revenue for rate-making purposes.

Previously, costly wastewater system improvements would have fallen entirely on SSA customers. In contrast, Pennsylvania American Water's purchase of SSA enables the company, due to Act 11, to spread capital investments among its more than 720,000 customers throughout the state. Like single tariff pricing for water service where rates are based on capital investments and expenses spread equally among water customers, the benefit of Act 11 is the long-term rate balance it provides for Scranton and Dunmore customers.

SSA's debt of approximately $70 million was eliminated following Pennsylvania American Water's approximately $195 million purchase. Additionally, Scranton and Dunmore realized a new source of tax revenue generated from property that was previously tax-exempt. The company's customers are paying additional taxes (approximately $400,000 annually) to the municipalities, school district, and county, providing some relief for stressed public budgets.

Pennsylvania American Water brought both the technical expertise and financial resources to meet the communities' challenges and provide a long-term wastewater solution, while establishing a plan to maintain reasonable rates for the customers, which was approved by the regulator. The millions of dollars in net proceeds from the sale will make a significant impact on Scranton's financial recovery efforts, including the opportunity to potentially mitigate future tax increases on its homeowners and businesses.

Case Study #6: Cooperatives

Florida Governmental Utility Authority

Overview

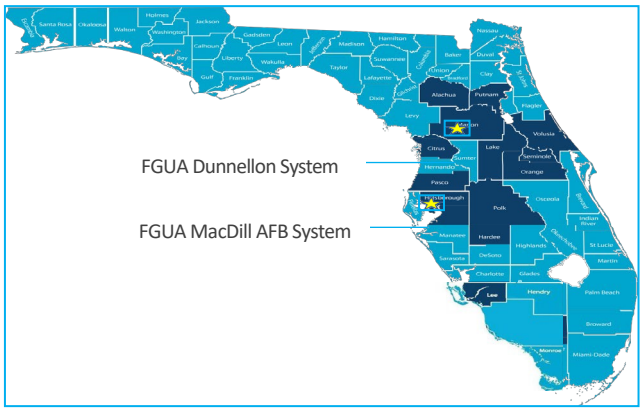
The term co-operative (co-op) in the context of water and wastewater utilities often refers to non-profit, community-based associations established by customers to own, operate and maintain utility systems. A broader interpretation of the term could be defined as a combination of governmental entities within multiple jurisdictions to form a co-op by an interlocal agreement. Potential advantages of non-profit co-op (and municipal systems) over investor-owned utilities (IOUs) is the avoidance of certain taxes, corporate overhead and profit upstreaming, and greater local control.

In Florida, certain counties joined together in 1999 to create a unique interlocal utility authority, the statewide Florida Governmental Utility Authority (FGUA). The FGUA was formed under a newly adopted Florida State Statute (Chap 163.01) to address an interest of individual counties to support the purchase of a private IOU which wished to sell its Florida utility systems in multiple jurisdictions together.

Governance Structure

FGUA is managed by a six-member board of directors, with six alternates. Like other co-ops, the FGUA is subject to state environmental regulatory oversight, including facility and groundwater withdrawal permitting. Consistent with many other co-ops, rate and fee setting for the association and municipal systems is not state regulated but rather left to the co-op's governing board. Specific to FGUA, its initial (1999) interlocal cooperation agreement between the participating governmental units (Brevard, Lee, Polk and Sarasota counties) contained the following significant features:

- FGUA's sole focus is water and sewer services;
- FGUA is locally governed and controlled – providing "home rule" control among voluntary participants with no ongoing State involvement;
- Participating governments maintain control over the utilities with a seat on the governing Board;
- Member governments do not incur any financial liability for the acquired systems;
- Members may re-acquire the FGUA utility systems within their jurisdiction at any time for the value of outstanding debt;
- Formerly private systems now become subject to higher municipal facility, operating and customer service standards;
- FGUA is eligible for the same federal, state and local district grants and loans as local governments. In addition, they can issue tax-exempt debt and may impose special assessments;
- FGUA is subject to the same transparency and public accountability standards as local governments.



System Demographics / Regulatory History

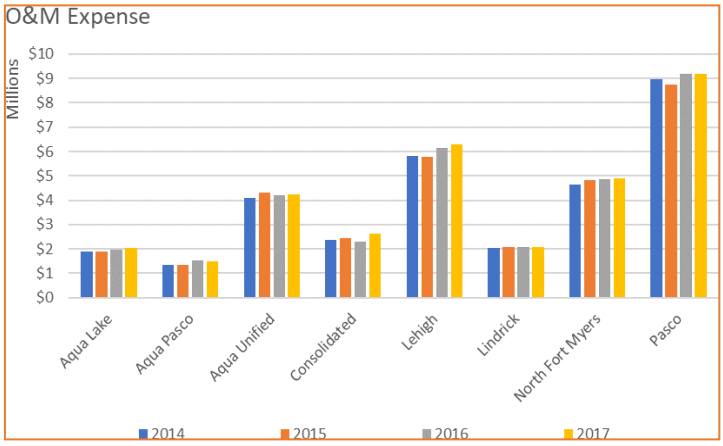
The FGUA currently consists of 80 individual utility systems in 13 Florida counties and serves approximately 120,000 customer connections. The FGUA has no employees of its own instead contracting for all services. Full range management services are provided by Government Services Group Inc., a Florida-based governmental consulting firm which oversees operations and maintenance contract services provided by U.S. Water Services Corporation.

The FGUA is a special purpose unit of local government currently consisting of numerous small systems, many geographically isolated lacking adjacent municipal infrastructure support. Yet, because of its large scale, and the fact that FGUA is a collaborative extension of local governments with similar utility powers and duties, the FGUA brings substantial economies of scale and resource capability to smaller systems.

Operations / Financials

The FGUA systems are aggregated within several separate enterprise funds for financing, accounting and reporting requirements as provided by each bond indenture. For FY2017 (most recent audit) the FGUA Utility Systems included the following separate systems (with bond ratings):

- Lehigh Acres (A1/A+/A) (M/S&P/F)
- North Fort Myers (A2/ - / -)
- Lindrick (A1/A-/ -)
- Pasco Aloha (A2/ - / -)
- Consolidated (A2/ - /A-)
- Aqua Lake (Baa1/ - /A-)
- Aqua Pasco (A3/ - /A-)
- Aqua Unified (A3/ - /A-)
- MacDill AFB Utility System (N/A)
- Dunnellon Utility System (N/A)

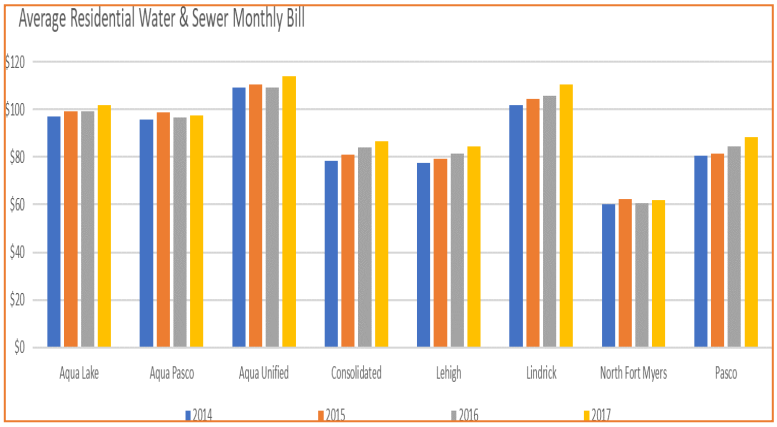


The annual operating budget for Fiscal Year 2019 is $86 million. O&M costs are limited by a fixed price five-year operations, maintenance and customer service contract. The contract limits annual price adjustments to specific Consumer Price Index levels and customer growth throughout the contract term. The five-year capital budget for Fiscal Years 2019 – 2023 is $65 million. Total assets of the FGUA as of fiscal year end 2017 are over $538 million and growing.

Capital Financing

The FGUA funds its capital through a combination of sources, including tax-exempt bond proceeds, impact fees, government grants and loans and operating revenue (cash-on-hand). For example, the Dunnellon transaction included the innovative use of low-interest loan funding from the USDA Rural Development Program.

Overall debt levels have historically been high due to amortization of the purchase price and capital improvement needed upon acquisition. As of September 30, 2017, total outstanding debt and unamortized premium stood at $421.27 million. Annual debt service levels are relatively stable with minor changes due to refunding or reductions in federal subsidies as provided through certain Build America Bond (BAB) programs.



Rate Affordability

The combined water and sewer residential rates for certain systems within FGUA are regarded as high relative to nearby utilities due to the high debt service associated with the acquisition cost of the systems. A large majority of customers supported the FGUA acquisitions and higher associated rates for the benefits of improved, consistent service levels. After acquisition, major rate increases are limited and in certain systems, rate decreases have been implemented. The four (4) year average combined Water and Sewer Monthly Bill for FGUA's systems ranges from $62 per month (North Fort Myers System) to $114 per month (Aqua Unified System).

Regional System Optimization / Conclusion

For public infrastructure, collaboration can offer substantial long-term benefits to a system and its rate payers. When water systems, which are predominately local, operate with a provincial approach to governance and control, they limit the potential for economies of scale, sharing of best practices and sharing of critical resources, all to the detriment of those being served by their systems. This approach can and does lead to regulatory noncompliance, infrastructure failure and severe customer backlash. Co-ops break down these barriers and provide opportunities for efficiency, cost savings, optimal operational management and greater public and environmental safety.

- Because of its scale and private contract model, FGUA's O&M cost per connection is typically lower.
- Because of its singular focus on water and sewer, FGUA's capital project delivery is typically faster and less expensive.
- Because of the partnership nature of the acquisition agreement, FGUA and its participating local government systems have limited disputes about infrastructure capacity sharing to save customers money in rates.

Since FGUA's inception, and with limited exceptions, the majority of FGUA's systems have continued to rely on the partnership to leverage FGUA's resources, to benefit from its expertise, to serve their residents and avoid further strain on their local community's resources. For example, for seven years the federal government has found the FGUA to be a vital mission partner supporting MacDill Air Force Base. More recently, the City of Dunnellon saw a relief of rate pressure for customers, service significantly improved, and their long-term debt eliminated by divesting their utility to the FGUA.

In summary, intergovernmental collaboration as structured through co-ops can yield enormous benefits to the public and make limited government funding go farther. There is clear empirical evidence at FGUA that demonstrates higher benefits per dollar spent within the collaborative versus what was previously achieved

by the participating systems independently. Co-ops can serve as a major force to achieve more strategic and smarter returns on the nation's investments in infrastructure.

Resources

FGUA's website posts its annual strategic plans and financial statements. These can be found at:

- https://www.fgua.com/about-us/strategic-plans/
- https://www.fgua.com/about-us/finance/reports/