North Carolina Water and Wastewater Regionalization Study Report

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I. Introduction and Legislative Context

Water is a critical natural resource. Safe drinking water and reliable wastewater treatment protect public health, protect the environment, and support economic activity and daily life. Decisions about how these services are planned, financed, and delivered have lasting consequences. Across the State of North Carolina, many water and wastewater systems face growing financial, operational, and regulatory pressures. In response, policymakers have expressed interest in whether regional approaches may help some systems address financial instability, improve service delivery, or achieve long-term sustainability.

In the summer of 2025, the North Carolina General Assembly enacted Session Law 2025-77 (House Bill 694), directing the Environmental Finance Center at the School of Government at the University of North Carolina at Chapel Hill (EFC) to study regional approaches to water and wastewater services in the State and report its findings by April 1, 2026.

The law requires the study to examine the potential benefits and costs of regionalization and the financial, statutory, and regulatory barriers that affect the use of regional arrangements. It directs the EFC to develop recommendations for legislative or regulatory changes that would support more informed decision-making on the financial stability of public water and wastewater systems and the potential role of regional approaches in addressing financial instability.

The legislation further requests identification of public water or wastewater systems that may benefit from regional approaches. Rather than producing a fixed list, this report presents objective indicators and a structured decision framework designed for repeated use as conditions change. The framework is intended to support consistent and transparent evaluation over time and to inform State and local planning, funding decisions, and oversight.

In preparing this report, the EFC consulted with stakeholders involved in water and wastewater oversight and service delivery, including the State Water Infrastructure Authority (SWIA), the Department of Environmental Quality (DEQ), the Local Government Commission (LGC), the North Carolina League of Municipalities (NCLM), and the North Carolina Association of County Commissioners (NCACC).

II. Study Approach and Methods

This study used a mixed-methods approach that integrated legal review, qualitative input, and quantitative analysis. The approach was broad enough to identify statewide patterns while remaining focused on meeting the April 1 reporting deadline.

The analysis focused on water and wastewater systems owned by local governments. Although investor-owned and nonprofit systems may participate in regional arrangements, local government utilities operate within a distinct legal framework and are directly subject to State oversight, funding programs, and regulatory requirements referenced in Session Law 2025-77.

The legal analysis reviewed North Carolina statutes and regulatory authorities relevant to regional water and wastewater services and included a fifty-state survey examining how other states authorize, encourage, or require regional approaches. *See* Appendix A. It also catalogued more than sixty North Carolina interlocal agreements (ILAs) related to water and wastewater regional partnerships. *See* Appendix A. All together, this work provided comparative context from other states and documented how regional partnerships are currently structured under North Carolina law.

The study team gathered qualitative input through targeted interviews with subject-matter experts and representatives from organizations involved in oversight, finance, and service delivery, including those identified in the session law. These discussions focused on barriers to regional approaches, conditions under which they were workable, and potential policy changes.

The team also conducted listening sessions with councils of government and held sixteen virtual public input sessions open to utilities and other interested participants. Sessions were organized around broad themes and guided by participant experience. The team collected written input through a general survey. *See* Appendix B. To ground the analysis in practice, the study included interviews with utilities engaged in regional efforts and a review of materials from prior initiatives in North Carolina. These examples illustrated how different regional models had operated and had been sustained over time. The team hosted a group of twenty water and wastewater experts and stakeholders for a full-day summit to review the information collected over the course of the study, identify themes, and brainstorm viable paths forward for the State. The group included representatives from DEQ, SWIA, LGC, NCLM, the North Carolina Rural Water Association (NCRWA), and management, financial, engineering, and legal professionals who work directly with local government utilities.

Quantitative and spatial analysis included updating a statewide map of drinking-water interconnections first developed in 2015 using current connection data maintained by the Division of Water Resources' Drinking Water Watch. The team also created a new database of consolidation and regionalization efforts through a systematic review of local water-supply plans, with expert review to resolve unclear cases, as the State does not maintain a centralized record of these efforts. The team used the data to examine relationships among system characteristics, interconnections, and consolidation outcomes. *See* Appendix C.

The study also surveyed utilities on bulk water and wastewater rates charged between local government systems. A bulk rate is the price that one utility charges another for large-volume, wholesale water-supply or wastewater-treatment services. Initial survey results indicate that bulk rates can vary widely both in their structure and in how they support the overall financial functions of utilities. *See* Appendix C.

Finally, the study reviewed de-identified responses from North Carolina utilities included in a national survey conducted by researchers at the University of Massachusetts Amherst. These data provided additional context on utility experiences and perspectives related to regional approaches. *See* Appendix C.

III. Water and Wastewater Service in North Carolina

Approximately 515 local-government-owned water and wastewater systems operate in North Carolina. Service is highly concentrated among a small number of large systems. Forty-six systems, representing just 8.9 percent of all systems, serve 70.1 percent of residents who receive centralized water or wastewater service. In contrast, the remaining 467 systems, or 91.1 percent, serve only 29.9 percent of those residents.

Most systems are small. Of the 515 total systems, 375 serve fewer than 10,000 customers. Within that group, roughly 80 percent serve populations under 5,000, and about 30 percent serve fewer than 1,000.

These characteristics shape how utilities plan, operate, and finance their services. Smaller systems often face higher per-unit costs and limited administrative capacity. Although infrastructure is aging across the sector, smaller systems typically have fewer financial and staffing resources to address repair and replacement needs. Many rely heavily on grant funding for capital improvements, particularly where infrastructure was installed decades ago and has seen limited reinvestment. Over time, this reliance can contribute to deferred maintenance and growing financial stress.

Governance and staffing constraints can further affect performance. Smaller systems are often overseen by elected officials and staff with limited experience in utility finance, asset management, or regulatory compliance. Turnover among elected officials and staff can make long-term planning and continuity more difficult. At the same time, utilities of all sizes face rising construction costs, workforce shortages, evolving regulatory requirements, emerging contaminants, and increasing operating expenses. These pressures affect infrastructure planning, rate setting, and day-to-day operations across the sector.

Larger and midsized utilities, while often benefiting from economies of scale, face additional challenges related to managing growth, expanding treatment and distribution capacity, securing long-term water supplies, and coordinating service across broader geographic areas. Scale can improve efficiency and financial flexibility, but it does not eliminate financial, regulatory, or operational risk.

Water and wastewater utilities are capital-intensive enterprises that require sustained investment over time. All systems must balance the need for rate sufficiency with affordability considerations while maintaining reliable service.

IV. Legal and Governance Framework for Water and Wastewater Services in North Carolina

Water and wastewater services in North Carolina delivered through local-government-owned utilities operate under a statutory framework that emphasizes local decision-making, with State oversight focused on financial integrity and regulatory compliance. State law authorizes multiple governance structures for providing these services. The range of legal options reflects legislative efforts to address differences in geography, service needs, and local preferences, but this variety can also make it difficult to compare authorities across systems or to structure regional arrangements involving entities formed under different statutes.

A. Governance Structures for Local-Government-Owned Utilities

North Carolina law allows local governments to provide water and wastewater services through several governance models established by general statute or, in some cases, by local acts of the General Assembly. These models vary in board composition, service-area definition, financing authority, and relationship to counties and municipalities.

1. County Public Enterprises

Counties may own and operate water and wastewater systems as public enterprises. The board of county commissioners serves as the governing body and is responsible for budgets, rates, operations, and capital decisions. G.S. 153A, art. 15.

2. Municipal Public Enterprises

Cities, towns, and villages may own and operate water and wastewater systems as public enterprises governed by the municipal governing board, which sets rates, adopts budgets, and oversees operations. G.S. 160A, art. 16.

3. Sanitary Districts

Sanitary districts are special-purpose local government units created to provide water, wastewater, and a few other governmental services within defined areas. They are governed by appointed boards and operate as separate units of government with independent authority to set rates, levy taxes, issue debt, and manage operations. G.S. 130A, art. 2, pt. 2.

4. County Water and Sewer Districts

Counties may create water and sewer districts to serve designated areas. The board of county commissioners must serve as the district's governing board, but the district is a separate municipal corporation. Commissioners must meet separately when acting as the district board, keep separate records, and adopt a separate budget. These districts may set rates, levy property taxes within their boundaries, and borrow money. G.S. 162A, art. 6.

5. Water and Sewer Authorities

Water and sewer authorities are independent public bodies created by one or more local governments. They are governed by appointed boards and have authority to own and operate systems, set rates, issue debt, and provide service within and beyond participating jurisdictions, subject to statutory limits. G.S. 162A, art. 1.

6. Metropolitan Water Districts

Metropolitan water districts provide regional water services across multiple jurisdictions. They are formed through joint local government action with State approval and are governed by appointed boards. Statutes authorize these districts to own facilities, set rates, issue debt, and levy ad valorem taxes within district boundaries under specified conditions. G.S. 162A, art. 4.

7. Metropolitan Sewerage Districts

Metropolitan sewerage districts provide regional wastewater collection and treatment. Their formation and governance are similar to metropolitan water districts, with authority focused on wastewater infrastructure, rates, and financing. G.S. 162A, art. 5.

8. Metropolitan Water and Sewerage Districts

These districts combine water and wastewater functions within a single regional entity. They are formed through joint action of participating governments and have broad authority to own, operate, and finance integrated systems. G.S. 162A, art. 5A.

9. Ownership or Operational Transfer to Another Local Government

In some regional arrangements, one local government utility assumes legal ownership, operational control, or both for another unit's water or wastewater system. This may occur through asset transfer, long-term lease, management agreement, or related contractual structure authorized under

general local government powers. The receiving unit operates the system as part of its enterprise, while the originating unit relinquishes varying degrees of control.

10. Joint Agencies and Interlocal Undertakings

Local governments may jointly exercise authority or provide services cooperatively through joint agencies or ILAs. Governance structure, cost sharing, and operational responsibilities are defined by agreement between the participating units. G.S. 160A, art. 20.

11. Utilities Created by Local Act

In some cases, the General Assembly has created utility entities through local acts tailored to specific regions or circumstances. These entities operate under their enabling legislation, which may differ from general statutory frameworks.

Although each governance model supports the provision of essential public services, they differ in key respects, including board structure, taxing authority, service-area expansion, debt issuance, and relationships to participating governments. These differences offer flexibility but can complicate coordination across systems operating under different legal frameworks.

B. Local Authority over Rates, Budgets, and Operations

Authority over rates, budgets, capital planning, and operations generally rests with a local utility's governing board. Water and wastewater systems are typically operated as public enterprises, with user fees supporting operating costs, debt service, and capital investment. Some governance models have statutory authority to levy property taxes within their service areas, while others rely entirely on user fees and other nontax revenues.

Financial management of local government utilities is governed by the Local Government Budget and Fiscal Control Act, G.S. 159, art. 3. This law establishes requirements for budgeting, accounting, auditing, and internal controls that apply to all government utilities. (County public enterprises, municipal public enterprises, sanitary districts, county water and sewer districts, metropolitan water districts, and metropolitan sewerage districts are defined as units of local government for purposes of this law. Water and sewer authorities, metropolitan water and sewerage districts, joint-agency entities, and entities created by local act of the General Assembly are defined as public authorities.)

C. State Financial Oversight: The Local Government Commission

The LGC provides statewide financial oversight of local governments and public authorities, including all local government water and wastewater utilities. It reviews annual audits and financial data, evaluates financial-performance indicators, and works with local officials to address identified concerns. It approves all local government bond issuances, as well as other forms of borrowing, including some installment financings and capital-lease agreements.

When financial problems persist, the LGC may require formal responses to financial-performance indicators of concern, mandate additional training, require engagement of outside financial assistance, and expand the scope of contracts or financing subject to LGC approval. Under specified statutory conditions, the LGC may assume control of a unit's financial affairs and, in limited circumstances, operation of a water or wastewater system. *See* G.S. 159-181.

D. State Regulatory Oversight: The Department of Environmental Quality

The Department of Environmental Quality's Division of Water Resources oversees compliance with drinking-water and wastewater regulations through permitting, monitoring, and enforcement. The division issues permits, monitors compliance with regulatory standards, and may take enforcement action through notices of violation, administrative orders, compliance schedules, or penalties. This authority is directed toward protecting public health and the environment. *See* G.S. 143-211.

E. Planning, Funding, and Technical Assistance

State programs administered under G.S. 159G by the SWIA and the Division of Water Infrastructure provide planning, funding, and technical assistance to local government water and wastewater systems. These programs include the Drinking Water State Revolving Fund, the Clean Water State Revolving Fund, and State grant and loan programs. Together, they support infrastructure planning, capital investment, and long-term system sustainability.

Planning tools commonly supported through these programs include asset inventories, capital-improvement plans, rate studies, and merger or regionalization feasibility studies. In most cases, participation in planning activities is voluntary unless tied to specific funding conditions or regulatory requirements.

Chapter 159G also establishes the Viable Utility Program, administered jointly by the SWIA and the LGC. The program creates a statewide process to assess the financial, managerial, and operational condition of local government water and wastewater systems and to require corrective action when necessary.

Under G.S. 159G-45, the SWIA and the LGC develop and apply assessment criteria that address factors such as system size, infrastructure condition, infrastructure maintenance, revenue adequacy relative to debt service, and financial-management practices. Systems that meet the statutory criteria may be designated *distressed*.

A unit identified as distressed must complete specified corrective measures, which may include an asset assessment, a rate study, required training, and a plan to address infrastructural, financial-management, and governance issues. Assessments occur at least biennially. *See* G.S. 159G-45(b) to (c).

This designation may also affect access to certain State funding programs, including the Viable Utility Reserve. *See* G.S. 159G-32, -45.

The program is supported by dedicated technical-assistance staff who play an important coordinating role. They work with local governments and support partners to keep corrective efforts on track, facilitate communication, and help ensure that required measures are completed in a practical and timely manner.

F. Legal Authority for Regional Cooperation and Interlocal Agreements

North Carolina law provides broad authority for local governments to cooperate through ILAs and joint undertakings under G.S. 160A, art. 20. These statutes allow local governments to jointly exercise existing powers or to contract with one another for services or facilities that each party is authorized to provide on its own.

ILAs involving water and wastewater are widely used to support cooperative arrangements such as bulk water or wastewater service, shared treatment capacity, joint ownership or operation of infrastructure, shared staffing or equipment, administrative support, and coordinated planning.

Agreements may address short-term needs or long-term service relationships, and they typically allocate responsibility for governance, financing, maintenance, debt service, and capital investment.

The interlocal statutes are intentionally flexible and do not require creation of new legal entities or transfers of ownership. At the same time, an ILA does not expand the legal authority of the participating units; each party must already have statutory authority to perform the functions addressed. Agreements must be approved by the governing boards of the participating units and must include required terms related to purpose, duration, financing, and termination.

G. Regional Partnerships in Practice

The governance structures and interlocal authorities described above give local governments several ways to work together regionally. In practice, communities across North Carolina use these tools in different ways, depending on local conditions. Regionalization is not a single model. It occurs along a spectrum of arrangements that range from limited cooperation to full integration.

At one end of the spectrum are narrow partnerships. These include bulk water or wastewater agreements, emergency interconnections, emergency-communications plans, shared treatment capacity, or joint use of specific facilities. These arrangements address specific needs such as backup supplies, capacity constraints, or short-term operational challenges, while allowing each system to keep its own governing board and ownership.

More involved partnerships include shared staffing, joint procurement of professional services, shared-management contracts, coordinated capital planning, or joint grant applications. These approaches can reduce administrative burden, improve access to technical expertise, and help systems meet regulatory requirements without merging governance or assets.

At the most integrated end of the spectrum are arrangements in which systems combine operations or ownership. This may occur through creation of a regional authority or district, or through transfer of operational control or ownership to another local government. In these cases, responsibility for service delivery, capital investment, and compliance is centralized.

Across this spectrum, regional partnerships can provide important benefits. These include improved reliability through shared infrastructure and backup capacity, better compliance support through access to better technical and managerial expertise, more efficient use of capital, and greater ability to plan for growth, aging infrastructure, and long-term service needs. Regional arrangements can also help spread risk and reduce pressure on individual systems facing capacity or staffing challenges.

Some regional partnerships develop organically. These are often situations where systems already have a working relationship, where service areas are expanding toward one another, or where regional cooperation supports planned growth. Existing trust or shared history can make these partnerships easier to form and sustain.

But regional partnerships do not solve all challenges. They do not eliminate the need for adequate rates, sound financial management, or ongoing infrastructure investment. In some areas, geography, legacy infrastructure, or system condition limits how far integration can go. As a result, regional approaches work best when they are tailored to local and regional conditions rather than applied as a uniform solution.

Recognizing the range of partnership options and how they function in practice provides important context for understanding the barriers discussed in the next section and for the recommendations that follow.

V. Barriers to Regional Water and Wastewater Approaches

North Carolina law provides broad authority for local governments to cooperate through ILAs and regional entities, and regional partnerships occur fairly regularly across the state. Many systems share infrastructure, contract for services, or coordinate in targeted ways. At the same time, many other regional-partnership efforts encounter hurdles that prove difficult, and sometimes impossible, to overcome.

Interviews, surveys, case review, and quantitative analysis identify a consistent set of obstacles that limit broader adoption of regional water and wastewater approaches. These obstacles span political, financial, informational, technical, geographic, institutional, and legal dimensions, and they often reinforce one another. In some cases, one barrier alone is enough to stop progress. More often, several constraints align and prevent efforts from moving beyond initial discussions, even where there is interest or a clear operational benefit.

A recurring constraint across these areas is that decisions about rates, capital investment, staffing, growth, and regulatory compliance are made at the individual-system level, even where utilities operate within shared service areas or interconnected networks. Regional conditions are not routinely incorporated into formal decision-making. As a result, promising regional efforts can stall despite the availability of legal authority and documented potential advantages.

A. Political and Governance Barriers

Political and governance dynamics were frequently described as core barriers to regionalization. Short election cycles and turnover among governing boards make it difficult to sustain multiyear discussions about shared infrastructure, long-term investments, and structural change. Elected officials often face pressure to prioritize near-term rate stability over long-term system sustainability.

Under current law, decisions about rates, budgets, and service are made at the individual-system level. This preserves local control but makes regional cost-sharing difficult, particularly when costs and benefits are uneven. Officials may hesitate to support arrangements that could affect local rates if decisions would be influenced by a regional body.

Utilities are also closely tied to community identity. In some areas, limited trust between neighboring jurisdictions reinforces resistance, even when potential benefits are recognized. Some participants noted that even limited cooperation can be viewed as a first step toward consolidation, increasing reluctance.

Growth concerns add another layer. Some communities worry that regionalization could encourage unwanted growth; others fear it could limit future development. Because water and wastewater services influence growth patterns, boards are cautious about sharing authority.

Differences in system size and financial strength also shape discussions. Smaller systems worry about limited influence in a regional structure. Larger systems are concerned about absorbing risk from weaker partners without clear protections. Past regional efforts—especially those that were politically difficult—continue to shape current perceptions.

B. Financial and Rate-Setting Barriers

Financial conditions were consistently identified as a significant constraint on regionalization. In many systems, rates have not covered the full cost of service for extended periods. This can lead to limited reserves, deferred maintenance, and growing regulatory risk. In this environment,

regionalization may be viewed as financially disruptive because it can bring underlying imbalances to the surface and require corrective action sooner rather than later.

Aligning rates across systems is one of the most challenging aspects of regionalization. When one system has historically maintained higher rates and another has held rates below cost, creating a unified rate structure may require substantial increases in one community. Rate changes that are immediate and highly visible within a single community are often harder to implement than incremental adjustments made gradually over time within one system.

Existing financial obligations add further complexity. Outstanding debt, unfunded capital needs, and aging infrastructure raise questions about how liabilities would be treated in a regional structure. Determining whether costs remain tied to the original system or are shared more broadly is both technically complex and politically sensitive. Participants frequently cited challenges associated with debt restructuring and allocation of legacy costs.

Quantitative analysis supports these concerns. Systems experiencing financial distress were significantly less likely to consolidate, even after accounting for other factors. Limited financial stability reduces a system's ability to engage in negotiations and increases perceived risk for potential partners.

Participants also raised concerns about long-term support. Regionalization is typically a transition that requires sustained investment, not a one-time transaction. The willingness of newly formed entities to consolidate diminishes when there is uncertainty about financing terms, continued funding priority in State funding programs, or access to credit.

Preliminary results from the bulk rates survey indicate that some utilities rely heavily on bulk sales to outside customers as a source of operating revenue. Additional analysis is underway and will be released publicly.

C. Gaps in Information and Data

Many systems lack the information needed to evaluate regional options. Developing cost-of-service studies, asset inventories, capital-improvement plans, and long-term financial projections often requires outside legal, financial, and engineering support. For smaller systems in particular, the cost of obtaining this professional assistance can be a barrier.

Staffing constraints affect both data quality and continuity. Utilities with limited administrative and technical staff may struggle to maintain accurate, up-to-date records. Turnover can further reduce consistency and institutional knowledge. Without reliable information on asset condition, long-term replacement needs, and full cost of service, systems have difficulty assessing whether regional approaches would improve financial stability or service reliability. In many cases, planning has focused on near-term operating needs rather than long-term capital replacement, debt service, and regulatory-compliance costs. These gaps make it difficult to establish a baseline for comparing alternatives.

Regional discussions are also affected by inconsistent data across systems. Differences in accounting practices, rate structures, and reporting methods complicate comparison. This in turn can increase uncertainty and slow progress because the systems involved lack a shared analytical foundation.

D. Capacity, Technical, and Geographic Barriers

Even when information is available, limited capacity may prevent action. Smaller and rural utilities often operate with minimal staff and have limited time to evaluate partnership options, negotiate agreements, or manage transitions. Utility responsibilities span finance, operations, engineering, and regulatory compliance. Without sufficient coordination across these areas, systems may struggle to assess regional options comprehensively or maintain consistent positions during negotiations. Geographic and infrastructural conditions present additional constraints. In some regions, terrain, dispersed development patterns, or aging infrastructure make physical interconnection technically difficult or cost-prohibitive. Small-diameter lines installed decades ago may need substantial replacement before they can support integration. Where physical integration is not feasible, regional approaches may instead focus on shared management, operational support, or administrative services. These alternatives may offer benefits but are not always considered as part of regional discussions.

Limited access to external expertise further constrains progress. Engineering, legal, and financial services needed to design and implement regional arrangements are often costly and in high demand.

E. Structural, Regulatory, and Institutional Barriers

Oversight and support responsibilities for water and wastewater systems are distributed across multiple State agencies. Participants noted that coordination among financial, regulatory, and policy functions could be improved. Differences in planning requirements, funding timelines, and regulatory expectations can create uncertainty for systems considering regional arrangements.

Planning and feasibility studies are generally advisory. Identified regional benefits are not consistently linked to funding incentives, regulatory flexibility, or implementation mechanisms. That is, they often provide clear analyses but not clear courses of action. Some funding prioritizes standalone capital projects rather than regional implementation. In those cases, available funding may reduce incentives to pursue broader structural solutions, even where long-term benefits might be greater.

Quantitative analysis indicates that State policy tools can influence outcomes. Systems that received merger and regionalization feasibility grants and systems that were already physically interconnected were more likely to consolidate.

Interbasin-transfer requirements were identified as a procedural constraint in certain situations. Although statistical analysis does not show a strong correlation with reduced consolidation, the permitting process requires advance commitments and may slow arrangements dependent on shared water supplies.

Survey results indicate that structural factors such as distance or availability of a partner are not widely viewed as prohibitive but that utilities are primarily concerned with upfront costs, cost equity, liability, and the potential loss of decision-making control. At the same time, partnerships are valued for their potential to improve financial capacity and emergency response.

F. Legal Authority and Statutory Uncertainty

Multiple statutory pathways exist for shared services and governance. However, entities formed under different statutes do not have identical powers related to rates, debt issuance, taxation, service areas, or regulatory responsibility. These differences add complexity when systems operating under distinct legal frameworks seek to consolidate or share governance.

Uncertainty also arises when one local government assumes ownership or operational control of another system. Although such arrangements are generally authorized, State law does not fully define the scope of authority, liability, and responsibility in every circumstance. Questions may arise regarding rate-setting authority, responsibility for existing debt, compliance obligations, and future capital investment.

This uncertainty increases transaction costs, extends negotiations, and raises perceived risk. Participants indicated that clearer statutory guidance could reduce uncertainty and support more consistent regional arrangements.

VI. Addressing Impediments to Regionalization

The findings in this report show that regionalization in North Carolina is limited less by legal authority than by perceptions of financial risk and by the institutional conditions under which decisions are made. While many systems face similar challenges and operate within shared service areas, the barriers described in the previous section often prevent early, structured action and make it difficult to move from interest to implementation.

The recommendations that follow respond directly to these conditions. Together, they outline a coordinated and graduated approach to regional planning and utility sustainability that clarifies expectations for early evaluation, strengthens regional engagement, aligns State support, and introduces proportionate tools when voluntary action is insufficient. The framework preserves local governance and recognizes the role of financially stable systems.

Recommendation 1: Require Structured Regional Engagement to Reframe Sustainability Decision-Making

Water and wastewater utilities do not operate in isolation. Their long-term sustainability is shaped not only by rates, budgets, and management practices but also by regional conditions that no single governing board can control. These include fragmented service territories, small and uneven customer bases, shared water sources, interconnections, workforce shortages, aging infrastructure, and financial disparities among neighboring systems.

North Carolina's large number of small systems makes these dynamics more pronounced. Because utilities can be closely tied to local identity and governance, concerns about losing authority or being taken over can make regional discussions politically difficult, even when cooperation could reduce risk or improve efficiency. As a result, neighboring systems that share infrastructure or service areas may rarely evaluate options together unless a crisis forces the issue.

The study found that important constraints often appear long before a system is formally labeled distressed. A utility may look stable on paper, yet operate in a fragmented region that limits long-term choices. By the time formal intervention occurs, trust may be low and feasible options narrower.

Current law focuses mainly on individual system performance and typically responds after problems become acute. It does not create a routine, structured opportunity for neighboring systems to examine shared conditions and build working relationships in advance.

Requiring structured regional engagement would address this gap. The goal is to ensure that utilities and governing boards periodically review regional conditions together, document shared risks, and consider practical options in a noncrisis setting. Even modest partnerships, such as shared services or joint planning, can build trust over time and expand future choices.

Broadly, the process would be as follows:

- The State would establish a planning framework by designating regions.
- The State, or designated regional partners, would then convene structured discussions and produce a written report of regional findings.
- Utilities would then evaluate possible shared-service or regional approaches.

Local governments would retain authority over decisions, unless State escalation were triggered (see recommendation 2). But governing boards in designated regions would be required to formally receive and acknowledge regional findings when making major decisions about rates, capital investment, debt, service expansion, or long-term operations.

In short, many sustainability challenges are regional, but oversight structures focus on individual systems. Structured regional engagement creates a consistent way to identify shared constraints early, build trust, and expand long-term options while preserving local control.

Recommendation 2: Establish a State-Level Board of Regionalization and Utility Sustainability

Structured regional engagement requires consistent oversight and a clear path from early risk identification to, if necessary, structural intervention. A state-level board dedicated to regionalization for water and wastewater systems and utility sustainability would best provide that oversight. By integrating monitoring, regional coordination, and graduated corrective authority within a single framework, the State can identify shared constraints earlier, expand feasible options, and preserve local control whenever possible while ensuring that essential water and wastewater services remain sustainable.

Water and wastewater challenges rarely fall into neat categories. Financial weakness, infrastructure deterioration, compliance violations, governance instability, workforce shortages, and fragmented service territories often overlap. Multiple State agencies currently address pieces of these issues, but no single entity evaluates statewide risk holistically or manages escalation in a consistent way. The existing framework also tends not to respond until after distress becomes acute. A state-level board would create an integrated sustainability structure. It would build on the experience, data systems, and expertise developed through existing programs, including the Viable Utility Program and the LGC's Unit Assistance List. It would also expand the focus from distressed systems alone to regional and long-term sustainability risk.

This board would not replace technical-assistance providers, funding agencies, or regulators. It would coordinate those tools, align them within a single framework, and ensure that the State identifies and addresses risk early and consistently. Its core responsibilities would fall into three categories.

1. Overseeing Regional Engagement

The board would oversee implementation of the process established in recommendation 1:

- designating regions using objective criteria such as geographic proximity, shared infrastructure or water resources, overlapping service areas, and operational or financial interdependence;
- establishing timelines and participation requirements;
- providing support to facilitate regional meetings;
- ensuring consistent data collection and analysis;
- reviewing and adopting regional-findings reports; and
- determining when structural regional risk exists.

Regional designation would create a planning framework only. It would not automatically change governance structures or require consolidation.

2. Monitoring Utility Sustainability Statewide

The board would continuously monitor financial, operational, managerial, and structural indicators across systems. Monitoring would include review of

- audits and financial statements,
- rate structures and cost recovery,
- capital-improvement planning and asset management,
- compliance history,
- governance stability, and
- regional fragmentation and interdependence.

The board would identify early warning indicators before systems met formal distress thresholds. This proactive posture would expand available options and reduce crisis-driven decision-making.

3. Administering a Defined Escalation Framework

State law should establish a clear, progressive escalation structure. The board would advance through stages of escalation only when documented risk persisted and local corrective efforts failed.

Stage 1: Directed Corrective Action

When the board identified material sustainability risk, it would issue written findings and require specific corrective actions within a defined timeframe. These actions could include

- completion of a rate study,
- adoption and implementation of cost-based rates,
- development of a multiyear financial plan,
- preparation or update of an asset inventory and a capital-improvement plan,
- implementation of internal financial controls, and
- workforce-stabilization planning.

The board would require periodic progress reporting and could coordinate with funding agencies to align financial assistance with corrective plans.

Stage 2: Mandatory Regional and Structural Evaluation

If the risk remained unresolved, or if the board determined that structural regional constraints prevented long-term viability, the board would require a formal feasibility evaluation. All designated regional partners would have to participate. The evaluation would analyze

- shared-services arrangements,
- management agreements,
- bulk or wholesale restructuring,
- consolidations or mergers,
- governance restructuring, and
- realignment of service territories.

The board would define analytical standards, require comparative financial modeling, and evaluate operational and governance implications. The process would produce a documented determination regarding long-term viability under independent and regional models.

Stage 3: Required Structural Implementation

If the evaluation demonstrated that independent operation was not viable and local governing boards declined to act, the board would issue formal findings and require implementation of structural remedies authorized by statute, which could include

- execution of shared-service agreements,
- transfer of management authority,
- consolidation or merger,
- reassignment of service territory, and
- creation or designation of a regional operating entity.

The board would impose these measures only after concluding that less intrusive actions had failed and that structural change was necessary to protect public health, environmental compliance, or financial solvency.

Stage 4: Stabilization and Protective Financial Oversight

If a system faced acute fiscal instability or a breakdown in compliance, the board could impose temporary stabilization measures while structural remedies proceeded. These measures could include

- review and approval of annual budgets,
- oversight of rate implementation,
- restrictions on nonessential expenditures, and
- required reserve restoration plans.

These controls would function as temporary safeguards designed to prevent further deterioration.

Composition and Staffing

The board's effectiveness would depend on getting the composition right. Challenges to water and wastewater sustainability are rarely limited to a single issue; financial strain, infrastructure condition, governance capacity, and regulatory compliance are often interconnected. The board therefore must be structured to evaluate systems comprehensively rather than through a single disciplinary lens. Membership should include individuals with expertise in utility management, public finance

and rate setting, engineering and infrastructure planning, environmental compliance, local government governance and law, and regional planning. This range of experience ensures that decisions reflect operational realities, fiscal analysis, legal authority, and long-term system planning.

Dedicated professional staff are equally important. Staff with backgrounds in finance, engineering, compliance, governance, and regional facilitation should manage data systems, conduct sustainability assessments, coordinate regional engagement, and prepare formal findings. A multidisciplinary state-level board supported by skilled, full-time staff would provide the depth, continuity, and statewide perspective necessary to effectively address complex sustainability challenges. Existing staff from the current Viable Utility Program could bring practical experience, established relationships, and subject-matter expertise that could strengthen and accelerate this work.

Recommendation 3: Clarify Legal Authority and Reduce Legal Risk for Regional Arrangements

The issue identified in the findings is not lack of authority but uncertainty over how to resolve certain practical and legal questions when cooperation becomes more lasting and formal or when it involves a transfer of ownership or operational control. That uncertainty creates hesitation, particularly when one local government considers assuming responsibility for another system. Standardized guidance for local governments could demystify regionalization for hesitant units by addressing four common issues.

First, clearer direction is needed on the treatment of existing financial obligations. Local governments need explicit guidance on how outstanding debt and related obligations are handled when systems cooperate, merge, or transfer assets. Do those obligations remain tied solely to the original system and its customer base? May financial responsibilities be shared by agreement? Under what conditions? Clarifying these questions would reduce financial-risk concerns and make due diligence more predictable.

Second, the allocation of regulatory responsibility should be addressed. Guidance should identify who holds compliance responsibility during transitions of ownership or operational control, and it should detail how preexisting violations are treated. Consideration should be given to establishing a defined transition framework for systems that assume responsibility for a noncompliant utility, including whether limited grace periods or structured compliance plans may be appropriate.

Third, governance and rate-setting authority should be clarified in the context of ILAs. Local governments need clearer confirmation of the scope of authority that may be delegated, the permissible methods for allocating costs, and whether rates may be set separately for different service areas within a combined or jointly operated structure.

Finally, the law should be more clear about which operational powers transfer automatically and which must be expressly addressed in an agreement when a utility assumes ownership or operational control of another system. These powers include setting rates for an acquired system, making capital- and asset-management decisions, integrating staffing and billing, and otherwise managing the system as part of a larger enterprise.

Resolving these points of uncertainty can make existing cooperative authority more usable and reduce perceived risk.

Recommendation 4: Strengthen Utility Governance and Management

Participation in regional planning and implementation should be supported by targeted education and technical assistance for governing boards, utility management, and utility staff.

Effective participation in regional processes requires a shared understanding of long-term utility finance, infrastructure planning, regulatory risk, and governance responsibilities. Many of the challenges that lead to sustainability concerns stem not from lack of authority but from limited capacity to evaluate long-term tradeoffs, interpret technical information, or connect planning decisions to financial and operational outcomes.

Education and technical assistance should focus on

- long-term utility finance and rate adequacy;
- capital planning, asset management, and infrastructure reinvestment;
- identification and oversight of financial, operational, and regulatory risk;
- regional service models, shared services, and governance structures; and
- the fiduciary and legal responsibilities of governing boards and utility leadership.

Education should be structured to support practical decision-making and should be tailored to the role of the audience, recognizing the different responsibilities of governing boards, managers, and operational staff.

Participation in structured regional planning, enhanced State oversight, or recovery processes may serve as a trigger for focused education and technical assistance. Providing support at these points, instead of relying entirely on compliance, ensures that additional expectations are paired with the tools needed to meet them. Strengthening governance and management capacity supports more informed decision-making, improves the quality of regional engagement, and increases the likelihood of sustainable options being identified and implemented before conditions require more direct intervention.

VII. Indicators and Metrics for when Regionalization Is Appropriate

Regional water and wastewater solutions are most effective when evaluated early and deliberately, rather than in response to crisis. Clear and predictable indicators help identify when regional options merit structured consideration and reduce reliance on reactive decision-making.

No single indicator determines whether regionalization is appropriate. Indicators are most informative when they appear across multiple areas and persist over time. Patterns, trends, and interaction between indicators provide stronger signals than isolated conditions and help distinguish temporary challenges from structural limitations.

Using indicators supports consistency in state and local decision-making. Indicators clarify when regional evaluation is warranted, support proportional responses, and help align planning, financial, and regulatory tools with system conditions.

A. Financial Condition

Financial-condition indicators signal whether a system has the financial resilience and flexibility needed to sustain independent operation, absorb shocks, and plan for long-term capital and compliance obligations. Indicators in this category may include

- repetitive operating deficits over multiple fiscal years,
- declining or consistently low unrestricted cash balances,
- cash on hand that is below accepted benchmarks,
- debt-service-coverage ratios that limit flexibility or constrain future investment,
- placement on the Unit Assistance List or identification through Viable Utility Program processes, and
- reliance on short-term financial measures that defer underlying cost pressures rather than resolving them.

When these indicators persist, they suggest reduced capacity to maintain infrastructure, respond to regulatory requirements, and manage long-term risk without structural change or external support.

B. Planning and Financial-Management Capacity

Planning and financial-management-capacity indicators signal whether a system can anticipate future needs and translate known risks into sustainable long-term decisions. Indicators in this category may include

- absence of an asset-management plan, multiyear capital-improvement plan, annual audit, or long-term financial forecast;
- planning documents that do not reflect known infrastructure conditions, regulatory requirements, or service-area growth;
- failure to translate identified capital and operational needs into a realistic long-term financial strategy;
- rate analyses that exclude known or engineer-recommended capital needs or that rely on indefinite deferral of reinvestment;
- overreliance on grant funds to cover capital improvements;
- identified funding gaps that remain unaddressed due to weak planning or governance capacity; and
- limited staff or governing-board capacity to integrate planning, budgeting, and financial decision-making.

Periodic rate adjustments do not mitigate these risks when they are not grounded in comprehensive, forward-looking planning.

C. Water Quality and Regulatory Performance

Indicators of water quality and regulatory performance signal whether a system can reliably meet public health standards and sustain compliance over time. Indicators in this category may include

- repeated health or reporting violations involving drinking water or wastewater,
- extended or recurring compliance schedules,
- enforcement actions or consent orders,

- time-sensitive violations that pose elevated public health risk,
- new or evolving regulatory requirements that impose significant operational or capital obligations, and
- necessary upgrades in treatment to maintain compliance due to declining source-water quality.

Persistent compliance issues often indicate underlying financial, staffing, or infrastructure limitations.

D. Infrastructure Condition and Capital Affordability

These indicators signal whether a system can realistically maintain, rehabilitate, or replace essential assets on its own. Indicators in this category may include

- aging infrastructure with significant deferred maintenance,
- major rehabilitation or replacement needs that exceed realistic local financing capacity,
- capital needs that would require rate increases beyond what the service area can reasonably support, and
- limited redundancy in critical assets such as treatment, pumping, or storage.

When infrastructure needs reach this scale, unit-specific reinvestment may be impractical, and regional options may warrant evaluation.

E. System Scale and Structural Resilience

System-scale and structural-resilience indicators signal whether a system's size and configuration support operational resilience and cost stability. They may include

- very small customer bases that limit revenue stability;
- a customer base that results in a lack of revenue diversification or an overreliance on a few specific customers;
- a lack of economies of scale to absorb capital, compliance, or workforce costs; and
- for small systems, significant depreciation or reinvestment needs.

Small size alone does not necessitate regionalization, but it increases vulnerability when combined with other indicators.

F. Water Supply, Capacity, and Resilience

These indicators signal whether a system can reliably meet current and future demand under normal and stressed conditions. Indicators in this category may include

- capacity utilization approaching permitted or design limits;
- dependence on a single water source, treatment facility, or other critical asset with notable vulnerabilities; and
- limited resilience in cases of drought, contamination, or supply disruption.

These conditions may make regional approaches more feasible or cost-effective than continued system-specific expansion.

G. Physical Proximity and Connectivity

Physical-proximity and connectivity indicators signal the practical feasibility and relative cost of regional solutions. Indicators in this category may include

- existing interconnections with neighboring systems,
- close geographic proximity to other utilities, and
- shared infrastructure corridors or overlapping service areas.

While lack of connectivity does not preclude regional approaches, proximity reduces transaction costs and barriers to implementation.

H. Demographic and Service-Area Dynamics

Demographic and service-area indicators signal whether future demand, changes in the customer base, or development patterns will strain unit-specific systems. They may include

- rapid population or service-area growth without corresponding long-term planning,
- lack of planning for growth-related capital and operational impacts, and
- declining or stagnant customer bases that increase per-customer costs.

Both growth and decline can increase financial and operational pressure and can elevate the relevance of regional evaluation.

I. Workforce and Operational Capacity

Workforce and operational-capacity indicators signal whether a system can sustain day-to-day operations and compliance over time. Indicators in this category may include

- an inadequate number of certified operators,
- anticipated retirements without identified successors, and
- persistent vacancies or difficulty filling key positions.

Workforce limitations often interact with financial and infrastructure challenges, reducing overall system resilience.

J. Customer Experience and Community Confidence

Customer-experience and community-confidence indicators signal emerging service, communication, or governance issues that may not yet appear in financial or compliance data. Indicators in this category may include

- persistent customer complaints regarding water quality, service reliability, or affordability;
- declining customer confidence in utility management; and
- escalating public concern that precedes formal compliance or rate-setting actions.

While these indicators reflect perception, they may point to underlying structural or management challenges that warrant closer evaluation.

K. Using Indicators to Guide State Engagement

The indicators described above are intended to inform when and how the recommendations in this report should be applied. They are not intended to function as automatic triggers or rigid thresholds. Instead, they provide a structured way to assess risk, align State responses with system conditions, and ensure that intervention is proportional and evidence-based.

Indicators should be evaluated based on four factors: the number of indicator categories involved, the severity of the conditions, the persistence of those conditions over time, and the effectiveness of prior assistance or corrective action.

1. Early Conditions: Monitoring and Capacity Support

When indicators appear in a single category, or when conditions are emerging but not persistent, the findings support limited State engagement focused on monitoring and capacity building. Indicators may reflect early financial stress, incomplete planning, isolated compliance issues, workforce vulnerability, or emerging infrastructure needs. These conditions suggest elevated risk but do not indicate that independent operation is no longer viable. State actions at this stage align with the recommendations related to

- technical and planning assistance;
- improved data, transparency, and reporting;
- voluntary regional engagement and information sharing; and
- opportunities for education and capacity support for governing boards and staff.

The objective at this point is to support informed local decision-making and reduce the likelihood of escalation.

2. Escalating Risk: Structured Regional Engagement and Incentives

When indicators appear across multiple categories, or when conditions persist over multiple review periods despite early assistance, the risk to long-term sustainability increases. Indicators often include combinations such as financial stress paired with deficient planning, recurring water-quality or compliance challenges, infrastructure needs that are not financially manageable at the unit level, or workforce constraints that affect operations. These conditions align with the recommendations related to

- required structured regional engagement and documentation;
- formal evaluation of regional options;
- alignment of grants, loans, and technical assistance with regional planning;
- incentives that prioritize collaboration, shared services, or coordinated investment; and
- required education and technical-assistance collaboration for governing boards and staff.

The recommendations recognize that, once indicators have become this prevalent, unit-specific strategies may be insufficient on their own and that regional options warrant serious and documented consideration.

3. Sustained Unsustainability: Directed Action and Coordinated State Involvement

When indicators show sustained financial, operational, or regulatory unsustainability over an extended period, and when prior planning, assistance, and incentives have not stabilized conditions, stronger State involvement may be appropriate. Indicators may include persistent financial distress, unresolved compliance or water-quality issues, unaffordable capital needs, limited operational capacity, or findings that independent operation is not viable. These conditions align with the recommendations related to

- State-directed regional action where necessary;
- coordinated use of financial, regulatory, and planning tools;
- enhanced financial oversight or intervention where authorized by law; and
- implementation of regional solutions identified through prior evaluation.

Directed action at this stage is intended to ensure continued service and protect public health while maintaining proportionality and limiting unnecessary burden on financially stable systems.

VIII. Conclusion

Water and wastewater systems across the State operate under a wide range of conditions and capacities. Some systems face increasing pressure related to infrastructure age, financial resources, workforce capacity, regulatory requirements, or changing service areas. This report presents a framework for identifying when regional options warrant structured consideration and for aligning State support and oversight with system conditions in a consistent and proportional way. The purpose of this framework is to support long-term service viability and protect public health by encouraging timely, evidence-based action before conditions escalate into crisis.

Appendix A. Legal Research

Regionalization in Other States

As part of this study, the team looked beyond North Carolina to gather a national perspective on how other states are approaching regionalization efforts in water and wastewater by completing a fifty-state survey using primarily the AI-generated surveys on Westlaw. We found that states have a variety of ways to encourage regionalization through legislation: (1) specific programs, funding, state agencies, or other public bodies explicitly meant to encourage regionalization; (2) planning requirements; and (3) other miscellaneous legislation meant to encourage regionalization without standing up any specific program, funding, or public body. Some states went beyond encouragement and required regionalization in certain instances or established a receivership model. Some states use a combination of these various types of legislation or regulations.

In total, there are at least twenty states with specific programs, funding, or public bodies explicitly meant to encourage regionalization efforts. Here are some examples.

- Cal. Water Code § 189 establishes the Office of Sustainable Water Solutions. Among other things, this office promotes and facilitates regional drinking-water and wastewater projects and regional solutions that include the consolidation of existing water districts.
- Georgia's Local Government Efficiency Act (Ga. Code Ann. § 36-86-1 *et seq.*) establishes a program that provides grants to local government units considering consolidation. These grants help units (1) determine the need for units or service-delivery programs to consolidate, (2) assess the desirability of consolidation, and (3) plan and implement consolidation. Water supply, water distribution, wastewater, and sewage are among the types of services that fall within the scope of the program.
- Mass. Gen. Laws ch. 21, § 31A establishes a matching-grant program for communities who want to join the Massachusetts Water Resources Authority or another regional system for water or wastewater.
- Pennsylvania's Small Water Systems Assistance Act (35 PA. Stat. and Cons. Stat. § 724.1–.15 (West)) provides assistance to small systems in becoming or remaining viable and promotes creating regionalized systems. The provisions include a grant program for feasibility studies and a program dedicated to training operators and developing methods to share staff between small systems.

At least twelve states encourage regionalization through their planning requirements. For instance, Connecticut requires water-utility coordinating committees to prepare coordinated water-system plans that promote cooperation between public water systems in several ways, including system integration, water-company plans, joint management or ownership of services, and interconnection. Conn. Gen. Stat. § 25-33h; *see also* § 25-32a (water companies include municipalities); Conn. Agencies Regs. § 25-33h-1 (corresponding regulation for coordinated water-system plans); Conn. Gen. Stat. § 25-32 to -54 (discussing water supplies generally); Conn. Gen. Stat. § 25-33i (restricting approval of public water-supply system unless existing system can't provide water service or committee recommends approval). In Texas, the state legislature has provided funding for political subdivisions to develop regional facility plans under the Texas Water Assistance Program's Research

and Planning Program, Tex. Water Code Ann. § 15.406, and Texas requires each regional water-planning group to develop a regional water plan that includes an assessment of progress for the regional area in encouraging cooperation between water-user groups to achieve economies of scale and incentivize strategies that benefit the entire region. Tex. Water Code Ann. § 16.053(e)(12).

At least sixteen states encourage regionalization through legislation that does not establish a program, funding, or public body. For example, in Kentucky, the legislature has established a forbearance period for acquiring utilities so that no fines or penalties are imposed, giving the unit time to make improvements to acquired systems. The unit may also have access to priority funding from the Kentucky Infrastructure Authority's eligible financing to make the corrections identified in the state and federal violations. Ky. Rev. Stat. Ann. § 65.058. The state has also created a process for the sale, lease, or transfer of a utility system in an emergency where a city has a population under 1,000. Ky. Rev. Stat. Ann. § 96.5405. In Tennessee, local governments and utility districts can serve as guarantors and provide security for loans to encourage joint action in establishing fiscally self-sufficient wastewater facilities, Tenn. Code Ann. § 68-221-1005(j). In some circumstances, authorized local governments can assign rights and obligations under a loan received under the statutory part to any other local government following certain procedures. *See* Tenn. Code Ann. § 68-221-1005(k); *see also* § 68-221-1005(a) (providing context that this section concerns a low-cost loan program for local governments to build wastewater facilities).

At least fourteen states establish some sort of receivership model or mandate regionalization in some way other than through receivership.

- South Carolina allows appointment of a receiver for an enterprise where a municipality defaults payment of any refunding bonds for more than thirty days. *See* S.C. Code Ann. § 6-17-200, -21-360.
- Indiana allows for the initiation of an informal-review period, a rate-regulation period, or a receivership proceeding under certain circumstances where an enforcement order is issued on certain water or wastewater utilities. Ind. Code § 8-1-1.9-5.
- Mississippi has created a regional board and multiple county authorities to consolidate water, wastewater, and stormwater services in certain areas of the state. The state has mandated consolidation in at least three instances. Mississippi Gulf Region Utility Act, Miss. Code Ann. §§ 49-17-701 to -775; *see* §§ 49-17-727, -731, -735.
- Some states provide for both a receivership and another type of regional mandate. For instance, West Virginia allows the Public Service Commission to order a capable proximate utility to acquire a failing water or wastewater utility. But under some circumstances, it can enter an order for an alternative remedy. Alternatives include operation by another utility, a management company, or a service company; appointment of a receiver; merger with another public utility (with local government approval; or acquisition by mutual agreement). W. Va. Code § 24-2H-7; *see also* W. Va. Code R. §§ 150-5-10, -7-11 (related administrative law).

Finally, eight states have interesting ILA requirements or similar requirements related to water or wastewater. For example, Arkansas provides additional requirements for creating ILAs for consolidated waterworks and wastewater systems. Ark. Code Ann. § 25-20-302, -502.

Interlocal-Agreements Database

An ILA serves as the formal legal expression of a negotiated partnership between water and wastewater utilities. It documents how authority, responsibility, risk, and cost are allocated among participating units and provides the enforceable framework for ongoing cooperation. In North Carolina, statutory requirements for ILAs are minimal. G.S. 160A-464 grants broad authority for units of local government to contract with one another but does not prescribe detailed substantive provisions. This level of flexibility is not unique to North Carolina. As part of the out-of-state research conducted for this study, the team performed a targeted review of other states' laws to identify more detailed or water-specific ILA requirements and found only eight states with noteworthy additional provisions. Although the statutory framework leaves substantial discretion to local governments, the durability and effectiveness of a partnership often depend on how thoroughly the agreement addresses governance, financial, legal, and operational issues. Clarity and specificity in drafting reduce the likelihood of future disputes and provide structure when circumstances change.

The team reviewed over sixty ILAs collected during the course of this study, as well as agreements previously provided to the EFC over prior years. The review revealed significant variation in both length and substance. Agreements ranged from just over five pages to more than thirty pages. Provisions that might reasonably be expected in a water or wastewater partnership agreement were not consistently included. Some agreements contained detailed allocations of responsibility and financial methodology, while others addressed these matters only briefly or indirectly.

To provide structure and comparative insight, the team developed a searchable database to track core features and provisions across the ILAs reviewed. The database is intended as a practical drafting resource. It offers local governments a structured list of provisions to consider and allows users to identify example agreements containing specific clauses they may wish to evaluate or adapt. It organizes these provisions into five primary categories: (1) core features, (2) governance and decision-making provisions, (3) legal and administrative provisions, (4) financial and cost-sharing provisions, and (5) service and operational details. The database is available at https://uncsog.shinyapps.io/efc_draftingILA/.

The core-features category captures foundational elements of the agreement, including the partner units involved, the type of partnership structure created, any cited legal authority, the stated term or duration of the agreement, and whether automatic renewal is included.

The second category, governance and decision-making provisions, captures provisions that address the effective date, renewal and termination mechanisms, designation of ownership structure or lead entity, and whether the agreement establishes a joint board or committee to oversee implementation.

The third category, legal and administrative provisions, includes dispute-resolution provisions, allocations of rate-setting authority, liability and indemnification clauses, responsibilities for regulatory compliance, amendment procedures, withdrawal and dissolution terms, and successor or assignment provisions.

The fourth category, financial and cost-sharing provisions, tracks representations and warranties, provisions specifying which unit sets customer rates, identification of cost components included in charges, bulk-rate methodologies, revenue-handling arrangements, capital-investment responsibilities, and treatment of existing or future debt obligations.

The final category, service and operational details, notes whether agreements include audit and reporting requirements, service descriptions, service-area definitions, performance standards,

staffing arrangements, asset-ownership provisions, maintenance responsibilities, growth-related resale limitations, supply-interruption or shortage provisions, and clauses addressing suspension or modification of contractual obligations during emergencies.

By cataloging these provisions, the database provides an accessible reference to support thoughtful drafting and to promote greater clarity and consistency in water and wastewater ILAs.

Appendix B. Qualitative-Data Collection

Qualitative-data collection included targeted interviews with subject-matter experts. Among the interviewees were the entities identified in S.L. 2025-77: the LGC, the SWIA, the NCLM, and the NCACC. These interviews were designed to gather institutional perspectives on governance, finance, regulatory oversight, and regional dynamics affecting water and wastewater utilities.

The study team also hosted sixteen public-listening sessions that were open to any interested participant. The sessions were organized around eight themes, with two sessions devoted to each theme. The themes were financial drivers, viability, decision-making, growth, knowledge gaps, regulatory compliance, operations and staffing, and public relations. Participants were encouraged but not required to limit their comments to each session's theme.

Fourteen of the sixteen sessions included participants who provided substantive input to the study. In two sessions, attendees chose to observe and listen but did not offer comments. In addition to the listening sessions, the study team opened a general input survey to allow members of the public to submit written comments.

Recordings from the fourteen sessions in which substantive input was provided, along with responses to the general input survey, are available on the study website. *Water and Wastewater Regionalization Study*, NC Finance Connect, https://ncfinanceconnect.com/water-and-wastewater-regionalization-study/.

Appendix C. Quantitative-Data Analysis

To complement the qualitative findings from the listening sessions and provide broader statewide context, the project team used data from a survey of owners, managers, and operators of small community drinking-water systems conducted by Anita Milman and Alice Lubeck between June 2022 and June 2025. The eighteen-question survey captures challenges facing small systems, experiences with partnerships, and perceptions of the benefits and feasibility of collaboration, including the role of state policies such as the MRF grant program. The sample includes approximately 158 utilities, of which 66 are owned by local governments. The analysis focuses strictly on the latter subset. The survey was conducted using a mixed-mode survey of systems identified from the EPA's Safe Drinking Water Information System database, following the Dillman method, and responses were anonymized and reported in aggregate. *See* Anita Milman & Alice Lubeck, Data from *Partnerships and Small Community Water Systems*, Inter-University Consortium for Pol. & Soc. Rsch. (Dec. 11, 2025), https://doi.org/10.3886/E240121V1 (data set).

The distribution of perceived barriers to partnership is displayed in Figure 1, below. Overall, survey responses indicate that most utilities do not view structural conditions (i.e., the availability of a partner or geographic distance) as major impediments to partnership. Nearly half of respondents (48%) said that partner availability was not a barrier, and nearly half (48%) said that distance was not a barrier. Only about 17% viewed partner availability as a moderate barrier, and just 5% described it as substantial. Distance showed a similar pattern, with fewer than 7% identifying it as a substantial barrier and 10% as an extreme one.

As shown in Figure 1, below, legal requirements and system-specific technology were also generally viewed as manageable constraints. Roughly 28–31% reported that these factors were not barriers, while about 20–24% identified them as moderate barriers. However, legal requirements were more polarizing than other factors: 17% described them as an extreme barrier, suggesting that regulatory complexity may be highly consequential in specific contexts, even if not universally prohibitive.

Upfront financial cost emerged as the most significant structural barrier. Although 25% reported cost as not a barrier, nearly 40% characterized it as substantial or extreme—the highest combined share among the listed barriers. *See* Figure 1, *infra*. This suggests that while logistical and regulatory hurdles may be situational, financial feasibility represents a more consistent obstacle to partnership formation.

The pattern of responses regarding concerns about partnerships (shown in Figure 2, below) reveals a similar distribution. Few respondents dismissed governance-related issues outright; only about 19–21% indicated that issues such as monitoring partners, liability, dependence, or loss of decision-making control were not a concern. Instead, most utilities clustered in the some-, moderate-, or substantial-concern categories.

Equity in the distribution of costs stood out as the most prominent concern. Over 27% of respondents identified it as a substantial concern, and an additional 16% as extreme. Concerns about liability and responsibility were also notable, with roughly 22% identifying them as substantial and 12% as extreme. Potential loss of decision-making control was somewhat more evenly distributed, though nearly 20% still described it as an extreme concern. *See* Figure 2, *infra*.

Taken together, the survey findings suggest that while structural barriers such as distance or partner availability are not widely perceived as prohibitive, financial feasibility and governance-related concerns appear to be salient considerations for utilities contemplating partnerships. These results complement the qualitative findings that financial- and institutional-risk considerations continue to shape utilities' willingness to regionalize.

Figure 1. Barriers to Forming Partnerships

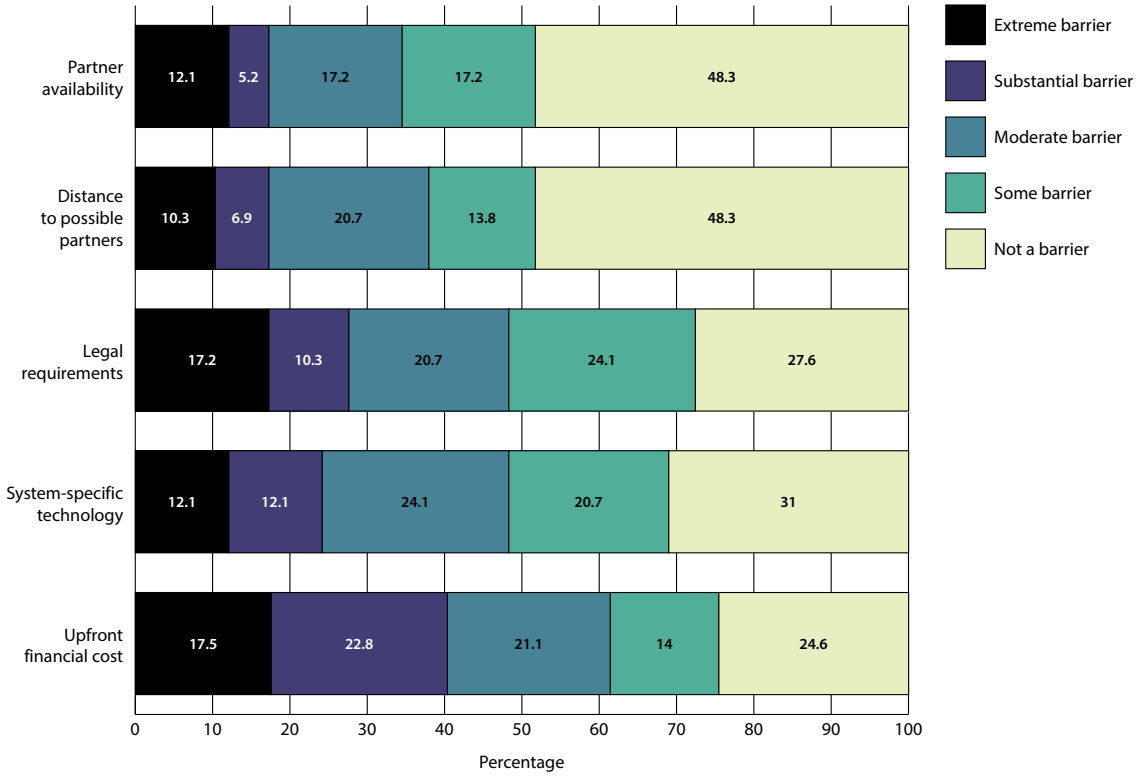


Figure 2. Concerns About Partnerships

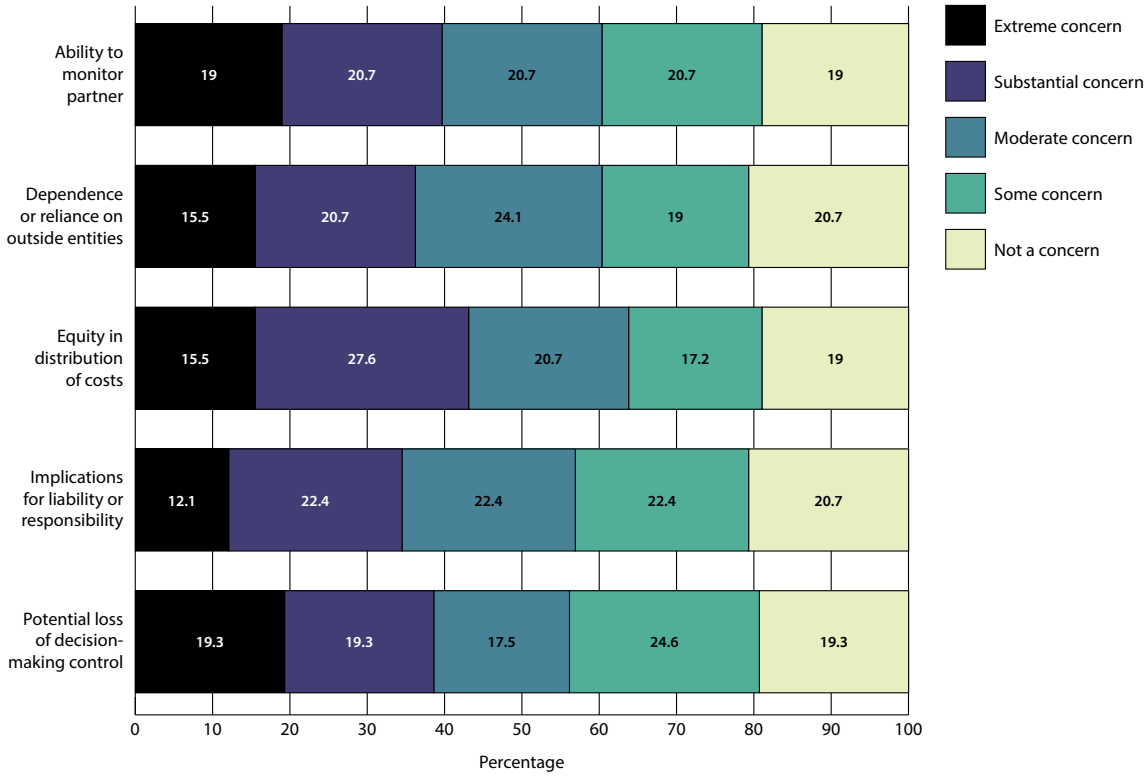
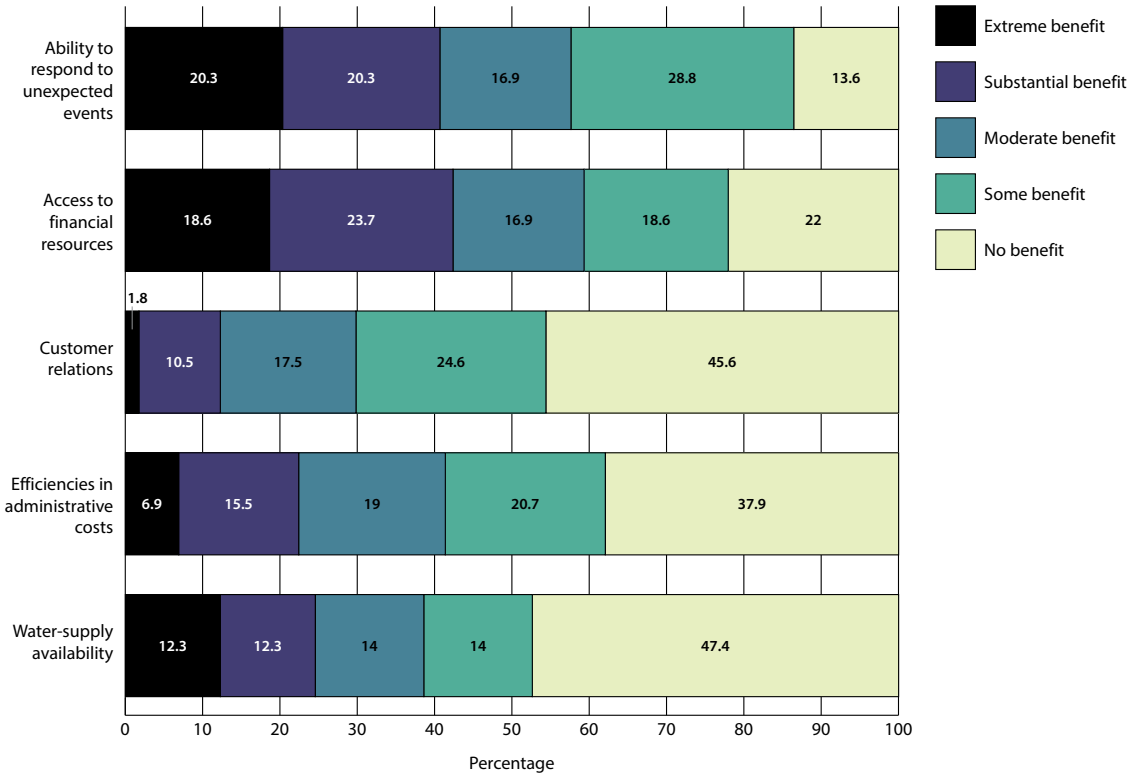


Figure 3. Perceived Benefits of Partnerships for Technical and Financial Concerns



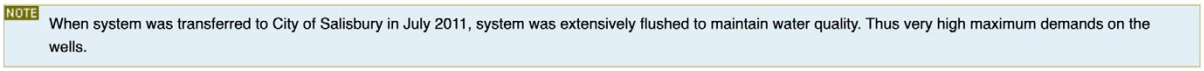
Survey responses also reveal how utilities perceive potential benefits, as shown in Figure 3. The distribution of responses suggests that perceived gains are uneven across categories. The strongest perceived benefits relate to financial resilience and emergency-response capacity. More than 40% of respondents identified access to financial resources as a substantial or extreme benefit, and a similar share viewed partnerships as providing substantial or extreme improvements in the ability to respond to unexpected events. These findings suggest that utilities recognize the potential value of partnerships in strengthening fiscal capacity and operational resilience.

Figure 3 also shows that, by contrast, anticipated improvements in customer relations and water-supply availability were viewed more skeptically. Nearly half of respondents (46%) indicated that partnerships would provide no benefit for customer relations, and 47% saw no benefit for water-supply availability. Only a small share viewed these areas as yielding extreme benefits. Efficiencies in administrative costs fell in between: Though 38% reported no benefit, roughly 22% identified substantial or extreme gains.

Overall, the pattern indicates that utilities perceive partnerships primarily as a tool for risk management and financial stabilization rather than as a mechanism for improving customer-facing outcomes or expanding water supply. Notably, survey responses suggest that utilities appear most motivated by partnerships when they address fiscal stress or emergency preparedness.

Figure 4. Example from Sanford's Local Water-Supply Plan (2024)

Figure 5. Example from China Grove's Local Water-Supply Plan (2011)



Factors That Influence the Observed Likelihood of Consolidation

In response to the legislative directive to evaluate regionalization as a strategy to improve the financial viability and long-term sustainability of water systems, the project team conducted a quantitative analysis of driving factors focused specifically on the case of consolidation. The main purpose of the analysis was to identify conditions that naturally support consolidation, assess whether existing policy incentives were effective, and highlight potential structural or institutional barriers. It relies on measurable indicators drawn from the most comprehensive statewide administrative records available. Specifically, the study examines whether the likelihood of consolidation varies based on system distress, existing physical interconnections, receipt of an MRF grant, interbasin-transfer restrictions, and geographic proximity. These factors are then used to assess the probability that any potential pair of water utilities consolidates. This approach allows for the identification of factors associated with increases or decreases in the likelihood of consolidation among water systems in North Carolina.

The project team constructed a novel dataset of consolidation events spanning 2000 to 2023, drawing on multiple sources from the North Carolina Department of Environmental Quality (DEQ). Our primary source is the universe of available local water-supply plans (LWSPs) submitted between 1997 and 2024 to the Division of Water Resources. In North Carolina, public water systems are required to report in each LWSP whether they have acquired other systems since the previous reporting period. LWSP reports therefore provide statewide documentation of consolidation events, allowing us to construct a comprehensive panel of consolidations.

Each system may also provide supplemental information in an open-ended notes field, which in some cases identifies the acquired system by name or provides additional contextual detail regarding the consolidation. When an acquired system was referenced by name but not by its Public Water System Identification number, we used a fuzzy text-matching procedure to link the reported system name to its official number. This approach generally allowed us to recover the identity of the acquired system, though some ambiguity remained in cases involving common or partially specified system names. Figure 4 provides an example from the City of Sanford's 2024 LWSP showing how acquisitions are reported in practice.

In other cases, evidence of consolidation appears only in the acquired system's LWSP rather than in the acquiring system's plan. For example, the Town of China Grove reported being acquired by the City of Salisbury in 2011 (*see* Figure 5), but Salisbury's LWSP made no mention of the acquisition.

To capture these asymmetric reports, we scanned all LWSP comments for references to mergers or acquisitions using a curated list of keywords (e.g., *acquire*, *merge*, *taken over*, *regionalize*). All positive matches were then manually reviewed to remove false positives. Keywords are frequently used in contexts unrelated to actual consolidations. In some cases, keywords are used in the context of proposed, exploratory, or ultimately unrealized mergers. These cases were excluded.

In some instances, a system responded yes when asked whether it had acquired another system during the reporting period, but it provided no identifying information in the notes field. In these cases, the notes were either blank or too vague to determine the identity of the acquired system, limiting our ability to fully characterize the consolidation event (e.g., Town of Hamilton's 2014 LWSP). Because the counterparty could not be identified, such cases were not included as confirmed consolidations in the pairwise dataset.

Consolidation events were classified as confirmed only when sufficient information was available to identify both the acquiring and acquired systems. Using this approach, the project team identified a total of 106 confirmed consolidations over the study period.

To characterize existing physical linkages between systems, we supplemented the LWSP data with information from Drinking Water Watch, which reports continuous (physical) interconnections among public water systems. These data allow us to map system-to-system linkages and distinguish utilities that are physically interconnected from those that operate in isolation. A recurring challenge in constructing this network is that reported interconnections are often incomplete or inconsistently recorded across systems, making it difficult to determine whether two systems are directly connected or connected indirectly through one or more intermediary systems.

Finally, the project team incorporated additional contextual information from the DEQ Division of Water Infrastructure (DWI). Specifically, we obtained records of utilities that received MRF grants since the MRF program's inception in 2016, as well as a list of utilities designated as distressed in 2022, shortly after the distressed-systems program began in 2021. These data allowed us to assess how financial distress and targeted state interventions relate to consolidation outcomes.

Using these data, the project team estimated a logistic regression model of consolidation between pairs of water utilities. Formally, the model is specified as

$$\log\left(\frac{\mathrm{P}(\mathrm{consolidation}_{ij}=1}{1-\mathrm{P}(\mathrm{consolidation}_{ij}=1}\right)=\beta_0+\beta_1\mathrm{Distance}_{ij}+\beta_2\mathrm{Interconnect}_{ij}+\beta_3\mathrm{MRF}_{ij}+\beta_4\mathrm{Distressed}_{ij}+\beta_5\mathrm{BasinOut}_{ij}$$

where each observation represents a pair of water systems i and j. The dependent variable equals 1 if consolidation occurs and 0 otherwise. The model includes the following explanatory variables:

- *Distance* denotes distance between systems, measured in hundreds of miles, capturing spatial frictions that may impede consolidation.
- *Interconnect* is a binary indicator of whether the two systems are physically connected, reflecting infrastructural or institutional feasibility. Interconnection implies past coordination, negotiated agreements, and operational compatibility, which can lower (or reveal) governance and political barriers.
- *MRF* is a binary indicator for the presence of state-level incentives or support for merging or restructuring. Participation in an MRF grant reflects willingness to engage in governance reform and to navigate regulatory-approval processes.

Table 1. Factors That Drive or Constrain Consolidation

Factor	(1)	(2)
Distance (miles)	-0.095**	-0.092**
	(0.010)	(0.010)
Interconnected	1.607**	1.864**
	(0.238)	(0.280)
Awarded MRF grant	1.590**	2.346**
	(0.282)	(0.390)
At least one system distressed	-1.078**	-0.999**
	(0.301)	(0.387)
Out of basin	-0.305	-0.257
	(0.243)	(0.245)
Awarded MRF grant & interconnected		-1.179*
		(0.545)
Distressed system in pair & interconnected		0.120
		(0.629)
Awarded MRF & distressed system in pair		-1.099
		(1.095)
Constant	-3.519**	-3.675**
	(0.205)	(0.224)
Observations	241,859	241,859
Log likelihood	-545.222	-542.966
AIC	1,102.444	1,103.933

Notes: Outcome variable is a binary measure of consolidation where 1 indicates consolidation and 0 indicates otherwise. AIC = Akaike information criterion. Standard errors in parentheses.
*$p < .05$
**$p < .01$

- *Distressed* is a binary indicator of whether the Viability Utility Program has labeled one or both systems in the pair "distressed." Distress reflects differences in fiscal health, debt burdens, and managerial capacity, all of which affect the ease of aligning rate structures and absorbing liabilities.
- *BasinOut* is an indicator capturing whether the systems are located in different basins. Crossing basin boundaries may add institutional complexity.

The project team also estimated an alternative specification that includes interactions between interconnection and both MRF and distress to test whether the effects of grant support and financial condition depend on existing physical ties.

The results are shown in Table 1. Across both models, consolidation is less likely for more distant pairs and more likely for interconnected systems and MRF recipients, while financial distress significantly reduces consolidation likelihood; basin boundaries are not significant. The MRF–interconnection interaction is negative and significant, indicating that grant support is weaker when systems are already interconnected, while other interactions are not statistically significant.

As discussed in the report, consolidation is a product of many factors beyond what is included in the analysis. Consolidation of water systems is typically a multiyear process shaped by negotiations, regulatory review, financing arrangements, and community engagement, many aspects of which are not directly observable in administrative or survey data. Informal relationships between utilities, local political dynamics, leadership turnover, public opposition, and the sequencing of infrastructure investments can all influence consolidation outcomes but are difficult to measure quantitatively. As a result, observed consolidation events reflect not only the measurable characteristics of systems but also a longer and more complex decision process that may begin well before consolidation is formally recorded.

Bulk Rates Survey

To complement the other activities of the study, the team opened and distributed a Qualtrics survey that asked utilities about specific rates for water and wastewater service. This included bulk rates charged to other local government utilities and outside rates charged to utility customers beyond municipal boundaries. The survey also asked about existing interconnections to provide confirmation for the data derived from LWSPs, as described above. The survey had a low response rate, with 57 utilities represented across the different question types. The study team anticipates supplementing this data with data collected by other means, such as review of rate sheets and ILAs, in order to conduct more statistical analysis of both bulk and outside rates.

Of the survey respondents, 23 responded that they provide other local government units with bulk water services, bulk wastewater services, or both. The survey captured 106 bulk-sales relationships, as participants were asked about both how they charge and whom they charge. Rates were sometimes consistent across customers and sometimes varied among customers. Volumetric rates for service ranged from $1.84 to $12.41 per one thousand gallons. Utilities were asked what percentages of their revenues comprised charges for bulk-rate services, and responses ranged from 1% to 89%. Of the 25 services (i.e., utility provision of either water or wastewater) that reported revenue percentages from bulk sales, 7 (28%) reported that outside rates made up at least 22% of overall revenues.

Participants were also asked whether they purchased bulk services. Twenty-three respondents confirmed that they did for water, wastewater, or both. The survey captured 40 purchasing relationships across the 23 respondents. Rates exhibited more variation in these responses, including volumetric blocks and charges per lift stations. Volumetric rates ranged from $1.81 to $18.70 per thousand gallons. When asked about the percentage of budgeted expenses that went to treatment and/or services, responses ranged from 4% to 75%. Of the 18 respondents that provided information on budgeted expenses, 9 (50%) reported bulk purchases making up at least 20% of their overall budget.

The survey also asked about charging outside rates. Forty respondents confirmed that they did: 31 charged outside rates for both water and wastewater service, 5 for wastewater service only, and 4 for water service only, totaling 71 individual services (water or wastewater) across respondents. Participants were asked what percentage of revenues stemmed from services charged at outside rates, and responses ranged from 2% to 70%. Of the 44 services (i.e., utility provision of either water or wastewater) that reported revenue percentages from outside-rate sales, 15 (36%) reported that outside rates accounted for at least 20% of overall revenues.