GROWTH MANAGEMENT AND THE PRIVATE SECTOR: STRATEGIES FOR COORDINATION

a guide for growing communities

by

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ABSTRACT

Providing safe drinking water facilities has long been recognized as a way to promote public health and welfare. In the past half-century, connections have also emerged between water provision and urban and suburban growth. Carefully planned provision of water and sewer infrastructure has become a popular, and by some accounts, the single most effective tool in managing this growth. This guide explains the use of water infrastructure in growth management, describes how the private sector has become a prominent force in providing water infrastructure, and examines the challenges to effective growth management imposed by private sector involvement. The guide also includes a toolbox of strategies growing North Carolina communities facing increasing private sector presence can use to retain land use planning and growth management power.

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I. INTRODUCTION

Small municipalities in North Carolina commonly face dispersed development patterns, weak land use regulations, and reliance on private wells for drinking water. Many of these municipalities also face tremendous growth pressures, which overwhelm local governments’ capacity to adequately meet the needs of current and future citizens. Municipalities often attempt to cope with these problems by limiting development through land use plans that permit only low density residential development on large lots. In practice, the resultant development pattern increases land consumption, thereby making provision of drinking water more difficult.

Private sector entry can compound the problem. By capturing the profitable (i.e., higher density, suburban) market segments, the private firm saddles the public sector with only the high-cost (i.e., low density) market segments.

Without contractual obligations guiding private development, the municipality cannot spread infrastructure costs widely enough to provide uniform service. Also, because the availability of water strongly influences land development patterns, unregulated private water provision contributes to urban sprawl and undermines municipal governments’ ability to control the location and pace of development.

Thus far, little guidance has been available to municipalities seeking solutions to this issue. This guide begins to clarify the scope of this issue, defines the potential impacts of locally unregulated private sector water provision on land development patterns and identifies some strategies that municipalities can use to begin working with the private sector to mitigate those impacts. These strategies will assist North Carolina jurisdictions in (a) ensuring safe, adequate, and equitable provision of drinking water services to citizens, and (b) retaining control over the spatial distribution of water as it affects land use planning and growth management. Local officials can use this guide to understand relationships with private sector water providers and, if appropriate, to guide the development of private contracts that ensure adequate provision of water and the retention of land use planning power in the hands of the municipality or county. This guide provides a framework through which municipalities can evaluate this option and its implications for land development. It also is intended to aid municipalities in negotiating effective contracts, enabling coordination of long range land use planning between water service providers and public officials, ensuring that future development is both served by water and in accordance with long range growth plans.

The guide is intended for use primarily in North Carolina. Due to differences in utilities regulations and planning laws across states, some of the information in this guide may not be relevant in other states.

Growth in North Carolina

North Carolina is the fifth most rapidly urbanizing state in the nation, developing almost 160,000 acres of open space every year, and is ranked first nationally in the number of municipalities incorporated during the 1990s. Rural counties experienced the most rapid growth during the same decade, both in terms of total population and population living in urbanized areas. Nearly half of residents in the most rapidly urbanizing counties rely on private wells for drinking water, but as the population and developed land area swell, the demand for municipal water service is increasing.¹ Land use planning in these areas often fails to keep pace with development, resulting in a sprawling land use pattern that rapidly consumes land and makes the cost of providing comprehensive public

¹ U.S. Census 2000
infrastructure such as water and sewer a significant expense for burgeoning municipalities.

Figure 1: Growth and urbanization in North Carolina, 1995 - 2000

Urbanization index = change in water system customers / change in population
Data source: U.S. Census, U.S. Geological Survey

Linking water and growth management

The term “growth management” was popularized in the 1960s as a means to limit development, but has since been adapted to mean long range and capital improvements planning that seeks to maintain community values, protect natural resources, and accommodate new development. The growth management philosophy allows for exercise of property rights while at the same time directing development to strike a balance among often competing economic development, environmental protection, and social justice motives.2

One of the keys to effective growth management is strategic provision of public infrastructure such as sewer and water. The presence and location of public infrastructure has a profound impact on the rate and pattern of development, as it not only serves to meet existing demand, but also tends to unleash latent demand for developable land.3 Thus, local governments must exert significant control over the location and management of sewer and water infrastructure in order to manage growth effectively.4,5 The power of public infrastructure in shaping development patterns has been recognized in both academic research and planning practice since the 1960s.

Coordinating land use and infrastructure planning is also critical for fiscal reasons. Uncoordinated low density development comes at a high cost with respect to public infrastructure. One review of literature found that increasing housing densities from three to twelve homes per acre and locating them near public facilities reduces the cost of providing those services by one third.6 Other researchers have determined that developments with lot sizes greater than about half an acre are too dispersed to provide water and sewer service efficiently.7 The fiscal importance of long-range coordination of land use and public infrastructure is perhaps summarized best by Arthur Nelson and James Duncan:

"...development of one-, two-, or five-acre lots on septic systems and private wells in a few places may not require the full array of public services. However, the long-term effect of continued development will result in the need for capital facilities such as water and sewer, drainage, and roads. Such facilities may be required to serve low density or scattered areas for reasons of health hazard, pollution, and congestion. Extension of such facilities over large areas developed at low density can be very costly. Moreover, such facilities may be financed at the expense of facilities needed for infill, redevelopment, and planned expansion of urban areas. Thus, urban sprawl can and often does require extension of facilities and services in an economically inefficient manner."8

**Challenges imposed by the private sector**

Despite the widespread recognition of the relationship between public services and development, few of North Carolina’s smaller municipalities have taken advantage of the potential to manage growth through facilities provision, and most have encouraged low density land development patterns that make efficient facilities provision impossible.9,10,11 As a result, growing communities throughout the state are struggling to find ways both to meet residents’ water and sewer demands and manage growth.12 Meanwhile, the more agile and financially competitive private sector is cornering the water market, cherry-picking the most profitable customers and effectively gaining control over land development.13,14

Licensed private providers have several competitive advantages over municipal suppliers, including experience, economies of scale, and the option to provide service only where it is profitable to do so. This last advantage makes the private sector particularly problematic to municipalities seeking to provide water to their citizens. In essence, the private sector claims the customers in the areas that are most profitable to serve (perhaps areas with higher density development), leaving unprofitable households off the system.15 This increases the community’s already difficult task of providing water and decreases its ability to manage growth. In order for a community with a strong private sector presence to provide adequate water service and manage growth, therefore, local leaders must understand the mechanics of water provision and find a way to gain control over the distribution of private services.

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12 While sewerage is generally recognized to have an even more influential role in land development, the private sector’s involvement in the water market is much more widespread in North Carolina. As of January, 2006, there were twice as many water customers served by private systems as sewer customers. North Carolina Utilities Commission (2006). *North Carolina’s Public Utility Infrastructure & Regulatory Climate*. PowerPoint presentation, available at [http://www.ncuc.net](http://www.ncuc.net).
Understanding water provision

North Carolina law defines water systems as

“all plants, systems, facilities or properties used or useful or having the present capacity for future use in connection with the supply or distribution of water or the control and drainage of stormwater runoff and any integral part thereof, including but not limited to water supply systems, water distribution systems, stormwater management programs designed to protect water quality by controlling the level of pollutants in, and the quantity and flow of, stormwater and structural and natural stormwater and drainage systems of all types, sources of water supply including lakes, reservoirs and wells, intakes, mains, laterals, aqueducts, pumping stations, standpipes, filtration plants, purification plants, hydrants, meters, valves, and all necessary appurtenances and equipment and all properties, rights, easements and franchises relating thereto and deemed necessary or convenient by the authority for the operation thereof.”

This definition encompasses all public and municipal water utilities, as well as those run by homeowners’ associations and not-for-profit organizations that serve at least fifteen customers.

A clarification is necessary to avoid confusion among citizens and leaders dealing with public utilities: The term “public utility” is defined as any person or private company providing services such as water, sewer, electricity, telecommunications, and motorized transportation for profit to the general public. Utilities provided by public entities such as a municipality, county, or district authority; homeowners’ associations; not-for-profit organizations; and companies serving fewer than fifteen residential customers are not “public utilities.” In this guide, publicly owned and operated utilities are referred to as “municipal utilities.”

Authority

All municipalities are authorized under state law to construct, expand, own, operate, and/or acquire water supply and distribution systems within their corporate limits. They may finance the construction and operation of such systems through taxes and fees, securing loans or selling bonds, or appropriating grant money. The state also authorizes municipalities to set rates for water service and to require connection to the system for any developed property within the municipal limits and within a “reasonable distance” of the water system. Additionally, municipalities have the ability to award franchises that grant private companies the right to operate municipal water systems.

Regulation

A number of government agencies are involved in the regulation and operations of public and municipal utilities in North Carolina. The Local Government Commission supervises the fiscal operations of municipal utilities, and in times of financial crisis has the authority to take over local financial affairs. Two branches of the Department of Natural Resources (DENR) are involved with municipal and public water utilities: the Division of Water Resources (DWR) and the Division of Environmental Health, Public Water Supply section (PWS).

16 NCGS § 162A -12
17 Statutory authority for provision of public services including water is established in the North Carolina General Statues § 160A Article 16; see discussion of water system rate structures in this section.
18 NCGS § 160A-319
DWR is responsible for ensuring the quality and preservation of all water sources and supplies. State law requires all municipalities that provide or are planning to provide public water to file a local water supply plan with DWR, and update that plan every five years. The plan should include population (present and projected), industrial development, water use within the service area, present and future water supplies, estimate of ability to meet future water needs, conservation programs, and plans to respond to drought or other shortages. Local governments are not eligible for financial assistance from the state for water projects unless they have an approved plan on file with DWR.¹⁹

PWS regulates all aspects of both municipal and public water provision, from system design to customer delivery. Pursuant to the 1979 North Carolina Drinking Water Act,²⁰ the PWS is responsible for:

- determining whether proposed systems will be capable of complying with state and federal drinking water quality and public water supply regulations, and approving or rejecting proposals based on that criteria,
- regulating the design, construction, and operation of public water systems,
- determining the suitability of water sources,
- identifying contaminants and determining acceptable levels of contaminants in the water supply, and establishing appropriate methods to treat water to remove or neutralize contaminants,
- specifying the manner in which water quality is monitored and reported, and
- monitoring the quantity of water in the public supply, and in the absence of a local water supply plan,²¹ limit connections in order to maintain the water supply.

Specific water provision standards are established in the North Carolina Administrative Code, Subchapter 18, Title 15A. The Code include standards for identification, management, and protection of public water supply sources; design, construction, maintenance, and operation of water systems, including intakes, storage, transport, distribution, and pumping; water treatment; and protection, monitoring, and reporting of water quality. The regulations are summarized in Appendix A and available in full through the DENR website: http://www.deh.enr.state.nc.us/pws/rules/contents.htm.

The North Carolina Utilities Commission

In addition to the public health and environmental protection regulations, public utilities, as natural monopolies, are subject to additional market regulations to ensure a high quality of service at a fair price. The North Carolina Utilities Commission (NCUC) provides that regulation in North Carolina. The NCUC is a seven-member governor-appointed board with regulatory and judicial power over all public utilities in the state. The NCUC has three primary duties: granting certificates of public need and convenience (CPN), which serves as a license for public utilities to construct, acquire, or operate a utility system contingent upon approval of the system by DENR; establishing the rates public utilities can charge customers;²² and enforcing quality of service standards.²³ These duties are discussed more fully below.

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¹⁹ NCGS § 143-355
²⁰ NCGS § 130A article 10
²¹ As described in NCGS § 143-355
²² See rule R7-4 of the NCUC rules and regulations for operating public utilities, in Appendix B and online at http://www.ncuc.commerce.state.nc.us/nccrules/chap7.htm. See also NCGS § 62-133, the Public Utilities Act, Article 7, included here in Appendix C.
²³ http://www.ncuc.commerce.state.nc.us/overview/ucdesc.htm.
Granting CPNs and enforcing service standards

In order to become a public utility, an applicant must prove the public convenience or necessity of the proposed service and provide a secured bond of at least $10,000, the exact amount of which to be determined by the commission, to the commission. The amount is based on the applicant’s record of operation in the state, the number of existing and proposed customers served, the potential for future expansion needs, the quality of the proposed system, and the necessity of service in the proposed area. The application process is the same for existing public utilities wishing to expand existing systems into new territory. The purpose of the bond is to guarantee the safety and reliability of the service; in the event that the public utility fails to provide the service adequately, the bond money is used to pay for the takeover by an emergency operator. Upon posting this bond, the NCUC grants a CPN, which the utility holds contingent upon conformance to all applicable service standards, realization of reasonable profits, and continued public need for the service, as determined by the NCUC.

In the event the public utility fails to provide adequate service and does not have the capital means to improve service to acceptable standards, the NCUC also has the responsibility to authorize the utility to assess from each customer a pro-rated share of the capital expense of improving the service (thus granting propriety interest to those customers) and to abandon service to customers that are unwilling or unable to pay. If the service quality becomes low enough to jeopardize public health, the NCUC may elect to appoint an emergency operator to assume control of the utility system.

Establishing rates:

The NCUC and the public utility work together to determine a rate structure with reasonable prices that ensures an adequate rate of return to the utility. While local government is typically not involved in collecting fees and may not receive revenue from the water system, the town has a crucial stake in the rate structure. Ideally, the rate structure generates sufficient revenue, is equitable, politically palatable, and administratively feasible, and promotes conservation of water. From a business standpoint, the public utility is interested primarily in the revenue aspect of the rate structure. Therefore it is the government’s responsibility to ensure equitability and the promotion of conservation. Ultimately, no matter what entity owns and operates the water system, citizens will blame local government officials if the rates or services are unpopular.

The four most common types of rate structures are uniform flat fees, single block rate, decreasing block rate, and increasing block rate.24

Uniform Flat Fees

With a uniform flat fee, all customers pay the same amount to the utility every month, regardless of their usage. This structure has the advantage of simplicity, but is not equitable and does not promote conservation. A variation of the flat fee is the fixture rate, in which customers are charged based on the number and type of water-using fixtures they own.

Single Block Rate

In a single block rate system, customers are charged the same fee for every unit of water they consume. Therefore, the 1st water unit costs the same as the 100th water

unit. This structure is relatively easy for utilities to administer and customers to understand, and ensures that customers pay in proportion to use.

**Decreasing Block Rate**

Decreasing block rate pricing is akin to bulk pricing: the price per unit decreases and the number of units purchased increases. The structure may be appropriate when the cost of providing water decreases with increasing consumption; however, it does not account for treatment costs and it fails to discourage overuse of water resources.

**Increasing Block Rate**

With an increasing block rate, the price increases with each additional unit of water a customer purchases. A low starting price can ensure that each customer can afford to meet basic water needs, while discouraging excess water use.

Block rates are commonly used in conjunction with a service charge. In this arrangement, the service charge is used to offset the capital costs of constructing the system, and the per-unit charge accounts for water usage (theoretically equivalent to system operating costs).

The NCUC estimates that seven percent of North Carolina households purchased water from 2240 privately-owned water systems in 2005.25 Currently the vast majority of these systems are community wells serving suburban subdivisions.26 Where municipal water systems are not available, privately owned community wells are more cost-effective and permit greater development densities than individual household wells, and are often seen as a selling point in the real estate market.27 However, as suburban development intensifies, some private suppliers are finding it economically efficient to connect these systems to ensure cheaper, more reliable water and enable more rapid system expansion.28 This is precisely what Aqua North Carolina recently proposed to do in Oak Ridge and Summerfield, adjacent Triad communities. At the same time both towns were considering constructing their own municipal water systems. As leaders in these towns are discovering, competing with an established private water system is economically infeasible, yet the towns must gain some control over the water market in order to ensure comprehensive coverage and keep land use planning decisions in the public realm. Solving this conundrum has profound implications for growth management throughout the state. The next section offers guidance to municipalities seeking a solution to this critical issue.

26 Neither of the two state agencies that regulate private water utilities maintains records of the types or locations of systems operated by the state’s 2,240 licensed utilities. However, according to Aqua North Carolina president Neil Phillips, over 99% of that company’s customers are served by community wells. Aqua North Carolina controls half the private water market in North Carolina. Personal communication, Neil Phillips, 3/25/2006
27 Ibid.
II. DECIDING TO TAKE ACTION

Any decision with respect to water provision will have long-lasting impacts on the town. Whether water is provided privately or publicly, citizens will ultimately hold the government accountable for ensuring an acceptable water quality, protecting natural resources, and ensuring adequate provision to the community. Thus, before undertaking a course of action, a community must ask itself some critical questions. These questions are presented and discussed below. The answers to these questions are unique to each community; therefore each should be carefully considered in each individual community.

Setting goals

*What does the community hope to achieve?*

Public water provision has implications for public health, economic development, equity, revenue-generation, and guidance of growth. Community leaders must be aware of these implications when determining what it can and cannot hope to achieve in providing water. Arrangements for provision of water should address supplying water to existing and future customers as well as ensuring that the community is adequately prepared to manage future growth. When potential customers are located in dispersed, low-density locations that are not profitable to provide water to, the community will have to decide if and how it will get water to those customers. Extension of water lines to dispersed areas is a double-edged sword: on one hand, extension will be costly and will likely encourage new development in these areas. On the other hand, new development in these areas could make them profitable to serve. Thus, when making the decision to finance extension of lines, the town should be aware that development will likely increase, and should consider (a) how it will pay for those extensions and (b) how it will manage future growth in those areas. The town must also determine mechanisms for serving future development in new areas, whether that is through fundraising, limiting growth in new areas, targeting specific areas for extension and development, or a combination of strategies.

In general, any arrangement with the private sector should ensure that solutions address the following criteria:

*Effectiveness*

- All existing and future homes and businesses in the municipality have a sustainable supply of safe, sufficient drinking water, whether it is self-supplied or system water.
- Water is provided in accordance with the municipality’s future land use goals. The municipality’s Land Use Plan, Long Range Growth Plan, or Capital Improvements Plan must state those goals explicitly, and should be legal, equitable, environmentally sustainable, and fiscally responsible.
- Provisions are in place to ensure water is available for fire-fighting purposes throughout the community, including sufficient pipe diameters and storage capacities.

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**Efficiency/Fiscal responsibility**

- The water system is constructed and water distributed in an economically efficient manner.
- If public funds are used to pay for expansion of the public utility’s system into unprofitable areas, there is a mechanism to recoup those funds if and when development intensity in those areas increases to the point at which the public utility would have been able to expand its system without public expenditures.

**Equity**

- Basic tenets of social equity are upheld. Key equity principles local leaders should uphold when making any decisions, not just regarding water, are
  - Horizontal equity, which holds that similarly situated individuals should be treated similarly (e.g. they should pay similar taxes and receive similar services)
  - Vertical equity, in which those with greater means to pay for services pay more than those with fewer means

There are a variety of taxation principles intended to address these basic tenets of equity, including
  - Benefit principle, which holds that individuals should pay according to the benefits received
  - Ability to pay, which is the idea that all people should pay in accordance with their abilities, regardless of benefit received
  - Progressivity, which recognizes that the more money someone has, the more absolute value they are able to place on goods and services received. In other words, $1000 is less important to someone with a $100,000 income that someone with a $20,000 income.

Equity issues that are likely to arise in discussions of providing public water include ensuring that
  - water is available to all citizens at fair rates that do not put an undue burden on those least able to pay
  - affordability of housing is not jeopardized through artificially increased housing prices

**Environmental sustainability**

- Water is provided in a manner that preserves ecological integrity and protects natural resources.

**Feasibility**

- Solutions are administratively, legally, and politically feasible.

**Engaging the private sector**

*Would engaging the private sector in planning help the community achieve its goals? What forms might that engagement take?*

In theory, the municipality’s options for dealing with private utilities range from coexistence to full government control over the utility. However, current policies at the state level limit local governments’ abilities to exert influence over the private sector, so realistically, and coordination agreement will fall well within that spectrum. This arrangement could range from informal coordination, in which the community and utility view each other’s growth plans, perhaps modifying them to achieve a more efficient outcome, to a legally binding service contract that installs the utility as the community’s official public water provider. Whichever form of coordination community members and the private sector decide is most appropriate, government officials must take steps to
ensure that decisions regarding water service are made in the best interest of the community, and not necessarily in the private utility’s bottom line.

*Is the private sector willing to enter into a coordination agreement?*

As one town leader explained, when it comes to influencing the actions of private utilities, towns are playing poker with no hand, as the private sector is fairly autonomous in terms of how it expands its systems.\(^{31}\) Therefore it is necessary for municipal leaders to understand the relationship between land use planning and water infrastructure, and be able to convince private providers that coordinated development is more efficient than uncoordinated development. Also, there may be other incentives to draw the private sector to the negotiating table, such as the potential for a guaranteed monopoly or the right to use public rights-of-way. While the private sector is under no legal obligation to cooperate with local governments, it does stand to make some gains in efficiency by coordinating expansion plans with local growth management plans. Also, depending on the terms of a service contract, the private provider may be assured a long-term monopoly and gets the benefit of the use of public rights-of-way.

*Is the private sector able and willing to meet the service goals of the town?*

Such goals could include serving all existing homes within a certain time frame or using a particular water source. If these goals are to be included in a coordination agreement, what, if any, concessions will the town have to make? What other means does the town have to address these service goals?

Private companies are ultimately motivated by their economic bottom line. Service rates are closely regulated by the Utilities Commission, so private companies cannot afford to construct infrastructure that will not be profitable. If the current development pattern is such that not all existing homes are located in areas that are profitable to serve, the government and the private provider must work together to determine a mechanism to pay for extension of water lines to those homes. These mechanisms could be worked into the contract, or could simply be means for the town to subsidize to cost to extend water lines.

**Analyzing tradeoffs**

*What are the costs and benefits of entering into a coordination agreement with a private utility?*

Any decision regarding the provision of water is likely to have long-term impacts, both anticipated and unforeseen. It is therefore critical for decision makers and citizens to understand the scope and weight of the issue, including future unintended consequences of any water management arrangement, and the feasibility of various alternatives.

In most cases, municipal water systems are revenue generators for the towns that operate them. On one hand, by granting a private company the rights to that revenue from town residents, the town foregoes a future source of funds. On the other hand, the costs of incurring debt to finance the construction of a municipal water system may outweigh the system’s future benefits, especially if it has to compete for customers.

Cost-benefit analyses are useful tools for evaluating such tradeoffs, but they often fail to incorporate fully all the factors involved in town planning, including environmental protection, land preservation, and the importance of adhering to identified growth goals.\(^{32}\) It is important for decision makers to understand all the tradeoffs associated with these decisions.

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with the decision to enter into a coordination agreement, including alternatives to contracting and potential limitations and consequences of different coordination arrangements.

For example, formally engaging the private sector in land use planning may position them to exert significant influence over decision makers, increasing and institutionalizing the private sector's control over development patterns. Conversely, not engaging the private sector at all could thwart land use planning efforts by the town.

**Involving stakeholders**

*Is there stakeholder support for engaging in a coordination agreement with the private sector?*

Without public support, implementation of decisions may be met with substantial resistance or be politically infeasible to implement. Bringing stakeholders to the table and working toward consensus will not guarantee agreement on a particular decision, but it will help the community as a whole make a decision that is more inclusive, informed, and fair than one that could be achieved through more traditional means, such as litigation or voting. Involving a range of stakeholders in the decision-making process will result in a plan that is more likely to be supported in the long run.

Stakeholder groups that should be included in the decision to enter into a coordination agreement will vary in different communities, but generally fall into five groups: individual citizens, including current and future residents and landowners both within and beyond the PSA; citizen-based organizations; public agencies, including the Utilities Commission, local government, which is ultimately responsible for ensuring that citizens have safe, reliable water, county governments that may have to expand county services such as schools and fire protection if the community continues to grow, and public health officials; the private sector and developers; and the media.

Local leaders should employ a variety of means to involve as wide an array of stakeholders as possible, including especially vulnerable and disadvantaged individuals. Methods to involve stakeholders include small group meetings, facilitated discussions, and presentations held throughout the community, web-based outreach, open-houses, and via local media outlets. For stakeholder involvement to be effective, it is critical to provide stakeholders with straightforward information and pay close attention to their interests and concerns.

**Making a decision**

*What is the best coordination agreement for the community?*

If the community determines that entering into a coordination agreement with the private sector is appropriate, the following section will assist town leaders in developing an effective, mutually beneficial contract.

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35 Ibid.

Elements of a sound contract

NCGS 160A-319 presents a basic framework for establishing a contractual relationship between a municipality and a private utility, but there are a number of other issues that must be addressed in arranging a contract. These issues include, among others, the length of the contract, what happens after the contract expires (e.g. does the municipality have an option to purchase the system? At what price?), what happens if either the town or the private utility fails to comply with the terms of the contract, and whether the contract is exclusive.

However the contract is written, it should ensure that both the utility and the municipality satisfy the following basic responsibilities:

Responsibilities of public utility

- Maintain a minimum level of service, including but not limited to meeting or exceeding EPA drinking water quality standards, protecting the environment, and charging reasonable rates as determined by the North Carolina Utilities Commission.
- Serve customers with a sustainable water source. In areas with limited or compromised groundwater, the utility should seek a surface water source in order to preserve groundwater for those residents unable to connect to the public system.
- Establish and make available for public review a mechanism by which it determines what areas of the municipality are profitable for it to serve with its water system, define the boundaries of the profitable service area, and establish a timetable to completing construction of the water system within the profitable service area.
- Attempt to construct its water system in accordance with the municipality’s long range growth plans.

Responsibilities of the municipality

- If public funds are used to subsidize extension of the water system beyond the profitable service area, enforce the public utility’s standard of profitability to ensure the subsidy program is not abused.
- Establish a mechanism for recouping its expenses if and when the areas served by the extended lines becomes profitable for the utility, especially if public funds will be used to subsidize the extension of unprofitable water system lines.
- Include the public utility in mid-range growth planning efforts in order to prioritize the subsidization of extension of water system lines.
- Prepare a long-range growth plan and capital improvements plan.
III. THE DECISION MAKERS’ TOOLBOX

The next step in planning for water is understanding the range of planning tools available for local decision makers to help ensure appropriate provision of water and promote effective, community-supported growth management. Local officials and citizens should then choose the tools that best fit their situation and, if applicable, their coordination agreement with the private sector. The tools presented here will be most effective when infrastructure and land use planning are fully integrated, but even without private sector cooperation, proper implementation of these tools will aid in growth management. The tools are not mutually exclusive: most will work best when implemented as one of many tools used to ensure adequate water provision and guide growth. This section provides descriptions of the tools and a summary of the pros and cons of each. The legal bases for each tool, as well examples of the tools in practice in North Carolina, are presented in sidebars. At the end of the chapter, the tools are compared and evaluated with respect to the following criteria, also discussed in the previous section:

- Effectiveness
- Efficiency
- Equity
- Environmental sustainability
- Feasibility

Providing water to existing homes

For the private sector to be interested in providing water in a community, there must be areas of the community that are profitable for that private utility to serve. It can be assumed that the private utility will maximize its service area, providing water to all customers in its profitable service area (PSA). With a dispersed, low-density development pattern, however, large portions of the community are likely to be beyond the PSA. This likely leaves the local government with the responsibility of financing extension of water lines to those areas. This section thus presents tools the town can employ to raise and manage funds to be used to subsidize extension of water lines to areas outside the PSA.

Tool 1. Local property taxes

North Carolina law enables municipalities to levy property taxes to finance installation of water infrastructure and/or to pay off debt financing used to pay for water infrastructure.

Primary Pros
- Improves ability to provide system water to existing and future development
- Tax revenue may be used to provide system water to existing homes

Primary Cons
- Existing water customers will be required to pay water fees to utility and water taxes, subsidizing those outside the PSA
- Does not provide substantial revenue initially
- Tax may drive development out of town

Uncertainties
- Probably not politically feasible
- Probably not equitable
- Does not address land use issues
Intergovernmental Grants
North Carolina Rural Economic Development Center

The primary source of intergovernmental grants for public water systems is the state. The North Carolina Rural Economic Development Center serves as a clearinghouse for distributing some of the state funds. Municipalities in rural counties may apply to the center for Supplemental Grants, a matching grant program to assists in improvements to existing water and sewer systems, and Capacity Building Grants, which finances strategic planning for local water and sewer systems. DENR, the state Department of Commerce, and the NC Clean Water Management Trust fund also award grants for water projects at the state level.

A number of federal agencies award grants for local water projects, including the EPA, the Appalachian Regional Commission and the Departments of Commerce and Agriculture. The federal government contributes 21% of all grant financing for water projects.

For more information, visit http://www.ncruralcenter.org.
maintaining, and operating any project or facility, or performing any function, which such city or county may be authorized by general law or local act to provide or perform.

Tool 3. Water availability fees

A public water system benefits all residents living live near the system, regardless of whether they choose to connect to it. In addition to providing household water, public water systems improve fire protection and serves as emergency water sources in the event household wells become inadequate. Therefore, a water availability fee (also known as availability of service fee) assesses all users of the system based on the benefits they receive, whether that use is use it through a household connection or simply the additional measure of safety afforded by the system’s existence.

Primary Pros
- Improves ability to provide system water to future development
- Requires only users of the system to pay
- Overall infrastructure costs may be reduced through more compact, sustainable land use pattern

Primary Cons
- Does not provide water to existing households

Uncertainties
- Appropriate determination of fees would require analysis of cost of providing system water to that area

Legal authority

GS § 160A-317.
(a) A city may require an owner of developed property...within a reasonable distance of any water line or sewer collection line owned, leased as lessee, or operated by the city or on behalf of the city to connect the owner's premises with the water or sewer line or both, and may fix charges for the connections. In lieu of requiring connection under this subsection and in order to avoid hardship, the city may require payment of a periodic availability charge, not to exceed the minimum periodic service charge for properties that are connected.

GS § 62-133.1.
(b) A water or sewer utility may enter into uniform contracts with nonusers of its utility service within a specific subdivision or development for the payment by such nonusers to the utility of a fee or charge for placing or maintaining lines or other facilities or otherwise making and keeping such utility's service available to such nonusers; or such a utility may, by contract of assignment, receive the benefits and assume the obligations of uniform contracts entered into between the developers of subdivisions and the purchasers of lots in such subdivisions whereby such developer has contracted to make utility service available to lots in such subdivision and purchasers of such lots have contracted to pay a fee or charge for the availability of such utility service; provided, however, that the maximum nonuser rate shall be as established by contract, except that the contractual charge to nonusers of the utility service can never exceed the lawfully established minimum rate to user customers of the utility service.

Water Availability Fees

**OWASA**

The Orange Water and Sewer Authority (OWASA), in Orange County, finances water and sewer infrastructure extensions mostly by assessing availability fees of the new customers that will benefit from and necessitate infrastructure extensions and/or expansions. The amount of the fee is determined on a cost-recovery basis, with each new customer paying a pro-rated share of the cost of extending the line and/or increasing capacity of existing lines.

Water Availability Fee

OWASA

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Tool 4. Special assessment districts

Special assessment districts (SADs) enable municipalities to assess additional taxes in specific areas with special project financing needs, such as areas outside the PSA, the development of which will necessitate an expansion of the water line. SADs are designated by ordinance through either government action or citizen petition. Property owners within the district are assessed fees based on the estimated benefits they will receive from the project.

Primary Pros
- Improves ability to provide system water to existing and future development
- Adheres to the benefit principle of equity by requiring only users of the system to pay
- May be used to pay for system water provision to existing households.
- Encourages a more compact, sustainable land use pattern that reduces location-specific infrastructure costs.

Primary Cons
- Might decrease housing affordability
- Appropriate determination of fees would require analysis of cost of providing system water to that area
- Diligent bookkeeping is required to ensure each development receives services commensurate with the fees it paid
- Higher property taxes may accelerate conversion of undeveloped land outside the SAD

Uncertainties
- Revenue generated might not be sufficient to fund system expansion
- The additional assessment may reduce demand for new housing in the district, and increase demand in areas without
- Requires careful fiscal oversight to ensure funds are appropriated correctly

Legal authority:
GS § 160A-542
A city may levy property taxes within defined service districts in addition to those levied throughout the city, in order to finance, provide or maintain for the district services provided therein in addition to or to a greater extent than those financed, provided or maintained for the entire city. In addition, a city may allocate to a service district any other revenues whose use is not otherwise restricted by law.

Tool 5. Extension trust fund

The municipality assesses a fee of a percentage of the public utility’s profits in that municipality to invest in a dedicated trust fund used solely to subsidize extension of the

Special Assessment Districts
Brunswick County
Brunswick County uses revolving funds from special assessment districts to finance water infrastructure construction in areas that were developed before the county constructed its water system. The process Brunswick County uses to establish a SAD is
(1) identify the area to extend water service to,
(2) define the boundaries of the district,
(3) hold public hearings to determine public interest in creating a SAD,
(4) subject to public support, create the SAD, and
(5) extend water lines into the SAD.
Since Brunswick County uses a revolving SAD fund, money generally available from previous SADs to begin immediate construction; revenues from the new SAD are used to finance future extensions in other districts.
water system to areas in need outside the PSA. As development intensifies to the point that subsidized areas become profitable, the public utility would be obligated to repay the subsidy back into the trust fund.

**Primary Pros**
- Ensures water provision to existing areas in need outside the PSA
- Establishes an institutional mechanism for assessing fees from public utility

**Primary Cons**
- Municipality is responsible for assessing and collecting fees from public utility
- Might not be legal – see uncertainties regarding state utility franchise fee

**Uncertainties**
- The utility might not agree to this in the contract
- By state law, if a municipality receives from the state any portion of the state utilities franchise tax for the public utility, it may not assess any additional taxes or fees upon that public utility (GS § 105-116)

**Legal authority**
There is no specific enabling legislation for establishing an extension trust fund; however, under the statutory authority for granting franchises, at least one municipality (see text box) is attempting to establish a precedent for doing so, subject to NCUC approval.

**Extension Trust Fund Oak Ridge**
In October 2005, the town of Oak Ridge signed a contract with Aqua North Carolina, the state’s largest public water utility, to be the town’s official municipal water supplier. Much of the town’s existing development not in the PSA is experiencing water shortages and contamination of groundwater, so a primary concern of town officials in drafting the contract was establishing a mechanism that would immediately begin providing funds to extend Aqua North Carolina’s water system to those areas. Recognizing that extending the system to selected areas would ultimately increase demand for service, and thus profitability in those areas, representatives from Aqua North Carolina agreed to pay 4% of its profits in Oak Ridge into a town-controlled extension trust fund, which will be used to subsidize system extension to those areas in need.

**Linking future growth to infrastructure planning, adequacy, and timing**
A dispersed development pattern is more expensive to provide services, such as system water, than is compact, organized development. This expense is borne by both the town (if it has to subsidize) and by the public utility. By using appropriate growth management tools, municipalities can better manage the location, timing, and organization of development in town without removing property owners’ rights to develop their property while ensuring fiscally responsible use of public infrastructure funds. This section presents tools the community can employ to manage future development by linking it to the availability of public infrastructure.
Tool 6. Zoning

Zoning is the only land planning tool currently in place in many towns. As noted by Tabors et al, however, it is a weak tool for determining the pace, intensity, location, and timing of development. Rather than actively guiding land use, zoning tends to simply solidify current growth patterns, and it is virtually always overshadowed by the powerful impacts of infrastructure development. Under conventional zoning, residential development is permitted by right in any area zoned for it, regardless of the ability of that development to be served by a public utility. Despite zoning’s weaknesses, however, it may be of some utility in areas with stolid zoning and adjustment boards and large tracts of open space or agricultural lands. Keeping these tracts zoned for no- or very-low density development until water and sewer infrastructure are available would preserve valuable land resources, permit a more sustainable development pattern in the future, and ensure adequate water supply for residents.

The basis of zoning is the zoning map, which delineates zones in which particular land uses are allowed. The zoning map is created by ordinance and should be made in accordance with the municipality’s comprehensive land use plan. Decisions regarding the placement of zones ultimately belong to the governing board (e.g. town council), but should be made with the advice of the planning and zoning board. Courts generally uphold zoning regulations as long as they are roughly in keeping with the comprehensive plan and are designed to promote public health, safety, and general welfare.

Primary pros
- Has potential to prevent undesirable land use – in this case, land use that would require inefficient extension of system water
- Strong legal basis

Primary cons
- Too often considered the only necessary growth management tool
- Allows development by right, regardless of parcel-specific special considerations, such as contaminated groundwater, that may warrant careful review before development is permitted.

Uncertainties
- Relatively easily negated by variances from a malleable or sympathetic Board of Adjustments

Legal Authority
GS § 160A-381
(a) For the purpose of promoting health, safety, morals, or the general welfare of the community, any city may adopt zoning and development regulation ordinances.

Zoning Greensboro
One of the goals of the city of Greensboro’s 2025 Connections Comprehensive Plan is to “provide a development framework for the [city’s] fringe that guides sound, sustainable patterns of land use, limits sprawl, protects rural character, evidences sound stewardship of the environment, and provides for efficient provision of public services and facilities as the City expands.” Among the policies set forth to achieve this goal is the creation of a Conservation Development Zoning District, which will permit only clustered development near existing development while preserving large tracts of open space.

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GS § 160A-383.
Zoning regulations shall be designed to promote the public health, safety, and general welfare. To that end, the regulations may address, among other things, the following public purposes: to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration of population; to lessen congestion in the streets; to secure safety from fire, panic, and dangers; and to facilitate the efficient and adequate provision of transportation, water, sewerage, schools, parks, and other public requirements. The regulations shall be made with reasonable consideration, among other things, as to the character of the district and its peculiar suitability for particular uses, and with a view to conserving the value of buildings and encouraging the most appropriate use of land throughout such city.

Tool 7. Subdivision regulations
Subdivision regulations control the manner in which a parcel of land can be subdivided, and thus the pattern in which it is developed. The physical layout of subdivisions often becomes the physical layout of entire communities, so subdivision regulations can be a powerful land use planning tool. Subdivision regulations can be written to allow for or require compact, efficient development patterns that facilitate future connection to a water system, while preserving the ability to use well water until the system is complete. In areas with existing development, encouraging or requiring new subdivision development to be located near existing homes would further facilitate water system extension.

Subdivision regulations are created via ordinance, and decisions regarding approval of proposed subdivisions must be based on the standards established in the ordinance. Similar to zoning ordinances, subdivision ordinances must be designed to promote public health, safety, and general welfare. The ordinance should set forth who will be in charge of decisions regarding approval or denial of proposed subdivision projects, typically either the elected governing body or the planning board.

Primary Pros
- Potentially coordinates development patterns of adjacent property to facilitate pipeline connections
- Preserves open space
- Reduces development costs
- Smaller lot options may increase availability of affordable housing

Primary Cons
- Does not ensure that infrastructure can be extended to the development, only that once extended, can be efficiently distributed to customers

Uncertainties
- May be difficult to convince residents and potential homebuyers that smaller lots do not necessarily decrease property values, create multi-family housing complexes, or ruin community character

Subdivision Regulations
Valdese
The Town of Valdese has adopted subdivision regulation ordinance as a means to promote orderly development, preserve open space, and provide for “the coordination of utilities, streets, and highways within proposed subdivisions with existing or planned streets and highways and other public facilities.” Subdivision plans must be approved by the planning board and town council and must meet minimum standards specifically designed to fulfill the objectives of the ordinance.
**Legal authority**  
GS § 160A-371  
A city may by ordinance regulate the subdivision of land within its territorial jurisdiction.

**Tool 8. Development moratorium**

A municipality can legally enact a temporary moratorium on new development in water-poor areas until more sustainable growth management strategies are implemented. Moratoria are generally upheld in court provided they are of reasonable length (6 months to 2 years), address a real, documented need, and are used to enable the town government to address that need. Moratoria only prevent development permit approvals – developers may proceed with permits granted before the moratorium takes effect. Therefore, there is usually an onslaught of permit applications between the time the moratorium is announced and when it actually takes affect. There may also be a rush of applications as soon as the moratorium is lifted.

Moratoria are enacted by ordinance, and must be preceded by public hearings. The moratorium ordinance must contain the following information, adapted from GS § 160A-381:

- A clear statement of the problems or conditions necessitating the moratorium and what courses of action, alternative to a moratorium, were considered by the city and why those alternative courses of action were not deemed adequate.
- A clear statement of the development approvals subject to the moratorium and how a moratorium on those approvals will address the problems or conditions leading to imposition of the moratorium.
- An express date for termination of the moratorium and a statement setting forth why that duration is reasonably necessary to address the problems or conditions leading to imposition of the moratorium.
- A clear statement of the actions, and the schedule for those actions, proposed to be taken by the city during the duration of the moratorium to address the problems or conditions leading to imposition of the moratorium.

**Primary Pros**
- Delays new development while town officials implement growth-management strategies

**Primary Cons**
- Only a temporary solution; unsustainable
- Decreases job opportunities for construction workers
- Restricts affordable housing
- Denies both town and county revenue from development permitting fees
- Often politically difficult to implement
- Onslaught of permit applications between announcing and effecting moratorium

**Uncertainties**
- If moratorium time not used to establish growth management strategies, uncontrolled development will resume when moratorium is lifted, probably at a faster pace than before the moratorium

**Legal authority**  
GS § 160A-381  
(e) As provided in this subsection, cities may adopt temporary moratoria on any city development approval required by law. The duration of any moratorium shall
be reasonable in light of the specific conditions that warrant imposition of the moratorium and may not exceed the period of time necessary to correct, modify, or resolve such conditions....

**Tool 9. Adequate public facilities ordinance**

Adequate public facilities provisions both manage the location and density of new development and ensure neither the government nor citizens are burdened with the cost of providing public facilities to areas where it is uneconomical to do so.38 Basically, if developers cannot prove that the existing facilities in an area have the capacity to serve the new development, the town will not grant development permits unless the developers pay for the capital improvements to the facility.39 Adequate public facilities ordinances have since been used with mixed results in many parts of the country.

Primary pros
- Fiscally responsible
- Accommodates growth where it is most appropriate, discourages it elsewhere

Primary cons
- Will not limit development if the market is strong enough for developers to pay to extend infrastructure
- Will not limit development in areas already served by large community well systems
- Determining adequacy of facilities is an administrative or legal burden.
- Limiting or delaying development necessarily decreases housing supply, reducing the affordability of housing.

Uncertainties
- Consideration only of adequacy of facilities can overshadow other legitimate concerns about location and intensity of developments
- Unknown development costs is frustrating for developers and property owners

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### Development Moratoria & Adequate Public Facilities Ordinance Davidson

The town of Davidson has used development moratoria three times in the past decade in order to update the town’s ordinances to adapt to increasing growth. The first moratorium, enacted in 1994, allowed the town to create a radically new and different land plan incorporating smart growth tools. The second moratorium lasted from 2000 to 2001, during which time town leaders established an adequate public facilities ordinance. The most recent moratorium, from 2004 to 2005, was used to developed mixed-use planning strategies along a heavy traffic corridor in the town’s extra-territorial jurisdiction.

Davidson’s adequate public facilities ordinance was enacted in June, 2000 with three main goals in mind: (1) ensure an adequate level of service for all facilities for all citizens, (2) avoid overburdening taxpayers with excessive capital improvements expenses, while providing a realistic framework for preparing a capital improvements program, and (3) implementing the goals and policies of the Davidson Planning Ordinance, including discouraging sprawl and preserving a high quality of life. One drawback noted by planning staff of the APFO is the administrative burden of keeping track of adequacy of facilities and keeping developers informed of the costs of extending facilities.

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Legal authority
There is no specific enabling legislation for adequate public facilities ordinances in North Carolina, but the general statutes enabling the three preceding tools (zoning, subdivision regulations, development moratoria) (GS 160A-383 and 153A-341) do grant municipalities the authority to enact regulations to facilitate adequate provision of facilities such as water and sewer. Whether these statutes provide legal authority for APFOs is a subject of some debate throughout the state; however, a number of municipalities have successfully enacted APFOs.
### Table 2. Criteria for successful fundraising program

<table>
<thead>
<tr>
<th>Program</th>
<th>Effectiveness</th>
<th>Equity</th>
<th>Feasibility</th>
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<td>Water for existing use</td>
<td>Water for future use</td>
<td>Meets land use goals</td>
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<tr>
<td>Grants</td>
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<td>2 2 0</td>
<td>2</td>
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<tr>
<td>Water Availability Fees</td>
<td>0 1 1 2</td>
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<tr>
<td>Special Assessment Districts</td>
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<tr>
<td>Extension Trust Fund</td>
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</table>

2 = satisfies criteria  1 = may satisfy criteria  0 = does not address criteria or impact unknown  -1 = opposes criteria

### Table 3. Criteria for successful growth management program

<table>
<thead>
<tr>
<th>Program</th>
<th>Effectiveness</th>
<th>Equity</th>
<th>Feasibility</th>
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<tr>
<td></td>
<td>Water for existing use</td>
<td>Water for future use</td>
<td>Meets land use goals</td>
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<tr>
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<td>2</td>
</tr>
<tr>
<td>Subdivision Regulations</td>
<td>0 2 2 1</td>
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<td>Development Moratorium</td>
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<td>APFO</td>
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</table>

2 = satisfies criteria  1 = may satisfy criteria  0 = does not address criteria or impact unknown  -1 = opposes criteria
<table>
<thead>
<tr>
<th>Program</th>
<th>Primary Participants</th>
<th>Responsibilities</th>
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</thead>
<tbody>
<tr>
<td>Grants</td>
<td>Granting agency</td>
<td>Award grant</td>
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<td></td>
<td>Town Council / Planning</td>
<td>Submit grant application</td>
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<td></td>
<td>department</td>
<td>Coordinate expansion plans with public utility</td>
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<td></td>
<td></td>
<td>Administer funds</td>
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<tr>
<td></td>
<td>Public utility</td>
<td>Coordinate expansion plans with town</td>
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<tr>
<td></td>
<td></td>
<td>Implement expansion plans</td>
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<tr>
<td>Water</td>
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<tr>
<td>Availability Fees</td>
<td>Town Council / Planning</td>
<td>Set fee location and schedule</td>
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<tr>
<td></td>
<td>department</td>
<td>Collect fees</td>
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<td>Administer funds</td>
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<td></td>
<td>Coordinate expansion plans with public utility</td>
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<td></td>
<td>Developers &amp; property owners</td>
<td>Pay fees</td>
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<tr>
<td></td>
<td>Permit Inspection Agency</td>
<td>Enforce fees as requirement for development permit</td>
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<td>Special</td>
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<td>Town Council</td>
<td>Enact special assessment district legislation</td>
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<td></td>
<td>Town Council / Planning</td>
<td>Set district location (if not petitioned by property</td>
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<td></td>
<td>department</td>
<td>owners)</td>
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<td>Set tax rate</td>
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<td>Administer funds</td>
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<td>Coordinate expansion plans with public utility</td>
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<td>Tax Collection Agency</td>
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<td>Residents &amp; property owners</td>
<td>Petition for special assessment district if not</td>
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<td>enacted by town council</td>
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<td>Pay taxes</td>
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<td>Coordinate expansion plans with municipality</td>
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<td></td>
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<tr>
<td>Extension</td>
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<td>Trust Fund</td>
<td>Town Council</td>
<td>Negotiate contract</td>
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<td>Collect revenues</td>
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<td>Administer trust account</td>
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<td>Collect repayment</td>
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<td>Pay into trust fund</td>
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<td>Utilities Commission</td>
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<td><strong>Zoning</strong></td>
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<td>Implement zoning</td>
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<td><strong>Subdivision regulations</strong></td>
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<td>Enact / modify subdivision ordinance</td>
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<td>Permit Inspection Agency</td>
<td>Enforce subdivision regulations</td>
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<td></td>
<td>Grant building permits</td>
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<td><strong>Development moratorium</strong></td>
<td>Town Council</td>
<td>Announce and enact moratorium</td>
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<td>Permit Inspection Agency</td>
<td>Deny building permits during moratorium</td>
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<td>Planning Department</td>
<td>Manage pre- and post-moratorium onslaught of permit applications</td>
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<td><strong>Adequate Public Facilities Ordinance</strong></td>
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<td>Enact Ordinance</td>
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<tr>
<td></td>
<td>Town Council / Planning Department</td>
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<td>Develop capital improvements plan in conjunction with public utility</td>
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<td>Develop capital improvements plan in conjunction with town</td>
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<td>Implement plan</td>
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<td></td>
<td>Developers</td>
<td>Install or pay to install facilities if developing in areas without adequate facilities</td>
</tr>
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</table>
IV. CONCLUSION

The information and tools presented here will help community leaders decide whether to attempt to coordinate with local private sector water providers, and if coordination is appropriate, will help leaders understand how that coordination should take place to achieve the best outcome for the community. As communities grow, their infrastructure must grow too, so it makes sense for those charged with installing, operating, and maintaining the infrastructure to be involved in the planning process. Encouraging compact development will benefit the private utility by expanding the area it can profitably serve and increasing the number of households it can connect in that area. Coordinating development with water system expansion will benefit developers and property owners by ensuring that new developments will have access to system water, thereby increasing the value of the property. Also, private sector personnel may have valuable additional knowledge regarding which areas of town will be most feasible to connect to system water. Finally, while a rapid, dense build-out may be the best case scenario for the private provider, it is not in accordance with principles of managed growth, nor is it likely in accordance with the wishes of the members of the community. Bringing the private sector into the planning process early on will establish the town as a proactive and planning-savvy, willing to work with private companies, but not be controlled by them.

A note about availability of information

For a town considering working with the private sector to provide water, there is very little information available regarding the land use effects of private water utilities. The North Carolina Utilities Commission maintains a list of all regulated utilities in the state, but does not have a record of the locations of the systems owned and/or operated by those utilities. Additionally, the state does not maintain historical data regarding the numbers of customers served by these systems except for 2004 and 2005.40

Information is also lacking at the local level. In a survey of county managers and planning directors, 36 of the 53 respondents had no knowledge about whether there are franchised water providers in their county, and the twelve that did report having franchised systems in their county could only approximate how many systems are in those counties and how many customers are served.41

At the federal level, the US Geological Survey collects information at the county level regarding the number of customers using water from public systems, but the dataset is difficult to navigate and does not contain information regarding whether those systems are publicly or privately operated. Additionally, the US Census used to collect data about water sources at the block group level, but discontinued that practice in 1990.

This lack of information is unfortunate because it precludes analytical research on the impact the type of water supply (publicly or privately provided) has on local land use. There is much debate on whether private water utilities are a good idea, but very little information available to conduct research and to assist municipalities in deciding whether to work with private utilities.

40 Personal communication, Ken Rudder, NCUC public staff division director, 3/30/2006.
41 Survey conducted Feb/Mar 2006 via phone and web.
V. REFERENCES AND WORKS CITED


VI. APPENDICES

Appendix A. North Carolina Drinking Water Act

NCGS 130A article 10: select statues regarding public water system regulation. Also provided in the North Carolina Administrative Code, Title 15A, subchapter 18C: Rules Governing Public Water Systems

(a) The Commission shall adopt and the Secretary shall enforce drinking water rules to regulate public water systems. The rules may distinguish between community water systems and noncommunity water systems.
(b) The rules shall:
   (1) Specify contaminants which may have an adverse effect on the public health;
   (2) Specify for each contaminant either:
      a. A maximum contaminant level which is acceptable in water for human consumption, if it is feasible to establish the level of the contaminant in water in public water systems; or
      b. One or more treatment techniques which lead to a reduction in the level of contaminants sufficient to protect the public health, if it is not feasible to establish the level of the contaminants in water in a public water system; and
   (3) Establish criteria and procedures to assure a supply of drinking water which dependably complies with maximum contaminant levels and treatment techniques as determined in paragraph (2) of this subsection. These rules may provide for:
      a. The minimum quality of raw water which may be taken into a public water system;
      b. A program of laboratory certification;
      c. Monitoring and analysis;
      d. Record-keeping and reporting;
      e. Notice of noncompliance, failure to perform monitoring, variances and exemptions;
      f. Inspection of public water systems; inspection of records required to be kept; and the taking of samples;
      g. Criteria for design and construction of new or modified public water systems;
      h. Review and approval of design and construction of new or modified public water systems;
      i. Siting of new public water system facilities;
      j. Variances and exemptions from the drinking water rules; and
      k. Additional criteria and procedures as may be required to carry out the purpose of this Article.
(b1) The rules may also establish criteria and procedures to insure an adequate supply of drinking water. The rules may:
   (1) Provide for record keeping and reporting.
   (2) Provide for inspection of public water systems and required records.
   (3) Establish criteria for the design and construction of new public water systems and for the modification of existing public water systems.
   (4) Establish procedures for review and approval of the design and construction of new public water systems and the modification of existing public water systems.
   (4a) Limit the number of service connections to a public water system based on the quantity of water available to the public water system, provided that the number of service connections shall not be limited for a public water system
operating in accordance with a local water supply plan that meets the requirements of G.S. 143-355(l).
(5) Establish criteria and procedures for siting new public water systems.
(6) Provide for variances and exemptions from the rules.
(7) Provide for notice noncompliance in accordance with G.S. 130A-324.
(b2) Two or more water systems that are adjacent, that are owned or operated by the same supplier of water, that individually serve less than 15 service connections or less than 25 persons but that in combination serve 15 or more service connections or 25 or more persons, and that individually are not public water systems shall meet the standards applicable to public water systems for the following contaminants: coliform bacteria, nitrates, nitrites, lead, copper, and other inorganic chemicals for which testing and monitoring is required for public water systems on 1 July 1994. The standards applicable to these contaminants shall be enforced by the Commission as though the water systems to which this subsection applies were public water systems.
(b3) The Department shall not certify or renew a certification of a laboratory under rules adopted pursuant to subdivision (3)b. of subsection (b) of this section unless the laboratory offers to perform composite testing of samples taken from a single public water supply system for those contaminants that the laboratory is seeking certification or renewal of certification to the extent allowed by regulations adopted by the United States Environmental Protection Agency.
(c) The drinking water rules may be amended as necessary in accordance with required federal regulation.
(d) When a person that receives water from a public water system is authorized by the Utilities Commission, pursuant to G.S. 62-110(g), to install sub-meters and resell water to persons who occupy the same contiguous premises, that person shall be regulated as a consecutive water system. The monitoring, analysis, and record-keeping requirements applicable to consecutive water systems under this section shall be satisfied by the monitoring, analysis, and record keeping performed by the supplying water system and submitted to the Department in compliance with this section. The supplying water system shall perform the same level of monitoring, analysis, and record keeping that the supplying system would perform if the person that receives the water had not been authorized to resell water under G.S. 62-110(g), but the supplying water system shall not be required to perform additional monitoring, analysis, and record keeping. A supplying water system is not responsible for operation, maintenance, or repair of the consecutive water system. (1979, c. 788, s. 1; 1983, c. 891, s.2; 1985, c. 417, ss. 1, 2; 1991 (Reg. Sess., 1992), c. 826, s.1; 1993 (Reg. Sess., 1994), c. 776, s. 15; 1995, c. 25, s. 1; 2000-172, s. 1.1; 2001-502, s. 6.)

G.S. 130A-316. Department to examine waters.
The Department shall examine all waters and their sources and surroundings which are used as, or proposed to be used as, sources of public water supply to determine whether waters and their sources are suitable for use as public water supply sources. (1979, c. 788, s. 1; 1983, c. 891, s. 2.)

G.S. 130A-318. Disinfection of public water systems.
(a) The Department is authorized to require disinfection of:
   (1) Public water systems introduced on or after January 1, 1972; and
   (2) All public water systems, regardless of the date introduced, whenever:
      a. The maximum microbiological contaminant level is exceeded; or
      b. Conditions exist that make continued use of the water potentially hazardous to public health.
(b) Public water systems shall employ disinfection methods and procedures approved by the Department. (1979, c. 788, s. 1; 1983, c. 891, s. 2.)
G.S. 130A-322. Imminent hazard; power of the Secretary.
(a) The Secretary shall judge whether an imminent hazard exists concerning a present or potential condition in a public water system.
(b) In order to eliminate an imminent hazard, the Secretary may, without notice or hearing, issue an order requiring the person or persons involved to immediately take action necessary to protect the public health. A copy of the order shall be delivered by certified mail or personal service. The order shall become effective immediately and shall remain in effect until modified or rescinded by the Secretary or by a court of competent jurisdiction. (1979, c. 788, s. 1; 1983, c. 891, s. 2.)

The following acts are prohibited:
(1) Failure by a supplier of water to comply with this Article, an order issued under this Article, or the drinking water rules;
(2) Failure by a supplier of water to comply with the requirements of G.S. 130A-324 or the dissemination by a supplier of any false or misleading information with respect to remedial actions being undertaken to achieve compliance with the drinking water rules;
(3) Refusal by a supplier of water to allow the Department or local health department to inspect a public water system as provided for in G.S. 130A-17;
(4) The willful defiling by any person of any water supply of a public water system or the willful damaging of any pipe or other part of a public water system;
(5) The discharge by any person of sewage or other waste above the intake of a public water system, unless the sewage or waste has been passed through a system of purification approved by the Department; and
(6) The failure of a person to maintain a system approved by the Department for collecting and disposing of all accumulations of human excrement located on the watershed of a public water system. (1979, c. 788, s. 1; 1983, c. 891, s. 2; 1985, c. 462, s. 2; 1989, c. 727, s. 146.)

G.S. 130A-328. Community water system operating permit and permit fee.
(a) No person shall operate a community water system who has not been issued an operating permit by the Department. A community water system operating permit shall be valid from January 1 through December 31 of each year unless suspended or revoked by the Department for cause. The Commission shall adopt rules concerning permit issuance and renewal and permit suspension and revocation. The annual fees in subsection (b) shall be prorated on a monthly basis for permits obtained after January 1 of each year.
(b) The following fees are imposed for the issuance or renewal of a permit to operate a community water system; the fees are based on the number of persons served by the system:

<table>
<thead>
<tr>
<th>Number of Persons Served</th>
<th>Fee</th>
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<tbody>
<tr>
<td>100 or fewer</td>
<td>$150</td>
</tr>
<tr>
<td>More than 100 but no more than 500</td>
<td>$175</td>
</tr>
<tr>
<td>More than 500 but no more than 3300</td>
<td>$300</td>
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<tr>
<td>More than 3300 but no more than 5000</td>
<td>$450</td>
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<tr>
<td>More than 5000 but no more than 10,000</td>
<td>$550</td>
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<tr>
<td>More than 10,000 but no more than 50,000</td>
<td>$650</td>
</tr>
<tr>
<td>More than 50,000</td>
<td>$850</td>
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All fees collected under this section shall be applied to the costs of administering and enforcing this Article. (1991, c. 576, s. 1; 1991 (Reg. Sess., 1992), c. 811, s. 6; c. 1039, s. 11.)
Appendix B. NCUC Rules and Regulations

Relevant articles in Rules and Regulations of the North Carolina Utilities Commission, Chapter 7: Water Companies

http://www.ncuc.commerce.state.nc.us/ncrules/chap7.htm

Rule R7-4. Approval of rate schedules, rules and regulations.
(a) Approval Required. — Rates, schedules, rules, regulations, special contracts, and other charges for the purchase, sale, or distribution of water shall not become effective until filed with and approved by the Commission.
(b) Manner of Filing. — Tariffs containing all the rates, rules, and regulations of each utility shall be filed in the manner prescribed by the Commission.
(c) Utility's Special Rules.
   (1) A utility desiring to establish any rule or requirement affecting its customers shall first make application to the Commission for approval of the same, clearly stating in its application the reason for such establishment.
   (2) On or after ninety days from the effective date of these rules and regulations any utility's special rules and regulations now on file with the Commission which conflict with these rules will become null and void unless they have been refiled and approved by the Commission.

Rule R7-5. Maps and records.
Each utility shall keep on file in its office suitable maps, plans, and records showing the entire layout of every pumping station, filter plant, reservoir, transmission and distribution system, with the location, size and capacity of each plant, size of each transmission and distribution line, fire hydrant, value and customer's service reservoirs, tanks, and other facilities used in the production and delivery of water.

Rule R7-7. Adequacy of facilities.
All water production, treatment, storage, and distribution facilities shall comply with the rules of the North Carolina Department of Environment, Health and Natural Resources and the rules of other state and local governmental agencies governing public water systems.

Rule R7-10. Cross connections.
No physical connections between the distribution system of a public potable water supply and that of any other water supply shall be permitted unless such other water supply is of safe, sanitary quality and has been approved by the North Carolina Department of Environment, Health and Natural Resources and other state or local governmental agencies with rules pertaining to cross connection.

Rule R7-12. Quality of water.
(a) Every water utility shall comply with the rules of the North Carolina Department of Environment, Health and Natural Resources and the rules of other state and local governmental agencies governing purity of water, testing of water, operation of filter plant, and such other lawful rules as those agencies prescribe.
(b) All water being supplied by water utilities subject to the jurisdiction of the North Carolina Utilities Commission is required, as a minimum, to meet the standards of water quality as set forth in the United States Safe Drinking Water Act enacted in 1974 and as amended in 1986; provided, that upon application in writing to the Commission and
approval of the Commission in writing, a water utility may have a specified deviation or
tolerance from the mineral content requirements of said United States Safe Drinking
Water Act enacted in 1974 and as amended in 1986, based upon regional water
characteristics or conditions and upon the economic feasibility of providing treatment to
the water or of locating alternate sources of water.

(a) Each water utility shall adopt a standard method for installing a service connection or
meter installation, which is included in the "connection charge." Such method shall be
set out with a written description and drawings, together with a schedule of connection
charges, to the extent necessary for a clear understanding of the requirements and shall
be submitted to the Commission for its approval.
(b) The term "service connection" shall mean, viz., the pipe between its main and the
nearest property line, a curb cock and curb box or other standard equipment and
connections. The curb cock may be installed at a convenient place between the property
line and the curb.
(c) Temporary service shall be installed by mutual agreement.
(d) The customer shall furnish and lay the necessary pipe to make the connection from
the property line nearest the utility's water main, and shall keep the service line from
the property line to the place of consumption in good repair. The customer shall not
make any change in or rebuild such service line without giving written notice to the
utility. All of the foregoing shall be designated as "customer's service line."
(e) In the installation of a service line, the customer must not install any tees or branch
connection ahead of the meter location and must leave the trench open and pipe
uncovered until it is examined by an inspector of the utility and shown to be free from
any irregularity or defect.
(f) In any case where a reasonable doubt exists as to the proper location and size for
"customer's service line," the utility shall be consulted and its approval of the location
and size of line be secured in writing.

Rule R7-16. Extension of mains.
(a) General Provisions.
    (1) A bona fide customer as referred to in subsections (b) and (c) hereinafter
shall be a customer of permanent and established character, exclusive of the real
estate developer or builder, who receives water service at a premises improved
with structures of a permanent nature.
    (2) Any facilities installed hereunder shall be the sole property of the utility.
    (3) The size, type, quality of materials, and their location will be specified by the
utility, and the actual construction will be done by the utility or by a constructing
agency acceptable to it.
    (4) Adjustment of any difference between the estimated cost and the reasonable
actual cost of any main extension made hereunder will be made within 60 days
after the actual cost of the installation has been ascertained by the utility.
    (5) In case of disagreement or dispute regarding the application of any provision
of this rule, or in circumstances where the application of this rule appears
impracticable or unjust to either party, the utility, applicant or applicants may
refer the matter to the Public Utilities Commission for settlement.
    (6) Extensions for fire hydrant service, private fire protection service, and
temporary service will not be made under this rule.
    (7) The utility will not be required to make extensions where grades have not
been brought to those established by public authority.
    (8) Where the property of the applicant or applicants is located adjacent to a
street or highway exceeding 70 feet in width, or a freeway, waterway, or railroad
right-of-way, the utility may elect to install a main extension on the same side
thereof as the property of the applicant or applicants, and the estimated cost in such case will be based on such an extension.

(9) Where an extension must comply with an ordinance, regulation, or specification of a public authority, the estimated cost of said extension shall be based upon the facilities required to comply therewith.

(b) Extensions to Serve Individuals.

(1) The utility will extend its water distribution mains to serve new bona fide customers at its own expense, other than to serve subdivisions, tracts, housing projects, industrial developments or organized service districts, when the required total length of main extension from the nearest existing distribution main is not in excess of 100 feet per service connection. If the total length of main extension is in excess of 100 feet per service connection applied for, the applicant or applicants for such service shall be required to advance to the utility before construction is commenced that portion of the reasonable estimated cost of such extension over and above the estimated reasonable cost of 100 feet of the main extension per service connection exclusive of the cost of service connections and meters and exclusive of any costs of increasing the size or capacity of the utility's existing mains or any other facilities used or necessary for supplying the proposed extension. Such estimated reasonable cost shall not be based upon the cost of a main in excess of 4 inches in diameter except where required by the special needs of the applicant or applicants. The money so advanced will be refunded by the utility without interest in payments equal to the reasonable actual cost of 100 feet of the main extension, for which advance was made for each additional service connection, exclusive of that of any customer formerly served at the same location. Refunds will be made within 180 days after the date of first service to a bona fide customer. No refunds will be made after a period of 5 years from the date of completion of the main extension and the total refund shall not exceed the amount advanced.

(2) Where a group of five or more individual applicants request service from the same extension, or in unusual cases after obtaining Commission approval, the utility at its option may require that the individual or individuals advance the entire cost of the main extension as herein provided and the utility will refund this advance as provided in subsection (c)(2) of this rule.

(3) In addition to refunds made on the basis of service connections attached directly to the extension for which the cost was advanced as provided in subdivision (1) of this subsection, refunds also will be made to the party or parties making the advances in those cases where additional bona fide customers are served by a subsequent main extension, either continuous or lateral, supplied from the original extension upon which an advance is still refundable, whenever the length of such further extension is less than 100 feet per service connection. Such additional refunds will equal the difference between the 100-foot allowance per service connection and the length of each required subsequent extension multiplied by the average cost per foot of the extension used as the basis for determining the amount advanced. In those cases where subsequent customers are served through a series of such main extensions, refunds will be made to the party or parties making the advances in chronological order beginning with the first of the extensions in the series from the original point of supply, until the amount advanced by any party is fully repaid within the period of 5 years as specified above. In those cases where two or more customers have made a joint advance on the same extension, refunds will be made in the same proportion that each advance bears to the total of said joint advance. Where the utility installs a main larger than that for which the cost was advanced to serve an individual or individuals, and a subsequent extension is supplied from such main, the original
individual or individuals will not be entitled to refunds which might otherwise accrue from subsequent extensions.

(c) Extensions to Serve Subdivisions, Tracts, Housing Projects, Industrial Developments or Organized Service Districts.

(1) An applicant for a main extension to serve a new subdivision, tract, housing project, industrial development or organized service district shall be required to advance to the utility before construction is commenced the estimated reasonable cost of installation of the mains, from the nearest existing main at least equal in size to the main required to serve such development, including necessary service stubs or service pipelines, fittings, gates and housings therefore, and including fire hydrants when requested by the applicant or required by public authority, exclusive of meters. If additional facilities are required specifically to provide pressure or storage exclusively for the service requested, the cost of such facilities may be included in the advance upon approval by the Commission.

(2) The money so advanced will be subject to refund by the utility without interest to the party or parties entitled thereto. The total amount so refunded shall not exceed the amount advanced. Refunds will be made under the following method:

Proportionate Cost Method. — For each service connection directly connected to the extension, exclusive of that of any customer formerly served at the same location, the utility will refund within 180 days after the date of first service to a bona fide customer that portion of the total amount of the advance which is determined from the ratio of 100 feet of main to the total footage of main in the extension for which the cost was advanced. No refunds will be made after a period of 5 years from the date of completion of the main extension.

**Rule R7-17. Refusal to serve applicants.**

(a) Noncompliance with Rules and Regulations. — Any utility may decline to serve an applicant until he has complied with State regulations governing water service and the approved rules and regulations of the utility.

(b) Utility's Facilities Inadequate. — Until adequate facilities can be provided, a utility may decline to serve an applicant if, in the best judgment of the utility, it does not have adequate facilities to render service applied for or if the intended use is of a character that is likely to affect unfavorably service to other customers.

(c) Applicant's Facilities Inadequate. — The utility may refuse to serve an applicant if, in its judgment, the applicant's installation of water piping is regarded as hazardous or of such character that satisfactory service cannot be given.

**Rule R7-20. Utility's discontinuance of service.**

(a) Violation of Rules. — Neglect or refusal on the part of a customer to comply with these rules or the utility's rules properly filed with the Commission shall be deemed to be sufficient cause for discontinuance of service on the part of the utility.

(b) Access to Property. — The utility shall at all reasonable times have access to meters, service connections, and other property owned by it on customer's premises for purposes of maintenance and operation. Neglect or refusal on the part of the customer to provide reasonable access to their premises for the above purposes shall be deemed to be sufficient cause for discontinuance of service on the part of the utility.

(c) Notice of Discontinuance. — No utility shall discontinue service to any customer for violation of its rules or regulations without first having diligently tried to induce the customer to comply with its rules and regulations. After such effort on the part of the utility, service may be discontinued only after written notice of such intention, and that five (5) days, excluding Sundays and holidays, shall have been given the customer by
the utility; provided, however, that where an emergency exists, or where fraudulent use of water is detected, or where a dangerous condition is found to exist on the customer's premises, the water may be shut off without such notice.

(d) Disputed Bills. — In the event of a dispute between the customer and the utility respecting any bill, the utility shall make forthwith such investigation as shall be required by the particular case, and report the result thereof to the customer. In the event that the matter in dispute cannot be compromised or settled by the parties, either party may submit the fact to the Commission for its opinion, and pending such opinion, service shall not be discontinued.


(f) Reconnection Charge. — Whenever the supply of water is turned off for the violation of rules and regulations, nonpayment of bill, or fraudulent use of water, the utility may make a reconnection charge, approved by the Commission, payable in advance, for restoring the service. The fee shall be no more than fifteen dollars ($15.00); except, if the utility proves that its actual and reasonable cost for restoring the service is greater than fifteen dollars ($15.00), the fee may be set at no more than the proven cost.

(g) When Water Turned Off at Customer's Request. — When for any valid reason the supply of water has been turned off at the customer's request, the utility shall charge for restoring service the fee approved by the Commission. The fee shall be no more than fifteen dollars ($15.00); except, if the utility proves that its actual and reasonable cost for restoring the service is greater than fifteen dollars ($15.00), the fee may be set at no more than the proven cost.

(h) Turning Water On or Off, Disconnecting Meter, etc., Without Authority. — No plumber, owner, or other unauthorized person shall turn the water on or off except in case of emergency at any corporation stop or curb stop, or disconnect or remove the meter without the consent of the utility.

No utility shall charge or demand or collect or receive any greater or less or different compensation for sale of water, or for any service connected therewith, than those rates and charges approved by the Commission and in effect at that time.

Rule R7-26. Interpretations.
(a) Residential Service.

(1) "Residential service" is defined as service to a householder or tenant living in a separate house or a separate apartment in an apartment building.
(2) Should the owner of a multiple apartment building undertake to furnish water to his tenants as a part of their monthly rent, then such service shall be classed as "Commercial."
(3) A close member of a householder's family, living with that householder and using the same water facilities, shall not be classified as an additional service or as "Commercial."
(4) In cases where a householder or tenant devotes some portion of the occupied building to commercial use and uses the remainder as a residence, then the predominant use of water shall constitute the basis for classification as either residential or commercial.

(b) Commercial Service.

(1) "Commercial service" is defined to include service to each separate business enterprise, occupation, or institution occupying for its exclusive use any unit or units of space as an entire building, entire floor, suite of rooms or a single room, and using water for such incidental use as the schedule of rates applicable to the particular installation may permit. "Commercial service" shall apply to all stores, offices, hotels, wholesale houses, garages, display windows, signs, theaters,
barber and beauty shops, churches, opera houses, auditoriums, lodge halls, schoolhouses, banks, bakeries, and any other space occupied for commercial purposes. Any rooming house, lodginghouse, resort, inn or tavern renting more than four rooms to strangers or transients, without any previous agreement for accommodation or as to the duration of stay, shall be classed as a hotel and as such it comes under the "Commercial" classification.

(2) Where a single business enterprise or institution occupies more than one unit of space in the conduct of the same business, each separate unit will be metered separately and considered a separate service unless the customer makes the necessary provisions whereby the different units may be connected to permit the metering of all water used through one meter. The above rule shall not be construed to allow any customer to secure combined meter readings and billings by reason of ownership in the same person, partnership, association, or corporation of different buildings or units of space which are not used and operated by the customer and held out to the public as one single business unit.

(c) Industrial Service. — "Industrial service" is defined as a customer manufacturing or producing a commodity for the use and sale to the general public.

(d) Fire Protection Service. — "Fire protection service" is defined as each customer taking service under a distinct fire protection rate schedule.

Rule R7-27. Fire protection service.

a) The rate fixed in the schedule to be paid for fire hydrants contemplates the use of a sufficient amount of water through said hydrants for the bona fide purpose of extinguishing fires, by or under the supervision of fire department employees or officials, and does not authorize the use of said hydrants and the water that flows therefrom by any unauthorized person.

b) The company may require all new consumers who desire both regular commercial service and fire protection service to install separate service lines, one to be used only for fire protection. The company may require all old consumers who now have only one service connection for combined commercial service and for fire protection to install separate lines, all expenses incurred in making such change to be paid for by the company. In cases where separate lines are installed, the consumer is not permitted to take water from the fire protection line except for the extinguishing of fires or for fire drills. Neither will the company permit an interconnection to be made between the regular service line and the fire protection line.

Rule R7-36. Availability rates.

(a) Definitions.

(1) "Availability rate" — means a fee or charge paid to a water utility by a subscriber thereof for the availability of water service being provided by the utility in a specific subdivision or real estate development.

Rule R7-37. Bonds.

(a) Except as provided in paragraph (f), before temporary operating authority, or a certificate of convenience and necessity is granted to a water or sewer utility company, or before a water or sewer utility company extends service into territory contiguous to that already occupied, without regard to the date of the issuance of the existing franchise, the company must furnish a bond to the Commission as required by G.S. 62-110.3. The company shall ensure that the bond is renewed as necessary to maintain it in continuous force in conformity to the rules herein.

(b) The form of the bond shall be as in the Appendix to this Chapter.

(c) The amount of the bond shall be set by the Commission on the basis of evidence presented during the application proceeding. In the case of a no-protest application proceeding, the amount of the bond shall be based on information in the application. In
the event that the parties cannot agree on the appropriate amount, the issue shall be referred to the Commission for final decision. In setting the amount of a bond, the Commission shall consider and make appropriate findings as to the following:

1. Whether the applicant holds other water or sewer franchises in this State, and if so its record of operation,
2. The number of customers the applicant now serves and proposes to serve,
3. The likelihood of future expansion needs of the service,
4. If the applicant is acquiring an existing company, the age, condition and type of the equipment,
5. Any other relevant factors, including the design of the system, and
6. In the case of a contiguous extension, both the original service area and the proposed extension.

The bond shall be in an amount, not less than ten thousand dollars ($10,000), sufficient to provide financial responsibility in a manner acceptable to the Commission.

(d) The bond may be secured by the joinder of a commercial bonding company or other surety acceptable to the Commission. An acceptable surety is an individual or corporation with a net worth, not including the value of the utility, of at least twenty (20) times the amount of the bond or five hundred thousand dollars ($500,000), whichever is less. The net worth of a proposed surety must be demonstrated by the annual filing with the Commission of an audited financial statement. Where a utility proposes to secure its bond by means of a commercial surety bond of nonperpetual duration issued by a corporate surety, the bond and commercial surety bond must specify that (a) if, for any reason, the surety bond is not to be renewed upon its expiration, the financial institution shall, at least 60 days prior to the expiration date of the surety bond, provide written notification by means of certified mail, return receipt requested, to the Chief Clerk of the North Carolina Utilities Commission, 4325 Mail Service Center, Raleigh, North Carolina 27699-4325, that the surety bond will not be renewed beyond the then current maturity date for an additional period, (b) failure to renew the surety bond shall, without the necessity of the Commission being required to hold a hearing or appoint an emergency operator, allow the Commission to convert the surety bond to cash and deposit said cash proceeds with the administrator of the Commission’s bonding program, and (c) the cash proceeds from the converted surety bond shall be used to post a cash bond on behalf of the utility pursuant to section (e)(3) of this rule.

(e) The bond may also be secured by posting with the Commission cash or securities acceptable to the Commission at least equal in value to the amount of bond. If the aggregate value of the securities posted declines below the amount required to guarantee the full bond, the utility shall make any additional deposits necessary to guarantee the bond. If the aggregate value of the securities posted increases above the amount required to guarantee the bond, the utility may withdraw securities as long as the aggregate value remains at least equal to the amount required.

Acceptable securities are:

1. Obligations of the United States of America
2. Obligations of the State of North Carolina
3. Certificates of deposit drawn on and accepted by commercial banks and savings and loan associations incorporated in the State of North Carolina
4. Irrevocable letters of credit issued by financial institutions acceptable to the Commission. If the irrevocable letter of credit is nonperpetual in duration, the bond and letter of credit must specify that (a) if, for any reason, the irrevocable letter of credit is not to be renewed upon its expiration, the financial institution shall, at least 60 days prior to the expiration date of the irrevocable letter of credit, provide written notification by means of certified mail, return receipt requested, to the Chief Clerk of the North Carolina Utilities Commission, 4325 Mail Service Center, Raleigh, North Carolina 27699-4325, that the irrevocable
letter of credit will not be renewed beyond the then current maturity date for an additional period, (b) failure to renew the irrevocable letter of credit shall, without the necessity of the Commission being required to hold a hearing or appoint an emergency operator, allow the Commission to convert the irrevocable letter of credit to cash and deposit said cash proceeds with the administrator of the Commission's bonding program, and (c) the cash proceeds from the converted irrevocable letter of credit shall be used to post a cash bond on behalf of the utility pursuant to section (e)(3) of this rule.

(5) Such other evidence of financial responsibility deemed acceptable to the Commission. If the utility proposes to post evidence of financial responsibility other than that permitted in (1), (2), (3), and (4) above, a hearing will be held to determine if the form of the proposed security serves the public interest and if the amount of the bond proposed by the utility should be higher due to its lack of liquidity. At this hearing, the burden of proof will be on the utility to show that the proposed security under subparagraph (5) and the proposed amount of the bond will be in the public interest.

(f) If a utility subject to the Commission's jurisdiction is operating without a franchise and either

(1) it applies for a franchise, or

(2) the Commission asserts jurisdiction over it, the utility shall satisfy the bonding requirement. If the Commission finds that such a utility cannot meet that requirement, it may grant the utility temporary operating authority for a reasonable period of time until it can transfer the system or post the bond. If after the expiration of the time period the company has neither posted the bond nor transferred the system, the Commission may seek fines and penalties under G.S. 62-310.

(g) The company shall attach a separate notarized statement to its annual report which is due on or before April 30th of each year stating the amount of the bond, whether the bond is still in effect, and the date of next renewal.
Appendix C. Rate Setting

Relevant excerpts from the Public Utilities Act, Article 7.
Rates of Public Utilities.

(a) The Commission shall make, fix, establish or allow just and reasonable rates for all public utilities subject to its jurisdiction. A rate is made, fixed, established or allowed when it becomes effective pursuant to the provisions of this Chapter.

(a) In fixing the rates for any public utility subject to the provisions of this Chapter, other than bus companies, motor carriers and certain water and sewer utilities, the Commission shall fix such rates as shall be fair both to the public utilities and to the consumer.
(b) In fixing such rates, the Commission shall:
   (1) Ascertain the reasonable original cost of the public utility’s property used and useful, or to be used and useful within a reasonable time after the test period, in providing the service rendered to the public within the State, less that portion of the cost which has been consumed by previous use recovered by depreciation expense plus the reasonable original cost of investment in plant under construction (construction work in progress). In ascertaining the cost of the public utility’s property, construction work in progress as of the effective date of this subsection shall be excluded until such plant comes into service but reasonable and prudent expenditures for construction work in progress after the effective date of this subsection may be included, to the extent the Commission considers such inclusion in the public interest and necessary to the financial stability of the utility in question, subject to the provisions of subparagraph (b)(4a) of this section.
   (1a) Apply the rate of return established under subdivision (4) of this subsection to rights-of-way acquired through agreements with the Department of Transportation pursuant to G.S. 136-19.5(a) if acquisition is consistent with a definite plan to provide service within five years of the date of the agreement and if such right-of-way acquisition will result in benefits to the ratepayers. If a right-of-way is not used within a reasonable time after the expiration of the five-year period, it may be removed from the rate base by the Commission when rates for the public utility are next established under this section.
   (2) Estimate such public utility’s revenue under the present and proposed rates.
   (3) Ascertain such public utility’s reasonable operating expenses, including actual investment currently consumed through reasonable actual depreciation.
   (4) Fix such rate of return on the cost of the property ascertained pursuant to subdivision (1) as will enable the public utility by sound management to produce a fair return for its shareholders, considering changing economic conditions and other factors, as they then exist, to maintain its facilities and services in accordance with the reasonable requirements of its customers in the territory covered by its franchise, and to compete in the market for capital funds on terms which are reasonable and which are fair to its customers and to its existing investors.
   (4a) Require each public utility to discontinue capitalization of the composite carrying cost of capital funds used to finance construction
(allowance for funds) on the construction work in progress included in its rate based upon the effective date of the first and each subsequent general rate order issued with respect to it after the effective date of this subsection; allowance for funds may be capitalized with respect to expenditures for construction work in progress not included in the utility's property upon which the rates were fixed. In determining net operating income for return, the Commission shall not include any capitalized allowance for funds used during construction on the construction work in progress included in the utility's rate base.

(5) Fix such rates to be charged by the public utility as will earn in addition to reasonable operating expenses ascertained pursuant to subdivision (3) of this subsection the rate of return fixed pursuant to subdivisions (4) and (4a) on the cost of the public utility's property ascertained pursuant to subdivisions (1) and (1a) of this subsection.

(a) In fixing the rates for any water or sewer utility, the Commission may fix such rates on the ratio of the operating expenses to the operating revenues, such ratio to be determined by the Commission, unless the utility requests that such rates be fixed under G.S. 62-133(b). Nothing in this subsection shall be held to extinguish any remedy or right not inconsistent herewith. This subsection shall be in addition to other provisions of this Chapter which relate to public utilities generally, except that in cases of conflict between such other provisions, this section shall prevail for water and sewer utilities.
(b) A water or sewer utility may enter into uniform contracts with nonusers of its utility service within a specific subdivision or development for the payment by such nonusers to the utility of a fee or charge for placing or maintaining lines or other facilities or otherwise making and keeping such utility's service available to such nonusers; or such a utility may, by contract of assignment, receive the benefits and assume the obligations of uniform contracts entered into between the developers of subdivisions and the purchasers of lots in such subdivisions whereby such developer has contracted to make utility service available to lots in such subdivision and purchasers of such lots have contracted to pay a fee or charge for the availability of such utility service; provided, however, that the maximum nonuser rate shall be as established by contract, except that the contractual charge to nonusers of the utility service can never exceed the lawfully established minimum rate to user customers of the utility service. (1973, c. 956, s. 2.)