2017 Interbasin Transfer Certificate

Water Conservation Plan

Prepared for:

Pender County Utilities

Submitted to:

North Carolina Division of Water Resources

October 2017

Prepared by:

HIGHFILL
INFRASTRUCTURE
ENGINEERING, P.C.
3804 Park Avenue, Suite A
Wilmington, NC 28403

ch2m
SM

CH2M HILL North Carolina, Inc.
3120 Highwoods Boulevard
Suite 214 - Magnolia Building
Raleigh, NC 27604
(919) 875-4311

This page has been intentionally left blank.

Contents

This page has been intentionally left blank.

SECTION 1

Introduction

Pender County Utilities (PCU) is committed to effectively managing water resources and ensuring safe and reliable water supply for the communities they serve while being good stewards of the natural environment. As part of long-range planning efforts, PCU is engaging in the planning process as a regional provider of surface water. PCU has reached out to other neighboring utilities, including all other utility providers within Pender County, to determine who may consider obtaining surface water through PCU's system in the future. These utilities are currently reliant on groundwater for their potable water needs. The utilities that have decided to partner with PCU as a co-applicant as part of the interbasin transfer (IBT) certificate process include the Town of Burgaw, Town of Topsail Beach, Town of Surf City, Town of Wallace (in neighboring Duplin County), and Utilities, Inc. PCU and its co-applicants are requesting an authorized transfer between designated IBT river basins, from the Cape Fear River to the South River, Northeast Cape Fear River, and New River IBT basins of 14.5 million gallons per day (MGD), calculated as a daily average of a calendar month. The proposed transfer volume is based on updated water demand projections for the next 30 years.

Under the authority of North Carolina General Statute (NCGS) 143-215.22L, a Water Conservation Plan must be in place that specifies the mandatory water conservation measures that will be implemented by PCU and its co-applicants to ensure the efficient use of the transferred water.

This Water Conservation Plan is structured to:

- Summarize PCU's water resources planning effort and water conservation programs.
- Summarize PCU's implementation plans for the water conservation strategy that meets the intent of the NCGS language for such a plan.

1.1 Water Conservation History

PCU is a small rural NC utility with 7,500 customers and average day demands less than 1.0 MGD. Based on billing records, PCU customers do not currently exhibit high levels of discretionary water use or resource mismanagement. To foster continued responsible stewardship, the following conservation measures are currently in place and are discussed in more detail in subsequent sections of this document:

- Rate structure that discourages excessive water use
- Water resources planning to promote conservation
- Supply-side management
    - Water use efficiency
    - Water supply flexibility
- Demand-side management
    - Education
    - Incentives
    - Regulation

1.2 Water Consumption and Utility Rate Structure

PCU's current water system annual average daily residential water usage is approximately 40 gallons per capita per day (GPCD). This figure is significantly less than the annual average GPCD identified as part of the recent residential end use study completed by the Water Research Foundation (WRF). According to WRF, the average annual per capita usage across 23 cities throughout the United States is 95 GPCD, with a minimum of 52 GPCD and maximum of 217 GPCD (WRF, 2016). Neighboring Brunswick County reported 67 GPCD for its year-round population in 2016. Onslow Water and Sewer Authority (ONWASA) reported 51 GPCD for the same period, Warsaw (in Duplin County) reported 64 GPCD, and East Bladen County Water District reported 115 GPCD. (NCDWR, 2017)

The PCU system unit consumption value is also well below the annual average system unit consumption values identified by the USGS for North Carolina, 70 GPCD, and the nation, 88 GPCD (Range: 55 – 168 GPCD) (USGS). As additional customers are added to PCU's system, the unit consumption values are expected to remain relatively steady. Factors driving this expectation are the prevalence of low-flow fixtures and newer technologies for household appliances in newly constructed houses, along with a reduced need for distribution system flushing as customers are added to the system. These factors will help to balance the addition of services for potentially less efficient existing homes as the system is expanded.

A comparison of monthly water bills and conservation signal costs was generated utilizing the UNC Environmental Finance Center (EFC) NC Water and Wastewater Rates Dashboard (hereafter, EFC Dashboard). Table 1 shows that PCU has the highest monthly water bill per 5,000 gallons ($57.50) among the utilities shown, which include utilities in the geographic region plus several from upstream in the major basin. The EFC considers the conservation signal to be the cost per 1,000 gallons above 10,000 gallons. PCU's conservation signal, which is the top tier for PCU's irrigation customers and commercial customers, was increased from $6.00 to $9.95/ 1,000 gallons as of July 1, 2017, making PCU's the highest among all utilities shown. This comparison shows that PCU's rates strongly promote efficient water use. (UNC)

TABLE 1
Water Usage Bills of Comparable Regional Utilities

Utility Provider	Monthly Water Bill (5,000 gallons)	Conservation Signal – Cost per 1,000 gallons above 10,000 gallons
PCU	$57.50	$9.95*
Surf City	$33.42	$4.06
ONWASA	$26.35	$3.75
Cary	$25.87	$6.46
Fayetteville	$23.02	$4.52
Harnett County	$34.25	$5.25
Cape Fear PUA	$31.26	$3.67
Topsail	$55.42	$5.50
Brunswick County	$27.25	$3.10
Pittsboro	$40.40	$6.84
Wallace	$23.65	$2.13
Jacksonville	$25.94	$4.83
Burgaw	$23.75	$5.07

* This rate was effective July 1, 2017, and is not yet reflected in the EFC Dashboard.

1.3 Water Resources Planning

PCU has implemented multiple water conservation and efficiency programs in their continued effort to be among the most stringent in the source basin. A comparison of PCU's water conservation program with other entities utilizing the Cape Fear River as a water source is included in Appendix A. A brief summary of the comparison is provided below:

- Rates: PCU has higher usage rates and conservation signal rates than neighboring utilities. Implementing higher rates is the single most effective method of reducing water usage.
- Education: PCU provides extensive water conservation tips on their website, including links to rainwater harvesting information. PCU plans to include periodic conservation fliers with monthly water bills beginning in 2018.
- Regulation: PCU requires separate irrigation services with meters per NCGS 143-355.4. PCU is recommending that the Pender Board of County Commissioners (BOCC) amend the water and sewer ordinance to ban irrigation of impervious surfaces and to require irrigation customers to install rain sensors on new automated irrigation systems effective Spring 2018.
- Other: Two specific programs offered by other utilities are not feasible for PCU at this time.
    - Reclaimed water – PCU is primarily a water utility now, with only limited centralized wastewater treatment available to an isolated portion of the County. As a small rural utility, capital expenditures for significant new infrastructure typically require some combination of grants (if available) and long-term financing. With water rates already among the highest in the state, the debt service required to enable construction of collection, treatment and reclaimed water distribution infrastructure is cost prohibitive.
    - Aquifer Storage and Recovery (ASR) – With recent concerns over emerging contaminants in regional drinking water and their fate in the environment, the investment required to investigate the hydrogeologic possibility of utilizing ASR, and the capital investment required for the infrastructure to implement ASR, water storage via ASR is not currently considered a feasible water conservation measure for PCU.

PCU maintains awareness of information and operational technology developments to anticipate and support timely adoption of water conservation improvements. PCU has recently updated its Water Shortage Response Plan (WSRP) and is now among the most stringent in the Cape Fear River basin. The co-applicants will be required to meet or exceed PCU's standards in water conservation, water efficiency, and drought management prior to purchasing water from PCU. PCU anticipates implementing new conservation programs as they are determined to be effective and appropriate to maintain or minimize the already low per capita usage level for PCU customers. The programs that will be implemented when PCU becomes a regional provider include:

- An established notification system so that if PCU must implement a step in its WSRP that each co-applicant and their wholesale customers are notified prudently.
- Regular coordination among water system users involving PCU, co-applicants, and wholesale customer operators.
- Creating a long-term, shared regional vision for sustainable, reliable water resources.

SECTION 2

Water Conservation Plan

2.1 Objectives

Water is a valuable natural resource that every living thing needs to survive. Overuse in one area diminishes the availability of the resource to communities and ecosystems downstream. PCU realizes that efficient use of water from the Cape Fear River basin must be accomplished year-round and not just during drought periods. PCU has implemented multiple water resources management and conservation strategies to achieve these objectives, including supply-side management and demand-side management, which will result in the efficient use of water in the source and receiving river basins. Sections 2.2 and 2.3 highlight PCU's water conservation strategies.

2.2 Supply-side Management

2.2.1 Water Use Efficiency

PCU has relatively new water system infrastructure, which limits the potential for distribution system losses compared to older systems. PCU is committed, however, to operational optimization to ensure ongoing, timely, cost-effective, reliable, and sustainable performance improvements in all facets of its operations. PCU aims to minimize resource use, loss, and impacts from day-to-day operations. PCU maintains awareness of information and operational technology developments to anticipate and support timely adoption of improvements. The following programs are currently in place:

- PCU monitors and reviews water usage for non-revenue losses and unaccounted water each month following each billing cycle. Unmetered, non-revenue water is approximately 10% of potable water produced. The unmetered, non-revenue water includes firefighter training and emergency use, along with flushing to maintain water quality and other distribution system operations.
- Annual SCADA system calibration ensures accurate monitoring of tank levels and timely notification of significant changes in system pressure, which helps reduce the risk of tanks overflowing and alerts operators to potential line breaks or other system problems.
- The annual enterprise fund budget includes a line item for maintenance and repair of the water distribution system.
- Valves are exercised on a regular basis.
- Hydrants are flushed annually.
- All known defective meters are repaired or replaced expeditiously.
- Rates are established to adequately cover debt service and operational costs, provide for reserves, and plan and invest for future needs.

2.2.2 Water Supply Flexibility

The supply-side management focuses on maintaining flexibility in managing available water supplies and increasing the ability to adapt to changes in the future that are relatively uncertain, including economic and business climate, technological advances, hydrologic and climate variability, and environmental regulatory changes. Increasing PCU's water resources resilience will also improve the overall regional resilience. Many residents have access to private groundwater wells for irrigation purposes, potentially further reducing the demand on PCU's surface water supply.

The co-applicants currently obtain their water supply from groundwater sources. The Town of Burgaw is considering drilling additional wells and/or interconnecting with PCU to meet future supply needs. The Town of Topsail Beach has an emergency connection with the Town of Surf City. Likewise, the Town of Surf City has an emergency connection with Topsail Beach and another with ONWASA. The Town of Wallace has an emergency connection with Duplin County. The Town of Wallace withdraws groundwater in the Central Coastal Plain Capacity

Use Area (CCPCUA), where restrictions have been implemented to limit groundwater use. Utilities Inc. currently provides water service to two developments in the US 17 corridor, Belvedere Plantation and Olde Pointe, from groundwater sources.

Co-applicant concerns with current groundwater supplies are primarily related to salt water intrusion. To maintain potential supplemental supply and to provide event management capabilities, no co-applicant currently is expected to fully decommission its groundwater supply sources unless water quality actually deteriorates or the threat of deterioration is imminent. The interconnections and the existing groundwater supplies, therefore, preserve the opportunity for supplemental or emergency use. While PCU is expected to eventually become the primary water provider, the regional system interconnectivity and availability of supplemental groundwater supply provides some flexibility for emergency event management.

2.3 Demand-side Management

PCU's demand-side management strategy focuses on influencing customers to use water efficiently, resulting in reduced water demand. Long-term water use reductions are achieved through a combination of changing technologies (for example, low-flow toilets) and behaviors (for example, fixing leaks). PCU has a threefold approach to achieving water conservation that includes the following elements:

- **Education**
    - Education materials are available on PCU's website and will soon be included in mailers. http://www.pendercountync.gov/Government/Departments/Utilities/WaterConservationTips.aspx Information provided includes:
        - Irrigation
            - Adjust your irrigation timer monthly – lawns require different amounts of water in winter than in spring. Thus irrigating with the same amount of water may result in water wasting.
            - The most efficient time for watering is early morning or late evenings, when temps are cooler and winds lighter.
            - Native or desert landscaping is another way to reduce watering. Replace lawns and water consuming plants with attractive native and drought tolerant plants. Native or desert landscaping is a responsible way to enhance the beauty of the gardens while conserving water and protecting the environment.
        - Look for leaks – and repair them right away
            - Check your toilet for leaks. A leak inside the toilet can waste up to 200 gallons of water a day. Check by adding a few drops of food coloring into the tank. If there is a leak, color will show in the bowl in about 30 minutes. Check for worn out, corroded, or bent parts. Replacement kits are relatively inexpensive and easily installed.
            - Faucet leaks are usually visible, but some unnoticeable leaks may occur in areas like the on/off handle or in the pipes below the basin.
        - Install water-saving devices
            - Install low flow toilets, aerators and showerheads.
            - Make sure all devices are properly installed.

- Wash dishes wisely
    - Run the dishwasher only when you have a full load. Automatic dishwashers use about 15 gallons per load.
    - If washing dishes by hand, don't let water run continuously for rinsing. If you have 2 sinks, fill one with rinse water. If you have only one sink, first gather all your washed dishes in a dish rack, and then rinse them quickly. Also, using the least amount of detergent necessary minimizes the rinse water needed.

- **Incentives**
    - Residential use is subject to a uniform rate structure (base monthly rate plus usage per 1,000 gallons) that incentivizes customers to use water efficiently by charging customers based on individual usage. The less water customers use, the more money they save. According to the EFC Dashboard, PCU's water rates are among the top 10% in the state (UNC) and, at $57.50 for 5,000 gallons used, nearly double the median statewide water bill of $32.50. *Note: Not yet reflected in the EFC Dashboard are PCU's rates effective July 1, 2017 ($27.50 base, plus $6.50 per 1,000 gallons per month), which increase the cost for 5,000 gallons per month to $60.00.*
    - All commercial, industrial, institutional, and irrigation customer rates are set using an inclining block rate to further discourage excessive usage. On July 1, 2017, PCU implemented an increase for the highest tier of the inclining block, usage above 10,000 gallons, to $9.95 per 1,000 gallons. The EFC Dashboard shows the median statewide conservation signal rate to be $4.38 per 1,000 gallons, so PCU's rates provide strong incentive to conserve water.

- **Regulations**
    - PCU is recommending to the Pender BOCC to amend the Pender County Water and Sewer Ordinance to ban irrigation of impervious surfaces and to require irrigation customers to install rain sensors on new automated irrigation systems effective Spring 2018.
    - PCU encourages water conservation and responsible water use at all times. The Pender County Water and Sewer Ordinance currently provides enforceable requirements to ensure the efficient use of water during water emergencies. PCU staff have the authority to issues citations for violations of the Water Shortage Response Plan (WSRP) based on the number of prior violations and level of water shortage.
    - Specific regulations currently include the following:
        - New construction with irrigation systems connecting to PCU require separate irrigation metering and will be charged based on the inclining block rate.
        - Drought surcharges are implemented in WSRP stages 3, 4, and 5.

Inherent in the implementation of any demand-side management strategy are the uncertainties related to the outcomes and the benefit from implementation. These uncertainties typically include customer (behavioral) response levels to conservation programs and messaging, market penetration, program funding levels, and growth, as well as larger societal trends. These factors not only impact the level of potential water savings on the potable water system from demand-side management, but also the timing of the potential savings.

2.4 Efficient Use of Water from the Interbasin Transfer Source Basin

The implementation of PCU's water conservation strategies (supply-side and demand-side management) will perpetuate the efficient use of water in the source basin (Cape Fear IBT basin) and receiving river basins (Cape Fear, South River, NE Cape Fear, and New River IBT basins). To maintain the achieved water use efficiency, continued

commitment to the supply-side management and demand-side management will be necessary. PCU has shown a strong commitment to water conservation to date and will maintain that commitment going forward.

PCU has also updated its WSRP to ensure consistent application of the water resource management triggers and measures during water emergencies. The co-applicants will be required to adopt PCU's WSRP prior to purchasing water. Having these policies in place will help conserve water in the Cape Fear River IBT basin.

2.5 Reporting on Water Conservation Effectiveness

PCU is required to submit a Local Water Supply Plan (LWSP) annually to NCDWR. As part of this submission, the annual GPCD (residential and overall system-wide GPCD) is calculated and can be used to track the long-term status of water use efficiency on a per capita basis. PCU tracks the quantity of water billed on a monthly basis. PCU will compare the quantity of water billed with the number of water customers each month as a measure of water conservation effectiveness. If the IBT Certificate is approved by the EMC, PCU will include water conservation effectiveness measures in the IBT quarterly and annual monitoring reports.

SECTION 3

References

EFC Resources: North Carolina Water and Wastewater Rates Dashboard. EFC Resources: North Carolina Water and Wastewater Rates Dashboard | Environmental Finance Center. N.p., 3 May 2017. Web. 05 July 2017.

Highfill Infrastructure Engineering, P.C. and CH2M. January 2017. *Environmental Assessment for an Interbasin Transfer from the Cape Fear River*.

North Carolina Division of Water Resources (NCDWR). 2017. *Local Water Supply Plans (searchable online)*. Accessed October 12 and 16, 2017. https://www.ncwater.org/Water_Supply_Planning/Local_Water_Supply_Plan/index.php

North Carolina General Statute (NCGS). 2014. Regulation of surface water transfers (NCGS 143-215.22L).

Pender County Utilities. 2017. Water Conservation Tips. http://www.pendercountync.gov/Government/Departments/Utilities/WaterConservationTips.aspx

University of North Carolina (UNC). 2016. North Carolina Water and Wastewater Rates Dashboard. Environmental Finance Center. January 2016 rates. Accessed October 2016.

USGS. 2006. A Gap Analysis of North Carolina. NC Division of Coastal Management. 2016. Beach & Coastal Waterfront Access. http://ims.ncdenr.org/Website/nccoastal_access/viewer.htm. Assessed April 2017.

Water Research Foundation (WRF). 2016. Residential End Uses of Water, Version 2. Report #: 4309b

Appendix A – Water Conservation Program Comparison Matrix

This page has been intentionally left blank.

Water Conservation Program Comparison

Utility	Pender County	Fayetteville PWC	Harnett County	Cape Fear PUA	Topsail	Brunswick Co	Cary	Pittsboro
Rates: (see rate comparison table)	Uniform structure for residential, tiered commercial and irrigation rate	Tiered residential structure, varies for in/out of city, all inside city rates lower than PCU	Flat structure, slightly higher than Maple Hill, but lower than Rocky Point/Topsail	Uniform structure, base charge lowest of those compared for residential-sized meter, highest for larger meters, consumption charge flat and lowest of compared	Tiered usage structure	Tiered rate structure. Overall rates are lower.	Tiered rate structure Water Budgets	Tiered rate structure
Education:	Water Conservation page on website including tips Links to: rainwater harvesting, Save Water NC, DWR, Water Wiser, H2ouse, and HomeAdvisor Mailers planned	Water Conservation page on website including tips Brochures: Water Wise Gardening, Water Conservation Water Wise Demo Garden	Links to: cold/summer weather tips, H2ouse Water Saver Home website, NC Clean Water Education Partnership website, and EPA WaterSense website	Conservation & Water Emergency Management page on website PDFs of tips Links to: drought monitor and Water Use it Wisely websites	N/A	Website states they can help you find ways to conserve	Public Education/Beat the Peak Campaign Fix a Leak Week Campaign Block Leader Program Residential Water and Irrigation Audits Website Festival Booths	Festival booths
Regulation:	Irrigation meters required Rain sensors planned Irrigation schedules planned	Irrigation meters required Irrigation schedules, alternate day	Irrigation meters required	Irrigation meters required	Irrigation meters required From May 27 – September 30 annually, Irrigation and manual watering are restricted to 2 hours per day, 3 days per week (alternating days by address). Manual watering is also allowed for an additional 2 hours on Saturday or Sunday. No watering between July 2 – 8. Rain sensors or manual cutoff required.	Irrigation meters required	Water Waste Ordinance Rain Sensor Ordinance Alternate Day Watering Ordinance New Development Land Development Ordinance Irrigation Plan Review Requirement for Separate Irrigation Meters	Voluntary Water Conservation Irrigation meters required
Other:		Reclaimed water utilized onsite at WRFs		ASR Bulk RCW		ASR (planning stages) RCW program (available for irrigation and non-potable uses), New golf courses required to utilize. Incentives to use.	High Efficiency Toilet Rebate Rain Barrels Give-aways RCW program	RCW program Town Operations Meter Replacement WTP Efficiency Waterline Replacement Landscape Watering Practices

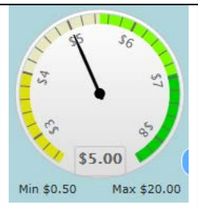
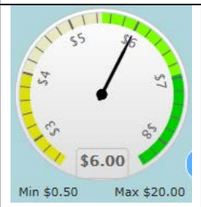
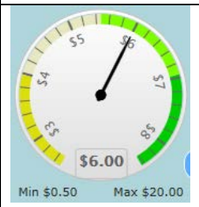
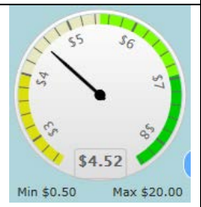
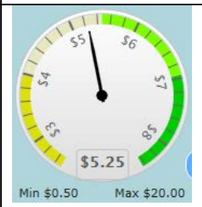
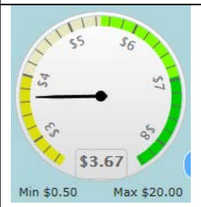
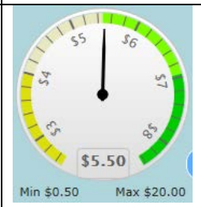
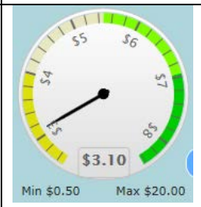
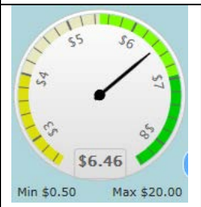
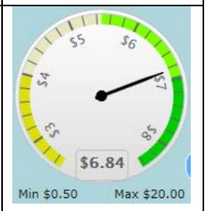
Rates Comparison

Utility	Pender County			Fayetteville PWC	Harnett County
	Maple Hill	**Pender Commerce Park**	**Rocky Point-Topsail/ Scotts Hill**		
Base Charge	Residential Unit Base Fee (per single unit if multi-unit) $19.50 per month Commercial Unit Base Fee (per single unit if multi-unit) $21.50 per month	Commercial Unit Base Fee (per single unit if multi-unit) $29.50 per month	Residential Unit Base Fee (per single unit if multi-unit) $27.50 per month Commercial Unit Base Fee (per single unit if multi-unit) $29.50 per month	**Basic Faci** Meter Size / Inside City 5/8" or 3/4" $11.50 1" $18.40 1 1/2" $31.05 2" $51.75 3" $92.00 4" $149.50 6" $293.25 8" $460.00	
Residential	Usage Rate $6.00 per 1,000 gallons		Usage Rate $6.50 per 1,000 gallons	**Residential Inside City** (mgal / gallon) First 2 mgals/ (2,000 gallons) $2.36 $0.002360 Next 3 mgals (3-5)/ (next 3,000 gallons) $2.81 $0.002810 Next 5 mgals (6-10)/ (next 5,000 gallons) $3.82 $0.003820 Each Additional mgal/ (gallon) $4.56 $0.004560 Backflow Prevention Assembly Inspection Charge $1.60	Flat Rate Water, Res, 1st 2,000 gal $18.50 Per Thousand Water, Res $5.25
Commercial	Usage Rate $6.50 per 1,000 gallons	Usage Rate $7.00 per 1,000 gallons $9.95 per 1,000 gallons if over 10,000 gallons per month	Usage Rate $7.00 per 1,000 gallons $9.95 per 1,000 gallons if over 10,000 gallons per month	**Non-residential Water Service Inside City** (mgal / gallon) Usage Charge per mgal (gallon) $2.83 $0.00283 **Large Water User Inside City** Usage Charge per mgal (gallon) $2.34 $0.00234	Flat Rate Water, Com, 1st 2,000 gal $25.00 Per Thousand Water, Com $5.25
Irrigation		Irrigation Base Fee $29.50 per month Usage Rate $7.00 per 1,000 gallons $9.95 per 1,000 gallons if over 10,000 gallons per month	Irrigation Base Fee $29.50 per month Usage Rate $7.00 per 1,000 gallons $9.95 per 1,000 gallons if over 10,000 gallons per month	**Residential Water Irrigation Inside City** First 30 mgals/ (first 30,000 gallons) $4.90 $0.00490 Next 30 mgals/(31-60)/ (next 30,000 gallons) $6.01 $0.00601 Each Additional mgal/ (gallon) $9.33 $0.00933 Backflow Prevention Assembly Inspection Charge $1.60 **Non-residential Irrigation Inside City** Usage Charge per mgal (gallon) $4.55 $0.00455	

<table>
<tr><th>Utility</th><th>Cape Fear PUA</th><th>Topsail</th><th>Brunswick County</th></tr>
<tr><td>Base Charge</td><td>
<table>
<tr><td></td><td></td><td>Rates and Fees Effective 2/10/16</td><td>Rates and Fees Effective 7/1/16</td></tr>
<tr><td>1</td><td>WATER RATES</td><td></td><td></td></tr>
<tr><td></td><td>Water rates include both a fixed meter charge based on meter size and consumption charge based on metered consumption, billed bi-monthly (every two months).</td><td></td><td></td></tr>
<tr><td></td><td>Fixed Meter Charge by Meter Size*</td><td>Bi-Monthly</td><td>Bi-Monthly</td></tr>
<tr><td></td><td>5/8"</td><td>$ 25.81</td><td>$ 25.81</td></tr>
<tr><td></td><td>1" (Single-Family Residential with fire sprinkler system)</td><td>$ 25.81</td><td>$ 25.81</td></tr>
<tr><td></td><td>1"</td><td>$ 64.53</td><td>$ 64.53</td></tr>
<tr><td></td><td>1 1/2"</td><td>$ 129.05</td><td>$ 129.05</td></tr>
<tr><td></td><td>2"</td><td>$ 206.48</td><td>$ 206.48</td></tr>
<tr><td></td><td>3"</td><td>$ 387.15</td><td>$ 387.15</td></tr>
<tr><td></td><td>4"</td><td>$ 645.25</td><td>$ 645.25</td></tr>
<tr><td></td><td>6"</td><td>$ 1,290.50</td><td>$ 1,290.50</td></tr>
<tr><td></td><td>8"</td><td>$ 2,064.80</td><td>$ 2,064.80</td></tr>
<tr><td></td><td>10"</td><td>$ 3,226.25</td><td>$ 3,226.25</td></tr>
<tr><td></td><td>12"</td><td>$ 3,871.50</td><td>$ 3,871.50</td></tr>
<tr><td></td><td>* Fixed Meter Charge is not applied to Irrigation Meters if a separate Water Meter exists.</td><td></td><td></td></tr>
</table>
</td><td>Facility Charge (0 gallons) * $30.00/month
* $20/month for multiple units on a master meter (effective July 1, 2014)</td><td>Larger Industrial and Wholesale meters have designated base and usage rates as well.
Typical residential meter size assumed to be ¾”.</td></tr>
<tr><td>Residential</td><td>
<table>
<tr><td>Consumption Charge (per 1,000 gallons)**</td><td>$ 3.67</td></tr>
<tr><td>** Single-Family Residential is serviced by one domestic meter</td><td></td></tr>
</table>
</td><td>Additional Usage (1-3,333 Gallons) $5.00 per 1000 gal
Additional Usage (3,334- 10,000 Gallons) $5.25 per 1000 gal
Additional Usage (10,001 – 20,000 Gallons) $5.50 per 1000 gal
Additional Usage (Above 20,000 Gallons) $5.75 per 1000 gal</td><td>
<table>
<tr><td>3/4"</td><td>Retail Meter</td><td></td><td>Approved</td></tr>
<tr><td></td><td>Base Service Charge (plus usage)</td><td></td><td>$ 12.00 /month</td></tr>
<tr><td></td><td></td><td>0 - 6,000 gallons</td><td>$ 3.05 /1000-gallons</td></tr>
<tr><td></td><td></td><td>6,001 - 20,000 gallons</td><td>$ 3.10 /1000-gallons</td></tr>
<tr><td></td><td></td><td>>20,000 gallons</td><td>$ 3.15 /1000-gallons</td></tr>
</table>
</td></tr>
<tr><td>Commercial</td><td>
<table>
<tr><td>Consumption Charge (per 1,000 gallons)**</td><td>$ 3.67</td></tr>
<tr><td>** Single-Family Residential is serviced by one domestic meter</td><td></td></tr>
</table>
</td><td>Additional Usage (1-3,333 Gallons) $5.00 per 1000 gal
Additional Usage (3,334- 10,000 Gallons) $5.25 per 1000 gal
Additional Usage (10,001 – 20,000 Gallons) $5.50 per 1000 gal
Additional Usage (Above 20,000 Gallons) $5.75 per 1000 gal</td><td>
<table>
<tr><td>1"</td><td>Retail Meter</td><td></td><td></td></tr>
<tr><td></td><td>Base Service Charge (plus usage)</td><td></td><td>$ 16.00 /month</td></tr>
<tr><td></td><td></td><td>0 - 6,000 gallons</td><td>$ 3.05 /1000-gallons</td></tr>
<tr><td></td><td></td><td>6,001 - 20,000 gallons</td><td>$ 3.10 /1000-gallons</td></tr>
<tr><td></td><td></td><td>>20,000 gallons</td><td>$ 3.15 /1000-gallons</td></tr>
<tr><td>1 1/2"</td><td>Retail Meter</td><td></td><td></td></tr>
<tr><td></td><td>Base Service Charge (plus usage)</td><td></td><td>$ 18.00 /month</td></tr>
<tr><td></td><td></td><td>0 - 6,000 gallons</td><td>$ 3.05 /1000-gallons</td></tr>
<tr><td></td><td></td><td>6,001 - 20,000 gallons</td><td>$ 3.10 /1000-gallons</td></tr>
<tr><td></td><td></td><td>>20,000 gallons</td><td>$ 3.15 /1000-gallons</td></tr>
<tr><td>2"</td><td>Retail Meter</td><td></td><td></td></tr>
<tr><td></td><td>Base Service Charge (plus usage)</td><td></td><td>$ 20.00 /month</td></tr>
<tr><td></td><td></td><td>0 - 20,000 gallons</td><td>$ 3.05 /1000-gallons</td></tr>
<tr><td></td><td></td><td>20,001 - 100,000 gallons</td><td>$ 3.10 /1000-gallons</td></tr>
<tr><td></td><td></td><td>>100,000 gallons</td><td>$ 3.15 /1000-gallons</td></tr>
<tr><td>3"</td><td>Retail Meter</td><td></td><td></td></tr>
<tr><td></td><td>Base Service Charge (plus usage)</td><td></td><td>$ 24.00 /month</td></tr>
<tr><td></td><td></td><td>0 - 50,000 gallons</td><td>$ 3.05 /1000-gallons</td></tr>
<tr><td></td><td></td><td>50,001 - 250,000 gallons</td><td>$ 3.10 /1000-gallons</td></tr>
<tr><td></td><td></td><td>>250,000 gallons</td><td>$ 3.15 /1000-gallons</td></tr>
<tr><td>4"</td><td>Retail Meter</td><td></td><td></td></tr>
<tr><td></td><td>Base Service Charge</td><td></td><td>$ 28.00 /month</td></tr>
<tr><td></td><td>Minimum Usage Charge</td><td></td><td>$ 632.50 /month</td></tr>
<tr><td></td><td></td><td>0 - 250,000 gallons</td><td>$ 3.05 /1000-gallons</td></tr>
<tr><td></td><td></td><td>250,001 - 500,000 gallons</td><td>$ 3.10 /1000-gallons</td></tr>
<tr><td></td><td></td><td>>500,000 gallons</td><td>$ 3.15 /1000-gallons</td></tr>
<tr><td>6"</td><td>Retail Meter</td><td></td><td></td></tr>
<tr><td></td><td>Base Service Charge</td><td></td><td>$ 32.00 /month</td></tr>
<tr><td></td><td>Minimum Usage Charge</td><td></td><td>$ 1,375.00 /month</td></tr>
<tr><td></td><td></td><td>0 - 500,000 gallons</td><td>$ 3.05 /1000-gallons</td></tr>
<tr><td></td><td></td><td>500,001 - 750,000 gallons</td><td>$ 3.10 /1000-gallons</td></tr>
<tr><td></td><td></td><td>>750,000 gallons</td><td>$ 3.15 /1000-gallons</td></tr>
</table>
</td></tr>
<tr><td>Irrigation</td><td></td><td></td><td>
<table>
<tr><td></td><td>Irrigation Meter - Residential</td><td></td><td></td></tr>
<tr><td></td><td>Base Service Charge (Base Service charge is waived if used in conjunction with another retail meter, otherwise Base Service Charge is based on the Retail Meter Base Service Charge)</td><td></td><td>$ - /month</td></tr>
<tr><td></td><td></td><td>0 - 6,000 gallons</td><td>$ 3.05 /1000-gallons</td></tr>
<tr><td></td><td></td><td>6,001 - 12,000 gallons</td><td>$ 3.25 /1000-gallons</td></tr>
<tr><td></td><td></td><td>12,001 - 20,000 gallons</td><td>$ 3.50 /1000-gallons</td></tr>
<tr><td></td><td></td><td>20,001 - 50,000 gallons</td><td>$ 4.00 /1000-gallons</td></tr>
<tr><td></td><td></td><td>>50,000 gallons</td><td>$ 6.00 /1000-gallons</td></tr>
<tr><td></td><td>Irrigation Meter - Commercial/Multi-Family</td><td></td><td></td></tr>
<tr><td></td><td>Base Service Charge (Base Service charge is waived if used in conjunction with another retail meter, otherwise Base Service Charge is based on the Retail Meter Base Service Charge)</td><td></td><td>$ - /month</td></tr>
<tr><td></td><td></td><td>0 - 20,000 gallons</td><td>$ 3.05 /1000-gallons</td></tr>
<tr><td></td><td></td><td>20,001 - 50,000 gallons</td><td>$ 3.25 /1000-gallons</td></tr>
<tr><td></td><td></td><td>50,001 - 100,000 gallons</td><td>$ 3.50 /1000-gallons</td></tr>
<tr><td></td><td></td><td>100,001 - 200,000 gallons</td><td>$ 4.00 /1000-gallons</td></tr>
<tr><td></td><td></td><td>>200,000 gallons</td><td>$ 6.00 /1000-gallons</td></tr>
</table>
</td></tr>
</table>

Utility	Cary	Pittsboro
Base Charge	**Meter Size** 5/8" & 3/4" 1" *Base Charge Inside Cary or Morrisville Corporate Limits* 3.07 3.07	Water Inside **Basic Service Charge** (Flat monthly fee Meters ≤ 1 inch $ 13.26 Meters > 1 inch $ 24.48
Residential	**Single-Family Residential: Customers Inside Cary or Morrisville Corporate Limits (charge per 1,000 gallons)** Tier 1 (usage 0 - 5,000 gallons) 4.56 Tier 2 (usage 5,001 - 8,000 gallons) 5.11 Tier 3 (usage 8,001 - 23,000 gallons) or up to water budget amount 6.46 Tier 4 (usage > 23,000 gallons) or over water budget amount 12.19	Plus a monthly usage fee per 1,000 gallo 0 to 2,000 gallons $ 4.93 2,001 to 6,000 gallons $ 5.76 > 6,000 gallons $ 6.84
Commercial	**Non-Residential & Multifamily: Customers Inside Cary or Morrisville Corporate Limits (charge per 1,000 gallons)** Tier 1 (usage 0 - Water Budget Amount) 5.11 Tier 2 (usage > than Water Budget Amount) 12.38	Plus a monthly usage fee per 1,000 gallo 0 to 2,000 gallons $ 4.93 2,001 to 6,000 gallons $ 5.76 > 6,000 gallons $ 6.84
Irrigation		Plus a monthly usage fee per 1,000 gallo 0 to 2,000 gallons $ 4.93 2,001 to 6,000 gallons $ 5.76 > 6,000 gallons $ 6.84

UNC Environmental Finance Center Dashboard Comparison

Utility	Pender County			Fayetteville PWC	Harnett County	Cape Fear PUA	Topsail	Brunswick Co	Cary	Pittsboro
	Maple Hill	Rocky Point-Topsail	Scotts Hill							
Affordability (Water Bills as % MHI)	1.14%	1.54%	1.54%	0.63%	0.89%	0.75%	1.06%	0.70%	0.34%	0.91%
Conservation Signal (Water Price/1,000 gallons, after 10,000 gallons)										

Source: University of North Carolina (UNC) Environmental Finance Center, North Carolina Water and Wastewater Rates Dashboard. January 2017 rates. Accessed July 2017.

US Census Bureau American FactFinder Median Household Income Comparison

Utility	Pender County	Fayetteville PWC	Harnett County	Cape Fear PUA	Topsail	Brunswick Co	Cary	Pittsboro
Place	**Pender County, NC**	**Fayetteville, NC (Metro Area)**	**Harnett County, NC**	**Wilmington, NC (city)**	**Topsail, NC (township)**	**Brunswick County, NC**	**Cary, NC (town)**	**Pittsboro, NC (town)**
Median household income in the past 12 months (in 2015 Inflation-adjusted dollars)	$44,828	$43,861	$46,353	$42,128	$57,663	$46,859	$91,579	$53,422

Source: United States Census Bureau, American FactFinder, 2011-2015 American Community Survey 5-Year Estimates. Accessed August 2017.