

BRUNSWICK COUNTY BOARD OF COMMISSIONERS
SPECIAL CALLED MEETING
MARCH 1, 2021
1:00 PM

1. Call to Order

2. Order Of Business

Presentation - Raftelis Report: Brunswick County Water Rate Study (Elaine Conti, Executive Vice President)

3. Adjourn



Brunswick County Board of Commissioners
ACTION AGENDA ITEM
March 1, 2021

From:
Andrea White

Action Item # 2. -
Presentation - Raftelis Report: Brunswick County Water Rate Study (Elaine Conti, Executive Vice President)

Issue/Action Requested:

Request that the Board of Commissioners conduct a workshop to receive and discuss the Water Rate Study Summary Report from Raftelis.

Background/Purpose of Request:

In 2019, Raftelis Financial Consultants, Inc. ("Raftelis") was engaged by Brunswick County ("County") to perform a cost of service water rate study. The study was conducted based on current conditions, including several assumptions about the timing and funding sources for debt issuances needed for approximately \$183.3 million of capital projects for a water plant expansion with LPRO advanced treatment and a 54" raw water transmission main. Since the presentation of water rates in May of 2019, the County has continued to update its projection of FY 2022 rates to reflect the County's changing debt issuance environment and changing water customer base.

Fiscal Impact:

Reviewed By Director of Fiscal Operations

Approved By County Attorney:

Yes

County Manager's Recommendation:

Recommend the Board of Commissioners conduct a workshop to receive and discuss the Water Rate Study Summary Report from Raftelis.

ATTACHMENTS:

Description

- Brunswick County Summary Report - Final Summary Report Final v2.pdf
- Raftelis Brunswick County Presentation

Brunswick County, NC

Water Rate Study

Summary Report / January 2021



1. BACKGROUND of STUDY

Raftelis Financial Consultants, Inc. (“Raftelis”) was engaged by Brunswick County (“County”) in 2019 to perform a cost of service water rate study. The study was performed for several reasons: 1) the County’s wholesale rates, which had by contract historically been pegged to changes in the producer price index, were expiring and the County wanted the wholesale rates to be based on a cost of service methodology, 2) the County wanted to adopt a retail water rate structure in fiscal year (“FY”) 2020 that promoted water conservation and equity and 3) the County wanted to understand the impact on rates in FY 2022 resulting from debt anticipated to be issued to fund several large capital projects and increased operations and maintenance costs (\$2.9 million per year) associated with the low-pressure reverse osmosis system (“LPRO”).

The study was conducted based on current conditions, including several assumptions about the timing and funding sources for debt issuances needed for approximately \$183.3 million of capital projects for a water plant expansion, a raw water transmission main, and a LPRO system. Specifically, the County anticipated funding a portion of these projects with revenue bonds with debt service beginning in FY 2021 and a portion with funding from the Water Infrastructure Finance and Innovation Act (“WIFIA”) with anticipated debt service to begin later in FY 2026¹. The analysis used historical customer class usage characteristics and water flow data known at the time and incorporated the County’s study objectives, as explained below, which included conservation and customer equity. The resulting water rates for both FY 2020 and FY 2022 were presented at a Board meeting in May of 2019. The FY 2020 rates were revenue neutral but allowed the County to make changes to its rate structure to promote water conservation, which was achieved by modifying the tier cut offs and pricing differentials for retail and irrigation use.

Since the presentation of water rates in May of 2019, the County has continued to update its projection of FY 2022 rates to reflect the County’s changing debt issuance environment and changing water customer base. In particular the FY 2022 rates were modified three additional times between June 2019 until January 2021, as summarized below.

Feasibility Report for 2019 Revenue Bonds

Subsequent to the initial analysis, the County’s methods of financing capital projects became more known. In particular, the County became aware they could not take advantage of the the WIFIA program capitalization period and instead issued revenue bonds for all capital projects in two different series (the 2019 Revenue Bonds and the 2020 Revenue Bonds). Raftelis was engaged by the County to perform a bond feasibility study for inclusion in the Official Statement for the issuance of the 2019 Revenue Bonds. The 2019 Revenue Bonds financed the Lower Cape Fear raw water main (\$26.6 million) and several sewer projects (the Northeast Brunswick Regional Wastewater Treatment Plant expansion and force main improvements). The County anticipated issuing additional revenue bonds in 2020 to fund the Northwest Water Treatment Plant expansion and the LPRO system. The additional debt service would begin in FY 2022 with the first full debt payment for both the 2019 Revenue Bond issue and the subsequent 2020 Revenue bond issue occurring in FY 2023, which resulted in approximately \$2.2 million of debt service costs taking place earlier than anticipated in the original rate study. Raftelis updated its analysis to include the most recent information regarding the timing and amount of the annual debt service for the 2019 Revenue Bonds and the second anticipated revenue bond

¹ Capitalized interest would allow the delay of the debt repayment.

issue in early 2020. The analysis also included changes in water flow resulting from the anticipation of some wholesale customers leaving the County's water system. The potential loss of several wholesale customers represented a significant decrease in wholesale flow of approximately 47%, which necessitated a re-examination of the customer usage characteristics for the wholesale class. (The loss in wholesale flow was also estimated to reduce O&M costs by approximately \$500k). The combination of the reduction in wholesale water flow and the net increase in costs mainly due to increase in the debt service caused water rate projections for all customer classes, and the monthly base charge, to increase more than previously anticipated. The resulting water rates from this update were documented in the feasibility report which was part of the October 2019 Official Statement for the 2019 Revenue Bonds.

May 2020 Agreed Upon Procedures

In May of 2020, the County issued the 2020 Revenue Bonds which funded the Northwest Water Treatment Plan expansion and the LPRO system (\$156.7 million). Raftelis was engaged to perform an "agreed upon procedures" (AUP), which was an update and abbreviated version of the feasibility study to demonstrate the County's ability to pay the proposed debt. The previous analysis was used and updated again with the most current information, which included the updated debt service for the 2020 Revenue Bonds (which resulted in over \$200,000 more in debt service in FY 2022) and the anticipation of two wholesale customers becoming part of the County's retail system. Because the customers of these wholesale customers would now be assessed the County's retail rates, which included the monthly base charge, this change would generate more revenues than under the existing wholesale rates. Therefore the change resulted in reduced FY 2022 volumetric water rates for all customer classes compared to the rates projected as part of the October 2019 Official statement. The changes in customer water flow were documented in the AUP dated May 2020.

Final Update to FY 2022 Rates

Subsequent to the AUP, the County was informed that a large industrial customer, representing 25% of projected industrial water flow, would be leaving the system. The previous AUP analysis was updated once again to reflect the changes in water use and customer characteristics. Overall, the changes in the FY 2022 water rates from those presented in the original May 2019 rate study is an increase of approximately 33% in the volumetric water rates for each customer class and for the monthly base charges. The increase is due to the combination of wholesale and industrial water flows declining by approximately 47% and 25% respectively, changes in customer usage characteristics resulting from losses and recategorization in wholesale and industrial water use, and approximately \$2.5 million debt service costs beginning earlier than anticipated. The remainder of this report summarizes the updated cost of service results and the resulting FY 2022 rates based on the most recent assumptions regarding the County's customer base.

Study Objectives

The County's objectives for the FY 2020 and the FY 2022 water rates were the same and included the following:

-) Develop a financial plan for the water enterprise fund to ensure financial sufficiency necessary for upcoming bond issuances
-) Modify the retail rate structure to promote water conservation and equity among customers
-) Develop cost of service based rates for the County's wholesale water customer class due to the expiration of wholesale contracts, which had historically been pegged to changes in rates to the producer price index

- J) Implement rate adjustments in one year to continue to provide customers with rate stability from year-to-year

2. **Water Financial Plan**

This section describes the Water Financial Plan assumptions for developing the revenue requirements of the water system. The revenue requirements include operating and capital expenses as well as debt service coverage requirements that determine the overall revenue adjustments for a financially sufficient water enterprise fund. Revenue adjustments are the change in revenue for the water enterprise but often do not directly translate to customer bill increases due to rate modifications as part of the cost of service analysis and changes in water flow.

Key Assumptions

The study period was FY 2020 to 2024, which was the period required to demonstrate debt service coverage for the Series 2019 and 2020 bonds, with proposed revenue and rate adjustments anticipated to take place in FY 2022. Various types of assumptions and inputs were incorporated into the study based on discussions with and/or direction from County staff and included the following: 1) O&M increases due to the LPRO system, 2) growth in projected number of water accounts and retail water use, 3) changes in water demand resulting from anticipated changes in the wholesale and industrial customer base, 4) timing of debt service for upcoming bond issues and 5) inflationary factors for other O&M expenses.

Revenue Requirements

Raftelis worked with County staff to escalate individual budget line items according to appropriate escalation factors. Projected operating expenses were based on budget information from the FY 2020 water budget fund ordinance. Various growth rates have been used to project water operating costs. The majority of the costs were escalated by a growth rate of 2.5% -3.0%, consistent with historical increases. Costs associated with salaries, benefits, chemicals, and utilities were escalated at 3.5% per year. Operating expenses for the Northwest Water Treatment Plant division were anticipated to increase by \$2.4 million in FY 2022 due to the LPRO facility. The increase was offset slightly by anticipated reductions in variable costs, such as chemical and electricity costs, from the loss of wholesale customers.

Non-operating expenses include existing and proposed debt service payments. The County anticipated using debt issuances to fund approximately \$183.3 million of capital projects for a water plant expansion, a raw water transmission main, and a LPRO system. The 2019 Revenue Bonds financed the Lower Cape Fear raw water main (\$26.6 million) and several sewer projects (the Northeast Brunswick Regional Wastewater Treatment Plant expansion and force main improvements). The County anticipated issuing additional revenue bonds in 2020 to fund the Northwest Water Treatment Plant expansion and the LPRO system. The additional debt service would begin in FY 2022 with the first full debt payment for both the 2019 Revenue Bond issue and the subsequent 2020 Revenue bond issue occurring in FY 2023. Non-operating expenses increased significantly over the forecast period in future years as annual debt service payments with Series 2019 Bonds and the Series 2020 Bonds commence.

Other budgeted expenditures and transfers included capital outlays, rate funded capital improvement projects, and interfund transfers. Projected capital outlays in FY 2020 and beyond were based on normalized capital

outlays escalated at 3% for water and 3% for wastewater. Interfund transfers occurring in FY 2019 included transfers to the Capital Reserve Fund to fund CIP projects funded with revenues generated from rates. The County does not anticipate funding any CIP projects through rates beyond FY 2022.

The operating, non-operating, and other budgeted expenditures equal the total revenue requirements of the water system. The summary of these costs are shown in Exhibit 1. Compared to the FY 2020 expenditures, the FY 2023 costs were anticipated to be approximately 30.5% greater due to the following:

- └ Debt service for the water system will have increased in total by \$9.7 million per year
- └ O&M expenses are anticipated to increase by approximately \$2.6 million

Exhibit 1: Projection of Revenue Requirements for the Water System

Water Fund	Audited 2019 (1)	Projected for Fiscal Year Ending June 30th				
		2020	2021	2022	2023	2024
Operating Expenses (2)						
Administration	\$ 4,447,569	\$ 3,241,806	\$ 3,338,370	\$ 3,437,831	\$ 3,540,276	\$ 3,645,795
NW Water Treatment Plant	5,226,744	4,760,501	4,864,433	7,161,650	7,338,575	7,581,707
211 Water Treatment Plant	1,628,790	1,879,324	1,814,429	1,883,007	1,917,102	1,988,760
Distribution Division	2,432,652	2,534,421	2,362,661	2,414,099	2,467,081	2,521,652
LCFWSA - Reimbursable	366,169	390,985	357,031	365,317	373,853	382,645
Customer Service	1,058,677	1,127,742	1,161,469	1,196,208	1,231,990	1,268,844
Instrumentation/Electrical Division	1,254,756	1,333,086	1,337,707	1,370,791	1,404,868	1,439,967
Construction	1,260,046	1,108,196	1,140,167	1,173,097	1,207,015	1,241,950
Subtotal: Operating Expenses	\$ 17,675,403	\$ 16,376,061	\$ 16,376,266	\$ 19,002,000	\$ 19,480,758	\$ 20,071,319
% Change		-7.4%	0.0%	16.0%	2.5%	3.0%
Debt Service Payments						
Bonds						
CBU Revenue Bond – Series 2004	\$ 181,162	\$ 75,484	\$ -	\$ -	\$ -	\$ -
Series 2015 Rev - 10 Refd Water lines	85,753	88,307	85,857	83,092	79,594	78,036
Series 2015 Rev - 10 Refd NW PLn	887,103	880,736	874,271	860,014	795,854	798,062
Series 2015 Revenue Bonds - Northwest Plant Expansion F	541,494	541,244	540,494	544,244	542,544	545,044
Series 2015 Revenue Bonds - Danford Road Project	250,963	251,213	251,213	250,963	250,563	249,813
Series 2019 Refunding Bonds	-	99,780	172,425	172,875	172,950	172,650
Series 2019 Bonds	-	-	-	968,000	1,457,250	1,457,500
Proposed Series 2020 Bonds	-	-	-	-	8,359,250	8,358,350
	\$ 1,946,475	\$ 1,936,763	\$ 1,924,260	\$ 2,879,187	\$ 11,658,004	\$ 11,659,455
G.O. Indebtedness						
2012 GO Refunding BSL	295,450	293,650	292,550	295,550	293,150	295,450
	\$ 295,450	\$ 293,650	\$ 292,550	\$ 295,550	\$ 293,150	\$ 295,450
Subtotal: Debt Service Payments	\$ 2,241,925	\$ 2,230,413	\$ 2,216,810	\$ 3,174,737	\$ 11,951,154	\$ 11,954,905
Other Budgeted Expenditures						
Capital Outlay (3)	\$ 1,788,982	\$ 2,831,000	\$ 1,439,030	\$ 1,481,731	\$ 1,502,213	\$ 1,523,309
Interfund Transfers						
To Capital Reserve- Rate Funded CIP	790,000	3,800,000	-	3,500,000	-	-
	\$ 790,000	\$ 3,800,000	\$ -	\$ 3,500,000	\$ -	\$ -
Subtotal: Other Budgeted Expenses	\$ 2,578,982	\$ 6,631,000	\$ 1,439,030	\$ 4,981,731	\$ 1,502,213	\$ 1,523,309
Total Water Fund Expenditures and Transfers	\$ 22,496,310	\$ 25,237,474	\$ 20,032,106	\$ 27,158,468	\$ 32,934,125	\$ 33,549,533
% Change		12.2%	-20.6%	35.6%	21.3%	1.9%

Notes:

- (1) Expenses increase in FY 2019 (by approximately \$1,755,000) due to the impacts of Hurricane Florence.
- (2) Water operating expenses are anticipated to remain flat in FY 2021 because repair and maintenance costs were normalized based on historical averages. Water operating expenses increase by \$2.9 million in FY 2022 when the

LPRO system goes on-line, but this increase in expenses will be offset by a \$500,000 reduction in chemical and electricity costs associated with the loss of two wholesale customers.

- (3) Capital Outlay in future years are based on historical averages, excluding non-recurring projects that were experienced in FY 2019, FY 2020, and FY 2022.

Account Growth and Water Demand Assumptions

To estimate future water rate revenue, two factors were used – account growth from new connections and changes in annual water demand. In FY 2018 the County served 41,557 water accounts and 17,719 wastewater accounts. The number of connected water customers has continued to grow at a rate of approximately 3.5% per year over the last five years. The number of retail water customers served by the County was forecast to increase at a moderate pace of 2.7% over the projection period. Exhibit 2 presents the projected growth in the number of water accounts.

Exhibit 2: Projection of Number of Water Accounts

Number of Water Accounts (1)	Actual	Projected For the Fiscal Year Ending June 30th				
	2019	2020	2021	2022	2023	2024
Availability of Service						
Meter Size						
3/4"	40,884	42,199	43,877	45,125	46,409	47,729
1"	1,413	1,413	1,413	1,413	1,413	1,413
2"	108	108	108	108	108	108
3"	4	4	4	4	4	4
4"	18	18	18	18	18	16
6"	21	21	19	19	19	19
8"	13	13	13	13	13	13
10"	-	-	-	-	-	-
12"	3	3	3	1	1	1
Total Water Accounts	42,464	43,779	45,455	46,701	47,985	49,303
% Change		3.1%	3.8%	2.7%	2.7%	2.7%

Notes:

- (1) To be conservative, the number of retail water customers with meters larger than ¾" are assumed to remain constant throughout the forecast. The number of customers with ¾" meters are anticipated to grow by 2.7% per year which represents the average over the past 8 years. In comparison, the increase in water customers over the past 5 years was 3.5%. The number of customers also includes the transition of the City of Northwest and the Town of Navassa from wholesale water customers to retail customers.

Water usage for retail and wholesale customers has increased on average by approximately 3.0% to 3.5% per year over the past several years. The County's retail and wholesale customer base was expected to continue growing, but at a more moderate pace. Retail water flow was anticipated to increase by 2.6% per year, while wholesale water flow was anticipated to increase at a rate of 2.0% per year over the forecast period. However, as mentioned previously, it was anticipated that wholesale and industrial water flow would decrease due to loss in wholesale and industrial customers by FY 2022. Therefore, a significant decline in wholesale and industrial water use was expected to occur in FY 2022. As shown in Exhibit 3, this represents a reduction in total water use of about 23%. It should be noted that because irrigation flow is more variable and impacted by weather, irrigation flow for FY 2020 has been conservatively estimated based on the historical 3-year average.

For the remaining years of the forecast period after FY 2022, the combined annual increase in total water flow is projected to be approximately 1.7% per year.

Exhibit 3: Projection of Billable Water Use by Customre Class

Water Usage Summary (in 1,000 gallons) (1)		Actual	Projected For the Fiscal Year Ending June 30th				
		2019	2020	2021	2022	2023	2024
Retail							
	Block 1	1,243,032	1,216,538	1,277,340	1,310,041	1,343,579	1,377,976
	Block 2	294,284	369,562	379,023	388,726	398,678	408,884
	Block 3	147,843	162,328	166,484	170,746	175,118	179,601
		1,685,160	1,748,428	1,822,847	1,869,513	1,917,375	1,966,461
Irrigation	% Change		3.8%	4.3%	2.6%	2.6%	2.6%
	Block 1	287,516	233,165	233,165	233,165	233,165	233,165
	Block 2	155,476	262,311	262,311	262,311	262,311	262,311
	Block 3	100,485	87,437	87,437	87,437	87,437	87,437
		646,861	582,913	582,913	582,913	582,913	582,913
	% Change		-9.9%	0.0%	0.0%	0.0%	0.0%
Industrial							
	Block 1	641,874	685,985	685,985	487,170	487,170	487,170
Wholesale		1,966,553	2,137,637	2,135,813	1,081,359	1,102,986	1,125,046
Total Billed Water Volume		4,940,447	5,154,962	5,227,557	4,020,955	4,090,444	4,161,590
	% Change		4.3%	1.4%	-23.1%	1.7%	1.7%

3. The Cost of Service Process

The basic principle in the establishment of cost of service rates is to achieve general fairness in the recovery of costs from various classes of customers. The approach used in this study was based on the principles endorsed by the AWWA, which allows the County to demonstrate rates have not been set in an arbitrary manner and one class of customer is not subsidizing another to an unjustifiable extent, or in a manner that is not approved and supported by the County. Costs have been allocated between customer classes based on their estimated demand requirements and recognizing the different costs associated with serving different customer classes. The cost of service analysis is based on the base-extra capacity methodology recommended in the AWWA Manual M-1.

Identification of Test Year Revenue Requirements

Consistent with the guidelines identified in the AWWA Manual M-1 the cost of service analysis was performed on a test year. The test year for this evaluation was fiscal year (FY) 2023 (July 1, 2022- June 30, 2023) because this is the year that full debt service for both the 2019 and 2020 Bonds is anticipated to occur. The process was performed on a “cash-basis” which means the test year costs include anticipated expenses (revenue requirements) incurred by the County in FY 2023. These expenses include annual operating and maintenance costs for salaries, benefits, insurance, electricity, chemicals, supplies, contractual services, etc. Items like depreciation, non-cash accruals and adjustments, and return on rates are not included in a cash-basis approach. The revenue requirements identified in Exhibit 1 for FY 2023 were used for the test year.

Allocation to Functional Cost Drivers

The cost of service methodology necessitated that the revenue requirements for FY 2023 be allocated into functional categories listed in the following table.

Exhibit 4. Functional Cost Allocation Categories

Source of Supply	Billing
Treatment Plant	Customer Service
Transmission	Meter Reading
Distribution	General Admin
Storage	

The revenue requirements were allocated to the functional categories based on allocation factors developed by Raftelis and the County based on the County’s system characteristics, and generally accepted industry practices. For example, operating costs for the customer service center were allocated to customer service; costs for operating the treatment plants were allocated to treatment; and costs of obtaining water from the LCFWSA were allocated to source of supply. Capital costs (debt service requirements) were allocated based on the allocation of specific debt issuances. Detailed schedules of the functional cost allocation process is presented in Appendix A, and a summary of the cost allocation methodology is provided below.

Costs that are not easily assigned to a specific functional category are included in the ‘general and admin support’ cost center. This includes costs like utilities administration. The general and admin support costs are ultimately redistributed to the functional cost centers.

Allocation to Cost Component Drivers

The functional costs were then allocated to their cost components in accordance with how the facilities are designed. Cost components included volume-based allocations (base, max day, and peak hour) and meter-based allocations (meter repair and replacement, billing and customer service). The volumetric components were used to calculate commodity rates and the meter components were used to determine fixed costs to recover from each meter size.

Water systems are required to be designed and built to provide service during normal as well as peak operating conditions. A customer who has continuous and steady water use places a demand on the water system that is more predictable versus an irrigation account which may run at high capacity for two hours on a given day, or it may go days/weeks/months with no usage. Therefore, it is important to recognize these differences in the assignment of costs to a customer class. System monthly peaking factors were reviewed and analyzed to develop ratios for max day and peak hour allocations.

For functions designed to meet the max day requirements, the percentage of the systems designed to meet average day demand is 58%, or 1.00 divided by the max day ratio of 1.73. The remaining 42% was allocated to meeting max day demand. Functions designed to meet the peak hour requirements of the system were allocated 31% to average day demand (1.00 divided by max day ratio of 3.20), 23% to max day demand (the max day increment of 1.73 less 1.00 (0.73) divided by 3.20), and the final increment to meet peak hour demand is 46% (the peak hour increment of 3.20 less max day of 1.73 divided by 3.20).

Exhibit 5. Peaking Factor Analysis

Water System Information	CODE	Demand	Base	Max Day	Max Hour	Total
		Factors				
Base	X	1.00	100%	0%	0%	100%
Max Day	Y	1.73	58%	42%	0%	100%
Max Hour	Z	3.20	31%	23%	46%	100%

The allocations derived from the peaking factor analysis were applied to the allocated functional costs according to the schedule shown in Exhibit 6 below, and the resulting cost allocations are shown in Appendix A.

Exhibit 6. Functional Cost Components

Function	Functional Cost Driver		
	Base	Max Day	Peak Hour
Source of Supply	✓		
Treatment	✓	✓	
Transmission	✓	✓	✓
Distribution	✓	✓	✓
Storage	✓	✓	✓

Offsetting these costs components are other operating revenues generated by Utilities, including interest income, system development charges, penalties and late payment fees, etc. Costs tied directly to customer billing (service charges, late payment fees, etc.) were directly applied to offset the customer relations functional component. The remaining miscellaneous revenues were allocated in a similar manner, based on purpose and function.

The functional costs are then allocated between the retail and wholesale and industrial classes in order to recognize that some costs should not be born by the wholesale or industrial classes. The chart below demonstrates the functional costs shared by retail versus wholesale and industrial customers. Appendix B provides additional detail on the resulting cost allocations.

Exhibit 7. Functional Cost Allocation Between Retail, Wholesale and Industrial Customers

FUNCTIONAL COSTS	RETAIL	WHOLESALE	INDUSTRIAL
Source of Supply	✓	✓	✓
Treatment	✓	✓	✓
Transmission	✓	✓	✓
Distribution	✓	X	X
Storage	✓	✓	✓
Billing	✓	✓	✓
Customer Service	✓	X	✓
Meter Reading/Service	✓	X	✓

Customer Class Units of Service

Developing unit costs of service is essential in developing rates that are equally applicable to all classes of users. The detailed development of units of service based on projections of accounts, customer demand, and max day and peak hour capacity factors is presented in Exhibit 8 below. Each customer class has a unique max day and peak hour ratio that is based on the most recent three years of monthly consumption information. The AWWA Manual M-1 identifies a process to take these monthly totals and develop daily factors based on assumptions for various customer characteristics like business hours and days in operation. As expected, the irrigation customers have the highest levels of peaking.

Exhibit 8. Customer Class Units of Service

	Average		Maximum Day Requirements			Maximum Hour Requirements			Meter/Bill Data		
	Annual Use FY 2023 (kgal)	Average Daily Use (kgal/day)	Capacity Factor %	Total Capacity (kgal/day)	Extra Capacity (kgal/day)	Capacity Factor %	Total Capacity (kgal/day)	Extra Capacity (kgal/day)	No. of Meters (No.)	No. of Meters (Equiv.)	No. of Bills (No.)
Retail	1,917,375	5,253	1.93	10,141	4,888	3.20	16,834	6,693	47,944	531,538	575,327
Irrigation	582,913	1,597	3.14	5,015	3,418	5.21	8,324	3,310	11,093	11,093	133,117
Industrial	487,170	1,335	1.43	1,910	575	1.90	2,540	630	23	725	276
Wholesale	1,102,986	3,022	2.34	7,058	4,036	3.88	11,716	4,658	18	481.0	216
Total Units of Service	4,090,444			24,123	12,917		39,415	15,291	59,078	543,837	708,935

Unit Cost Development and Costs to Be Recovered from Each Customer Class

Water unit costs are derived by dividing the total allocated costs for each functional component allocated to either retail, wholesale or industrial customer class by the corresponding service requirements of the utility. It should be noted the unit costs for the wholesale and industrial class recognize water loss. The unit costs are used to determine the costs that should be recovered from each customer class. Appendix B provides the detail cost allocation schedules for retail, wholesale and industrial customers, and Exhibit 9 shows the summary of the resulting cost allocation for each customer class.

Exhibit 9. Costs to Be Recovered from Each Customer Class

Customer Class	BASE	MAX DAY	MAX HOUR	Billing	Customer Service & Meter Reading	Totals	% of Total	% of Total Excluding Base
Retail	\$ 8,119,969	\$ 3,088,224	\$ 910,594	\$ 2,224,540	\$ 1,292,631	\$ 15,635,958	52.4%	32.0%
Irrigation	\$ 2,468,603	\$ 2,159,251	\$ 450,279	\$ 514,704	\$ 299,083	\$ 5,891,921	19.8%	26.3%
Industrial	\$ 1,704,099	\$ 296,493	\$ 41,380	\$ 1,067	\$ 620	\$ 2,043,660	6.9%	10.2%
Wholesale	\$ 3,858,199	\$ 2,079,501	\$ 305,787	\$ 835	\$ -	\$ 6,244,321	20.9%	31.4%
Totals	\$ 16,150,870	\$ 7,623,469	\$ 1,708,040	\$ 2,741,147	\$ 1,592,334	\$ 29,815,860	100%	100%

The unit costs are used to determine the costs that should be recovered from each customer class, which is then compared to revenues under the existing rates to identify potential variances. As shown in Exhibit 10, the significant changes in the customer base (reduction in wholesale and industrial customers), combined with the debt service to fund the raw water transmission line, the water treatment plant expansion, and LPRO system results in a shift in the cost recovery from the customer classes. Because the County desired to have rate increases take place in one year over the study period, the cost of service results were modified to recognize the following occurrences over the study period:

-) Recognize the variability in irrigation flow and revenues from year to year
-) Recognize the impact of future pay-go for the distribution system
-) Recognize future growth in the retail class is anticipated to increase slightly higher than the wholesale class
-) Recognize reductions in the wholesale and industrial classes will have an impact on the water system characteristics

Exhibit 10. Modifications to Cost Recovery

Customer Class	Current Cost Revenue FY 2019	Current % of Water Flow in FY 2019	COS Study Results 2023	Adjusted COS 2023	Anticipated % of Water Flow by FY 2023
Retail	51.9%	34.1%	52.4%	59.6%	46.9%
Irrigation	<u>12.8%</u>	<u>13.1%</u>	<u>19.8%</u>	<u>13.9%</u>	<u>14.3%</u>
Subtotal:	64.7%	47.2%	72.2%	73.4	61.1%
Industrial	8.7%	13.0%	6.9%	7.1%	11.9%
Wholesale	<u>26.6%</u>	<u>39.8%</u>	<u>20.9%</u>	<u>19.5%</u>	<u>27.0%</u>
Total	100%	100%	100%	100%	100%

Monthly Base Charge

The cost of service analysis identified costs that should be recovered from each component of a fixed service charge, which include billing, meter maintenance, and readiness-to-serve. Billing costs are reflective of costs incurred to issue each bill, including staff time to audit meter reading and billing data, staff time to read meters, customer service staff time to answer questions or initiate work orders, etc. Meter maintenance costs are reflective of the annual costs to maintain customers' meters in good working condition and to replace meters as necessary. Readiness-to-serve costs reflect a portion of the capital investment that the County has made to provide safe and reliable water service. Because the County's debt service associated with the water system is increasing to fund the water capital improvement projects, a portion of this debt will be recovered in the readiness-to-serve costs. The inclusion of the increased debt service will cause the monthly base charges to increase by \$4 per month in FY 2022. It should also be noted the County desired to implement a monthly

base charge in FY 2022 for irrigation customers but the charge would only include the billing and meter maintenance costs components since these costs are incurred for all meters.

Volumetric Rates

The volumetric rates for each customer class are determined by taking the total allocated costs for each customer class and subtracting the costs to be recovered from the monthly base charges. The resulting revenue requirements from each customer class are divided by the equivalent water use for each tier.

Proposed Rates for FY 2022

As shown in Exhibit 11 the proposed rates for FY 2022 result in significant increases for all customer classes and rate components as compared to FY 2020 rates. The proposed FY 2022 rates reflect significant increases due to a culmination of several factors: 1) The County's O&M and debt costs are increasing by approximately \$7.4 million per year 2) The County's billable water flow is anticipated to decrease in total by 23% which is a loss of revenues of approximately \$3.3 million, and 3) the cost of service allocation, even when adjusted, results in shifts of cost recovery among customer classes which creates additional increases for some customer classes. It is recommended that the County revisit the cost allocation once water demand among the wholesale and industrial classes has stabilized and lapsed so that the cost of service analysis can reflect current peaking factors and actual O&M costs for the LPRO system.

Exhibit 11. Projection of FY 2022 Rates through FY 2024

		For the Fiscal Year Ending June 30th					
Water Rates		2019	2020	2021	2022	2023	2024
Base Service Charge		1-Jan-22					
3/4"		\$ 12.00	\$ 12.00	\$ 12.00	\$ 16.00	\$ 16.00	\$ 16.00
1"		16.00	16.00	16.00	20.00	20.00	20.00
1 1/2"		18.00	18.00	18.00	22.00	22.00	22.00
2"		20.00	20.00	20.00	24.00	24.00	24.00
3"		24.00	24.00	24.00	28.00	28.00	28.00
4"		28.00	28.00	28.00	32.00	32.00	32.00
6"		32.00	32.00	32.00	36.00	36.00	36.00
8"		35.00	35.00	35.00	39.00	39.00	39.00
10"		39.00	39.00	39.00	43.00	43.00	43.00
12"		43.00	43.00	43.00	47.00	47.00	47.00
	% Change		0.0%	0.0%	33.3%	0.0%	0.0%
Irrigation		\$ -	\$ -	\$ -	\$ 5.00	\$ 5.00	\$ 5.00
Volumetric Rates							
Residential							
Block 1		\$ 3.05	\$ 2.85	\$ 2.85	\$ 4.15	\$ 4.15	\$ 4.15
Block 2		3.10	3.30	3.30	4.80	4.80	4.80
Block 3		3.15	3.85	3.85	5.70	5.70	5.70
	% Change		-6.6%	0.0%	45.6%	0.0%	0.0%
Irrigation							
Block 1		\$ 3.05	\$ 3.30	\$ 3.30	\$ 4.80	\$ 4.80	\$ 4.80
Block 2		3.25	4.30	4.30	6.20	6.20	6.20
Block 3		3.50	5.70	5.70	8.30	8.30	8.30
Block 4		4.00	5.70	5.70	8.30	8.30	8.30
Block 5		6.00	5.70	5.70	8.30	8.30	8.30
Industrial							
Block 1		\$ 2.93	\$ 2.96	\$ 2.89	\$ 4.35	\$ 4.35	\$ 4.35
	% Change		1.0%	-2.4%	50.5%	0.0%	0.0%
Wholesale (1)							
Block 1 - All usage		\$ 2.93	\$ 2.96	\$ 2.89	\$ 5.25	\$ 5.25	\$ 5.25
	% Change		1.0%	-2.4%	81.7%	0.0%	0.0%

Customer Impacts

The proposed FY 2022 rates will result in an increase of \$9.85 per month for the County's average retail customer using 4,500 gallons of water use per month, which is an increase of 39.7%. For the County's wholesale customers, the increase in the volumetric rate of \$2.36 per 1,000 gallons is assumed to be passed through to their retail customers. Assuming an average residential water use of 4,500 gallons per month, results in a direct pass-through increase to a wholesale customer's residential monthly bill of \$10.62 (4.5 kgal times \$2.36 per kgal). This represents an increase of 7.8% compared to the County's retail customer (\$10.62 compared to \$9.85).

Over the past two decades, Brunswick County has been the fastest growing county in North Carolina. The population increased approximately 87% from 2000 – 2018². The County's growth has allowed it to keep the water bills for the average retail customer using 4,500 gallons per month practically unchanged since 2004. The County's wholesale and industrial rates have adjusted annually according to changes in the producer price index, which has resulted in average annual rate increases since 2004 of about 1.4% per year. In comparison, the average annual increase in the consumer price index for water, sewer, and solid waste services in the US has increased by 4.5% per year since 2004³.

4. Revenue Sufficiency under Proposed FY 2022 Rates

As demonstrated in the agreed upon procedures developed for the Series 2020 Bonds, the FY 2022 rates need to allow the County's water system to remain financially sufficient over the study period. The proposed rates and resulting revenues shown in Exhibit 11, will allow the County to cover its revenue requirements over the study period, in particular as it relates to the debt service payments resulting from the recent bond issues. However, there will usually be differences between the forecast and actual results, because events and circumstances frequently do not occur as expected, and those differences may be material.

² Brunswick County Planning Department *Book of Statistical Facts, Data, & Maps for Brunswick County* dated Fall 2019

³ <https://beta.bls.gov/dataViewer/view/timeseries/CUUR0000SEHG>

Exhibit 11: Projection of Financial Sufficiency of Proposed FY 2022 Rates

	Audited	Projected for Fiscal Year Ending June 30th				
	2019	2020	2021	2022	2023	2024
Water Revenues						
Operating Revenues						
User Charges (1)						
Retail/Wholesale User Charges						
Base Service Charge	\$ 6,188,355	\$ 6,396,501	\$ 6,637,361	\$ 7,916,053	\$ 9,969,004	\$10,238,469
Volumetric Charges						
Retail	7,261,740	7,707,423	7,927,931	9,519,233	11,958,925	12,176,217
Industrial	2,104,894	2,030,515	1,982,496	1,704,282	2,119,188	2,119,188
Wholesale	5,795,469	6,336,586	6,180,981	4,188,464	5,798,212	5,913,365
Subtotal: Retail/Wholesale User Charges	\$21,350,458	\$22,471,024	\$22,728,768	\$23,328,033	\$29,845,329	\$30,447,239
% Change		5.2%	1.1%	2.6%	27.9%	2.0%
Other User Charges						
Service Charges	\$ 150,040	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000
Late Payment Penalty	172,894	150,000	150,000	150,000	150,000	150,000
Taps & Connections (2)	1,097,730	850,000	799,000	799,000	799,000	799,000
Transmission line fee (2)	461,055	461,055	319,000	319,000	319,000	319,000
Capital Recovery Fees (2)	1,279,536	1,118,000	946,000	900,000	900,000	900,000
Subtotal: Other User Charges	3,161,255	2,729,055	2,364,000	2,318,000	2,318,000	2,318,000
Total: User Charges	\$24,511,713	\$25,200,079	\$25,092,768	\$25,646,033	\$32,163,329	\$32,765,239
% Change		2.8%	-0.4%	2.2%	25.4%	1.9%
Other Operating Revenues						
Miscellaneous Revenues (3)	\$ 852,801	\$ 332,280	\$ 332,280	\$ 332,280	\$ 332,280	\$ 332,280
LCFWSA O&M Reimbursement	367,518	390,985	390,985	390,985	390,985	390,985
Subtotal: Other Operating Revenues	\$ 1,220,319	\$ 723,265	\$ 723,265	\$ 723,265	\$ 723,265	\$ 723,265
Total: Water Operating Revenues	\$25,732,032	\$25,923,344	\$25,816,033	\$26,369,298	\$32,886,594	\$33,488,504
% Change		0.7%	-0.4%	2.1%	24.7%	1.8%
Non-Operating Revenues						
Investment Earnings	\$ 319,608	\$ 130,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
Total Water Revenues	\$26,051,640	\$26,053,344	\$25,916,033	\$26,469,298	\$32,986,594	\$33,588,504
% Change		0.0%	-0.5%	2.1%	24.6%	1.8%
Total Revenue Requirements for the Water System	\$22,496,310	\$25,237,474	\$20,032,106	\$27,158,468	\$32,934,125	\$33,549,533
% Change		12.2%	-20.6%	35.6%	21.3%	1.9%
Net Surplus/(Deficit)	\$ 3,555,330	\$ 815,871	\$ 5,883,927	\$ (689,171)	\$ 52,470	\$ 38,971
Debt Service Coverage for Water System - Total Debt	3.59	4.28	4.26	2.32	1.12	1.12

Notes:

- (1) User charges are calculated by multiplying the projected number of customers and water demand shown in supporting schedules 3 and 4 by the projected rates shown in supporting schedule 5. To be conservative, Revenues in FY 2020 are estimated based on water demand, which is in turn based on average use over several years. Revenues increase significantly in FY 2022 due to the water rate increase. Revenues reflect the loss of two water wholesale customers and one large industrial customer. Revenues also reflect the County taking over the water systems of the City of Northwest and the Town of Navassa. The City of Northwest and the County have entered into an agreement and therefore the City of Northwest is no longer a wholesale customer of the County but instead its water customers are now retail customers of the County, which was effective on January 1, 2020. The Town of Navassa (a wholesale customer) and the County have entered into an agreement and the Town of Navassa's customers became retail customers of the County on July 1, 2020.
- (2) Revenues from tap and connection fees, capital recovery fees, and transmission line fees for FY 2020 and beyond are conservative and are based on a 10-year average as opposed to recent levels.
- (3) Miscellaneous revenues in FY 2019 include a receipt from the Golden Leaf Foundation Grant

APPENDIX

Appendix A – Functionalization of Revenue Requirements

Appendix 11 - Functionalization of Revenue Requirements												
O&M	2023	CODE	Source of Supply/Base	Treatment	Transmission	Distribution	Storage	Billing	Customer Service	Meter Reading and Service Cost	General/ Admin	
Administration Division	\$ 3,540,276	S	0%	0%	0%	0%	0%	35%	0%	0%	65%	100%
NW Treatment plant												
Personal Services	\$ 1,581,242	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Operating Costs												
LCFWSA	\$ 2,053,324	A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Chemicals	\$ 1,591,350	A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Utilities	\$ 723,666	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Repair & Maint - Building	\$ 22,500	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Repair & Maint - Tanks	\$ -	F	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%
Repair & Maint - Grounds	\$ 5,000	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Repair & Maint - Equipment	\$ 157,500	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Repair & Maint - Filters	\$ 20,000	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Repair & Maint - Pipe	\$ -	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Repair & Maint - Instrument	\$ 20,000	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Repair & Maint - Roadways	\$ 6,000	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Repair & Maint - Vehicles	\$ 3,000	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
All other operating expenses	\$ 1,154,993	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Subtotal: NW Treatment Plant	\$ 7,338,575											
211 WTP												
Personal Services	\$ 768,377	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Operating Costs												
Operating Costs less chemical	\$ 291,043	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Chemical	\$ 529,973	A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Utilities	\$ 327,709	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
	\$ -	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Subtotal: 211 Treatment Plant	\$ 1,917,102											
Distribution Division												
Personnel	\$ 1,132,273	K	0%	0%	39%	38%	0%	0%	0%	23%	0%	100%
Electricity - Tanks	\$ 13,113	F	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%
Electricity - BPS	\$ 437,091	C	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
Repair & Maint - Building	\$ -	J	0%	0%	51%	49%	0%	0%	0%	0%	0%	100%
Repair & Maint - Tanks	\$ 220,500	F	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%
Repair & Maint - Grounds	\$ -	J	0%	0%	51%	49%	0%	0%	0%	0%	0%	100%
Repair & Maint - Equipment	\$ 5,000	J	0%	0%	51%	49%	0%	0%	0%	0%	0%	100%
Repair - hydrants	\$ 15,000	J	0%	0%	51%	49%	0%	0%	0%	0%	0%	100%
Repair & Maint - Pipe	\$ -	J	0%	0%	51%	49%	0%	0%	0%	0%	0%	100%
Repair & Maint - Roadways	\$ -	J	0%	0%	51%	49%	0%	0%	0%	0%	0%	100%
Repair & Maint - Other Utili	\$ -	J	0%	0%	51%	49%	0%	0%	0%	0%	0%	100%
Repair and Mnt - Booster Pump	\$ 60,000	C	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
R and M - Meters and Services	\$ 285,051	Q	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
R and M - Transmission Mains	\$ 25,000	C	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
R and M - Distribution Mains	\$ 25,000	D	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%
R and M - Transmission Mains	\$ 12,500	C	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
All other costs	\$ 236,554	J	0%	0%	51%	49%	0%	0%	0%	0%	0%	100%
Subtotal: Water Field Operat	\$ 2,467,081											0%
LCFWSA (all going to source of supply) -	\$ 373,853	A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Water Customer Service	\$ 1,231,990	L	0%	0%	0%	0%	0%	0%	82%	18%	0%	100%
Operating Costs		L	0%	0%	0%	0%	0%	0%	82%	18%	0%	100%
Subtotal: Customer Service Costs	\$ 1,231,990											
Instrumentation - 617170												
Personnel	\$ 968,272	M	0%	73%	16%	0%	3%	0%	0%	8%	0%	100%
Repair and Maint - Equipment	\$ 57,000	M	0%	73%	16%	0%	3%	0%	0%	8%	0%	100%
Repair and Maint - Instrument	\$ -	M	0%	73%	16%	0%	3%	0%	0%	8%	0%	100%
R and M - Gen Administrat	\$ 20,000	M	0%	73%	16%	0%	3%	0%	0%	8%	0%	100%
R and M - Water Transmiss	\$ 75,000	C	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
R and M - NWWTP	\$ 37,500	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
R and M - 211 WTP	\$ 35,000	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
R and M - 211 Raw Water S	\$ 27,500	A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
R and M - LCFWSA Raw Water	\$ (5,000)	A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
R and M Generators	\$ (27,100)	B	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
Repair and Maint - Vehicles	\$ 15,000	M	0%	73%	16%	0%	3%	0%	0%	8%	0%	100%
All other O&M	\$ 201,696	M	0%	73%	16%	0%	3%	0%	0%	8%	0%	100%
Subtotal: Instrumentation Costs	\$ 1,404,868											
Construction Division (taps, new service, but also main breaks)												
Personnel	\$ 1,041,638	J	0%	0%	51%	49%	0%	0%	0%	0%	0%	100%
All other O&M	\$ 165,377	J	0%	0%	51%	49%	0%	0%	0%	0%	0%	100%
Subtotal: Construction Division	\$ 1,207,015											
	\$ 5,223,765											
Total Water Fund O&M	\$ 19,480,758											

Appendix A – Functionalization of Revenue Requirements

		2023	CODE	Source of Supply/Base	Treatment 0	Transmission 0	Distribution 0	Storage 0	Billing 0	Customer Service	Meter Reading and Service Cost	General/ Admin
Capital												
Capital Outlay												
	Administration	\$ 42,436	H	0%	0%	0%	0%	0%	0%	0%	0%	100%
	NW treatment plant, etc.	\$ 77,250	B	0%	100%	0%	0%	0%	0%	0%	0%	0%
	211 Water Treatment Plant	\$ 185,658	B	0%	100%	0%	0%	0%	0%	0%	0%	0%
	Water - Field Operations	\$ 160,451	J	0%	0%	51%	49%	0%	0%	0%	0%	0%
	LCWFA	\$ -	A	100%	0%	0%	0%	0%	0%	0%	0%	0%
	Water - Customer Service	\$ 26,523	P	0%	0%	0%	0%	0%	0%	100%	0%	0%
	Water - Instrumentation	\$ 96,160	M	0%	73%	16%	0%	3%	0%	0%	8%	0%
	Construction Division - capital outlay	\$ 114,736	J	0%	0%	51%	49%	0%	0%	0%	0%	0%
	Taps	\$ 799,000	Q	0%	0%	0%	0%	0%	0%	0%	100%	0%
	Transfers to Capital Project	\$ -	J	0%	0%	51%	49%	0%	0%	0%	0%	0%
Water Debt Service												
	CBU Revenue Bond – Series 2004	\$ 172,950	B	0%	100%	0%	0%	0%	0%	0%	0%	0%
	2012 GO Refunding BSL	\$ 293,150	B	0%	100%	0%	0%	0%	0%	0%	0%	0%
	FY 2015 Water Revenue Bonds Northwest Plant Expansion	\$ 542,544	B	0%	100%	0%	0%	0%	0%	0%	0%	0%
	FY 2015 Water Revenue Bonds Danford Road Project	\$ 250,563	C	0%	0%	100%	0%	0%	0%	0%	0%	0%
	FY 2015 Revenue Refunding of 2010 RZEDB - NW Plant Exp	\$ 795,854	B	0%	100%	0%	0%	0%	0%	0%	0%	0%
	FY 2015 Revenue Refunding of 2010 RZEDB - Water Lines	\$ 79,594	D	0%	0%	0%	100%	0%	0%	0%	0%	0%
	Proposed Bond Issue - WTP	\$ 8,359,250	B	0%	100%	0%	0%	0%	0%	0%	0%	0%
	Proposed Bond Issue - Raw Water Main	\$ 1,457,250	A	100%	0%	0%	0%	0%	0%	0%	0%	0%
Total Water Fund Capital Costs		\$ 13,453,366										
Total Gross Revenue Requirements		\$ 32,934,125										
OFFSETS												
		2023	CODE	Source of Supply/Base	Treatment 0	Transmission 0	Distribution 0	Storage 0	Billing 0	Customer Service	Meter Reading and Service Cost	General/ Admin
	Service Charges	\$ 150,000	P	0%	0%	0%	0%	0%	0%	100%	0%	0%
	Late Payment Penalty	\$ 150,000	P	0%	0%	0%	0%	0%	0%	100%	0%	0%
	Investment Earnings (1)	\$ 100,000	H	0%	0%	0%	0%	0%	0%	0%	0%	100%
	Miscellaneous Revenues	\$ 175,000	H	0%	0%	0%	0%	0%	0%	0%	0%	100%
	So BrunsBSD/Shall Disconnect Svc Fee	\$ 18,000	P	0%	0%	0%	0%	0%	0%	100%	0%	0%
	Educational Program Fees	\$ 4,000	H	0%	0%	0%	0%	0%	0%	0%	0%	100%
	Taps & Connections	\$ 799,000	Q	0%	0%	0%	0%	0%	0%	0%	100%	0%
	Backflow Device Inspection Fee	\$ 104,280	D	0%	0%	0%	100%	0%	0%	0%	0%	0%
	Other Sales and Service	\$ 8,000	H	0%	0%	0%	0%	0%	0%	0%	0%	100%
	LCFWSA O & M Reimbursement	\$ 390,985	A	100%	0%	0%	0%	0%	0%	0%	0%	0%
	Capital Recovery Fee	\$ 900,000	B	0%	100%	0%	0%	0%	0%	0%	0%	0%
	Transmission Line Fees	\$ 319,000	C	0%	0%	100%	0%	0%	0%	0%	0%	0%
Total Water Fund Offsets		\$ 3,118,265										
TOTAL NET WATER FUND REV. RQMTS.		\$ 29,815,860										

Appendix A – Functionalization of Revenue Requirements

CODE	Source of Supply	Treatment 0	Transmission 0	Distribution 0	Storage 0	Billing 0	Customer Service	Meter Reading and Service Cost	General/ Admin	TOTALS
CODE for Allocating O&M and Capital to Functions All Source of Supply All Treatment - NW WTP All Transmission All Distribution All meters All Storage Billing All General/Admin Split between T & D based on Pipe Capacity Split between Transmission & Distribution based on Pipe Distribution Division / Personnel Water Customer Service Allocation Instrumentation Division Allocation Cash funded water CIP allocation Fixed asset allocation Customer Service Meter Reading Readiness to Serve Admin Division allocation	A	100%								100%
	B		100%							100%
	C			100%						100%
	D			100%						100%
	E									100%
	F				100%					100%
	G					100%				100%
	H								100%	100%
	I			87%	13%					100%
	J			51%	49%					100%
	K			39%	38%			23%		100%
	L						82%	18%		100%
	M		79%	12%	3%			6%		100%
	N			51%	49%					100%
	O	0%	21%	34%	37%				8%	100%
	P						100%			100%
	Q							100%		100%
	R									100%
	S					35.0%			65.0%	100%

Appendix A – Functionalization of Revenue Requirements

Allocation of O&M Dollars to Function O&M	2023	CODE	Source of Supply/Base	Treatment 0	Transmission 0	Distribution 0	Storage 0	Billing 0	Customer Service	Meter Reading and Service Cost	General/ Admin
Administration Division	\$ 3,540,276	S	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,239,097	\$ -	\$ -	\$ 2,301,180
NW Treatment plant			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Personal Services	\$ 1,581,242	B	\$ -	\$ 1,581,242	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operating Costs	\$ -	O	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
LCFWSA	\$ 2,053,324	A	\$ 2,053,324	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Chemicals	\$ 1,591,350	A	\$ 1,591,350	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Utilities	\$ 723,666	B	\$ -	\$ 723,666	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Building	\$ 22,500	B	\$ -	\$ 22,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Tanks	\$ -	F	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Grounds	\$ 5,000	B	\$ -	\$ 5,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Equipment	\$ 157,500	B	\$ -	\$ 157,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Filters	\$ 20,000	B	\$ -	\$ 20,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Pipe	\$ -	B	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Instrument	\$ 20,000	B	\$ -	\$ 20,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Roadways	\$ 6,000	B	\$ -	\$ 6,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Vehicles	\$ 3,000	B	\$ -	\$ 3,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
All other operating expenses	\$ 1,154,993	B	\$ -	\$ 1,154,993	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
211 WTP			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Personal Services	\$ 768,377	B	\$ -	\$ 768,377	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operating Costs	\$ -	O	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operating Costs less chemicals/utilities/purchased	\$ 291,043	B	\$ -	\$ 291,043	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Chemical	\$ 529,973	A	\$ 529,973	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Utilities	\$ 327,709	B	\$ -	\$ 327,709	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Water Field Operations			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Personnel	\$ 1,132,273	K	\$ -	\$ -	\$ 441,392	\$ 430,458	\$ -	\$ -	\$ -	\$ 260,423	\$ -
Electricity - Tanks	\$ 13,113	F	\$ -	\$ -	\$ -	\$ -	\$ 13,113	\$ -	\$ -	\$ -	\$ -
Electricity - BPS	\$ 437,091	C	\$ -	\$ -	\$ 437,091	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Building	\$ -	J	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Tanks	\$ 220,500	F	\$ -	\$ -	\$ -	\$ -	\$ 220,500	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Grounds	\$ -	J	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Equipment	\$ 5,000	J	\$ -	\$ -	\$ 2,531	\$ 2,469	\$ -	\$ -	\$ -	\$ -	\$ -
Repair - hydrants	\$ 15,000	J	\$ -	\$ -	\$ 7,594	\$ 7,406	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Pipe	\$ -	J	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Roadways	\$ -	J	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair & Maint - Other Utili	\$ -	J	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair and Mnt - Booster Pump	\$ 60,000	C	\$ -	\$ -	\$ 60,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
R and M - Meters and Services	\$ 285,051	Q	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 285,051	\$ -
R and M - Transmission Mains	\$ 25,000	C	\$ -	\$ -	\$ 25,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
R and M - Distribution Mains	\$ 25,000	D	\$ -	\$ -	\$ -	\$ 25,000	\$ -	\$ -	\$ -	\$ -	\$ -
R and M - Transmission Mains	\$ 12,500	C	\$ -	\$ -	\$ 12,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
R and M - Distribution Mains	\$ 236,554	J	\$ -	\$ -	\$ 119,760	\$ 116,794	\$ -	\$ -	\$ -	\$ -	\$ -
LCFWSA (all going to source of supply) - 617150	\$ 373,853	A	\$ 373,853	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Water Customer Service	\$ 1,231,990	L	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,010,231	\$ 221,758	\$ -
	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operating Costs	\$ -	L	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Instrumentation (Works on All Parts of System) - 617170			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Personnel	\$ 968,272	M	\$ -	\$ 706,263	\$ 153,716	\$ -	\$ 32,472	\$ -	\$ -	\$ 75,821	\$ -
Repair and Maint - Equipment	\$ 57,000	M	\$ -	\$ 41,576	\$ 9,049	\$ -	\$ 1,912	\$ -	\$ -	\$ 4,463	\$ -
Repair and Maint - Instrument	\$ -	M	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
R and M - Gen Administrat	\$ 20,000	M	\$ -	\$ 14,588	\$ 3,175	\$ -	\$ 671	\$ -	\$ -	\$ 1,566	\$ -
R and M - Water Transmiss	\$ 75,000	C	\$ -	\$ -	\$ 75,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
R and M - NW/WTP	\$ 37,500	B	\$ -	\$ 37,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
R and M - 211 WTP	\$ 35,000	B	\$ -	\$ 35,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
R and M - 211 Raw Water S	\$ 27,500	A	\$ 27,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
R and M - LCFWSA Raw Water	\$ (5,000)	A	\$ (5,000)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
R and M Generators	\$ (27,100)	B	\$ -	\$ (27,100)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repair and Maint - Vehicles	\$ 15,000	M	\$ -	\$ 10,941	\$ 2,381	\$ -	\$ 503	\$ -	\$ -	\$ 1,175	\$ -
All other O&M	\$ 201,696	M	\$ -	\$ 147,118	\$ 32,020	\$ -	\$ 6,764	\$ -	\$ -	\$ 15,794	\$ -
Construction Division (taps, new service, but also main breaks - is it distribution or transmission?)											
Personnel	\$ 1,041,638	J	\$ -	\$ -	\$ 527,350	\$ 514,288	\$ -	\$ -	\$ -	\$ -	\$ -
All other O&M	\$ 165,377	J	\$ -	\$ -	\$ 83,726	\$ 81,652	\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL O&M COST ALLOCATION	\$ 19,480,758	\$ -	\$ 4,570,999	\$ 6,046,917	\$ 1,992,284	\$ 1,178,066	\$ 275,934	\$ 1,239,097	\$ 1,010,231	\$ 866,051	\$ 2,301,180

Appendix A – Functionalization of Revenue Requirements

	2023	CODE	Source of Supply/Base	Treatment 0	Transmission 0	Distribution 0	Storage 0	Billing 0	Customer Service	Meter Reading and Service Cost	General/Admin
CAPITAL COST ALLOCATION											
Capital Outlay											
Administration	\$ 42,436	H	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 42,436
NW treatment plant, etc.	\$ 77,250	B	\$ -	\$ 77,250	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
211 Water Treatment Plant	\$ 185,658	B	\$ -	\$ 185,658	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Water - Field Operations	\$ 160,451	J	\$ -	\$ -	\$ 81,231	\$ 79,219	\$ -	\$ -	\$ -	\$ -	\$ -
LCWFSA	\$ -	A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Water - Customer Service	\$ 26,523	P	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 26,523	\$ -	\$ -
Water - Facility Operations Div	\$ 96,160	M	\$ -	\$ 70,140	\$ 15,266	\$ -	\$ 3,225	\$ -	\$ -	\$ 7,530	\$ -
Construction Division - capital outlay	\$ 114,736	J	\$ -	\$ -	\$ 58,088	\$ 56,649	\$ -	\$ -	\$ -	\$ -	\$ -
Taps	\$ 799,000	Q	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 799,000	\$ -
Transfers to Capital Project	\$ -	J	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Water Debt Service	\$ -	O	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
CBU Revenue Bond – Series 2004	\$ 172,950	B	\$ -	\$ 172,950	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2012 GO Refunding BSL	\$ 293,150	B	\$ -	\$ 293,150	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
FY 2015 Water Revenue Bonds Northwest Plant Expansion	\$ 542,544	B	\$ -	\$ 542,544	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
FY 2015 Water Revenue Bonds Danford Road Project	\$ 250,563	C	\$ -	\$ -	\$ 250,563	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
FY 2015 Revenue Refunding of 2010 RZEDB - NW Plant Exp	\$ 795,854	B	\$ -	\$ 795,854	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
FY 2015 Revenue Refunding of 2010 RZEDB - Water Lines I	\$ 79,594	D	\$ -	\$ -	\$ -	\$ 79,594	\$ -	\$ -	\$ -	\$ -	\$ -
Proposed Bond Issue - WTP	\$ 8,359,250	B	\$ -	\$ 8,359,250	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Proposed Bond Issue - Raw Water Main	\$ 1,457,250	A	\$ 1,457,250	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL CAPITAL COST ALLOCATION	\$ 13,453,366		\$ 1,457,250	\$ 10,496,795	\$ 405,147	\$ 215,462	\$ 3,225	\$ -	\$ 26,523	\$ 806,530	\$ 42,436
Total Revenue Requirements	\$ 32,934,125										
OFFSET COST ALLOCATION											
Service Charges	\$ (150,000)	P	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (150,000)	\$ -	\$ -
Late Payment Penalty	\$ (150,000)	P	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (150,000)	\$ -	\$ -
Investment Earnings (1)	\$ (100,000)	H	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (100,000)
Miscellaneous Revenues	\$ (175,000)	H	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (175,000)
So BrunSBS/Disconn Svc Fee	\$ (18,000)	P	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (18,000)	\$ -	\$ -
Educational Program Fees	\$ (4,000)	H	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (4,000)
Taps & Connections	\$ (799,000)	Q	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (799,000)	\$ -
Backflow Device Inspection Fee	\$ (104,280)	D	\$ -	\$ -	\$ -	\$ (104,280)	\$ -	\$ -	\$ -	\$ -	\$ -
Other Sales and Service	\$ (8,000)	H	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (8,000)
LCFWSA O & M Reimbursement	\$ (390,985)	A	\$ (390,985)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Capital Recovery Fee	\$ (900,000)	B	\$ -	\$ (900,000)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Transmission Line Fees	\$ (319,000)	C	\$ -	\$ -	\$ (319,000)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Offset Cost Allocation	\$ (3,118,265)		\$ (390,985)	\$ (900,000)	\$ (319,000)	\$ (104,280)	\$ -	\$ -	\$ (318,000)	\$ (799,000)	\$ (287,000)
Total Allocated NET O&M and Capital to Functions	\$ 29,815,860		\$ 5,637,264	\$ 15,643,711	\$ 2,078,431	\$ 1,289,247	\$ 279,159	\$ 1,239,097	\$ 718,754	\$ 873,580	\$ 2,056,616
Reallocation of General/Admin			6.1%	16.9%	2.2%	1.4%	0.3%	73.0%	0.0%	0.0%	0.0%
			\$ 125,411	\$ 348,023	\$ 46,239	\$ 28,682	\$ 6,210	\$ 1,502,050	\$ -	\$ -	\$ (2,056,616)
Net Allocated O&M and Capital to Functions	\$ 29,815,860		\$ 5,762,676	\$ 15,991,735	\$ 2,124,670	\$ 1,317,929	\$ 285,370	\$ 2,741,147	\$ 718,754	\$ 873,580	\$ -
		% of Total	19.3%	53.6%	7.1%	4.4%	1.0%	9.2%	2.4%	2.9%	0.0%

Appendix B – Customer Class Allocations

	Amount	CODE	BASE	MAX DAY	MAX HOUR	Readiness to Serve	Customer Service	Meter Reading	Total
Source of Supply	\$ 5,762,676	X	100%	0%	0%				100%
Treatment	\$ 15,991,735	Y	58%	42%	0%				100%
Transmission	\$ 2,124,670	Z	31%	23%	46%				100%
Distribution	\$ 1,317,929	Z	31%	23%	46%				100%
Storage	\$ 285,370	Z	31%	23%	46%				100%
Billing	\$ 2,741,147		0%	0%	0%				100%
Customer Service	\$ 718,754						100%		100%
Meter Reading	\$ 873,580							100%	100%
	\$ 29,815,860								

Water System Information	CODE	Demand Factors	Base	Max Day	Max Hour	Total
Base	X	1.00	100%	0%	0%	100%
Max Day	Y	1.73	58%	42%	0%	100%
Max Hour	Z	3.20	31%	23%	46%	100%

If Wholesale shares in All Costs		Amount	CODE	BASE	MAX DAY	MAX HOUR	Readiness to Serve	Cust. Service & Meter Reading	Total
	Source of Supply	\$ 5,762,676	X	\$ 5,762,676	\$ -	\$ -			\$ 5,762,676
	Treatment	\$ 15,991,735	Y	\$ 9,223,204	\$ 6,768,530	\$ -			\$ 15,991,735
	Transmission	\$ 2,124,670	Z	\$ 663,959	\$ 487,252	\$ 973,458			\$ 2,124,670
	Distribution	\$ 1,317,929	Z	\$ 411,853	\$ 302,242	\$ 603,834			\$ 1,317,929
	Storage	\$ 285,370	Z	\$ 89,178	\$ 65,444	\$ 130,748			\$ 285,370
	Billing	\$ 2,741,147							\$ 2,741,147
	Customer Service	\$ 718,754						\$ 718,754	\$ 718,754
	Meter Reading and Service Cost	\$ 873,580		\$ -	\$ -	\$ -		\$ 873,580	\$ 873,580
		\$ 29,815,860		\$ 16,150,870	\$ 7,623,469	\$ 1,708,040	\$ -	\$ 1,592,334	\$ 29,815,860
				54.2%	25.6%	5.7%	0.0%	5.3%	100.0%
	Units of Service			4,090,444	12,917	15,291	543,837	708,935	
	Cost per kgal			\$ 3.95	\$ 590.20	\$ 111.70	\$ -	\$ 2.25	\$ 7.29

Appendix B – Customer Class Allocations

WHOLESALE CALCULATION - Remove Distribution, Customer Service, etc.											
	Wholesale does not share in Distribution and other Retail Costs	Amount	Joint Cost Allocation	Joint Costs	CODE	BASE	MAX DAY	Readiness to Serve	Billing	Cust. Service & Meter Reading	Total
Source of Supply		\$ 5,762,676	100%	\$ 5,762,676	X	\$ 5,762,676	\$ -				\$ 5,762,676
Treatment		\$ 15,991,735	100%	\$ 15,991,735	Y	\$ 9,223,204	\$ 6,768,530				\$ 15,991,735
Transmission		\$ 2,124,670	100%	\$ 2,124,670	Z	\$ 663,959	\$ 487,252				\$ 2,124,670
Distribution		\$ 1,317,929	0%	\$ -	Z	\$ -	\$ -				\$ -
Storage		\$ 285,370	100%	\$ 285,370	Z	\$ 89,178	\$ 65,444				\$ 285,370
Billing		\$ 2,741,147	100%	\$ 2,741,147					\$ 2,741,147		\$ 2,741,147
Customer Service		\$ 718,754	0%	\$ -						\$ -	\$ -
Meter Reading and Service Cost		\$ 873,580	0%	\$ -		\$ -	\$ -				\$ -
		\$ 29,815,860		\$ 26,905,596		\$ 15,739,017	\$ 7,321,227	\$ -	\$ 2,741,147	\$ -	\$ 26,905,596
						52.8%	24.6%	0.0%	9.2%	0.0%	
					pumped to accounted water loss						
Units of Service					10%	4,499,488	14,208	543,837	708,935	708,935	4,499,488
Cost per kgal						\$ 3.50	\$ 515.27	\$ -	\$ 3.87	\$ -	\$ 5.98
Wholesale Units of Service						1,102,986	4,036	481	216		
Allocated Wholesale Costs						\$ 3,858,199	\$ 2,079,501	\$ -	\$ 835		\$ 6,244,321
INDUSTRIAL CALCULATION - don't share in distribution but do share in Billing, Customer Service, and Meter Reading (per County staff, industrial customers use meters 12" or greater so should not share in distribution costs)											
						BASE	MAX DAY	Readiness to Serve	Billing	Cust. Service & Meter Reading	Total
Units of Service						487,170	575	725	276	276	
Unit Rate						\$ 3.50	\$ 515.27		3.87	2.25	
Allocated Industrial Costs						\$ 1,704,099	\$ 296,493	\$ -	\$ 1,067	\$ 620	\$ 2,043,660
RETAIL ALLOCATION											
	Retail Allocation when Wholesale does not share in Distb/etc.	Amount	Retail Allocation	Joint Costs	CODE	BASE	MAX DAY	Readiness to Serve	Billing	Cust. Service & Meter Reading	Total
Source of Supply		\$ 5,762,676	100%	\$ 5,762,676	X	\$ 5,762,676	\$ -	\$ -	\$ -	\$ -	\$ 5,762,676
Treatment		\$ 15,991,735	100%	\$ 15,991,735	Y	\$ 9,223,204	\$ 6,768,530	\$ -	\$ -	\$ -	\$ 15,991,735
Transmission		\$ 2,124,670	100%	\$ 2,124,670	Z	\$ 663,959	\$ 487,252	\$ -	\$ -	\$ -	\$ 2,124,670
Distribution		\$ 1,317,929	100%	\$ 1,317,929	Z	\$ 411,853	\$ 302,242	\$ -	\$ -	\$ -	\$ 1,317,929
Storage		\$ 285,370	100%	\$ 285,370	Z	\$ 89,178	\$ 65,444	\$ -	\$ -	\$ -	\$ 285,370
Billing		\$ 2,741,147	100%	\$ 2,741,147					\$ 2,741,147		\$ 2,741,147
Customer Service		\$ 718,754	100%	\$ 718,754						\$ 718,754	\$ 718,754
Meter Reading		\$ 873,580	100%	\$ 873,580						\$ 873,580	\$ 873,580
		\$ 29,815,860		\$ 29,815,860		\$ 16,150,870	\$ 7,623,469	\$ -	\$ 2,741,147	\$ 1,592,334	\$ 29,815,860
						54.2%	25.6%	0.0%	9.2%	5.3%	
Less Wholesale Allocation						\$ (3,858,199)	\$ (2,079,501)	\$ -	\$ (835)	\$ -	
Less Industrial Allocation						\$ (1,704,099)	\$ (296,493)	\$ -	\$ (1,067)	\$ (620)	
NET RETAIL ALLOCATION						\$ 10,588,572	\$ 5,247,475	\$ -	\$ 2,739,244	\$ 1,591,714	\$ 21,527,879
Retail Units of Service						2,500,288	8,306	542,631	708,443	708,443	2,500,288
Retail Unit Costs						\$ 4.23	\$ 631.80	\$ -	\$ 3.87	\$ 2.25	\$ 8.61

Appendix B – Customer Class Allocations

	Average		Maximum Day Requirements			Maximum Hour Requirements			Meter/Bill Data		
	Annual	Average	Capacity	Total	Extra	Capacity	Total	Extra	No. of	No. of	No. of
	Use FY 2023 (kgal)	Daily Use (kgal/day)	Factor %	Capacity (kgal/day)	Capacity (kgal/day)	Factor %	Capacity (kgal/day)	Capacity (kgal/day)	Meters (No.)	Meters (Equiv.)	Bills (No.)
Retail	1,917,375	5,253	1.93	10,141	4,888	3.20	16,834	6,693	47,944	531,538	575,327
Irrigation	582,913	1,597	3.14	5,015	3,418	5.21	8,324	3,310	11,093	11,093	133,117
Industrial	487,170	1,335	1.43	1,910	575	1.90	2,540	630	23	725	276
Wholesale	1,102,986	3,022	2.34	7,058	4,036	3.88	11,716	4,658	18	481.0	216
Total Units of Service	4,090,444			24,123	12,917		39,415	15,291	59,078	543,837	708,935

Customer Class	BASE	MAX	MAX	Billing	Customer Service	Totals	% of Total
		DAY	HOUR		& Meter Reading		
Retail	\$ 8,119,969	\$ 3,088,224	\$ 910,594	\$ 2,224,540	\$ 1,292,631	\$ 15,635,958	52.4%
Irrigation	\$ 2,468,603	\$ 2,159,251	\$ 450,279	\$ 514,704	\$ 299,083	\$ 5,891,921	19.8%
Industrial	\$ 1,704,099	\$ 296,493	\$ 41,380	\$ 1,067	\$ 620	\$ 2,043,660	6.9%
Wholesale	\$ 3,858,199	\$ 2,079,501	\$ 305,787	\$ 835	\$ -	\$ 6,244,321	20.9%
Totals	\$ 16,150,870	\$ 7,623,469	\$ 1,708,040	\$ 2,741,147	\$ 1,592,334	\$ 29,815,860	100%

Brunswick County

Water Rate Study Results - Updated

March 1, 2021

Agenda

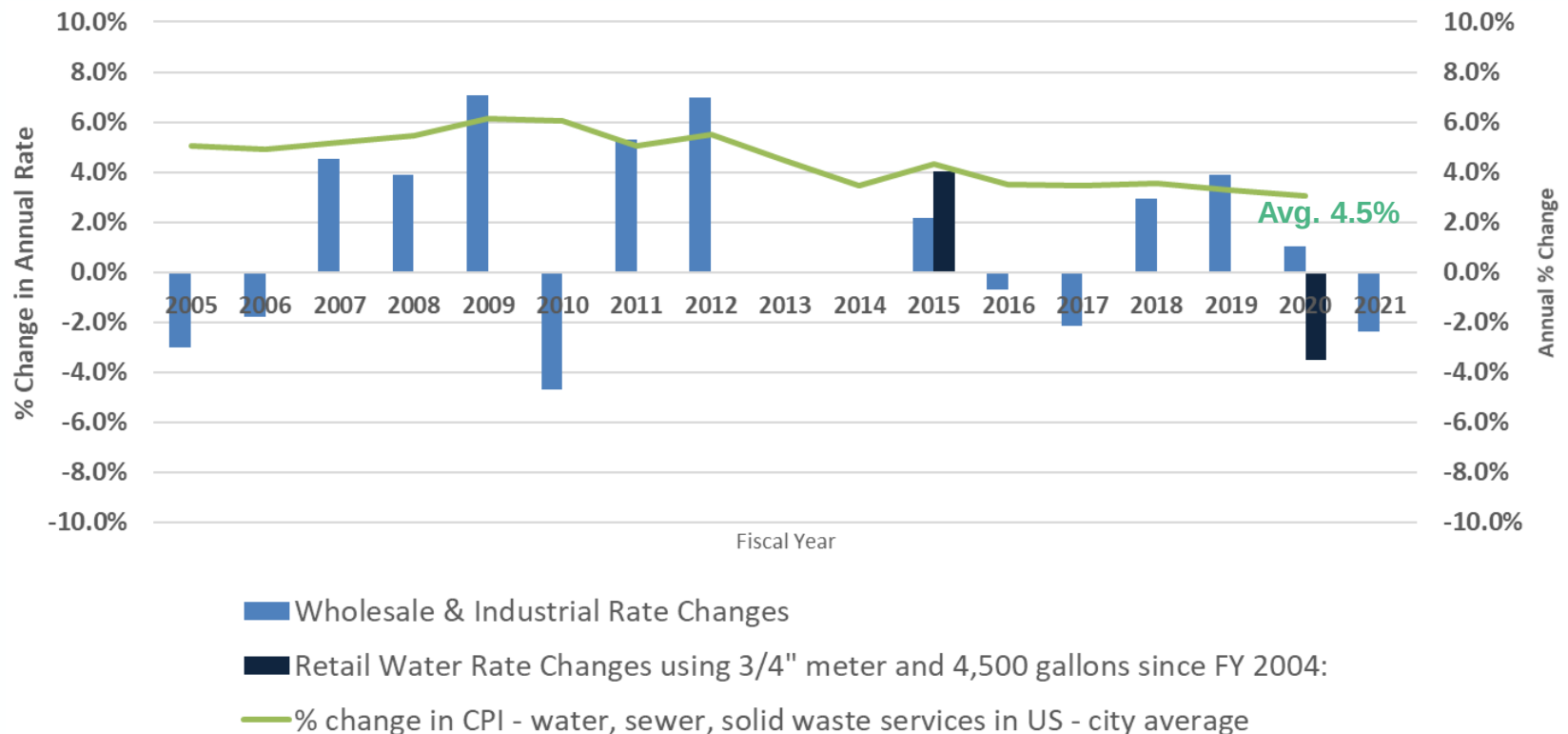
- History of Changes in Water Rates
- Timeline of Events
- 2019 Study Process and Implemented Rate Structure Changes
- What Changed?
- Overview of 2022 Revised Rates and Customer Impacts



History of Rate Changes

Growth has helped keep water rate increases lower than industry benchmarks

- Practically unchanged for average retail customer
- Wholesale/industrial changes averaging 1.4% per year



History of Rate Changes

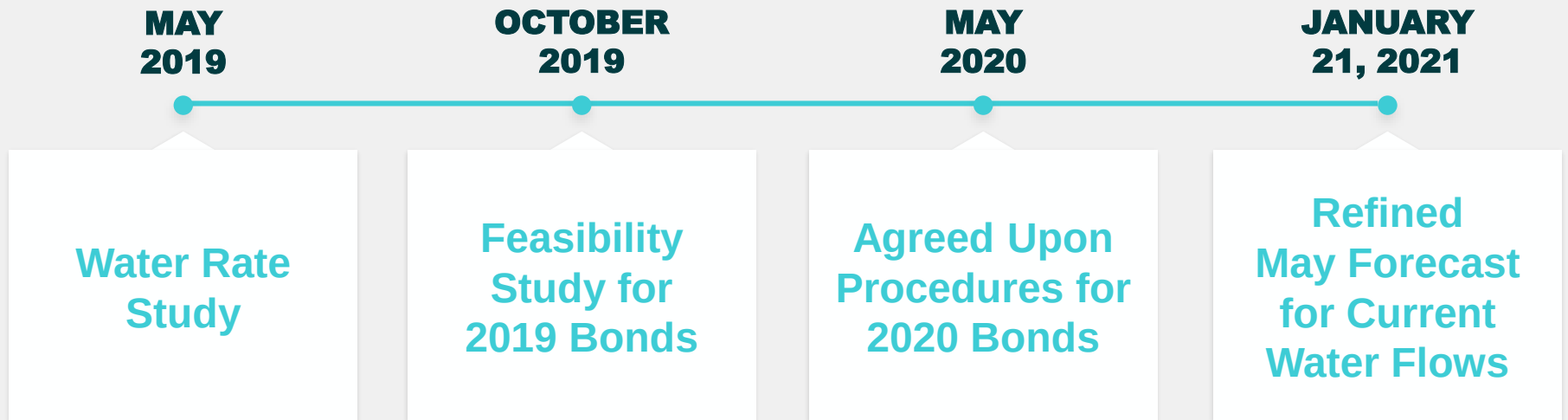
Water bills for average customers have remained **below NC benchmarks**

	Average Monthly Water Bill (4,500 gallons)
NC Coastal Communities (1)	\$36.14
NC state average (1)	\$35.94
Utilities with > 25,000 accounts (1)	\$31.36
County Wholesale Customers – average (2)	\$30.24
Brunswick County - 2021	\$24.83

(1) Source: Average from UNC EFC Dashboard

(2) Excludes Bald Head Island

Timeline of Events



2019 Rate Study Process



2019 Water Study Drivers



**Expiration of
wholesale contracts**



**Industry standard for
rate setting**



**Capital improvement project
costs of \$183 million**



**Retail rate structure
refinement to support
requirements for SRF funding**

2019 Water Study Objectives



**Financial sufficiency for upcoming bond issues –
*debt service coverage***



Use *AWWA M-1* methodology for wholesale/industrial rates



Promote water conservation and equity among retail customers



Implement rate adjustments in 1 year for rate stability

2019 Water Study Objectives

Study Objectives	Recommended for <u>Implementation</u> in FY 2020	Forecast for FY 2022
Financial sufficiency for upcoming bond issues – debt service coverage		X
Promote water conservation and equity among retail customers	X (revenue neutral)	
Use AWWA M-1 methodology for wholesale/industrial rates		X
Implement rate adjustments in 1 year for rate stability		X (increased revenues to cover debt and O&M)

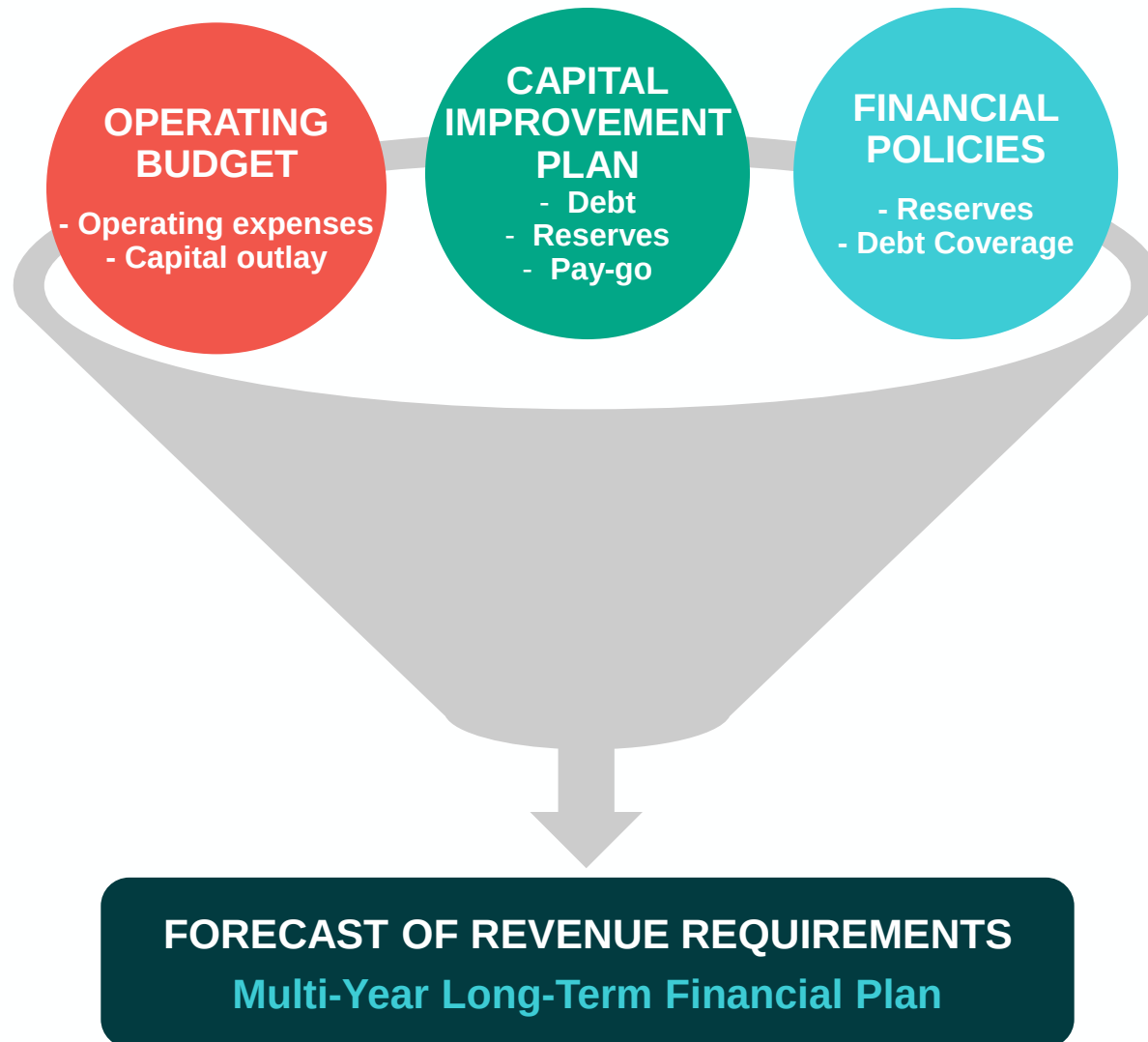
2019 Study Assumptions

- WIFIA financing could allow capitalized interest to delay portion of debt service payments until FY 2026
- Increase in debt service costs and O&M costs associated with the LPRO plant
- No changes in water flow



Anticipated increase in revenues from rates to cover costs was **\$5.4 million**

2019 Rate Study Approach – Cash Needs

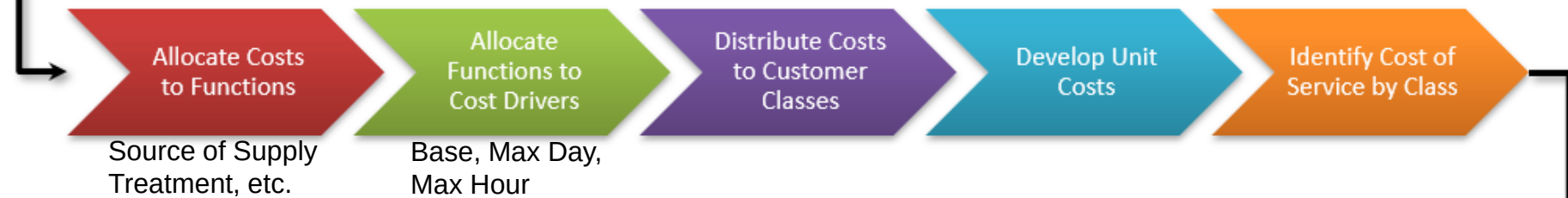


AWWA Cost-of-Service Methodology – Base Extra Capacity

IDENTIFY COSTS TO RECOVER FROM RATES



ALLOCATE COSTS TO CUSTOMER CLASSES



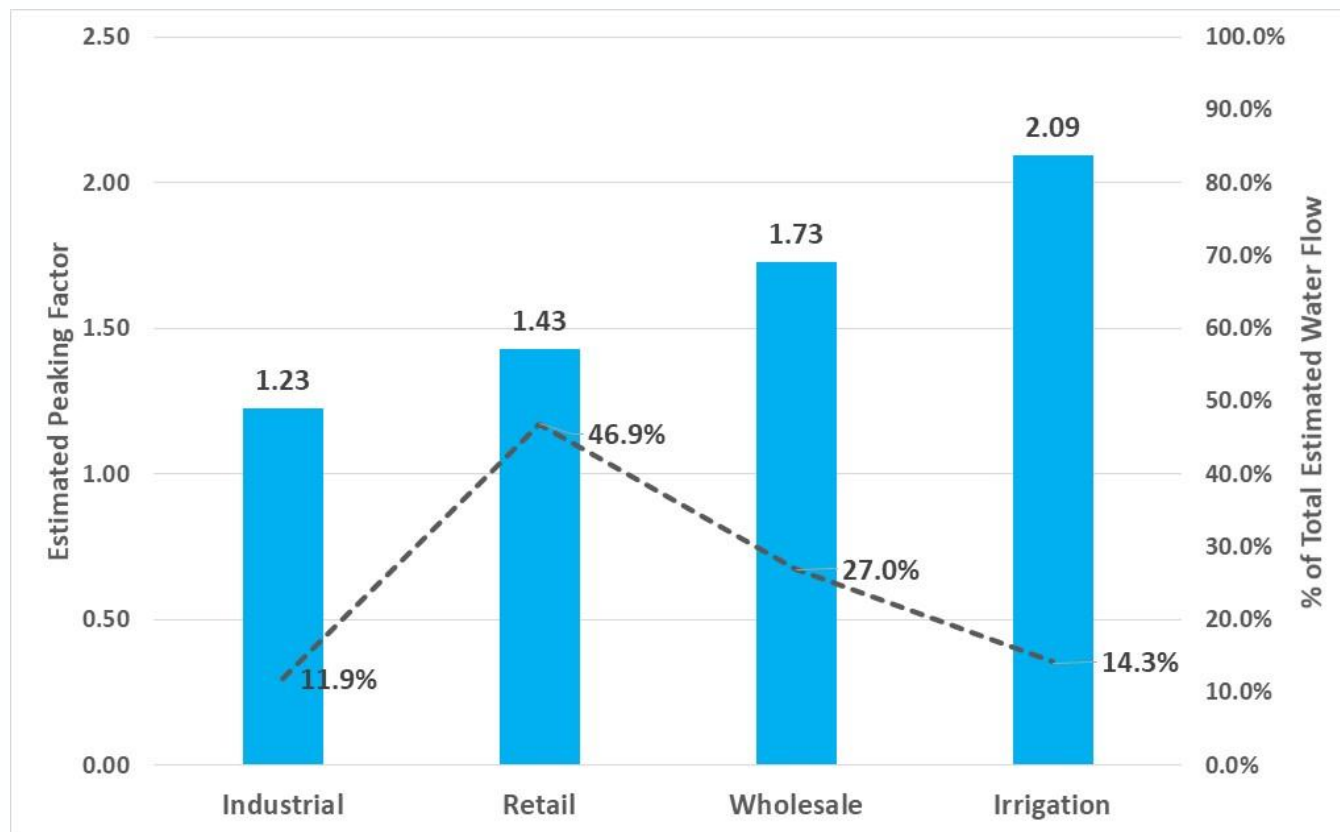
DESIGN RATE STRUCTURE

Unit
Costs

AWWA Cost-of-Service Methodology

Uses peaking factors to allocate costs:

Retail irrigation and wholesale classes place higher demands on system than industrial and retail classes.



AWWA Cost-of-Service Methodology

Certain classes do not share in all costs

FUNCTIONAL COSTS	RETAIL	WHOLESALE	INDUSTRIAL
Source of Supply	✓	✓	✓
Treatment	✓	✓	✓
Transmission	✓	✓	✓
Distribution	✓	X	X
Storage	✓	✓	✓
Billing	✓	✓	✓
Customer Service	✓	X	✓
Meter Reading/Service	✓	X	✓

Original Study Results for FY 2022

- **BASE CHARGE**

- Increase to provide financial sufficiency for bonds
- Add Irrigation base charge for cost of minimum service:
 - Billing, ongoing repair and maintenance, meter replacement costs, meter reading network, capacity of meter

- **VOLUMETRIC RATES –
RETAIL AND IRRIGATION**

- Increase to provide financial sufficiency for bonds

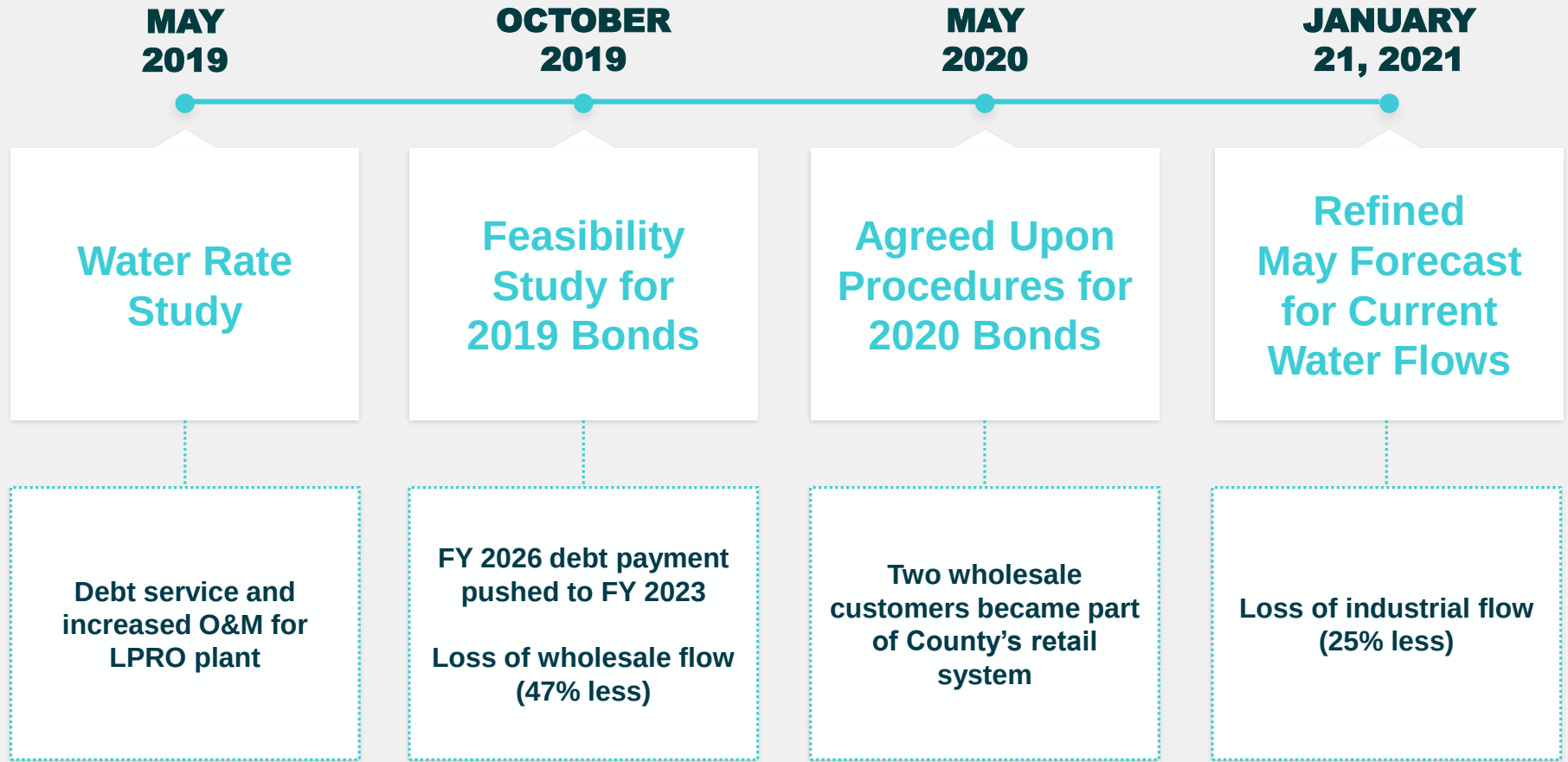
- **VOLUMETRIC RATES –
INDUSTRIAL/WHOLESALE**

- Use AWWA M-1 Methodology

What Changed?



What Changed Since Original Study?



Impact of Changes

- Debt increased costs sooner (FY 2023) by \$2.5 million
- Reduction in total water flow of 23% results in anticipated loss of revenues of \$3.3 million but \$500k less in O&M
 - Total increase in revenues needed from rates:

$$\begin{array}{|c|} \hline \text{Original} \\ \text{Estimate} \\ \$5.4\text{M} \\ \hline \end{array} + \begin{array}{|c|} \hline \text{Additional} \\ \text{Increase} \\ \$5.3\text{M} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Total} \\ \text{Increase} \\ \$10.7\text{M} \\ \hline \end{array}$$

- Loss of wholesale customers resulted in higher peaking factors for wholesale class

Resulting Allocation of Cost Recovery by Customer Classes for FY 2023

Customer Class	Final Cost Recovery 2023	Anticipated % of Water Flow by FY 2023
Retail	59.5%	46.9%
Irrigation	<u>13.9%</u>	<u>14.3%</u>
Subtotal:	73.4	61.2%
Industrial	7.1%	11.9%
Wholesale	<u>19.5%</u>	<u>26.9%</u>
Total	100%	100%

Revised FY 2022 Rates

FY 2022 Base Charge

Meter Size	Current	Revised Results	\$ Change from Current Rates	Irrigation Meter
3/4"	\$12.00	\$16.00	<i>\$4.00</i>	\$5.00
1"	\$16.00	\$20.00	<i>\$4.00</i>	\$5.00
1 1/2"	\$18.00	\$22.00	<i>\$4.00</i>	\$5.00
2"	\$20.00	\$24.00	<i>\$4.00</i>	\$5.00
3"	\$24.00	\$28.00	<i>\$4.00</i>	\$5.00
4"	\$28.00	\$32.00	<i>\$4.00</i>	\$5.00
6"	\$32.00	\$36.00	<i>\$4.00</i>	\$5.00
8"	\$35.00	\$39.00	<i>\$4.00</i>	\$5.00
10"	\$39.00	\$43.00	<i>\$4.00</i>	\$5.00
12"	\$43.00	\$47.00	<i>\$4.00</i>	\$5.00

Revised FY 2022 Rates

Rates per 1,000 gallons of water use

Volumetric Rates	Current	Revised Results	\$ Change from Current Rates
Residential			
Block 1	\$2.85	\$4.15	<i>\$1.30</i>
Block 2	\$3.30	\$4.80	<i>\$1.50</i>
Block 3	\$3.85	\$5.70	<i>\$1.85</i>
Irrigation			
Block 1	\$3.30	\$4.80	<i>\$1.50</i>
Block 2	\$4.30	\$6.20	<i>\$1.90</i>
Block 3	\$5.70	\$8.30	<i>\$2.60</i>
Industrial			
All usage	\$2.89	\$4.35	<i>\$1.46</i>
Wholesale			
All usage	\$2.89	\$5.25	<i>\$2.36</i>

Estimated Customer Impacts

Average Water Bill (4,500 gallons)*			
	Current 2021 Bill	Change in Bill	Revised Bill 2022
NC Coastal Communities	\$36.14		
NC state average	\$35.94		
Utilities with > 25,000 accounts	\$31.36		
County Wholesale Customers – average*	\$30.24	**\$10.62	\$40.86
Brunswick County	\$24.83	\$9.85	\$34.68

**Excludes Bald Head Island*

***Assumes \$ change in volumetric rate is passed through directly in wholesale customer's volumetric rates to their retail customers.*

The average irrigation customer using 6,000 gallons will have an increase in their bill of \$14.40 for retail customers and \$14.16 for County Wholesale customers (assuming a direct pass through).

Estimated Financial Sufficiency of Water System

	Audited FY 2019	Estimated FY 2023
Operating Revenues from Rates	\$21.35M	\$29.85M
Other Operating and Non-Operating Revenues	<u>\$4.38M</u>	<u>\$3.04</u>
Total Operating Revenues	\$25.73M	\$32.89M
Less Operating Expenses	<u>-\$17.68M</u>	<u>-\$19.48</u>
Net Revenues for Debt Service	\$8.07M	\$13.41
Total Debt Service	\$2.24M	\$11.95M
Debt Service Coverage Ratio	3.59	1.12



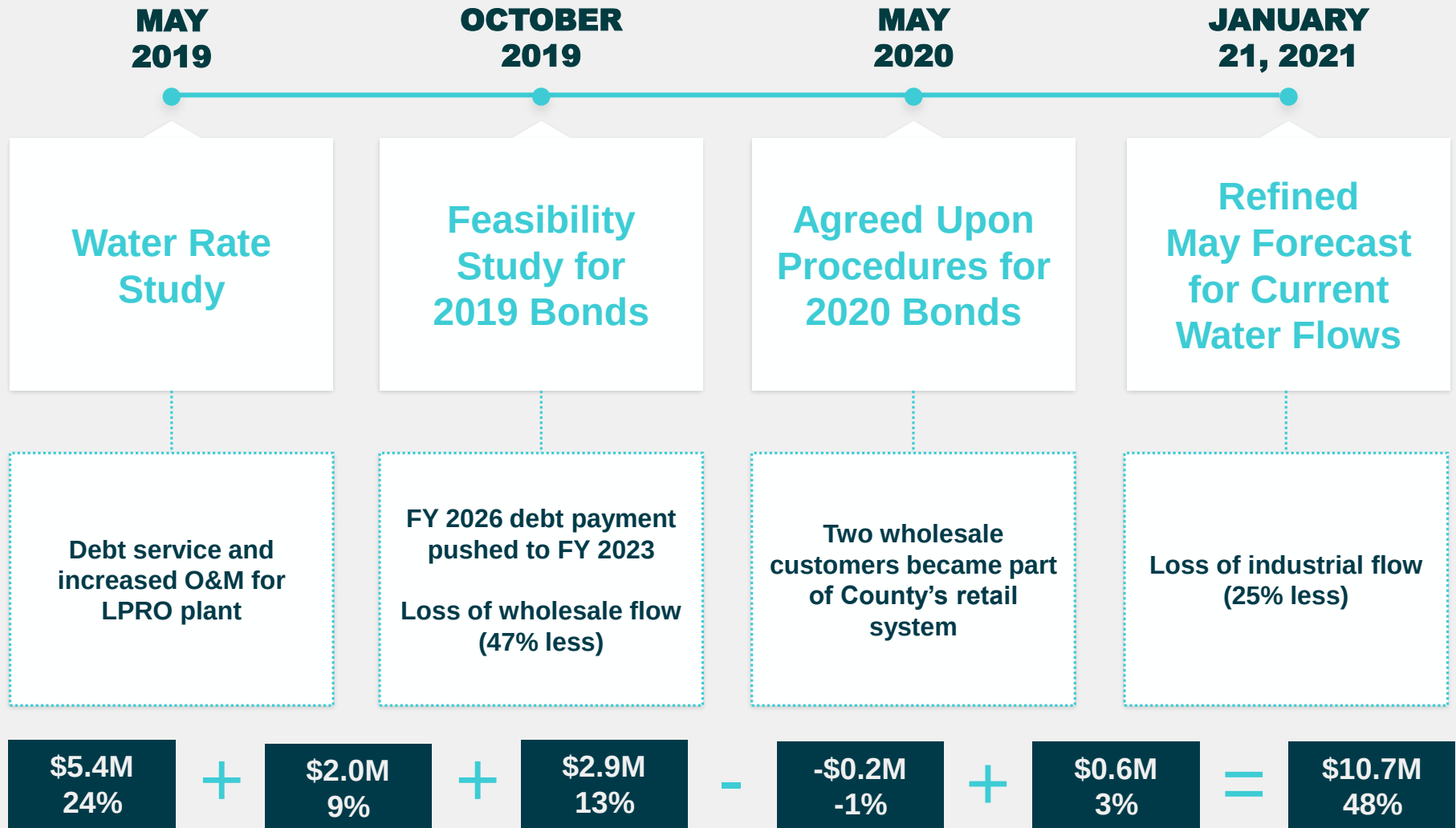
Thank you!

Contact: Elaine Conti, 704.936.4436 / econti@raftelis.com

RFC is a Registered Municipal Advisor with the MSRB and SEC under the Dodd-Frank Act and is fully qualified and capable of providing advice related to all aspects of utility financial and capital planning, including the size, timing, and terms of future debt issues. Any opinion, information or recommendation included in this presentation, related to the size, timing, and terms of a future debt issue may be relied upon only for its intended purpose. This information is not intended as a recommendation to undertake a specific course of action related to the issuance of debt, or to indicate that a particular set of assumptions for the size, timing and terms of issuing debt will be available at the time debt is actually issued.

Additional Information

What Changed Since Original Study?



Resulting Allocation of Cost Recovery by Customer Classes for FY 2023

Customer Class	Cost Recovery Results 2023	Final Cost Recovery 2023	Anticipated % of Water Flow by FY 2023
Retail	52.4%	59.5%	46.9%
Irrigation	<u>19.8%</u>	<u>13.9%</u>	<u>14.3%</u>
Subtotal:	72.2%	73.4	61.2%
Industrial	6.9%	7.1%	11.9%
Wholesale	<u>20.9%</u>	<u>19.5%</u>	<u>26.9%</u>
Total	100%	100%	100%