



BARROW COUNTY
Georgia



Barrow County, Georgia
Water and Wastewater
Cost of Services Analysis
June 2016

Prepared for:

**The Barrow County
Board of Commissioners**

Prepared by:



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Executive Summary

Executive Summary

This document provides an analysis of water and wastewater system costs and the allocation of these costs to their respective services. The 1st DRAFT report provided the proposed initial true cost and allocation methodology for purposes of getting acceptance by County and Water/Wastewater Management. A review meeting walked through the concepts in order to get comments related to any adjustments needed in the assumptions.

After the first review meeting a 2nd DRAFT report was prepared that included a proposed five-year capital program, three alternative cost recovery scenarios, and recommendations for rates, fees and charges for the next five years. Two additional review meetings were conducted. The first was with County Management and Utility staff on April 7, 2016. The second was with the Finance Director, Wastewater Supervisor and the Board of Commissioner's Chair on April 19, 2016. Based on input from these meetings adjustments were made to produce a 3rd DRAFT. These adjustments included adding the basis for which indirect costs are calculated, delaying a few wastewater projects and adjusting some language related to the findings and recommendations. This 4th DRAFT was produced to reflect correcting the allocation of the 2005 Series Bond to the Wastewater System and recent refinancing activities and update 2015 cost to reflect information recently made available.

The findings and recommendations are summarized as follows:

Findings

The most notable finding of this study is that SPLOST is lowering UOBWA water cost by approximately \$1.67/1000 gallons. Other findings of this study include:

- Retail water customers are currently covering cost for retail services and a portion of wholesale water and wastewater system costs.
- Wastewater customers are paying less than one half of true wastewater cost. Volume sales are below operating costs.
- Significant capital cost is proposed for wastewater system improvements over the next 5 years (\$3.9M)
- Barrow County ranked 5th lowest 5,000-gallon monthly bill among a comparison of 20 similar utilities in Georgia.
- There is approximately \$170,000 of cost for services provided by other County departments not assigned to the Water and Wastewater budgets.
- Wholesale water contract price is below actual wholesale unit cost; non-contract price is also below wholesale unit cost.
- Any significant additional volumes purchased from Bear Creek WTP would benefit Barrow County retail and potentially benefit the Cities participating as wholesale customers.
- Billed water data showed some potential issues both for wastewater and water accounts in terms of accurate metering/billing.
- Current financial situation driven by historic events.

Recommendations

- Raise wastewater unit rate by \$0.60 per 1000 gallons annually starting July 2016. (Wastewater only accounts)
- Raise wastewater unit rate by \$0.30 per 1000 gallons annually starting July 2016. (Wastewater with Barrow County Water Service)
- Retail water rates can remain unchanged for 2017.
- Increase the non-contract price for wholesale water to \$2.96/1000 gallons.
- The wholesale contract rate should be set at \$2.28/1000 gallons to match the CPI per terms of the contract in June 2016.
- Barrow County should look for opportunities to increase water sales. This would reduce both wholesale and retail cost per 1000 gallons.
- Maintain/Renew SPLOST payment of Bear Creek Reservoir and Water Treatment Plant debt.
- Identify proposed Sewer projects on five-year CIP for 2018 SPLOST
- Consider implementing a meter asset management program¹ designed to reduce apparent water losses and increase billed volume.
- Annually update financial model to verify model assumptions to actual year-end results.
- Update Cost of Services Analysis every five years.

¹ A meter asset management program goes beyond a simple meter replacement. Procedures to actively do in-field testing of meters, examining billing volumes for significant changes, meter sizing determination, and replaced meter testing should be put in place to increase overall meter reading accuracy.



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Introduction

Section 1 – Introduction

Purpose

Barrow County, Georgia, though the Barrow County Water and Sewerage Authority (BCWSA)¹ owns and operates a water distribution system and wastewater collection system for the benefit of its customers. Additionally, the County owns a wastewater treatment plant, a land application system and is a member of the Upper Oconee Basin Water Authority that provides drinking water to the County. The County has approximately 5,300 retail water customers, 1,300 retail wastewater customers and 6 wholesale customers.

There are three main purposes of this study: 1) to provide the Commissioners and County Management documentation on the cost of service provided as it relates to retail and wholesale water customers and retail wastewater customers; 2) provide analyses for up to three alternative rate structure scenarios; and 3) develop a financial model that will allow projection of rate revenue needs, based on adjustments to the capital plan and other assumptions.

Guiding Principles

The following guiding principles are the approaches, methodologies, and concepts that will assist Barrow County in financial and capital planning for the water and wastewater systems. They provide general financial and capital planning principles as well as specific principles utilized in this study.

General Financial and Capital Planning

- Barrow County can best serve their customers by providing reasonable periodic increases to customer billings to recover inflationary increases in costs, added regulatory requirements and system expansion. Large, one-time increases do not allow a customer time to adjust and may cause instability in the revenue stream.
- Barrow should implement a five-year funding plan and adjust it annually based on latest conditions with a focus to minimize any required cost increase to their customers. The five-year funding plan shall include:
 - Focus revenue increase requirements consistent with existing cost recovery need to retail and wholesale rates, base charges, user fees and connection fees.
 - Debt coverage ratios shall meet or exceed 1.05 for total debt and 1.25 for revenue bond debt.
 - Barrow County should reduce debt payments to total system revenues to 25% or lower.
 - Operating cash reserves should be 16% of the total (after debt service) budget and be used in emergency situations, i.e. loss of a top 10 customer, natural disaster, and severe droughts.
 - All system funds generated in excess of costs should be transferred to a Capital Projects fund after accounting for operational reserve requirements. This may also be referred to as an Extension and Renewal Fund (E&R).

¹ The County Commissioners recently took responsibility for the management of the water and wastewater systems. The Authority still exists; they now provide a financing role. The County has operational and capital improvement responsibility.

- Cost control and efficiencies should be a component of annual financial and capital plans.

Rate Study

- The rate study shall use a cash flow analysis to ensure sufficient revenues to recover operational costs, debt costs, and capital improvement/replacement costs.
- The rate study and comprehensive financial model shall use projected user fee and connection fee revenues to offset unit charge revenue requirements.
- The model shall be developed to project up to 20 years, though- the first five years will have the most detailed capital improvement plan.
- The rate study shall isolate costs related to wholesale and retail water and retail wastewater services.
- The rate study shall provide a description of what cost the unit charge, base charge, user fees, connection/capacity fees cover. Including identifying the following:
 - Portion of unit/base/fee for operating the system
 - Portion of unit/base/fee for capital related costs
 - Portion of unit/base/fee for debt
 - Portion of unit/base/fee for other non-operating costs

Background

In 2011, Barrow County assumed all assets and operational responsibilities for the water and wastewater utilities from the Barrow County Water and Sewerage Authority (BCWSA). Barrow County provides both retail potable water and wastewater collection and treatment services for County residents, government facilities and businesses. They also provide wholesale water to the Cities of Auburn, Braselton, Statham, and Winder and Oconee and Jackson County's¹. Wastewater collection primarily serves unincorporated County customers; however, some wastewater customers are water customers for other water service districts.

The primary water supplier is the Upper Oconee Basin Water Authority (UOBWA). The UOBWA operates the Bear Creek water supply reservoir and treatment plant. Barrow County is a member of the UOBWA and receives an entitlement share of treated water, currently 38.1% of the plant's capacity. Barrow County also has an agreement in place with the City of Statham to purchase a minimum of 2,000,000 of water per month from their water treatment facility². However, the characteristics of this water is incompatible with that from the Bear Creek Reservoir, as such, no water is actually pumped from Statham.

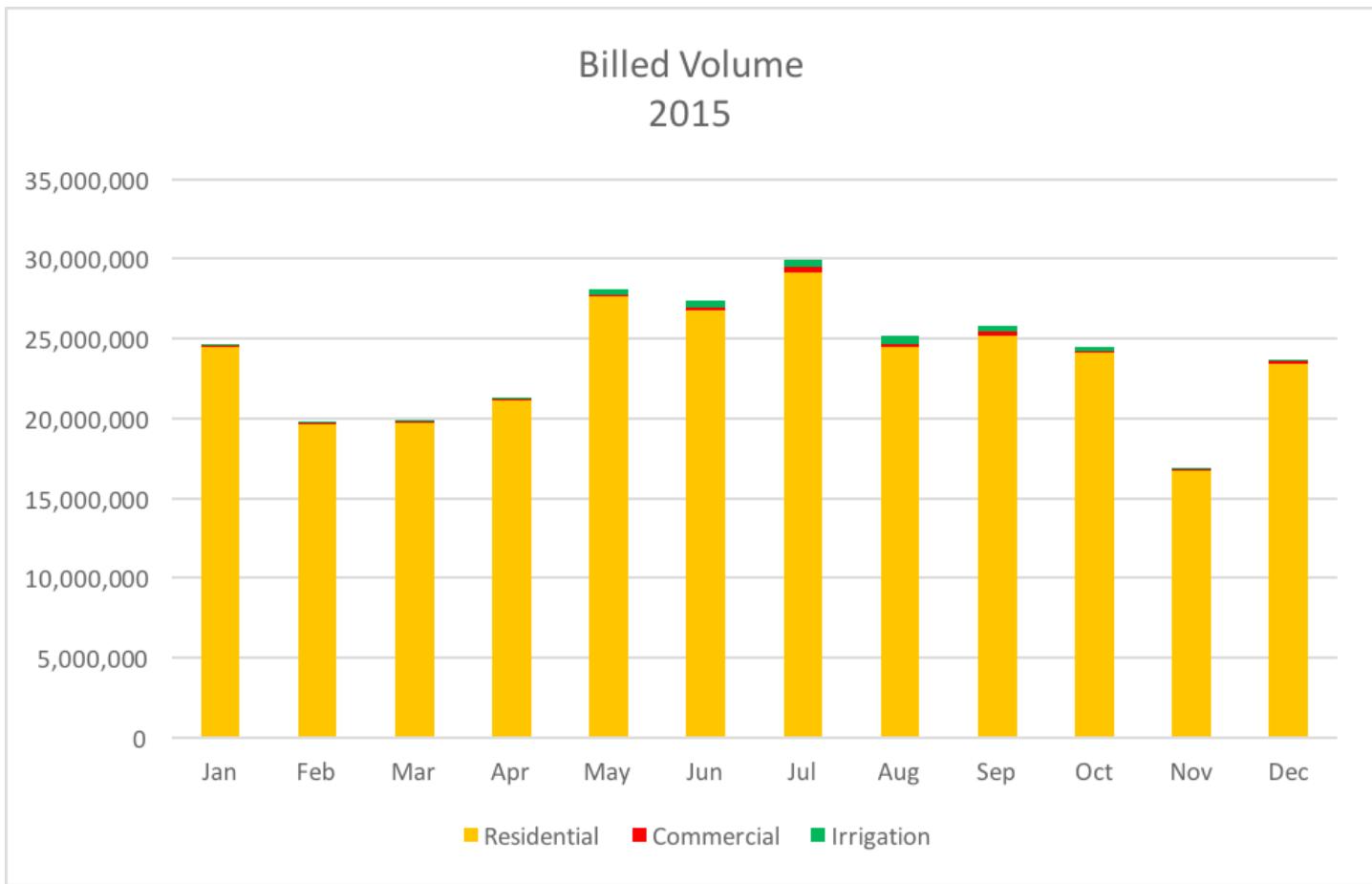
The primary retail water customer class is residential; however, there are a few commercial, institutional, and governmental customers. The following figure provides the monthly volume for each customer class.

Figure 1.1 shows the summer peak driven primarily from the residential customer.

¹ A portion of Jackson County is served by Barrow County water at the wholesale rate, Jackson County reads these meters and bills these customers.

² Agreement dated May 14, 1991 establishes a \$1.50/1000 gallons as the unit rate to be adjusted as needed.

**Figure 1.1 Billed Volumes
Borrow County, Georgia**



Barrow County wastewater is treated in three locations. The Tanners Bridge Land Application Facility is owned by the County and can treat up to 500,000 gallons per day. The Barber Creek Treatment Plant is owned by the County and operated by contract through a private firm. The capacity of the Barber Creek treatment plant is currently 500,000 gallons per day, but can be expanded to 1,500,000 gallons per day. The third treatment location is Winder's Cedar Creek treatment plant. Barrow County has entered into an agreement to obtain 1,000,000 gallons per day of wastewater treatment capacity from this Winder facility.

Precision Planning Inc., working with Utility Department staff, developed a five-year Capital Improvement Plan (CIP) for the Water and Wastewater systems. The following is a summary of the capital cost anticipated over the next five years.

Table 1.1
Capital Improvement Plan

Service	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Total
Wastewater	\$165,000	\$750,000	\$500,000	\$450,000	\$2,050,000	\$3,915,000
Water and Wastewater	35,000	71,000	27,000	28,000	29,000	190,000
Retail Water	471,500	212,500	300,000	600,000	1,320,000	2,904,000
Wholesale Water	0	0	0	0	500,000	500,000
Total	\$671,500	\$1,033,500	\$827,000	\$1,078,000	\$3,899,000	\$7,509,000

Management Objectives

Several objectives for the Rate Study were identified in the request for proposal (RFP). These objectives will be considered in developing the final report.

- Analyze the cost model for finished water from the UOBWA.
- Determine current and projected water and wastewater revenue.
- Determine current and projected water and wastewater costs.
- Allocate costs between usage rates and fees.
- Determine appropriate wholesale water rates based on current and future wholesale projections.
- Allocate costs among customer classes, such as commercial, residential, industrial.
- Develop water and wastewater rate/fee structures to enable the County to recover cost equitably.
- Develop water and wastewater rate/fee proposals that includes both level and incentive based, conservation structures.
- Collect information and provide a survey of the rates and fees charged by other comparable Georgia municipal water and wastewater utilities.

Existing User Charge System

Water

The current water unit charge is a two-tiered increasing block rate structure. A base charge of \$7.50 is applied each month to retail customers. The first tier up to 10,000 gallons is charge at a rate of \$6.30 per 1000 gallons. The charge for water above 10,000 gallons in a single month (Tier 2) is \$8.41 per 1000 gallons. Irrigation charges are charged at the same unit rate. There is an activation fee of \$50 to establish water service from an existing connection. New connections are charged based on meter size ranging from \$2,000 for a $\frac{3}{4}$ " meter to \$60,000 for a 10" meter. Customers with fire sprinkler systems are charged each month based on fireline meter size. Barrow County charges for other administrative services and plan review as well.

Wastewater

The current wastewater unit charge is \$3.27 per 1000 gallons based on 100% metered water. There is a base charge of \$15.60 per month which includes the first 2000 gallons. The capacity charge, based on water meter size, for new connections range from \$4,500 for a $\frac{3}{4}$ " water meter to \$441,000 for an 8" meter. An exception to this is for Apartment buildings which are based on the $\frac{3}{4}$ " meter multiplied by the number of units.

Organization

The rate study has an Executive Summary, four sections and an Appendix. The four sections include this introduction, an analysis of customer consumption characteristics, cost of service and allocation to customer classes and an overall findings and recommendations section. The appendix contains the fixed asset listing and printout of the financial model.

Acknowledgements and Assumptions

The rate study was conducted by Nelsnick Enterprises with the assistance from Barrow County staff for data collection and review. This includes Robert Sills and Natasha Barreto for Nelsnick Enterprises, Jimmy Parker and Jim Sunta for Precision Planning and Jimmy Terrell, Lynn Thomas, Mark Whiddon and Rose Kissaalita from Barrow County. Additionally, the County Commissioners will have an opportunity to provide input on the third draft prior to finalization of the report. Assumptions used in this report are based on best information available at the time. Projection of future conditions involves certain risk and cannot be guaranteed. As such, recommendations should be evaluated annually to determine if adjustments are warranted.



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Customer Characteristics

Section 2 – Customer Characteristics

System Characteristics and Consumption Statistics

Purpose

The purpose of this section is to provide an analysis of the customer characteristics of the Barrow water and wastewater systems. The analysis provides for an understanding of how the variety of Barrow customers impact the water system, how changes in unit rates and/ or rate structure will impact customers, and compare changes over time. The system characteristics relate to the number of accounts in each class; and the consumption statistics relate to how customers use water throughout the calendar year using monthly billing records. This analysis covers 2010 through 2014.

The following consumption statistics have been developed by customer class:

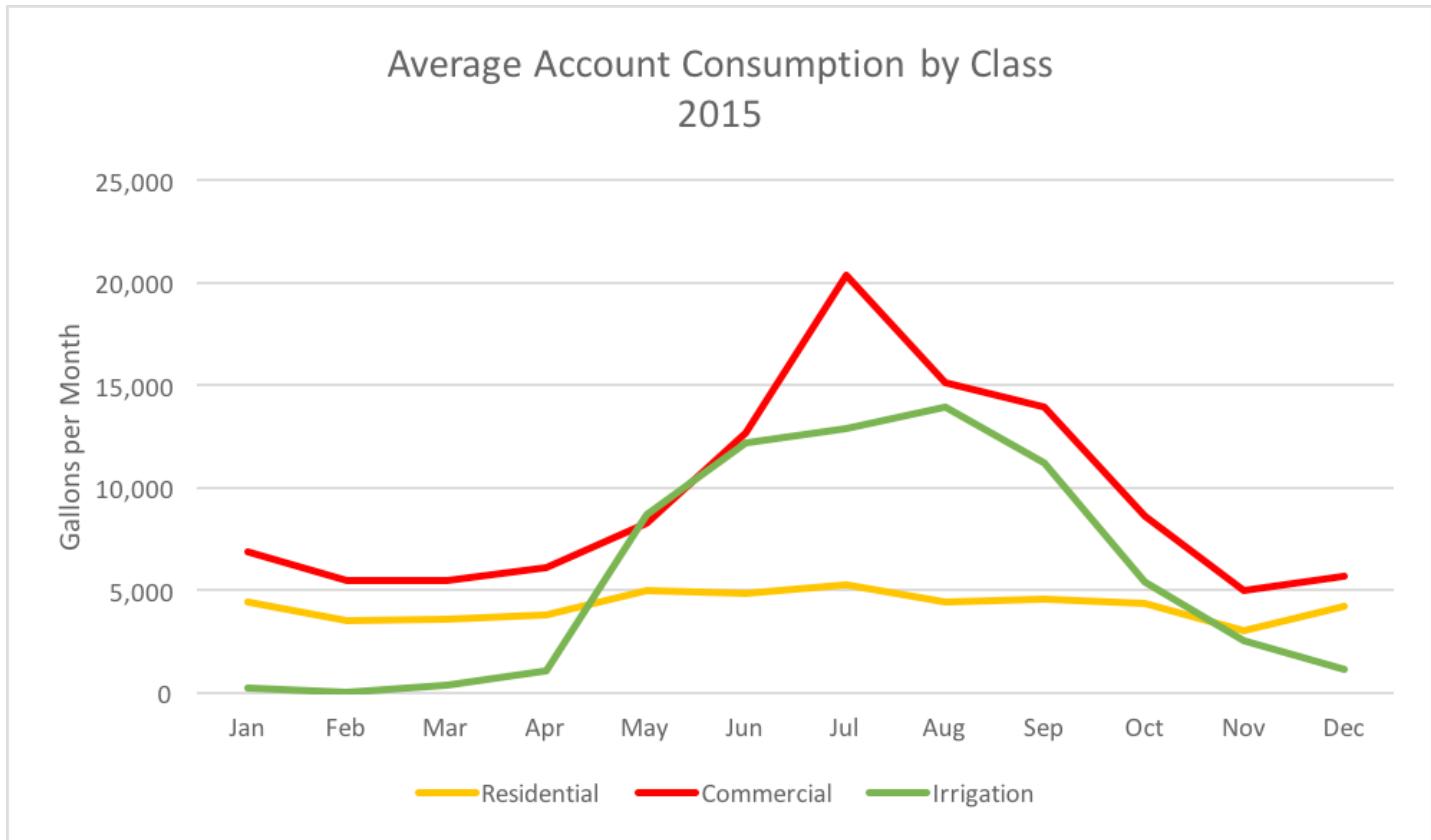
- Average Month
- Annual Usage
- Peak Month
- Minimum Month
- Winter Average (Jan – Mar billed volume)
- Summer Average (Jul – Sep billed volume)

In addition to these statistics, an analysis of tiered volume usage was also conducted.

Water Customers

The Barrow County water system primarily serves residential customers. The 2015 billed volume from the Black Mountain billing software was used for all consumption statistics. The billing volume report include 5,507 residential, 16 commercial and 36 irrigation coded accounts. The annual monthly average volume billed was 4,276 gallons for residents, 9,481 gallons for commercial customers, and 5,815 gallons for irrigation accounts. The monthly distribution is provided in **Figure 2.1**.

Figure 2.1
2015 Average Monthly Water Billed Consumption

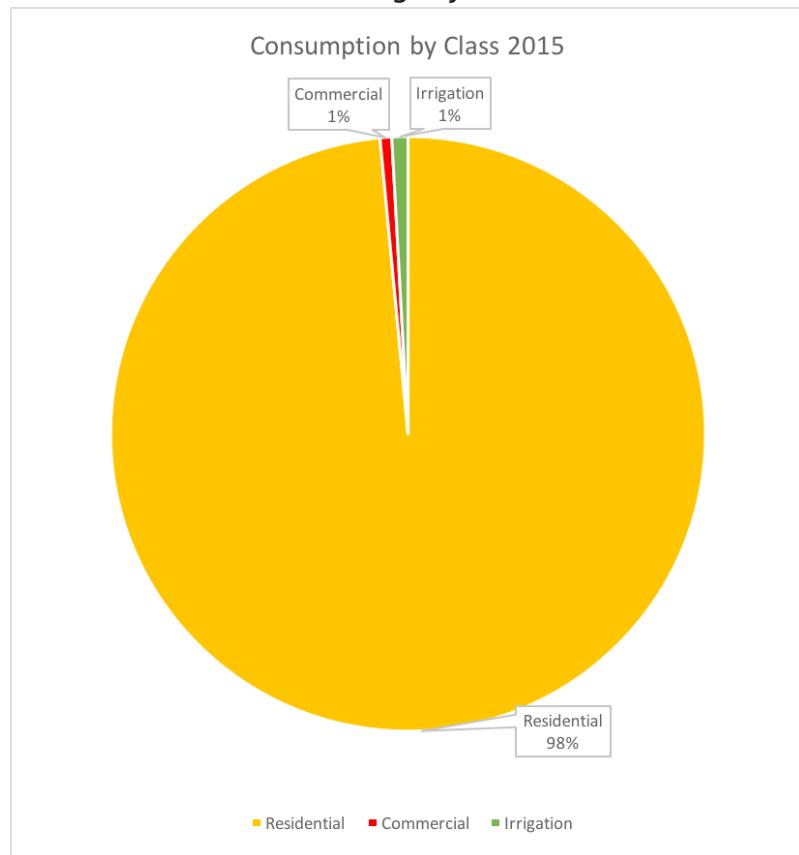


Though the average consumption shows a significant peak volume for commercial customers, since they only represent 1% of the total volume, their impact to the system is minimal. This is shown in **Table 2.1** where the peak month for residential customers is approximately 13 million gallons higher than their minimum month. Whereas, the commercial peak and minimum months occur at the same time as the residential customer, the commercial increase in peak volume is only 250,000 gallons. **Figure 2.2** on the following page, depicts the total billed volume by customer class.

Table 2.1
Consumption Statistics (Gallons)
Barrow County Retail Water 2015

	Peak Month by Customer Class		Minimum Month by Customer Class		Winter Average per Account	Summer Average per Account
Residential	29,187,220	July	16,763,730	November	3,863	4,773
Commercial	326,239	July	80,532	November	5,948	16,478
Irrigation	502,310	August	350	February	217	12,681

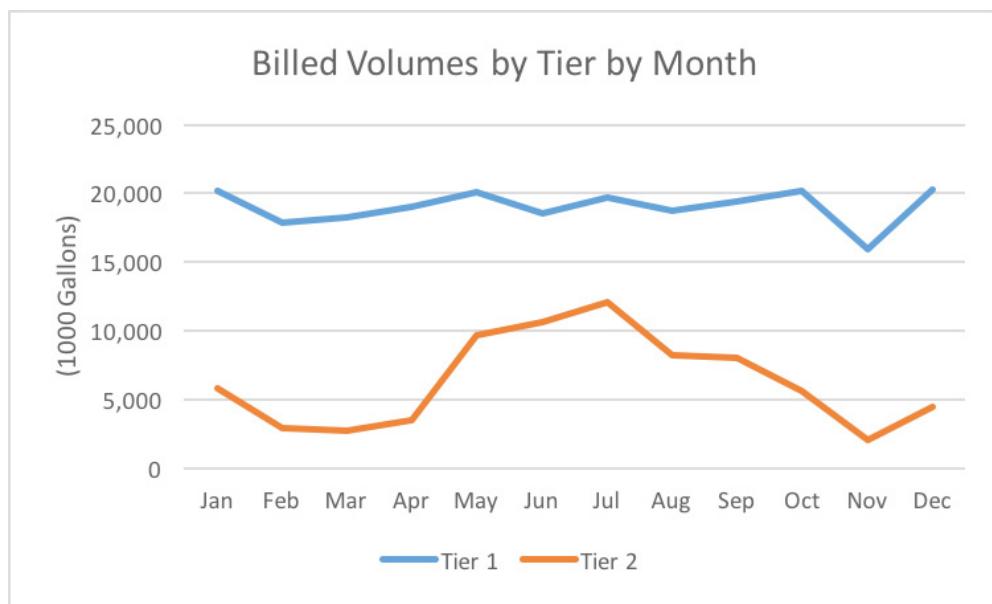
Figure 2.2
2015 Annual Water Billed Consumption
Percentage by Class



Analysis of Water Volume by Tiers

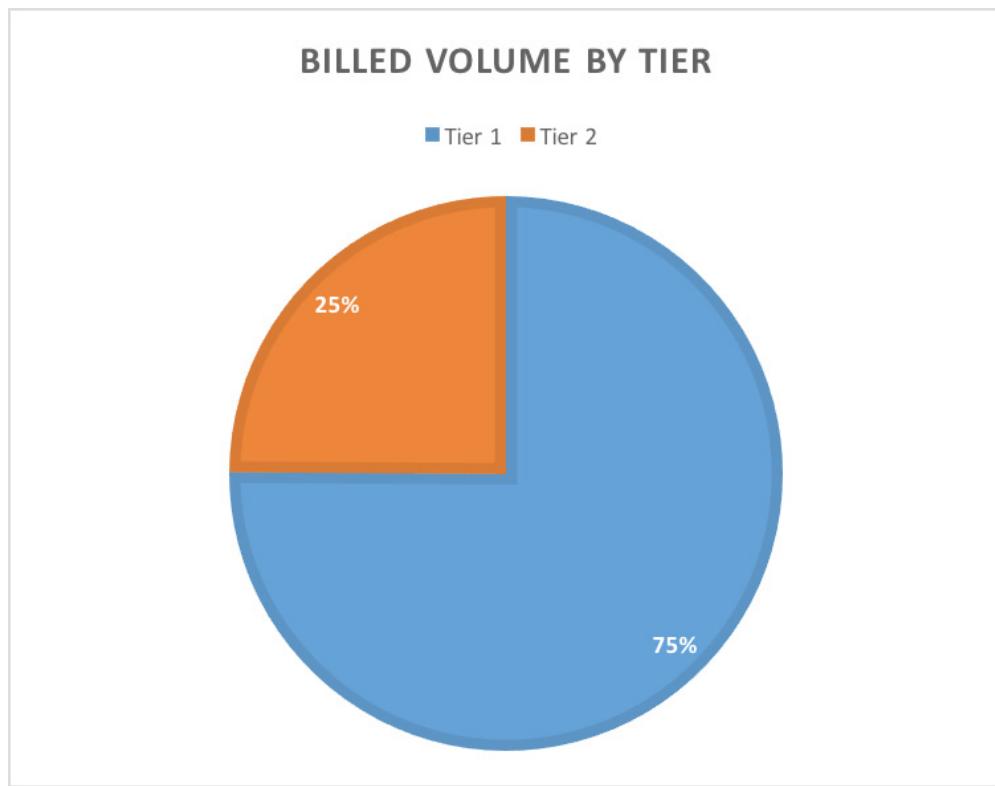
In order to encourage water conservation, the unit charge for water is increased for higher volume usage. **Figure 2.3** shows that during peak summer usage, more water is billed at the Tier 2 price.

Figure 2.3
2015 Volume by Tier by Month



The percent of total annual volume by tier is provided in **Figure 2.4**. To encourage water conservation a target of 20% or more in the highest tier is desired.

Figure 2.4
Annual 2015 Volume by Tier



Wastewater Customers

Metered water is utilized to determine wastewater contribution by customer. Additionally, many of Barrow County's wastewater customers are in the Auburn and Winder water service district. As such, these Barrow County customers are billed by these cities based on the respective city's water bill. The revenues are collected by the City and provided to Barrow County after applying a 7% administrative fee to cover the cost of meter reading and billing.

Regulatory Environment

In recent years, the State of Georgia has initiated a number of programs designed to promote conservation of the state's water resources. The focus of these efforts has been to more efficiently utilize water supplies by minimizing the amount of water lost in the treatment and distribution of potable water and by improving the processing of wastewater flows so as to return as much of the consumed water as possible back to the environment. Reducing customer use is a key component of the new regulations and involves non-mandatory measures related to customer education as well as mandatory requirements related to use of low flow plumbing fixtures, restricting outdoor watering, etc.

Regulatory changes specifically related to rate setting have not been a major emphasis and are not anticipated in the near future. However, to ensure compliance with current and likely future water conservation goals, more aggressive conservation rate structures may need to be considered. The

proposed rate structure appears to adequately address current water conservation needs; however, Barrow County should continue to monitor water demands in order to determine if adjustments in the conservation rate structure are warranted.

Barrow County has not been directly impacted by the recent Tri-State Water litigation and other regional planning initiatives within the North Georgia Metropolitan Water Planning District. However, it may be indirectly affected by regulatory and planning impacts related to providing future supplies for the City of Atlanta and surrounding counties. It is possible that water may need to be redirected from basins outside of the Chattahoochee River to meet expanding demands in Atlanta and Gwinnett County. The resulting expansion of its wholesale supply would likely be of great financial benefit to Barrow County.

Compliance with current and unforeseen future environmental regulations may also affect Barrow County's capital improvements program (CIP) by increasing project costs and necessitating rearrangement of the CIP implementation schedule. For example, a project for modeling and evaluating water distribution system hydraulic conditions is planned to assist Barrow County in meeting current Georgia Environmental Protection Division (EPD) rules for disinfection by-products (DBP). The results of the project may require amending the CIP to move some water line projects up in the schedule, expand project scope(s) or insert new projects into the current 5-year timeline.

Findings

The Barrow County water and wastewater system primary customer base is residential. There are few commercial and industrial accounts. The summer peak consumption pattern is typical of residential irrigation requirements. The conservation rate (Tier 2) is applied on 25% of the volume billed annually.

Barrow County depends on Winder and Auburn to bill for a significant number of wastewater customers located within the Winder and Auburn water service areas. The volume reports from Winder and Auburn were inadequate to do a volume based analysis for this study. As such, the wastewater rate calculation performed later in this document uses sales dollars, rather than volume. The water volume data provided by Black Mountain was sufficient to perform a volume based rate calculation. However, in reviewing the billing data, it was apparent that many accounts had very low volumes. Barrow County's meter replacement program may need to be reviewed for effectiveness.



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Cost and Cost Allocation

Section 3 – Cost

Water and Wastewater Expenses

Water and wastewater expenses are provided separately within the budget. **Table 3.1** shows actual retail water expenses for 2013 through 2015 and the budget for 2016. The largest portion of water cost (29%) is related to the purchase of water from the UOBWA¹. **Table 3.2** shows wholesale water expenses for 2013 through 2015 and the budget for 2016. **Table 3.3** shows wastewater expenses for 2013 through 2015 and the budget for 2016.

Expenses

Table 3.1
Retail Water Expenses 2013 – 2016

Water Expenses	2013	2014	2015	2016
Operating Expenses				
Personnel	\$356,653	\$307,700	\$298,058	\$421,672
Contracted Services	158,230	224,247	248,611	262,780
Utilities	11,070	6,301	7,776	20,000
Purchased Water (UOBWA)	73,500	72,155	72,122	75,000
Other Supplies	92,981	177,714	138,470	154,100
Total Operating	\$692,434	\$788,117	\$765,037	\$933,552
Non-Operating Expenses				
Operating Capital Outlay	\$53,873	\$0	\$0	\$386,500
Workers Compensation	0	0	0	15,460
Existing Water Debt	325,215	325,060	324,535	323,490
Total Non-Operating	379,088	325,060	324,535	725,450
Total Water Expenses	\$1,071,522	\$1,113,177	\$1,089,572	\$1,659,002

Source: Barrow County Finance

¹ Total water purchase for 2016 budget is \$1,100,000 out of a combined water budget (wholesale and retail) of 3,844,420 (29%). Please note the purchase amount excludes the debt payment for the reservoir and treatment plant at Bear Creek.

Table 3.2
Wholesale Water Expenses 2013 – 2016

Water Expenses	2013	2014	2015	2016
Operating Expenses				
Personnel	\$55,608	\$55,733	\$4,836	\$64,240
Contracted Services	815,293	5,656	1,792	88,700
Utilities	52,419	46,715	50,480	50,000
Purchased Water (UOBWA)	380,511	1,020,893	943,658	1,025,000
Other Supplies	7,587	8,359	7,929	14,699
Total Operating	\$1,311,418	\$1,137,356	\$1,008,695	\$1,242,639
Non-Operating Expenses				
Operating Capital Outlay	\$0	\$0	\$0	\$0
Existing Water Debt	1,434,291	1,433,792	1,434,300	942,779
Total Non-Operating	\$1,434,291	\$1,433,792	\$1,434,300	\$942,779
Total Water Expenses	\$2,745,709	\$2,571,148	\$2,442,995	\$2,185,418

Source: Barrow County Finance

Table 3.3
Wastewater Expenses 2013 – 2016

Wastewater Expenses	2013	2014	2015	2016
Operating Expenses				
Personnel	\$212,248	\$221,055	\$233,215	\$259,785
Contracted Services	95,828	93,223	283,604	191,750
Utilities	89,389	83,214	136,345	90,000
Other Supplies	22,821	52,266	67,654	48,500
Total Operating	\$420,286	\$449,758	\$720,818	\$590,035
Non-Operating Expenses				
Operating Capital Outlay	\$58,697	\$486,618	\$14,531	\$238,000
Existing Wastewater Debt	1,208,743	1,207,189	1,220,876	1,087,017
Total Non-Operating	\$1,267,440	\$1,693,807	\$1,235,407	\$1,325,017
Total Wastewater Expenses	\$1,687,726	\$2,143,565	\$1,956,225	\$1,915,052

Source: Barrow County Finance

Depreciation

Depreciation was estimated by evaluating the asset listing for the utility (**Table 3.4 – 3.6**). Though depreciation is a non-cash cost to the utility it is used to determine cash needed for future replacement and rehabilitation projects. This does not reflect the cost of any expansion or extension of services.

Table 3.4
Wholesale Water Annual Depreciation Expenses 2015

Description	Transmission Main
Equipment	\$4,322
Infrastructure	196,773
Pump	9,975
Tanks	20,381
Grand Total	\$231,451

Source: Barrow County Finance

Table 3.5
Retail Water Annual Depreciation Expenses 2015

Description	Retail Water
Buildings	\$6,310
Infrastructure	376,321
Improvements	6,880
Tanks	21,675
Grand Total	\$411,186

Source: Barrow County Finance

Table 3.6
Wastewater Annual Depreciation Expenses 2015

Description	Wastewater
Other	\$598
Building	216,587
Engineering	0
Equipment	11,172
Land	0
Lift Station	4,000
Infrastructure	224,966
Pump	67,456
Road	13,489
Vehicle	4,950
Grand Total	\$543,218

Source: Barrow County Finance

Upper Oconee Basin Water Authority

The following table shows the cost for UOBWA purchased water based on calendar year 2015 reconciled costs. The true cost portion excludes the SPLOST payment. The UOBWA recently refinanced debt which has lowered cost to its membership. However, the UOBWA is in the process of evaluating its asset management policy which has the potential of raising member contribution. It should be noted that the \$2.87 per 1000 gallons' calculation is based on current purchase levels. An increase in purchased volume would lower average unit cost due to the high percentage of debt cost included in the calculation. Since the debt is currently being paid for by SPLOST 2012 proceeds, the actual cost to the retail and wholesale customer is \$1.22 for water leaving the treatment plant. The real cost including debt is \$2.87 per 1000 gallons.

Table 3.7
UOBWA 2015¹ Cost

System Cost	Reservoir	Treatment Plant
Fixed	\$521,401	\$1,247,328
Variable	23,508	251,535
Total	\$544,909	\$1,498,863
Total Cost	\$2,043,772	
Exported	712,091	1000 gallons
True Average Cost	\$2.87	per 1000 gallons
UOBWA Revenue Bond	Reservoir	Treatment Plant
Principal	\$229,473	\$487,932
Interest	\$147,196	\$312,984
Total Debt	\$1,177,586	
SPLOST 2012	\$1,177,586	
Balance	\$866,186	Cost to wholesale and retail customers
Subsidized Cost	\$1.22	per 1000 gallons

An analysis was performed to see the effect on the average cost per thousand gallons if Barrow County purchased more water from the UOBWA. An increase in 20% range would reduce the subsidized cost by approximately 10%. An increase of 142,000 units (1000 gallons) would result in an approximate reduction of \$0.12 for the retail and wholesale customers.

¹ The UOBWA uses the Calendar Year (Jan – Dec) for their fiscal year.

Debt Cost

There are multiple outstanding debts being paid by water and wastewater customers. The water system has the 2001 Revenue Bond and the debt related to the Upper Oconee Basin Water Authority (UOBWA). The total outstanding principal on these loans is \$12,918,486. The UOBWA debt is currently being paid through SPLOST with a debt service requirement of \$1,208,574 in FY16¹.

The wastewater system currently has a GEFA debt and a commitment to the City of Winder for the purchase of wastewater treatment capacity. The GEFA (Phase 1 and Phase 2) payment is \$204,163 and \$21,597 per year and the Winder commitment is \$269,694 per year for construction with the principal paid by 2027, and an additional \$1,500 per new residential equivalent customer for capacity. Based on the balance of \$4,513,000 for the capacity portion², Barrow will need approximately 3,000 residential equivalent connections to pay this portion of the debt. The wastewater system also had debt related to the Barber Creek facility. Barber Creek was financed using the 2005 Revenue Bond and was refinanced in February 2016 with an outstanding principal of \$6,220,000³ and a payment of \$722,084 in FY16. The following table provides the total remaining principal debt and 2016 debt payments for the water and wastewater system.

Table 3.8
Debt Cost

Description	Uses	Remaining Principal	Payment 2016	Source
Series 2005 now 2016	Wastewater System	\$6,220,000	\$722,084	Finance Dept. (Refinanced)
GEFA Phase 1	Wastewater System	2,551,846	204,163	2016 Budget
GEFA Phase 2	Wastewater System	314,926	21,597	2016 Budget
Winder	Wastewater System	2,785,000	269,694	Finance Dept. (Refinanced)
Wastewater Total		\$11,871,772	\$1,217,538	
Series 2001	Water System	\$1,670,000	\$323,490	2016 Budget
UOBWA	Water System	11,248,486	1,208,547	2016 Budget
Water Total		\$12,918,486	\$1,532,037	

Planned Water and Wastewater System Projects

Precision Planning, working with Utility staff, has developed a five-year capital program. The total cost is estimated to be \$7.5 million. The projects are listed on the following page showing anticipated years for construction and expenditures. The Wastewater system accounts for the majority of needed improvement at over \$3.9 million for the five-year period. Additional wastewater projects have been identified but are beyond the 5-year planning horizon.

1 The UOBWA recently refinance the treatment/reservoir debt that lowered overall payments to its members.

2 A pending agreement with Winder may change the terms and capacity available.

3 Source: Barrow County Finance Department as of February 2016

Description	Type	Service	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Total
Miscellaneous Pump Station Upgrades	S	Wastewater	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000
Tom Miller Road Pump Station Improvements	S	Wastewater	50,000	50,000				550,000
Vehicle/Truck Replacement	W/S	Both	25,000	26,000	27,000	28,000	29,000	135,000
5 MG Ground Storage Tank Mixer System (DBP Reduction)	W	Retail	361,500					361,500
Apalachee River/Williamson Creek Gravity Sewer Evaluation & Rehab	S	Wastewater	50,000	150,000	150,000			350,000
Mowing Equipment Attachment	W/S	Both	10,000					10,000
Inline Valves on Manning Gin Road	W	Retail	20,000					20,000
Altitude Valve Installation at SR 124 Water Tank	W	Retail	15,000					15,000
Perry Sims Road Water Main Extension	W	Retail	75,000					75,000
Old Victron School Road 12-Inch Water Main Extension	W	Retail	200,000	250,000				450,000
New Skid Steer Loader	W/S	Both		45,000				45,000
Influent Flow Meter Installation at 5 MG Storage Tank	W	Retail		12,500				12,500
Park 53 Gravity Sewer Extension (SR 53 @ SR 316) - Economic Development	S	Wastewater	50,000	300,000	150,000			500,000
Tanners Bridge Road W/PCP (Wastewater Capacity Expansion)	S	Wastewater	15,000		250,000	2,000,000	2,265,000	
Detention Pond at SR 124 Tank Site	W	Retail		50,000				50,000
SR 53 12-Inch Water Main Extension (SR 316 to Oconee Co Line)	W	Retail			600,000	650,000	1,250,000	
Clacktown Road Water Main Extension	W	Retail				420,000	420,000	
Park 53 PS Oxygen Generation/Aeration System	W	Retail				250,000	250,000	
New Transmission System Booster Pump Station	W	Wholesale				500,000	500,000	
	\$671,500	\$1,033,500	\$827,000	\$1,078,000	\$3,899,000	\$7,509,000		

Capacity Charge

The Georgia Development Impact Fee Act (DIFA) regulates how impact fees can be imposed in a community. However, DIFA allows water and wastewater systems to avoid the administrative requirements of DIFA through the use of a connection fee related to the cost of capacity. This connection fee also known as a capacity fee is in compliance with DIFA as long as new development does not pay more than their fair share of capacity cost. The following calculation is provided in terms of an equivalent residential unit (ERU) using a $\frac{3}{4}$ " meter. The current water fee is set at \$2,000 for a $\frac{3}{4}$ " meter which includes meter and meter installation. Since meter installation would be approximately \$850, the capacity portion of this charge is \$1,150.

The actual capacity cost per ERU can be calculated by taking the value of the system and dividing by number of ERU's the system can serve. Currently, Barrow County has an 8MGD capacity available. An ERU can be determined by taking the peak demand for the typical residential customer. The ERU is calculated by taking an average, based on billed volume, of 177.7 gallons' times a design peak factor of 2 or 353.4 gallons per day. Given an 8MGD capacity, Barrow County can serve 22,641 ERU's. The total value of the water system infrastructure is \$27,438,907 based on the latest fixed asset listing. Dividing this value by the ERU give an estimated capacity cost of \$1212 per ERU. The capacity charge income should be used to retire existing debt.

A similar calculation can be performed for wastewater. The total value of the wastewater system is \$35,050,434 based on the net present value of the fixed asset listing, including the value of the 1,000,000 MGD in capacity of the Winder Treatment Plant. The Barrow County treatment plants provide an additional 1,000,000 MGD in capacity. The ERU is set at 300 gallons, per Wastewater Department Superintendent, which gives Barrow County the capacity of 6,667 ERU's for wastewater. Dividing this into the wastewater system value gives you \$5,258 per ERU for wastewater service. The capacity charge income should be used to retire existing debt.

DIFA requires that new development should not pay more than the fair share of capacity cost. Since the calculated capacity charges are above the current fees collected by Barrow County, DIFA requirements are being met. It should be noted that the above calculation is based on readily available information. Other methodologies exist that include looking at the replacement value of the system, debt cost, and incremental cost of new capacity. These methodologies would result in a higher calculation. When using these methodologies, an appropriate credit must be provided for any rate revenue or other sources of funds provided by the developer that would be used to retire debt or pay for new facilities.

Long-term Planning

The discussion in this section has focused on the allocation of FY16 costs for the water and wastewater systems. Also discussed, was the need for capital projects for both the water and wastewater system to address renewal and expansion projects. These will identify specific cost to the water and wastewater customer. These projects are used to address both wear and tear of the system as well as expansion. A financial model has been developed as part of this study to allow Barrow County to test different capital improvement plan scenarios and determine their impact on rate increase requirements. The rate model uses modest growth assumptions of 2% new accounts and 1% billed volume. This is approximately 300 new wastewater and 1000 new water customers over a 10-year period. Though the financial model covers 20 years, it is designed to be updated each year based on actual results. This allows the Commissioners to decide if the five-year rate adjustment plan needs to be

modified. Events such as drought, economic recessions, and natural disasters may impact expenses and revenues negatively. Events such as location of a major development and unplanned increase in economic activity may impact revenues positively. However, this may require expansion plans to be accelerated.

For long term planning, the financial model uses depreciation to build up a capital project fund for the replacement of existing assets in the future. Since depreciation may not necessarily reflect actual future needs, Barrow County should consider developing an asset management plan. Until then, the financial model will use a combination of depreciation and the five-year CIP for projecting rate revenue needs.

Indirect Cost Allocation

Not all General Government Service Costs are directly budgeted to the water and sewer department. These cost were estimated and applied to the cost allocation and projection performed in the next section. The cost is summarized in **Table 3.10**. The basis for the allocations was developed with consultation with the Barrow County Finance Director.

Table 3.10
Allocation of General Fund Services to Enterprise Fund

General Fund Services	Cost	Allocation		Basis
Information Technology	\$416,960	5.26%	\$21,932	Departments
Finance	727,354	2.20%	16,002	Employees
County Manager	210,608	5.26%	11,078	Departments
Board of Commissioners	249,656	5.26%	13,132	Departments
Public Works Administration	90,000	28.57%	25,714	Staff Judgement
Fleet Maintenance	123,926	6.47%	8,015	Vehicles
Human Resources	223,900	2.20%	4,926	Employees
Buildings & Grounds	1,293,950	5.26%	68,062	Departments
Cost to Enterprise Fund			\$168,861	

Cost Allocation and Projections

The following tables show an allocation of cost and a five-year projection. Based on current trends, an assumption of 3% per year expense growth was used for operations. The billed volume growth is set at 1% per year. The purpose of these tables is to show the true cost of the system as is. Included are funds to address the maintenance/replacement of the system using depreciation. Since depreciation is an accounting tool to estimate value of the system it may not necessary reflect true cost. The CIP developed will address both replacement and expansion/extension needs for the systems.

Table 3.11
UOBWA Projected Cost

Water Purchased						
UOBWA	2017	2018	2019	2020	2021	
Operations	\$763,258	\$786,156	\$809,740	\$834,033	\$859,054	3% Growth
Capital	240,562	245,373	250,281	255,286	260,392	2% Growth
Debt	1,210,048	1,208,048	1,208,472	1,209,242	1,209,223	
Total	\$2,213,868	\$2,239,577	\$2,268,493	\$2,298,561	\$2,328,669	
Total Volume	726,333	740,859	755,677	770,790	786,206	1000 Gallons
Cost of Water Leaving UOBWA	\$3.05	\$3.02	\$3.00	\$2.98	\$2.96	Per 1000 Gallons
SPLOST Subsidized Cost	\$1.38	\$1.39	\$1.40	\$1.41	\$1.42	Per 1000 Gallons

The rise in cost in the 2017 unit cost is attributable to the increase in the budget related to the asset management plan for the UOBWA. The calculation for true cost per 1000 gallons is the total cost divided by the volume. The SPLOST subsidized cost subtract the debt from the total and then dividing by the volume. This bottom line influence both retail and wholesale rate revenue requirements.

Tables 3.12 – 3.13 show the projected cost for wholesale and retail water customers using the SPLOST subsidized UOBWA unit cost. The Asset Management row is a proposed cost to address replacement of infrastructure in the future. The General Fund Services row is a proposed cost to be transferred to the General Fund to account for services provided to the water and sewer systems from General Government.

Table 3.12
Wholesale Projected Cost

Wholesale Cost	2017	2018	2019	2020	2021	
Operations	\$224,168	\$230,893	\$237,820	\$244,955	\$252,303	3% Growth
Asset Management	238,395	245,546	252,913	260,500	268,315	3% Growth
General Fund Services	26,089	26,872	27,678	28,508	29,363	3% Growth
Additional Capital Needed	0	0	0	0	0	
Total	\$488,652	\$503,311	\$518,411	\$533,963	549,982	
Billed Volume	372,924	380,383	387,990	395,750	403,665	1000 Gallons
Unit Cost Transmission	\$1.31	\$1.32	\$1.34	\$1.35	\$1.36	Per 1000
UOBWA subsidized	\$1.38	\$1.39	\$1.40	\$1.41	\$1.42	Per 1000
Total Wholesale	\$2.69	\$2.71	\$2.74	\$2.76	\$2.78	Per 1000

The total wholesale cost is above the current contract price for Auburn and Braselton. The combined volumes of these cities currently represent 96% of wholesale water sold. As such and even though the non-contract price for water is much higher than cost, the wholesale system - does not produce sufficient revenues. This can be rectified by selling more wholesale water or increasing the contract price to \$2.43 per 1000 gallons. However, under the contract agreements, the wholesale price can only be increased based on the Consumer Price Index (CPI). This limits the wholesale contract price to \$2.26 per 1000 gallons for 2016. The non-contract price is currently set at \$2.86 per 1000 gallons.

Table 3.13
Retail Projected Cost

Retail Cost	2017	2018	2019	2020	2021	
Operations	\$884,309	\$910,838	\$938,163	\$966,308	\$995,297	3% Growth
Asset Management	423,522	436,227	449,314	462,793	476,677	3% Growth
Debt	321,975	324,990	327,300	328,905	329,805	
General Fund Services	95,660	98,529	101,485	104,530	107,666	3% Growth
Additional Capital Needed	0	0	0	0	0	
Total	\$1,725,465	\$1,770,584	\$1,816,262	\$1,862,536	\$1,909,445	
Billed Volume	323,908	330,386	336,994	343,734	350,609	1000 Gallons
Operations	\$5.33	\$5.36	\$5.39	\$5.42	\$5.45	1000 Gallons
UOBWA subsidized	\$1.38	\$1.39	\$1.40	\$1.41	\$1.42	Per 1000
Total Retail	\$6.71	\$6.75	\$6.79	\$6.83	\$6.87	Per 1000

Though the retail average cost is above the existing unit charge, user fees and base charges are used to offset unit rate revenue requirements. As such, when all user fees, base charges and unit charge revenues are added together, they exceed the retail water system cost.

Table 3.14 depicts the wastewater projected cost for 2017 – 2021. Due to the difficulty in aligning the billed volume reports from Winder, Auburn and Barrow County, a total billed volume was not possible at this time. As such, rate increase requirements discussed later are based on sales not billed volumes.

Table 3.14
Wastewater Projected Cost

Wastewater Cost	2017	2018	2019	2020	2021	
Operations	\$607,736	\$625,968	\$644,747	\$664,090	\$684,012	3% Growth
Asset Management	559,515	576,300	593,589	611,397	629,739	3% Growth
Debt	1,217,538	1,217,538	1,217,538	1,217,538	1,217,538	
General Fund Services	42,215	43,482	44,786	46,130	47,514	3% Growth
Additional Capital Needed	0	0	0	0	0	
Total	\$2,429,021	\$2,465,306	\$2,502,679	\$2,541,175	\$2,580,824	

User Fees

User fees help reduce unit charges by offsetting certain service provision costs. This includes periodic requests or specialized services by customers related to their account. The user service fees were assessed for reasonableness and their revenue allocated to either retail water or sewer. These fees reduce the required unit charge needed to recover cost. There are currently no user fees associated with the wholesale water customers.

Rate Calculation

The following rate calculations are based on actual costs and not recommendations. In order to avoid “rate shock” to consumers, rate adjustments should be done over time. Recommended rates are provided in the findings and conclusions section of this report.

Existing Rate Structure

As discussed earlier the contract wholesale rate increase is limited by the CPI. The resulting 2016 rate is \$2.26 and is below cost. Future rates assuming a 1% CPI are as follows. The non-contract price includes a 7% Admin markup and the actual calculation is below the current non-contract price. Since the contract price is below cost, it is recommended that the non-contract price not be changed.

Table 3.15
Wholesale Water Projected Rate Calculation

Wholesale Water Unit Rate Calculation	2017	2018	2019	2020	2021
Wholesale Expenses	\$1,673,449	\$1,701,867	\$1,732,442	\$1,764,085	\$1,796,217
Volume	372,924	380,383	387,990	395,750	403,665
Unsubsidized Cost	\$4.49	\$4.47	\$4.47	\$4.46	\$4.45
SPLOST Credit	\$1.73	\$1.69	\$1.67	\$1.63	\$1.60
Wholesale Cost adjusted for SPLOST	\$2.76	\$2.78	\$2.80	\$2.83	\$2.85
7% Admin (Non-Contract Price)	\$2.95	\$2.97	\$3.00	\$3.03	\$3.05
Recommended Pricing					
Non-Contract Price per 1000 gal	\$2.96	\$2.98	\$3.00	\$3.03	\$3.05
Contract Price per 1000 gal	\$2.28	\$2.30	\$2.32	\$2.34	\$2.36
CPI	1.00%	1.00%	1.00%	1.00%	1.00%

Table 3.16
Retail Water Projected Rate Calculation

Retail Water Unit Rate Calculation	2017	2018	2019	2020	2021
Retail Water Expenses	\$2,192,070	\$2,250,069	\$2,308,991	\$2,368,884	\$2,429,796
Base Charge	\$7.50	\$7.50	\$7.50	\$7.50	\$7.50
Number of Customers	5670	5784	5899	6017	6138
Expenses Covered by Base Charge	\$510,300	\$520,560	\$530,910	\$541,530	\$552,420
Other Projected Revenues	\$213,330	\$215,463	\$217,618	\$219,794	\$221,992
Revenues Needed From Unit Charge	\$1,468,440	\$1,514,046	\$1,560,463	\$1,607,559	\$1,655,384
Retail Volume	323,908	330,386	336,994	343,734	350,609
Tier 1	\$225,031	\$229,532	\$234,122	\$238,805	\$243,581
Tier 2	\$98,877	\$100,854	\$102,872	\$104,929	\$107,028
Tier 2 Price Multiplier	\$1.32	\$1.32	\$1.32	\$1.32	\$1.32
Effective Volume	355,549	362,660	369,913	377,311	384,857
Tier 1 Unit Charge Calculated	\$4.13	\$4.17	\$4.22	\$4.26	\$4.30
Tier 2 Unit Charge Calculated	\$5.45	\$5.51	\$5.57	\$5.62	\$5.68

Rate Alternatives

The existing rate structure can be converted to a 3-tiered conservation rate structure, a seasonal rate or a hybrid rate structure. These are not the recommended rates, rather a comparison of alternatives for County Commissioner's consideration is provided in **Table 3.17**. The FY17 base years is used for this comparison. Given that the current rate structure is adequate at this time, a change in rate structure may not be warranted at this time.

Table 3.17
Rate Structure Alternatives

	Existing	3-Tier	Seasonal (no tiers)		Hybrid	
Base Charge	\$7.50	\$7.50	\$7.50		\$7.50	
Tier 1	\$6.30	\$5.05	\$6.23 (Oct – Apr)	\$8.25 (May – Sept)	\$4.57 (Oct – Apr)	\$5.54 (May – Sept)
					\$6.60	\$7.53
Tier 2	\$8.41	\$6.97			\$7.55	\$8.60
Tier 3		\$8.41				

Wastewater Rates

In general, wastewater rates should be uniform as customer peaking does not affect collection and treatment cost. Peak costs are associated with Inflow & Infiltration (I&I) due to rain events and high water tables.

Wastewater rates could not be directly calculated using the billed volume data. However, total cost could be calculated and rate increases estimated. Given the magnitude of cost not currently covered by the existing wastewater customer, increase should be done over time. **Table 3.18** shows an increase of \$0.30 per 1000 gallons for each year in the five-year planning horizon. Commissioners should also consider the intangible value of wastewater as an economic driver and health/safety issue. Many communities subsidize wastewater capital projects with SPLOST due to the added property tax from higher densities, protection of the environment and employment opportunities.

Table 3.18
Wastewater Projected Rate Calculation

Wastewater Unit Rate Calculation	2017	2018	2019	2020	2021
Wastewater Expenses	\$2,427,004	\$2,463,288	\$2,500,660	\$2,539,154	\$2,578,802
Volume Sales	\$452,350	\$493,062	\$537,437	\$585,806	\$638,529
Increase in Unit Charge	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30
Other Income	\$600,000	\$612,000	\$624,240	\$636,725	\$649,459
Wastewater Deficit	(\$1,374,654)	(\$1,358,226)	(\$1,338,983)	(\$1,316,623)	(\$1,290,814)

Fund Balance

The cash available for capital improvements is sufficient over the next five years. However, the fund balance will drop from approximately \$8.8 million to \$4.9 million with \$1.3 million of that restricted. This will leave the water and wastewater enterprise fund with only \$3.7 million for projects at the end of the five-year period.

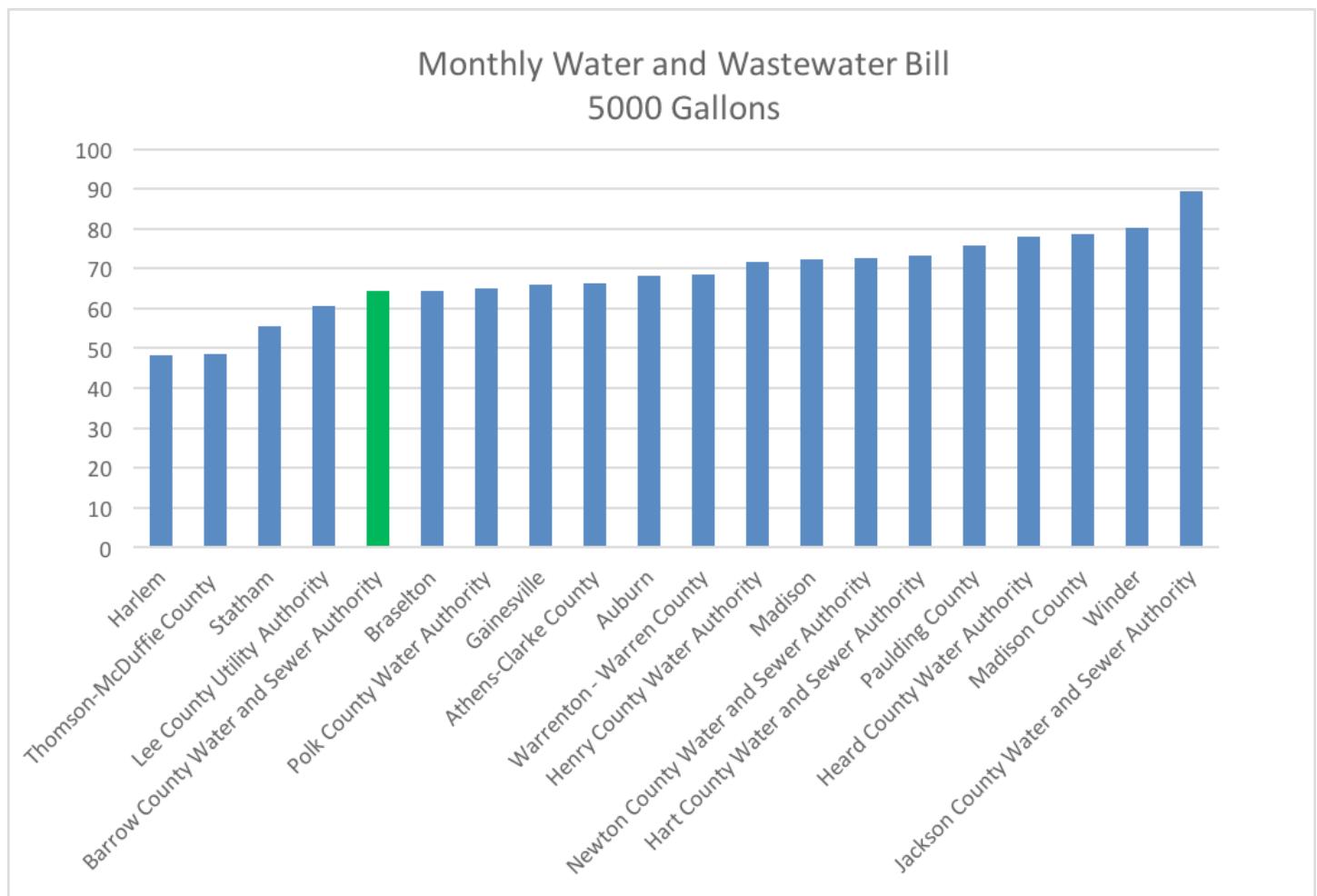
This reduction of cash will continue into the future. This reduction in cash is driven primarily from wastewater system cost. However, the good news is that the primary wastewater debt is paid off in 2025, and debt payments will drop from \$1.2 million in 2025 to \$0.5 million in 2026. Other good news is that the retail water system will pay off their Series 2001 debt in 2021. This will leave only the UOBWA debt which is paid by SPLOST. This debt will be paid for in 2027.

Comparison to Similar Utilities

The UFC Georgia Water/Sewer Rates Dashboard was used to compare customer bills to other communities. There are 20 utilities within 25 miles of Barrow County that provided water and sewer service. The bill for 5,000 gallons for a Barrow County customer is \$64.41. This compares to a range from \$23.75 to \$96.32 for the surrounding area.

Additionally, Barrow County rates were compared to a number of nearby utilities and similar sized utilities across Georgia. The figure below shows the monthly bill for 5000 gallons.

Figure 3.1
2015 Monthly Bill Comparison





BARROW COUNTY
Georgia



F i n d i n g s a n d R e c o m m e n d a t i o n s

Findings and Recommendations

The most notable finding of this study is that SPLOST is lowering UOBWA water cost by approximately \$1.67/1000 gallons. Other findings of this study include:

- Retail water customers are currently covering cost for retail services and a portion of wholesale and wastewater system costs.
- Wastewater customers are paying less than one half of true wastewater system cost. Volume sales are below operating costs.
- Significant capital cost is proposed for wastewater system improvements over the next 5 years (\$3.9M)
- Barrow County ranked 5th lowest 5,000-gallon monthly bill among a comparison of 20 similar utilities in Georgia.
- There is approximately \$170,000 of cost for services provided by other County departments not assigned to the Water and Wastewater budgets.
- Wholesale water contract price is below actual wholesale unit cost; non-contract price is also below wholesale unit cost.
- Any significant additional volumes purchased from Bear Creek WTP would benefit Barrow County retail and potentially benefit the Cities participating as wholesale customers.
- Billed water data showed some potential issues both for wastewater and water accounts in terms of accurate metering/billing.
- Current financial situation driven by historic events.

It is recommended that future rate increase requirements be focused on the wastewater customers until sales are more in line with costs. A \$0.30 increase on the wastewater unit charge (leaving the base charge at \$15.60) would result in \$0.90¹ increase in a 5,000-gallon month bill. Applying a \$0.30 unit charge increase annually for 8 years will result in raising the typical 5,000 gallon per month wastewater bill from \$25.41 to \$32.61. This would still result in monthly bills that compare well with similar communities in Georgia using their 2015 bills. See figure 4.1 on following page. A summary of other recommendations are as follows:

- Raise wastewater unit rate by \$0.60 per 1000 gallons annually starting July 2016. (Wastewater only accounts)
- Raise wastewater unit rate by \$0.30 per 1000 gallons annually starting July 2016. (Wastewater with Barrow County Water Service)
- Retail water rates can remain unchanged for 2017.
- Increase the non-contract price for wholesale water to \$2.96/1000 gallons in July 2016.
- The wholesale contract rate should be set at \$2.28/1000 gallons to match the CPI per terms of the contract in July 2016.
- Barrow County should look for opportunities to increase water sales. This would reduce both wholesale and retail cost per 1000 gallons.
- Maintain/Renew SPLOST payment of Bear Creek Reservoir and Water Treatment Plant debt.
- Identify proposed Sewer projects on five-year CIP for 2018 SPLOST
- Consider implementing a meter asset management program designed to reduce apparent water losses and increase billed volume.
- Annually update financial model to verify model assumptions to actual year-end results.
- Update Cost of Services Analysis every five years.

¹ The first 2,000 gallons are imbedded in the base charge

Figure 4.1
Comparison of Current and 8 Year Projected Barrow County Monthly Bill

