

# City of Charlottesville

# UTILITY RATE REPORT

## ADOPTED ● FY 2018

Prepared June 1, 2017 by the Department of Finance & Department of Utilities

*To Be One Community  
Filled With Opportunity*



City of Charlottesville  
Virginia



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## SECTION I: EXECUTIVE SUMMARY

### ***Introduction***

The City of Charlottesville owns and operates public utilities for water, wastewater, natural gas, and stormwater. The word “utility” comes from the Latin word “ūtilitās” which means “useful”. The useful features of the City’s utilities include:

- **Convenience** – Service is delivered directly to or from your home or business.
- **Reliability** – Service is provided within reach 24 hours a day, 7 days a week, 365 days a year with few or no interruptions in service.
- **Quality** – The City has taken the lead in promoting projects to enhance the quality of utility services provided. Examples include replacement of the water distribution and wastewater collection pipelines, use of granular activated carbon to improve water quality and odor reduction improvements at the Moores Creek Advanced Water Resource Recovery Facility.
- **Safety** - Protecting public health and safety is a core part of the City’s utility service. The City (in conjunction with our partners at the Rivanna Water and Sewer Authority and Albemarle County Service Authority) has an exceptional track record of providing water that meets or exceeds all federal and state standards for public health. The Natural Gas Division has a robust safety program for our customers and the public to be cautious working around natural gas pipelines and how to detect gas leaks.
- **Sustainability** – The City promotes conservation of natural resources through a number of programs including water conservation kits, low flow toilets, rain barrels, and programmable thermostats. The success of these programs is evident by the trend of reduced water and natural gas consumption per customer. Conservation is good for both the environment and customer’s wallets as lower usage lowers utility bills.

Utility services are essential and invaluable on a daily basis to us as both individuals and a community. Thoughtful, deliberate planning and sufficient financial resources ensures efficient and orderly maintenance and operation of these systems. This need

for investment in our utility systems is not without cost but must be balanced with affordability.

The budgets for each of the utilities have been thoroughly examined for opportunities to reduce costs without sacrificing service. Reductions are based on either historic spending patterns or sufficient monies already on hand as a result from carrying funds forward from previous fiscal years. As a result of cost reductions and an expanding customer base, water rates are remaining unchanged and wastewater rates are increasing by only 0.25%. The cost of natural gas is increasing after several years of decline. As a result, rates for natural gas are increasing 3%. For City residential customers who receive water, wastewater, and natural gas (approximately 87% of City residents), their total utility bill is projected to increase by a little more than 1%.

Each of the City's utilities is accounted for separately as enterprise funds. Enterprise funds are operated on a self-supporting basis, meaning that they are required to cover the full costs of providing its services. The City's utilities are funded solely through their rates and related fees and charges and are not subsidized with general tax revenues. The utilities do not operate on a for-profit basis. Utility rates are calculated annually to bring each fund to a break-even point. However, given variable factors, such as weather, usage, and number of customers, the utilities can generate either an operating surplus or deficit during any given year. Any annual surpluses or deficits are accounted for and remain within their respective fund.

This report presents the adopted utility rates for water, wastewater, and gas service for the fiscal year 2018. The rates are based on the operating budget for the utilities, debt service costs, and the wholesale rates from Rivanna Water and Sewer Authority (RWSA), and British Petroleum (BP), our gas supplier.

## **A. Water**

For fiscal year 2018, the adopted composite rate for 1,000 cubic feet of water is \$54.51 per thousand cubic feet (mcf), unchanged from the current year (a 0% increase).

While the composite water rate is unchanged, the actual increase each customer will see on their monthly utility bill is dependent on monthly water usage. For example:

- The average monthly water bill for the single family household, who uses 422 cf (a drop from 427 cf calculated for last year's rate report) of water, will not change and will be \$27.00.
- The monthly bill for the retail customer who uses 1,000 cf per month be \$58.51.

The City adopted a seasonal rate structure in 2004 to encourage conservation by charging higher prices in summer months, when water supply is likely to be lower. The average amount of water used by a single family customer has been declining by an average of just under 3% annually for the past several years. Water conservation is both good for the environment and customer's cost as less usage can offset increases in rates.

- The monthly bill for the average single-family residential customer, who uses 422cf per month, will remain the same at \$24.38 in winter months. The same average household will pay \$30.49 in summer months when water is more expensive, the same amount that was paid last year for 422cf of water.

The specific rate and fee proposal for next year includes:

1. No change in the consumption rate per mcf of all water used at \$54.51.
2. Continue seasonal rates.
3. Maintain the City's connection (facility) fees for new customers adopted in FY2013 to more accurately reflect actual costs of providing additional water capacity.
4. Maintain the facility fees adopted in FY2016 for low-income housing for meters greater than 5/8" and 25% of the facility fee charge for a new water service.

The current monthly customer charge of \$4.00 will remain unchanged.

Water rates includes following:

- The wholesale charges by RWSA accounts for 49.5% of the operating cost of the water utility. RWSA's operating rate charged to the City increased from \$13.711/mcf in FY2017 to \$14.728/mcf in FY2018. This is a 7.42% increase. One of the reasons for the increase is costs associated with RWSA's Granular Activated Carbon (GAC) water treatment improvements that City Council adopted in 2012. The operating charge is the portion needed to cover the City's share of RWSA's operating costs for supplying wholesale water to the region. (For a description please see RWSA Fiscal Year 2017-2018 Budget Proposal March 28, 2017 [http://www.rivanna.org/wp-content/uploads/8a-1st-attachment-RWSA-FY-2018-ADOPTED-BUDGET\\_BODdraft.pdf](http://www.rivanna.org/wp-content/uploads/8a-1st-attachment-RWSA-FY-2018-ADOPTED-BUDGET_BODdraft.pdf).)
- Beginning in November of 2015 (FY2016) RWSA began to charge the City a fixed amount for debt service every month, rather than having debt service based on the amount of water treated or a "per thousand gallon rate". This is beneficial to all jurisdictions since the cost for RWSA's debt service fixed regardless of the amount of

water used. The debt payment to RWSA fell by 1.80% in FY2018, to \$160,039 per month from \$162,968 per month in FY2017. (For a detailed description of RWSA's Capital Improvement Plan, Fiscal Years 2017-2021, adopted on March 28, 2017 please see <http://www.rivanna.org/wp-content/uploads/7e-1st-attachment-2017-2021-CIP-Draft-Ver-11-3.15.17.pdf>.)

- The portion of RWSA's operating costs that the City pays is based on its relative share of RWSA's total flow. It should be noted that the City's share of water usage has fallen from 72% in 1983 to its current level of 52% compared to Albemarle County Service Authority's share of 48%.
- Facility fee revenues are used for rate stabilization. Rate stabilization is comprised of a revenue stream that has been accumulated for the purpose of leveling rates. This is intended to mitigate any dramatic fluctuations that might occur in a given year. This revenue stream is explained in detail in Section III-E. \$350,000 is to be used in FY2018 to lower water rates to customers. Rate stabilization will reduce the rate to customers by \$2.33, or 4.27%, per 1,000 cubic feet.
- Excluding the cost of water purchased from RWSA and the City's debt service costs, expenditures are projected to increase by \$275,379.
- Debt service funding, used to pay for capital projects that have been financed with long-term bonds, is expected to increase \$25,000 from \$1,775,000 to \$1,800,000.
- Several assumptions about water usage are made in the rate calculation. The number of City water customers has been increasing. Water volume purchased from RWSA is expected to increase from 236,279 mcf to 247,849 mcf. This projection also factors in the water loss factor that the City has been experiencing recently (projected to be 14% in FY2018). The water loss factor is the difference between the amount we purchase from RWSA and the amount we sell to our customers. It can be associated with meter errors, unmetered/unbilled water use, fire hydrant flushing, and water leaks that occur.
- The University of Virginia (UVA) is our single largest water customer, comprising approximately 30% of total water use. It is projected that their water use in FY2018 will be 63,000 mcf; an increase from budgeted FY2017 usage (62,500 mcf). The minimal change in water usage is due to new buildings being completed on campus in combination with UVA's conservation measures.
- The water conservation program, which has had dedicated staff and operating budget since it was established in 2002, continues to assist City customers by reducing their water consumption through both permanent and behavioral strategies. The toilet rebate program, which operates with carry-over funds, will be reduced this year to \$20,000. A balance of over \$70,000 is projected which is enough to fund the program in the coming year. Also, the City of Charlottesville continues to provide a \$30 rebate for up to two rain barrels to qualifying City water customers. \$1,500 is added to that program in FY2018.

Estimated Future Water and Wastewater Rates are shown in Section IX. This section presents the projected rates for future fiscal years 2018 through 2022 and presents the impact on the future rates of the additional revenue generated by the facility fees, projected economic conditions, and the City's and RWSA's future capital improvement plans. (For a complete list of capital projects for the Water Utility, please see Section IV-I.)

## **B. Wastewater**

For fiscal year 2018, the adopted rate for 1,000 cf of wastewater is \$74.83, an increase of 0.29%. While the wastewater rate is increasing by 0.29%, the actual percent increase for each customer is dependent on monthly usage. For example:

- The average monthly wastewater bill for the single family household, who uses 422cf of water, will rise from \$35.49 to \$35.58, an increase of \$0.09 or 0.25%.
- The monthly bill for the retail customer who uses 1,000 cf per month will rise from \$78.61 to \$78.83, an increase of \$0.22 or 0.28%.

Specific rate and fee proposals for next year are:

1. Increase the consumption rate per mcf from \$74.61 to \$74.83.
2. Maintain the City's wastewater facility fees for new customers adopted in FY2013 to reflect the actual cost of providing wastewater capacity.
3. Maintain the facility fees adopted in FY2016 for low-income housing for meters greater than 5/8" at 25% of the cost of new wastewater fee.

The current monthly customer charge of \$4.00 will remain unchanged.

This increase in the wastewater rate is due to the following:

- The wholesale charges from RWSA accounts for 56.7% of the City's operating cost for the wastewater utility.
- The operating portion of the RWSA rate is increasing by 6.32%, from \$13.726/mcf to \$14.594/mcf. (For a description please see RWSA Fiscal Year 2017-2018 Budget Adopted March 28, 2017 [http://www.rivanna.org/wp-content/uploads/8a-1st-attachment-RWSA-FY-2018-ADOPTED-BUDGET\\_BODdraft.pdf](http://www.rivanna.org/wp-content/uploads/8a-1st-attachment-RWSA-FY-2018-ADOPTED-BUDGET_BODdraft.pdf).)
- Like the RWSA water debt component, RWSA changed the basis for the wastewater debt service from the amount of wastewater treated or a "per thousand gallon rate" to a fixed monthly amount. It is increasing from \$369,037 to \$392,841 per month, or 6.45%.
- RWSA forecasts that the total amount of treated wastewater increase by one percentage point from FY2017 to FY2018. The City will pay 53% of the total urban wastewater

treatment costs borne by RWSA, while Albemarle County Service Authority's share is 47%. The City's share is based on historical flow figures.

- Currently there is \$500,000 of facility fee revenues available for rate stabilization for the wastewater utility. Rate stabilization revenue will be utilized in rate calculations to minimize rate fluctuations in a given year.
- The Wastewater Utility budget, net of treatment costs and debt service, is increasing \$113,774 from the FY2017 budget.
  - The largest increase comes from the Wastewater Operations and Maintenance costs. It is increasing by \$92,964, primarily the result of an increase in salaries, retirement, health care, and other contractual services.
  - The PILOT payment to the General Fund is increasing by \$23,908 and is based on 6% of budgeted sales from the prior year.
  - Indirect Costs paid to the General Fund are falling by \$12,137. This is based on a study that is performed annually to determine which costs of general government are used to support of enterprise funds.
  - The Sewer Surcharge has been removed from the budgeted expenses this year, since it is simply a pass-through fee to RWSA. The fee is charged to customers and therefore appears as revenue. RWSA charges the City, who pays it out of expenses. Since an equal amount appears in both revenue and expenditures it is not shown.
  - Vehicle Replacement is increasing to \$73,606 for FY2018. Last year the wastewater budget for this line item was reduced due to funds carried forward. It is felt that the full \$73,606 should be budgeted next year to account for any major vehicle purchases that need to be made.
- Debt service is increasing compared to FY2017 by \$15,000 to \$3,000,000. Debt service is based on capital projects that are bond funded for the wastewater utility.

See Section IX for projected Water and Wastewater rates for future fiscal years 2018 through 2022. This section presents the impact of the additional revenue generated by the facility fees, projected economic conditions, and the City's and RWSA's future capital improvement plans and their impact future rates. (For a complete list of capital projects for the Wastewater Utility, please see Section V-H.)

## **C. Gas**

The rate for FY2018 will increase by an average of 3.3% to the firm customers and 0.03% to the interruptible customers based on March 1, 2017 wholesale rates. Firm customers include all types of customers (residential, commercial and industrial) for whom gas supplies are

guaranteed to be available all year without interruption. The actual percent increase is dependent upon usage.

1. For an average residential monthly consumption of 4,611 cf, the monthly bill will increase from \$45.99 to \$47.37, an increase of 3.0%.
2. For a representative industrial interruptible monthly consumption of 1,000,000 cf, the monthly bill will increase from \$5,209.12 to \$5,388.22, an increase of .03%.
3. The current monthly charge of \$10.00 for firm customers and \$60.00 for interruptible customers will remain unchanged.

Wholesale prices for natural gas have been volatile during the past twelve months, reaching a high of \$3.93/dccatherm (dth) in January, 2017 rising from a low of \$1.963/dth in July, 2016. These wholesale cost fluctuations were passed on to the City's customers through the PGA rate adjustment.

The adopted rates are based on current March 2017 wholesale rates. Gas prices have been lower but rose this year with the March 2017 commodity prices of \$2.627, which is \$0.916 dth higher than the March 2016 prices of \$1.711dth on which the base rates for the year are established. The rate changes reflect the increases in contract prices, the increased sales volume, and changes in the operating budget as well as contracting to purchase our gas through one pipeline.

The FY2018 budget includes continued funding for the Gas Assistance Program and for the customer heating incentive program for the purchase of programmable thermostats. In addition, there is continued funding for technology, environmental administration and normal operating cost increases.

#### **D. Stormwater**

Rates for Stormwater are unchanged for FY2018.

### **E. Impact on Average Residential Customer Monthly Utility Bill**

The average single family customer using 422 cf water and wastewater and 4,611 dth of gas per month is projected to spend the following per month:

**Figure 1: Comparison of Monthly Utility Bill**

	<b>Current</b>	<b>Proposed</b>	<b>Change</b>	<b>Percent</b>
<b>Water</b>	\$ 27.00	\$ 27.00	\$ -	0.00 %
<b>Wastewater</b>	35.49	35.58	0.09	0.25
<b>Gas</b>	45.99	47.37	1.38	3.00
<b>Total</b>	\$ 108.48	\$ 109.95	\$ 1.47	1.36 %

## SECTION II: IMPROVING INFRASTRUCTURE

All of the City's utilities are making significant infrastructure investments to provide better customer service, improve reliability and greater system sustainability. Many of these projects are ongoing and funded with revenues from prior, current, and future fiscal years.

### A. *Wastewater System Improvements*

Charlottesville's sanitary sewer system extends to most areas of the City and consists of about 170 miles of pipe and 5,700 manholes. Because the system was constructed over a period of many decades, the main lines consist of several different types of materials – terra cotta (clay), PVC, ductile iron, and concrete. The pipes vary in age from about 15 to 100 years old. The sizes of the pipes range from six inches to thirty



inches. Manholes are either brick or pre-cast concrete. The City operates and maintains the sanitary system within its boundaries. The flows from the City's system join flows from Albemarle County and empty into RWSA interceptors. These combined flows are carried to RWSA's Moore's Creek Wastewater Treatment Plant.

The City has a number of challenges within the sewer system; sewer lines that are undersized, points in the system that restrict flow, and sewer lines that run near and under structures. Also,



most of the existing system is the original pipe installed prior to 1970. The goal of reducing inflow and infiltration ("I&I") to the sewer system continues. The terms "inflow" and "infiltration" apply to excess water that enters the sanitary sewer system. Inflow is surface water that flows into the system from various sources, such as defects in manhole covers and improperly connected roof drains. Infiltration is ground water that seeps into the system through pipe cracks, broken joints and deteriorated manholes. Rainfall

events often cause excess water to enter the system. These rain events can result in overflows

from manholes, which must be corrected for health and environmental reasons. The excess water also taxes the capacity of the treatment plant, which could lead to major investments to expand the treatment facilities. There is also an indication that there are broken pipes and open joints where wastewater can leave the system. The I&I rehabilitation program identifies needed repairs to restore the integrity of the system which are necessary in order to reduce the amount of inflow and infiltration to the sewer system.



In 2009, the City awarded a multi-year, multi-million dollar contract for sewer repair and rehabilitation. The work encompasses the rehabilitation of sewer manholes and sewer lines, as well as completion of particularly difficult or time consuming sewer replacement projects. In addition, crews have been performing CCTV (closed circuit televising) and smoke testing throughout the City system. Any deficient pipes or structures are immediately added to the list for rehabilitation/replacement under the same contract. Initial work has centered on the Schenk's Branch area, which was identified as a high priority in previous studies, but has since continued into other areas in the City.

To date, 39.7 miles or 209,627 linear feet of sewer lines have been replaced or rehabilitated.

## **B. *Water Distribution System Improvements***

The City's water distribution system contains over 1,047 fire hydrants, 3,366 water valves and 180 miles of water main line ranging in size from 2" to 18" in diameter. About 20 miles of that pipe is three inches or less in diameter. Most of these mains are galvanized steel, several decades old, and serving multiple customers. Not only are they severely corroded, but the pressure can be low. These undersized lines are being replaced with adequately sized water lines.



A Water Prioritization Study was completed in 2009, which identified 48 projects totaling \$7 million to be completed. Since 2009, additional projects were identified and added to the list and work has been completed on 58 water projects. These projects aim to improve fire protection, reduce main breaks,

improve overall water quality and address the undersized lines. Total length of pipe replaced to date for water projects is approximately 11.4 miles (60,177 linear feet) averaging about 2 miles (10,000 linear feet) per year. This work is continuing in FY2018.

Additionally, the Utilities Department plans to begin an aggressive, supplemental water main replacement schedule the summer of 2017 that will include five large projects. These projects include the following:

- 17<sup>th</sup> Street NW Water Main Extension

The project will consist of boring 115' of 8" water main under the existing CSX railroad from 17<sup>th</sup> St NW to the intersection of Chancellor Street and Madison Lane. This will move the Chancellor Street/ Madison Lane area from the Alderman Pressure Zone to the Lambeth Pressure Zone, providing higher operating pressure and improved fire protection to the area. The project has been awarded and construction is scheduled to begin June 1, 2017.

- Rugby Road Water Meter Replacements/ Gentry Lane Water Main Installation

The first phase of the project will consist of installing 2,600' of 8" water main in Gentry Lane from the southwest to the northeast intersections of Rugby Road/ Gentry Lane/ Dairy Road. Presently, 19 water services along Gentry Lane are served by a dead-end 6" line in the road, while 11 water services are served by a dead-end 2" line in the backyards of the properties on the north side of Gentry Lane. The new 8" line will serve all the properties allowing the existing 6" and 2" lines to be abandoned, reducing maintenance and removing City infrastructure from private properties. The new line will increase capacity, while improving fire flow for the area, as well as the Walker Upper Elementary School/ Charlottesville City Schools Administration Office complex. This project will be constructed in two 1,300' phases. The first phase is from the southwest intersection to Greenleaf Lane and is scheduled to be under construction around the middle of June 2017, once the City school year has finished. The second phase from Greenleaf Lane to the northeast intersection will be completed in the summer of 2018.

There are currently two water mains (one 12" and one 6" that reduces to a 4") in Rugby Road from University Avenue to Route 250. The second phase of the project will move all existing water services from the smaller diameter line to the larger diameter line. This will allow for the smaller diameter line to be abandoned reducing the maintenance needed in Rugby Road. This phase of the project will be constructed in the summer of 2018.

- Emmet Street/ Ivy Road Water Main Replacement

Two 6" lines currently run in parallel in Emmet Street and Ivy Rd from the intersection of McCormick Road to the City/ County line on Ivy Rd. Utilities will use a combination of two methods to replace the two existing lines – pipe bursting and open trenching. Where feasible, one of the existing 6" lines will be burst in place and upsized to an 8" HDPE DR11 pipe. This will greatly reduce the impact on traffic around the area during construction. Where bursting is not an option, a new 8" ductile iron pipe will be installed. Upon completion of the project, one 8" line will replace the parallel 6" lines from McCormick Rd to St. Anne's Belfield. This project is currently in design and is scheduled to begin construction in the summer of 2018.

- High Street Water Main Replacement

In an effort to improve utilities ahead of large paving and streetscape projects, Utilities will implement a project to replace approximately 5,400 feet of 6" diameter water main with 12" diameter piping. This will greatly reduce maintenance while providing capacity for future development along the High Street corridor. This project is currently under design and implementation is planned for the summer of 2018.

- West Main Street Water Main Replacement (Summer of 2018)

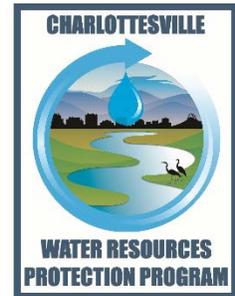
The purpose of the project is to replace an existing 18" water main that is a main feed to the City. This project will be completed in phases; the first phase includes relocation of the line that currently goes under the railroad tracks just south of 9th Street SW. The new line will be installed in W. Main Street from 9th Street SW, turn south on Roosevelt Brown Blvd, and connect to the existing line at Grove Street. This project is currently under design and implementation is planned for the summer of 2018.

Most of the City's service lines (the lines from the mains to the water meters) are galvanized steel and were installed when the residences were constructed. Many are now severely corroded with a tendency to fail at the worst times – nights, weekends, and inclement weather events. The City is continuing its service line replacement program as part of the upgrading and replacement of water mains. To date, over 6 miles (32,000 linear feet) of water service lines have been replaced.

Lastly, the City has implemented a meter testing, recalibration, and replacement project that addresses all size meters at assessment frequencies determined by the meter size. Further descriptions of these two projects are discussed in the Water Conservation Program section (Section IV-F).

## **C. *Water Resource Protection Program Capital Infrastructure Improvements***

The Stormwater Utility is the dedicated funding source for the City's Water Resources Protection Program (WRPP). The WRPP is designed to rehabilitate the City's aging stormwater conveyance system, comply with federal and state stormwater regulations, address drainage problems, and pursue environmental stewardship. The following paragraphs describe the implementation of capital infrastructure improvements using stormwater utility funds.



### Stormwater Conveyance System Rehabilitation Program

Charlottesville's stormwater conveyance system is integrated throughout the City's municipal boundary and consists of approximately 130 miles of pipe and approximately 8,250 structures. The pipes range in age, size, and material types that include vitrified clay (VC), corrugated metal (CMP), reinforced concrete (RCP), ductile iron (DI), polyvinyl chloride (PVC), and high density polyethylene (HDPE). The exact age of the pipes is unknown but could be generally understood to be zero to 80+ years old. The sizes of the pipes range from four inches to ninety six inches in diameter. Structures include junction boxes, drainage inlets, and catch basins and are either brick, cinder block, precast concrete, or cast in place concrete. The City owns and maintains the stormwater conveyance system located within, the public street right-of-way, City owned land, and City held easements on private land. The City does not own and maintain the stormwater conveyance system owned by other public bodies or located on privately owned land without an easement. Approximately 33% of the stormwater pipes and 28% of the stormwater structures located within the municipal boundary are City owned. The entire stormwater conveyance network ultimately discharges to local streams, rivers, drainage ways, floodplains, and low lying areas. Approximately 13 miles of the stormwater conveyance system carry streams that have been piped.

The combination of an integrated and co-mingled privately and publically owned stormwater conveyance system that ranges in age, condition, and material type presents many challenges to infrastructure and asset management and maintenance. The deterioration of the City owned stormwater infrastructure can cause clogging, sinkholes, and drainage and erosion issues. Of particular vulnerability are VC and CMP pipes which are prone to deterioration due to the nature of the material and the age of installation.



The City has had an active Stormwater Conveyance System Rehabilitation Program since 2010.

The work encompasses the rehabilitation, replacement, and repair of VC and CMP pipes and associated structures located in the City right of way and on City owned parcels. Recently, on a case-by-case basis, the City has utilized the Rehabilitation Program contractors to rehabilitate storm conveyance infrastructure, both under

easement to the City and privately owned, on a limited number of private parcels to address deteriorating stormwater infrastructure and drainage issues. In addition, non-routine repairs are completed in a timely manner as they arise, often in response to subsidence in City streets and sidewalks.

The Utilities Department works in collaboration with the Public Service Division of Public Works to complete routine repairs to the stormwater conveyance system. The Public Service Division is responsible for completing the routine repairs. Materials are paid for with Stormwater Utility capital funds.

To date, approximately 10 miles of pipe have been rehabilitated. 90% of the pipes rehabilitated were VC and CMP. Approximately 120 structures have been rehabilitated.

### City-Wide Water Resources Master Plan

The City-wide Water Resources Master Plan was initiated in 2016. The goal of the plan is to apply criteria to select and prioritize capital projects that improve water resources and/or drainage issues. The final product, to be completed in 2017, is a drainage improvement capital improvement plan (CIP) and a water quality CIP. Projects included in the drainage CIP address a combination of historic and recent drainage issues. Projects in the water quality CIP focus on stormwater management retrofits that are cost effective and represent eligible pollutant reductions that the City can use towards meeting its Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan requirements.

The TMDL Action Plan is a relatively recent requirement of the City's Municipal Separate Stormwater Sewer System (MS4) permit issued by the Virginia Department of Environmental Quality. DEQ has added the Action Plan requirement to meet its Chesapeake Bay regulatory obligations to the Environmental Protection Agency (EPA). The TMDL Action Plan requirement

is in addition to the minimum stormwater control measures that the City has been implementing since first being issued a MS4 permit in 2003. During 2016 the Master Plan was substantially completed and implementation of the CIPs will start in 2017.



In the interim, Stormwater Utility funds were used to implement several small / medium water quality and drainage improvement projects during this calendar year. Maintenance of a select stormwater management facilities included in the Action Plan was also funded.

## **SECTION III: RIVANNA WATER AND SEWER AUTHORITY**

### **A. *Rivanna Water and Sewer Authority (RWSA) Capital Budget***

The Capital Improvement Plan (CIP) for Fiscal Years 2017-2021 has been prepared as a guidance document outlining future infrastructure projects needed to meet the Rivanna Water and Sewer Authority's core mission of providing safe, high-quality, cost-effective wholesale water and wastewater services to the City of Charlottesville (City) and Albemarle County community. The CIP is a 5-year planning document, which is updated annually to reflect the needs of the community and progress on adopted projects as they move toward final design and construction. This document provides estimates of project costs and schedules that will help the Board of Directors and staff to understand the financial implications of the program. (For a detailed description of RWSA's Capital Improvement Plan, Fiscal Years 2017-2021, and Adopted March 28<sup>th</sup>, 2017 please see <http://www.rivanna.org/wp-content/uploads/7e-1st-attachment-2017-2021-CIP-Draft-Ver-11-3.15.17.pdf>.)

The development of the Capital Improvement Plan is a process of requests from the Board and community, regulatory mandates, safety concerns, renewal and rehabilitation needs, and bringing together master plans. Each year these identified projects are reviewed and prioritized by the Authority management team and brought forth for review by the Board of Directors.

During the past year several capital projects were completed or are very near completion, and as such are being removed from the 2017-2021 CIP. These projects account for approximately \$14.2 million or 10.6% of FY 15-19 CIP and were under budget by a combined \$0.45 million. These projects include:

- Meadowcreek Interceptor Closeout
- Lower Schenks Branch Interceptor
- Albemarle-Berkley Interceptor
- Comprehensive Sanitary Sewer Model and Study Update
- MCAWRRF Administration Building Repairs

The total 5-year 2017-2021 CIP is approximately \$135.9 million, with the previous expenditures on active projects totaling approximately \$37.8 million, leaving a net adopted 5-year projected expenditure of \$98.1 million.

There are several new projects added to the CIP this year, with a total estimated cost of \$7,106,442, including:

- Interconnect Lower Sugar Hollow and Ragged Mountain Raw Water Mains (\$225,000)
- Flow Meter and Automatic Valve on the Sugar Hollow to Ragged Mountain Transfer (\$150,000)
- Sugar Hollow Dam Rubber Crest Gate Replacement and Intake Tower Repairs (\$940,000)
- South Fork Water Treatment Plant Improvements (\$5,430,442)
- Crozet Water System Master Plan (\$300,000)
- Glenmore WWRF Influent Pump and VFD Addition (\$61,000)

There are a few projects where the adopted budgets have been modified based on the anticipated project requirements and necessitate funding adjustments. The projects with changes include:

- Observatory Water Treatment Plant Improvements (\$9.50 million existing / \$10 million adopted)
- Route 29 Pump Station Site Acquisition (\$1.9 million existing / \$1.22 million adopted)
- Route 29 Pipeline VDOT Betterment (\$3.075 million existing / \$2.9 million adopted)
- Avon to Pantops Water Main (\$0.25 million existing / \$5.5 million adopted)
- South Fork Hydropower Plant Decommissioning (\$2 million existing / \$1 million adopted)
- Buck's Elbow Tank – Interior Coating and Mixing (\$1.055 million existing / \$1.2 million adopted)

- Upper Schenks Branch Interceptor (\$6.67 million existing / \$9.01 million adopted)
- Rivanna Pump Station and Tunnel (\$33.3million existing / \$32.2 million adopted)
- Crozet Flow Equalization Tank (\$2.33 million existing / \$3.75 million adopted)
- Crozet Pump Stations Bypass Fittings and Isolation Valves (\$0.22 million existing / \$0.72 million adopted)
- MCAWRRF Odor Control - Phase 2 (\$9.8 million existing / \$10.1 million adopted)
- MCAWRRF Roof Replacements (\$0.9 million existing / \$1.3 million adopted)
- MCAWRRF Second Centrifuge (\$1.025 million existing / \$1.29 million adopted)
- Radio Upgrades (\$0.5 million existing / \$0.52 million adopted)

## **SECTION IV: WATER UTILITY**

### **A. *Water Rate Structure***

The adopted water rates include seasonal rates that incorporate a 30% spread between the lower winter rates (October through April) and the higher summer rates (May through September), when water is more likely to be in scarce supply. The rates recommended in this report for FY2018 have been prepared on this basis.

### **B. *Fiscal Year 2018 Budget and Rate Impact***

As shown in Exhibit IV-A, the total water expenditures of approximately \$11.255 million have increased by 6.4% or \$675,994 over last year. Significant portions of the budget are described below:

- Water purchase costs rose by \$375,614. The increase is due to a rise in the wholesale costs of water provided by RWSA and an increase in the volume of water anticipated to be purchased from RWSA. The operations rate from RWSA rose 7.42%. The debt portion, which no longer depends on the amount of water consumed, fell \$2,929 (1.80%) per month from last year's RWSA budget.
- Operations and maintenance is increasing by \$98,333 or 4.11%. The increase primarily comes from Salaries and Benefits that no longer reflect vacancies and turnover that the water division regularly experiences. City Council has decided to increase the living wage of individuals employed by the City. Because of this, divisions must address the compression that occurs when one's salary is increased. There has also been an increase in retirement, health care, and other contractual services.
- Water Conservation budget has been budgeted at the full amount requested. There are sufficient carry-over funds from previous years to cover anticipated program costs in the amount of \$110,000.
- Payment in lieu of taxes (PILOT) is increasing by \$9,955 or 1.69%. The City's PILOT is based on 6% of budgeted water sales from the prior year.
- The Water Utility's contribution to support services and administrative costs provided by City government, indirect costs, is increasing \$39,835 or 33.10%.
- The Utility Billing Office (UBO) budget is increasing by \$21,533 or 1.30%. One-sixth of the budget, \$279,019 is assigned to the Water Utility. The remainder is

assigned to Wastewater and Gas Utility budgets. This represents a \$3,589 increase to be funded by the water rate. The increase stems from budgeting based on actual expenditures in previous fiscal years.

- Meter Reading budget is increasing \$5,922, a 1.58% increase stemming primarily from salaries and benefits. As with the UBO budget, one-sixth of the budget is assigned to the Water Utility, which represents a \$987 increase. The remainder is assigned to Wastewater and Gas Utility budgets.
- There has been a reduction in the amount budgeted Water Assistance Program as there are sufficient funds available from previous fiscal years. It is recommended that the current year budget be reduced by \$7,500, from \$15,000 to \$7,500. An increase of \$25,000 for debt service funding to support capital projects associated with the Water Utility.

Based on the approved budget, the City's water rate per thousand cubic feet (mcf) will remain unchanged at \$54.51. Seasonal rates will be as follows:

- Months of May – September - \$62.78/mcf
- Months of October – April - \$48.29/mcf

This represents a 30% spread in summer vs. winter rates. These rates are designed to be “revenue neutral” over the course of a year. A seasonal rate structure is used by many localities as a way to promote water conservation during the peak usage months.

The rate for the UVa’s central system, under a separate contract with the City, will increase from \$26.40/mcf to \$27.02/mcf, 2.35%. UVa’s rate is determined by a 1981 contract.

### **C. *Rate Stabilization Funds***

The purpose of rate stabilization revenue is to mitigate year-to-year fluctuations in utility rates to customers. In general, the rate stabilization revenues should not be used to artificially suppress rates (to sustain rates at levels below the costs of service), but to enable smooth or level annual increases to rates despite fluctuating changes in expenses or variations in annual revenue received. The fund is comprised of facility fee revenues from new customers connecting to the City’s water system.

The amount to be used will be \$350,000 in FY2018 which reduces the rate by \$0.36/mcf. This use of rate stabilization produces a total rate \$2.33/mcf lower than if the stabilization funds were not utilized.

## **D. *Factors Influencing Water Rates***

There are several factors that influence the change in rate needed for the Water Utility to operate on a self-supporting basis, including:

- Changes in wholesale water rates from RWSA
- Availability of rate stabilization funds
- Debt service changes
- City water operating expenses and revenues
- Wholesale volumes purchased or retail volumes sold and water lost

Increasing wholesale rates from our supplier, RWSA, increase the City's rate by \$1.07. An increase in the use of rate stabilization funds decreases the rate by \$0.36. An increase of \$25,000 for debt service expense increases the rate by \$0.18. The increase in operating expenses and revenues increases the rate by \$1.61. Finally, the volume sold to customers and purchased from RWSA is increasing, and the loss factor is remaining unchanged at 14%, resulting in a reduction of \$2.32. All changes produce a adopted water rate of \$54.51/mcf in FY2018. The following chart illustrates the effects each component has on the adopted rate.

**Figure 2: Components of Adopted Water Rate**

### Impacts on Water Rate (per 1,000 cf)



## E. Facility Fee Recommendations

Facility Fees are intended to provide funding to finance all or part of capital improvements required to provide system capacity to serve new customers. Existing users, through service charges and other fees, have developed a valuable public capital asset, and the facility charge to new users is designed to recognize the “current cost” or “anticipated future cost” of providing the capacity necessary to serve additional users. Both new and existing customers benefit greatly from these fees. New customers benefit from having utility service available to serve them without having to wait for the system to be expanded. Existing customers benefit from being “repaid” the costs of system and ensuring new development pays its proportionate share of system expansion costs.

The fee setting methodology typically involves new users paying their proportionate share of the value of assets based their impact on the capacity in the system. The charge is computed by establishing a fixed asset value under a historical or replacement cost basis, and allocating this cost over the total number of units of service. An equivalent residential connection (ERC) is a means of relating large-use customers to a base customer, typically a single-family unit served by a 5/8" water meter. An ERC is expressed as a ratio of the base customer unit. It should be recognized that large consumption customers use a higher share of system capacity and should equitably pay a higher proportionate share of facility fees.

The facility fees allow for new customers to “buy in” to the current system. The facility fee also provides support for the City’s share of RWSA’s facilities.

No changes to the Water Facility Fee are planned for FY2018.

**Figure 3: Adopted Water Facility Fees**

Meter Size	ERC	Water Facility Fee	Low-Income Housing Fee	Change in Fees
5/8"	1	\$3,100	\$800	\$0
1"	2.5	\$7,750	\$1,938	\$0
1.5"	5	\$15,500	\$3,875	\$0
2"	8	\$24,800	\$6,200	\$0
3"	15	\$46,500	\$11,625	\$0
4"	25	\$77,500	\$19,375	\$0
6"	50	\$155,000	\$38,750	\$0

Currently the City offers a reduced water facility fee for affordable housing for developers. The fee for a meter larger than 5/8", whether for water or wastewater, is 25% of the standard facility fee. For a description of the program please see City Code Sec. 31-

102.1 [https://www.municode.com/library/va/charlottesville/codes/code\\_of\\_ordinances?nodeId=CO\\_CH31UT\\_ARTIIIWASEGE](https://www.municode.com/library/va/charlottesville/codes/code_of_ordinances?nodeId=CO_CH31UT_ARTIIIWASEGE).

## **F. *Water Conservation Program***

The City of Charlottesville continues to partner with City customers to find ways to conserve water. In FY2010 the average single-family home used 689 cf of water per month. This has declined each year to the current level of 422 cf/month. Highlights of the program include the distribution of over 10,500 free indoor water conservation kits since 2008, the development and dissemination of Water-Wise landscaping and indoor water conservation information, and a low-flow toilet rebate program, which has replaced 6,133 high consumption toilets since 2003.

The water conservation program also maintains an extensive public outreach campaign. This includes educational activities at summer camps, educating the public during Fix a Leak Week, distributing water-saving information and promotional items at dozens of community events every year such as Kid\*Vention and the Earth Day EcoFair. The City's water conservation message has also been conveyed via the internet (online ads, mobile aps, and social media), print, radio, and television. The water conservation program partners with community partners including the Local Energy Alliance Program (LEAP), UVA Sustainability, Albemarle County Service Authority, and Rivanna Water & Sewer Authority. In addition, we have continued to be an active participant in the American Water Works Association (AWWA), the Alliance for Water Efficiency (AWE) and the Environmental Protection Agency's (EPA) WaterSense program. In 2016, the City of Charlottesville was recognized for their water conservation efforts supporting the WaterSense program and for the second year in a row, received the 2016 Partner of the Year Award for the excellent water conservation efforts performed in 2015. In addition in 2016, the water conservation program was recognized for their excellence in public information and communication with their use of social media from AWWA's Virginia Chapter.

Replacing water distribution mains and service lines is an important component in water conservation. Aging pipes are a primary cause of lost water in a system. Since FY2009, the City has been replacing aged water lines and service lines, which reduces leaks and supports the infrastructure improvements outlined in Section II-B. The City has also performed annual system wide leak detection surveys. With 180 miles of water lines, 78 leaks were found during

the FY2016 through various methods, 14 of those water leaks were found and fixed during the annual leak audit in FY2016. The City aims to respond and repair leaks expeditiously to minimize water loss and service impacts. Leak audit surveys were completed in twelve of the past fourteen years and will continue annually. The next survey is scheduled for summer 2017 and will be consistent with past years covering 100% of the distribution system.

The American Water Works Association (AWWA) recommends that all utilities perform a water audit every year. This audit is intended to identify sources of non-revenue water and to focus efforts in reducing those water losses. Initial audits from FY2010 through FY2012 resulted in improved recordkeeping of water use by City contractors and more detailed procedures for annual fire hydrant testing. Water audits completed for FY2013 – FY2016 have used the same process and resulted in improved data collection procedures specifically quantifying unbilled and unmetered water usage. In FY2014 - FY2016, water loss was quantified by more accurate calculations of loss from water leaks, unmetered unbilled water usage, and water meter error.

Based on the water audit recommendations, a water meter calibration and replacement project was implemented starting in FY2014. In FY2014, the City tested 5% of 5/8-inch meters, 15% of 1-inch meters, 17% of 1.5-inch meters, 17% of 2-inch meters, 60% of 3-inch meters, 44% of 4-inch meters, and 100% of 6-inch meters. Results from this meter testing and calibration effort indicated that all meters need to be regularly tested with intervals determined by the meter size. The meter replacement project also revealed a need to upgrade meter vaults on many of our large meters to improve access and meet current standards. In 2014, the City began a program to upgrade infrastructure associated with 2-inch water meters. In 2017, the meter replacement program continues and has expanded to include all meters 1.5-inch and above. The meter replacement project has replaced 41 large water meters in 2016 and continues to increase in momentum into FY2018. Also as part of the meter replacement program, the City is evaluating customer consumption to verify that the meters are appropriately sized. Since regular water meters less accurately measure low flow rates, extra-sensitive “low-flow” ultrasonic meters will be installed in all applications. In addition, starting in the summer of 2017, 5/8” and 1” meters will be assessed and a replacement program will be implemented similar to the large meters.

The table below outlines current water conservation efforts implemented by the City.

**Figure 4: Water Conservation Activities**

Program Initiatives	Description
Rebates: Low Flow Toilets & Rain Barrels	Low flow toilet rebates issued in FY2016 totaled 223; a revised program to rebate only EPA WaterSense labeled toilets began in July 2012. Rain barrel rebates issued in FY2016 totaled 38, and rebates issued 2009 (start of program) – end of FY2016 totaled 722. The City promotes the rain barrel workshops and opportunities offered by community partners, such as the TJSWCD.
Public Awareness Campaign for Free Indoor Water Conservation Kits	Multiple giveaway events were held during FY2016 and additional events are planned for the 2017 - 2019 calendar. The City partnered with LEAP to distribute water conservation kits as part of their home energy check-ups; Approximately 500 kits are distributed per year at various water conservation events and from the Office of Utility Billing.
Water Conservation Education	The water conservation program goes to summer camps, schools, and small groups to teach the importance of conserving water and ways they can do so. Information pamphlets are provided at all events with tips on how to save water both inside and outside their home. Educational information is also provided on the Water Conservation website explaining ways to save water and money for all types of water needs and usage.
Water-Wise Landscaping	Education and outreach in forms of print ads, radio ads, and social media to inform the community on appropriate lawn watering and water conscious (drought tolerant) landscapes. In the summer of 2016, the water conservation program used weather specific target ads in weather.com mobile and tablet apps to ensure educational information was appropriately conveyed and targeted. This campaign was a huge success and will continue during the summer of 2017.
Online Residential Water Use Calculator	This online tool, available on the city website, is designed specifically for Charlottesville residents to better understand their water usage.
Community Attention Student Volunteer (Blue Team)	Worked with Community Attention to give youth a volunteer opportunity to go door to door and distribute indoor conservation kits and rebate information. Ten high and middle school students participated and passed out conservation kits to over 100 households in 2016.
Carwash Certification	Continued the joint efforts of the City and Albemarle County Service Authority so more businesses will sign up for water conservation carwash certification.
Regular Ad Campaign, Year Round- Check, Twist, Replace	The water conservation program runs yearly ad campaigns using social media, print, television, radio, and online ads to promote the current EPA WaterSense sponsored water conservation campaign: “Check, Twist, Replace”.
Multi-Family Homes’ Toilet Retrofits	This program has been in existence since June 2011; since then, over fifteen apartment buildings have received rebates to replace their high consumption toilets. In FY2015, 212 low flow toilets were replaced in a large multi-family complex. In FY2016, several smaller multi-family complexes utilized this program.
System Leak Detection Audit	Annual Water System Wide Survey found and fixed 14 leaks in fall 2015 (FY2016), and 8 leaks in fall 2016 (FY2017). The leak detection audit for FY2018 will occur in summer 2017. All discovered leaks on the public side of the system are then designated as high priority work orders.

Program Initiatives	Description
Water Line Replacement	Water Department program continues to replace aging distribution lines and public side of service laterals, preventing wasteful water loss.
System Water Audit	Continue to perform AWWA audit each fiscal year and assess areas of improvement in water utility infrastructure, water accountability, and water conservation.
Water Meter Recalibration & Testing	Starting in 2013, approximately 10% of all water meters were tested and calibrated. Since the initial set of meters were tested, it was determined a Water Meter Replacement Project would be implemented. Meter recalibration and testing continues with testing on the larger sized meters that are removed from the field as part of the large meter replacement project.
Water Meter Replacement Project	Based on meter testing and the AWWA water audit recommendations, all water meters at or above 1.5-inch will be evaluated and replaced if necessary. In addition, all meters set to be replaced will be assessed based on water consumption, to select the appropriate meter size. A portion of 1.5-inch and larger meters have been replaced (41 in 2016) and the large meters continue to be replaced in FY2018. Starting in Summer of 2017, small meters (5/8" and 1") will be assessed and will be replaced similar to the large meter program.
Fix a Leak Family 5k	The annual race to highlight EPA WaterSense's nationwide Fix a Leak Week was scheduled for March 2016 at Pen Park. This race is nationally recognized by the EPA. Due to weather concerns, the race was cancelled. All advertising materials and promotional materials were still used to effectively convey the message of finding and fixing leaks. The next Fix a Leak Family 5K is schedule for March 26, 2017.
Water Conservation Community Outreach	The water conservation program participated in numerous community events. At each event, materials are tailored to the audience and information on how to save water, and toilet rebates and rain barrel rebates are always available. For FY2016, water conservation outreach occurred during Kids Book Festival, City Service Fair, Kid*Vention, UVA, Earth Day EcoFair, neighborhood community events, and City Hall. In addition, the water conservation program mentored a high school intern during the summer as part of the Community Attention Youth Internship Program, where the intern provided essential support with water conservation outreach.
Imagine a Day without Water	The water conservation program held the 2 <sup>nd</sup> Imagine a Day without Water campaign in 2016 that involved a student art contest showing the importance of water in our everyday lives. The campaign and contest, co-sponsored with ACSA and RWSA, was a huge success with over 445 poster entries with representation from all City Public Schools. Artwork was displayed around Charlottesville including in City Hall.
Celebrate our Drinking Water Supply	RWSA, ACSA, and the City celebrated the Charlottesville water system as part of Drinking Water Week and the Ragged Mountain Reservoir reaching full capacity in 2016. There was a community engagement event at Ragged Mountain Reservoir and dedication of the improved reservoir. Educational tables were present to discuss the process that occurs to get clean drinking water to your tap.
"I'm For Water" Campaign & The Mayor's Challenge	Participated in the national Mayor's Challenge. Cities compete to get the most residents to take the EPA WaterSense pledge "I'm For Water" and support water conservation practices in their area. Charlottesville came in 3 <sup>rd</sup> in their population size in April 2016. The City plans on participating again in April 2017.

## **G. *Toilet and Rain Barrel Rebate Programs***

In support of water conservation efforts, the City adopted a Toilet Replacement Rebate Program in 2003 and a Rain Barrel Rebate Program in 2009. Currently the program provides a rebate of up to \$100 to any City water customer who purchases and installs an EPA WaterSense toilet to replace older high flow models. WaterSense models use significantly less water, resulting in water savings thus dollar savings every year. Residential customers may replace up to three (3) toilets at a given residence built before 1994. Owners of multi-unit apartment complexes are allowed to replace two (2) toilets per unit. Commercial property owners may replace up to two (2) toilets and receive up to \$80 per replacement. The following chart shows the program participation since adoption of the program. The program will be funded at \$20,000 in FY2018. This is a reduction from past years where the funding was \$40,000. The program has sufficient carry-over funds available to continue to provide the expected number of rebates.

**Figure 5: Historic Participation in Toilet Rebate Program**

Toilet Rebate				
Granted in Fiscal Year <sup>1</sup>	Total # of Customers	Total # of Toilets rebated	Total \$ rebate	Average Rebate / customer (calculated)
2016	186	223	\$ 22,217.96	\$ 119
2015	189	460	\$ 40,554.93	\$ 215
2014	219	305	\$ 29,544.10	\$ 135
2013	358	573	\$ 54,112.67	\$ 151
2012	258	544	\$ 54,185.67	\$ 210
2011	363	599	\$ 61,864.86	\$ 170
2010	286	367	\$ 36,401.41	\$ 127
2009	219	310	\$ 31,085.77	\$ 142
2008	180	302	\$ 30,372.22	\$ 169
2007	194	232	\$ 23,844.95	\$ 123
2006	224	256	\$ 25,513.55	\$ 114
2005	240	285	\$ 28,328.74	\$ 118
2004	361	403	\$ 39,939.33	\$ 111
2003	1,195	1,274	\$ 125,316.54	\$ 105
<b>Total</b>	<b>4,472</b>	<b>6,133</b>	<b>\$ 603,282.70</b>	

<sup>1</sup> In FY2011 the toilet rebate program was expanded to include owners of multi-unit apartment buildings.

The Rain Barrel Rebate Program was started in 2009 to encourage City homeowners to use harvested rainwater for numerous outside uses like washing a car, watering plants, and irrigating landscapes. The program provides up to two (2) \$30 rebates for rain barrels purchased per service address. The City has provided 722 rebates since the project started in 2009 including 38 rebates in FY2016. The City also provides rain barrel workshops periodically

to help City residents construct rain barrels for their use and educates them about the importance of rain water harvesting and water conservation.

## H. *Water Assistance Program*

The Water Assistance Program (WAP) was adopted in FY2012 by City Council to assist City water customers experiencing hardship in making timely or full payments of their water utility bill. The WAP is intended only for residential customers, whether owners or renters of property. It is not intended for landlords or commercial property accounts and is administered in a fashion similar to the established Gas Assistance Program (GAP). The maximum allotment per household per year is \$150 or three times the customer’s average monthly bill, whichever is less.

In FY2016, 157 customers benefited from the WAP in receiving a total of \$13,712. The water budget for the next fiscal year includes \$7,500 for WAP. The WAP also has carry-over funds available from previous fiscal years. Comparable assistance has been adopted in the wastewater fund through the Wastewater Assistance Program (WWAP).

## I. *Water Utility Capital Projects*

The current capital projects in each entity’s five-year capital plan are listed below. The City updates its capital plan annually with the 5 year capital plan being FY2018 – FY2022. RWSA adopted its Capital Improvement Plan March 28, 2017 (FY2017 - FY2021).

**Figure 6: City/RWSA 5 Year Capital Improvement Plan for Water**

<u>City Capital Projects – Water System</u>	<u>Projected Five Year Capital Cost</u>
Water Line replacement (Annual Service Contract) .....	\$ 2,250,000
Water Meter Replacement .....	\$ 1,000,000
Large Waterline Replacements Projects .....	<u>\$ 3,000,000</u>
<b>Total City Capital Water</b>	<b>\$ 6,250,000</b>

<u>RWSA Urban Water Projects</u>	<u>Projected</u>
<u>Five Year Capital Cost</u>	
South Fork Reservoir to Ragged Mtn. Pipeline .....	\$ 2,269,751
South Fork Reservoir Dredging .....	\$ 10,000

Observatory WTP Improvements .....	\$ 9,577,021
Ragged Mountain Reservoir to Observatory Pipe Assessment .....	\$ 285,000
Route 29 Pump Station .....	\$ 753,584
Valve Repair – Replacement Phase 2.....	\$ 500,000
Urban Water Granular Activated Carbon Improvements .....	\$ 14,818,366
Stillhouse Tank Modification Study.....	\$ 548,603
Avon to Pantops Water Main .....	\$ 5,500,000
Water Meter Wholesale Master Metering .....	\$ 2,852,876
Route 29 Pipeline .....	\$ 2,898,765
Piney Mountain .....	<u>\$ 500,000</u>
<b>Total RWSA Urban Water</b>	<b>\$ 40,513,966</b>

## J. Exhibits

### EXHIBIT IV-A WATER UTILITY TWO YEAR BUDGET COMPARISON

<u>Revenue Required</u>	<u>FY2017 BUDGET</u>	<u>FY2018 BUDGET</u>	<u>PERCENT CHANGE</u>
Water purchases	\$ 5,195,201	\$ 5,570,815	7.2 %
Operations & maintenance	2,391,500	2,489,833	4.1
Water conservation budget	88,287	201,333	128.0
Toilet Rebate Program	40,000	20,000	(50.0)
Payment in lieu of taxes	590,330	600,285	1.7
Indirect costs	120,346	160,181	33.1
Utility billing office budget	275,430	279,019	1.3
Meter reading budget	62,291	63,278	1.6
Water assistance program	15,000	7,500	
Vehicle replacement budget	-	36,515	-
Rain Barrels	-	1,500	
Computer system support	21,360	20,480	(4.1)
Interest on deposits	5,000	5,000	-
Debt service funding	<u>\$ 1,775,000</u>	<u>\$ 1,800,000</u>	1.4 %
Total revenue required	\$ 10,579,745	\$ 11,255,739	6.4 %
Less revenues not related to water use:			
Water Conservation Carry-forward	\$ -	\$ 110,000	
Connection service charges	125,000	125,000	-
Rate stabilization	300,000	350,000	16.7
Other fees and charges	<u>150,000</u>	<u>93,000</u>	(38.0) %
Total	\$ 575,000	\$ 678,000	17.9 %
Revenue required from water charges	\$ 10,004,745	\$ 10,577,739	5.7 %
LESS UVa central charges	1,650,000	1,702,260	3.2
Balance to be recovered by City Water Sales	\$ 8,354,745	\$ 8,875,479	6.2 %
Required Percent Increase in Overall Charges	0.35%	6.23%	
Minimum Monthly Charge	4.00	4.00	48.3
Minimum charges	<u>\$ 685,580</u>	<u>\$ 691,208</u>	0.8
Balance to be recovered through rate above minimum	\$ 7,669,165	\$ 8,184,271	6.7 %
Volume (MCF) above minimum	140,700	150,150	6.7
<b>Rate per MCF</b>	<u><b>\$ 54.51</b></u>	<u><b>\$ 54.51</b></u>	-

**EXHIBIT IV-B  
WATER RATE CALCULATION  
FY2018**

	<b>MCF</b>	<b>Amount</b>
Revenue Required:		
Water purchases	247,849	\$ 5,570,815
Operations & maintenance		2,489,833
Water conservation budget		201,333
Toilet Rebate Program		20,000
Payment in lieu of taxes		600,285
Indirect costs		160,181
Utility billing office budget		279,019
Meter reading budget		63,278
Water assistance program		7,500
Vehicle replacement budget		36,515
Rain Barrels		1,500
Computer system support		20,480
Bad Debts		0
Interest on deposits		5,000
Debt service funding		\$ 1,800,000
Total revenue required		\$ 11,255,739
Less revenues not related to water use:		
Water Conservation Carry-forward		\$ 110,000
Connection service charges		125,000
Rate stabilization		350,000
Other fees and charges		\$ 93,000
Total other revenues		\$ 678,000
Revenue required from water charges		\$ 10,577,739
Less fixed water charges and uses:		
Anticipated water loss	14.0 %	34,699
UVa central charges @ <sup>1</sup>	\$ 27.02	63,000
Monthly customer charges @	\$ 4.00	691,208
Total fixed water charges		\$ 2,393,468
Balance to recover through rate above minimum	150,150	\$ 8,184,271
Rate required per MCF above minimum		<b>\$ 54.51</b>
<b>ALTERNATE RATE WITH NEUTRAL WINTER / SUMMER DIFFERENTIAL (30%)</b>		
Rate required per MCF above minimum - Winter		<b>\$ 48.29</b>
Rate required per MCF above minimum - Summer		<b>\$ 62.78</b>

1 According to the 1981 agreement, UVa is charged 100% of the wholesale rate the City pays to RWSA plus 25% of the general operation, administrative overhead, and assessment and collection cost of the City's retail rate.

**EXHIBIT IV-C  
WATER UTILITY  
PROJECTED REVENUE REQUIREMENTS**

<u><b>Funds Required</b></u>	<u><b>FY2017</b></u>	<u><b>FY2018</b></u>
Water purchases	\$ 5,195,201	\$ 5,570,815
Operations & maintenance	2,391,500	2,489,833
Water conservation budget	88,287	201,333
Toilet Rebate Program	40,000	20,000
Payment in lieu of taxes	590,330	600,285
Indirect costs	120,346	160,181
Utility billing office budget	275,430	279,019
Meter reading budget	62,291	63,278
Water assistance program	15,000	7,500
Vehicle replacement budget	0	36,515
Rain Barrels	0	1,500
Computer system support	21,360	20,480
Interest on deposits	5,000	5,000
Debt service funding	<u>\$ 1,775,000</u>	<u>\$ 1,800,000</u>
 Total Funds Required	 \$ 10,579,745	 \$ 11,255,739
 <u><b>Funds Provided</b></u>		
Water Charges	\$ 10,004,745	\$ 10,577,739
Other Revenue	<u>575,000</u>	<u>678,000</u>
 Total Funds Provided	 \$ 10,579,745	 \$ 11,255,739
 Gain (Loss)	 <u>\$ -</u>	 <u>\$ -</u>

**EXHIBIT IV-D  
WATER RATE COMPARISON**

<b>MONTHLY USAGE (CUBIC FEET)</b>	<b>\$ 4.00 / \$ 54.51 FY2017</b>	<b>\$ 4.00 / \$ 54.51 FY2018</b>	<b>DOLLAR CHANGE</b>	<b>PERCENT CHANGE</b>
0	\$ 4.00	\$ 4.00	\$ -	0.00 %
200	14.90	14.90	0.00	0.00
300	20.35	20.35	0.00	0.00
422	27.00	27.00	0.00	0.00
750	44.88	44.88	0.00	0.00
1,000	58.51	58.51	0.00	0.00
2,000	113.02	113.02	0.00	0.00
3,000	167.53	167.53	0.00	0.00
5,000	276.55	276.55	0.00	0.00
10,000	549.10	549.10	0.00	0.00
100,000	\$ 5,455.00	\$ 5,455.00	\$ -	0.00 %

Note: Average single-family customer uses 422 CF per month.

**EXHIBIT IV-E  
WATER RATE COMPARISON  
SEASONAL RATES**

**SUMMER RATES**

<b>MONTHLY USAGE (CUBIC FEET)</b>	<b>\$ 4.00 / \$ 4.00 /</b>		<b>DOLLAR CHANGE</b>	<b>PERCENT CHANGE</b>
	<b>\$ 62.78 FY2017</b>	<b>\$ 62.78 FY2018</b>		
0	\$ 4.00	\$ 4.00	\$ -	0.00 %
200	16.56	16.56	0.00	0.00
300	22.83	22.83	0.00	0.00
<b>422</b>	<b>30.49</b>	<b>30.49</b>	<b>0.00</b>	<b>0.00</b>
750	51.09	51.09	0.00	0.00
1,000	66.78	66.78	0.00	0.00
2,000	129.56	129.56	0.00	0.00
3,000	192.34	192.34	0.00	0.00
5,000	317.90	317.90	0.00	0.00
10,000	631.80	631.80	0.00	0.00
100,000	\$ 6,282.00	\$ 6,282.00	\$ -	0.00 %

Note: Average single-family customer uses 422 CF per month.

**WINTER RATES**

<b>MONTHLY USAGE (CUBIC FEET)</b>	<b>\$ 4.00 / \$ 4.00 /</b>		<b>DOLLAR CHANGE</b>	<b>PERCENT CHANGE</b>
	<b>\$ 48.29 FY2017</b>	<b>\$ 48.29 FY2018</b>		
0	\$ 4.00	\$ 4.00	\$ -	0.00 %
200	13.66	13.66	0.00	0.00
300	18.49	18.49	0.00	0.00
<b>422</b>	<b>24.38</b>	<b>24.38</b>	<b>0.00</b>	<b>0.00</b>
750	40.22	40.22	0.00	0.00
1,000	52.29	52.29	0.00	0.00
2,000	100.58	100.58	0.00	0.00
3,000	148.87	148.87	0.00	0.00
5,000	245.45	245.45	0.00	0.00
10,000	486.90	486.90	0.00	0.00
100,000	\$ 4,833.00	\$ 4,833.00	\$ -	0.00 %

Note: Average single-family customer uses 422 CF per month.

## **SECTION V: WASTEWATER UTILITY**

### **A. *Fiscal Year 2018 Budget and Rate Impact***

The wastewater rate is projected to increase from \$74.61/mcf to \$74.83/mcf in FY2018. As shown on Exhibit V-A, the wastewater operating budget of approximately \$14.570 million has increased by 4.65%, or \$647,597. This increase is due to factors described below:

- The cost of treatment from RWSA is increasing by \$518,823, 6.71%. The wastewater treatment cost charged by RWSA accounts for 56.7% of the City's operating cost of the wastewater utility. RWSA has increased its operations rate charged to the City by 6.32%, from \$13.726/mcf to \$14.594/mcf. The City will pay 53% of the total urban operating wastewater treatment costs borne by RWSA, compared to Albemarle County Service Authority's share of 47%. The City's relative share is based on historical flow figures. The amount of wastewater that RWSA forecasts will be treated is projected to be one percentage point higher than last year. The debt component charged by RWSA is a monthly fixed charge. The monthly charge is going up from \$369,037 to \$392,841 per month, a 6.45% increase.
- The cost of operations and maintenance is increasing by \$92,964 or 5.04%. Similar to the Water Utility, the increase primarily is from salaries and benefits. City Council increased the living wage of individuals employed by the City. There has also been an increase in retirement, health care, and other contractual services.
- An increase in the PILOT of \$23,908, 3.04%. This is due to an increase in the budgeted wastewater sales revenue from the prior year.
- Indirect costs are those costs associated with services provided by other City departments that support the wastewater utility. The City's indirect costs are decreasing by \$12,137, or 9.46%.
- The Utility Billing Office (UBO) budget is increasing by \$21,533 or 1.30%. One-sixth of the budget is assigned to the Wastewater Utility. The remainder is assigned to Water and Gas Utility budgets. This represents a \$3,589 increase to be funded by the Wastewater rate.
- Meter Reading budget is increasing \$5,921, a 1.58% increase stemming primarily from salaries and benefits. As with the UBO budget, one-sixth of the budget is assigned to the Wastewater Utility, which represents a \$987 increase. The remainder, one-sixth and two-thirds of the amount, is assigned to Water and Gas Utility budgets, respectively.

- There has been a reduction in the amount budgeted for the Wastewater Assistance Program as a result of existing carry-over funds from previous fiscal years that can be used along with current year money to fund the program. It is recommended that the current year budget be reduced to \$7,500.

## **B. *RWSA's Fiscal Year 2018 Wholesale Cost***

Several projects factor into the wholesale treatment cost for wastewater from RWSA. Among them are the Schenks Branch Interceptor Replacement, Rivanna Pump Station and Tunnel, Moores Creek Wastewater Facility Odor Control. The Schenks Branch Interceptor lies completely within the City of Charlottesville's boundaries and is dedicated solely to the conveyance and treatment of the City's wastewater, whereas the other projects are shared by the City and County.

One of the major components impacting the City's debt service rate from RWSA is the Meadowcreek Interceptor project. The Meadowcreek Interceptor project included the replacement of approximately 4.2 miles (22,000 linear feet) of interceptor with larger diameter pipe to provide capacity for wet weather flow. Although the project has essentially been completed, its debt service will continue to impact the City's debt service rate from RWSA. An update of RWSA's capital projects contained within their Adopted Capital Improvement Plan follows:

- Upper Schenks Branch Interceptor: The Schenks Branch Interceptor is located in the eastern part of the City of Charlottesville and ties into the Meadowcreek Interceptor. The interceptor was constructed in the mid-1950s of 21-inch clay and concrete pipe. The existing interceptor is undersized to serve present and future wet weather flows as determined by the City, and is to be upgraded to 30-inch pipe. The Upper Schenks Branch Interceptor consists of two sections along McIntire Road. Both of these sections have been designed and construction has begun on the first phase of this project which is located in the City's Schenks Branch Greenway. The contractor was issued a Notice to Proceed in July 2015. Sewer pipe and manhole installation work was completed in February 2017, the walking trail was paved, and grass seed was planted. Installation of landscaping will be completed in fall of 2017. The second phase of the Upper Schenks Interceptor will be upgraded by RWSA in coordination with the City of Charlottesville's sewer upgrades once easement negotiations with Albemarle County are complete (or the City authorizes the second phase project be constructed under McIntire Road). Project costs include design, permitting, easement acquisition, construction, construction observation/administration by the engineering consultant; and project contingencies.
- Rivanna Pump Station and Tunnel: Pumping capacity between the Rivanna Interceptor in Riverview Park and the Moores Creek Advanced Water Resource Recovery Facility

requires expansion for wet weather peak flow, from a current capacity of 24.5 mgd to a firm capacity of 53 mgd in accordance with RWSA's DEQ Consent Order. Following a lengthy public process and study of alternatives, the RWSA Board selected to move forward with a final design in December 2011. The project includes construction of approximately 1,620 linear feet of a tunnel with a tunnel-boring machine which will connect the existing Rivanna Interceptor in Riverview Park to a new pump station located on the RWSA MCAWRRF property. The final design included pumps capable of delivering a peak pumping rate equivalent to 53 mgd, electrical gear, influent grinders, self-cleaning wet well, air collection for odor control, back-up power generation, SCADA control and integration, tie-ins to the existing systems, site and permitting work, storage building demolition and electrical relocation work, as well as architectural, structural and mechanical systems. The existing pump station at the entrance to Riverview Park will be demolished once the new pump station and tunnel are complete and in service. Bidding was held in November 2013 and the project was awarded in December 2013. Construction began in March 2014 and is anticipated to be completed in late summer 2017.

- Moore's Creek AWWRF Odor Control – Phase 2: As part of the implementation of the next phase of the 2007 Odor Control Master Plan at the MCAWRRF, operation audits were performed, liquid and vapor phase sampling was conducted, and a computerized dispersion model was developed in 2014. Recommendations for odor control improvements that would significantly control odors from traveling beyond the MCAWRRF fence line were presented to the RWSA Board of Directors in December 2014 and the CIP project for \$9.33M was approved at the January 2015 Meeting. The budget was later increased to \$9.85M. The final design for odor control improvements includes covering the head works and screening channels, installing grit facilities, constructing a bypass line through one equalization basin, covering the primary clarifiers, building additional odor scrubbing facilities to treat the foul air from the covered sources, removing the post-digestion clarifiers from service, modifying the handling, hauling and storage of biosolids, cleaning the equalization basins and holding ponds, and coating the interior of the digesters. A Value Engineering Study was conducted in June 2015 to evaluate odor control design alternatives based on the preliminary design. The design for the Odor Control Improvements Project was completed in November 2015. An award of construction contract and associated engineering construction administration and inspection occurred in April 2016. Final project completion is expected in January 2018. The digester coating and basin cleaning projects will be managed by RWSA staff through separate contracts.
- Moore's Creek AWWRF Roof Replacements: The majority of the buildings at the Moore's Creek Advanced Water Resource Recovery Facility were constructed in 1981 and 1983 during a major expansion of the existing treatment plant. All buildings constructed at that time were built with a metal roof system. In 2014, deficiencies were identified in the roof at the Administration Building and the roof was replaced. The materials of the original roof at the Administration Building are the same as the roof material on the other buildings. Likewise, many of the buildings have started to experience leaks and

structural deficiencies. As a result, the purpose of this project is to replace the roof systems at the following buildings at the Moores Creek AWRRF: Blower Building, Moores Creek Pump Station, Sludge Pump Station No. 2, Maintenance Building 1, and Maintenance Building 2. Following additional review of the conditions of various buildings located at the Moores Creek AWRRF, this project also now includes replacement of the roof systems for the Sludge Pumping Building, the Primary Pump Building, and the Effluent Pump Building. Design of these improvements will begin in January 2017.

- Moores Creek AWRRF Second Centrifuge: The Moores Creek AWRRF currently operates a high-speed centrifuge to process and dewater digested biosolids from the treatment process. The centrifuge was constructed during the 2009-2012 Nutrient Upgrade project and served to replace an older plate and frame filter press operation (which was removed during installation of the centrifuge), with a second plate and frame press serving as backup. An evaluation of the remaining filter press concluded that extensive repairs would be required to maintain this as a backup dewatering system and the repairs would not be cost-effective as purchasing a second centrifuge. Without the the second press the facility does not have a redundant process, and thus during planned or emergency outages a portable back-up unit must be rented or leased. A second centrifuge will allow for continued biosolids dewatering during planned or emergency repairs to one of the two centrifuges, for higher-rate processing by operating both units simultaneously during other periods (thus saving on staff time), and for better maintenance of proper solids flow through the plant.

### **C. *Rate Stabilization Funds***

\$500,000 of rate stabilization funds will be used in FY2018 to reduce wastewater rates by \$3.70. Expected use in FY2018 is \$100,000 more than that those used in the previous fiscal year.

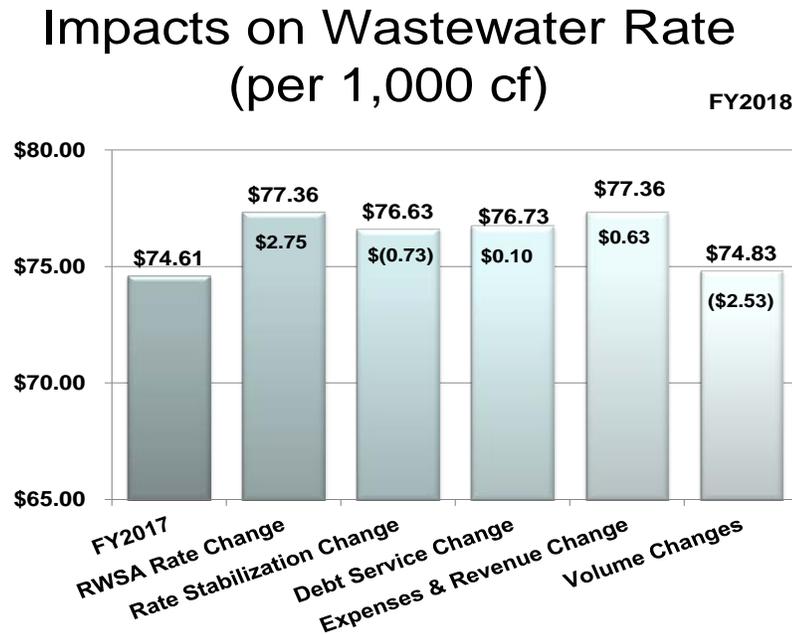
### **D. *Factors Influencing Wastewater Rates***

There are several factors that influence the change in rates needed for the Wastewater Utility to operate on a self-supporting basis, including:

- Changes in wastewater treatment rates from RWSA
- Availability of rate stabilization funds used to mitigate increases in rate increases
- Debt service payments by the City
- City wastewater operating expenses and revenue from other sources
- Changes in volumes treated by RWSA or expected to be billed to our City customers and the number of customers billed

The following chart illustrates the impact of each component for the adopted rate for FY2018.

**Figure 7: Components of Adopted Wastewater Rate**



The increase in the treatment cost from RWSA increases the rate an additional \$2.75/mcf to \$77.36/mcf. Rate stabilization has been increased to \$500,000 lowering the rate to \$76.63, or - \$0.73/mcf. A debt service increased \$15,000 to \$3,000,000, increasing the rate to customers by \$0.10, or \$76.73. Changes in expenses and revenue result in an increase in the rate of \$0.63/mcf to \$77.36/mcf. Projected increases in the number of customers and treatment volume decreases the per-unit cost necessary and decreases the rate \$2.53 for a final rate per mcf of \$74.83.

## E. *Rate Comparisons*

Exhibits VI-A and VI-B provide a comparison of customer bills for water and wastewater at various levels under the current and adopted rates.

For the single-family household using approximately 422 cf of water per month, the combined water and wastewater bill will be \$62.58. This is an increase of \$0.09 or 0.14% based on the composite rate structure. A retail customer using 1,000 cf will have a combined water and wastewater bill that will be \$137.34, an increase of \$0.22 or 0.16%.

## F. *Wastewater Assistance Program*

A Wastewater Assistance Program (WWAP) was created by City Council in FY2012 to assist customers who had difficulty paying their bills due to extreme circumstances. It is recommended that \$7,500 be budgeted in FY2018 in combination with existing funds to fund the WWAP. 155 customers received assistance in FY2016, totaling \$13,647. This program will continue to operate in conjunction with the WAP. The program will be administered by the Utility Billing Office in a similar fashion as the established Gas Assistance Program.

## G. *Facility Fees*

No increase in the facility fees has been adopted for the City in FY2018.

**Figure 8: Adopted Wastewater Facility Fee**

Meter Size	ERC	Proposed City Wastewater Facility Fee	Adopted Low-Income Housing Fee	Change in Facility Fees
5/8"	1	\$5,350	\$800	\$0
1"	2.5	\$13,375	\$3,344	\$0
1.5"	5	\$26,750	\$6,688	\$0
2"	8	\$42,800	\$10,700	\$0
3"	15	\$80,250	\$20,063	\$0
4"	25	\$133,750	\$33,438	\$0
6"	50	\$267,500	\$66,875	\$0

## H. Wastewater Utility Capital Projects

The current capital projects in each entity’s five-year capital plan are listed below. The City updates its capital plan annually with the 5 year capital plan being FY2018–FY2022. RWSA adopted its Capital Improvement Plan March 28, 2017 (FY2017 - FY2021).

**Figure 9: City/RWSA 5 Year Capital Improvement Plan for Wastewater**

<u>City Capital Projects – Wastewater System</u>	<u>Projected Five Year Capital Cost</u>
Rehabilitation/Replacement Program .....	\$ 10,250,000
<b>Total City Capital Wastewater</b>	<b>\$ 10,250,000</b>

<u>RWSA Urban Wastewater Projects</u>	<u>Projected Five Year Capital Cost</u>
Schenks’ Branch Interceptor .....	\$ 6,041,464
Rivanna Pump Station and Tunnel.....	\$ 9,697,478
Interceptor Sewer and Manhole Repair.....	\$ 1,214,059
Administration Building Repairs .....	\$ 84,746
Bridge Repairs .....	\$ 299,259
Moore’s Creek WWTP Odor Control – Phase 2 .....	\$ 9,180,620
Moore’s Creek WWTP Roof Replacements .....	\$ 1,264,000
Moore’s Creek WWTP Second Centrifuge .....	<u>\$ 1,277,601</u>
<b>Total RWSA Urban Wastewater (omits Crozet Projects)</b>	<b>\$ 29,059,227</b>

**I. Exhibits**

**EXHIBIT V-A  
WASTEWATER UTILITY  
TWO YEAR BUDGET COMPARISON**

<u>Revenue Required</u>	<u>FY2017 BUDGET</u>	<u>FY2018 BUDGET</u>	<u>PERCENT CHANGE</u>
Cost of treatment	\$ 7,736,415	\$ 8,255,238	6.71 %
Operations & maintenance	1,843,614	1,936,578	5.04
Payment in lieu of taxes	786,206	810,114	3.04
Indirect costs	128,281	116,144	(9.46)
Utility billing office budget	275,430	279,019	1.30
Meter reading budget	62,291	63,278	1.58
Sewer Surcharge	25,000	-	(100.00)
Wastewater assistance program	15,000	7,500	(50.00)
Vehicle replacement	36,423	73,606	
Computer system support	28,240	28,020	(0.78)
Debt service funding	<u>\$ 2,985,000</u>	<u>\$ 3,000,000</u>	0.50
 Total operations	 \$ 13,921,900	 \$ 14,569,497	 4.65 %
Less revenues not related to sewer rates:			
Finance charges for late payments	\$ 20,000	\$ 30,000	50.00
Rate stabilization	<u>\$ 400,000</u>	<u>\$ 500,000</u>	25.00
 Total	 \$ 420,000	 \$ 530,000	 26.19 %
 Revenue required from sewer charges	 \$ 13,501,900	 \$ 14,039,497	 3.98 %
LESS UVa central charges	2,564,573	2,576,280	0.46 %
Balance to be recovered by City Water Sales	\$ 10,937,328	\$ 11,463,217	4.81 %
Required Percent Increase in Overall Rates	5.54%	0.28%	
Minimum Monthly Charge	4.00	4.00	0.00 %
Minimum charges	<u>\$ 682,324</u>	<u>\$ 687,360</u>	0.74 %
 Balance to be recovered through rate above minimum	 \$ 10,255,004	 \$ 10,775,857	 5.08 %
Volume (MCF) above minimum	137,439	144,000	4.77 %
 <b>Rate per MCF</b>	 <u><b>\$ 74.61</b></u>	 <u><b>\$ 74.83</b></u>	 0.29 %

**EXHIBIT V-B  
WASTEWATER RATE CALCULATION  
FY2018**

	<b>MCF</b>	<b>AMOUNT</b>
Revenue required:		
Cost of treatment	186,000	\$ 8,255,238
Operations & maintenance		1,936,578
Payment in lieu of taxes		810,114
Indirect costs		116,144
Utility billing office budget		279,019
Meter reading budget		63,278
Wastewater assistance program		7,500
Vehicle replacement		73,606
Computer system support		28,020
Debt service funding		\$ 3,000,000
Total revenue required		\$ 14,569,497
Less revenues not related to usage:		
Finance charges for late payments		\$ 30,000
Rate Stabilization		\$ 500,000
Total other revenues		\$ 530,000
Revenue required from sewer charges		\$ 14,039,497
Less fixed sewer charges :		
U Va central charges <sup>1</sup>	\$ 61.34	42,000
Minimum charges @	\$ 4.00	0
Total fixed sewer charges	42,000	\$ 3,263,640
Balance to recover through rate above minimum	144,000	\$ 10,775,857
Rate required per MCF above minimum		<b>\$ 74.83</b>

**Note: 1** According to the 1981 agreement, UVA is charged 100% of the wholesale rate the City pays to RWSA plus 50% of the general operation, administrative overhead, assessment and collection and capital outlay cost components of the City's retail rate.

**EXHIBIT V-C  
WASTEWATER UTILITY  
PROJECTED REVENUE REQUIREMENTS**

<u>Funds Required</u>	<u>FY2017</u>	<u>FY2018</u>
Cost of treatment	\$ 7,736,415	\$ 8,255,238
Operations & maintenance	1,843,614	1,936,578
Payment in lieu of taxes	786,206	810,114
Indirect costs	128,281	116,144
Utility billing office budget	275,430	279,019
Meter reading budget	62,291	63,278
Sewer Surcharge	25,000	-
Wastewater assistance program	15,000	7,500
Vehicle replacement	36,423	73,606
Computer system support	28,240	28,020
Debt service funding	<u>\$ 2,985,000</u>	<u>\$ 3,000,000</u>
 Total Funds Required	 \$ 13,921,900	 \$ 14,569,497
 <u>Funds Provided</u>		
 Sewer charges	 \$ 13,501,900	 \$ 14,039,497
Finance charges for late payments	20,000	30,000
Rate stabilization	<u>\$ 400,000</u>	<u>\$ 500,000</u>
 Total Funds Provided	 <u>\$ 13,921,900</u>	 <u>\$ 14,569,497</u>
 Gain (Loss)	 <u>\$ -</u>	 <u>\$ -</u>

**EXHIBIT V-D  
WASTEWATER RATE COMPARISON**

<b>MONTHLY USAGE (CUBIC FEET)</b>	<b>\$ 4.00 / \$ 74.61 FY2017</b>	<b>\$ 4.00 / \$ 74.83 FY2018</b>	<b>DOLLAR CHANGE</b>	<b>PERCENT CHANGE</b>
0	\$ 4.00	\$ 4.00	\$ -	0.00 %
200	18.92	18.97	0.05	0.26
267	23.92	23.98	0.06	0.25
300	26.38	26.45	0.07	0.27
422	35.49	35.58	0.09	0.25
750	59.96	60.12	0.16	0.27
1,000	78.61	78.83	0.22	0.28
2,000	153.22	153.66	0.44	0.29
3,000	227.83	228.49	0.66	0.29
5,000	377.05	378.15	1.10	0.29
10,000	750.10	752.30	2.20	0.29
100,000	\$ 7,465.00	\$ 7,487.00	\$ 22.00	0.29 %

Note: Average single-family customer uses 422 CF per month.

## **SECTION VI: COMBINED WATER AND WASTEWATER CHARGES**

The following charts show the impact on customers given the newly adopted water and wastewater rates for the upcoming fiscal year. Exhibit VI-A shows the impact of water usage on the combined bill using the composite water rate. Exhibit VI-B shows the seasonal impact of water usage on the customer bill given the combined rates. The final exhibit, Exhibit VI-C, shows the adopted combined facility fees.

EXHIBIT VI-A

COMBINED WATER AND SEWER BILL COMPARISON  
CURRENT FY2017 AND FY2018 RATES  
USING COMPOSITE WATER RATES

Composite Water Rates

	FY2017 Rates			FY2018 Rates			Dollar Increase (Decrease)	Percent Increase (Decrease)
	Water	Sewer	Total	Water	Sewer	Total		
<b>Rate Schedule</b>								
Customer Charge	\$ 4.00	\$ 4.00	\$ 8.00	\$ 4.00	\$ 4.00	\$ 8.00		
Charge per mcf	\$ 54.51	\$ 74.61	\$ 129.12	\$ 54.51	\$ 74.83	\$ 129.34		
<b>Bill Amounts</b>								
<u>Cu Ft</u>								
0	\$ 4.00	\$ 4.00	\$ 8.00	\$ 4.00	\$ 4.00	\$ 8.00	\$ -	0.00 %
200	14.90	18.92	33.82	14.90	18.97	33.87	0.05	0.15
267	18.55	23.92	42.47	18.55	23.98	42.53	0.06	0.14
300	20.35	26.38	46.73	20.35	26.45	46.80	0.07	0.15
422	27.00	35.49	62.49	27.00	35.58	62.58	0.09	0.14
750	44.88	59.96	104.84	44.88	60.12	105.00	0.16	0.15
1,000	58.51	78.61	137.12	58.51	78.83	137.34	0.22	0.16
1,500	85.77	115.92	201.69	85.77	116.25	202.02	0.33	0.16
2,000	113.02	153.22	266.24	113.02	153.66	266.68	0.44	0.17
3,000	167.53	227.83	395.36	167.53	228.49	396.02	0.66	0.17
5,000	276.55	377.05	653.60	276.55	378.15	654.70	1.10	0.17
10,000	549.10	750.10	1,299.20	549.10	752.30	1,301.40	2.20	0.17
100,000	\$ 5,455.00	\$ 7,465.00	\$ 12,920.00	\$ 5,455.00	\$ 7,487.00	\$ 12,942.00	\$ 22.00	0.17

Note: Average single-family customer uses 422 CF per month.

**EXHIBIT VI-B  
COMBINED WATER AND SEWER BILL COMPARISON  
CURRENT FY2017 AND FY2018 RATES**

**Using Winter Rates**

	FY2017 Rates			FY2018 Rates			Increase (Decrease)	Increase (Decrease)
	Water	Sewer	Total	Water	Sewer	Total		
<b>Rate Schedule</b>								
Customer Charge	\$ 4.00	\$ 4.00	\$ 8.00	\$ 4.00	\$ 4.00	\$ 8.00		
Charge per mcf	\$ 48.29	\$ 74.61	\$ 122.90	\$ 48.29	\$ 74.83	\$ 123.12		
<b>Bill Amounts</b>								
<b>Cu Ft</b>								
0	\$ 4.00	\$ 4.00	\$ 8.00	\$ 4.00	\$ 4.00	\$ 8.00	\$ -	0.00 %
200	13.66	18.92	32.58	13.66	18.97	32.63	0.05	0.15
267	16.89	23.92	40.81	16.89	23.98	40.87	0.06	0.15
300	18.49	26.38	44.87	18.49	26.45	44.94	0.07	0.16
422	24.38	35.49	59.87	24.38	35.58	59.96	0.09	0.15
750	40.22	59.96	100.18	40.22	60.12	100.34	0.16	0.16
1,000	52.29	78.61	130.90	52.29	78.83	131.12	0.22	0.17
1,500	76.44	115.92	192.36	76.44	116.25	192.69	0.33	0.17
2,000	100.58	153.22	253.80	100.59	153.66	254.25	0.45	0.18
3,000	148.88	227.83	376.71	148.88	228.49	377.37	0.66	0.18
5,000	245.47	377.05	622.52	245.47	378.15	623.62	1.10	0.18
10,000	486.94	750.10	1,237.04	486.94	752.30	1,239.24	2.20	0.18
100,000	\$ 4,833.44	\$ 7,465.00	\$ 12,298.44	\$ 4,833.44	\$ 7,487.00	\$ 12,320.44	\$ 22.00	0.18

**Using Summer Rates**

	FY2017 Rates			FY2018 Rates			Increase (Decrease)	Increase (Decrease)
	Water	Sewer	Total	Water	Sewer	Total		
<b>Rate Schedule</b>								
Customer Charge	\$ 4.00	\$ 4.00	\$ 8.00	\$ 4.00	\$ 4.00	\$ 8.00		
Charge per mcf	\$ 62.78	\$ 74.61	\$ 137.39	\$ 62.78	\$ 74.83	\$ 137.61		
<b>Bill Amounts</b>								
<b>Cu Ft</b>								
0	\$ 4.00	\$ 4.00	\$ 8.00	\$ 4.00	\$ 4.00	\$ 8.00	\$ -	0.00 %
200	16.56	18.92	35.48	16.56	18.97	35.53	0.05	0.14
267	20.76	23.92	44.68	20.76	23.98	44.74	0.06	0.13
300	22.83	26.38	49.21	22.83	26.45	49.28	0.07	0.14
422	30.49	35.49	65.98	30.49	35.58	66.07	0.09	0.14
750	51.09	59.96	111.05	51.09	60.12	111.21	0.16	0.14
1,000	66.78	78.61	145.39	66.78	78.83	145.61	0.22	0.15
1,500	98.17	115.92	214.09	98.17	116.25	214.42	0.33	0.15
2,000	129.56	153.22	282.78	129.56	153.66	283.22	0.44	0.16
3,000	192.34	227.83	420.17	192.34	228.49	420.83	0.66	0.16
5,000	317.90	377.05	694.95	317.90	378.15	696.05	1.10	0.16
10,000	631.80	750.10	1,381.90	631.80	752.30	1,384.10	2.20	0.16
100,000	\$ 6,282.00	\$ 7,465.00	\$ 13,747.00	\$ 6,282.00	\$ 7,487.00	\$ 13,769.00	\$ 22.00	0.16

Note: Average single-family customer uses 422 CF per month.

**EXHIBIT VI-C**

Meter Size	ERC	Water Facility Fee	Low-Income Water Facility Fee	Chage in Water Facility Fees	Wastewater Facility Fee	Low-Income Water Facility Fee	Chage in Wastewater Facility Fees	Combined City Facility Fees	Combined Low-Income Facility Fees	Change in Facility Fees
5/8"	1	\$3,100	\$800	\$0	\$5,350	\$800	\$0	\$8,450	\$1,600	\$0
1"	2.5	\$7,750	\$1,938	\$0	\$13,375	\$3,344	\$0	\$21,125	\$5,281	\$0
1.5"	5	\$15,500	\$3,875	\$0	\$26,750	\$6,688	\$0	\$42,250	\$10,563	\$0
2"	8	\$24,800	\$6,200	\$0	\$42,800	\$10,700	\$0	\$67,600	\$16,900	\$0
3"	15	\$46,500	\$11,625	\$0	\$80,250	\$20,063	\$0	\$126,750	\$31,688	\$0
4"	25	\$77,500	\$19,375	\$0	\$133,750	\$33,438	\$0	\$211,250	\$52,813	\$0
6"	50	\$155,000	\$38,750	\$0	\$267,500	\$66,875	\$0	\$422,500	\$105,625	\$0

## **SECTION VII: STORMWATER UTILITY**

### **A. Stormwater Utility Fee Rate Structure**

The Stormwater Utility fee rate was adopted in March, 2013 when City Council approved the Stormwater Utility Ordinance. The rate is projected to stay flat for the period FY2014-FY2018 per the multi-year operations budget and five-year capital plan approved by City Council during Stormwater Utility Ordinance adoption. The rate will be evaluated during the planning and development of the FY2019-FY2023 multi-year operations budget and 5 year capital plan. Infrastructure costs are paid for with a combination of fee revenues and bond sales over the five year period.

### **B. Fiscal Year 2018 Budget**

The total Stormwater Utility expenditures of approximately \$3.289 million have increased by approximately 34% in the amount of \$834,100. This is the result of planned bond issue for FY2018 to fund the design and permitting of drainage and stormwater quality projects.

### **C. Credit Program and Charlottesville Conservation Assistance Program**

The Credit Program and Charlottesville Conservation Assistance Program (CCAP) were adopted by City Council in FY2014. The Credit Program is required by state law as a component of a municipal stormwater utility. Property owners who install and maintain structural stormwater management facilities that permanently reduce stormwater runoff and/or pollutants can apply for and receive a credit towards their stormwater utility fee ranging from 20% to 100% minus one billing unit for the impervious area treated by the facility. The Credit Program is budgeted at \$50,000 a year.

CCAP is provided in partnership with the Thomas Jefferson Soil and Water Conservation District and provides a one-time cost share for property owners who install an eligible water resources stewardship project. For a description of the program and a list of potential projects please go to <http://tjswcd.org/vcap.php>. CCAP is budgeted at \$32,000 a year.

### **D. Financial Relief Program**

City Council adopted a financial relief program in February 2014 to assist homeowners who experience hardship in paying the Stormwater Utility Fee applied to their property. The program is budgeted at \$25,000 a year and paid from the General Fund, not Stormwater Utility funds. The

program provides a 60% to 100% reduction in the Stormwater Utility Fee for residents eligible for the Real Estate Tax Relief program, with the Stormwater Utility Fee reduction matching the percentage received in real estate tax relief. The program also provides a 25% stormwater utility fee reduction for residents who are approved for the Charlottesville Housing Affordability Tax Grant Program (CHAP).

**E. Stormwater Utility Capital Projects**

The current capital projects in each entity’s five-year capital plan are listed below. The Stormwater Utility capital plan was adopted by Council when the Stormwater Utility Ordinance was approved in March of 2013. The five-year capital plan for the Stormwater Utility is for the period FY2014–FY2018.

**Figure 10: Five-Year Capital Improvement Plan for Stormwater**

<u>City Capital Projects – Wastewater System</u>	<u>Projected Five-Year Capital Cost</u>
Design/Permitting for Drainage/ Stormwater Improvement Projects .....	\$ 700,000
Water Resources Master Plan .....	\$ 450,000
Major Capital Drainage Improvement Project Construction .....	\$ 1,200,000
Stormwater Quality Retrofit Project Construction .....	\$ 800,000
Neighborhood Drainage Improvements .....	\$ 250,000
Rehabilitation Program .....	<u>\$ 4,500,000</u>
<b>Total City Capital Stormwater</b>	<b>\$ 7,900,000</b>

## SECTION VIII: GAS UTILITY

### ***A. Background***

The City of Charlottesville's gas utility is one of three municipally owned gas utilities in the Commonwealth of Virginia and has provided service for over 150 years. It operates on a self-supporting basis and is not designed to operate at a profit. Rates are set annually at a break-even point. However, due to various factors (winter weather and the number of gas customers) it can generate a profit or loss in any given year.



Natural gas is domestically abundant with 95% of the natural gas we use in the United States coming from North America. There are more than 100 years of availability of natural gas in the U.S. alone, plus a lot more gas reserves that have not been touched. This assures availability for many years to come. Natural gas is also the cleanest burning fossil fuel. Because the combustion processes for natural gas is almost perfect, very few impurities are emitted into the atmosphere as pollutants. Also, with the

introduction of new technologies, nitrogen oxide, a pollutant targeted by the Clean Air Act can be significantly reduced. This combustion results in fewer greenhouse gases than coal or oil since when it is burned completely the principal products of combustion are carbon dioxide and water vapor, thus reducing our carbon footprint. Unlike other energy sources, natural gas provides instant heat as soon as it's turned on, so natural gas can keep an entire residence comfortable by providing instant warm heat to your furnace, fireplace, stove and water heater.

It is also one of the lowest cost and most efficient energy sources available. Households that use natural gas appliances for heating, water heating, cooking and clothes drying spend an average of \$693 less per year than homes using electrical appliances. Thus, natural gas is preferred by many people, but the market area is restricted to those geographic areas that are served by distribution lines, as natural gas is piped directly into your residence. To obtain maximum sales from new developments, it is important to have mains in place before construction begins. If a

customer has installed equipment that uses another fuel, conversion to natural gas takes place over an extended time period and diminishes the economic feasibility of line extensions. Therefore, it is essential to work with potential gas customers as they are making their initial decisions, via an active marketing effort, if the City wishes to continue to add new customers.

The Charlottesville gas system currently provides service to an area that includes all of Charlottesville and parts of Albemarle County consisting of 329 miles of main. There are approximately 20,083 customers (12,180 in the City and 7,903 in the County). This includes 207 new customers over last year, as well as another 30 finished service connections that will become customers once the home or business is occupied. This is an increase of 237 connections over last year, and an example of the expansion programs which have provided a substantial capacity for growth, allowing the gas system to compete for business in a growing service area.

Five levels of service are provided to meet the needs of various customer classes: Firm, Interruptible, Air Conditioning, Small Volume Transportation, and Large Volume Transportation. Most consumers are firm customers, with a priority for gas use at all times. Currently, there are 10 large-volume customers with interruptible service who are not assured of continuous service; they must maintain an alternate fuel system and be prepared to switch to that alternate fuel within several hours of notification. This customer class is vital to the system because it allows the City to stay within the volume requirements of the firm transportation entitlement and still meet the gas needs of firm customers in peak demand periods. Interruptible customers pay lower rates than firm customers because they have no assurance of service in peak demand periods and, therefore, do not share in the cost of providing peak period supply. The air conditioning class includes a few customers who use gas air conditioning systems and pay lower rates because this is an off-peak load. Transportation customers are those who purchase their own gas from independent suppliers and transport it through the City's distribution system to their location. All transportation service is on an interruptible basis. There are currently two transportation customers, one small volume and one large volume. The City's gas consumption by customer class based on volume for was approximately:

66% firm customers  
34% interruptible  
<1% air conditioning  
100%

## **B. Marketing Efforts and New Business**

Yearly home sales for 2016 in Greater Charlottesville were up 6.9% compared to 2015 sales. This marked the fourth consecutive year with gains in sales as the 3,524 homes sold in 2016 achieved the highest level since 2006. The median sales price for 2016 remained steady with an average price of \$275,000, according to a year-end real estate report from the Charlottesville Area Association of Realtors (CAAR).

The home improvement market is another niche where we have been concentrating our sales efforts. The large difference in energy cost between natural gas and oil/propane helps homeowners to offset the initial cost of conversion. This market accounted for more than 15% of applications for residential gas service in 2016.

### **New Services Completed and Planned**

Projects: 1=County; 2=City

#### *Residential*

- Belvedere 2nd phase – 120 lots (1)
- Berkeley – main extension for existing homes (1)
- Briarwood – 665 residences (1)
- Cascadia - 258 units (1)
- Dunlora Gates – 20 units (1)
- Free State Run – 27 lots (1)
- Hyland Ridge – 84 luxury single homes (1)
- Lochlyn Hill – (2)
- Naylor Street Subdivision – 7 lots (2)
- Oaklawn Subdivision – 16 lots (2)
- Outbounds Farm – 20 lots (1)
- River House Condominiums – 24 units (1)
- Sunset Overlook – 41 lots (1)
- Water Street Promenade – Old Coal Tower Apartments (2)
- Westmoreland Main Extension - main extension for existing homes (1)

#### *Commercial*

- 3 Notch Brewery at IX – restaurant (2)
- 5<sup>th</sup> Street Commercial Development – retail, restaurant and daycare (1)
- Alamo Drafthouse Cinema (1) – movie theatre and restaurant

- Aqua Car Wash (2)
- Baywood Hotel (2)
- BJ's at Stonefield – restaurant (1)
- Bojangles at Hollymead towncenter – restaurant (1)
- CVS at W Rio Road – retail (1)
- Carpet Plus – retail (2)
- Fifth Street Station - retail (1)
- Fairfield Inn and Suites by Marriott – hotel (2)
- Jared's Jewelry – retail (1)
- Harvest Moon Catering – restaurant (1)
- North Wing Barracks Café – restaurant (2)
- Pantops Fire Station (1)
- Texas Roadhouse – restaurant (1)
- UVA Fontaine Medical Park Addition (1)
- YMCA McIntire Park (2)

**Potential new projects include:**

*Residential*

- Belmont Station – 39 townhomes (2)
- Brookhill – 800 to 1,550 units (1)
- Dunlora Park – 33 lots (1)
- North Pointe – mixed-use residential (1)
- Oakleigh – Senior Assisted Living (1)
- Wintergreen Farm - 85 lots (1)

*Commercial*

- 29<sup>th</sup> Place addition – retail (1)
- Autograph – hotel (2)
- Belvedere Station – retail and restaurant (1)
- Brookhill – 130,000 sq. ft. commercial (1)
- CVS Barracks – retail (2)
- Fulton Bank (2)
- Kroger Marketplace at Seminole Square (2)
- Landmark Hotel (2)
- Longhorn Steakhouse – restaurant (1)

- West2nd– 69 unit mixed used (2)
- McIntire Square (2)
- Northtown Center– retail and offices (1)
- St. Thomas Aquinas Church (2)
- The Standard - mixed used (2)
- William Taylor Plaza - mixed used (2)
- Wild Wings at Northtown – restaurant (1)
- Zaxby's - restaurant (2)

## Gas Safety Public Awareness Program

Our actions in 2016 included:

- *“Dig with Care” Program* – Although most commercial excavators are aware of the “call VA811 before digging” law, the number of third party excavation damage to our gas line is on the rise. Part of the problem lies with excavators not following the dig with care guidelines. “No Reasonable Care” gas line damage jumped from 28% in 2012 to 50% in 2013. To tackle the situation, we launched the Education Program “Dig with Care” featuring the following elements :
  - **Marty’s Minute** – A series of radio spots with the contractor Marty. Our well-intended fictitious character shares his wisdom of years of experience in construction and the importance of digging with care. These spots have been aired during the early morning drive hours on a local Country Radio station.
  - **VA 811 Day Celebration** – On August 11th, Charlottesville Gas hosted its annual VA811 Day event, celebrating safe excavation practices. We featured a live radio DJ broadcast, distributed giveaways, food, educational materials, and received local media press coverage.
  - **Distribution of VA 811 Kits** - We started a new outreach program to local excavators and construction workers. Staff visited construction sites and handed out VA 811 Kits that are comprised of a VA 811 T-Shirt, a VA 811 bumper sticker, and a safe excavation guide
  - **Excavation Safety Training** – We hosted a special training for local excavators, plumbers and building inspectors. The 1½-hour presentation was led by Frank Hudik of the State Corporation Commission (SCC).

Since the “Dig with Care” program was launched, we experienced a 49% reduction in gas line damage caused by third party excavators (from 2.83/1000 Miss Utility tickets in 2013 to 1.41/1000 Miss Utility tickets in 2016).

- TV Spot - Two Sing-A-Long safety commercials featuring our Flicker the Flame jingle were produced and began airing in 2012. The first spot focuses on the smell of gas and what to do if you suspect a leak, and the second spot highlights calling Miss Utility before digging. Both commercials featured City employees and local children, and were produced by Charlottesville Newsplex. These spots have aired on local network channels (NBC, CBS, CW, FOX, ABC), cable TV channels (BET, Bravo, E!, Food Network, ABC Family, Hallmark Channel, Nickelodeon, Cartoon Network, DIY Channel, ESPN, ESPN2, Golf Channel, HGTV, NBC Sports) and before film screenings at Stonefield Regal Movie Theater.
- Video Campaign for College Students On the 2014 Public Awareness follow-up survey, we noticed a gap of knowledge regarding gas safety with young adults. Part of the issue is this audience is not easily reached by traditional media (TV and Radio). To address the matter, we developed an online campaign targeting college students.
- Improved Gas Safety Flyer - This bilingual bill stuffer featured a more user friendly layout and a natural gas scent scratch-n-sniff square. A contest was launched on our webpage measure effectiveness. 257 participants that voluntarily replied to the survey.
- Intensified Outreach Programs - We targeted events with high attendance such as UVa baseball games, KidVention, Holiday Heritage Parade and the WVPT Kids Book Festival. Flicker even had the honor of throwing out the first pitch at an UVa Baseball ACC series game.
- Expansion of the Flicker @ Your Classroom Program - During the 2016 school year, the Flicker @ Your Classroom and Summer Camp programs reached over 150 children.
- Outsource Utility Location - In 2014, we outsourced the utility location marking process resulting in an increase in utility marking accuracy and reducing damage.

# Gas Safety Public Awareness Program

## Multimedia Materials

**NATURAL GAS**  
A safe energy source for whatever you do

Let Flicker show all the steps to you!

Natural Gas **ROTTEN** Smells Like **EGGS**

**CALL 911**  
ON CALL GAS

**Natural Gas Safety Word Scramble**  
Directions: Unscramble the underlined words in the gas safety statements below, then use the numbered letters to uncover a hidden message from Flicker!

- Natural gas smells like ATERTD GEES
- If you smell gas, leave the area. Do not turn any lights or SNPALEPIE on or off.
- Call 911 or Charlottesville Gas at 970-3800 if you suspect a gas REAL
- To avoid damaging pipes, call 811 to have all underground LITUISEI marked.
- Natural gas is delivered through DUGNDRROUN pipes.

**Be Gas Safety Smart**  
**Call 811**  
Before you dig

**What's That Smell?**  
Moldy Leftovers? Roommate's Dirty Socks?

Click here to find out! *It could save your life.*

TV Spot

All promotional material created in-house (no production cost)

## Outreach Programs



UVA Athletic Events

Community Events

VA 811 Kit Distribution

## Flicker @ your classroom



## **Gas Marketing Program**

Based on a recent customer survey, we found that a significant share of our audience were unaware that natural gas has a competitive edge over other energy fuels. We also noticed a lack of knowledge of our free installation offer (up to 150 feet of gas lines installed with a qualified appliance). In the spring of 2015, we launched a new TV spot “Charlottesville Gas: The Right Choice.” The new commercial was created in-house, and its’ goal was to promote the unique benefits of natural gas in an effort to acquire new customers requesting to have natural gas lines installed to their homes. We also highlighted the free installation offer. In this particular ad, our mascot Flicker the Flame is the host of a “Jeopardy!” style quiz game show “Know Your Energy.” In the commercial, natural gas is always the right answer for all your home’s needs. Since the airing of the new commercial has begun, we noticed that several inquiries are referring to the new TV ad, and asking for more information about the free installation offer.

In November 2010, we launched the Flicker the Flame Facebook page. By March 2017, the page had 820 friends. With this initiative, we hope to create an open dialogue with our customers as well as with our Flicker fans.

In addition to working closely with developers and builders, some of the City’s marketing activities included:

- Conducting gas main extension surveys to existing neighborhoods located nearby our service area;
- Developing and mailing various brochures targeting specific businesses; and
- Developing and mailing postcards for potential customers with gas mains in front of their homes.

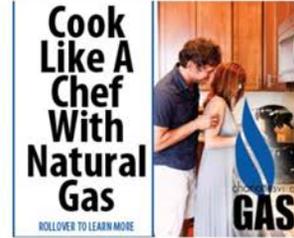
# Gas Marketing Program

## Multimedia Materials



TV Spot

## Online Campaign



## Print Material

**City of Charlottesville Public Utilities**  
WELCOME GUIDE

**ESSENTIAL LIVING 24/7**

**Welcome to the City of Charlottesville Public Utilities community!**

The following is some useful information regarding our departments and the services they provide. We are committed to providing safe and reliable services to all, day or night.

The Public Utilities Division of the City of Charlottesville is responsible for providing water, collecting wastewater, and distributing natural gas to our community. The Division is also responsible for utility line locating through the Utility, and working in cooperation with utility account services through the Utility Billing Office.

**24 hour emergency service: (434) 970-3800**

**Natural Gas**

Charlottesville Gas supplies natural gas to over 13,000 customers in the City and urban areas of Albemarle County. We have been providing affordable, efficient, reliable service for over 100 years, and staying true to our promise.

Natural gas is an affordable, clean, and reliable choice. The other 100 natural gas services included from the onset to the meter free of charge when using a qualifying gas appliance (range, water heater, furnace, stove).

If your home does not already have gas service, contact the Gas Marketing Office at (434) 970-3817 to check the availability on your street.

For more information, visit [www.charlottesville.org/gas](http://www.charlottesville.org/gas).

**Utility Billing**

The Utility Billing Division of the City of Charlottesville Department of Finance provides customer service for natural gas, water, and wastewater service accounts in the City of Charlottesville and natural gas service accounts in Albemarle County. Some of our services include:

- Budget Plans** enable you to spread the cost of water heating bills over the winter year.
- Gas Assistance Program:** a local funds to help eligible households with the cost of heating their homes. The program is funded through private donations and City of Charlottesville contributions. Customers must meet income and resource guidelines which may be obtained from the Utility Billing Division or the Department of Social Services. Others who do not have those guidelines, but can provide proof of financial hardship, may qualify.
- Water Assistance (WAP) and Wastewater Assistance Program (WWAP):** The City of Charlottesville has both water and wastewater assistance programs to provide eligible households with water and sewer bills. Customers must meet income and resource guidelines which may be obtained from the Utility Billing Division or the Department of Social Services. Others who do not meet those guidelines, but can provide proof of financial hardship may qualify. These programs may also assist in covering the cost of water and sewer bills when water bills were not included from customer negligence.

The City's online portal provides customers with the ability to view utility bills, manage their accounts, and pay bills for the City of Charlottesville.

For more information, and for frequently asked questions, please visit [www.charlottesville.org](http://www.charlottesville.org) and look for Utility Billing within our website and services.

Utility Guide

**Charlottesville Gas @ your service**

**How to Apply for Gas Service Line Installation**

**What should you do before you apply?**  
The City of Charlottesville has a strict application process for new building construction and existing buildings on 434-970-3817 or Gas@City.org

**How do I submit a service application?**  
You should submit a service application online on our website at [www.charlottesville.org/gas](http://www.charlottesville.org/gas) and email it to the Gas Marketing Office your service applications.

**What should I include in a service application?**  
To be successful in getting a service application, all of the following information must be provided:  
- Complete address and location of the building  
- Location of the building (e.g., residential, commercial, industrial)  
- Location of the building (e.g., residential, commercial, industrial)  
- Location of the building (e.g., residential, commercial, industrial)  
- Location of the building (e.g., residential, commercial, industrial)

**Gas Meter Specifications**

The regulations on the installation of the City of Charlottesville gas are specific regarding the size, location, and type of gas meter. The City of Charlottesville has specific requirements for the installation of gas meters. The City of Charlottesville has specific requirements for the installation of gas meters. The City of Charlottesville has specific requirements for the installation of gas meters.

## Cost Comparison

Energy rates- cost per Million BTU  
Charlottesville, VA  
March, 2017



## Facebook



### **C. Review of Fiscal Year 2017 Performance**

There are two variables which cannot be predicted when setting natural gas rates. The first is the severity of the winter weather and the resulting heating demand, and the second is the wholesale cost of gas.

Base rates for the year include both a gas cost component based on actual wholesale prices in effect as of March, 2017 and budgeted operating costs for the year. The operating cost component remains fixed for the year, but the gas cost component is adjusted monthly through the Purchased Gas Adjustment (PGA) to reflect the actual cost of gas for the month. Rates for the current year were designed to recover the FY2018 budget on a break-even basis.

Natural gas commodity prices continue to be volatile. Prices on the New York Mercantile Exchange (NYMEX) have ranged from \$3.93/dth to \$1.963/dth in the last twelve months. Over the past months, the NYMEX monthly gas commodity prices have averaged \$0.3255/dth more than the prior twelve months. However, current prices for March 2017 are higher (\$2.627/dth) than they were in March 2016 (\$1.711/dth).

Other energy related fuels such as oil, gasoline, propane, coal and electricity have varied widely in price as well. Crude Oil prices have ranged from \$35.36 to \$54.00 per oil barrel (BBL) in the past twelve months and are currently at \$54.00/BBL. Coal prices have increased this year ranging from \$34.05/ton to 61.85/ton. Electricity prices have been somewhat less volatile. Electricity for home heating, although typically more expensive than natural gas, is becoming less competitive due to lower gas prices.

Sales to the firm customers are projected to be lower than the FY2017 forecast. The firm customers continued to use less per customer on a weather-adjusted annual basis. This is part of a nationwide trend being driven by improved appliance efficiency, home energy efficiency improvements and conscious conservation efforts as a reaction to high gas commodity prices. Sales to the Interruptible customers have remained steady, with the University of Virginia transporting gas during the summer months. This is usually linked to the market demand for their products, conservation and efficiency efforts and/or alternate fuel competition.

The University of Virginia increased their gas consumption over the entire fiscal year due to using more gas than coal. Also, half of their consumption was interruptible while half was large volume transportation during the summer months.

## ***D. Fiscal Year 2018 Budget, Estimated Gas Sales and Adopted Rates***

### **Budget**

The adopted operating budget for fiscal year 2018 was used in these rate calculations.

### **Estimated Gas Sales**

For fiscal year 2018, we are projecting total gas flows to the City of 2,718,372 dth. This lower gas purchase volume and anticipated sales, a slight increase in the operating budget and an increase in contract costs, result in increasing rates.

This forecast includes factors that have been correlated to the local climatological data. This is an inexact process, and forecasting gas usage will continue to vary for weather conditions.

Interruptible rates are forecast to remain fairly flat based on historical consumption and input from the large customers, while our small volume transportation customer is forecasted to be the same as last year. The University of Virginia estimated usage in FY2018 of 874,477 dth (485,738 as a large volume transport customer and 388,739 as an interruptible customer) is lower than last year.

Total flow estimates include an allowance of 2% for unaccounted for gas. Actual gas system losses for the past year were less than 2%. It is common, however, to design rates assuming a 1-2% loss. In FY2018 as in previous years, the conservative assumption of 2% loss has been used.

### **Adopted Rates**

Adopted rates for fiscal year 2018 are based on wholesale gas rates as of March 1, 2017, the City's operating budget and projected sales volume for the year. The PGA in effect for March 2017 is included in the adopted rates, and is reduced to zero as a starting point for next year. These adopted rates will become base rates for next year, and will be adjusted up or down as needed to reflect monthly changes in actual gas cost.

Adopted firm rates for July 1, 2017 are 3.31% higher for the typical firm customer, who uses 8,000 cf, than actual rates for March, 2017. The base rate increase includes a non-gas operating cost increase of about 4.34% in budgeted expense, a decrease of 1.50% for using fund balance to pay for the increase in capital projects, a 2.50% decrease due to rates stabilization as well as a sales volume decrease resulting in a 0.37% decrease in the base rate. Finally the contract price

changed resulting in an increase of 3.34%. The major changes in budgeted combined non-gas operating costs components include the following:

- The total non-gas operating budget increased by \$1,223,269 from FY2017 to FY2018, reflecting an increase of 4.34%,
- Use of fund balance to pay for increase in capital projects, \$1,500,000, is a decrease of 1.50%,
- Use of fund balance to stabilize gas rates of \$1,835,000, is a decrease of 2.50%,
- Sales volume for firm customers decreased in FY2018 by 95,180 from FY2016 causing a 0.37% decrease; and
- Increase in the contract price of 3.34%.

Adopted interruptible rates are about 0.03% higher than current actual rates for the typical interruptible customer.

### ***E. Gas Rate Comparison***

Exhibit VIII-E provides a comparison of the City's current firm gas rates with other Virginia gas companies. It is difficult to compare rates in the environment of rapidly changing wholesale gas cost. The exhibits reflect a snapshot of rates for March 2017. No information is available for potential changes to other gas system rates. Because the other gas utilities have different ways of passing through increases in wholesale gas cost, the relative competitiveness of these systems is constantly changing. Firm industrial rates are more difficult to compare since many systems incorporate a monthly demand charge into the rate. Interruptible rates are also very difficult to compare from system to system. Many surrounding systems do not have a published interruptible rate and others routinely discount from a published rate on a monthly basis. Rate comparisons are provided only for general information and trend determination.

### ***F. Gas Assistance Program***

The City's Gas Assistance Program (GAP) provides financial assistance to local residents who need help to pay heating bills. This fund supplements assistance that is available to many people under other programs, and may be the assistance available for some residents who need help but do not qualify under the guidelines of other programs. In the last twelve months, the City has provided 252 households with over \$67,638 in assistance. Contributions from area businesses and residents help to supplement the amount of money that is available for assistance. The FY2018 budget includes \$60,000 in new funding plus carryovers from prior years and should be sufficient to fund the program in FY2018.

## ***G. Programmable Thermostat Rebate Program***

The thermostat rebate program provides a rebate of up to \$100 per account to any customer who purchases and installs a programmable thermostat. The thermostats can be used to automatically lower the temperature in a building at night or while a resident is away at work, vacation or the like, and to raise the temperature at pre-set times. By setting a thermostat back 10° to 15° at night for 8 hours, it is estimated that a customer can reduce his or her heating bills by 5% to 15%. Over the past year, 79 customers have received rebates totaling \$8,792.01. Next year's budget includes \$10,000 to continue funding this program.

## ***H. Summary of Recommendations***

Exhibit VIII-C reflects the FY2017 Base Rate, the March 2017 rate (with the PGA applied), and the adopted FY2018 Base Rates. The rates for the Firm, Interruptible, Transportation, Air Conditioning, and Gas Lighting classifications are illustrated on the exhibit.

The gas rates in this report are summarized as follows:

- Rate schedules presented in Exhibit VIII-C; and
- A base unit cost for firm gas of \$4.1579 per dth and a base unit cost for interruptible gas of \$2.8621 per dth.

### **Impact on Average Customer**

Rates for July 1, 2017 are 3.31% higher for the average typical firm customer, who uses 8,000 cf, than the rates for March, 2016. Firm customers include various customers (residential, commercial and industrial) for whom gas supplies are guaranteed to be available all year long without interruption. The actual percent decrease is dependent upon usage.

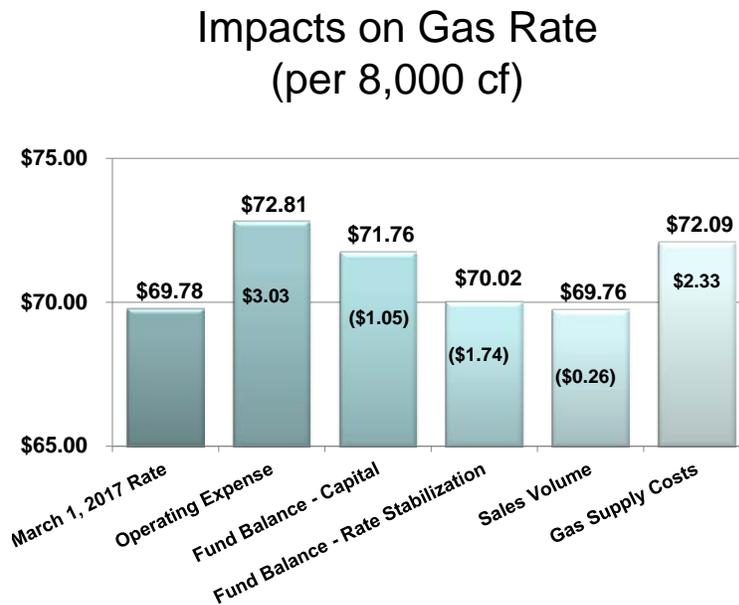
- For a representative residential monthly consumption of 8,000 cf, the monthly bill will increase from \$69.78 to \$72.09, an increase of 3.31%.
- The average single-family household, who consumes 4,611 cf of gas, will see the monthly bill increase from \$45.99 to \$47.37, an increase of 3.0%.

## ***I. Factors Influencing the Gas Rate***

The City of Charlottesville's gas rate is influenced by the operating budget, sales volume, contract price, and any additional revenue received by the gas utility.

- Continued growth in our customer base and a volatile gas wholesale market contribute to the 3.31% increase to firm customers.
- The total non-gas operating budget increased by \$1,223,269 from FY2017 to FY2018, reflecting an increase of 4.34%,
- Use of fund balance to pay for increase in capital projects, \$1,500,000, is a decrease of 1.50%,
- Use of rate stabilization to reduce gas rates for customers of \$1,835,000, is a decrease of 2.50%,
- Sales volume for firm customers decreased in FY2018 by 95,180 from FY2016 causing a 0.37% decrease; and
- Increase in the contract price of 3.34% and a new rate of \$72.09.

**Figure 11: Components of Adopted Gas Rate**



**J. Exhibits**

**EXHIBIT VIII-A  
GAS UTILITY  
TWO YEAR BUDGET COMPARISON**

<u>Revenue Requirements:</u>	<b>FY2017 BUDGET</b>	<b>FY2018 BUDGET</b>
Gas Purchased	\$ 8,220,636	\$ 10,418,834
Operations & Maintenance	8,055,489	8,202,783
Payment in Lieu of Taxes	3,276,503	3,221,325
Indirect Costs	468,384	489,716
Utility billing office budget	1,101,720	1,116,075
Meter Reading	249,416	253,112
Bad Debt	35,000	35,000
New Construction Projects	419,249	1,936,019
Debt Service Funding	400,000	300,000
Total Revenue Required for operations	\$ 22,226,397	\$ 25,972,864
<u>Less Revenues not related to gas rates:</u>		
Use of fund balance for construction	\$ -	\$ 1,500,000
Rate Stabilization	-	1,835,000
Total	-	3,335,000
<u>Revenue Provided by Operations:</u>		
Gas Sales	\$ 21,901,397	\$ 22,312,864
Other Operating Revenue	325,000	325,000
Total Revenue	\$ 22,226,397	\$ 25,972,864
Gain (Loss) From Operations	\$ -	\$ -

**EXHIBIT VIII-B  
GAS RATE CALCULATION  
FY2018**

Revenue Required:	<u>dth</u>	<u>Amount</u>
Gas Purchased	2,718,372	\$ 10,418,834
General Operations		2,686,900
Distribution Lines		2,353,696
Gas Supply - Other		460,077
Gas Service		908,128
Payment in Lieu of Taxes		3,221,325
Indirect Costs		489,716
Utility billing office budget		1,116,075
Meter Reading		253,112
Bad Debt		35,000
Marketing		50,000
City Yard Evaluation		100,000
Integrated Information System		1,000,000
Capital Projects - New Business		1,936,019
Gas Assistance Program Contribution		60,000
Thermostat Replacement Program		10,000
Debt Service Funding - Combined		300,000
Environmental Administration		359,082
Vehicle Replacement		214,900
 Total Revenue Required		 <u>\$ 25,972,864</u>
 Less Other Funding Sources:		
Fund Balance		1,500,000
Rate Stabilization		1,835,000
Air Conditioning Sales	10,000	\$ 71,571
Transportation Fees	519,592	1,769,443
Other Revenue		<u>325,000</u>
 Total	 529,592	 \$ 5,501,014
 Revenue Required from Firm and Interruptible Customers	 2,188,780	 \$ 20,471,850
 Estimated Sales:		
Air Conditioning	10,000	
Gas loss	53,302	
Firm Sales	2,176,082	\$ 18,291,597
Interruptible Sales	<u>478,988</u>	<u>2,180,253</u>
 Total Estimated Sales	 2,718,372	 \$ 20,471,850

**Exhibit VIII-C  
GAS UTILITY  
FY2018**

	<u>7/1/2016 Base Rate</u>	<u>3/1/2017 PGA</u>	<u>*Actual 3/1/2017 Rates</u>	<u>Proposed Rates FY18</u>
<b><u>FIRM</u></b>				
Customer Charge (Minimum)	\$ 10.00		\$ 10.00	\$ 10.00
First 3,000 Cu Ft, Per MCF	8.0201	(0.0462)	7.9739	8.2781
Next 3,000 Cu Ft, Per MCF	7.5389	(0.0462)	7.4927	7.7814
Next 144,000 Cu Ft, Per MCF	6.7369	(0.0462)	6.6907	6.9536
Over 150,000 Cu Ft, Per MCF	6.5765	(0.0462)	6.5303	6.7880
<b><u>INTERRUPTIBLE</u></b>				
Customer Charge (Minimum)	\$ 60.00		\$ 60.00	\$ 60.00
First 600 MCF, Per MCF	5.6652	0.1791	5.8443	5.8319
Over 600 MCF, Per MCF	4.3750	0.1791	4.5541	4.5763
Annual Minimum (MCF)	1,200		1,200	1,200
<b><u>AIR CONDITIONING</u></b>				
All Gas Used, Per dth	\$ 7.1571	\$ (0.0462)	\$ 7.1109	\$ 7.3171
<b><u>GAS LIGHT</u></b>				
Charge per Month	\$ 17.00		\$ 17.00	\$ 17.51
<b><u>TRANSPORTATION</u></b>				
Small Volume Customer				
Monthly Service Charge	\$ 150.00		\$ 150.00	\$ 150.00
Rate per dth	\$ 3.1808		\$ 3.1808	\$ 3.2827
Large Volume customer - 35,000 mcf/per month				
Monthly Service Charge	\$ 600.00			\$ 600.00
Rate per dth	\$ 1.8869			\$ 1.9569

\*Proposed rate schedules are based on wholesale rates for March, 2017

Note: MCF is volume adjusted by thermal factor and is equivalent to dth

**EXHIBIT VIII-D  
GAS UTILITY  
COMPARISON OF CHARGES WITH FY2017 and FY2018 RATES**

<b>FIRM CUSTOMERS</b>	<b>BASE RATES FY2017</b>	<b>ACTUAL RATES 03-01-17</b>	<b>Proposed with 03-01-17 GAS COST</b>	<b>PERCENT INCREASE (DECREASE)</b>
4,000 CU. FT.	\$ 41.60	\$ 41.41	\$ 42.62	2.92 %
4,611 CU. FT.*	46.21	45.99	47.37	3.00
8,000 CU. FT.	70.15	69.78	72.09	3.30
15,000 CU. FT.	117.31	116.62	120.76	3.55
20,000 CU. FT.	150.99	150.07	155.53	3.64
25,000 CU. FT.	184.68	183.52	190.30	3.69
35,000 CU. FT.	252.05	250.43	259.83	3.75
60,000 CU. FT.	420.47	417.70	433.67	3.82
100,000 CU. FT.	689.95	685.33	711.82	3.87
150,000 CU. FT.	1,023.79	1,019.86	1,059.50	3.89
200,000 CU. FT.	\$ 1,355.62	\$ 1,346.38	\$ 1,398.90	3.90 %

**INTERRUPTIBLE CUSTOMERS**

100,000 CU. FT.	\$ 626.54	\$ 644.43	\$ 643.19	(0.19) %
200,000 CU. FT.	1,193.04	1,228.86	1,226.38	(0.20)
400,000 CU. FT.	2,326.08	2,397.72	2,392.76	(0.21)
600,000 CU. FT.	3,459.12	3,566.58	3,559.14	(0.21)
1,000,000 CU. FT.	5,209.12	5,388.22	5,389.66	0.03
2,000,000 CU. FT.	9,584.12	9,942.32	9,965.96	0.24
4,000,000 CU. FT.	\$ 18,334.12	\$ 19,050.52	\$ 19,118.56	0.36 %

\* Average Residential customer

**EXHIBIT VIII-E  
GAS RATE COMPARISON  
SUMMER AND WINTER RESIDENTIAL REQUIREMENTS  
AT MARCH 1, 2017**

<u>Distributor</u>	<u>Minimum Charge</u>	<u>4 dth of Usage</u>	<u>8 dth of Usage</u>
Charlottesville - Proposed	\$ 10.00	\$ 42.62	\$ 72.09
Charlottesville - Present	\$ 10.00	\$ 41.42	\$ 69.78
Southwestern VA Gas	\$ 9.55	\$ 38.83	\$ 68.10
Virginia Natural Gas	\$ 11.00	\$ 37.31	\$ 84.40
Danville	\$ 11.15	\$ 48.55	\$ 85.95
Richmond	\$ 12.54	\$ 51.86	\$ 91.18
Columbia Gas of Virginia	\$ 17.00	\$ 60.52	\$104.05

**All rates shown from other gas systems represent existing rates for March, 2017**

**EXHIBIT VIII-F**  
**Actual Rates for the Average 8 dth Customer**

	<u>FY2012</u>	<u>FY2013</u>	<u>FY2014</u>	<u>FY2015</u>	<u>FY2016</u>	<u>FY2017</u>
<b>July</b>	\$ 97.83	\$ 88.50	\$ 96.37	\$ 110.02	\$ 65.77	\$ 69.65
<b>August</b>	105.41	89.82	94.90	100.58	81.16	69.77
<b>September</b>	104.72	89.31	95.61	89.69	80.99	70.17
<b>October</b>	104.61	89.67	91.52	89.69	80.98	70.23
<b>November</b>	104.29	93.59	91.47	89.05	80.51	70.23
<b>December</b>	104.08	95.11	93.40	90.67	80.48	70.25
<b>January</b>	103.70	92.80	97.71	78.43	81.12	70.27
<b>February</b>	102.37	91.94	106.32	76.43	81.11	70.26
<b>March</b>	102.84	93.32	101.02	76.58	80.47	\$69.78
<b>April</b>	102.55	97.04	99.24	74.99	80.55	
<b>May</b>	102.34	98.79	101.50	71.00	80.55	
<b>June</b>	\$ 102.86	\$ 96.37	\$ 100.27	\$ 68.21	\$80.55	

Lowest rate      \$ 65.77      July, FY2016

Highest rate      \$110.02      July, FY2015

## **SECTION IX: PROJECTED FUTURE WATER AND WASTEWATER RATES**

### **A. General**

The following analysis shows projected impacts of future operating costs and capital improvement expenditures by City and RWSA, on future water and wastewater rates. In addition, a sensitivity analysis is performed to gauge the impact of the use of rate stabilization revenue to mitigate rate increases in any given year. Revenue has been projected to offset future rate increases and minimize the fluctuation in rate changes over the period examined. These fluctuations are caused primarily by rising future capital costs. Projections of future wholesale rates from RWSA and City water and wastewater rates for the next five fiscal years are shown in Exhibits IX-A and IX-D. The following assumptions were used to develop these estimates:

1. RWSA Wholesale Rates and the purchase of water and wastewater:
  - Estimates, provided by RWSA, of the projected wholesale rates are presented at the top of each exhibit.
  - RWSA's rates are split into an Operational Rate and a Debt Cost.
  - The Debt Cost is converted to a rate for the purposes of this study.
  - Analysis includes RWSA's Adopted Capital Improvement Plan for Fiscal Years 2017-2021, adopted March 28<sup>th</sup>, 2017.
  - The purchased volume of water and wastewater from RWSA is assumed to remain constant. The total treatment cost is calculated for each year and is included in the City's utility budgets.
  
2. The City's water and wastewater budgets:
  - Debt service is based on funding the City's adopted water and wastewater CIP's for fiscal years 2018 through 2022.
  - Operations and maintenance, payment in lieu of taxes, indirect costs, utility billing, meter reading, and water conservation line items in the City's budget are inflated at an annual rate of 2.0% for 2018 through 2022.
  - It is assumed that the Vehicle Replacement is returned to its normal budgeted amount of \$73,029 in FY2019 for water and \$73,606 in FY2018 for wastewater and remains at that level.
  - It is assumed that the Water Conservation Budget is returned to its normal level in FY2018 and escalates by 2% each year thereafter.

3. Other Revenue (service charges, etc.) – Assumed to remain constant for each year. However, the facility fee rate structure that was implemented in FY2009 and increased in FY2013 will have an impact on the amount of rate stabilization that will be used to mitigate future rate increases. Revenue received from these fees, along with additional revenue from the respective fund has been reserved to offset future rate increases, if approved. The impacts are presented at the bottom of Exhibits IX-A and IX-D and are discussed in more detail in Item 7.
4. Usage – The future flow volumes and proportions that the City sells to UVa and to the City customers are assumed to remain constant.
5. Revenue from UVa – Revenue from the sale of water and wastewater service to UVa is calculated using the contract agreement and are included.
6. Results – The resulting rates per mcf for each year are shown at the bottom of each exhibit with the percent increase from the year before. Below that is the monthly bill for the average single-family residential customer (422 cf per month) and the percent increase for each year.
7. Impact of the Rate Stabilization on the Future Rates – At the bottom of each exhibit, the effect of the facility fees on the rates are calculated using the following assumptions:
  - City Staff estimates that the following revenue will be generated each year for each (water and wastewater) fund.

Year	Water Revenue	Wastewater Revenue
FY2018	\$350,000	\$500,000
FY2019	\$300,000	\$400,000
FY2020	\$300,000	\$400,000
FY2021	\$300,000	\$400,000
FY2022	\$300,000	\$400,000

- This additional revenue is shown for each year. It is assumed that \$1,550,000 of additional revenue will be generated for the water funds and \$2,100,000 for the wastewater fund from FY2018 through FY2022.
- The amount of each year's revenue that will be applied to reducing that year's rates is presented.
- If available, the amount of carryover from prior years to achieve relatively stable annual rate increases is presented.

- The total rate stabilization revenue to be applied to the rate calculation in each year and the new balance to be recovered is then calculated.
- Results – The resultant rates per mcf are shown at the bottom with the new rates for the average single-family residential customer.

## **B. *Future Water Rates***

Exhibit IX-A presents the estimated future water rates for the next five fiscal years. Also shown are the rates recommended in this report and the current rates. Without the use of rate stabilization, the rate per mcf increases from \$59.45 in 2019 to \$64.38 projected in five years. The monthly bill of the average single-family residential customer (422 cf per month) rises from \$29.09 in 2019 to \$31.17 anticipated in 2022.

Using the revenue generated from the rate stabilization fund to reduce and stabilize the rates over the years' results in anticipated future annual rate increases per mcf at a high of 9.60% in 2019, when it is assumed all carry-over money has been spent and budgets are returned to their usual level, to a low of 2.66% in FY2022. The average single-family water bill will increase between approximately 7.72% and 2.31%.

Exhibit IX-B presents projected future rates per mcf with and without the use of rate stabilization revenue. Without the use of stabilization revenue, rates range from \$59.45 in FY2018 to \$64.38 in FY2021. With the use of rate stabilization revenue, rates vary from \$57.46 in FY2019 to \$62.38 in FY2022. Exhibit IX-C shows the average monthly bill of a typical single-family household in the City. Without rate stabilization, the monthly bill varies from \$29.09 in FY2019 to \$31.17 in FY2022. Using stabilization funds, the average monthly bill is projected to be \$28.25 in FY2019 and \$30.02 in FY2022.

## **C. *Future Wastewater Rates***

Exhibit IX-D presents the estimated future wastewater rates for fiscal years 2018 through 2022. Also shown are the FY2018 rates recommended in this report and the rates being charged in FY2017. The rate with stabilization used increases from \$78.35 in FY2019 to \$87.76 per mcf projected in FY2022. The rate per mcf without rate stabilization would be \$81.13 in FY2019 and \$90.54 in FY2022. With rate stabilization the monthly bill for a single-family will be an average of \$37.06 in FY2019 to \$41.03 in FY2022. Without the use of rate stabilization, the monthly bill of the average single-family customer (422cf per month) rises from \$38.24 in 2019 to \$42.21 anticipated in 2022.

The usage of rate stabilization in FY2019 is assumed to be the same as that used in FY2022. The amount adopted for usage in FY2018 is \$500,000. In addition, the fund is forecast to be used for future years as well.

Exhibit IX-E and IX-F present wastewater rates per mcf and the average monthly bill of a single-family household in the City.

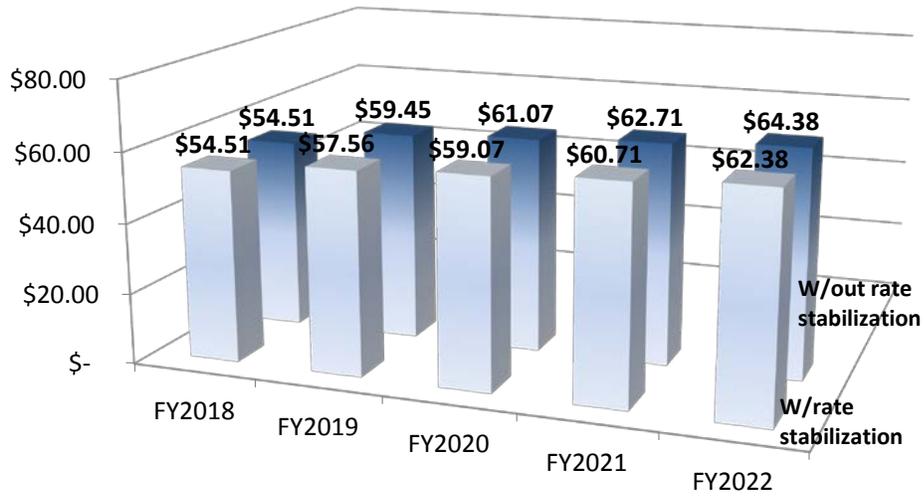
It should be noted that any future changes in RWSA's or the City's capital expenditure plan, operating expenditures, volume or purchases or sales and/or collection of facility fee revenue will have an impact on future rates.

## D. Exhibits

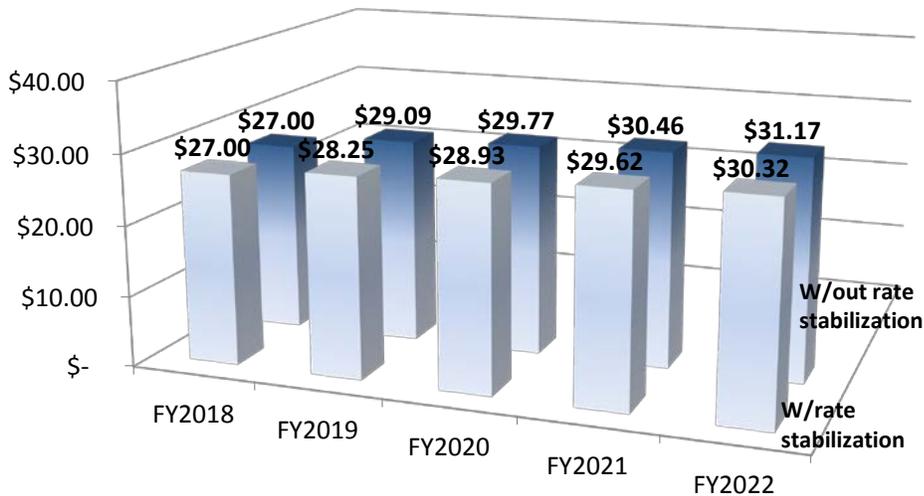
### EXHIBIT IX-A WATER FUND FUTURE WATER RATE PROJECTIONS

	Adopted		Projections			
	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
<b>Estimated Wholesale Cost of Water</b>						
RWSA - Operational Rate (Cost/MCF)	\$13,711	\$14,728	\$15,170	\$15,625	\$16,094	\$16,577
RWSA - Debt Rate (Cost/MCF)	\$8,197	\$7,749	\$8,097	\$8,445	\$8,792	\$9,143
<b>Total RWSA Rate (Cost/MCF)</b>	<b>\$21,908</b>	<b>\$22,477</b>	<b>\$23,267</b>	<b>\$24,070</b>	<b>\$24,885</b>	<b>\$25,720</b>
Percent Change in RWSA Rates	6.27%	2.60%	3.52%	3.45%	3.39%	3.00%
Amount of Water Sold (MCF)	236,279	247,849	247,849	247,849	247,849	247,849
<b>Cost of Water Purchase From RWSA</b>	<b>\$5,176,303</b>	<b>\$5,570,815</b>	<b>\$5,766,747</b>	<b>\$5,965,839</b>	<b>\$6,167,839</b>	<b>\$6,374,664</b>
	2.25%	7.62%	3.52%	3.45%	3.39%	3.35%
<b>Projected City Budgets</b>						
Water purchases	\$5,195,201	\$5,570,815	\$5,766,747	\$5,965,839	\$6,167,839	\$6,374,664
Operations & maintenance (inflate 2%)	2,391,500	2,489,833	2,539,630	2,590,422	2,642,231	2,695,075
Water conservation (inflate 2%)	88,287	201,333	205,360	209,467	213,656	217,929
Toilet rebate program	40,000	20,000	40,000	40,000	40,000	40,000
Payment in lieu of taxes (inflate 2%)	590,330	600,285	612,290	624,536	637,027	649,767
Indirect costs (inflate 2%)	120,346	160,181	163,385	166,653	169,986	173,385
Utility Billing Office budget (inflate 2%)	275,430	279,019	284,599	290,291	296,097	302,019
Meter Reading budget (inflate 2%)	62,291	63,278	64,544	65,834	67,151	68,494
Water assistance program	15,000	7,500	15,000	15,000	15,000	15,000
Vehicle replacement budget	0	36,515	73,029	73,029	73,029	73,029
Rain Barrels	0	1,500	1,500	1,500	1,500	1,500
Computer System Support	21,360	20,480	20,480	20,480	20,480	20,480
Interest on deposits	5,000	5,000	5,000	5,000	5,000	5,000
Debt service funding	1,775,000	1,800,000	1,825,000	1,850,000	1,875,000	1,900,000
<b>Total operations</b>	<b>\$10,579,745</b>	<b>\$11,255,739</b>	<b>\$11,616,563</b>	<b>\$11,918,051</b>	<b>\$12,223,996</b>	<b>\$12,536,344</b>
Percent Increase	0.48%	6.39%	3.21%	2.60%	2.57%	2.56%
Less revenues not related to water use:						
Water Conservation Carry-forward	0	110,000	0	0	0	0
Connection fees	125,000	125,000	125,000	125,000	125,000	125,000
Other revenue	150,000	93,000	93,000	93,000	93,000	93,000
Rate stabilization	300,000	350,000	0	0	0	0
<b>Total</b>	<b>\$575,000</b>	<b>\$678,000</b>	<b>\$218,000</b>	<b>\$218,000</b>	<b>\$218,000</b>	<b>\$218,000</b>
Revenue required from water charges	\$10,004,745	\$10,577,739	\$11,398,563	\$11,700,051	\$12,005,996	\$12,318,344
LESS UVa central charges	1,650,000	1,702,260	1,777,796	1,834,402	1,891,866	1,950,680
Balance to be recovered by City Water Sales	\$8,354,745	\$8,875,479	\$9,620,767	\$9,865,650	\$10,114,129	\$10,367,664
<b>Minimum Monthly Charge</b>	<b>4.00</b>	<b>4.00</b>	<b>4.00</b>	<b>4.00</b>	<b>4.00</b>	<b>4.00</b>
Minimum charges revenue	\$685,580	\$691,208	\$693,627	\$696,055	\$698,491	\$700,936
Balance to be recovered through rate	\$7,669,165	\$8,184,271	\$8,927,140	\$9,169,595	\$9,415,638	\$9,666,728
Volume (MCF)	140,700	150,150	150,150	150,150	150,150	150,150
<b>Rate per MCF</b>	<b>\$54.51</b>	<b>\$54.51</b>	<b>\$59.45</b>	<b>\$61.07</b>	<b>\$62.71</b>	<b>\$64.38</b>
Percent Change in MCF Rate	4.09%	0.00%	9.06%	2.72%	2.69%	2.66%
<b>Monthly Bill for Single-family Cust. (422 CF/month)</b>	<b>\$27.00</b>	<b>\$27.00</b>	<b>\$29.09</b>	<b>\$29.77</b>	<b>\$30.46</b>	<b>\$31.17</b>
Percent Change in Monthly Bill	3.46%	0.00%	7.72%	2.35%	2.32%	2.31%
<b>Proposed Rates with Additional Stabilization</b>						
	\$0	\$0	\$0	\$0	\$0	\$0
Additional revenue from Stabilization Fund	\$0	\$0	\$300,000	\$300,000	\$300,000	\$300,000
Revenue to be applied to the current year	\$0	\$0	\$300,000	\$300,000	\$300,000	\$300,000
	\$0	\$0	\$0	\$0	\$0	\$0
New balance to be recovered through the rate	\$7,669,165	\$8,184,271	\$8,627,140	\$8,869,595	\$9,115,638	\$9,366,728
<b>New Rate per MCF</b>	<b>\$54.51</b>	<b>\$54.51</b>	<b>\$57.46</b>	<b>\$59.07</b>	<b>\$60.71</b>	<b>\$62.38</b>
Percent Change in MCF Rate	4.09%	0.00%	5.41%	2.80%	2.78%	2.75%
<b>New Monthly Bill for Single-family Cust. (422 CF/mo)</b>	<b>\$27.00</b>	<b>\$27.00</b>	<b>\$28.25</b>	<b>\$28.93</b>	<b>\$29.62</b>	<b>\$30.32</b>
Percent Change in Monthly Bill	3.45%	0.00%	4.63%	2.41%	2.39%	2.36%

## Exhibit IX-B Future Water Rates (1,000 CF)



## Exhibit IX-C Future Water Rates Single-Family (422 CF)



**EXHIBIT IX-D  
WASTEWATER UTILITY  
FUTURE WASTEWATER RATE PROJECTIONS**

	Adopted FY2017	FY2018	FY2019	Projected FY2020	FY2021	FY2022
<b>Estimated Wholesale Cost of Sewer</b>						
RWSA - Operational Rate (Cost/MCF)	\$ 13.726	\$ 14.593	\$ 15.031	\$ 15.482	\$ 15.946	\$ 16.425
RWSA - Debt Cost /month	\$ 18.601	\$ 19.427	\$ 20.165	\$ 20.891	\$ 21.622	\$ 22.358
<b>Total RWSA Rate (Cost/MCF)</b>	<b>\$ 32.327</b>	<b>\$ 34.020</b>	<b>\$ 35.196</b>	<b>\$ 36.373</b>	<b>\$ 37.569</b>	<b>\$ 38.782</b>
Amount of Treatment Purchased (MCF)	241,000	242,655	242,655	242,655	242,655	242,655
<b>Cost of Sewer Purchase From RWSA</b>	<b>\$ 7,736,415</b>	<b>\$ 8,255,238</b>	<b>\$ 8,585,448</b>	<b>\$8,928,865</b>	<b>\$9,286,020</b>	<b>\$9,657,461</b>
Percent Increase	7.40%	6.71%	6.97%	7.25%	7.54%	7.85%
<b>Projected City Budget</b>						
Cost of treatment	\$ 7,736,415	\$ 8,255,238	\$ 8,585,448	\$8,928,865	\$9,286,020	\$9,657,461
Operations and maintenance (Inflate by 2.0%)	\$ 1,843,614	1,936,578	1,975,310	2,014,816	2,055,112	2,096,214
Payment in lieu of taxes (Inflate by 2.0%)	\$ 786,206	810,114	826,316	842,843	859,699	876,893
Indirect costs (Inflate by 2.0%)	\$ 128,281	116,144	118,467	120,836	123,253	125,718
Utility billing office budget (Inflate by 2.0%)	\$ 275,430	279,019	284,599	290,291	296,097	302,019
Meter reading budget (Inflate by 2.0%)	\$ 62,291	63,278	64,544	65,834	67,151	68,494
Wastewater assistance program	\$ 15,000	7,500	15,000	15,000	15,000	15,000
Vehicle replacement	36,423	73,606	73,606	73,606	73,606	73,606
Computer system support	\$ 28,240	28,020	28,020	28,020	28,020	28,020
Debt service funding	\$ 2,985,000	\$ 3,000,000	\$ 3,100,000	3,250,000	3,400,000	3,500,000
<b>Total operations</b>	<b>\$ 13,921,900</b>	<b>\$ 14,569,497</b>	<b>\$ 15,071,309</b>	<b>\$15,630,112</b>	<b>\$16,203,959</b>	<b>\$16,743,426</b>
Percent Increase	3.71%	4.65%	3.44%	3.71%	3.67%	3.33%
Less revenues not related to sewer rates:						
Finance charges for late payments	\$ 20,000	\$ 30,000	\$ 30,000	30,000	30,000	30,000
Rate stabilization	400,000	500,000	-	-	-	-
<b>Total</b>	<b>\$ 420,000</b>	<b>\$ 530,000</b>	<b>\$ 30,000</b>	<b>30,000</b>	<b>30,000</b>	<b>30,000</b>
Revenue required from sewer charges	\$ 13,501,900	\$ 14,039,497	\$ 15,041,309	\$15,600,112	\$16,173,959	\$16,713,426
LESS UVa central charges	2,564,573	2,576,280	2,669,226	2,771,076	2,876,202	2,979,060
Balance to be recovered by City sewer sales	\$ 10,937,327	\$ 11,463,217	\$ 12,372,083	\$12,829,036	\$13,297,757	\$13,734,366
<b>Minimum Monthly Charge</b>	<b>4.00</b>	<b>4.00</b>	<b>4.00</b>	<b>4.00</b>	<b>4.00</b>	<b>4.00</b>
Minimum charges	\$ 682,324	\$ 687,360	\$ 689,766	692,180	694,603	697,034
Balance to be recovered thru rate	\$ 10,255,003	\$ 10,775,857	\$ 11,682,317	\$12,136,856	\$12,603,154	\$13,037,332
Volume (MCF) used to calculate rate	137,439	144,000	144,000	144,000	144,000	144,000
<b>Rate per MCF</b>	<b>\$ 74.61</b>	<b>\$ 74.83</b>	<b>\$ 81.13</b>	<b>\$84.28</b>	<b>\$87.52</b>	<b>\$90.54</b>
Percent Change in MCF Rate	5.92%	0.29%	8.42%	3.88%	3.84%	3.45%
<b>Monthly Bill for Ave S-f Cust. (422 CF/month)</b>	<b>\$ 35.49</b>	<b>\$ 35.58</b>	<b>\$ 38.24</b>	<b>\$ 39.57</b>	<b>\$ 40.93</b>	<b>\$ 42.21</b>
Percent Change in Monthly Bill	5.22%	0.25%	7.47%	3.48%	3.46%	3.11%
<b>Proposed Rates with Additional Stabilization</b>						
Beginning Rate Stabilization Balance	\$ -	\$ -	\$ -	\$0	\$0	\$0
Additional revenue from Stabilization Fund	-	-	400,000	\$400,000	\$400,000	\$400,000
<b>Revenue applied to current year to reduce rates</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 400,000</b>	<b>\$ 400,000</b>	<b>\$ 400,000</b>	<b>\$ 400,000</b>
Ending Rate Stabilization Fund Balance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Newbalance to be recovered through the rate	\$ 10,255,003	\$ 10,775,857	\$ 11,282,317	\$11,736,856	\$12,203,154	\$12,637,332
<b>New Rate per MCF</b>	<b>\$ 74.61</b>	<b>\$ 74.83</b>	<b>\$ 78.35</b>	<b>\$81.51</b>	<b>\$84.74</b>	<b>\$87.76</b>
Percent Change in MCF Rate	5.92%	0.29%	4.70%	4.03%	3.96%	3.56%
<b>New Monthly Bill for Ave S-f Cust. (422 CF/month)</b>	<b>\$ 35.49</b>	<b>\$ 35.58</b>	<b>\$ 37.06</b>	<b>\$ 38.40</b>	<b>\$ 39.76</b>	<b>\$ 41.03</b>
Percent Change in Monthly Bill	5.22%	0.25%	4.18%	3.60%	3.55%	3.21%

## Exhibit IX-E Future Wastewater Rates (1,000 CF)



## Exhibit IX-F Future Wastewater Rates Single-Family (422 CF)



## GLOSSARY OF TERMS

**Base Rate** – The gas rate as set each year as of July 1, consisting of budgeted operating costs and current wholesale gas prices; it is adjusted each month to reflect changes in the cost of wholesale gas through the PGA.

**Basin** – A geographical area of the City wastewater collection system.

**Carry-over** – the City Council directive by which unobligated funds remaining at the end of a budget year may be carried forward to the next budget year to cover costs.

**CCTV** – Closed circuit televising – Technology in which a camera, driven via remote control through the sanitary sewer, allows the operator to view blockages/breakages, etc., in the line and to schedule necessary maintenance accordingly.

**Cubic foot** – 7.48 gallons of water – The standard measure of water usage chosen by the City of Charlottesville.

**Debt Service** – The amount required to pay the annual principal and interest payments on long term debt, such as bonds.

**Degree Day** – The measure of relative heating requirements determined by subtracting the average temperature for the day from 65 degrees. The higher the number of degree days, the lower the temperature and, therefore, the higher the heating need.

**dth** – Decatherm; a measurement of gas that is 1,000,000 BTU (British thermal units) of heat. A metered volume of gas (mcf) is converted by the thermal factor, which varies with the temperature, to a constant heat value (dth) for billing purposes. Both purchases and sales are measured and priced by dth.

**Facility Fee** – The charge that the City of Charlottesville imposes for a new water or wastewater connection for the proportionate share of use of the water and wastewater infrastructure capacity. The charge is made when there is no service provided to the area prior to the request or if the existing connection is smaller than is required.

**Indirect Cost** - Local governments have overhead and administrative costs essential to operating the government and providing services to the public. Examples include costs incurred for a city manager, human resources, financial management, and information technology. Although these services typically reside in the General Fund, they also support departments in other funds, such as utilities. The indirect cost associated with these services and then charged to other funds is calculated, typically annually, based on a standard methodology of cost allocation.

**mcf** – 1,000 cf; a volumetric measurement of water flows. One mcf of water is approximately 7,480 gallons.

**NYMEX** – New York Mercantile Exchange - The City purchases gas from its supplier based on closing monthly prices from this exchange.

**Payment In Lieu Of Taxes (PILOT)** – An annual payment to the City's General Fund. The formula for water and wastewater used each year to calculate the amount of transfer is based on the prior year budgeted revenues from sales. The formula for gas is prior year expenses less cost of sales.

**PGA** – Purchased Gas Adjustment; the change in the annual base rate. It is calculated monthly to reflect the change in wholesale gas costs.

**Rate of Return** – The discount or interest rate that is used to calculate the maximum investment that the City will make to assess a potential gas line extension project, based on an expected flow of income.

**Rate Stabilization** – Money that has been set aside in prior years for the specific purpose of offsetting all or a portion of a potential utility rate increase.

**Water Loss Factor** – The difference between the amount of water purchased by the City from Rivanna Water and Sewer Authority for distribution and the amount that is billed to City customers. The loss may result from leaks, inaccurate meters, firefighting and other unmetered uses.

**Working Capital** – Current assets (cash and other liquid assets) less liabilities due within one year or net liquid assets available for use in current operations.

**Working Capital Requirement** – A formula used to calculate the amount needed to pay operating expenses for 60 days for water, wastewater, and for gas. This formula is used to ensure that there are adequate cash balances maintained to pay all obligations on time, without borrowing from the City's General Fund.