

# City of Charlottesville **UTILITY RATE REPORT**

Adopted - FY 2022

Prepared by the Department of  
Finance and the Department of Utilities



*Adopted FY'22 Utility Rate Report*

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## 1. EXECUTIVE SUMMARY

The purpose statement for the City of Charlottesville Department of Utilities (Utilities) is:

*To provide the Charlottesville community with safe and reliable natural gas, drinking water, and wastewater services at a reasonable cost in an environmentally responsible manner.*

Utilities operates and maintains the water, wastewater, and natural gas systems. In addition, Utilities also manages the Capital Improvement Program for the stormwater conveyance system. The goal of Utilities is to provide authorized service in a safe, reliable, responsive, and cost-effective manner. Utilities supports the following goals of the City's Strategic Plan:

- 3.2 Provide reliable and high-quality infrastructure
- 3.4 Be responsible stewards of natural resources
- 5.1 Integrate effective business practices and strong fiscal policies

The Gas, Water, Wastewater, and Stormwater budgets are funded by utility rates and charges and include funding for administration, operations, and maintenance of the four systems as well as funding for infrastructure improvements, technology advances, and debt service payments.

The billing and collection functions of the City's utilities are completed by the Finance Department's Utility Billing Office with the exception of stormwater utility billing which is performed by the Treasurer's Office. The utility budgets are separate from the General Fund and are not supported by taxes. These budgets and the respective rates and charges are considered and adopted by the City Council in June of each year.

In January 2021, the City received CARES funds totaling \$182,801.59 from the Commonwealth to assist municipal utility customers. Through the efforts of the Utility Billing Office and Utilities, a total of \$181,232.58 has been distributed to 467 accounts, at an average of \$388.08 per customer. The remaining balance of \$1,569.01 (less than 1% of the total award) was used for direct, administrative costs to the City associated with implementing the program; well below the 5% threshold allowed by the Commonwealth. The funds were allocated to residential accounts (86%) and commercial accounts (14%).

The Department of Utilities has implemented an aggressive Capital Improvement Program (CIP) to address aging infrastructure. Prior to 2008, very little replacement or rehabilitation had been completed to address the issues relating to the utility systems, with the exception of the natural gas utility. As the City continued to grow in population and development continued to increase, it was recognized that not only did the utility infrastructure need increased capacity, but the systems also needed to be improved to ensure that public health would not be compromised and to alleviate property damage.

Although the four (4) utility systems have vastly different components and functionalities, they are all treated similarly in the respect that the Department of Utilities acts aggressively through the CIP to continue to improve the operability of the utilities. Without this aggressive approach, the systems could

easily and quickly fall into disrepair, similar to the situation experienced prior to 2008, which is not in the best interest of the City of Charlottesville.

This section of the FY'22 Adopted Utility Rate Report provides a summary of the staff recommendations for each utility. Additional detailed information for each utility is provided in subsequent chapters.

**1.1 WATER AND SEWER**

**1.1.1 Adopted FY'22 Water and Sewer Rates**

Based on the projected revenue requirements to operate and maintain each utility, the adopted water and sewer rates for FY'22 (beginning July 1, 2021) are as follows:

*Exhibit 1: Adopted Water and Sewer Rates FY'22*

	Current	Adopted FY'22	\$ Change	% Change
<b>WATER (per 1,000 CF)</b>				
Summer	\$65.31	\$70.08	\$4.77	7.30%
Winter	\$50.24	\$53.91	\$3.67	7.30%
<b>SEWER (per 1,000 CF)</b>	\$80.14	\$81.34	\$1.20	1.50%

**1.2 NATURAL GAS**

The revenue requirements to operate and maintain the natural gas system are projected to slightly increase by an average of 1.0% for firm customers in FY'22. The single largest expenditure for Charlottesville Gas is the purchase of natural gas from British Petroleum (BP), the City's wholesale supplier. The projected price of gas for FY'22 is about the same as the current year. The gas rates for FY'22 are as follows:

*Exhibit 2: Adopted Gas Rates for FY'22*

		FY'20 (Adopted 7/1/19)	Adopted FY'22	\$ Change	% Change
<b><u>FIRM</u></b>					
Customer Charge (Minimum)	\$	10.00	\$ 10.00	\$0.00	0.0%
First 3,000 Cu Ft, Per MCF		9.0706	8.9908	(\$0.08)	-0.9%
Next 3,000 Cu Ft, Per MCF		8.5264	8.5198	(\$0.01)	-0.1%
Next 144,000 Cu Ft, Per MCF		7.6193	8.0489	\$0.43	5.6%
Over 150,000 Cu Ft, Per MCF		7.4379	7.5779	\$0.14	1.9%
<b><u>INTERRUPTIBLE</u></b>					
Customer Charge (Minimum)	\$	60.00	\$ 60.00	\$0.00	0.0%
First 600 MCF, Per MCF		7.3874	7.2178	(\$0.17)	-2.3%
Over 600 MCF, Per MCF		6.5720	6.6937	\$0.12	1.9%
Annual Minimum (MCF)		1,200	1,200	\$0.00	0.0%
<b><u>AIR CONDITIONING</u></b>					
All Gas Used, Per dth	\$	7.3471	\$ 7.7489	\$0.40	5.5%
<b><u>GAS LIGHT</u></b>					
Charge per Month	\$	17.51	\$ 17.51	\$0.00	0.0%
<b><u>TRANSPORTATION</u></b>					
Small Volume Customer					
Monthly Service Charge	\$	150.00	\$ 150.00	\$0.00	0.0%
Rate per dth	\$	3.2293	\$ 2.6462	(\$0.58)	-18.1%

### 1.3 STORMWATER

The Stormwater Utility fee was adopted in March 2013 at a rate of \$1.20/500 square feet of impervious surface per month. The fee has remained flat for the period FY'14-FY'21. No increase is proposed in FY'22. The Stormwater Utility fee is re-evaluated annually, in conjunction with the budget development process.

*Exhibit 3: Adopted Stormwater Utility Fee Rate FY'22*

	Current	Adopted FY'22	\$ Change	% Change
<b>STORMWATER (per 500 sq. ft. impervious area)</b>				
	\$1.20	\$1.20	\$0.00	0.00%

### 1.4 IMPACT ON CUSTOMER

The table below illustrates the impact on a City residential customer using 400 cubic feet (cf) of water and wastewater, owning a property with approximately 2,440 square feet of impervious surface, and using 4,600 cf of gas per month. This information is based on utility rates and charges adopted for July 1, 2021.

*Exhibit 4: Impact of Adopted FY'22 Rates and Charges on an Average Customer*

	Current (based on rates adopted 7/1/19)	Adopted (Effective 7/1/21)	\$ Change	% Change
Water <sup>1</sup>	\$27.61	\$29.76	\$2.15	7.79%
Sewer <sup>1</sup>	\$37.06	\$38.04	\$0.98	2.64%
Natural Gas <sup>1</sup>	\$50.85	\$50.60	-\$0.25	-0.49%
Stormwater <sup>2</sup>	\$5.86	\$5.86	\$0.00	0.00%
<b>Total</b>	<b>\$121.38</b>	<b>\$124.26</b>	<b>\$2.88</b>	<b>2.37%</b>

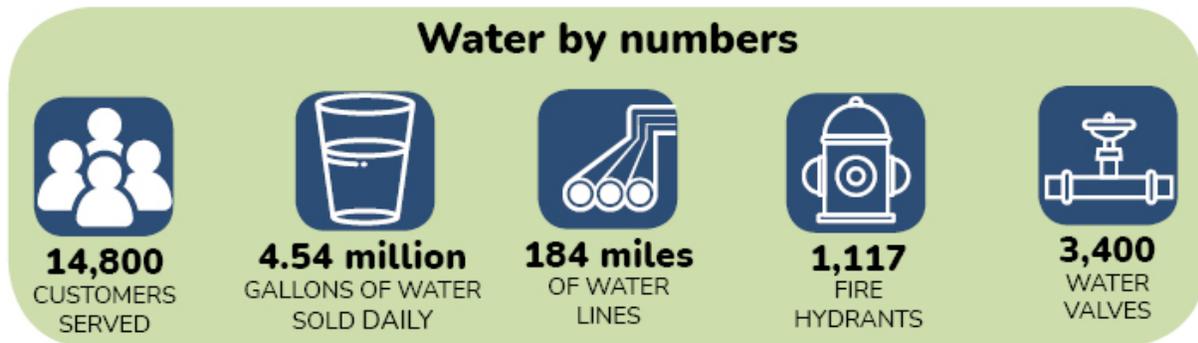
(1) Rates include monthly service charge.

(2) The budget impact shown reflects a residential monthly average fee and provides consistency with other utilities. Stormwater fees are rounded to the next whole billing unit and are billed to property owners biannually.

## 2. WATER

### 2.1 OVERVIEW

The City distributes potable water within its municipal boundaries and the University of Virginia. The City has approximately 14,800 water customers using 1.6 billion gallons of water annually or 4.5 million gallons daily. The City's water distribution system has 184 miles of pipes (enough to stretch from Charlottesville to Virginia Beach) ranging in size from 2" to 18" in diameter. The system also includes 1,117 fire hydrants and 3,400 water valves.



The City's water distribution system operates off of three (3) different pressure zones- the South Rivanna Pressure Zone, also known as the Urban Zone, the Lambeth Pressure Zone, and the Alderman Pressure Zone. These three zones have varying pressures based upon topography, incoming pressure available, and volume of flows needed in the areas. The hydraulic grade lines (HGL) of the three (3) zones vary- South Rivanna operates at 652', Lambeth operates at 750.5', and Alderman operates at 751'.

#### 2.1.1 Customer Satisfaction Survey

In January 2021, the Department of Utilities conducted an online customer satisfaction survey to gain feedback about our services. We received over 450 responses reflecting high levels of satisfaction with the reliability, value, and safety of the services we provide. Among respondents, 99% are satisfied and neutral about the reliability of water service, with 92% of respondents rating the value of their water service as excellent. Additionally, 92% of respondents are satisfied and neutral regarding the safety of their drinking water.



## 2.2 WATER QUALITY AND SAFETY

Protecting public health is a core function for the Department of Utilities. Since the early 1900's the City has diligently planned, developed, and operated a complex system that provides affordable, clean, safe, and great-tasting water. The City works closely with the Albemarle County Service Authority (ACSA), the Rivanna Water and Sewer Authority (RWSA), the Virginia Department of Health, and the Virginia Department of Environmental Quality to ensure superior water quality.

### 2.2.1 Water Treatment

The Rivanna Water and Sewer Authority (RWSA) collects, stores, and treats the water. The City then buys the treated water and distributes the water through the distribution system. Although drinking water supplies in the United States are among the safest in the world, RWSA employs various technologies and methods of water treatment to prevent contamination and to remove disease-causing agents. Common steps used in water treatment that can be found within the RWSA's process include:

#### Coagulation and Flocculation

Coagulation and flocculation are often the first steps in water treatment. Chemicals with a positive charge are added to the water. The positive charge of these chemicals neutralizes the negative charge of dirt and other dissolved particles in the water. When this occurs, the particles bind with the chemicals and form larger particles, called floc.

#### Sedimentation

During the sedimentation process, floc settles to the bottom of the water supply, due to its weight. This settling process is called sedimentation.

#### Filtration

Once the floc has settled to the bottom of the water supply, the clear water on top will pass through filters of varying compositions (sand, gravel, and charcoal) and pore sizes, in order to remove dissolved particles, such as dust, parasites, bacteria, viruses, and chemicals. As smaller, suspended particles are removed, cloudiness diminishes, and clear water emerges.

#### Granular Activated Carbon (GAC)

Treatment that removes man-made and naturally occurring contaminants that can impact taste and

odor in the finished water. This treatment also removes organic chemicals or disinfection byproducts that are regulated by the Environmental Protection Agency.

### Disinfection

As protection against any bacteria, viruses, and other microbes that might remain, disinfectant is added before the water is released into the distribution system and into your home or business.

RWSA carefully monitors the amount of disinfectant added to maintain quality water at the farthest reaches of the system.

## **2.3 WATER QUALITY TESTING**

The City takes water quality testing very seriously. Much has been discussed about lead in the United States, and since the 1970's, Charlottesville has taken a proactive stance by testing at risk homes, using corrosion inhibitors added to the water to coat the pipes, and having only lead-free pipes installed to carry drinking water. In 2018, the RWSA collected and tested hundreds of hourly, daily, weekly, monthly, quarterly, and annual samples to ensure the quality of our water. Sample sources included the rivers and reservoir from which the water treatment plants draw water, the water treatment plants themselves, and numerous locations in the City's distribution system. Contaminants that the City routinely tests for include:

- Turbidity
- Total Coliform and E. Coli Bacteria
- Combined Radium and Alpha and Beta Particles
- Barium
- Fluoride
- Lead
- Copper
- Nitrate
- Trihalomethanes and Haloacetic Acids
- Perfluoroalkoxy alkane
- Chlorine

For more information about the City's water quality, please visit [www.charlottesville.gov/waterquality](http://www.charlottesville.gov/waterquality).

## **2.4 BACKFLOW/CROSS CONTAMINATION PROTECTION**

Cross-contamination presents a serious hazard to our water supply. The situation in which water flows in a direction that is opposite from the intended flow is called backflow and can potentially put the drinking water supply in danger by allowing the undesirable reversal of flow, such that non-potable water moves into the potable water system. The location at which this backflow occurs, where a customer's water line and the main supply line are joined, is called a point of cross-connection. As part of the City's strategy, certain businesses, such as medical facilities, laboratories, food processing plants, chemical plants, high-rise buildings, or other facilities where a potential for backflow or cross-connection hazard may exist, are required to install and maintain cross-connection or backflow

prevention devices. The City's Department of Utilities currently maintains inspection records for over 900 backflow devices to provide the highest quality water to the City residents.

## **2.5 WATER CONSERVATION**

The City of Charlottesville is focused on the management of the water distribution systems to reduce water loss, and partners with City customers to conserve water. Highlights of the Water Conservation Program (WCP) include the distribution of over 11,800 free indoor water conservation kits since 2008, the development and dissemination of guidance on how to find and fix leaks, water smart information, and indoor water conservation information. Additionally, a low-flow toilet rebate program has supported the replacement of over 6,390 high consumption toilets since 2003, and a rain barrel rebate program that has issued 795 rebates since 2009.

The WCP continues to conduct an extensive public outreach campaign. This includes educational activities at summer camps, educating the public during Fix a Leak Week, and distributing water-saving information and promotional items at dozens of community events every year, such as Kid\*Vention and the Westhaven Community Day. The City's water conservation message has also been conveyed via the internet (online ads, mobile apps, and social media), mailings, newsletters, print, radio, and television. The WCP partners with community organizations including the Local Energy Alliance Program (LEAP), UVA Sustainability, Rivanna Conservation Alliance, Charlottesville City Schools, ACSA, and RWSA. In addition, the program has 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 2019 and 2020, the City of Charlottesville was recognized for water conservation efforts supporting the WaterSense program, receiving the 2019 and 2020 Sustained Excellence Awards; this is the highest honor given out by the WaterSense program and makes the sixth year in a row the program has received a WaterSense award.

In both 2019 and 2020, the City increased its focus on internal performance and efficiency through the City's Energy and Water Management Program. The WCP supports the water side of these efforts by managing the water usage of facilities managed by the City, educating staff and users of the facilities on how to be more efficient and reduce water usage, and supporting water efficient improvements. Another large focus over the past two years has been on Charlottesville City Schools and how to make their buildings more efficient and encourage the staff and students to implement good saving behaviors. These efforts are in line with Charlottesville's work towards meeting the climate goals adopted in 2019 of reducing greenhouse gas emissions by 45% by 2030, and becoming carbon neutral by 2050. Learn more about the City's energy and water performance and program initiatives in the FY2020 report. COVID-19 significantly impacted the City's in-person water conservation program's outreach and engagement in FY'20. The program saw a dip in interest in some of the programs and initiatives; however, the program continued to find unique ways to keep the community engaged while in-person events are put on hold.

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The exhibit below outlines the City's current water conservation efforts.

**Exhibit 5: Water Conservation Activities**

Program Initiatives	Description
Free Incentives: Water Conservation Kits, Toilet Flappers, and Other Resources	<p>The WCP offered free water conservation kits to all City residents. Kits include a WaterSense labeled showerhead, WaterSense labeled faucet aerators, and toilet leak detection dye tablets. These conservation kits were available for pick up at City Hall and at various public outreach events. In FY'19, 518 water conservation kits were given out to the community, and in FY'20, 300 conservation kits were given out to the community (see note below).</p> <ul style="list-style-type: none"> <li>• During the summer of 2019, the program worked with the Community Attention's TeensGive program (Blue Team) to give out 150 water conservation kits by going door-to-door in neighborhoods with high water usage. This outreach was put on hold in FY'20 due to COVID-19.</li> <li>• The City partnered with a local nonprofit, LEAP, to distribute fixtures that are included in the conservation kits during their Home Energy Check-Ups.</li> <li>• Water saving fixtures were given out at various community events during the year. In FY'19, an additional 238 aerators and 69 showerheads were given out to the community at these events.</li> <li>• In FY'20, the program started to offer universal toilet flappers and a practical plumbing handbook to City residents. Toilet flappers were available at City Hall for pick up and the plumbing handbook was available upon request. These materials will be made available at community events in the future.</li> <li>• These free resources are marketed using billing inserts, social media, and paid advertising.</li> </ul> <p><i>Note: In FY'20 due COVID-19, City Hall was closed, and customers were not able to pick up conservation kits and other free resources at City Hall. There was only one event in 2020 where these resources were made available as all other events were cancelled.</i></p>
Water Conservation Education	<p>The WCP connects with summer camps, schools, and small groups to teach the importance of conserving water. Informational pamphlets, resources, and water saving fixtures are provided at all events with tips on how to save water both inside and outside the home.</p> <ul style="list-style-type: none"> <li>• A new educational activity was developed in 2018 that has kids match WaterWise and WaterUse issues displayed on cards and discuss why these WaterWise practices are important. This activity was used in FY'19 and FY'20 educational events.</li> <li>• Educational information provided on the Water Conservation website explains ways to save water and money for all types of water needs and usage. In FY'19, the water conservation page received over 7,400 page views and in FY'20, it received over 6,890 page views.</li> </ul> <p><i>Note: In April 2020, the City changed over to a new website and all Water Conservation webpages were completely revamped and updated.</i></p>
Energy and Water Management Program and School Outreach	<p>An Energy and Water Management Program (EWMP) was recently formalized to provide consistent tracking of internal municipal utility usage, research and review of facilities' performance, and implementation of various programs and initiatives aimed at energy and water management.</p> <ul style="list-style-type: none"> <li>• In FY'20, the City adopted an internal Energy and Water Management Policy.</li> <li>• In FY'20, the EWMP started to work directly with Charlottesville City Schools to educate staff and students on saving energy and water at school (and at home). The program published quarterly educational materials with customized themes, tips, and messages.</li> <li>• Fall 2019 – spring 2020, the EWMP issued educational posters that were posted around each school with that quarter's outreach message and tips.</li> <li>• Summer 2020 – present, the EWMP developed quarterly student activity sheets that could be used as students pivoted to online learning. Each activity sheet has students learn about the message and tips provided through a series of activities that can be applied at home and at school.</li> </ul>
Water Conservation Community Outreach	<p>The WCP participated in numerous community events. Materials are tailored to the audience, and conservation information and rebate materials are available at these events.</p> <ul style="list-style-type: none"> <li>• For FY'19, outreach occurred at 13 events including Kid*Vention, UVA events, Tom Tom Festival, Grand Illumination, various neighborhood and community focused events, and at City Hall tabling.</li> <li>• For FY'20, outreach occurred at 6 events, including Kid*Vention, Grand Illumination, and Westhaven Community Day. However, all events after February 2020 were cancelled due to COVID-19.</li> </ul>

- The WCP mentored a high school intern during the summer of 2019 as part of the Community Attention Youth Internship Program (CAYIP), where the intern provided essential support with water conservation outreach. No intern was mentored in the summer of 2020 due to COVID-19.
- Starting in FY'20, the WCP engaged UVA students through the University's Internship Placement Program, who worked on the City's EWMP. During COVID-19, these internships continued remotely.

To celebrate the national Fix a Leak efforts of the EPA WaterSense program, the WCP holds an annual fun run, the Fix a Leak Family 5K. Billing inserts, paid ads, radio ads, and social media focused on the importance of finding and fixing leaks in your home were also used to support the campaign.

Fix a Leak Campaign

- Although Fix a Leak Week is typically held during March, in FY'19 the Fix a Leak Family 5K was held in May at Darden Towe Park, as part of a larger event, the Rivanna Riverfest. The larger event, which had other activities including a large tabling event, river race, and evening music on the river, was a huge success attracting a large group of participants and larger audience by having the 5K part of the event.
- In FY'20, the Fix a Leak Family 5K was again planned to be part of Rivanna Riverfest in May; however, due to COVID-19, the event was cancelled. Other planned in-person events in March during Fix a Leak Week were also cancelled.

The WCP holds an annual art contest, co-sponsored with ACSA and RWSA, as part of the Imagine a Day without Water campaign.

Imagine a Day without Water Campaign

- In FY'20, the 5<sup>th</sup> annual Imagine a Day without Water Art Contest asked youth to illustrate how they "Only Use What You Need." The contest had over 300 poster entries and the fan favorite entry was selected from over 1895 total online votes. The campaign included an event at the Shops at Stonefield and an awards ceremony for all award winners and participants.
- In FY'21, the 6<sup>th</sup> annual Imagine a Day without Water Art Contest was held (even during COVID-19) asking youth to consider, "What Water Means to Me". The contest was modified to allow for easier submissions of art and relaxed rules. The contest had 120 art submissions and had 870 online votes to help select the fan favorite winner. Due to COVID-19, there were no in-person events, but winners were honored during a Cville360 TV segment and through an official City press release.

The WCP put out 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. The program promoted WaterSense's "Sprinkler Spruce Up", "When in Drought", "Smart Irrigation", and other WaterSense outdoor campaigns and resources during the summer months.

Water-Wise Landscaping

- In the summer of 2019, the program used a local TV's weather page (computer, tablet, app, phone) during the summer months to bring attention to being water smart outside.
- In the summer of 2020, the program published several utility billing inserts to connect the community to outdoor water saving tips as well as promoted helpful resources and information on social media.
- The WCP provided businesses with specific information and resources on how they can save water. A free "Commercial Kitchen Water Use Efficiency and Best Practices Guides" has very relevant and current information on how commercial kitchens can save water and money. This literature is provided to City businesses upon request.
- The program continues joint efforts with the City and Albemarle County Service Authority for the Carwash Certification Program. This program has been on hold during COVID-19.

Water Efficient Businesses

Year-Round Ad Campaign: "Check, Twist, Replace" and Saving Water Indoors

The WCP runs yearly ad campaigns using social media, print, television, radio, and online ads to promote the EPA WaterSense sponsored water conservation campaign: "Check, Twist, Replace". This messaging encourages the community to find and fix leaks in their home and check out the City's water conservation rebates and incentives.

The Charlottesville Water Conservation Facebook Page utilizes social media to connect and reach the community using community based social marketing methods by posting regularly each Wednesday for #WaterTipWednesday (#WTW). This initiative conveys important information, resources, events, and highlights about the program.

Social Media and #WaterTipWednesday

- In FY'19, the Facebook page had 117 posts, received 46 new page likes, reached over 38,000 people, and saw over 1,500 engagements.
- In FY'20, the Facebook page had 118 posts, received 44 new page likes, reached over 15,900 people, and saw over 870 engagements.

The program also posts similar messages on the Twitter account, Charlottesville-A Green City Facebook Page, and Charlottesville-A Green City Instagram Page.

## 2.6 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 Toilet Rebate 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 labeled toilets use significantly less water and function as well as standard toilets, resulting in water (and dollar) savings every year. Residential customers may replace up to three (3) toilets at a given residence built before 1994. Commercial property owners may replace up to two (2) toilets and receive up to \$80 per replacement. Owners of multi-unit apartment complexes can replace two (2) toilets per unit. A special program targeted at toilet retrofits for large multifamily properties was started in 2011. Since then, over 17 apartment buildings have received rebates to replace their high consumption toilets. In FY'19, 21 toilets were replaced with low flow, WaterSense labeled toilets in an apartment on the historic Downtown Mall. Low flow WaterSense labeled toilet rebates issued in FY'19 totaled 247 and 177 in FY'20. The total number of toilet rebates issued to date is 6,391, saving the City a cumulative 60 million gallons of water. Rebates are marketed using billing inserts, social media, and paid advertising. The following chart shows the participation in the toilet rebate program for the past 14 years.

*Exhibit 6: Participation in Toilet Rebate Program since 2007*

Fiscal Year	# of Customers	# of Rebates	\$ Rebated	Average Rebate/Customer
2020	136	177	\$17,696	\$130
2019	178	247	\$24,092	\$135
2018	165	263	\$25,023	\$152
2017	185	246	\$24,153	\$131
2016	186	223	\$22,218	\$119
2015	189	460	\$40,555	\$215
2014	219	305	\$29,544	\$135
2013	358	573	\$54,113	\$151
2012	258	544	\$54,186	\$210
2011	363	599	\$61,865	\$170
2010	386	367	\$36,401	\$94
2009	219	310	\$31,086	\$142
2008	180	302	\$30,372	\$169
2007	194	232	\$23,845	\$123

The Rain Barrel Rebate Program is aimed at encouraging City homeowners to use harvested rainwater for 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 795 rebates since the program started in FY'09 including 35 rebates in FY'19 and 26 rebates in FY'20. The City promotes rain barrel workshops and opportunities offered by community partners, such as the Thomas Jefferson Soil and Water Conservation District (TJSWCD). Rebates are marketed using billing inserts, social media, and paid advertising.

## 2.7 WATER ASSISTANCE PROGRAM

The Water Assistance Program (WAP) was started in FY'12 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 (3) times the customer's average monthly bill, whichever is less.

In FY'19, 76 customers benefited from the WAP receiving a total of \$6,222.84. In FY'20, 53 customers received a total of \$5,247.50. The water budget for the next fiscal year includes \$10,000 for WAP. The WAP also has carry-over funds available from previous fiscal years. Comparable assistance has begun in the wastewater fund through the Wastewater Assistance Program (WWAP).

## 2.8 WATER INFRASTRUCTURE ASSET MANAGEMENT

The City's water distribution system contains 184 miles of water main line ranging in size from 2-inch to 18-inch in diameter. About 16.5 miles of that pipe is three (3) inches or less in diameter. The majority of the 16.5 miles of main are galvanized steel, several decades old, and serve multiple customers. Not only can the water lines be severely corroded but they can often result in low pressure and significantly reduce the quality of service to customers. The system also includes 1,117 fire hydrants and 3,400 water valves.

### 2.8.1 Water Distribution System

In 2010, the Department of Utilities determined that the water distribution system needed major attention and remediation for deficiencies. These deficiencies included: water main breaks, low water pressure, poor water quality, insufficient fire flow, and fire hydrant placement not within standards. After a comprehensive analysis of the system was completed, the development of 45 projects (known as the Priority List) was created. These projects would replace or rehabilitate existing water mains and install new water mains to create loops within the system to eliminate the deficiencies.

In order to determine project prioritization, criteria were used and a ranking number system developed and applied to all projects. The criteria were categorized into the following groups:

1. Physical Consideration criteria assesses the integrity of the pipes which comprise the water system.
2. System Consideration criteria addresses water quality, pressure, and fire limitations within the water system.
3. Environmental/Historic Consideration criteria addresses natural conditions which may be impacted by a construction project.
4. Public Impact criteria assesses the potential disruption to City residents.
5. Planning criteria assesses the potential to incorporate construction projects into areas to be developed within the City.
6. Area Construction criteria evaluates the potential to incorporate proposed construction projects into areas to be developed within the City.
7. Cost/Benefit Ratio assesses the cost required to achieve the overall benefit for the improvement.

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Each of the criteria was evaluated as to its importance versus the other criteria. A weighting value was given to each criteria. The weighting values ranged from 10 being the most important to 1 which was least important. The following is a summary of the weighting values and associated criteria:

<u>Weighted Value</u>	<u>Criteria</u>
10	Water Quality Issues, Low Fire Flow
8	Water Main Breaks
7	Water Age
6	Paving, Sewer Main Replacement, Cost/Benefit Ratio
5	Low Pressure
4	Traffic, Location
2	Wetlands, Natural Landmarks, Development Area
1	Service Line Repairs

In order to achieve success, the Department created a contract with over 200 individual bid items representing water system components to address the initial list of projects. Examples of these bid items include various sizes of pipe, fittings, valves, meters, service lines, fire hydrants, and site restoration.

In 2011, the Annual Water System Contract was awarded and construction began. Contractors were required to provide two (2) crews which would work simultaneously on the projects. Contractors were provided the list of projects, but no specific designs as to the extent of the projects. The annual contract was awarded with the potential for two (2) single-year renewals. Since this initial contract, there have been four (4) contracts awarded over 10 years with achievements and lessons learned every year and from every project.

This Priority List has had several iterations over the past 11 years and the Department has seen 90 completed projects totaling over 92,213 linear feet (LF) (17.47 miles) of water mains replaced. This equates to 9.5% of the entire water system being replaced under this contract. In order to complete these projects, the Department has spent \$20,218,366 to date with an average of \$2,021,837 being spent in a contract year. It is the intent of the Department to average approximately two (2) miles of main replacement per year which equates to an average of approximately \$200 per linear foot of pipe installed.

In the current contract year, at \$200/ LF, at the expected footage of pipe installed, which is two (2) miles, the construction budget for this project would be \$2,112,000. However, past contracts have varied between \$1,543,576 and \$2,817,456 per contract year. This value can change depending on the size and location of projects, weather, and unknowns that are encountered during construction.

As part of looking at the water system as a whole, there are some projects that need to be bid separately from the Annual Water System Contract. The earliest project that was bid separately was a 12" water main extension in Jefferson Park Avenue. The area from Maywood Lane to Monroe Lane was served by a single 6-inch main and was severely under capacity for the area it served. The contract included 1,500 feet of 12, 8, and 6-inch ductile iron water main installation. The project was completed at a contract price of \$427,147.

The second standalone project that has been completed was the Emmet Street/ Ivy Road Water Main Replacement. Two (2) 6-inch lines ran in parallel in Emmet Street and Ivy Rd from the intersection of McCormick Road to the City/ County line on Ivy Rd. A contractor procured by Utilities used a combination of two (2) methods to replace the two (2) existing lines – pipe bursting and open trenching.

Where feasible, one (1) of the existing 6-inch lines was burst in place and upsized to an 8-inch ductile iron pipe. The pipe bursting technology reduced the impact on traffic around the area during construction. The contractor was also able to take advantage of the UVA winter break and closed a portion of Emmet Street while classes were not in session. This allowed the contractor to leave the work area staged with equipment and material to take full advantage of working hours. Where pipe bursting was not an option, a new 8-inch ductile iron pipe was installed by the open trenching method. Upon completion of the project, one (1) 8-inch line replaced the parallel 6-inch lines from McCormick Rd to St. Anne's Belfield. The final project construction cost was \$2,329,943.

Another completed standalone project was the 18" West Main Street Water Main Replacement. The project began construction in October 2019 and was completed in April 2021. The project description was to replace an existing 18-inch water main that is a major feed to the City. The new line was installed in West Main Street from 9th Street SW, turned south on Roosevelt Brown Blvd, and connected to the existing line at Grove Street. The final project construction cost for the project was \$1,149,797.28.

An additional completed standalone project was the Rugby Road Water Meter Replacement/ Gentry Lane Water Main Installation, Phases 1 and 2. The first phase of the project consisted of installing 1,300-feet of 8-inch water main in Gentry Lane from the intersection of Diary Road and Gentry Lane to the intersection of Greenleaf Drive and Gentry Lane. Before the replacement project, 19 water services along Gentry Lane were served by a dead-end 6-inch line in the road, while 11 water services were served by a dead-end 2-inch line in the backyards of the properties on the north side of Gentry Lane. The new 8-inch line now serves all the properties allowing the existing 6-inch and 2-inch lines to be abandoned, reducing maintenance and removing City infrastructure from private properties. The new line increased capacity while improving fire flow for the area, including the Walker Upper Elementary School/ Charlottesville City Schools Administration Office complex. The total construction costs for phase 1 were \$533,174. The second phase, which consisted of 1,300-feet of 8-inch water main from Greenleaf Lane to the northeast intersection of Diary Road and Gentry Lane, was completed in the summer of 2018. The total construction costs for phase 2 were \$226,188.

Currently there are three (3) other standalone projects that will be completed by the Department in coming fiscal years. They are as follows:

- *Rugby Road Water Meter Replacement/ Gentry Lane Water Main Phase 3 Installation*

Currently there are two (2) water mains (one (1) 12-inch and one (1) 6-inch that reduces to a 4-inch) in Rugby Road from University Avenue to Route 250. The third phase of the project will move all existing water services from the smaller water line to the larger water line. This will allow for the smaller water line to be abandoned reducing the maintenance needed in Rugby Road. This phase of the project is intended to be constructed in the fall of 2020. This final phase of the three (3) phase project has an estimated construction cost of \$475,000.

- *High Street Water Main Replacement*

In an effort to improve utilities ahead of a large paving and streetscape project, Utilities will implement a project to replace approximately 5,400-feet of 6-inch diameter water main with 12-inch diameter piping. This will greatly reduce maintenance while providing capacity for future development along the High Street corridor. The Department of Utilities is currently coordinating with the Department of Neighborhood Development Services and the Rivanna Water and Sewer Authority on the design. This project is currently being designed with a construction date of FY'21 and has an estimated cost of \$1,780,000 for construction.

- *West Main Street Water Main Replacement*

The West Main Street corridor is currently served by a 10-inch cast iron main that is between 70 and 90 years old. In order to better serve the area in anticipation of future development, as well as to minimize the emergency responses due to old infrastructure, the Department is planning a complete replacement of the water main and appurtenances ahead of the West Main Streetscape project. The 4,000 LF of 10-inch cast iron main will be replaced with 12-inch ductile iron pipe providing higher capacity for the City. The replacement is anticipated to have a construction cost of \$1,540,000. However, due to what may be encountered in the subsurface, it is believed that this cost could easily increase by up to 50%.

While the Department has several large projects and programs underway that address water mains, the water services are still a focus for replacement. Most of the City's service lines (the lines from the mains to the water meters) are galvanized steel and were installed during residential construction. 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 8 miles (42,240 linear feet) of water service lines have been replaced.

### **2.8.2 Lambeth Field Pump Station**

The Department owns and operates one (1) pump station- the Lambeth Field Pump Station (LFPS). The LFPS is located adjacent to Rugby Road and provides water to a closed-loop high pressure zone. The pump station is designed to provide a firm capacity of 3.38 million gallons per day (MGD) and is currently outfitted with two (2) 0.65 MGD low capacity pumps and one (1) 2.2 MGD high capacity pump. The pump station also has a natural gas back-up high capacity pump that is capable of handling the 3.38 MGD firm capacity. The natural gas pump was installed since the City operates the natural gas utility and natural gas was readily available to the pump station.

The zone that the LFPS services is known as the Lambeth Pressure Zone and consists of the northern halves of the Venable and Barracks/ Rugby Neighborhoods. This pressure zone serves approximately 800 connections and provides fire protection to the area.

In 2009, the City recognized that this pressure zone was inadequate and unreliable, especially when a power outage occurred at the LFPS. When electrical power was lost, City crews would operate isolation valves between the Lambeth Pressure Zone and the South Rivanna Pressure Zone to allow water to bleed into the Lambeth Zone. This not only caused discolored water issues, but it also put the zone at high-risk due to low pressures and low fire flows.

The Department made the decision to evaluate the Lambeth Pump Station to address the known deficiencies. Upon review, there were several upgrades that needed to occur to provide safe drinking water and fire flows to the pressure zone. In addition to the mechanics of the pump station, the building also needed upgrades to provide structural integrity and longevity.

In 2011, after approval from the Virginia Department of Health (VDH), the Department issued an IFB for construction services. The contract was awarded and the following improvements were made:

- Supervisory Control and Data Acquisition (SCADA) and pressure transducers installed allowing the Department to track trends, water flows, pressure drops;
- An Autodialer was installed to alert the Department of any issues, including pressure drops or power failures;
- Building improvements including installing security fencing and lighting, installing interior lighting and repainting, and door, window, and roof replacement; and
- Installation of Variable Frequency Drive (VFD) motor-driven centrifugal pumps to control flows for energy and cost savings at times of decreased demand.

The upgrade was completed in 2012 and the total construction cost was \$442,000.

### **2.8.3 Water Loss Management**

Replacing water distribution mains and service lines is an important component in water loss prevention and conservation. Aging pipes are a primary cause of lost water in a system. Since FY'09, the City has been replacing aged water lines and service lines, which reduces leaks and supports improving infrastructure. The City has also performed annual system-wide leak detection surveys. With over 238 miles of water lines (mains and services), 11 leaks were detected and repaired during the 2019 testing, resulting in an estimated loss of 125,280 gallons per day through various methods. The yearly leak detection survey was performed again in 2020 with 6 leaks being found with an estimated total loss of 141,120 gallons per day. The City aims to respond and repair leaks expeditiously to minimize water loss and service impacts. Leak audit surveys were completed in 13 of the past 15 years and will continue annually. The next survey is scheduled for fall 2021 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 FY'10 – FY'12 resulted in improved recordkeeping of water use by City contractors and more detailed procedures for annual fire hydrant testing. Water

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audits completed for FY'13 – FY'17 have used the same process and resulted in improved data collection procedures specifically quantifying unbilled and unmetered water usage. In addition, in FY'14 – FY'17, water loss was quantified by more accurate calculations of loss from water leaks, and water meter error. The City will continue to minimize water loss by outreach, system repair and replacement, and improved leak detection technologies.

Based on the water audit recommendations, water meter calibration and replacement programs were implemented starting in FY'14. In FY'14, 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. Using this data, the Department will test 10% of all large meters (1.5-inch and larger) currently in circulation on an annual basis. Using spatial analysis tools, annual testing will allow the City to coordinate maintenance efforts to ensure the highest possible service while minimizing water loss due to mechanical failures.

Furthermore, the Department is addressing the need to replace large meters (1.5-inch and larger) through a Large Meter Replacement Program. Through this program, the Department has issued three (3) contracts since 2014 in an effort to install all of the large meters through the City in meter setters and vaults that are easily accessible for maintenance and testing purposes. Similar to the Annual Water System Contract, the contract has over 200 individual bid items representing water system components, and has an annual budget of \$750,000 per year.

To date, the program has replaced 323 water meters since its inception in 2014. The success of the program has led to increased momentum with the focus now shifting from 1.5” and 2” meters to the larger, more complicated 3” and 4” meters. The latest replacement contract was awarded in 2021 and a total of \$2,762,978 has been spent on upgrading the infrastructure.

As part of the meter replacement program, the City is evaluating customer consumption to verify that the meters are appropriately sized. Because conventional water meters less accurately measure low flow rates, starting in 2017, highly sensitive “low-flow” ultrasonic meters are being installed in all applications.

The current capital projects in the City’s five-year capital plan are listed below. The costs include construction and professional services. The City updates its capital plan annually with the five-year capital plan being FY'22 – FY'26.

*Exhibit 7: City Five-Year Capital Improvement Plan for Water*

<b>Project</b>	<b>Five-Year Total</b>
Water Line Replacement (Annual Service Contract)	\$6,800,000
Water Meter Replacement	\$3,750,000
Large Waterline Replacements Projects	\$3,225,000
<b>TOTAL</b>	<b>\$13,775,000</b>

## **2.9 RIVANNA WATER AND SEWER AUTHORITY**

The RWSA provides wholesale water supply, as well as drinking water for the City of Charlottesville and the Albemarle County Service Authority (ACSA). The City's share of RWSA's budget for water totals \$6,860,300 for FY'22 including operations costs and debt service for infrastructure. This is a proposed increase to the City of 15.2% (\$906,800) over the approved FY'21 budget. Operating expenses include personnel costs (staff salaries and benefits), general services costs (professional fees, utilities, insurance, permits, and data and voice communications), and operation and maintenance costs (chemicals, building repairs, equipment maintenance, technology and communications). Debt service provides funding to construct and renew major infrastructure including water treatment plants, pumping stations, piping systems and reservoir dams.

### **2.9.1 Infrastructure**

RWSA's Capital Improvement Plan (CIP) for water for Fiscal Years 2022-2026 has been prepared as a strategic and financially responsible plan to complete major infrastructure construction projects. The projects included in the CIP are necessary to achieve the RWSA's core mission of providing safe, high-quality drinking water for the City of Charlottesville and ACSA. The CIP is a five (5) -year planning document which provides an estimated budget and schedule for projects as they advance through the design and construction process.

The infrastructure requirements of the CIP are developed through RWSA's Asset Management and Master Planning programs to address capacity demands, regulatory mandates and rehabilitation needs. Each year, these projects are reviewed and prioritized by the RWSA management team and brought forth for review by the Board of Directors.

During the past year, several capital projects were very near completion or are no longer needed, and as such are being removed from the 2022-2026 CIP. These projects include:

- Valve Repair & Replacement (Phase 2)
- Finished Water System Master Plan
- South Rivanna Dam – Gate Repairs

The total five-year 2022-2026 CIP for water is approximately \$64.77 million. This includes projects already in previous CIPs which have been modified, as well as new projects.

*Exhibit 8: RWSA Water Infrastructure Projects to Serve City*

Project	FY'22-FY'26 Total (millions)
<b><i>New Projects</i></b>	
South Rivanna to Ragged Mountain Reservoir Raw Waterline – Birdwood to Old Garth	\$2.0 M
South Rivanna WTP – Plate Settlers Addition	\$0.2 M
<b>NEW PROJECTS, SUBTOTAL</b>	<b>\$2.2 M</b>
<b><i>Existing Projects</i></b>	
Ragged Mountain Reservoir to Observatory WTP Raw Waterline	\$15.33 M
Central Waterline	\$7.71 M
Ragged Mountain Reservoir to Observatory WTP Pump Station	\$5.85 M
South Fork Rivanna River Crossing and North Rivanna Transmission	\$9.67 M
Observatory WTP Improvements	\$15.3 M
Sugar Hollow Dam Rubber Crest Gate Replacement	\$0.67 M
South Rivanna Water Treatment Plan Improvements	\$4.6 M
Avon Pantops, Observatory Tank Improvements	\$1.05 M
North Rivanna Water Treatment Plant Upgrade	\$1.94 M
South Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way	\$0.45 M
<b>EXISTING PROJECTS, SUBTOTAL</b>	<b>\$62.57 M</b>
<b>TOTAL</b>	<b>\$64.77 M</b>

**2.9.2 Actual Water Flows**

The City portion of Urban Area operation rates and charges are based on water usage or flows. The estimated flows for the City will decrease 2% for the FY'22 budget.

*Exhibit 9: RWSA Water Usage Allocation*

	FY'21	FY'22	% Change
City	51%	49%	-1%
ACSA	49%	51%	+1%

**2.9.3 City Share of RWSA Water Costs**

The FY'22 budget increases the budget by \$275,500 in operating expenses and an increase of \$631,300 in debt service charges for a total budget increase of approximately \$906,800, or 15.2% above the FY'21 budget. RWSA’s costs to the City for water are planned to increase as follows:

- Operating expenses are to increase \$0.251 per 1,000 gallons (11.98%) for water
- Debt Service charges for the City are to increase 27.2% for water

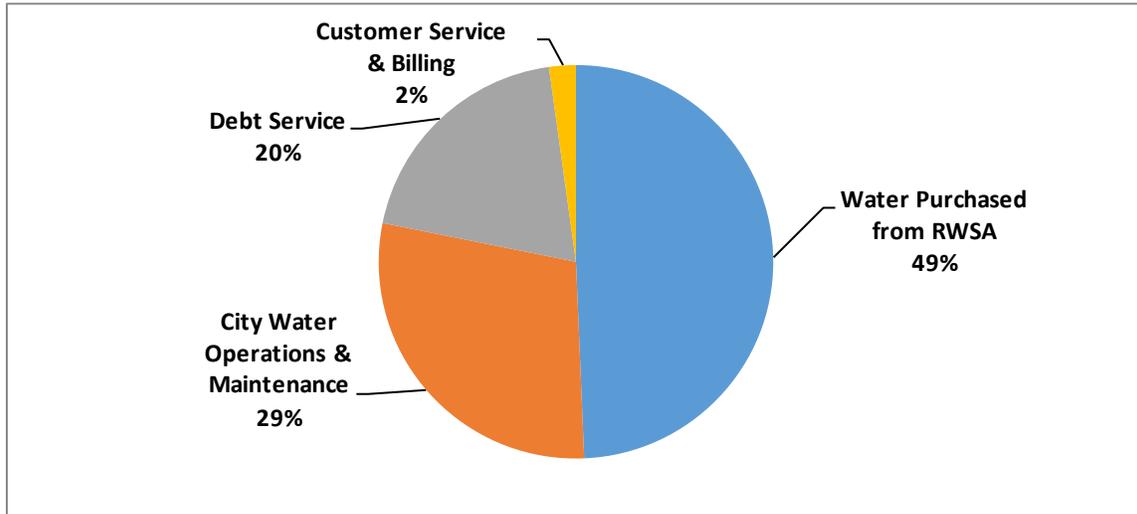
**2.10 REVENUE REQUIREMENTS**

This section of the report outlines the current and projected costs of operating and maintaining the City’s water system which constitute the revenue requirements (i.e., the amount of revenue required to be collected from customers).

**2.10.1 Current Revenue Requirements (FY'22)**

The FY'22 revenue requirements for the water utility totals \$13,904,929. The graphic below shows the major categories of expenses, the largest being the purchase of water from RWSA (49% of the FY'22 budget).

*Exhibit 10: Water Utility FY'22 Revenue Requirements*



The revenue requirements for the water utility are \$1,431,939 (11.5%) higher than the current year (note: utility rates and revenue requirements have not been updated for two years due to COVID 19). Debt service includes payments on existing bonds and new bonds to be issued to finance the utility's capital improvement plan. Excluding water purchase from RWSA and debt service, the cost to operate and maintain the water utility is increasing by approximately \$263,000.

*Exhibit 11: Comparison of Water Revenue Requirements FY'21 to FY'22*

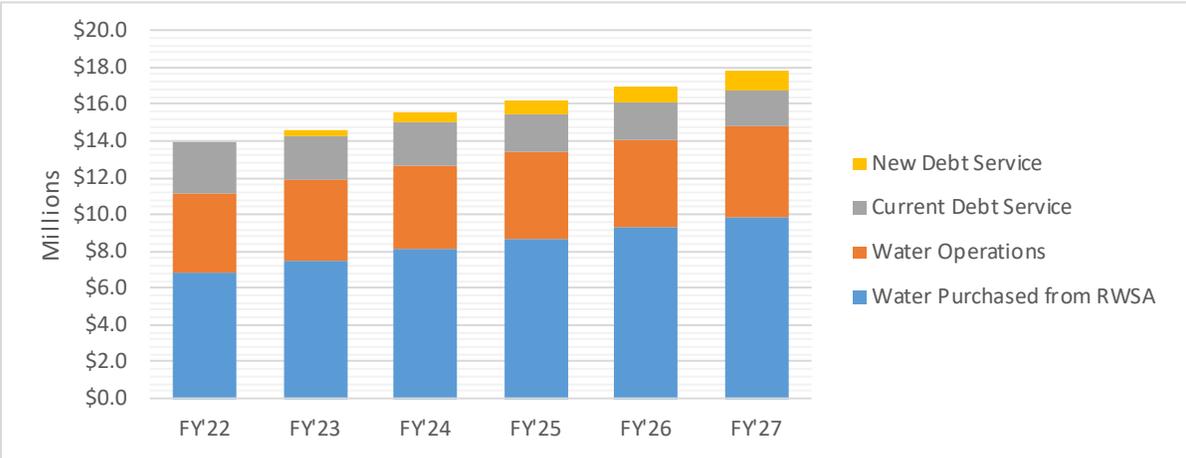
Revenue Requirements	FY'21	FY'22	\$ Change	% Change
Water Purchased from RWSA	\$5,953,500	\$6,860,300	\$906,800	15.2%
City Water Operations & Maintenance	\$3,760,349	\$4,008,030	\$247,681	6.6%
Debt Service	\$2,469,116	\$2,731,683	\$262,567	10.6%
Customer Service & Billing	\$290,025	\$304,916	\$14,891	5.1%
<b>TOTAL</b>	<b>\$12,472,990</b>	<b>\$13,904,929</b>	<b>\$1,431,939</b>	<b>11.5%</b>

**2.10.2 Projected Water Revenue Requirements (FY'22 – FY'27)**

To project operating expenses for FY'23-FY'27, the FY'22 water revenue requirements are escalated using a 3.0% escalation rate except for the cost to purchase water from RWSA which is based on projected rate increases. In addition to operating expenses, annualized capital costs are included. The City issues bonds to fund water capital projects to mitigate the financial burden on existing customers and improve equity by spreading the costs of long-term assets over all customers who will use and benefit from the assets. The City is currently paying debt service for bonds previously issued and plans to issue bonds to fund its water CIP.

The revenue requirements for FY'22 through FY'27 are shown below. The average annual increase is 7.3%

*Exhibit 12: Projected Water Revenue Requirements FY'22-FY'27*



### 2.11 CUSTOMERS AND USAGE

The City currently provides water service to just over 14,800 customers. The exhibit below provides a breakdown of current water customers by water meter size. Residential customers (5/8" water meters) comprise most the City's water customers (94.2%).

*Exhibit 13: Current Water Customers by Meter Size*

Water Meter Size	# of Customers	% of Customers
5/8	13,954	94.2%
1	298	2.0%
1.5	259	1.8%
2	237	1.6%
3	41	0.3%
4	15	0.1%
6	1	0.01%
14	1	0.01%
<b>TOTAL</b>	<b>14,807</b>	

The exhibit below provides a projection of water usage for the upcoming fiscal year in cubic feet.

*Exhibit 14: Projected FY'22 Water Usage*

Usage	Cubic Feet
Projected FY'22 Total	222,576,604

The City's water service area corresponds with the municipal boundary and thus is fixed. The City has been adding water customers the last several years as a result of redevelopment and infill development. It is difficult to project the number of future water customers and water usage; thus, no growth is factored into the planning period.

### 2.12 MONTHLY SERVICE CHARGE

The Monthly Service Charge for water and sewer funds a portion of the fixed and infrastructure costs associated with being a customer of the water utility. The charge is proportionate to the size of a water meter. The size of a water meter regulates the amount of water that can pass through the meter thus provides a proportionate measure of the different impact of customers. For example, one 1-inch meter uses as much water as two and a half 5/8-inch meters.

As noted above, the revenue requirements for the water utility have increased, including fixed costs and infrastructure. A 10% increase has been adopted for the Monthly Service Charges for FY'22. The majority of customers will see a \$0.50 increase in their Monthly Service Charge for water.

Exhibit 15: Adopted Monthly Service Charge for FY'22 for Water

Water Meter Size (inches)	Current	Adopted	\$ Change	% Change
5/8	\$5.00	\$5.50	\$0.50	10.00%
1	\$12.50	\$13.75	\$1.25	10.00%
1 1/2	\$25.00	\$27.50	\$2.50	10.00%
2	\$40.00	\$44.00	\$4.00	10.00%
3	\$80.00	\$88.00	\$8.00	10.00%
4	\$125.00	\$137.50	\$12.50	10.00%
6	\$250.00	\$275.00	\$25.00	10.00%
14	\$1,637.50	\$1,801.25	\$163.75	10.00%

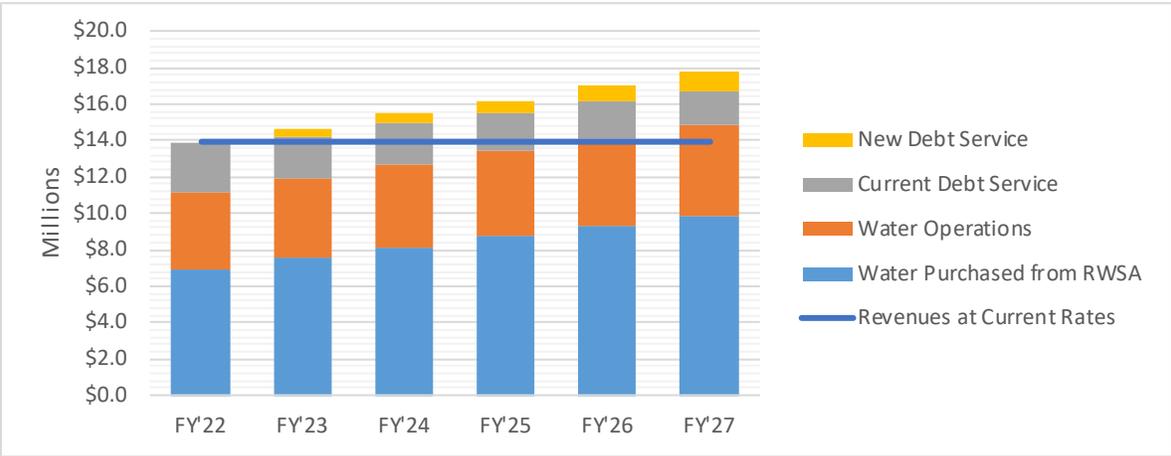
2.13 ADOPTED WATER RATES

2.13.1 Total Revenue Projections at Current Rates

The projected cost (revenue requirements) of the system are combined with the projected water customers and usage to determine an appropriate financial plan and set water rates for the planning period.

The adequacy of revenues from current rates is evaluated in order to determine if existing rates are enough to recover the revenue requirements. As shown in the following exhibit, current water rates are not enough to meet the projected revenue requirements.

Exhibit 16: Water Revenue Requirements and Revenue at Current Rates



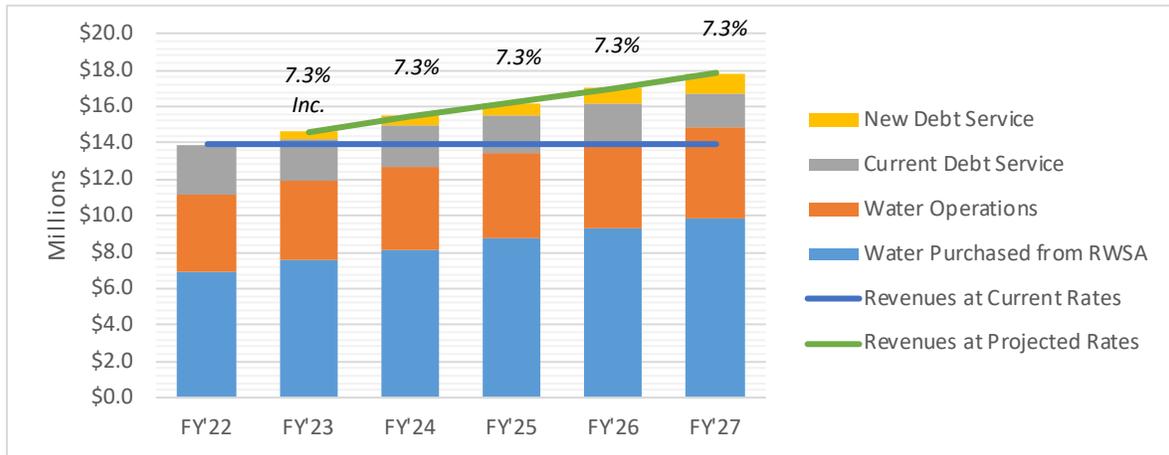
**2.13.2 Total Revenue Projections at Current and Adopted Rates**

In order to maintain the financial health of the City’s Water Fund over the planning period, revenue needs to be increased. In addition to covering the revenue requirements, revenue must also be enough to satisfy the City’s long-term financial policies.

To address these shortfalls, rates will need to be adjusted on a multi-year basis. Note: water rates are evaluated and adopted on an annual basis. A multi-year approach helps manage rate increases over the planning period and allows for proper planning and adjustment by customers and the City.

The exhibit below compares the revenue requirements (with percent change from the previous year) with total revenue projections at current rates as well as total revenue projected at adopted rates for FY'22 and the years of the planning period for water.

*Exhibit 17: Water Revenue Requirements, Revenue at Current Rates and Revenue at Adopted Rates*



**2.13.3 Water Rate Design**

There are no recommendations to change the City’s current seasonal water rate design.

**2.13.4 Adopted Water Rates FY'22**

Water rates are recommended to increase by 7.3% for FY'22.

*Exhibit 18: Adopted Water Rates FY'22*

	Current	Adopted FY'22	\$ Change	% Change
Summer	\$65.31	\$70.08	\$4.77	7.30%
Winter	\$50.24	\$53.91	\$3.67	7.30%

**2.13.5 Projected Water Rates FY'22-FY'27**

Based on the projected revenue requirements for FY'22-FY'27 and customer usage, the projected water rates for this planning period are shown below.

*Exhibit 19: Projected Water Rates FY'22-FY'27*

	Current	Adopted FY'22	Projected FY'23	Projected FY'24	Projected FY'25	Projected FY'26	Projected FY'27
Summer	\$65.31	\$70.08	\$75.20	\$80.69	\$86.58	\$92.90	\$95.68
Winter	\$50.24	\$53.91	\$57.85	\$62.07	\$66.60	\$71.46	\$73.60
Summer \$ Change		\$4.77	\$5.12	\$5.49	\$5.89	\$6.32	\$2.79
Summer % Change		7.3%	7.3%	7.3%	7.3%	7.3%	3.0%
Winter \$ Change		\$3.67	\$3.94	\$4.22	\$4.53	\$4.86	\$2.14
Winter % Change		7.3%	7.3%	7.3%	7.3%	7.3%	3.0%

**2.14 CUSTOMER IMPACTS**

The table below illustrates the average monthly water bill for customers based on water meter size with the recommended water rate increases and Monthly Service Charge.

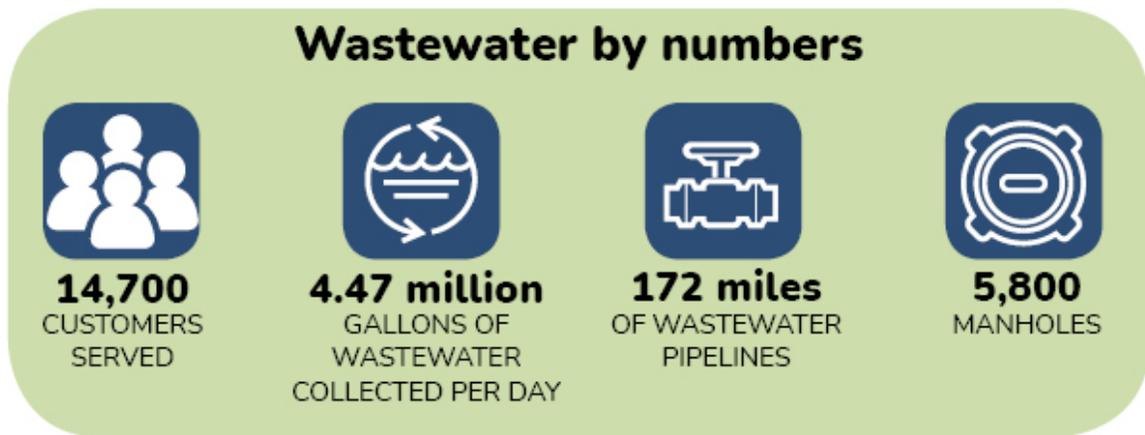
*Exhibit 20: FY'22 Customer Impacts from Adopted Water Rates and Charges*

Water Meter Size	Median Water Usage/ Month (cf)	FY'21 Ave. Monthly Bill	FY'22 Ave. Monthly Bill	\$ Increase	% Increase
5/8	400	\$27.61	\$29.76	\$2.15	7.79%
1	1,760	\$111.98	\$120.49	\$8.51	7.60%
1 1/2	3,410	\$217.73	\$234.32	\$16.59	7.62%
2	5,680	\$361.03	\$388.49	\$27.46	7.61%
3	11,750	\$744.11	\$800.64	\$56.53	7.60%
4	43,720	\$2,596.05	\$2,789.12	\$193.07	7.44%

### 3. SEWER

#### 3.1 OVERVIEW

The City operates and maintains the sanitary sewer collection system within its boundaries which consists of about 172 miles of pipe and over 5,800 manholes. The collection system was constructed over a period of many decades using 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 and range in size from 6-inch to 30-inch in diameter. Manholes are either brick or pre-cast concrete. 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 Moores Creek Advanced Water Resource Recovery Facility.



#### 3.1.1 2021 Customer Satisfaction Survey

Results of the 2021 Utilities Customer Satisfaction Survey show high levels of satisfaction with the reliability and value of our wastewater services. Of those surveyed, 98% are satisfied and neutral about the reliability of wastewater service, and 83% of respondents rate the value of their wastewater service as fair and above (good and excellent).



### **3.2 FATS, OILS, AND GREASE (FOG)**

The City of Charlottesville prohibits the discharge of fats, oils, and grease (FOG) down the drain. In excessive amounts, these contaminants will cause or contribute to a blockage in the sanitary sewer collection system. FOG accumulates in sewer pipes, and over time, can build up and restrict the flow in the pipe, causing untreated wastewater to back up into businesses or homes, or cause manholes to overflow in the street (commonly referred to as sanitary sewer overflow or SSO). This SSO can potentially enter a storm drain and contaminate local waters. In an effort to prevent these events, the City of Charlottesville maintains an active FOG program that routinely inspects and advises best management practices to over 300 city restaurants on an annual basis on how to properly dispose of FOG.

### **3.3 WASTEWATER ASSISTANCE PROGRAM**

A Wastewater Assistance Program (WWAP) was created by City Council in FY'12 to assist customers who had difficulty paying their bills due to extreme circumstances. It is recommended that \$10,000 be budgeted in FY'22 in combination with existing carryover funds to allocate to the WWAP. Seventy five customers received assistance in FY'19, totaling \$6,177.50. In FY'20, 54 customers received \$5,432.50 from the WWAP. This program will continue to operate in conjunction with the WAP. The program is administered by the Utility Billing Office in a similar fashion as the established Gas Assistance Program (GAP).

### **3.4 WASTEWATER INFRASTRUCTURE ASSET MANAGEMENT**

The City has several challenges within the sewer collection system, such as 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 was installed prior to 1970. In 2008, the Department of Utilities began planning and budgeting for a substantial long-term sewer system evaluation and rehabilitation program. The need for such a program arose to address the system as it continued to age and deteriorate. This deterioration allows for infiltration and inflow (I/I) to enter the sewer system. 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. I/I causes sanitary sewer overflows (SSOs) and increasing costs from unnecessary wastewater treatment, root intrusion causing blockages, partial to full collapses of pipe, and increased emergency repair situations. Since there was only operational maintenance performed to keep the system "working" and very little work completed towards system-wide improvement, a large backlog of difficult work was produced. In order to address the backlog, and to keep this situation from continuing to happen, the Department created a rigorous rehabilitation program.

### **3.4.1 Sanitary Sewer Rehabilitation**

In 2009, the City awarded a multi-year, multi-million dollar contract utilizing a “find-and-fix” approach for sewer repair and rehabilitation. The rehabilitation program identifies needed repairs to restore the integrity of the system which are necessary to reduce the amount of inflow and infiltration into the sewer system. 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.

“Find-and-fix” rehabilitation projects are unique projects. The exact work is not known at the time of bidding, so all potential work items must be included in the bid form (bid form includes over 200 bid items). The contractor performs the evaluation work during construction, primarily TV inspections, submits the evaluation to the Engineer for review, and the Engineer then decides on the final rehab work within seven (7) days. The work is fast-paced and allows for emergency situations to be addressed within 48 hours. The City estimates savings of over \$2 million following this find-and-fix approach.

To date, under this contract, the Department has completed:

- 492,132 linear feet (LF) (93.2 miles) of CCTV
- 224,241 LF (42.5 miles) of CIPP, 6” to 21” in diameter
- 20,872 LF (4.0 miles) of pipe replacement, 6” to 18” in diameter
- 223 point repairs
- 5,352 vertical feet (VF) (1.0 miles) of manhole rehabilitation
- 204 manhole replacements
- 567 frame and covers replaced

In order to complete this amount of work, the Department has issued five (5) contracts over 12 years and spent a total of \$21,053,208 on construction. The footage of pipe rehabilitation or replacements completed to date totals 245,113 LF, or 46.42 miles, which equates to 27% of the City’s total system.

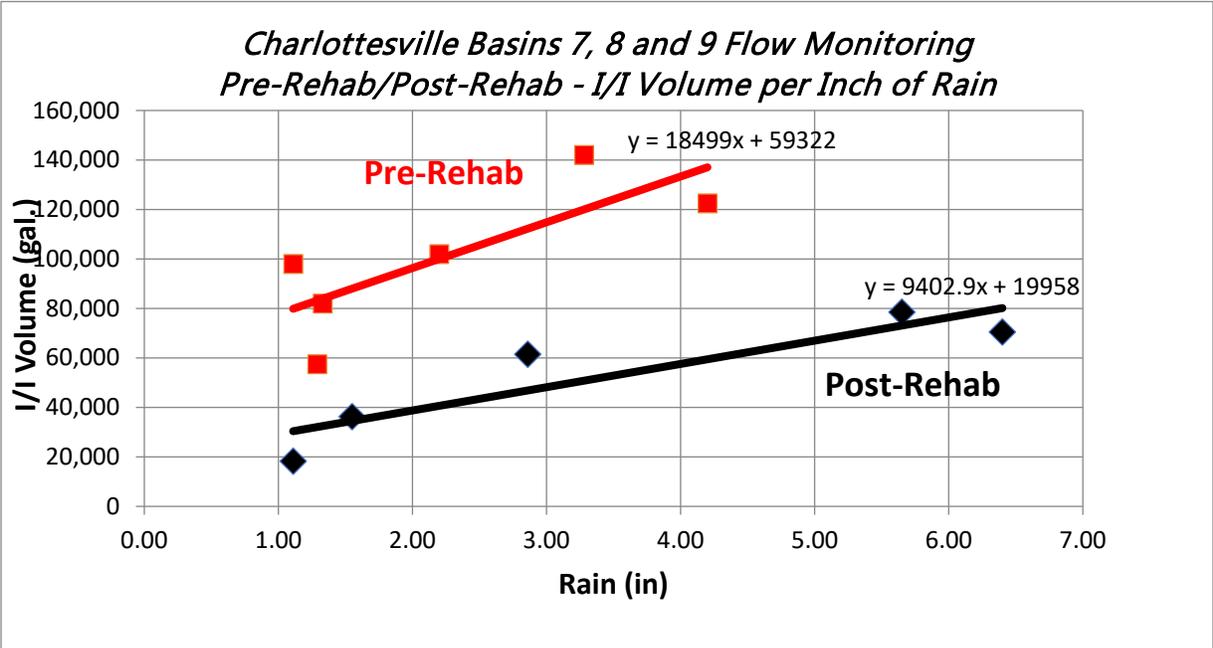
As stated above, approximately 27% of the sanitary sewer system has been rehabbed or replaced, and two (2) basins have had comprehensive rehabilitation. The remaining 22 sewer basins have all had rehabilitation performed which has addressed major defects. As the program continues, we will work through the City for comprehensive rehabilitation through all 24 basins.

The rehabilitation program will continue into FY'22 with a budget of \$2,000,000. Historically, on a yearly contract timeline, this budget has allowed an average of:

- 50,000 LF of CCTV
- 21,000 LF of CIPP
- 1,900 LF of pipe replacement
- 22 point repairs
- 19 manhole replacements
- 500 VF of manhole rehabilitation
- 63 frame and cover replacements

Initial work was centered on the Schenks Branch area (City Basins 7, 8, and 9), which was identified as a high priority in previous studies. Exhibit 23 is a table that demonstrates the success that the program has had with removing infiltration and inflow around the Schenks Branch area. The associated graph in the Exhibit shows the reduction in post-rehab flow levels of I&I per inch of rain as being close to half of the pre-rehab flows. Due to this success, work has since continued into other areas of the City where similar results have been observed. Over the last several years, the rehabilitation work has been focused in the southern part of the City in the Fifeville, Ridge Street, and Belmont neighborhoods.

Exhibit 21: Basins 7, 8, and 9 Flow Monitoring Results



The current capital projects in the City’s five-year capital plan are listed below.

Exhibit 22: City Five-Year Capital Improvement Plan for Wastewater

Project	Five-Year Total
Rehabilitation/Replacement Program	\$10,000,000
<b>TOTAL</b>	<b>\$10,000,000</b>

### **3.5 RIVANNA WATER AND SEWER AUTHORITY**

The Rivanna Water and Sewer Authority (RWSA) provides wastewater treatment services for the City of Charlottesville and the Albemarle County Service Authority (ACSA). The City's share of the FY'22 wastewater budget totals \$9,043,400 including operating expenses and debt service costs. This is an increase of 2.4% over the FY'21 budget. Operating expenses include personnel costs (staff salaries and benefits), general services costs (professional fees, utilities, insurance, permits, and data and voice communications), and operation and maintenance costs (chemicals, building repairs, equipment maintenance, technology and communications). Debt service charges provide funding to construct and renew major infrastructure including wastewater treatment plants, pumping stations, and piping systems.

#### **3.5.1 Infrastructure**

RWSA's Capital Improvement Plan (CIP) for wastewater for Fiscal Years 2022-2026 has been prepared as a strategic and financially responsible plan to complete major infrastructure construction projects. The projects included in the CIP are necessary to achieve the RWSA's core mission of providing wastewater treatment services for the City of Charlottesville and ACSA. The CIP is a five-year planning document which provides an estimated budget and schedule for projects as they advance through the design and construction process.

The infrastructure requirements of the CIP are developed through RWSA's Asset Management and Master Planning programs to address capacity demands, regulatory mandates and rehabilitation needs. Each year, these projects are reviewed and prioritized by the RWSA management team and brought forth for review by the Board of Directors.

During the past year, several capital projects were very near completion or are no longer needed, and as such are being removed from the FY'22- FY'26 CIP. Wastewater projects include:

- Moores Creek AWRRF Master Plan
- Moores Creek AWRRF Odor Control – Phase 2

The total five-year 2022 – 2026 CIP for sewer is approximately \$24.04 million. This includes projects already in previous CIPs which have been modified. There are no new wastewater capital projects proposed in the FY'22 budget.

*Exhibit 23: RWSA Sewer Projects for the City*

Project	FY'22-FY'26 Total (millions)
<b><i>New Projects</i></b>	
Moores Creek Concrete Repairs	\$2.65 M
Digester Sludge Storage Improvements	\$3.62 M
<b>NEW PROJECTS, SUBTOTAL</b>	<b>\$6.27 M</b>
<b><i>Existing Projects</i></b>	
Upper Schenks Branch Interceptor	\$0.68 M
Moores Creek Facility Improvements	\$9.82 M
Interceptor Sewer and Manhole Repair	\$1.95 M
Moores Creek Electrical and Lighting Improvements	\$5.32 M
<b>EXISTING PROJECTS, SUBTOTAL</b>	<b>\$17.77 M</b>
<b>TOTAL</b>	<b>\$24.04 M</b>

**3.5.2 Actual Wastewater Flows**

The City portion of Urban Area operation rates and charges are based on wastewater production (flows). The estimated flows for the City will decrease for FY'22 budget levels by 1%.

*Exhibit 24: RWSA Sewer Production Allocation*

	FY'21	FY'22	% Change
City	49%	48%	-1%
ACSA	51%	52%	1%

### 3.5.3 City Share of RWSA Wastewater Costs

The FY'22 budget increases by the amount of \$160,400 in operating expenses and an increase of \$55,500 in debt service charges for a total budget increase of \$215,900 or 2.4% above the FY'21 budget. RWSA's costs to the City for wastewater are planned to change:

- Operating expenses will increase \$0.148 per 1000 gallons (6.25%) for wastewater
- Debt Service charges will increase 1.13% for wastewater

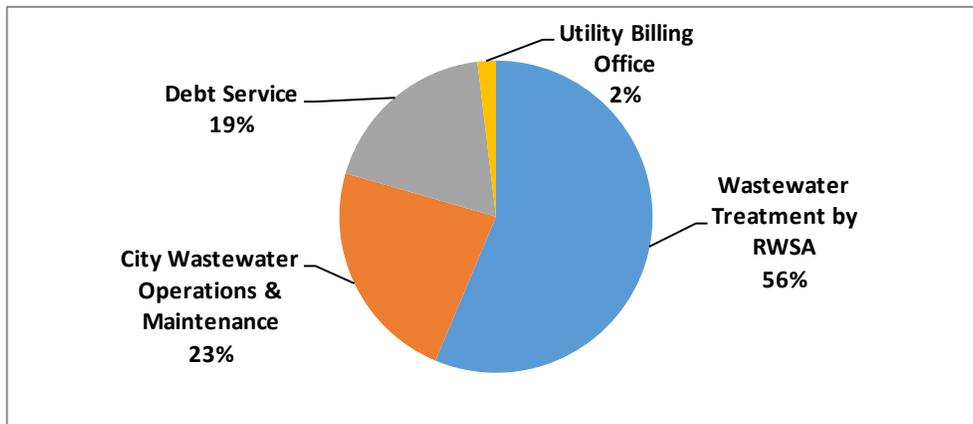
### 3.6 REVENUE REQUIREMENTS

This section of the report outlines the current and projected costs of operating and maintaining the City's sewer system which constitute the revenue requirements (i.e., the amount of revenue required to be collected from customers).

#### 3.6.1 Current Revenue Requirements (FY'22)

The FY'22 revenue requirements for the sewer utility totals \$16,059,081, the largest component being the purchase of wastewater treatment from RWSA (56% of the budget).

Exhibit 25: Sewer Utility FY'22 Revenue Requirements



The revenue requirements for wastewater are 3.9% higher than the current year (note: utility rates and revenue requirements have not been updated for two years due to COVID 19). The cost increases for City operations, maintenance and utility billing includes cost-of-living-adjustment (COLA) for employee salaries and related benefits. City contractual costs have increased as well.

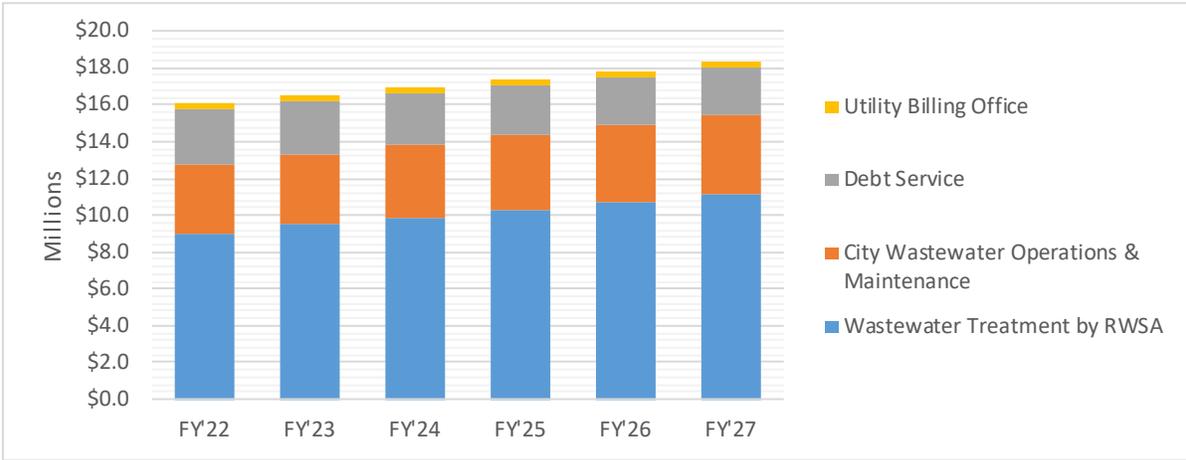
Exhibit 26: Comparison of Sewer Revenue Requirements FY'21 to FY'22

Revenue Requirements	FY'21	FY'22	\$ Change	% Change
Wastewater Treatment by RWSA	\$8,907,900	\$9,043,400	\$135,500	1.5%
City Wastewater Operations & Maintenance	\$3,281,538	\$3,720,871	\$439,333	13.4%
Debt Service	\$2,972,296	\$2,989,894	\$17,598	0.6%
Utility Billing Office	\$290,025	\$304,916	\$14,891	5.1%
<b>TOTAL</b>	<b>\$15,451,759</b>	<b>\$16,059,081</b>	<b>\$607,322</b>	<b>3.9%</b>

**3.6.2 Projected Revenue Requirements (FY'22-FY'27)**

To project operating expenses for FY'23-FY'27, the FY'22 sewer revenue requirements are escalated using a 3.0% escalation rate except for the cost to purchase wastewater treatment from RWSA which is based on projected rate increases. In addition to operating expenses, annualized capital costs are included. The City issues bonds to fund sewer capital projects to mitigate the financial burden on existing customers and improve equity by spreading the costs of long-term assets over all customers who will use and benefit from the assets. The City is currently paying debt service for bonds previously issued and plans to issue bonds to fund its sewer CIP. The projected revenue requirements for FY'22 through FY'27 are shown below.

Exhibit 27: Projected Sewer Revenue Requirements FY'22-FY'27



**3.7 CUSTOMERS AND USAGE**

The City currently provides sewer service to 14,719 customers. The exhibit below provides a breakdown of current sewer customers by water meter size. Residential customers (5/8 water meters) comprise the majority of the City's sewer customers (94.5%).

*Exhibit 28: Current Sewer Customers by Meter Size*

Water Meter Size	# of Customers	% of Customers
5/8	13,913	94.5%
1	293	2.0%
1.5	238	1.6%
2	219	1.5%
3	39	0.3%
4	16	0.1%
6	1	0.01%
14	1	0.01%
<b>TOTAL</b>	<b>14,719</b>	

The exhibit below provides a projection of sewage production for the upcoming fiscal year in cubic feet.

*Exhibit 29: Projected FY'22 Sewage Production*

Usage	Cubic Feet
Projected FY'22 Total	217,565,775

The City’s sewer service area corresponds with the municipal boundary and thus is fixed. The City has been adding sewer customers the last several years as a result of redevelopment and infill development. It is difficult to project the number of future sewer customers and sewage production; thus no growth is factored into the planning period.

### 3.8 MONTHLY SERVICE CHARGE

Like water, the City assesses a Monthly Service Charge for sewer to recoup the fixed costs of providing utility services such as customer service, billing, meter services, and infrastructure. Also, as with the water monthly service charge, the sewer monthly service charge is proportionate to water meter size.

As noted above, the revenue requirements for the sewer utility have increased, including fixed costs and infrastructure. A 10% increase has been adopted for the Monthly Service Charges for FY'22. The majority of customers will see a \$0.50 increase in their Monthly Service Charge for sewer.

Exhibit 30: Adopted Monthly Service Charge for FY'22 for Sewer

Water Meter Size (inches)	Current	Adopted	\$ Change	% Change
5/8	\$5.00	\$5.50	\$0.50	10.00%
1	\$12.50	\$13.75	\$1.25	10.00%
1 1/2	\$25.00	\$27.50	\$2.50	10.00%
2	\$40.00	\$44.00	\$4.00	10.00%
3	\$80.00	\$88.00	\$8.00	10.00%
4	\$125.00	\$137.50	\$12.50	10.00%
6	\$250.00	\$275.00	\$25.00	10.00%
14	\$1,637.50	\$1,801.25	\$163.75	10.00%

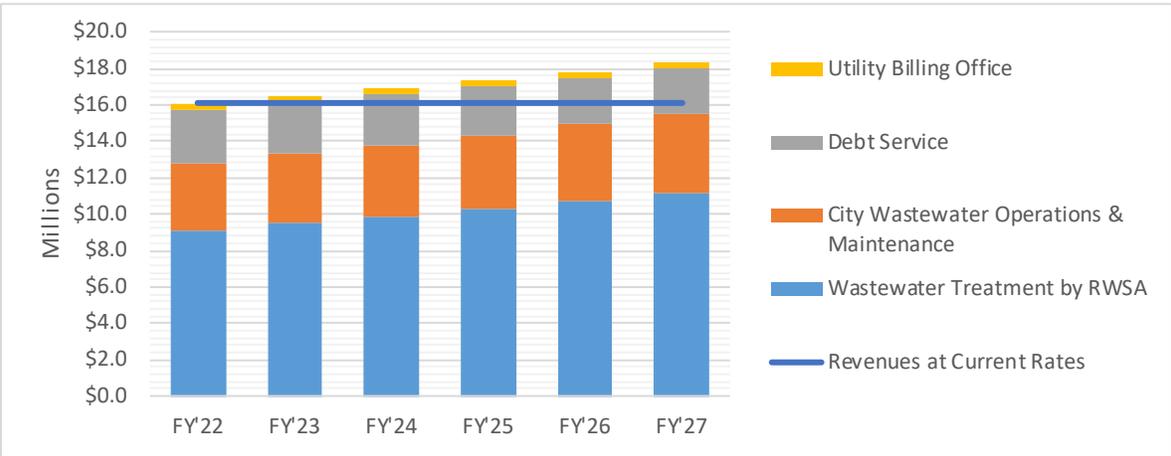
3.9 ADOPTED SEWER RATES

3.9.1 Total Revenue Projections at Current Rates

The projected costs (revenue requirements) of the system are combined with the projected sewer customers and usage to determine an appropriate financial plan and set sewer rates for the planning period.

The adequacy of revenues from current rates is evaluated in order to determine if existing rates are enough to recover the revenue requirements. As shown in the following exhibit, current sewer rates are not enough to meet the projected revenue requirements.

Exhibit 31: Sewer Revenue Requirements and Revenue at Current Rates



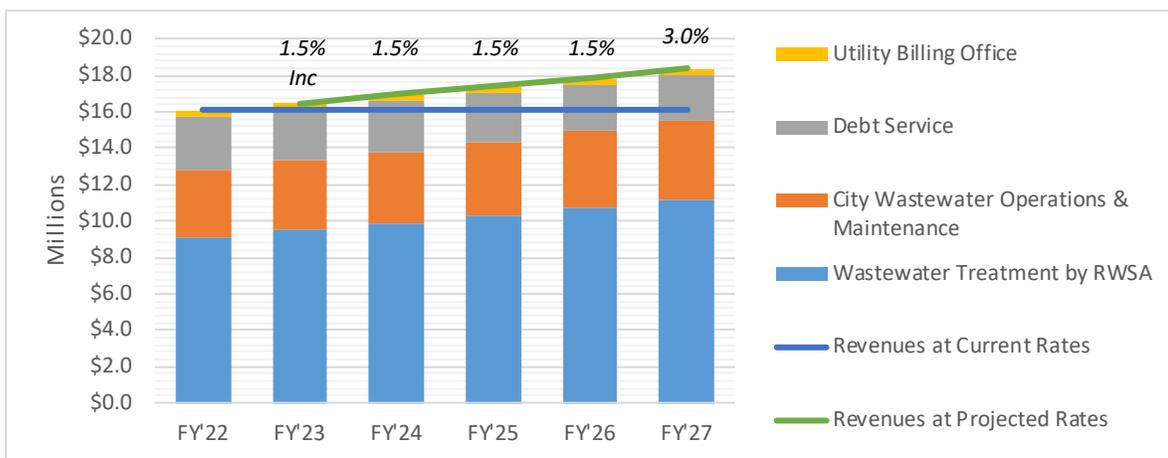
### 3.9.2 Total Revenue Projections at Current and Adopted Rates

In order to maintain the financial health of the City’s Sewer Fund over the planning period, revenue needs to be increased. In addition to covering the revenue requirements, revenue must also be enough to satisfy the City’s long-term financial policies.

To address these shortfalls, rates will need to be adjusted on a multi-year basis. Note: sewer rates are evaluated and adopted on an annual basis. A multi-year approach helps manage rate increases over the planning period and allows for proper planning and adjustment by customers and the City.

The exhibit below compares the revenue requirements (with percent change from the previous year) with total revenue projections at current rates as well as total revenue projections at adopted rates for FY'22 and the years of the planning period for sewer.

**Exhibit 32: Sewer Revenue Requirements, Revenue at Current Rates and Revenue at Adopted Rates**



## Sewer Rate Design

### 3.9.3 Sewer Rate Design

There are no recommendations to change the City’s current sewer rate design.

### 3.9.4 Adopted Sewer Rates FY'22

Proposed sewer rates for FY'22 are to increase by 1.5%.

**Exhibit 33: Adopted Sewer Rates FY'22**

Current	Adopted FY'22	\$ Change	% Change
\$80.14	\$81.34	\$1.20	1.50%

### 3.9.5 Projected Sewer Rates FY'22-FY'27

Based on the projected revenue requirements for FY'22-FY'27 and customer usage, the projected sewer rates for this planning period are shown below.

*Exhibit 34: Projected Sewer Rates FY'22 – FY'27*

	Current	Adopted FY'22	Projected FY'23	Projected FY'24	Projected FY'25	Projected FY'26	Projected FY'27
	\$80.14	\$81.34	\$82.56	\$83.80	\$85.06	\$86.33	\$88.92
\$ Change		\$1.20	\$1.22	\$1.24	\$1.26	\$1.28	\$2.59
% Change		1.5%	1.5%	1.5%	1.5%	1.5%	3.0%

### 3.10 CUSTOMER IMPACTS

The table below illustrates the average monthly sewer bill for customers based on water meter size with the adopted sewer rate increases and monthly service charge.

*Exhibit 35: Customer Impacts from Adopted FY'22 Sewer Rates and Charges*

Water Meter Size	Median Water Usage/ Month (cf)	FY'21 Ave. Monthly Bill	FY'22 Ave. Monthly Bill	\$ Increase	% Increase
5/8	400	\$37.06	\$38.04	\$0.98	2.64%
1	1,760	\$153.55	\$156.91	\$3.36	2.19%
1 1/2	3,410	\$298.28	\$304.87	\$6.59	2.21%
2	5,680	\$495.20	\$506.01	\$10.81	2.18%
3	11,750	\$1,021.65	\$1,043.75	\$22.10	2.16%
4	43,720	\$3,628.72	\$3,693.68	\$64.96	1.79%

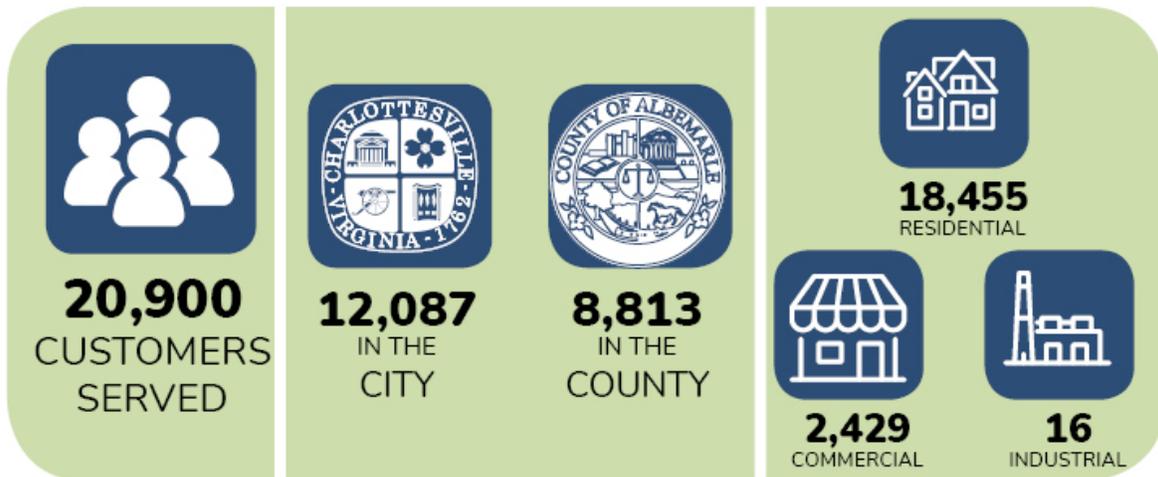
## 4. NATURAL GAS

### 4.1 OVERVIEW

Charlottesville's natural gas utility is one of three (3) 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), the utility can generate a profit or loss in any given year.

The Charlottesville gas system currently provides service to an area that includes all of Charlottesville and parts of Albemarle County and consists of 340 miles of main and over 298 miles of service lines. The system currently serves approximately 20,900 customers (12,087 in the City and 8,813 in the County).

#### 4.1.1 Our Customers



Three (3) levels of service are provided to meet the needs of various customer classes: Firm, Interruptible, and Small Volume Transportation. Most consumers are firm customers, with a priority for gas use at all times. Currently, there are 10 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 service assurance in peak demand periods. Therefore, they do not share in the cost of providing peak period supply. 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.

#### 4.1.2 2021 Customer Satisfaction Survey

Our recent Utilities Customer Satisfaction Survey reveals high levels of satisfaction with the reliability and value of our gas service, as well as a strong desire to maintain access to gas service. More than 93% of respondents are satisfied with the reliability of gas service, and 93% of respondents also rated the value of their gas service as fair and above (good and excellent). Additionally, 92% of respondents stated that gas availability to their home is a very important or extremely important amenity.



#### 4.2 SAFETY

Natural gas is a common energy source in our community, and we prioritize gas safety awareness among the public. Our Public Gas Safety Awareness Plan complies with and exceeds federally mandated regulations that follow the guidance provided by the American Petroleum Institute (API) Recommended Practice (RP) 1162. Since 2006, there has been a 113% increase in a resident's ability to recognize the smell of natural gas and a 75% reduction in gas line damage caused by third-party excavation. These significant gains in gas safety awareness are directly attributed to our robust safety program, which includes the following:

"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 lines 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 address 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 from 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 County Radio station.
- **Outreach and Training of Professional Excavators** – Due to COVID-19, our in-person safety events have been temporarily suspended, and will resume once it is safe to conduct them again. Prior to the pandemic, these events included VA811 Day, visits to new construction sites, and excavation safety training with the State Corporation Commission (SCC). These

## *Adopted FY'22 Utility Rate Report*

outreach events promote and reinforce safe digging practices and are an excellent opportunity to directly interact with local excavators, contractors, plumbers, and building inspectors.

Since the "Dig with Care" program was launched, we experienced a 56% reduction in gas line damage caused by third-party excavators (from 2.83/1000 Miss Utility tickets in 2013 to 1.25/1000 Miss Utility tickets in 2020).

Additional efforts to increase gas safety awareness include a strong presence on various media platforms, consistent participation in community events, outreach at local schools and camps, promotion of national safety campaigns, targeted mailings to professional excavators and plumbers, and enhanced training with emergency officials.

TV Spot – Two sing-a-long safety commercials, featuring Flicker the Flame, began airing in 2012. The first spot focuses on the smell of gas and what to do if a leak is suspected, and the second spot highlights the importance of contacting 811 before digging. These spots air on local network channels (NBC, CBS, CW, FOX, and ABC), on more than a dozen cable TV channels, and prior to COVID-19, before film screenings at Stonefield Regal Movie Theater. The latest Public Awareness survey results show that respondents age 26 or younger have a lower recall of our safety campaigns and were less likely to agree that Charlottesville Gas is adequately educating residents. We will be refreshing the commercials using a modern and upbeat version of the Flicker the Flame jingle to connect with a younger audience.

Commercials on Streaming Services – Subscription-based streaming providers have recently seen tremendous growth. Results of the TransUnion survey reveal the average consumer spends three (3) to four (4) hours a day on streaming services, with a total of 55% of all consumers choosing streaming services over cable TV. To maximize our media investment, we will be redirecting some of our advertisement funds from live TV to streaming ads on Comcast digital platforms. In response to COVID-19, we have already redirected some media investment from the local movie theater to the National CineMedia streaming service.

Community Outreach Programs – In-person community outreach programs have been temporarily suspended due to COVID-19. However, once it is safe to do so, we will resume outreach at high attendance community events, including the UVA Soccer season sponsorship. In 2019, we participated in 11 different community events throughout the year. We will also resume the Flicker @ Your Classroom and Camp programs, which in the 2018 and 2019 school years reached a combined total of over 780 children.

National Safe Digging Month – This national safety campaign occurs every April, and was promoted in several ways. We sent a bill insert tailored to residential customers explaining the steps of contacting 811 and the importance of safe digging practices at home, not just commercial worksites. Promotional flyers were prominently displayed at a local nursery to coincide with the spring outdoor project season, and a month-long social media campaign was launched to highlight safe digging and the 811 process.

Cross-bore Mailing – An informational postcard on cross-bore is periodically mailed to local plumbers to increase awareness of the proper procedure for clearing sewer blockages caused by a utility line that has accidentally been bored through a sewer line. The postcard includes an infographic of cross-bore and provides instructions on how to handle a cross-bore situation properly.

Enhanced Training of Emergency Officials – In recent years, we have expanded outreach with increased training of all local emergency officials. We provide a combination of presentations and hands-on experiences with the Charlottesville Police Department, Charlottesville Fire Department, Albemarle County Fire and Rescue, Albemarle County Police, UVA Police, and troopers from the Charlottesville office of the Virginia State Police. Recorded trainings are also available to those unable to attend live presentations.

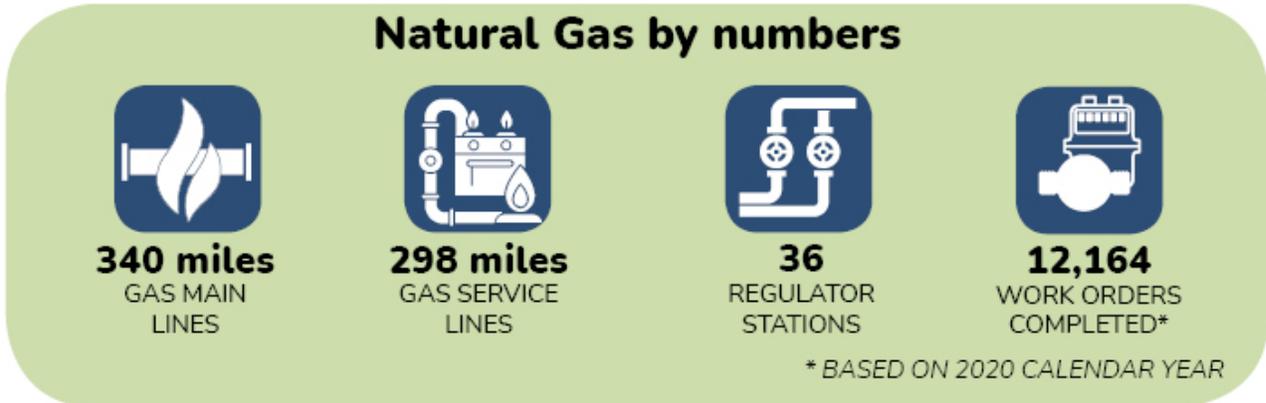
Outsource Utility Location – In 2014, we outsourced the utility locating process, resulting in increased utility marking accuracy and reducing damage.

Targeting Commercial Customers – To ensure commercial information is seen by a more significant amount of staff, we created a postcard with a magnet attached so businesses can display the information in a visible area for more people to read.

#### **4.3 REGULATORY COMPLIANCE**

Charlottesville Gas is required by the Pipeline & Hazardous Materials Safety Administration (PHMSA) to maintain an Operator Qualification Plan that adheres to federal regulations. These regulations require Charlottesville Gas employees to demonstrate their competence regarding a variety of different tasks performed on any Charlottesville Gas pipeline. The typical Charlottesville Gas employee must satisfactorily pass over 40 Operator Qualification (OQ) tests. Charlottesville Gas is required, by code, to retain these training and test records for a minimum of five (5) years. In December 2018, the State Corporation Commission (SCC), on behalf of PHMSA, audited the Charlottesville Gas Operator Qualification Plan and testing records. The Commission found no probable violations or recommendations regarding the Plan or the associated OQ records. The Charlottesville Gas Utility takes pride in staffing a trained and informed workforce, and the State Corporation Commission's inspection validated the City's efforts.

PHMSA requires Charlottesville Gas to monitor and address any potential leak threats to the natural gas system through a Distribution Integrity Management Program (DIMP). Examples of potential threats include excavator damages, corrosion, and material defects. Included in the City's DIMP Plan are procedures that have been put in place to mitigate potential threats to the gas system. Not only must this plan be in place, but operators must demonstrate that the procedures are being implemented and that potential threats are being reduced. As part of the Program, Utilities has been working with the City's IT Department to develop an application to track and survey risks and threats to the natural gas system. Using the Utility GIS Viewer and tablets, Gas employees can track and document the location, cause, severity, and response time associated with each leak. In March 2019, the State Corporation Commission, on behalf of PHMSA, performed a thorough audit of the City's Distribution Integrity Management Program. The Commission found no pipeline safety violations regarding the documentation or implementation of the City's Distribution Integrity Management Program.



#### 4.4 GHG REDUCTION STRATEGY

The Department of Utilities has developed a two-pronged strategy to help reduce greenhouse gas emissions (GHG) in our community due to natural gas consumption. First is the ongoing implementation of progressive energy-efficiency programs to reduce natural gas usage per household. Second is the planned participation in British Petroleum’s (BP) carbon offset program, which invests in environmental improvement projects that help counterbalance our GHG emissions.

##### 4.4.1 Energy-Efficiency Programs

In recent years, Charlottesville Gas has invested in and expanded its energy efficiency programs. We highlight to residents the benefits these programs provide, actively promote their availability, and constantly work to ensure they aid our efforts to reduce energy consumption. Currently, rebates for a programmable thermostat, a tankless water heater, and attic insulation are available, as well as free home weatherization to income-qualified households.

##### 4.4.2 Rebates

###### Programmable Thermostat

Since 2005, Charlottesville Gas has offered gas customers a rebate towards purchasing and installing a programmable thermostat (up to \$100). By setting a thermostat back 10° to 15° at night for 8 hours, it is estimated that a customer can reduce heating bills by 5% to 15%.

###### Natural Gas Tankless Water Heater

Since 2015, the City has offered a \$200 rebate to gas customers who switch from a traditional tank water heater to an energy-saving tankless natural gas water heater. According to the U.S. Department of Energy, water heating is the third-largest energy use in homes. By heating water only when needed, natural gas tankless water heaters reduce water heating expenses by 30% and provide continuous hot water delivery. This technology also produces less CO<sub>2</sub> and NO<sub>x</sub> than conventional gas or electric tank water heaters.

### Attic Insulation

In 2020, Charlottesville Gas began offering customers a rebate of up to \$200 towards the addition of attic insulation in their home when installed by a licensed contractor. Upgrading attic insulation is one of the most cost-effective ways to increase a home's comfort, lower heating and cooling bills, and improve a home's energy efficiency. For Fiscal Years 21 and 22, this rebate program will expand to accept "Do It Yourself" (DIY) attic insulation upgrade projects.

#### **4.4.3 No-Cost Home Weatherization for Income-Qualified Households**

In July of 2019, Charlottesville Gas started a partnership with LEAP to offer income-qualified gas customers a program designed to help increase the overall energy efficiency of their homes. The Charlottesville Gas Energy Efficiency Program (CGEEP) provides qualified households with free home weatherization improvements and funds the replacement of inefficient natural gas appliances.

Since its launch, 84 gas customers have benefited from the program. Of the total CGEEP recipients, 70% were Charlottesville homeowners, and 75% had at least one family member age 60 years or older living in the same household. In addition to single-family home customers, we extended our weatherization program to the energy efficiency improvement project performed at Westhaven Apartments.

Initial results of the program show that the savings from energy-efficiency upgrades in these homes vary depending on the original condition of the dwelling. Some CGEEP participants experienced a gas usage reduction in their homes of up to 54% compared to previous winter months.

In 2021, we expanded the income qualification criteria so more customers could take advantage of the program. We now accept applicants with household earnings of 80% or below Area Median Income (AMI) and if the account holder is 60 or older of 120% or below AMI.

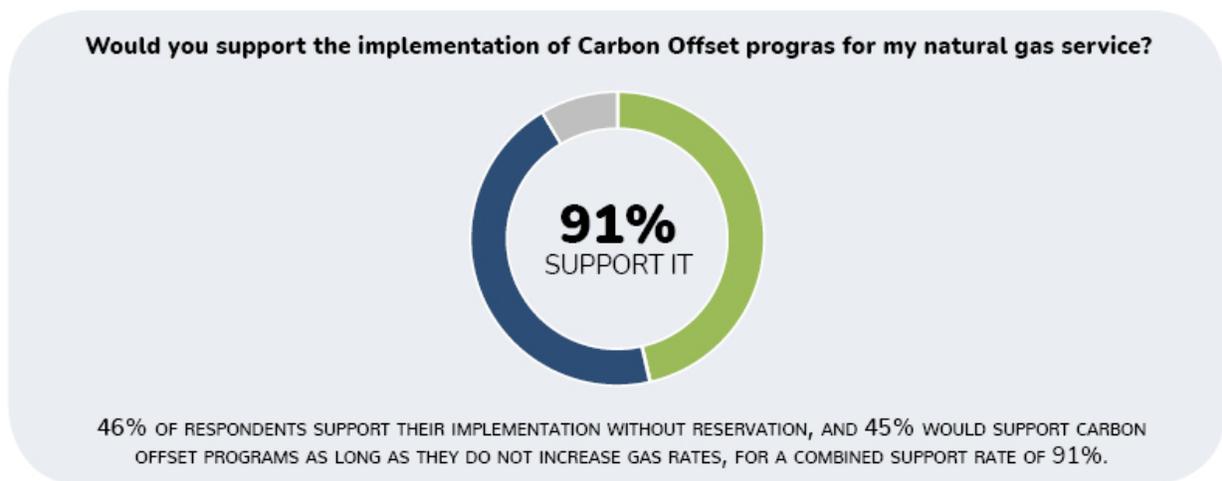
To date, the Charlottesville Department of Utilities has invested \$112,636 in the CGEEP program.

#### **4.4.4 Energy Efficiency Outreach Actions**

- We mailed postcards promoting CGEEP and the Attic Insulation rebate, targeting residents of gas-heated homes built before 1970, which is the first year Virginia enacted code requirements for home insulation. By concentrating efforts on older homes, we hope to maximize the benefits these programs provide.
- Twice a year, we include bill inserts to promote the rebate programs and free home weatherization through CGEEP.
- Paid web and mobile banners at NBC29 and CBS19
- For 2021, we will launch a series of TV spots that feature our energy efficiency programs. These spots will be seen on Comcast's on-demand streaming platform and will also air on The Weather and DIY Channels.
- To help maximize the newly expanded qualification criteria for CGEEP, we have a presentation planned for the program at The Center at Charlottesville. Targeting area residents over 60 may be an increased opportunity for participants, translating into a greater number of energy-efficient homes.

#### 4.4.5 Carbon Offset Program

The Department of Utilities has been proactive in finding new ways to better align departmental goals with the City of Charlottesville's Climate Action Plan. Using data captured through the Utilities Customer Satisfaction Survey, Utilities staff was able to recognize and respond to the interest customers had in Carbon Offsets. In doing so, Utilities has voluntarily taken part in a Carbon Offset program that is managed by British Petroleum (BP). This program allows Utilities to invest in various carbon sequestration projects all around the world. From reforestation projects in the Peruvian Amazon, to capturing agricultural methane on large farms in the Midwest, this program allows Utilities to move toward carbon neutrality by 2050. Utilities will initially offset 25% of its greenhouse gas emissions through these various projects; however, each year, there will be an increase in the percentage of offsets through this program or another carbon reduction program (i.e., Renewable Natural Gas). Utilities is able to reduce its carbon footprint with having little to no impact on the natural gas rates.



#### 4.5 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 FY'18, the City provided 110 households with over \$21,241.78 in assistance. Contributions from area businesses and residents help to supplement the amount of money that is available for assistance. The FY'20 budget includes no new funding since there is sufficient funding in carryovers from prior years to fund the program in FY'22.

#### 4.6 GAS INFRASTRUCTURE ASSET MANAGEMENT

Due to the relatively young age of the natural gas system (large replacement of the gas system in the mid to late 1990's) and the primary material being high density polyethylene (HDPE) extruded pipe, there are very few replacement projects due to aging infrastructure. However, at times the gas utility

must replace sections of gas infrastructure primarily due to manufacturer defects that have been identified throughout the system.

The Department is also preparing for two (2) large projects with the current capital budget. The first is an Abnormal Operating Conditions (AOC) contract. Abnormal Operating Conditions (AOC) are conditions identified by the operator that may indicate a malfunction of a component or deviation from normal operations. Currently, the Department has a large backlog of AOCs and are working towards issuing a construction contract for remediation of the issues. Historically, through a previously issued IFB, the Department saw an average contract cost of \$675,000 per year. The contract was bid using quantities equaling over 3,000 AOCs being corrected in the contract period. The contract was bid in March 2021 and the successful low bid was \$1,775,875, substantially higher than previous contracts. At this time, AOCs are being corrected by in-house personnel, but in order to eliminate the back log, an outside contractor must assist.

The second project is the replacement of the low pressure system with a high pressure system in West Main Street ahead of the streetscape project. This project will replace approximately one (1) mile of 10-inch cast iron main with 4-inch high-density polyethylene pipe. The project will also necessitate 17 meters that are currently in the buildings being moved to the outside, which could require substantial interior plumbing. Preliminary estimates for this work range from \$1,200,000 to \$1,500,000.

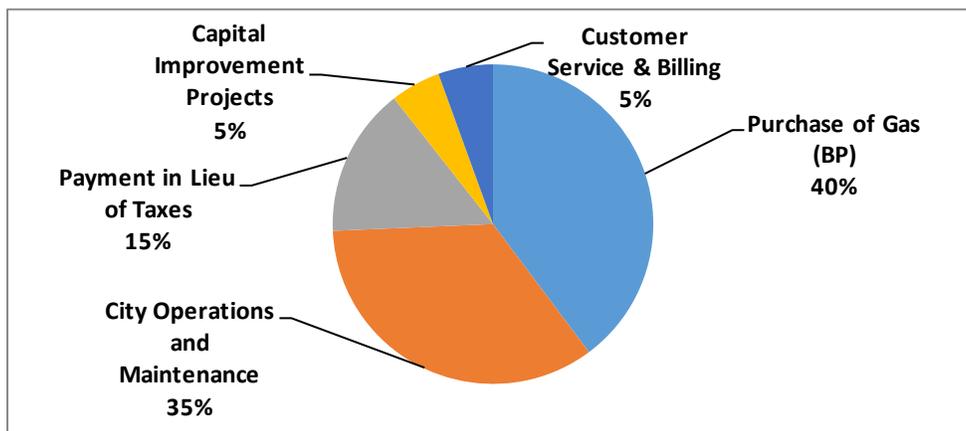
#### 4.7 FY'22 REVENUE REQUIREMENTS

This section of the report outlines the current and projected costs of operating and maintaining the City's sewer system which constitute the revenue requirements (i.e., the amount of revenue required to be collected from customers).

##### 4.7.1 Current Revenue Requirements (FY'22)

The FY'22 revenue requirements for the gas utility totals \$27,672,851, the largest component being the purchase of gas from BP (40% of the total).

Exhibit 36: Gas Utility FY'22 Revenue Requirements



The revenue requirements for gas are 1.0% higher than the current year (note: utility rates and revenue requirements have not been updated for two years due to COVID 19).

*Exhibit 37: Comparison of Gas Revenue Requirements FY'21 to FY'22*

Revenue Requirements	FY'21	FY'22	\$ Change	% Change
Purchase of Gas (BP)	\$11,008,930	\$11,008,930	\$0	0.0%
City Operations and Maintenance	\$8,917,410	\$9,560,369	\$642,959	7.2%
Payment in Lieu of Taxes	\$3,981,395	\$4,174,362	\$192,967	4.8%
Capital Improvement Projects	\$2,086,626	\$1,400,000	(\$686,626)	-32.9%
Customer Service & Billing	\$1,399,597	\$1,529,190	\$129,593	9.3%
<b>TOTAL</b>	<b>\$27,393,958</b>	<b>\$27,672,851</b>	<b>\$278,893</b>	<b>1.0%</b>

The cost of gas is not anticipated to increase which is consistent with recent trends in the natural gas industry due to an abundance of supply.

When setting the base rate each July 1, the City uses data from the preceding March 1 to project the cost. However, natural gas is a commodity that is traded daily and whose value fluctuates based on factors beyond the City's control (weather, politics, conflict, etc.). As noted above, the gas utility operates on a breakeven basis. To account for the fluctuation in gas prices, the City calculates a monthly Purchase Gas Adjustment (PGA) to adjust the base rate up or down. This ensures that utility is generating sufficient revenues to cover its costs and that customers are not being over- or undercharged.

City Operations and Maintenance costs are projected to increase by \$643,959 or due primarily to increases for a cost-of-living-adjustment (COLA) in salaries and benefits costs and contractual services.

The Payment in Lieu of Taxes (PILOT) is based on a formula of 23% of prior year budgeted expenses less cost of purchasing gas. It is a payment from the utilities to the City's General Fund and represents the taxes the utilities would pay the City if they were a private company providing utility services.

Infrastructure cost are projected to go down due to the retirement of all gas related debt.

#### 4.8 MONTHLY SERVICE CHARGE

Like water and sewer, the City assesses a Monthly Service Charge for gas to recoup the fixed costs of providing utility services such as customer service, billing, meter services, and infrastructure.

There are no changes adopted for the gas Monthly Service Charge.

#### 4.9 ADOPTED GAS RATES

The City is projecting to collect a total of \$27,672,851 to operate the gas utility in FY'22. \$25,939,357 is projected to be collected from gas rates. Miscellaneous revenues total approximately \$333,500. \$1,400,000 of fund balance will be used to cash fund capital improvement projects.

##### *Exhibit 38: Gas Rate Calculation FY'22*

<b>Revenue Requirements</b>	<b>FY'22</b>
Purchase of Gas (BP)	\$11,008,930
City Operations and Maintenance	\$9,560,369
Payment in Lieu of Taxes	\$4,174,362
Capital Improvement Projects	\$1,400,000
Customer Service & Billing	\$1,529,190
<b>TOTAL</b>	<b>\$27,672,851</b>

<b>Revenue to be Collected</b>	<b>FY'22</b>
Other Funding Sources	
Fund Balance	\$1,400,000
Miscellaneous Revenues	\$333,500
<i>Subtotal</i>	<i>\$1,733,500</i>
Revenue to Be Collected Through Rates	
Transportation Fees	\$54,957
Firm Sales	\$19,211,017
Interruptable Sales	\$6,673,377
<i>Subtotal</i>	<i>\$25,939,351</i>
<b>TOTAL REVENUE TO BE COLLECTED</b>	<b>\$27,672,851</b>

Adopted FY'22 Utility Rate Report

The adopted gas rates for FY'22 are shown below compared to the current rates.

*Exhibit 39: Adopted FY'22 Gas Rates*

Rate (per 1,000 cf)	Current Rates	Adopted FY'22 Rates	\$ Change	% Change
Firm Service – Up to 3,000 cf	\$9.0706	\$8.9908	-\$0.0798	-0.88%
Firm Service – Next 3,000 cf	\$8.5264	\$8.5198	-\$0.0066	-0.08%
Firm Service – Next 144,000 cf	\$7.6193	\$8.0489	\$0.4296	5.64%
Firm Service – Over 150,000 cf	\$7.4379	\$7.5779	\$0.1400	1.88%
Air Conditioning	\$7.3471	\$7.3471	\$0.0000	0.00%
Interruptible Sales (IS) Service				
Up to 600,000 cf	\$7.3874	\$7.2178	-\$0.1696	-2.30%
Over 600,000 cf	\$6.5720	\$6.6937	\$0.1217	1.85%
Interruptible Transportation Service (TS)				
Rates for TS are per decatherm				
TS customer only	\$3.2293	\$2.6462	-\$0.5831	-18.06%
Large Volume TS customer	\$1.8842	\$1.5877	-\$0.2965	-15.74%
Purchased Gas Adjustment (Firm Service)	\$4.2810	\$4.2810	\$0.0000	0.00%
Purchased Gas Adjustment (IS Service)	\$2.8498	\$2.8498	\$0.0000	0.00%

#### 4.10 IMPACTS ON CUSTOMERS

The table below illustrates the impacts of the adopted FY'22 rates on customer's bills at various usage rates. Note: the applicable Monthly Service Charges are included in the calculations.

*Exhibit 40: Customer Impacts from Adopted FY'22 Gas Rates and Charges*

Firm Customers	Current Monthly Gas Bill with April 2021 PGA	Adopted Monthly Gas Bill with April 2021 PGA	\$ Change	% Change
4,000 cubic feet	\$47.35	\$47.10	-\$0.25	-0.53%
4,600 cubic feet	\$52.70	\$52.45	-\$0.25	-0.47%
20,000 cubic feet	\$177.49	\$183.25	\$5.76	3.25%
60,000 cubic feet	\$498.32	\$521.26	\$22.94	4.60%

Interruptible Customers	Current Monthly Gas Bill with April 2021 PGA	Adopted Monthly Gas Bill with April 2021 PGA	\$ Change	% Change
100,000 cubic feet	\$915.28	\$898.32	-\$16.96	-1.85%
400,000 cubic feet	\$3,481.12	\$3,413.30	-\$67.82	-1.95%
1,000,000 cubic feet	\$8,286.64	\$8,233.58	-\$53.06	-0.64%
2,000,000 cubic feet	\$16,024.04	\$16,092.66	\$68.62	0.43%

## 5. STORMWATER

### 5.1 OVERVIEW

The Stormwater Utility, adopted by City Council in 2013, 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.

### 5.2 REGULATORY COMPLIANCE

As an operator of a Small Municipal Separate Storm Sewer System, Charlottesville is regulated by Virginia DEQ-issued General Permit (VAR040051). Through annual reporting (available on the City website), the City summarizes the status of permit compliance and stormwater management program elements pertaining to six required Minimum Control Measures. Activities include public education and outreach (including participatory events), implementation of Stormwater Pollution Prevention Plans, illicit discharge detection and elimination, administration of a local stormwater management program relating to construction and post construction activities, and water resources protection and improvement projects.

### 5.3 CREDIT PROGRAM AND CHARLOTTESVILLE CONSERVATION ASSISTANCE PROGRAM

The Stormwater Utility Fee Credit Program and Charlottesville Conservation Assistance Program (CCAP) were adopted by City Council in FY'14. The Credit Program is required by state law as a component of a municipal stormwater utility. Under the program, property owners who install and maintain structural stormwater management facilities which permanently reduce stormwater runoff and pollution may apply for and receive credit toward their stormwater utility fee. Credits range from 20%-100% minus one billing unit for the impervious area treated by the facility. The Credit Program is budgeted at \$50,000 per year.

The 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 eligible water resources stewardship practices on their property (i.e., conservation landscaping, rain gardens, etc.). The cost share can reimburse homeowners up to 75% of the cost incurred for project implementation. For a description of the program and a full list of eligible practices, please go to: <https://www.tjswcd.org/best-management-practices-homeowners/>. The CCAP is budgeted at \$32,000 per year.

### 5.4 FINANCIAL RELIEF PROGRAM

City Council adopted a financial relief program in February 2014 to assist homeowners who experience hardship in paying their stormwater utility fee. The program is budgeted at \$25,000 per year and is paid from the General Fund. The program provides a reduction in the stormwater utility fee for residents who are eligible for at least 60% Real Estate Tax Relief, 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 Program (CHAP).

## **5.5 STORMWATER INFRASTRUCTURE ASSET MANAGEMENT**

Charlottesville's stormwater conveyance system is integrated throughout the City's municipal boundary and consists of approximately 130 miles of pipe and 8,250 structures. The pipes range in age, size, and material type. Pipe materials 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 most pipes is unknown, but most are generally understood to be between 0-80 years old. The size of pipes in the system range from 4 to 96-inches in diameter. Structures in the system include junction boxes, drainage inlets, and catch basins. Structures are typically constructed of 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, on City-owned land, and within City-held easements on private property. The City does not own or maintain the stormwater conveyance system owned by other public entities or that which is located on privately-owned land without an easement. Approximately 54% of the stormwater pipes and 28% of the stormwater structures 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 conveys streams that have been piped.

The combination of an integrated and co-mingled privately and publicly owned stormwater conveyance system that ranges widely in age, condition, and material type presents many challenges to infrastructure and asset management. The deterioration of both City and privately-owned stormwater infrastructure can cause many problems, including sinkholes, clogged pipes, and drainage and erosion issues. Pipes constructed of VC and CMP materials are often older and more prone to deterioration due to age and the natural lifecycle of these construction materials.

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 comprises much of the work of the Stormwater Utility. The City has also utilized Rehabilitation Program contractors to replace and rehabilitate stormwater conveyance infrastructure in the City right-of-way, under easement to the City, and in limited cases, in privately-owned conveyance systems. This work is performed 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 and around City streets and sidewalks.

The City also completes routine maintenance and repairs to the stormwater conveyance system. Materials are paid for with Stormwater Utility enterprise or capital funds, depending on the size and scope of the project.

To date, approximately 12.3 miles of pipe have been rehabilitated (90% were VC and CMP), and 433 structures have been installed, rehabilitated, or replaced at a cost of \$9,705,956.

The Charlottesville Water Resources Master Plan was developed in 2016 and published in 2017. The goal of the Master Plan is to apply criteria to select and prioritize capital projects that improve water quality

and/or resolve drainage issues. The final Master Plan is comprised of a drainage improvement capital improvement plan (CIP) and a water quality CIP.

Projects included in the drainage improvement CIP address a combination of historic and more recently identified drainage issues, while projects in the water quality CIP focus on the implementation of stormwater best management practices and facility retrofits designed to improve water quality. Projects were selected for the water quality CIP based on cost effectiveness and eligibility to provide pollutant reductions which the City can use toward meeting its Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan nutrient reduction requirements. In 2019, the City received a commitment for \$792,147 in Stormwater Local Assistance Fund (SLAF) matching grant funds from Virginia Department of Environmental Quality (DEQ) for three stream restoration projects that have been identified as priority water quality improvement projects. The SLAF was established by the Virginia General Assembly to support local governments in the planning, design, and implementation of cost-effective stormwater best management practices that address commitments related to reducing pollutant loads and improving water quality.

The City’s TMDL Action Plan is a requirement of its Municipal Separate Storm Sewer System (MS4) discharge permit issued by the Virginia Department of Environmental Quality (DEQ). The Virginia DEQ has added the Action Plan as a requirement in order to meet statewide Chesapeake Bay regulatory obligations to the United States Environmental Protection Agency (EPA). The TMDL Action Plan is an addition to the minimum control measures the City has been required to implement since first being issued a Phase II MS4 permit in 2003.

Stormwater Utility funds are also used to implement small to medium water quality and drainage improvement projects and to maintain select stormwater management facilities identified in the City’s TMDL Action Plan.

The Stormwater Utility Capital Plan was adopted by Council when the Stormwater Utility Ordinance was approved in March of 2013. The first five-year Capital Plan for the Stormwater Utility covered the period FY’14–FY’18 and continued through FY’19, FY’20, and FY’21. The Stormwater Utility Capital Plan has been evaluated on a yearly basis and has occurred in conjunction with the utility rate development process.

*Exhibit 41: Five-Year Capital Improvement Plan for Stormwater*

Project	5 Year Total
Design/Permitting for Drainage/ Stormwater Improvement Projects	\$1,000,000
Water Resources Master Plan	\$250,000
Stormwater Quality Retrofit Project Construction	\$1,000,000
Neighborhood Drainage Improvements	\$250,000
Rehabilitation Program	\$5,000,000
<b>TOTAL</b>	<b>\$7,500,000</b>

### 5.6 REVENUE REQUIREMENTS

The total Stormwater Utility expenditures of approximately \$3.289 million are not projected to increase from FY'21 to FY'22. The projected FY'22 operating budget for the stormwater utility is \$835,384 less than the FY'21 budget. In FY'20, all operating expenses in the general fund associated with the Stormwater Utility were transferred to the Stormwater Enterprise Fund. This change resulted in a reduction of cash funding to the Stormwater Capital Projects Program in favor of low interest long term bond funding.

*Exhibit 42: Comparison of Stormwater Budgets FY'20 to FY'22*

Revenue Requirements	FY'20 Budget	FY'22 Budget	\$ Change	% Change
Salaries & Benefits	\$793,888	\$820,441	\$26,553	3.34%
Operating Expenditures	\$1,050,684	\$1,080,301	\$29,617	2.82%
Capital Projects	\$1,500,000	\$1,500,000	\$0	0.00%
Debt Service	\$119,039	\$119,039	\$0	0.00%
<b>TOTAL</b>	<b>\$3,463,611</b>	<b>\$3,519,781</b>	<b>\$56,170</b>	<b>6.16%</b>

### 5.7 ADOPTED STORMWATER UTILITY FEE FOR FY'22

The Stormwater Utility fee rate was adopted in March 2013 at \$1.20/500 sq. ft. of impervious surface on a property per month. Infrastructure costs for the Stormwater Utility are paid through a combination of fee revenues and bond sales. No stormwater utility fee increase is forecast in the coming fiscal year.

*Exhibit 43: Adopted Stormwater Utility Fee Rate FY'22*

	Current	Adopted FY'22	\$ Change	% Change
<b>STORMWATER (per 500 sq. ft. impervious area)</b>				
	\$1.20	\$1.20	\$0.00	0.00%

## 6. GLOSSARY

**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** – Dekatherm; 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.