

# CITY OF CHARLOTTESVILLE UTILITY RATE REPORT

FY 2024



PREPARED BY THE DEPARTMENT OF FINANCE  
AND THE DEPARTMENT OF UTILITIES

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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 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, apart from the stormwater utility, 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.

During COVID, the City received and distributed approximately \$575,000 of utility bill assistance funds from the American Rescue Plan Act (ARPA) and Coronavirus Aid, Relief, and Economic Security (CARES) Act. In the current fiscal year, ARPA funds totaling \$15,134 were applied to 386 residential customer accounts. In addition, the Low-Income Household Water Assistance Program (LIHWAP) was created to assist low-income households with water and wastewater bills. LIHWAP relief is available to eligible Virginia residents from October 2022 to September 2023 or until funds are depleted. So far, approximately \$66,000 has been distributed to 99 customer accounts.

A new and improved online bill payment service was launched in October 2021. Responding to feedback from the Customer Satisfaction Survey, Utilities now offers customers paperless billing, pay-by-text, and enhanced automatic payment options. These expanded bills pay services provide features that deliver convenient, secure, and environmentally friendly means to pay utility bills, and remain informed of account activity. Managed by Invoice Cloud, the new portal acts as the customer's account hub, giving them the ability to view and manage their utility account 24/7/365. More than 9,640 customers have already signed up for paperless billing and 4,050 have registered for Autopay, making the move to a

simplified, secure, and resource conscious way to pay their utility bills. One account on paperless billing saves almost \$6.00 per year, equaling approximately \$58,000 in savings to date.

To help achieve Community Climate Goals, Utilities has solicited the expertise of the consulting firm Black & Veatch (B&V) to conduct a Decarbonization Study. B&V will help Utilities responsibly and accurately determine how the gas utility can be a part of the solution in achieving and aligning itself with the community's greenhouse gas reduction goals. The Study will include an assessment of the legality of any potential actions allowable under federal and Virginia law, including discontinuing the natural gas distribution system or discontinuing new natural gas connections, and the Study will also evaluate several pathways and their impact on emissions, reliability of service, and cost to customers. These pathways include electrification, renewable natural gas (RNG), certified natural gas, hydrogen, and carbon offsets. Additionally, the Study will include an evaluation of operations of the gas utility and Utilities' energy efficiency program and propose recommendations for near and long-term actions.

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 and its customers.

In April 2023, Charlottesville Utilities was awarded a \$7.1 million grant from the Pipeline and Hazardous Materials Safety Administration's Natural Gas Distribution Infrastructure Safety and Modernization (NGDISM) grant program. The NGDISM program is part of the broader Bipartisan Infrastructure Law, which will provide nearly \$1 billion in federal funding over the next five years to support public gas systems' efforts to repair, rehabilitate, and replace aging pipes and reduce methane emissions. This grant facilitates the completion of Utilities' system-wide upgrade project by expediting the replacement of the last remaining section of legacy pipes. The last mile of 10" cast iron main line will be replaced with 4" high-density polyethylene (HDPE) plastic pipe, first generation polyethylene and other legacy pipe will be replaced with 2" HDPE, and 20 gas meters will be removed from the interior of several buildings. The project will help to eliminate all components in Charlottesville's natural gas system that have a higher probability of leaks.

The following section of the FY'24 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 FY'24 Water and Sewer Rates

Based on the projected revenue requirements to operate and maintain each utility, the water and sewer rates for FY'24 (beginning July 1, 2023) are as follows:

*Exhibit 1: Water and Sewer Rates for FY'24*

Rates (per 1,000 cf)	Current	Proposed	\$ Change	% Change
<b>WATER</b>				
Summer	\$80.59	\$86.86	\$6.27	7.8%
Winter	\$62.00	\$66.82	\$4.82	7.8%
<b>SEWER</b>				
	\$83.80	\$88.34	\$4.54	5.4%

### 1.1.2 Updating 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.

The revenue requirements for the water utility have increased, including fixed costs and infrastructure. The Monthly Service Charges for FY'24 will increase about 18%. Most customers will see a \$1.00 increase in their Monthly Service Charge for water and \$1.00 increase for sewer.

*Exhibit 2: Monthly Service Charge for FY'24 for Water*

Water Meter Size (inches)	Current	Proposed	\$ Change	% Change
5/8	\$5.50	\$6.50	\$1.00	18.18%
1	\$13.75	\$16.25	\$2.50	18.18%
1 1/2	\$27.50	\$32.50	\$5.00	18.18%
2	\$44.00	\$52.00	\$8.00	18.18%
3	\$88.00	\$104.00	\$16.00	18.18%
4	\$137.50	\$162.50	\$25.00	18.18%
6	\$275.00	\$325.00	\$50.00	18.18%
14	\$1,801.25	\$2,128.75	\$327.50	18.18%

**Exhibit 3: Adopted Monthly Service Charge for FY'24 for Sewer**

<b>Water Meter Size (inches)</b>	<b>Current</b>	<b>Proposed</b>	<b>\$ Change</b>	<b>% Change</b>
5/8	\$5.50	\$6.50	\$1.00	18.18%
1	\$13.75	\$16.25	\$2.50	18.18%
1 1/2	\$27.50	\$32.50	\$5.00	18.18%
2	\$44.00	\$52.00	\$8.00	18.18%
3	\$88.00	\$104.00	\$16.00	18.18%
4	\$137.50	\$162.50	\$25.00	18.18%
6	\$275.00	\$325.00	\$50.00	18.18%
14	\$1,801.25	\$2,128.75	\$327.50	18.18%

**1.2 NATURAL GAS**

Gas rates are projected to increase for all natural gas customers in FY'24. No change is being proposed for the monthly customer charge. The gas rates for all customer classes for FY'24 are as follows:

*Exhibit 4: Gas Rates for FY'24*

Customer Class	Current	Proposed	\$ Change	% Change
<b>FIRM</b>				
Customer Charge (Minimum)	\$10.00	\$10.00	\$0.00	0%
First 3,000 Cu Ft, Per MCF	\$8.8087	\$9.2491	\$0.44	5.00%
Next 3,000 Cu Ft, Per MCF	\$8.3559	\$8.7216	\$0.37	4.38%
Next 144,000 Cu Ft, Per MCF	\$7.9031	\$8.1941	\$0.29	3.68%
Over 150,000 Cu Ft, Per MCF	\$7.4504	\$7.6666	\$0.22	2.90%
<b>INTERRUPTIBLE</b>				
Customer Charge (Minimum)	\$60.00	\$60.00	\$0.00	0%
First 600 MCF, Per MCF	\$7.0120	\$7.2264	\$0.21	3.06%
Over 600 MCF, Per MCF	\$6.5125	\$6.6275	\$0.12	1.77%
Annual Minimum Usage (MCF)	1,200	1,200	0	0%
<b>AIR CONDITIONING</b>				
All Gas Used, Per DTH	\$7.3471	\$7.3471	\$0.00	0%
<b>GAS LIGHT</b>				
Charge, Per Month	\$17.51	\$17.51	\$0.00	0%
<b>TRANSPORTATION</b>				
Small Volume Customer				
Monthly Service Charge	\$150.00	\$150.00	\$0.00	0%
Rate, Per DTH	\$2.6287	\$3.0147	\$0.39	14.7%

### 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'23. No increase is proposed in FY'24. The Stormwater Utility fee is re-evaluated annually in conjunction with the budget development process.

*Exhibit 5: Stormwater Utility Fee Rate FY'24*

Rate (per 500 ft <sup>2</sup> of impervious area)	Current	Proposed	\$ Change	% Change
<b>STORMWATER</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 for July 1, 2023.

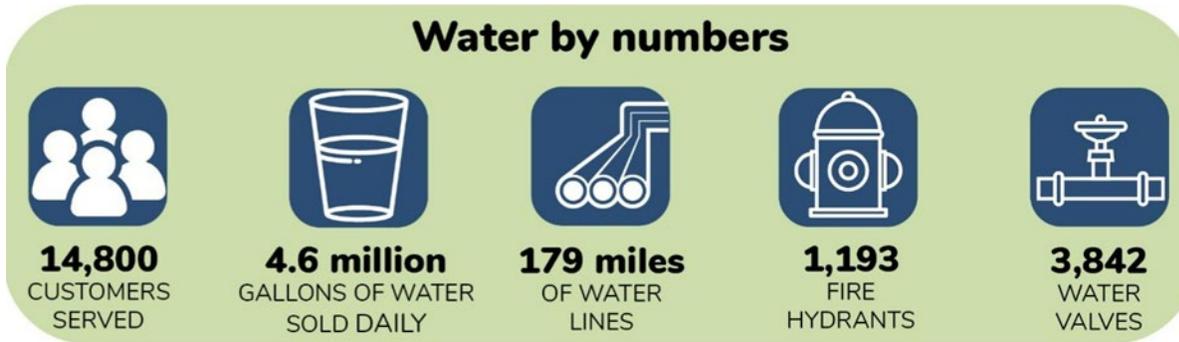
*Exhibit 6: Impact of FY'24 Rates and Charges on an Average Customer*

Utility	Current Monthly Bill	Proposed Monthly Bill	\$ Change	% Change
Water	\$33.40	\$36.57	\$3.17	9.49%
Wastewater	\$39.02	\$41.84	\$2.82	7.23%
Gas	\$48.27	\$51.70	\$3.43	7.11%
Stormwater	\$5.86	\$5.86	\$0.00	0.0%
<b>TOTAL</b>	<b>\$126.55</b>	<b>\$135.97</b>	<b>\$9.42</b>	<b>7.44%</b>

## 2. WATER

### 2.1 OVERVIEW

The City distributes potable water within its municipal boundaries and to the University of Virginia. The City has approximately 14,800 water customers using 1.6 billion gallons of water annually or 4.6 million gallons daily. The City’s water distribution system has 179 miles of pipes (enough to stretch from Charlottesville to Virginia Beach) ranging in size from 2” to 18” in diameter. The system also includes 1,193 fire hydrants and 3,842 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 February 2023, the Department of Utilities conducted an online customer satisfaction survey to gain feedback about our services. Over 210 responses reflect 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 97% of respondents rating the value of their water service as fair and above (good and excellent). Additionally, 94% 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 (VDH), and the Virginia Department of Environmental Quality (DEQ) to ensure superior water quality

### 2.2.1 Water Treatment

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 2022, 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. This 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. All new buildings are scrutinized during the design and permitting process to ensure the proper installation of backflow devices. Additionally, the Department of Utilities currently maintains inspection records for 935 backflow devices to provide the highest quality water to the City residents. The Cross-Connection Plan is reviewed annually and updated if necessary to reflect changes to the Virginia Waterworks Regulations.

## 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 11,970 free indoor water conservation kits since 2008,

the development and dissemination of guidance on how to find and fix leaks, EPA WaterSense program educational materials, and other indoor and outdoor water conservation information. Additionally, a low-flow toilet rebate program has supported the replacement of over 7,234 high consumption toilets since 2003, and a rain barrel rebate program that has issued 873 rebates since 2009.

The WCP continues to conduct an extensive public outreach campaign. Typically, this includes educational activities at summer camps, educating the public during annual campaigns, and distributing water-saving information and promotional items at dozens of community events.

COVID-19 continued to impact the City's in-person water conservation program's outreach and engagement in FY'22. The program participated in several in person events including Rivanna RiverFest and Westhaven Community Day and held several virtual outreach opportunities for the Fix a Leak and Imagine a Day without Water Campaigns. The City's water conservation message was also communicated via the internet (online ads, mobile apps, and social media), mailings, newsletters, print, radio, and television.

The WCP partners with community organizations including UVA Sustainability, Rivanna Conservation Alliance, the Local Energy Alliance Program (LEAP), Charlottesville City Schools, Community Climate Collaborative, 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 EPA's WaterSense program. In 2022, the City of Charlottesville was recognized for water conservation efforts supporting the WaterSense program, receiving the 2022 Sustained Excellence Award; this is the highest honor given out by the WaterSense program and makes the eighth year in a row the program has received a WaterSense award. In addition, the WCP was recognized in 2022 by the Virginia American Water Works Association for two public information awards in the water awareness and education and in the social media categories.

In 2022, the City continued 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.

A key partnership with Charlottesville City Schools continues to focus on how to make school buildings more efficient and encourage the staff and students to implement good water 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 FY2022 Energy and Water Performance Report.

The following exhibit outlines the City’s current water conservation efforts.

**Exhibit 7: Water Conservation Activities**

Program Initiatives	Description
<p>Free Incentives: Water Conservation Kits, Toilet Flappers, and Other Resources</p>	<p>The WCP offered free water conservation kits to 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'22, only 71 water conservation kits were given out to the community (see note below). These materials are promoted heavily in paid advertising and social media.</p> <ul style="list-style-type: none"> <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 provided to community groups to give out at various community events during the year. In FY'22, 500 toilet leak detection dye tabs, 120-bathroom aerators, 60 rain gauges, and 441 utility rebate brochures were provided at a few events.</li> <li>• In the Summer of 2022, the WCP updated their water conservation kits to include English and Spanish directions and information in each kit.</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. In FY'22, 10 toilet flappers and plumbing handbooks were passed out to the community.</li> </ul> <p><i>Note: In FY'22 due to COVID-19, City Hall was closed or open with limited public access, and customers were not able to easily pick up conservation kits and other free resources at City Hall.</i></p>
<p>Water Conservation Education and Community Outreach</p>	<ul style="list-style-type: none"> <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'22, the water conservation pages received over 7,900 page views.</li> <li>• In FY'22, the WCP engaged UVA students through the University’s Internship Placement Program, who worked on the City’s EWMP including WCP initiatives. During COVID-19, these internships continued remotely.</li> </ul>
<p>Energy and Water Management Program and School Outreach</p>	<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>• The EWMP published a FY'22 Energy and Water Performance Report detailing the actions that contributed to improve energy and water performance of municipal facilities.</li> <li>• In FY'21, the EWMP started the process of pursuing an energy saving performance contract, an alternative method for financing and implementing efficiency projects, for City facilities. In FY'22, the City selected an energy service company for an energy performance contract. Over 40 facilities were audited for energy and water saving opportunities.</li> <li>• In FY'21, 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>• Summer 2020 – present, the EWMP developed quarterly student activity sheets that could be used as students pivoted to online learning and then utilize for in-person classes. 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> <li>• Through the EWMP and local partners, the WCP provided 380 toilet leak detection dye tablets and directions to check their toilet for leaks to the 5th grade class at Walker Upper Elementary in Climate Action Activity Kits for Earth Day.</li> </ul>

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<p>Fix a Leak Campaign</p>	<p>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. 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.</p> <ul style="list-style-type: none"> <li>In FY'22, Fix a Leak events were delivered in a virtual format due to COVID-19 and were focused for the entire spring season. Event participation was free to the Charlottesville and the Albemarle County community. There were three events hosted by the City, ACSA, and RWSA. The Home Scavenger Hunt asked the community to get to know their water fixtures and check their homes for leaks by filling out a worksheet. Of the 38 participants of the home scavenger hunt, 17 indicated that they found and fixed a water leak, which is estimated to save the community approximately 850 gallons of water a day and 170,000 gallons of water a year. The Virtual Fix a Leak Family 5K encouraged the community to “stop that running toilet” by going on their own 5K run and provided them with information on how to fix leaks. The main in-person event hosted with the assistance of other community partners was Rivanna RiverFest. This event was held at Rivanna River Company on May 1st, from 11am to 4pm attracting over 400 people. There was a River Paddle Race, music, food, and community tables discussing aspects of water and the river.</li> </ul>
<p>Imagine a Day without Water Campaign</p>	<p>The WCP holds an annual art contest, co-sponsored with ACSA and RWSA, as part of the Imagine a Day without Water campaign.</p> <ul style="list-style-type: none"> <li>In FY'23, the 8th annual Imagine a Day without Water Art Contest invited youth to illustrate the “Value of Water” in an artistic creation. The contest continued to offer flexibility by allowing digital submissions. The contest had 248 poster entries and had 834 total online votes to pick the fan favorite winner. The campaign was supported with extensive marketing, press releases, social media, and a video announcing the art contest winners.</li> </ul>
<p>Water-Wise Landscaping</p>	<p>The WCP put out education and outreach in forms of print 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 (or not)”, “Smart Irrigation”, “Your Better Yard” and other WaterSense outdoor campaigns and resources during the summer months.</p> <ul style="list-style-type: none"> <li>These outreach materials were heavily promoted on the WCP webpage with a large, dedicated section on saving water outdoors including an expanded section around the “Your Better Yard” campaign.</li> <li>The program helped sponsor a community event put on by the local Master Gardeners focused around “Water-Wise Gardens”.</li> </ul>
<p>Water Efficient Businesses</p>	<ul style="list-style-type: none"> <li>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.</li> <li>The program continues joint efforts with the City and ACSA for the Carwash Certification Program.</li> </ul>
<p>Year-Round Ad Campaign: “Check, Twist, Replace” and Saving Water Indoors</p>	<p>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.</p> <ul style="list-style-type: none"> <li>In the Fall of 2022, the WCP created new video ads highlighting three water wasting characters and tips on what to do to save water. These updated video ads started running in December 2022 on local and cable TV and on streaming.</li> </ul>
<p>Social Media and #WaterTipWednesday</p>	<p>The Charlottesville Water Conservation Facebook Page utilizes social media to connect and reach the community using community based social marketing methods by regularly posting each Wednesday for #WaterTipWednesday (#WTW). This initiative conveys important information, resources, events, and highlights about the program.</p> <ul style="list-style-type: none"> <li>In FY'22, the WCP Facebook page had 113 posts, reached over 22,170 people, and saw over 559 engagements.</li> </ul> <p>The program also posts similar messages on the Twitter account, Charlottesville-A Green City Facebook Page, and Charlottesville-A Green City Instagram Page.</p>

**2.6 TOILET AND RAIN BARREL REBATE PROGRAMS**

In support of water conservation efforts, the City established 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. Low flow WaterSense labeled toilet rebates issued in FY'21 totaled 156 and 97 in FY'22. The total number of toilet rebates issued to date is 7,234, saving the City a cumulative 68 million gallons of water. Rebates were marketed using social media, e-newsletter, and paid advertising. The following chart shows the participation in the toilet rebate program for the past 16 years.

*Exhibit 8: Participation in Toilet Rebate Program since 2007*

Fiscal Year	# of Customers	# of Rebates	\$ Rebated	Average Rebate/Customer
2022	73	97	\$9524.85	\$130
2021	116	156	\$15,428	\$133
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 cars, 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 873 rebates since the program started in FY'09 including 32 rebates in FY'21 and 20 rebates in FY'22. The City promotes rain barrel workshops and opportunities offered by community partners, such as the Thomas Jefferson Soil and Water Conservation District (TJSWCD). Rebates were marketed using 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. The maximum allotment per household per year is \$150 or three (3) times the customer's average monthly bill, whichever is less.

In FY'22, 29 customers benefited from the WAP receiving a total of \$4,020. The FY'24 water budget does not include any money for WAP since there are funds (\$26,818) available from previous fiscal years. In recent years, there have been additional state and federal money available which has limited the need for participation in the WAP. Comparable assistance is available through the Wastewater Assistance Program (WWAP).

## 2.8 WATER INFRASTRUCTURE ASSET MANAGEMENT

The City's water distribution system contains 179 miles of water main 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 water main are galvanized steel, several decades old, and serve multiple customers. Not only can the water mains be severely corroded, but they can often result in low pressure and significantly reduce the quality of service to customers. The system also includes 1,187 fire hydrants and 3,763 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.

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.

Each of the criteria was evaluated as to its importance versus the other criteria. A weighting value was given to each criterion. 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

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, services, 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 12 years and the Department has seen 111 completed projects totaling over 107,496 linear feet (LF) (20.04 miles) of water mains replaced. This equates to 11.1% of the entire water system being replaced under this contract. To complete these projects, the Department has spent \$26,526,677 to date with an average of \$2,210,556 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 \$247 per linear foot of pipe installed.

In the current contract year, at \$247/LF, at the expected footage of pipe installed, which is two (2) miles, the construction budget for this project would be \$2,608,320. However, past contracts have varied between \$1,542,768 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 entire water system, 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 \$369,673.

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.

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 Dairy 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 Dairy 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 main to the larger water main. This will allow for the smaller water main to be abandoned reducing the maintenance needed in Rugby Road. This phase of the project is intended to be constructed in the fall of 2024. This final phase of the three (3) phase project has an estimated construction cost of \$600,000.

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 Public Works and the Rivanna Water and Sewer Authority on the design. This project is currently being designed with a construction date of FY'24 and has an estimated cost of \$1,780,000 for construction.

Locust Avenue Water Main Replacement

Locust Avenue from East High Street to Locust Lane is served by an approximately 1.2 mile 6-inch water main installed in 1924. The water main has experienced many breaks over the years. In addition, suspended from the bridge which spans Route 250 are two 6-inch water mains. One of the water mains has been abandoned since its support has failed. The project has been divided into two phases. The first phase consists of installing an 8-inch water main from East High Street to the Route 250 Bridge. The estimated construction cost of Phase 1 is \$1,975,000 with an anticipated start in the summer of 2024.

Phase 2 consists of installing an 8-inch water main from the Route 250 Bridge to Locust Lane and replacing the two 6-inch water mains under the bridge with new supports. The estimated construction cost of Phase 2 is \$2,783,000 with an anticipated start of the summer of 2025.

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 water services (the pipes 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 water service replacement program as part of the upgrading and replacement of water mains. To date, approximately 9.9 miles (52,218 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 can handle 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.

In 2021 the Department evaluated the SCADA System and decided, along with needed exterior improvements, replacement of the programmable logic controller (PLC) was required. A project was designed that included the following:

- Replacement of the PLC and rewiring to control the natural-gas powered pump;
- A concrete pad in from of the exterior electrical panels;
- An aluminum canopy over the electrical panels and concrete pad;
- Drainage structures and piping.

The project was advertised, and construction has been completed for a contract price of \$305,000.

### 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), 13 leaks were detected and repaired during the 2021 testing, resulting in an estimated loss of 534,240 gallons per day through various methods. The yearly leak detection survey was performed again in 2022 with 14 leaks being found with an estimated total loss of 502,560 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 15 of the past 17 years and will continue annually. The next survey is scheduled for fall 2023 and will be consistent with past years covering 100% of the distribution system.

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 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 tests 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 329 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 \$3,226,872 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.

*Exhibit 9: City Five-Year Capital Improvement Plan for Water*

Project	Five-Year Total
Water Line Replacement (Annual Service Contract)	\$6,000,000
Water Meter Replacement	\$2,500,000
Large Waterline Replacements Projects	\$4,500,000
<b>TOTAL</b>	<b>\$13,000,000</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 \$8,496,700 for FY’24 including operations costs and debt service for infrastructure. This is a proposed increase to the City of 14.6% (\$1,085,400) over the approved FY’23 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 2024-2028 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, capital projects were very near completion or are no longer needed, and as such are being removed from the FY’24-FY’28 CIP. The project is radio upgrades.

The total five-year CIP for water is approximately \$130.5 million. This includes projects already in previous CIPs which have been modified, as well as new projects.

**Exhibit 10: RWSA Water Infrastructure Projects to Serve City**

Project	FY'24-FY'28 Total (millions)
Ragged Mountain Reservoir to Observatory WTP Raw Waterline	\$32.3 M
Ragged Mountain Reservoir to Observatory WTP Pump Station	\$10.93 M
South Rivanna to Ragged Mountain Reservoir Raw Waterline – Birdwood to Old Garth	\$1.82 M
South Reservoir to Ragged Mountain Intake Facilities	\$34.26 M
South Rivanna Reservoir Aeration & Ragged Mountain Reservoir HLOS System	\$1.4 M
Central Waterline	\$37.7 M
Emmet Street Betterment	\$8.7 M
South Rivanna Water Treatment Plant Improvements	\$1.1 M
North Rivanna Water Treatment Plant Decommissioning	\$2.29 M
<b>TOTAL</b>	<b>\$130.5 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 decrease by 2% for the FY'24 budget.

**Exhibit 11: RWSA Water Usage Allocation**

	Current	Projected	% Change
City	49%	48%	-2%
ACSA	51%	52%	2%

### 2.9.3 City Share of RWSA Water Costs

The FY'24 budget increases the budget by \$393,000 in operating expenses and an increase of \$692,400 in debt service charges for a total budget increase of approximately \$1,085,400, or 14.6% above the FY'23 budget. RWSA's costs to the City for water are:

- \$2.949 per 1,000 gallons for operating expenses.
- \$307,200 per month for debt service charges.

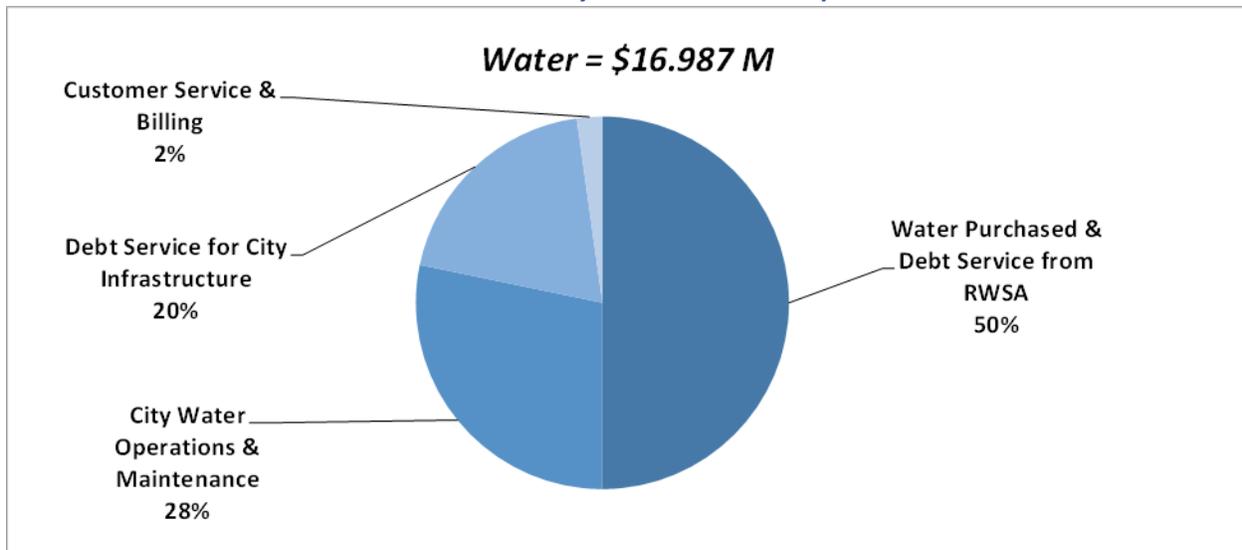
## 2.10 REVENUE REQUIREMENTS

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 FY'24 Revenue Requirements

The FY'24 revenue requirements for the water utility totals \$16,987,217. The graphic below shows the major categories of expenses, the largest being the purchase of water and debt service from RWSA (50% of the FY'24 budget).

*Exhibit 12: Water Utility FY'24 Revenue Requirements*



The revenue requirements for the water utility are \$1,814,822 (12.0%) higher than the current year. Debt service includes payments on existing bonds and new bonds to be issued by the City to finance the utility's capital improvement plan. Excluding water purchase and debt service from RWSA, the cost to operate and maintain the water utility is increasing by approximately \$933,000.

**Exhibit 13: Comparison of Water Revenue Requirements FY'23 to FY'24**

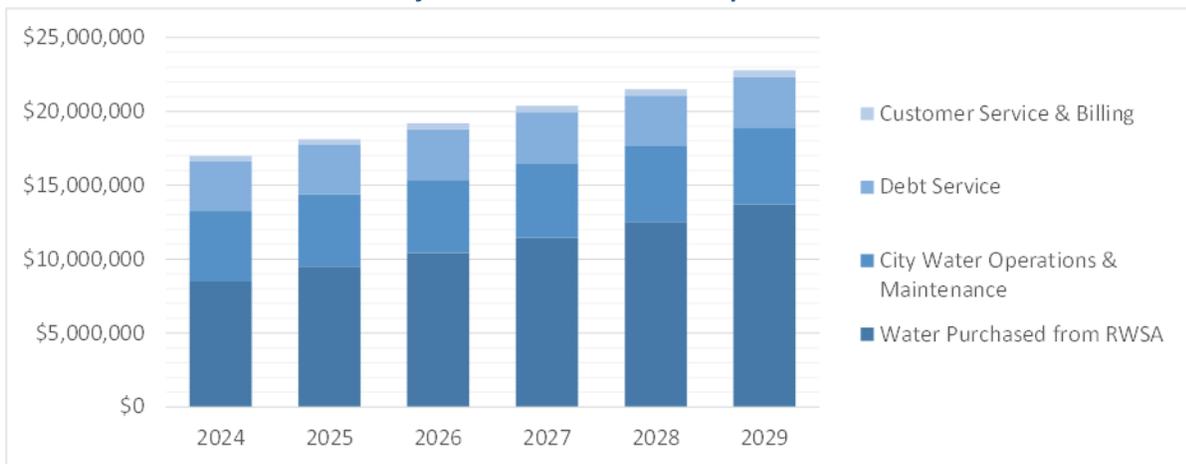
Revenue Requirements	Current	Proposed	\$ Change	% Change
Water Purchased & Debt Service from RWSA	\$7,675,232	\$8,496,700	\$821,468	10.7%
City Water Operations & Maintenance	\$4,172,730	\$4,799,064	\$626,334	15.0%
Debt Service for City Infrastructure	\$2,986,050	\$3,315,507	\$329,457	11.0%
Customer Service & Billing	\$338,383	\$375,946	\$37,563	11.1%
<b>TOTAL</b>	<b>\$15,172,395</b>	<b>\$16,987,217</b>	<b>\$1,814,822</b>	<b>12.0%</b>

**2.10.2 Projected Water Revenue Requirements (FY'25 – FY'29)**

To project operating expenses for FY'25-FY'29, the FY'24 water revenue requirements are escalated using historic averages 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'24 through FY'29 are shown below. The average annual increase is 6.0%.

**Exhibit 14: Projected Water Revenue Requirements FY'24-FY'29**



### 2.11 CUSTOMERS AND USAGE

The City currently provides water service to just over 14,500 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 (94.5%).

*Exhibit 15: Current Water Customers by Meter Size*

Water Meter Size (inches)	# of Customers	% of Customers
5/8	13,740	94.5%
1	272	1.9%
1.5	253	1.7%
2	221	1.5%
3	40	0.3%
4	14	0.1%
6	1	0.01%
14	1	0.01%
<b>TOTAL</b>	<b>14,542</b>	

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

*Exhibit 16: Projected FY'24 Water Usage*

Usage	Cubic Feet
Projected Total	198,222,189

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 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.

The revenue requirements for the water utility have increased, including fixed costs and infrastructure. The Monthly Service Charges for FY'24 will increase about 18%. Most customers will see a \$1.00 increase in their Monthly Service Charge for water.

**Exhibit 17: Monthly Service Charge for FY'24 for Water**

Water Meter Size (inches)	Current	Adopted	\$ Change	% Change
5/8	\$5.50	\$6.50	\$1.00	18.18%
1	\$13.75	\$16.25	\$2.50	18.18%
1 1/2	\$27.50	\$32.50	\$5.00	18.18%
2	\$44.00	\$52.00	\$8.00	18.18%
3	\$88.00	\$104.00	\$16.00	18.18%
4	\$137.50	\$162.50	\$25.00	18.18%
6	\$275.00	\$325.00	\$50.00	18.18%
14	\$1,801.25	\$2,128.75	\$327.50	18.18%

**2.13 WATER FACILITY FEES**

Water Facility Fees were developed and established for the City in 2008. Facility fees are one-time charges levied to offset existing or planned future capital costs necessary to meet the service needs of City water customers. These fees are assessed when new water service is requested where none has previously been provided, or an increase in capacity where service already exists, water facility fees are charged for this new increased demand for system capacity.

There are no changes being proposed to the Water Facility Fee for FY'24.

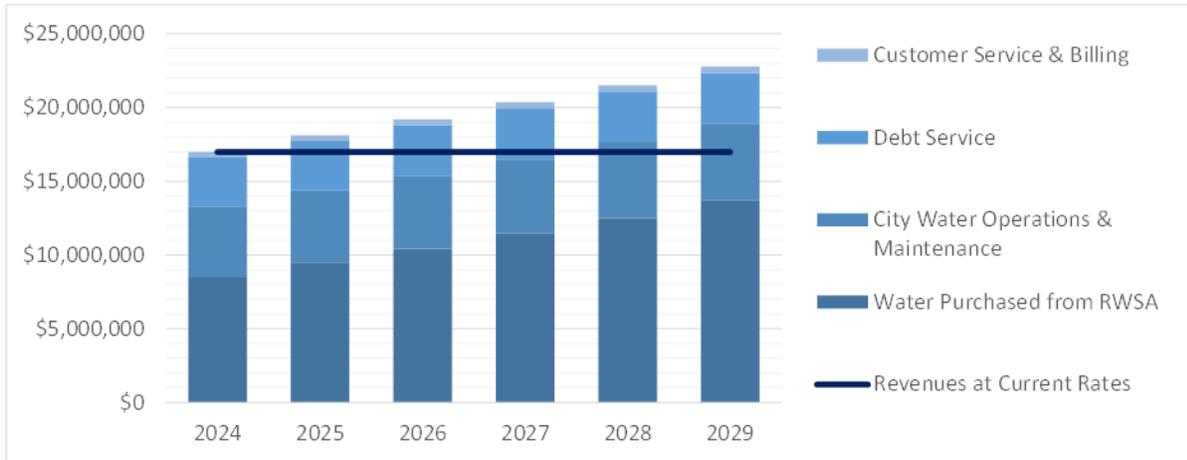
**2.14 WATER RATES**

**2.14.1 Total Revenue Projections at Current Rates**

The projected cost (revenue requirements) of the system is 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 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 18: Water Revenue Requirements and Revenue at Current Rates**



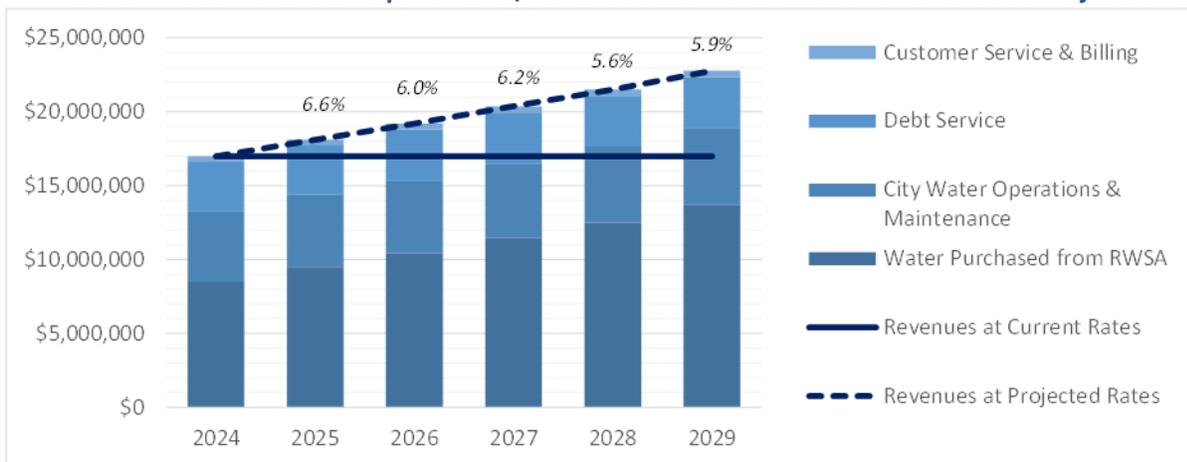
**2.14.2 Revenue Projections at Current and Projected Rates**

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 new rates for FY’24 and the years of the planning period for water.

**Exhibit 19: Water Revenue Requirements, Revenue at Current Rates and Revenue at Projected Rates**



**2.14.3 Water Rate Design**

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

**2.14.4 Water Rates FY’24**

Water rates are recommended to increase by 7.8% for FY’24.

*Exhibit 20: Water Rates FY’24*

Rates (per 1,000 cf)	Current	New	\$ Change	% Change
Water – Summer	\$80.59	\$86.86	\$6.27	7.8%
Water – Winter	\$62.00	\$66.82	\$4.82	7.8%

**2.14.5 Projected Water Rates FY’25-FY’29**

Based on the projected revenue requirements for FY’25-FY’29 and customer usage, the projected water rates for this planning period are shown below.

*Exhibit 21: Projected Water Rates FY’25-FY’29*

	Current	-----PROJECTED-----					
		2024	2025	2026	2027	2028	2029
Summer	\$80.59	\$86.86	\$92.60	\$98.12	\$104.20	\$109.98	\$116.47
Winter	\$62.00	\$66.82	\$71.24	\$75.49	\$80.16	\$84.61	\$89.60
Summer \$ Change		\$6.27	\$5.75	\$5.52	\$6.07	\$5.78	\$6.49
Summer % Change		7.8%	6.6%	6.0%	6.2%	5.6%	5.9%
Winter \$ Change		\$4.82	\$4.42	\$4.25	\$4.67	\$4.45	\$4.99
Winter % Change		7.8%	6.6%	6.0%	6.2%	5.6%	5.9%

**2.15 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.

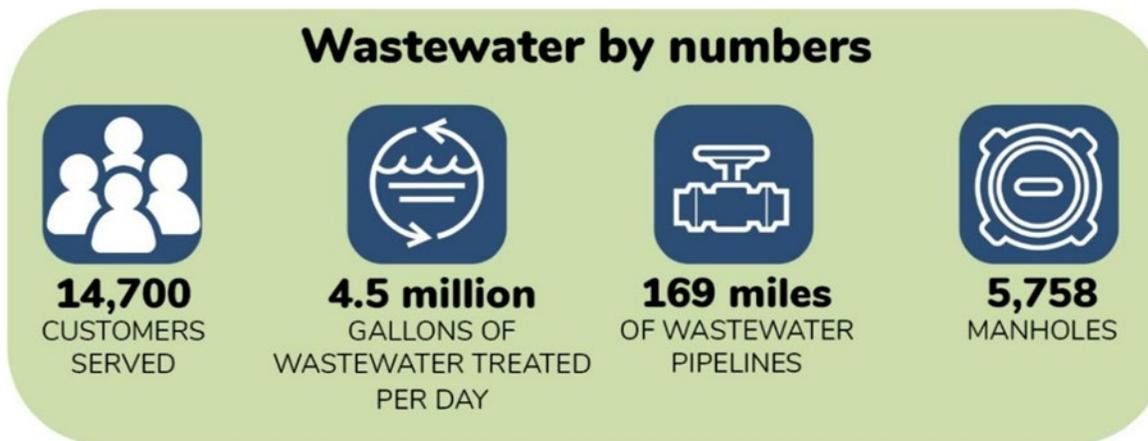
*Exhibit 22: Customer Impacts at FY'24 Water Rates and Charges*

<b>Water Meter Size</b>	<b>Median Water Usage/Month (cf)</b>	<b>Current Ave. Monthly Bill</b>	<b>Proposed Ave. Monthly Bill</b>	<b>\$ Increase</b>	<b>% Increase</b>
5/8	400	\$33.40	\$36.57	\$3.17	9.49%
1	1,760	\$136.50	\$148.55	\$12.05	8.83%
1.5	3,410	\$265.33	\$288.83	\$23.50	8.86%
2	5,680	\$440.16	\$478.97	\$38.81	8.82%
3	11,750	\$907.51	\$987.26	\$79.74	8.79%
4	43,720	\$3,186.79	\$3,448.97	\$262.18	8.23%

### 3. SEWER

#### 3.1 OVERVIEW

The City operates and maintains the sanitary sewer collection system within its boundaries which consists of about 169 miles of pipe and 5,758 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 (1.6 billion gallons per year or 4.5 million gallons per day) 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 2023 Customer Satisfaction Survey

Results of the 2023 Utilities Customer Satisfaction Survey show high levels of satisfaction with the reliability and value of our wastewater services. Of those surveyed, 99% are satisfied and neutral about the reliability of wastewater service, and 94% 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. This program is administered by the Utility Billing Office in a similar fashion as the established Gas Assistance Program. Twenty-nine customers received assistance in FY'22, totaling \$4,020. The FY'24 wastewater budget does not include any money for WWAP, since there are adequate funds (\$34,066) from prior fiscal years. In recent years, there have been additional state and federal money available which has limited the need for participation in the WWAP. Comparable assistance is available through the Water Assistance Program (WWAP).

### **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 groundwater that seeps into the system through pipe cracks, broken joints, and deteriorated manholes. I/I causes sanitary sewer overflows (SSOs) and increasing costs result 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. To address the backlog, and to keep this situation from happening again, 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 rehabilitation work needed within seven (7) days. The work is fast-paced and allows for emergency situations to be addressed within 48 hours. The City estimates savings exceeding \$5 million following this find-and-fix approach as well as taking half the time to complete a project compared to the traditional design-bid-build process.

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

- 606,268 linear feet (LF) (114.8 miles) of CCTV
- 256,528 LF (48.6 miles) of CIPP, 6” to 21” in diameter
- 22,463 LF (4.2 miles) of pipe replacement, 6” to 18” in diameter
- 251 point repairs
- 5,575 vertical feet (VF) (1.1 miles) of manhole rehabilitation
- 199 manhole replacements
- 594 frame and covers replaced

In order to complete this amount of work, the Department has issued five (5) contracts over 14 years and spent a total of \$24,857,298 on construction. The footage of pipe rehabilitation or replacements completed to date under this program totals 278,991 LF, or 52.84 miles, which equates to 31.3% of the City’s total system.

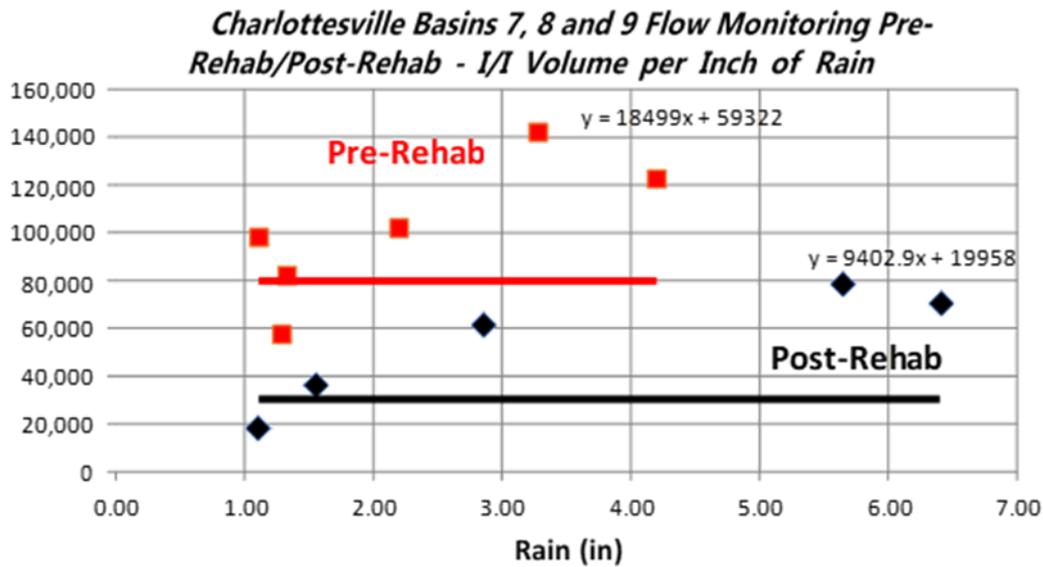
As stated above, approximately 31.3% of the sanitary sewer system has been rehabilitated or replaced, and two (2) basins have had comprehensive rehabilitation. The remaining 22 sewer basins have all had rehabilitation performed which has addressed major defects. As the program continues, we will work through the City for comprehensive rehabilitation through all 24 basins.

The rehabilitation program will continue into FY’24 utilizing available proceeds from the previous bond issues to fund the needs in the upcoming fiscal year. 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

The 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 on the southern part of the City in the Fifeville, Ridge Street, and Belmont neighborhoods.

**Exhibit 23: Basins 7, 8, and 9 Flow Monitoring Results**



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

**Exhibit 24: City Five-Year Capital Improvement Plan for Wastewater**

Project	Five-Year Total
Rehabilitation/Replacement Program	\$8,000,000
<b>TOTAL</b>	<b>\$8,000,000</b>

**3.5 RIVANNA WATER AND SEWER AUTHORITY**

RWSA provides wastewater treatment services for the City of Charlottesville and ACSA. The City’s totals \$9,296,600 including operating expenses and debt service cost, an increase of 4.9% over the current year. 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 2024-2028 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’24- FY’28 CIP. Wastewater projects include:

- Moores Creek AWRRF Aluminum Slide Gate Replacement

The total FY’24-FY’28 CIP for sewer is approximately \$28.28 million. This includes projects already in previous CIPs which have been modified.

*Exhibit 25: RWSA Sewer Projects for the City*

Project	FY’24 – FY’28 Total (millions)
Upper Schenks Branch Interceptor	\$0.58 M
Interceptor Sewer and Manhole Improvements	\$1.87 M
Moores Creek AWRRF Engineering and Administration Building	\$10.28 M
Moores Creek AWRRF Improvements	\$19.65 M
<b>TOTAL</b>	<b>\$28.28 M</b>

**3.5.2 Actual Wastewater Flows**

The City portion of Urban Area operation rates and charges are based on wastewater treatment (flows). The estimated flows for the City will decrease for FY’24.

**Exhibit 26: RWSA Sewer Production Allocation**

	Current	Projected	% Change
City	47%	46%	-2.1%
ACSA	53%	54%	1.9%

**3.5.3 City Share of RWSA Wastewater Costs**

The FY'24 budget increases the budget by \$312,000 in operating expenses and an increase of \$123,100 in debt service charges for a total budget increase of approximately \$435,100, or 4.9% above the FY'23 budget. RWSA's costs to the City for wastewater are:

- \$2.922 per 1,000 gallons for operating expenses.
- \$394,890 per month for debt service charges.

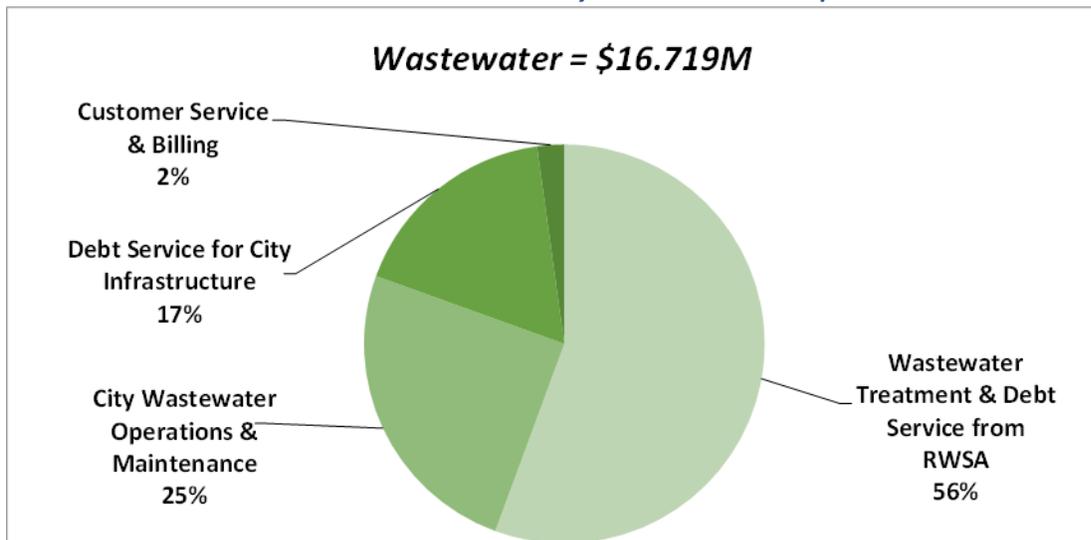
**3.6 REVENUE REQUIREMENTS**

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 FY'24 Revenue Requirements**

The FY'24 revenue requirements for the sewer utility totals \$16,718,897, the largest component being the purchase of wastewater treatment from RWSA (56% of the budget).

**Exhibit 27: Sewer Utility FY'24 Revenue Requirements**



The revenue requirements for wastewater are 4.1% higher than the current year. As noted earlier, charges from RWSA are increasing by 2.8%. The City’s debt service costs are slightly decreasing, as there are no new bond issues for wastewater planned in FY’24. The cost increases for City operations and maintenance and utility billing includes fully funding a mid-FY’22 market adjustment for salaries and a July 1 cost-of-living-adjustment (COLA) for employee salaries and related benefits.

**Exhibit 28: Comparison of Sewer Revenue Requirements FY’23 to FY’24**

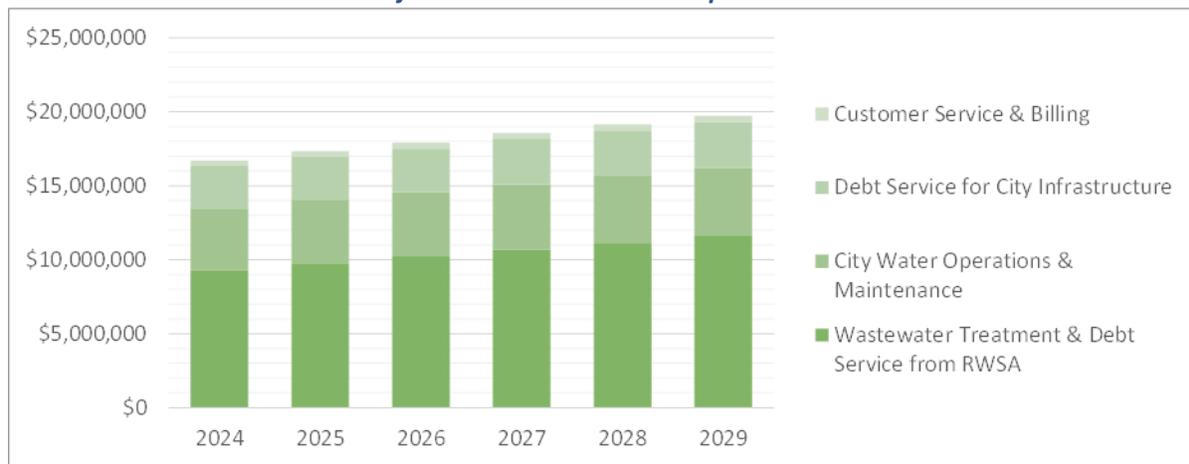
Revenue Requirements	Current	Proposed	\$ Change	% Change
Wastewater Treatment & Debt Service from RWSA	\$9,043,400	\$9,296,600	\$253,200	2.8%
City Wastewater Operations & Maintenance	\$3,720,871	\$4,165,163	\$444,292	11.9%
Debt Service for City Infrastructure	\$2,989,894	\$2,891,188	(\$98,706)	-3.3%
Customer Service & Billing	\$304,916	\$365,946	\$61,030	20.0%
<b>TOTAL</b>	<b>\$16,059,081</b>	<b>\$16,718,897</b>	<b>\$659,816</b>	<b>4.1%</b>

**3.6.2 Projected Revenue Requirements (FY’25-FY’29)**

To project operating expenses for FY’25-FY’29, the FY’24 wastewater revenue requirements are escalated using historic averages 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 wastewater 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 wastewater CIP.

The revenue requirements for FY’24 through FY’29 are shown below. The average annual increase is 3.4%.

**Exhibit 29: Projected Sewer Revenue Requirements FY’24-FY’29**



### 3.7 CUSTOMERS AND USAGE

The City currently provides sewer service to 14,410 customers. The exhibit below provides a breakdown of current sewer customers by water meter size. Residential customers (5/8 water meters) comprise most the City’s sewer customers (94.6%).

*Exhibit 30: Current Sewer Customers by Meter Size*

Water Meter Size (inches)	# of Customers	% of Customers
5/8	13,625	94.6%
1	265	1.8%
1.5	247	1.7%
2	217	1.5%
3	40	0.3%
4	14	0.1%
6	1	0.01%
14	1	0.01%
<b>TOTAL</b>	<b>14,410</b>	

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

*Exhibit 31: Projected FY'24 Sewage Production*

Usage	Cubic Feet
Projected Total	172,533,241

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.

The revenue requirements for the water utility have increased, including fixed costs and infrastructure. The Monthly Service Charges for FY'24 will increase about 18%. Most customers will see a \$1.00 increase in their Monthly Service Charge for sewer.

**Exhibit 32: Monthly Service Charge for FY'24 for Sewer**

Water Meter Size (inches)	Current	Proposed	\$ Change	% Change
5/8	\$5.50	\$6.50	\$1.00	18.18%
1	\$13.75	\$16.25	\$2.50	18.18%
1 1/2	\$27.50	\$32.50	\$5.00	18.18%
2	\$44.00	\$52.00	\$8.00	18.18%
3	\$88.00	\$104.00	\$16.00	18.18%
4	\$137.50	\$162.50	\$25.00	18.18%
6	\$275.00	\$325.00	\$50.00	18.18%
14	\$1,801.25	\$2,128.75	\$327.50	18.18%

### 3.9 SEWER FACILITY FEES

Sewer Facility Fees were developed and established for the City in 2008. Facility fees are one-time charges levied to offset existing or planned future capital costs necessary to meet the service needs of City sewer customers. These fees are assessed when new sewer service is requested where none has previously been provided, or an increase in capacity where service already exists, sewer facility fees are charged for this new increased demand for system capacity.

There are no changes to the Sewer Facility Fee for FY'24.

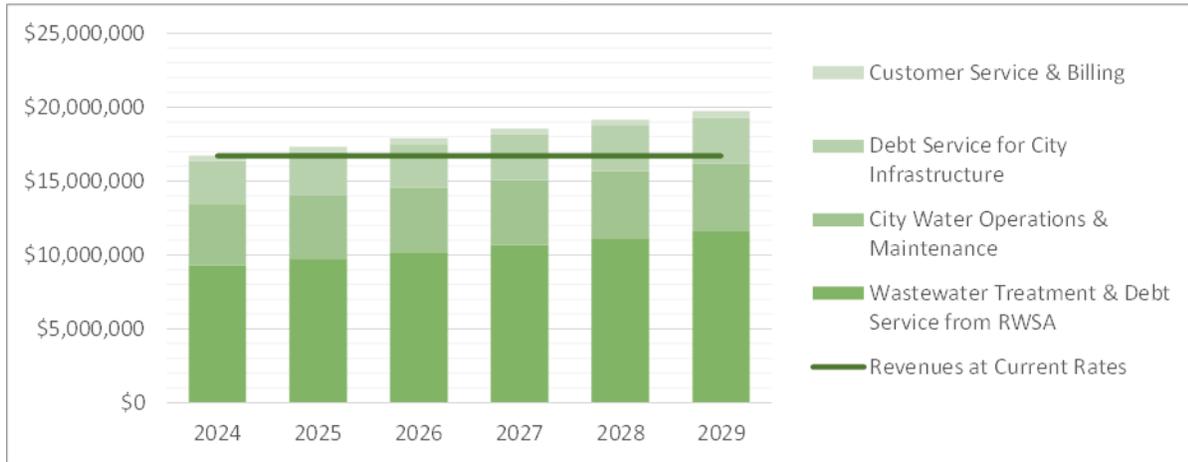
### 3.10 SEWER RATES

#### 3.10.1 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 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 33: Sewer Revenue Requirements and Revenue at Current Rates**



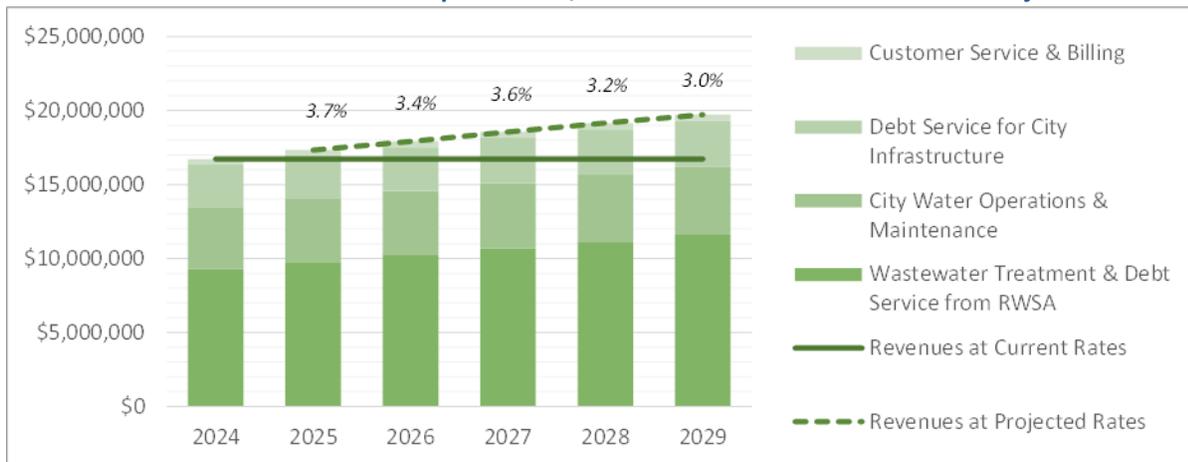
**3.10.2 Revenue Projections at Current and Projected Rates**

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 new rates for FY’24 and the years of the planning period for sewer.

**Exhibit 34: Sewer Revenue Requirements, Revenue at Current Rates and at Projected Rates**



## SEWER RATE DESIGN

### 3.10.3 Sewer Rate Design

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

### 3.10.4 Sewer Rates FY’24

Sewer rates for FY’24 will increase by 5.4%

*Exhibit 35: Sewer Rates FY’24*

Current	Proposed	\$ Change	% Change
\$83.80	\$88.34	\$4.54	5.4%

### 3.10.5 Projected Sewer Rates FY’25-FY’29

Based on the projected revenue requirements for FY’25-FY’29 and customer usage, the projected sewer rates for this planning period are shown below.

*Exhibit 36: Projected Sewer Rates FY’25 – FY’29*

Current	-----PROJECTED-----					
	2024	2025	2026	2027	2028	2029
\$83.80	\$88.34	\$91.58	\$94.65	\$98.05	\$101.21	\$104.22
\$ Change	\$4.54	\$3.24	\$3.07	\$3.40	\$3.16	\$3.01
% Change	5.4%	3.7%	3.4%	3.6%	3.2%	3.0%

## 3.11 CUSTOMER IMPACTS

The table below illustrates the average monthly sewer bill for customers based on water meter size with the FY’24 sewer rate increases and monthly service charge.

*Exhibit 37: Customer Impacts at FY’24 Sewer Rates and Charges*

Water Meter Size	Median Sewer/Month (cf)	Current Ave. Monthly Bill	Proposed Ave. Monthly Bill	\$ Increase	% Increase
5/8	400	\$39.02	\$41.83	\$2.81	7.21%
1	1,760	\$161.24	\$171.72	\$10.49	6.50%
1 1/2	3,410	\$313.26	\$333.73	\$20.47	6.53%
2	5,680	\$519.98	\$553.75	\$33.77	6.49%
3	11,750	\$1,072.65	\$1,141.96	\$69.31	6.46%
4	43,720	\$3,801.24	\$4,024.59	\$223.36	5.88%

## 4. NATURAL GAS

### 4.1 OVERVIEW

The City of Charlottesville's natural gas utility is one of three (3) municipally owned gas utilities in the Commonwealth of Virginia and has been providing service to the residents of Charlottesville and Albemarle County for over 150 years. The gas utility operates on a self-supporting basis and is not designed to generate a profit. However, due to various factors, such as winter weather and an increase in the number of customers, the utility can generate a profit or loss in any given year. Rates are set annually at a breakeven point and only cover the utility's operating budget and the costs associated with the purchase of natural gas from the City's provider. The Charlottesville gas utility currently provides service to Charlottesville, and to various portions of Albemarle County. Within the City of Charlottesville, 87.5% of the utility customers are provided natural gas service. The system consists of approximately 343 miles of main and over 303 miles of service lines. The system currently serves 21,300 customers (12,243 of which are in the City and 9,057 in Albemarle County).

#### 4.1.1 Our Customers

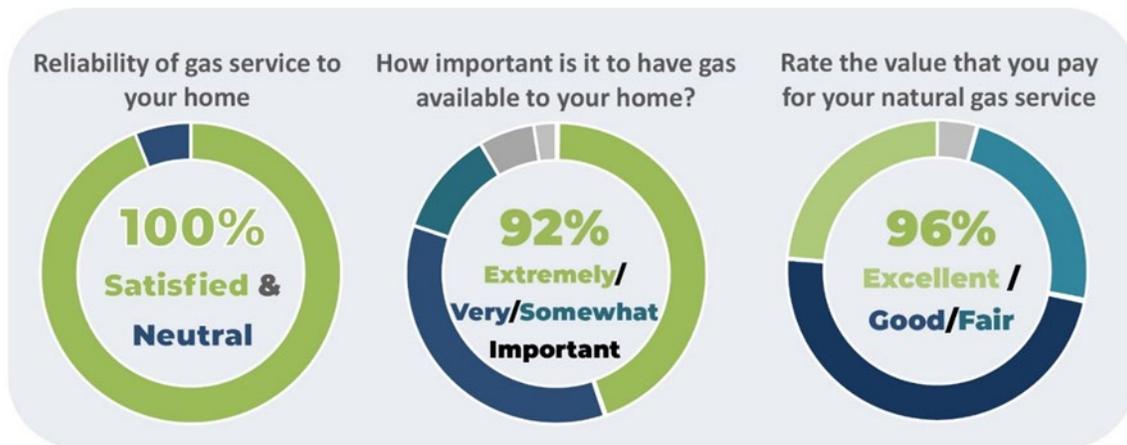


Three (3) levels of service are provided to meet the needs of various customers: Firm, Interruptible, and Small Volume Transportation. Most consumers are firm customers, with a priority for gas use at all times. Currently, there are nine (9) customers who are provided interruptible service. These customers are not assured of continuous service. They must also maintain an alternate fuel system and be prepared to switch to that alternate fuel within one hour of notification. This customer class is vital to the system because it allows the City to stay within the volume requirements set by the City's provider, and still meet the gas needs of firm customers in peak demand periods. Interruptible customers pay a lower rate 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 customers 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. The City currently has only one Small Volume Transportation customer.

**4.1.2 2023 Customer Satisfaction Survey**

Our most recent Utilities Customer Satisfaction Survey revealed 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. One hundred percent of respondents are satisfied or neutral with the reliability of gas service, and 96% of respondents rated the value of their gas service as fair, good, or excellent. Additionally, 92% of respondents stated that the availability of natural gas to their home or business is important, with a majority stating its availability is extremely important.



**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 of the American Petroleum Institute (API) Recommended Practice (RP) 1162. Since 2006, there has been a 142% increase in our customers' ability to recognize the smell of natural gas and a 58% 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 Country Radio station.
- **Outreach and Training of Professional Excavators** – These events include VA811 Day with visits to new construction sites, and excavation safety training with the State Corporation Commission (SCC). These outreach events promote and reinforce safe digging practices and are an excellent opportunity to interact directly with local excavators, contractors, plumbers, and building inspectors.
- **Outreach through Nuevas Raices** – Nuevas Raices is a Spanish language newspaper that serves Spanish speakers in Central Virginia. To help ensure our outreach efforts are as inclusive as possible, we run a monthly print advertisement in this newspaper that features the VA811 safety message in Spanish. A high percentage of construction workers in our area are Spanish speakers and communicating to them in the language they are most comfortable ensures we are effectively reaching an important target audience.

Since the "Dig with Care" program was launched, we have experienced a 44% reduction in gas line damage caused by third-party excavators (from 2.83/1000 Miss Utility tickets in 2013 to 1.59/1000 Miss Utility tickets in 2022).

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-along 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, MeTV and ABC), on the Weather and DIY channels on cable TV, and before film screenings at Stonefield Regal Movie Theater. The latest Public Awareness survey results show that respondents aged 26 or younger have a lower recall of our safety campaigns and were less likely to agree that Charlottesville Gas is adequately educating residents. In response to this result, we refreshed both the gas safety awareness and VA811 TV spots in the fall of 2021 with updated and more engaging animation.

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 have redirected some of our advertisement funds from live TV to streaming ads on Comcast digital platforms.

Community Outreach Programs – We participate in a variety of high attendance community events throughout the year. These events include a safety awareness presence at Blue Ridge Homebuilders Association functions, sponsorship of the UVA Soccer season, Charlottesville's Grand Illumination, UVA Baseball season sponsorship, Kid\*Vention, the Energy-Saving Trees Program, and Flicker @ Your Classroom and Camp programs.

Utilities Electronic Newsletter – In December of 2021, we began sending a monthly electronic newsletter using Constant Contact to Utilities customers who receive paperless billing. This newsletter provides customer-focused messages that highlight Utilities services, initiatives, updates, and program opportunities – including our annual gas safety awareness quiz, and information on safe digging practices and VA811 National Safe Digging Month.

National Safe Digging Month – This national safety campaign occurs every April and is promoted in several ways. We send 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. This information was also sent to customers who receive paperless billing via the monthly Utilities E-Newsletter, and a month-long social media campaign highlights safe digging and the 811 process.

Community Conversations on NBC29 – Utilities consistently appears on a live, in-studio, community news segment on NBC29. These segments provide an excellent opportunity to discuss details of important topics, including VA811 National Safe Digging Month, 8/11 National Safe Digging Day, and other Utilities' programs that intersect with safe digging awareness, such as the Energy-Saving Trees Program.

Cross-bore Mailing – An informational postcard on cross-bores 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 a 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 damages.

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

Local Builders Association Outreach – We continue to maintain a safety awareness presence with the Blue Ridge Home Builders Association (BRHBA). Members of this association include local and national builders and contractors and serves as an excellent opportunity to reinforce VA811 safe digging practices.

#### **4.3 REGULATORY COMPLIANCE**

Operator Qualification Program - 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 validates the City's efforts.

Distribution Integrity Management Program (DIMP) - 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 leak 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 worked 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 of 2022, 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.

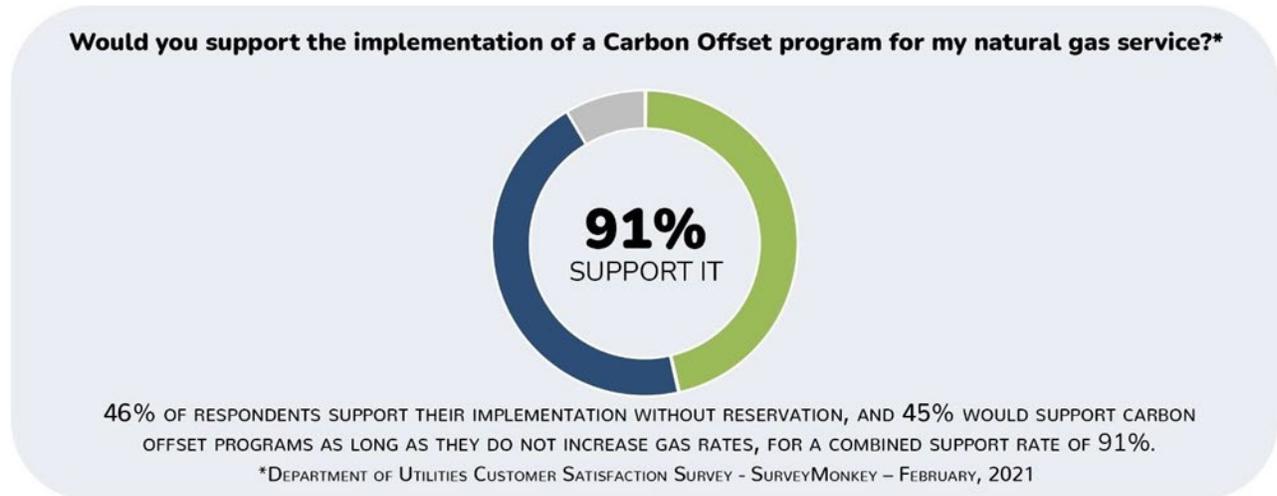
#### 4.4 GREENHOUSE GAS REDUCTION STRATEGY

In July of 2021, as a part of the City Council approved Utility Rate Report, a Carbon Offset Program was added to the Greenhouse Gas (GHG) Reduction Program. Charlottesville Gas was motivated to take advantage of this globally recognized carbon reduction pathway to further align itself with the City of Charlottesville climate action goals which include a 45% reduction in citywide greenhouse gas emissions by 2030 and carbon neutrality by 2050.

According to the 2019 City of Charlottesville GHG Inventory by Sector and Fuel Type Report (Released 2022), there has been a reduction of natural gas emissions in our community of 30% compared to the baseline emissions reported in 2011. This reduction is consistent with the City-wide GHG reduction. Most of this reduction is due to home energy efficiency improvements as well as an increase in efficiency of natural gas appliances. Charlottesville Gas' carbon footprint continues to decrease due to the 25% offset of its GHG emissions through our Carbon Offset Program which further aligns Charlottesville Gas with the citywide climate action goals of a 45% reduction by 2030. Below is more information regarding the programs Charlottesville Gas has implemented as a part of our GHG Reduction Strategy.

##### 4.4.1 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. Utilities can reduce its carbon footprint with having little to no impact on the natural gas rates.



#### 4.4.2 What are Carbon Offsets?

Whether it's the heating system in your home, the transportation you use, or even the food you eat, almost everything in your daily life contributes to the release of GHG emissions and impacts your carbon footprint. Carbon offsets help manage these emissions by funding projects that counterbalance their release with an equivalent amount of carbon dioxide (CO<sub>2</sub>) savings elsewhere. Offset projects finance activities that reduce GHGs or absorb CO<sub>2</sub>, like planting forests, implementing agricultural methane capture projects, and building biogas installations.

We shared the details of our Carbon Offset program with our community on multiple occasions:

- Bill Insert on the November's Utility Bill – Sustainability Initiatives
- December E-Newsletter that was sent to 3,600 customers – Utilities Newsletter
- Website: [www.charlottesville.gov/carbonoffsets](http://www.charlottesville.gov/carbonoffsets)

#### 4.4.3 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.

##### 4.4.4 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 \$300 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.

#### **4.4.5 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, 136 gas customers have benefited from the program. Of the total CGEEP recipients, 68% were Charlottesville homeowners, and 73% had at least one family member aged 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.

The energy-savings in these homes can vary a lot depending on the original condition of the dwelling (from 3% to 51% reduction in gas consumption). On average, we noticed a 20% reduction in gas consumption during the 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 \$182,726 in the CGEEP program.

#### **4.4.6 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.
- Utilities has partnered with the Arbor Day Foundation and their Energy-Saving Trees Program. This program gives away free trees to Charlottesville Utilities customers to strategically plant on their property, providing energy- and cost-saving benefits to their household and the broader community. Strategically planted trees provide cooling shade from the sun in warm months, and act as a barrier to cold winds during the winter months.
- We periodically promote the rebate programs and free home weatherization with CGEEP on our monthly Utilities Electronic Newsletter.
- Paid web banners and pre-roll spots were aired on NBC29 and CBS19.
- In 2021, we launched a series of TV spots that feature our energy efficiency programs. These spots can be seen on Comcast's on-demand streaming.

#### 4.5 DECARBONIZATION STUDY

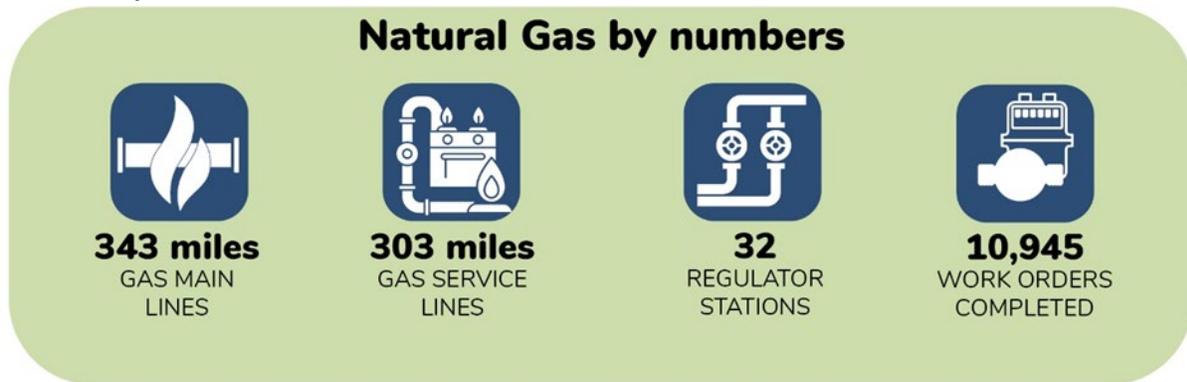
To help achieve Community Climate Goals, Utilities has solicited the expertise of the consulting firm Black & Veatch (B&V) to conduct a Decarbonization Study. B&V will help Utilities responsibly and accurately determine how the gas utility can be a part of the solution in achieving and aligning itself with the community's greenhouse gas reduction goals. The Study will include an assessment of the legality of any potential actions allowable under federal and Virginia law, including discontinuing the natural gas distribution system or discontinuing new natural gas connections, and the Study will also evaluate several pathways and their impact on emissions, reliability of service, and cost to customers. These pathways include electrification, renewable natural gas (RNG), certified natural gas, hydrogen, and carbon offsets. Additionally, the Study will include an evaluation of operations of the gas utility and Utilities' energy efficiency program and propose recommendations for near and long-term actions.

#### 4.6 GAS ASSISTANCE PROGRAM

The City's Gas Assistance Program (GAP) provides financial assistance to 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'22, the City provided 66 households with over \$18,256.69 in assistance. Contributions from area businesses and residents help to supplement the amount of money that is available for assistance. The FY'24 budget includes no new funding since there is sufficient funding (\$144,450) from prior years to fund the program in FY'24.

#### 4.7 GAS INFRASTRUCTURE ASSET MANAGEMENT

##### 4.7.1 Gas System Overview



Due to a system wide replacement of the natural gas system and the primary material being high-density polyethylene (HDPE) extruded pipe, there are very few replacement projects due to aging infrastructure. Currently, the natural gas system consists of 343 miles of gas mains and 303 miles of gas service lines.

273 miles of the gas main system are constructed of high-density polyethylene (HDPE) pipe, equating to approximately 79.6% of the entire system. Additionally, 99% of the natural gas services lines within the system are HDPE. HDPE is an extruded plastic pipe which possesses satisfactory material strength qualities and is resistant to corrosion. HDPE has become the industry standard for intermediate to low pressure natural gas distribution systems throughout the country.

69 miles of the natural gas system consist of cathodically protected coated steel pipelines, equating to approximately 20.2% of the entire system. Due to the maximum allowable operating pressure of HDPE, operators are required to utilize coated steel for their high-pressure distribution pipelines. These pipelines are induced with cathodic protection either by galvanic anode or impressed current systems. The functionality of the cathodic protection system is continuously monitored by Charlottesville Gas employees to verify that all facilities are meeting appropriate federal regulations and properly combatting below ground corrosion.

Charlottesville Gas currently operates approximately 1 mile of cast iron pipe within the entire system. Compared to other operators like the City of Danville and the City of Richmond, 1 mile of cast or ductile iron is a small amount to maintain. For example, the City of Richmond operates approximately 199 miles of cast or ductile iron main and the City of Danville operates approximately 7 miles of cast or ductile iron main. Charlottesville Gas is decades ahead of other gas distribution operators in terms of system enhancement and leak mitigation due to the tremendous effort of the utility to modernize the system with dependable and gas tight materials.

**Exhibit 38: Comparison of Miles of Pipe by Type among Public Gas Systems in Virginia**

Company	Miles of Cast Iron	Miles of Ductile Iron	Total Miles
City of Richmond	135	64	199
City of Danville	1	6	7
City of Charlottesville	1	0	1

**Table 1 - Cast & Ductile Iron Gas Mains by Company**

**4.7.2 Enhanced Leak Detection and Repair Program**

The City of Charlottesville utilizes state-of-the-art leak detection equipment to pinpoint hazardous and non-hazardous natural gas leaks throughout the system and has invested over \$500,000 dollars to provide every natural gas field crew, gas service technician, leak survey technician and first responder with Heath Consultants Detecto-Pak Infrared (DP-IR) leak detectors. The Heath Consultants DP-IR is recognized across the industry as an extremely sensitive piece of equipment capable of detecting leaks as small as 1 part per million. Another advantage of this equipment is it is only capable of detecting methane, eliminating the possibility of false alarms. For mobile leak surveying, leak survey technicians utilize a truck mounted Heath Consultants Optical Methane Detector. The Optical Methane Detector uses advanced infrared technology to pinpoint leaks in environments and terrain that are not accessible by foot.

In addition to utilizing advanced technology for leak detection, the City of Charlottesville conducts leak survey inspections more frequently than required. By the Department of Transportation (DOT) Pipeline Safety Standards, the City of Charlottesville is required to conduct a complete leak survey of the entire

distribution system once every 5 years. However, to prevent hazardous leaks and to minimize fugitive emissions to the atmosphere, the City of Charlottesville completes a system-wide leak survey once every 3 years.

The Department of Transportation also requires the City of Charlottesville to conduct leak surveys in business districts on a yearly basis. However, the City of Charlottesville has expanded its leak mitigation efforts beyond leak surveys on all cast iron infrastructure every year, to include annual leak surveys on high-pressure mains (> 400psig) as well.

The City of Charlottesville takes voluntary and involuntary releases of natural gas to the atmosphere very seriously and has put policies and procedures in place to mitigate the release of methane to the atmosphere. The table below illustrates the result of the City of Charlottesville’s leak mitigation program and the impact the program has had on annual leak trends. As the table shows, the City of Charlottesville has experienced a significant reduction in leaks per mile. The City of Charlottesville is well below the national average and attribute this to the more stringent internal policies and the excellent men and women who implement these procedures daily.

**Exhibit 39: Comparison of Number of Leaks Per Mile in Charlottesville vs. National Average**

Leaks Per Mile			
Year	2019	2020	2021
City of Charlottesville (w/Excavation Damages)	0.217	0.203	0.153
City of Charlottesville (w/o Excavation Damages)	0.169	0.159	0.095
National Average	0.295	0.281	0.282

**Table 2 - Annual Leak Data by Year**

**4.7.3 Natural Gas Capital Improvement Projects**

Due to a system wide replacement of the natural gas system, there is not a need for an ongoing replacement program. However, the Department is preparing for two (2) large projects with the current capital budget. The first is a gas meter and regulator abnormal operating conditions (AOC) contract.

Abnormal operating conditions (AOC) are conditions identified by Charlottesville Gas that may indicate a malfunction of a component or deviation from normal operations. The conditions primarily consist of corroded above ground gas meter piping or gas meters and regulators not having the required separation from building openings or sources of ignition. 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 previous annual contract, the Department saw an average cost of \$675,000 per year. The contract was bid using quantities equaling over 3,000 AOCs being corrected in the contract period. AOCs are being corrected by in-house personnel, but to eliminate the back log, an outside contractor must assist, and a contract will be bid in FY’24.

In April 2023, Charlottesville Utilities was awarded \$7.1 million grant from the Pipeline and Hazardous Materials Safety Administration’s Natural Gas Distribution Infrastructure Safety and Modernization

(NGDISM) grant program. The NGDISM program is part of the broader Bipartisan Infrastructure Law, which will provide nearly \$1 billion in federal funding over the next five years to support public gas systems' efforts to repair, rehabilitate, and replace aging pipes and reduce methane emissions. This grant facilitates the completion of Utilities' system-wide upgrade project by expediting the replacement of the last remaining section of legacy pipes. The last mile of 10" cast iron main line will be replaced with 4" high-density polyethylene (HDPE) plastic pipe, first generation polyethylene and other legacy pipe will be replaced with 2" HDPE, and 20 gas meters will be removed from the interior of several buildings. The project will help to eliminate all components in Charlottesville's natural gas system that have a higher probability of leaks.

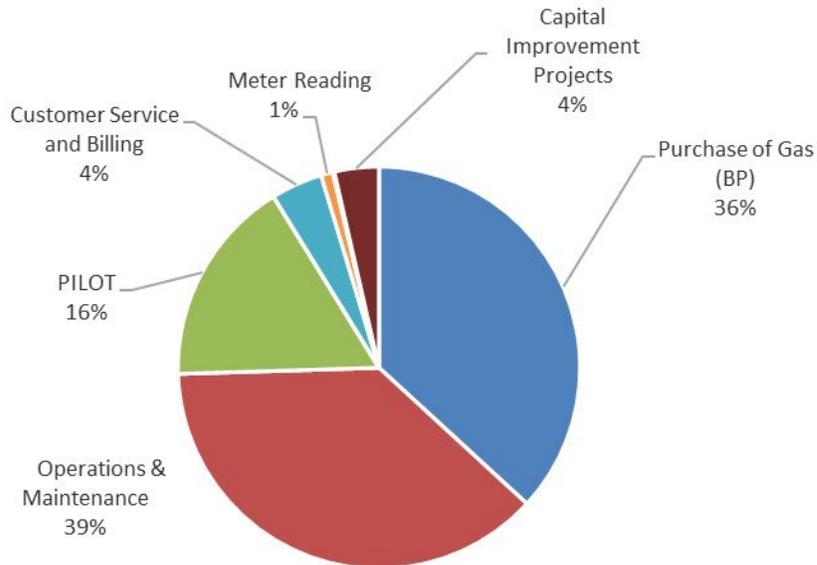
**4.8 FY'24 REVENUE REQUIREMENTS**

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

**4.8.1 Current Revenue Requirements (FY'24)**

The FY'24 revenue requirements for the gas utility totals \$28,419,687, the largest components being the operations and maintenance cost (39% of the total) and the purchase of gas from BP (36% of the total).

*Exhibit 40: Gas Utility FY'24 Revenue Requirements*



**Exhibit 41: Comparison of Gas Revenue Requirements FY'23 to FY'24**

<b>Revenue Requirements</b>	<b>FY'23</b>	<b>FY'24</b>	<b>\$ Change</b>	<b>% Change</b>
Purchase of Gas (BP)	\$14,200,000	\$10,306,728	(\$3,893,272)	-27.4%
City Operations and Maintenance	\$10,251,186	\$10,977,741	\$726,555	7.1%
Payment in Lieu of Taxes	\$4,216,875	\$4,673,902	\$457,027	10.8%
Capital Improvement Projects	\$1,200,000	\$1,000,000	(\$200,000)	-16.7%
Customer Service & Billing	\$1,539,473	\$1,461,316	(\$78,157)	-5.1%
<b>TOTAL</b>	<b>\$31,407,534</b>	<b>\$28,419,687</b>	<b>(\$2,987,847)</b>	<b>-9.5%</b>

The cost of gas has decreased over the last year. A large part of the decrease in the total revenue requirement is the Purchase of Gas from BP.

When setting the base rate each July 1st, the City uses data from the most recent month 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 the 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 \$726,555 due primarily to a cost-of-living-adjustment (COLA) in salaries and benefits costs. Contractual services are also increasing.

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.

**4.9 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 to the \$10.00 Monthly Service Charge.

**4.10 GAS RATES**

The City is projecting to collect a total of \$26,986,187 to operate the gas utility in FY'24. \$26,635,687 is projected to be collected from gas rates. Miscellaneous revenues total approximately \$350,500.

\$1,433,500 of fund balance will be used to cash fund capital improvement projects and other utility billing expenses.

*Exhibit 42: Gas Rate Calculation FY'24*

<b>Revenue Requirements</b>	<b>FY'24</b>
Purchase of Gas (BP)	\$10,306,728
City Operations and Maintenance	\$10,977,741
Payment in Lieu of Taxes	\$4,673,902
Capital Improvement Projects	\$1,000,000
Customer Service & Billing	\$1,461,316
<b>TOTAL</b>	<b>\$28,419,687</b>
<b>Revenue to be Collected</b>	<b>FY'24</b>
Other Funding Sources	
Fund Balance	\$1,433,500
Miscellaneous Revenues	\$350,500
<i>Subtotal</i>	<i>\$1,784,000</i>
Revenue to Be Collected Through Rates	
Transportation Fees	\$64,549
Firm Sales	\$19,720,708
Interruptible Sales	\$6,850,430
<i>Subtotal</i>	<i>\$26,635,687</i>
<b>TOTAL REVENUE TO BE COLLECTED</b>	<b>\$28,419,687</b>

The next table compares the gas rates for FY '24 to the current gas rates.

**Exhibit 43: Current Gas Rates Compared to FY'24 Gas Rates**

Rate (per 1,000 cf)	Current Rates FY23' Rates	Proposed FY24' Rates	\$ Change	% Change
<b>Firm Service</b> (1st to 3,000 cf)	\$8.8087	\$9.2491	\$0.44	5.00%
<b>Firm Service</b> (next 3,000 cf)	\$8.3559	\$8.7216	\$0.37	4.38%
<b>Firm Service</b> (next 144,000 cf)	\$7.9031	\$8.1941	\$0.29	3.68%
<b>Firm Service</b> (over 150,000 cf)	\$7.4504	\$7.6666	\$0.22	2.90%
<b>Air Conditioning</b>	\$7.3471	\$7.3471	-	0.00%
<b>Interruptible Service</b> (up to 600,000 cf)	\$7.0120	\$7.2264	\$0.21	3.06%
<b>Interruptible Service</b> (over 600,000 cf)	\$6.5125	\$6.6275	\$0.11	1.77%
<b>Gas Light</b> (charge per month)	\$17.5100	\$17.5100	-	0.00%
<b>Small Volume Transportation Customer</b>	\$2.6287	\$3.0147	\$0.39	14.68%
<b>Large Volume Transportation Customer</b>	\$1.5772	\$1.8088	\$0.23	14.68%
<b>Base Unit Cost (Firm Service)</b>	\$5.1715	\$3.9740	(\$1.20)	-23.16%
<b>Base Unit Cost (Interruptible Service)</b>	\$3.4986	\$2.2350	(\$1.26)	-36.12%

#### 4.11 IMPACTS ON CUSTOMERS

The table below illustrates the impacts of the FY'24 rates on customer's bills at various usage rates.

Note: the applicable Monthly Service Charges are included in the calculations.

**Exhibit 44: Customer Impacts at FY'24 Gas Rates and Charges**

Firm Customers Usage Per CF	FY23' Monthly Gas Bill with most recent PGA	FY24' Monthly Gas Bill with most recent PGA	\$ Change	% Change
4,000	\$43.45	\$46.47	3.01	6.95%
4,600	\$48.27	\$51.70	3.43	7.11%
20,000	\$165.50	\$178.63	13.13	7.93%
60,000	\$468.35	\$506.39	38.04	8.12%
Interruptible Customers Usage Per CF	FY23' Monthly Gas Bill with most recent PGA	FY24' Monthly Gas Bill with most recent PGA	\$ Change	% Change
100,000	\$698.85	\$782.64	\$83.79	12.0%
400,000	\$2,615.40	\$2,950.56	\$335.16	12.8%
1,000,000	\$6,248.70	\$7,046.84	\$798.14	12.8%
2,000,000	\$12,137.70	\$13,674.34	\$1536.64	12.6%

## 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 the Virginia DEQ-issued General Permit (VAR040051). Through annual reporting, 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 stormwater management requirements relating to land disturbing activities, inspection and maintenance of stormwater control facilities, and conveyance infrastructure 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 annual budget for the Credit Program is \$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 annual budget for the CCAP is \$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 has an annual budget of \$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 MANAGEMENT FACILITIES**

The City of Charlottesville has public ownership responsibility for over 66 public best management practices (BMPs) in 32 separate locations and compliance oversight for over 242 private BMPs at 172 separate addresses. 89 of these BMPs (both public and private) are included in the City's Total Maximum Daily Load (TMDL) Action Plan, a requirement of the Municipal Separate Storm Sewer System (MS4) discharge permit issued by the Virginia Department of Environmental Quality (VDEQ). VDEQ 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 used to manage the inspection of BMPs, maintenance of public BMPs, and enforcement of stormwater management plans for private BMPs.

## **5.6 STORMWATER INFRASTRUCTURE ASSET MANAGEMENT**

### **5.6.1 Stormwater Infrastructure Systems**

Charlottesville's stormwater conveyance system is integrated throughout the City's municipal boundary and consists of approximately 130 miles of pipe and 8,340 structures including 460 outfalls. 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 ranges 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 infrastructure 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 significant 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 14.7 miles of pipe have been rehabilitated (90% were VC and CMP), and 454 structures have been installed, rehabilitated, or replaced at a cost of \$11,844,568.

#### **5.6.2 Water Resources Master Plan**

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. Currently, the City is coordinating the Schenk's Branch Stream Restoration Project which has received Stormwater Local Assistance Fund (SLAF) grant funds from Virginia Department of Environmental Quality (DEQ). 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.

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 continues through FY'24. The Stormwater Utility Capital Plan is evaluated on a yearly basis and occurs in conjunction with the utility rate development process.

**Exhibit 45: Five-Year Capital Improvement Plan for Stormwater**

Project	
Design/Permitting for Drainage/ Stormwater Improvement Projects	\$1,000,000
Water Resources Master Plan Projects	\$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>

### 5.7 REVENUE REQUIREMENTS

The total Stormwater Utility expenditures of approximately \$3.5 million is projected to remain the same from FY'23 to FY'24.

**Exhibit 46: Comparison of Stormwater Revenue Requirements FY'23 to FY'24**

Revenue Requirements	FY'23 Budget	FY'24 Budget	\$ Change	% Change
Salaries & Benefits	\$903,887	\$943,010	\$39,123	4.33%
Operating Expenditures	\$911,002	\$871,879	-\$39,123	-4.29%
Capital Projects	\$1,500,000	\$1,500,000	\$0	0.00%
Debt Service	\$129,683	\$129,683	\$0	0.00%
<b>TOTAL</b>	<b>\$3,444,572</b>	<b>\$3,44,572</b>	<b>\$0</b>	<b>0.00%</b>

### 5.8 STORMWATER UTILITY FEE FOR FY'24

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 47: Stormwater Utility Fee Rate FY'24**

Current	Proposed	\$ Change	% Change
STORMWATER (per 500 sq. ft. impervious area)			
\$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.