

Utilities Operations Overview



The Charlottesville Department of Utilities provides the Charlottesville community with safe and reliable natural gas, drinking water, wastewater and stormwater services at a reasonable cost in an environmentally responsible manner.

Water Distribution System



The City's water distribution system contains over 1,100 fire hydrants, 3,400 water valves and 183 miles of water main line ranging in size from 2 inch to 18 inch in diameter.

Water Distribution System Improvements

A Water Prioritization Study was completed in 2009, which identified 48 projects totaling \$7 million to be completed. Since 2009, additional projects were identified and added to the list and work has been completed on 65 water projects.

These projects aim to improve fire protection, reduce main breaks, improve overall water quality and address the undersized lines. Total length of pipe replaced to date for water projects is approximately 12.6 miles (66,632 linear feet) averaging about two miles (10,000 linear feet) per year. This work is continuing in FY2019.

Additional projects include the following:

1. Rugby Road Water Meter Replacements/ Gentry Lane Water Main Installation
2. Emmet Street/ Ivy Road Water Main Replacement
3. High Street Water Main Replacement
4. West Main Street Water Main Replacement

Most of the City's service lines (the lines from the mains to the water meters) are galvanized steel and were installed during residential construction. The City is continuing its service line replacement program as part of the upgrading and replacement of water mains.

To date, over six miles (32,000 linear feet) of water service lines have been replaced.

System Improvements to Prevent Water Loss

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. The City has also performed annual system wide leak detection surveys. With over 180 miles of water lines, 124 leaks were found during the



FY2017 through various methods, and 17 of those water leaks were found and fixed during the annual leak audit in FY2017 (Fall 2016). Leak audit surveys were completed in 13 of the past 15 years and will continue annually.

The American Water Works Association (AWWA) recommends that all water utility owners 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. In FY2014 - FY2017, water loss was quantified by more accurate calculations of loss from water leaks, unmetered/unbilled water usage, and water meter error.



Based on the water audit recommendations, a water meter calibration and replacement project was implemented starting in FY2014. In 2018, the meter replacement program expanded to include all meters 1.5-inch and above. The meter replacement project replaced 59 large water meters in 2017 and over 150 since the project's inception. The success of the program has led to increased momentum into FY2019 with approximately 80 meters projected to be replaced in FY2019. 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.

Wastewater



Charlottesville's sanitary sewer system extends to most areas of the City and consists of about 171 miles of pipe and 5,700 manholes.

In 2009, Utilities awarded a multi-year, multi-million dollar contract utilizing a "find-and-fix" approach for sewer repair and rehabilitation. The work encompasses the rehabilitation of sewer manholes and sewer lines. 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 construction projects. The exact work is not known at the time of bidding, so all potential work items must be included in the bid form (bid form includes over 200 bid items). The Contractor performs the evaluation work during construction (primarily TV inspections), submits the evaluation to the Engineer for



review, and the Engineer then decides on the final rehab work within seven days. The work is fast-paced and allows for emergency situations to be addressed within 48 hours. The City estimates savings of over \$2 million following this find-and-fix approach. A paper highlighting the City's effort was presented by City staff at the 2018 WEF Collections System Conference.

To date, 41.2 miles or 217,302 linear feet of sewer lines have been replaced or rehabilitated.

Stormwater

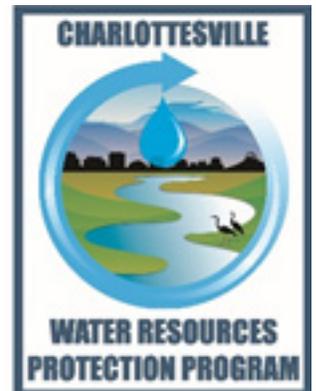


Charlottesville's stormwater conveyance system is integrated throughout the City's municipal boundary and consists of approximately 130 miles of pipe and approximately 8,250 structures.

Approximately 33% of the stormwater pipes and 28% of the stormwater structures located within the municipal boundary are City owned. Approximately 13 miles of the stormwater conveyance system carry streams that have been piped.

The Stormwater Utility is the dedicated funding source for the City's Water Resources Protection Program (WRPP). The WRPP is designed to rehabilitate the City's aging stormwater conveyance system, comply with federal and state stormwater regulations, address drainage problems, and pursue environmental stewardship.

The proposed stormwater utility rate for FY2019 remains unchanged at \$1.20/month per billing unit. Each billing unit represents 500 square feet of impervious area or fraction thereof on a property. Stormwater utility fees are billed twice a year to property owners and are received concurrently with real estate tax bills.



Utilities have had an active Stormwater Conveyance System Rehabilitation Program since 2010. The City has integrated the sanitary and storm sewer rehab into a single "find-and-fix" construction project with the same contractor completing the work. The work encompasses the rehabilitation, replacement, and repair of pipes and associated structures. In addition, non-routine repairs are completed in a timely manner as they arise, often in response to subsidence in City streets and sidewalks.

To date, approximately 10 miles of pipe and 250 structures have been rehabilitated.

The City-wide Water Resources Master Plan, completed in 2017, is a drainage improvement and a water quality capital improvement plan (CIP) that ranks and prioritizes projects in reference to available funding. Projects included in the drainage CIP address a combination of historic and recent drainage issues. Projects in the water quality CIP focus on stormwater management retrofits. Work has been initiated on four of the highest ranking water quality improvement projects and seven of the highest ranking drainage improvement projects.



Gas System



Charlottesville Gas has provided residents of Charlottesville and urban areas of Albemarle County with safe, efficient, reliable, and economical service for over 150 years. Charlottesville Gas has approximately 21,000 customers and maintains 330 miles of gas lines and 270 miles of gas service lines.

Charlottesville Gas employees are required by federal safety regulations to satisfactorily pass tests in order to document that employees are trained and qualified to complete a task on a gas facility to protect life and property. A typical Gas employee has to pass over 40 tests. Charlottesville Gas is the only municipality in Virginia participating in the State Corporation Commission (SCC) Enhanced Operator Qualification program with the other investor owned gas utilities. The SCC Enhanced Operator Qualification program provides a more rigorous process for testing Gas employees throughout the state. So far, nine tests have been completed by Gas employees with a 100% pass rate.

Utilities have been working with IT to develop different applications to track new gas installations and remediate gas system Abnormal Operating Conditions (AOC's). Using the Utility Viewer and tablets, Gas staff is able to track and document the location, materials and procedures of any gas installation. It also allows the Leak Survey Technicians and Service Crews to recognize AOC's in the field and immediately update the Viewer via a tablet. The AOC's are flagged in the Utility Viewer and repaired in order of importance.

In March of 2018, the State Corporation Commission (SCC) performed a meticulous and thorough audit on our Public Awareness Program in accordance with federal regulations. The SCC inspectors did not note any findings which is uncommon in Virginia. The Deputy Director of SCC was so impressed with our program that he invited the City of Charlottesville to headline the presentation "A Path to a Successful Public Awareness Program" at the 2018 SCC Damage Prevention Conference.

Charlottesville Gas received first place in the 3CMA 2017 Savvy Awards Category - Special Events-One Time Event for Flicker the Flame's 10th Birthday Party. Charlottesville Gas also received a 2nd place Savvy Award in the Marketing and Tools Category - Best Use of a Promotional Item for the Flicker the Flame Plush Toy.



There has been a 36% reduction in gas line damage caused by third party excavators in the last three years. This is due to the implementation of the outreach program "Dig with Care" and outsourcing the gas line location operation. The program includes a series of "Marty's Minute" radio spots, annual VA811 Day celebrations, excavation safety training workshops, distributing VA811 kits to local contractors, and outsourcing the utility location process to improve its accuracy. Charlottesville Gas' mascot, Flicker the Flame, also contributed to spreading awareness about safe digging and calling VA811.

