

AMHERST COUNTY SERVICE AUTHORITY

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April 29, 2021

To: Amherst County Service Authority (ACSA) Board

Subject: 2021 Benchmarking Water and Wastewater Rates for Future ACSA Adjustments

Dear Board Members:

This letter describes the results of ACSA's 2021 utility rate benchmarking study. Benchmarking utility rates consists of comparing ACSA water and sewer rates and fees to those of similar-size and similar-type Virginia county utilities and service authorities, which can be a highly useful management and governance tool. All utilities strive to keep their rates as low as possible and still fulfill their mission of public service. Yet, the primary driving force affecting rates and fees is the ever-changing environment of public health and environmental regulations. Since all utilities must meet these regulations within the same time frame, comparing the rates of similar-size and -type utilities can help ACSA's governing body and management understand what rates are, or are not, reasonable to cover the cost of regulatory compliance.

We are all aware of the competition between utilities to promote local development, as well as the need to provide water and sewer services within the financial capacities of residents of a more rural community. It is always a challenge for any water/wastewater utility to strike the delicate balance between remaining "business friendly" and continuing to fulfill its mission of providing for the public health and high quality of life of County residents. For these reasons, this report also compares ACSA rates and fees to those of the two neighboring Lynchburg Municipal Service Area (MSA) water and sewer authorities (Campbell County Utilities and Service Authority and the county portion of Bedford Regional Water Authority), as well as our neighbor to the north, the Wintergreen (county) portion of Nelson County Service Authority.

Pages 2, 3, 4, and 5 tabulate and describe the 2020 water and sewer rates for ACSA, the 3 neighboring authorities mentioned above, 13 other Virginia county water systems of similar-size (2,500 – 12,500 connections) and -type to ACSA, and 15 similar-size Virginia county or service authority wastewater systems (700 – 2,500 connections). This data was gleaned from "The 32nd Annual Virginia Water and Wastewater Rate Report 2020" by Draper Aden Associates (DAA). These data points are now six months to a year old. As of the completion of this report, approximately half of the other utilities did or will increase rates and/or fees in 2021 (the others did not respond), and where possible, those utilities are identified herein, but the study is the most recent comprehensive tabulation of rates and fees of Commonwealth utilities.

Pages 7 through 15 of the DAA study are included as Attachment No. 3; the utilities used in this benchmarking study are high-lighted for easy reference. Five other water utilities of similar size to ACSA are also high-lighted; they were not used in this study because they are not the same type (surface water source) as ACSA; they all use a groundwater source, which is an inequitable and uninformative comparison with ACSA. Water utilities utilizing a combination of surface water sources with groundwater sources and/or water purchasing were benchmarked.

It should be noted that this study did not compare ACSA rates and fees with those of towns and cities, including the City of Lynchburg. The typically larger utility systems and customer bases, and being departments in municipal governments, provide much more in the way of financial resources than are available to ACSA, so comparisons would not be equitable or informative.

Water Rates and Connection/Availability Fees:

Column A of the table on Page 3 compares a normal ACSA residential “water bill” with similar “bills” of the two MSA authorities and the other 13 water utilities benchmarked. Each “bill” includes the variable water usage (commodity) charge, based on 5,000 gallons of water, and the non-variable base service charge. ACSA’s “bill” is higher than one of the MSA utilities, lower than the other, and slightly (5.7%) higher than their average, but both MSAs are expected to raise their rates in 2021, so this percentage should decrease. ACSA’s “bill” is lower than 7 of the 13 non-MSA utilities (including Nelson County Service Authority). It almost matches (0.2% lower) the average of the 13, but at least 3 of the 13 did or will raise their rates in 2021 (half of those contacted did not reply); the average shown is low and the percentage should improve.

All this demonstrates that ACSA’s “bill”, and rates from which it is calculated, are exactly where a business should want them: right in the middle; not overcharging, creating a burden for low- and fixed-income households, yet not “leaving money on the table.” This warrants a rate increase for 2022; staff recommendation is that the 5.56% increase proposed for 2022 in the 2020 ProForma Cash Flow Update by financial consultant Davenport & Co. be adopted, unless otherwise advised by Davenport. It should be noted that a new recommendation may be forthcoming from Davenport, given the increase in inflation (see page 6) and the late 2020 reduction in anticipated cost of the Graham Creek Reservoir dam improvements project; these may tend to offset each other, or a slight change to the rate adjustment may be merited. ACSA’s monthly base service charge is \$12.00, exceeding CCUSA (\$8.00), but much lower than BRWA (\$23.00); a \$1.00 increase is recommended.

Columns B, C, and D compare ACSA’s connection and availability (tap) fees with those of the 15 utilities benchmarked. ACSA raised its tap fees in 2020; our connection fee matches both MSA utilities; our availability fee is higher than CCUSA and lower than BRWA; our combined fees are higher than CCUSA, lower than BRWA, and 6.25% lower than their average, and both MSAs expect to raise fees in 2021. The two MSAs are the entities with which ACSA competes for economic growth and development; having our fees in the middle and approximately matching their average is where ACSA should want to be; not higher than both, stifling Amherst County growth, or lower than both, which would result in available revenue is not being realized.

Comparing ACSA’s tap fees with the 13 non-MSA utilities does not result in usable conclusions. The connection fee reported by 1 of the 13 is not set, but calculated on a per-case basis. The connection fees for 7 of the 13 are higher than ACSA’s and 2 others match ours; only 3 are lower. And at least 3 of the 13 expect to raise fees in 2021. 8 of the 13 utilities reported not assessing availability fees. Of the 5 others, 3 have availability fees lower than ACSA, 1 matches ACSA, and 1 has a fee more than three times ACSA’s. The average combined tap fees for the 13 other utilities is lower than ACSA, but it is impossible to equitably compare ACSA’s connection or availability fees or combined fees with the non-MSA utilities. However, ACSA does not compete with those utilities for economic growth, so a comparison is not worthwhile, and since ACSA raised tap fees in 2020, there would be no recommendation for a 2022 increase, anyway.

2020 Water Rates & Fees Benchmarking

For Comparably Sized (2,500 - 12,500 Total Connections) Service Authorities and Counties

and Lynchburg Municipal Service Area Authorities (Bedford RWA and Campbell CUSA)

Source: Draper-Aden Associates "32nd Annual Virginia Water and Wastewater Rate Report 2020"

System	Column A 5 KG/Mo. Bill	Column B Conn./Mtr. Fee	Column C Facility Fee	Column D B & C
Amherst County Service Authority	\$47.74	\$1,500	\$3,000	\$4,500
Bedford Regional Water Authority ¹	\$51.00	\$1,500	\$4,000	\$5,500
Campbell County Utilities and Service Auth. ¹	\$39.34	\$1,500	\$2,600 ²	\$4,100
Alleghany County	\$46.00	\$1,000	N/A	\$1,000
Bristol Virginia Utilities Authority	\$47.12	\$1,485	N/A	\$1,485
Carroll County Public Service Authority	\$56.70	\$2,500	\$500	\$3,000
Dinwiddie County Water Authority ¹	\$24.32	\$1,618	N/A	\$1,618
Gloucester County	\$50.18	\$3,500	\$500	\$4,000
Halifax County Service Authority	\$48.00	N/A	\$1,250	\$1,250
Henry County Public Service Authority ¹	\$34.70	\$1,750	N/A	\$1,750
Isle of Wight County	\$72.57	\$4,000	N/A	\$4,000
Nelson County Service Auth. (Wintergreen)	\$56.50	\$4,000	N/A	\$4,000
Rapidan Service Authority	\$33.85	? ³	\$10,000	\$10,000 ³
Scott County Public Service Authority	\$59.54	\$1,500	N/A	\$1,500
Western Virginia Water Authority - Franklin	\$30.00	\$2,000	\$3,000	\$5,000
Wythe County ¹	\$62.39	\$1,000	N/A	\$1,000
Average for 13 similar size/type utilities:	\$47.84	\$1,873 ⁴	\$1,173	\$3,046 ⁴

¹ Rates and/or fees did or will increase in 2021 (there may be others; not all utilities contacted replied).

² Includes a \$1,900 Capital Recovery Charge and \$700 "System Development Fee".

³ Connection fees based on actual costs, which vary by location, so there is no set fee amount.

⁴ Average is low and not comparable to ACSA figure (see Notes 1 and 3).

ACSA's 2020 rates were higher than one of the other two Lynchburg MSA authorities, lower than the other.

Average of the other two MSAs' rates was $(\$51.00 + 39.34) / 2 = \45.17

ACSA's 2020 rates were $\$47.74 / \$45.17 = 5.7\%$ higher than the average of the other two MSAs, but both MSAs expect to raise rates in 2021, so that percentage will decrease.

ACSA's 2020 rates were lower than those of 7 of the 13 similar size and type utilities across Virginia.

ACSA's 2020 rates were $\$47.74 / \$47.84 = 0.2\%$ lower than the average of similar-sized Virginia utilities.

ACSA did not hear from all of the other utilities, but at least 3 of the 13 did, or expect to, raise rates in 2021, so that percentage should improve.

ACSA's 2020 new service tap fees were higher than one of the other Lynchburg MSAs, lower than the other.

Average of the other two MSAs' fees for a new water service was $(\$4,100 + \$5,500) / 2 = \$4,800$

ACSA's 2020 fees were $\$4,800 / \$4,500 = 6.3\%$ lower than the average of the other MSA authorities.

ACSA's 2020 new service tap fees were higher than all but two of the other benchmarked utilities, but this is mitigated by three factors:

- * See Notes 3 and 4 above;
- * At least several of them did, or expect to, raise fees in 2021 (see Note 1);
- * ACSA does not compete with them for economic growth.

Wastewater Rates and Connection/Availability Fees:

Column A of the table on Page 5 provides a comparison of a normal ACSA “sewer bill” with similar “bills” of the two MSA authorities and 15 other wastewater utilities benchmarked. Each “bill” includes the variable water discharge (commodity) charge, based on 5,000 gallons of water discharged, and the non-variable base service charge. ACSA’s “bill” is higher than one of the MSAs and lower than the other, again putting ACSA in the advantageous “middle” position, even if ACSA’s “bill” is 11.6% higher than the MSAs’ average, especially with the expectation that both MSAs did or will increase rates in 2021. ACSA’s “bill” is also lower than Nelson County Service Authority and lower than 7 of the other 14 non-MSA utilities. It is 2.9% lower than the average of the 15 non-MSA entities, again putting ACSA in the advantageous middle position, and at least 7 of the 15 did or will raise their rates in 2021 (several of those contacted did not reply), so it can be reliably expected that that percentage will increase.

This warrants a rate increase and staff recommendation is that the 6.56% increase proposed for CY2022 in the 2020 ProForma Cash Flow Update by Davenport & Co. be adopted, if recommended again in 2021, to ensure sufficient rate increases for the major capital improvements that will be undertaken in the coming years. It should be noted again that a new recommendation may be forthcoming from Davenport, given the increase in inflation (see page 6) and the late 2020 reduction in anticipated cost of the Graham Creek Reservoir dam improvements project; these may tend to offset each other, or a slight change to the rate adjustment may be merited. ACSA’s monthly base service charge is \$6.00, matching CCUSA and much lower than BRWA (\$23.00); ACSA should continue its annual \$1.00 increase, raising it to \$7.00 in CY2022, and annually until ACSA’s approximates that of the average of the two MSA authorities; this is the ACSA staff recommendation.

Columns B, C, and D compare ACSA’s connection and availability (tap) fees with those of the 17 utilities benchmarked. ACSA raised its availability and connection fees in 2020; our connection fee matches BRWA and is lower than CCUSA, our availability fee is lower than both MSAs, and our combined fees are lower than both MSAs and 8.1% lower than their average. The two MSAs are the entities with which ACSA competes for economic growth and development; having our fees lower than one, higher than the other, and lower than their average is where ACSA should want to be, but ACSA’s current position of being slightly lower than both MSAs and their average is warranted, given that ACSA fees were increased in 2020.

A comparison of ACSA’s fees with the 15 non-MSA utilities benchmarked does not result in any usable conclusions. Connection fees reported by 4 of the 15 are not set fees, but minimums, increasing with higher service installation costs; even with that, the average connection fee for the 15 is much higher than ACSA’s. 7 of the 15 did not report availability fees, and Nelson County Service Authority does not assess a set fee, but applies a \$5.00/month availability charge to all bills. Approximately half of the 15 did or will raise their fees in 2021, and several of the contacted utilities did not reply. So it is impossible to equitably compare ACSA’s connection or availability fees, or a combination of these fees, with the average of the 15 non-MSA utilities, or derive any real useful information from such a comparison. But ACSA does not compete with those utilities for economic growth, so the comparison is not worthwhile, and since ACSA raised its fees in 2020, there would, in any case, be no recommendation for an increase in 2022.

2020 Wastewater Commodity Rates & Connection/Availability Fees Benchmarking for:

* Lynchburg Municipal Service Area Authorities

* Comparable Type and Size (700 - 2,500 Total Connections) Service Authorities and Counties

System	Column A 5 KG/Mo.	Column B Connection Fee	Column C Availability Fee	Column E B & C
Amherst County Serv. Auth.	\$55.54	\$1,500	\$4,500	\$6,000
Bedford Regional Water Authority ¹	\$60.50	\$1,500	\$5,000	\$6,500
Campbell Co. Utilities & Serv. Auth. ¹	\$39.03	\$1,900	\$4,650 ²	\$6,550
Alleghany County	\$45.00	\$1,000	N/A	\$1,000
Caroline County ¹	\$71.52	\$1,000 ³	\$6,000	\$7,000 ³
Carroll County Public Service Auth.	\$62.00	\$2,500	\$500	\$3,000
Dinwiddie County Water Authority ¹	\$32.82	\$3,910	N/A	\$3,910
Gloucester County	\$64.95	\$5,205	\$1,200	\$6,405
Goochland County ¹	\$54.54	\$6,300	N/A	\$6,300
Greensville County	\$43.46	\$1,320 ³	\$835	\$2,155 ³
King George County Service Auth. ¹	\$92.14	\$11,183	N/A	\$11,183
Nelson County Service Authority ¹	\$64.00	\$4,000	? ⁴	\$4,000 ⁴
New Kent County	\$53.43	\$9,275	\$2,500	\$11,775
Pulaski County Sewerage Authority ¹	\$30.25	\$500 ³	N/A	\$500 ³
Rockbridge County Serv. Authority ¹	\$68.44	\$850	\$4,500	\$5,350
Scott County Public Service Auth.	\$70.66	\$2,000 ³	N/A	\$2,000 ³
Southampton County	\$44.00	\$1,800	\$6,000	\$7,800
Stoney Creek Sanitary District	\$61.00	\$6,000	N/A	\$6,000
Average for 19 similar-sized utilities:	\$57.21	\$3,790⁵	\$1,435⁵	\$5,225⁵

¹ Rates and/or fees did or will increase in 2021 (there may be others; not all utilities contacted replied).

² Includes a \$2,200 Capital Recovery Fee, a \$1,750 Sewer Capacity Charge, and a \$700 "System Development Fee".

³ This is a minimum; connection fees based on actual cost, so there is no set fee amount.

⁴ Assesses availability fees with a \$5.00 monthly fee added to sewer bills; there is no set fee amount.

⁵ Average is low and cannot be compared to ACSA figure (see Notes 1, 3, & 4).

ACSA's 2020 rates were higher than one of the other two Lynchburg MSA authorities and lower than the other.

Average of the other two Lynchburg MSA authorities rates was $(\$60.50 + \$39.03) / 2 = \$49.77$.

ACSA's 2020 rates were $\$55.54 / \$49.77 = 11.6\%$ higher than the average of the other two MSA authorities.

ACSA's 2020 rates were lower than those of 8 of the 15 similar-type and -size authorities across the Commonwealth.

ACSA's 2020 rates were $\$55.54 / \$57.21 = 2.9\%$ lower than the average of similar-sized Virginia utilities.

ACSA's 2020 combined new service fees were lower than both of the other two Lynchburg MSA authorities.

Average of the other two Lynchburg MSAs' combined new service fees was $(\$6,500 + \$6,550) / 2 = \$6,525$.

ACSA's 2020 combined new service fees were $\$6,000 / \$6,525 = 8.1\%$ lower than the average of the other two MSAs.

ACSA's 2020 new service connection fees cannot be fairly compared to 4 of the 15 similar size/type utilities in Virginia because the fees are not set amounts, but vary depending on the installations or how the fees are assessed; the amounts shown are minimums. The variations also lower fee averages, so comparison with ACSA is inequitable.

However, ACSA's connection fees were lower than 10 of the 15 other utilities; ACSA's combined tap fees were equal to or lower than 7 of the 15; and ACSA's combined tap fees were 14.8% higher than the average of the 15.

There are additional factors that should be considered when comparing ACSA new water and sewer service tap fees with those of BRWA and CCUSA. Both MSAs are much larger than ACSA: CCUSA has 60% more connections than ACSA, BRWA has 94% more, and both serve areas significantly more commercially and industrially developed than Amherst County. And both receive substantial financial subsidies from their county supervisors not available to ACSA. Campbell County pays the availability fees for all new commercial and industrial development in the county, as well as the new service connection fees for small businesses. BRWA receives annual funding assistance of hundreds of thousands of dollars from Bedford County toward BRWA debt service. These facts result in both MSAs having significantly more annual revenue than ACSA, which helps them keep fees low, but both expect to raise rates and fees in 2021.

Another factor is inflation. Attached to this report is Table 4 of "Consumer Price Index for All Urban Consumers (CPI-U): Selected Areas, March 2021", published by the US Bureau of Labor Statistics. The high-lighted line, appropriate for central Virginia and historically used in this annual report, shows that inflation rose by 3.0% over the last year. This figure was 1.9% for the previous year and 1.5% for the year before that. Inflation is increasing; ACSA must keep pace to maintain purchasing power of its revenues and the recommended percentage increases in rates are only about twice the current inflation rate, despite the many millions of dollars of capital projects ACSA must pursue in the coming years.

Even with refinancing the 2012 and 2017 bond loans in 2020 and 2021, respectively, ACSA debt service payments remain a very large part of the annual budget, due to capital improvements required to maintain regulatory compliance and update aging infrastructure, and will remain so over the next 10 years for the same reasons. In 2020, ACSA spent approximately \$0.5 million to repair the primary spillway at Graham Creek Reservoir, replace aging water and sewer lines along Woodys Lake Road, extend water mains to connect two new major water users, and initiate James River bank stabilization to protect the Madison Heights trunk sanitary sewer; all this work was funded within the annual budget or by ACSA financial reserves. Much more very costly work is upcoming that ACSA reserves cannot accommodate. Expensive capital projects must be completed at the Lynchburg Regional Wastewater Treatment Plant (for which ACSA has contractual obligations to assist in costs) and at Graham Creek Reservoir (in response to VA Dept. of Conservation & Recreation dam improvements regulations); James River (in response to a DEQ condition on ACSA's Harris Creek raw water intake permit requiring installation of a tertiary raw water intake pump station); Williams Creek Sewage Pump Station (a long overdue renovation); replacement of 2 small wastewater treatment plants with pump stations; upgrades to 8 other sewage pump stations; more James River bank stabilization; continued replacement of old, undersized water mains; continued rehabilitation of old sanitary sewers; continued extension of new sanitary sewers into existing residential areas currently served by aging drainfields; and many other projects. Operations and maintenance expenditures continue to rise, due to inflation, aging and deteriorating infrastructure, and regulatory compliance. The County joined ACSA in funding public sewer extensions 5 years ago, matching the money ACSA annually designates, and has promised ACSA \$1 million from 2021 stimulus funding in place of the annual funding contributions for the next 5 years. But ACSA expects to start two sanitary sewer construction projects in spring 2021, is preparing four others for construction, has started planning two very large projects to be completed by 2024, and has a long list of similar projects to complete, so it is still a significant impact on the ACSA budget.

This year has started well financially for ACSA; revenues are up for the first quarter of the year compared to the past several years. However, this may be a temporary anomaly of which to be leery; recent years have seen revenues increasingly impacted by lower water and wastewater usage, due to water conservation by the public; the increasing use of low flow fixtures (refer to the attached chart from the April 2019 issue of Opflow, the monthly American Water Works Association technical journal); minimal County growth and development; the phased closing of Central Virginia Training Center, coupled with CVTC's efforts to repair their campus sanitary sewer system to cut down on stormwater inflow and infiltration; and, now, the COVID-19 pandemic. These factors are still relevant and could impact ACSA revenues and finances the rest of 2021. To try to mitigate many of these conditions, the following actions were taken by ACSA during the second decade of this century:

1. ACSA cut the discretionary portion of the budget (the rehabilitation budget has been a fraction of what it should be to insure long term water and sewer line integrity).
2. The Board has five times refinanced ACSA's bonds to reduce the increase in escalating debt service payments (ACSA's financial consultants estimated that the 2020 and 2021 refinancings will save ACSA over \$1.3 million during the terms of the loans.)
3. Twice during this period, designated reserves have been undesignated to cover revenue deficits (\$405,000 in CY2012, and \$417,000 in CY2013).

Item 1 is being reversed; ACSA has resumed replacements of its large number of undersized, aging, deteriorating water and sewer lines, pump stations, and other infrastructure. Starting in late 2018, asset management has been increased in the annual budgets. ACSA's CY2018 budget re-initiated funding for the inspection, evaluation, and rehabilitation or replacement of water and sewer infrastructure, with several such projects having been completed and several more in the works, and this must be continued annually to ensure the integrity of both systems. Even with the substantial savings derived from the 2020 and 2021 bond refinancing efforts, Item 2 is an occasional opportunity that cannot be relied on. And, in reference to Item 3, ACSA reserves should be increased to, and maintained at, a minimum of seventy five percent (75%) of the annual budget for increasingly costly emergency and capital projects, as well as annual budget revenue deficits during down times.

ACSA must continue to tightwalk the fine line of rates and fees that are sufficient to maintain ACSA's mission, without being oppressive to low- and fixed-income households or stifling to economic growth. Several years ago, the ACSA Board adopted a recommendation by our financial consultants and initiated a policy of modest annual adjustments to rates and fees. Small regular rate adjustments have much less impact on household budgets than larger, less frequent increases (and generate more revenue through the effects of "compounding," not to mention the benefits of annual increases). During the period of 2007 through 2010, when ACSA was making small annual adjustments to rates and fees, no citizens spoke in opposition at the annual rate increase public hearings. The policy was interrupted by "The Great Recession" of 2010 - 2012, when the Board was reluctant to add to the economic distress of ACSA customers by raising rates. But in 2013, ACSA resumed modest annual rate adjustments, which have continued even through the current COVID-19 pandemic, and ACSA customers have accepted them; as in past years of modest increases, the October 2020 public hearing for 2021 rates and fees adjustments had no member of the public attend to speak in opposition to the increases.


The CPI attachment to this report was previously described. Its highlighted line (South – Size Class B/C) shows the percentage increase in cost of all products and services in central Virginia from March 2020 to March 2021 to average 3.0%. As noted earlier, this is a more than 50% increase from last year and 100% jump from the previous year. To maintain purchasing power of ACSA revenues, an increase of at least 3.0% for inflation would be required and appropriate to initiate preparation of ACSA’s 2022 budget. But such a rate increase would only adjust for recent inflation; it would not generate the revenues needed for the several upcoming major capital improvements projects and resumed asset management work cited previously, which will require many millions of dollars to complete. ACSA financial consultant Davenport & Co. includes these future major expenditures in their evaluation of ACSA’s finances and preparation of the annual rates and fees adjustments recommended in their annual ProForma Cash Flow Update reports.

As always, ACSA’s staff will do everything possible to hold down costs, while continuing to fulfill our primary mission of public health, safety, environmental protection, and economic growth. We ask only that the ACSA Board keep the information in this study in mind when Davenport & Co. makes its presentation. The Board employs our financial consultants specifically to help ACSA strike the proper balance between controlling rates/fees and keeping the utility on a sound financial footing. It should also be noted that Brown & Edwards, ACSA’s annual auditors, recommends that public utilities routinely have consultants conduct the type of rate analysis that generates the Davenport Pro-Forma Cash Flow Update each year. This benchmarking study will be provided to Davenport & Co., along with the completed audit by Brown & Edwards of ACSA’s 2020 finances and budget year, for Davenport’s use in preparing their 2021 ProForma report, which will be presented to the ACSA Board this fall.

Thank you for your time and effort in reviewing this document. Please provide any questions or comments to ACSA staff.

Sincerely,

AMHERST COUNTY SERVICE AUTHORITY



Robert A. Hopkins, PE
Executive Director

Attachments: Figure 2, “Average Daily Indoor Per Person Water use”, from “Conflicting Goals May Have Unintended Consequences for Legionella Growth”, by J. David Krause, Steve Deem, and H. Grace Jang, American Water Works Association Opflow Magazine, April 2019, Page 17.

Table 4, “Consumer Price Index for All Urban Consumers (CPI-U): Selected areas, all items, index, March 2021”, US Bureau of Labor, Bureau of Labor Statistics.

Pages 1, 7 to 15, “The 32nd Annual Virginia Water and Wastewater Rate Report 2020”, Draper Aden Associates.

As new energy and water conservation measures are proposed and implemented, it would be wise to consider their impacts on waterborne pathogens in distribution and premise plumbing systems.

fixtures, can lead to oversize plumbing systems and the problems associated with increased water age. Oversize systems can lead to inflated construction costs and inefficient water heating as well as potentially increase the incidence of *Legionella* growth in the water systems. Appropriately sized water pipes provide the necessary flow at the available water pressure to meet the real demand of a given system.

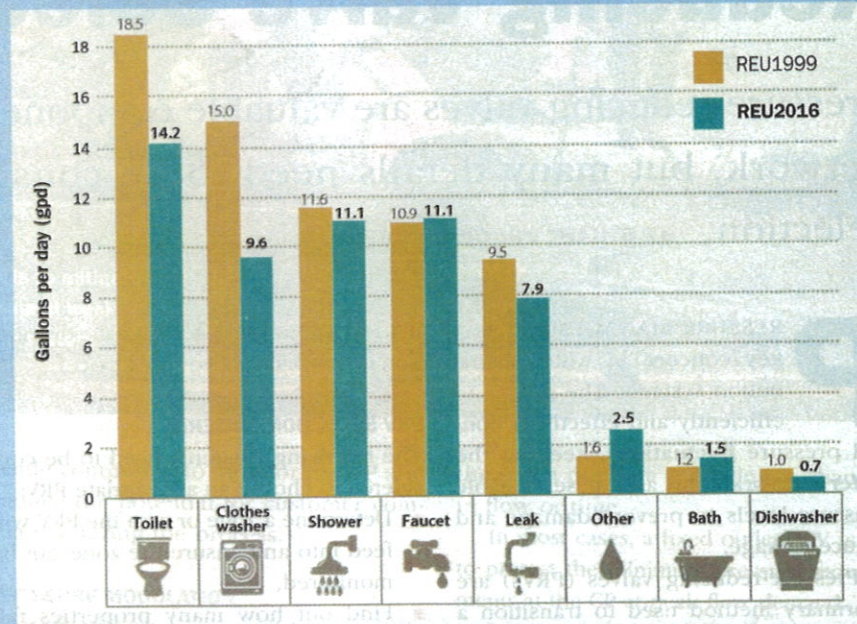
In premise plumbing, however, it's still questionable whether decreasing pipe diameters will solve the microbial issue. Although reducing pipe diameters could reduce water age, the higher surface-to-volume ratio and velocities may cause other water quality problems such as increased microbial growth and biofilm detachment in premise plumbing, and many end-use plumbing sizes are driven by peak demands. All these challenges support the need for building operators to develop site-specific water management programs as described in the March 2019 *Opflow* article, "Consider Common Management and Treatment Approaches to Control *Legionella* Bacteria."

Public Education and Outreach. Premise plumbing is beyond the control of water utilities. Building owners need to take a more prominent role in maintaining the water quality of their buildings. The challenge is it isn't typical for building owners (even in the healthcare environment) to understand water quality issues or how to properly manage them. Water utilities need to engage with stakeholders to advance the protection of water quality and public health.

A significant challenge is crafting a message sufficiently strong to elicit a response without alarming the public and weakening confidence in the water supply. Messages need to inform, educate, and invoke actions. Actions can include changing water use behavior or operational practices for building water system operators.

Figure 2. Average Daily Indoor Per Person Water Use

Residential end use (REU) in the United States decreased 15 percent from 1999 to 2016, primarily because of the improved water efficiency of clothes washers and toilets.



Source: DeOreo et al. 2016. Reprinted with permission. © Water Research Foundation.

BEST PRACTICES

As new energy and water conservation measures are proposed and implemented, it would be wise to consider their impacts on waterborne pathogens in distribution and premise plumbing systems. To avoid the unintended consequences of required changes affecting water use, storage, and treatment, all stakeholders—including community water service providers, USEPA, and state primacy agencies—must begin to recognize the potential impact the changes can have on the growth of *Legionella* and other waterborne pathogens. Once recognized, practical solutions to these conflicting goals can be designed and implemented.

Public water system operators and building operators can help by understanding and monitoring key water quality parameters throughout their respective distribution systems. Testing

and documenting water disinfectant residuals, temperature, and pH that represent spatial and temporal differences in the water served to customers are necessary to understand the underlying causes and to develop mitigation strategies. By using best practices, public water system operators and building operators can make good data-based decisions.

Despite the challenges, each entity plays a critical role in controlling and mitigating *Legionella* risk from source to tap. A shared responsibility among multiple stakeholders is needed to address these increasingly complex issues.

Editor's Note: This is the third of a three-article series on *Legionella* from the AWWA Distribution Systems Subcommittee on Premise Plumbing. The first article appeared in *Opflow's* February 2019 issue, and the second appeared in the March 2019 issue.



Economic News Release

Table 4. Consumer Price Index for All Urban Consumers (CPI-U): Selected areas, all items index

Table 4. Consumer Price Index for All Urban Consumers (CPI-U): Selected areas, all items index, March 2021

[1982-84=100, unless otherwise noted]

Area	Pricing Schedule ⁽¹⁾	Percent change to Mar. 2021 from:			Percent change to Feb. 2021 from:		
		Mar. 2020	Jan. 2021	Feb. 2021	Feb. 2020	Dec. 2020	Jan. 2021
U.S. city average	M	2.6	1.3	0.7	1.7	1.0	0.5
Region and area size⁽²⁾							
Northeast	M	2.1	1.0	0.6	1.2	0.8	0.4
Northeast - Size Class A	M	1.7	0.8	0.4	1.1	0.7	0.3
Northeast - Size Class B/C ⁽³⁾	M	2.6	1.3	0.9	1.4	0.9	0.4
New England ⁽⁴⁾	M	1.8	1.3	1.0	0.7	0.8	0.3
Middle Atlantic ⁽⁴⁾	M	2.2	0.9	0.5	1.4	0.8	0.4
Midwest	M	3.0	1.5	0.7	1.7	1.3	0.8
Midwest - Size Class A	M	2.6	1.6	0.8	1.3	1.0	0.8
Midwest - Size Class B/C ⁽³⁾	M	3.2	1.5	0.7	1.9	1.4	0.8
East North Central ⁽⁴⁾	M	2.8	1.5	0.7	1.6	1.4	0.9
West North Central ⁽⁴⁾	M	3.2	1.5	0.9	1.9	1.0	0.6
South	M	2.9	1.3	0.8	2.0	1.1	0.5
South - Size Class A	M	2.8	1.3	0.7	1.8	1.1	0.6
South - Size Class B/C ⁽³⁾	M	3.0	1.3	0.8	2.1	1.1	0.5
South Atlantic ⁽⁴⁾	M	2.9	1.1	0.7	2.1	1.0	0.5
East South Central ⁽⁴⁾	M	4.0	1.7	1.1	2.9	1.5	0.6
West South Central ⁽⁴⁾	M	2.4	1.4	0.8	1.5	1.0	0.6
West	M	2.4	1.2	0.7	1.6	0.8	0.5
West - Size Class A	M	2.3	1.2	0.6	1.4	0.8	0.5
West - Size Class B/C ⁽³⁾	M	2.6	1.3	0.7	1.8	0.7	0.5
Mountain ⁽⁴⁾	M	2.5	1.3	0.9	1.5	0.8	0.5
Pacific ⁽⁴⁾	M	2.4	1.2	0.6	1.6	0.7	0.5
Size classes							
Size Class A ⁽⁵⁾	M	2.3	1.2	0.6	1.4	0.9	0.5
Size Class B/C ⁽³⁾	M	2.9	1.3	0.8	1.9	1.0	0.6
Selected local areas							
Chicago-Naperville-Elgin, IL-IN-WI	M	2.6	1.2	0.6	1.2	1.3	0.6
Los Angeles-Long Beach-Anaheim, CA	M	2.2	0.9	0.5	1.0	0.6	0.4
New York-Newark-Jersey City, NY-NJ-PA	M	2.0	0.7	0.4	1.4	0.7	0.3
Atlanta-Sandy Springs-Roswell, GA	2				2.4	1.6	
Baltimore-Columbia-Towson, MD ⁽⁶⁾	2				1.1	0.1	
Detroit-Warren-Dearborn, MI	2				0.8	0.6	
Houston-The Woodlands-Sugar Land, TX	2				1.0	0.9	
Miami-Fort Lauderdale-West Palm Beach, FL	2				1.4	0.8	
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	2				1.0	0.8	
Phoenix-Mesa-Scottsdale, AZ ⁽⁷⁾	2				1.0	1.0	
San Francisco-Oakland-Hayward, CA	2				1.6	0.5	
Seattle-Tacoma-Bellevue, WA	2				1.7	1.2	
St. Louis, MO-IL	2				1.6	1.2	
Urban Alaska	2				1.3	1.0	
Boston-Cambridge-Newton, MA-NH	1	1.3	0.9				
Dallas-Fort Worth-Arlington, TX	1	3.4	1.8				
Denver-Aurora-Lakewood, CO	1	1.6	0.8				
Minneapolis-St. Paul-Bloomington, MN-WI	1	3.0	1.1				
Riverside-San Bernardino-Ontario, CA ⁽⁴⁾	1	3.6	1.3				
San Diego-Carlsbad, CA	1	4.1	2.4				

Footnotes

(1) Foods, fuels, and several other items are priced every month in all areas. Most other goods and services are priced as indicated: M - Every month. 1 - January, March, May, July, September, and November. 2 - February, April, June, August, October, and December.

(2) Regions defined as the four Census regions.

(3) Indexes on a December 1996=100 base.

(4) Indexes on a December 2017=100 base.

(5) Indexes on a December 1986=100 base.

(6) 1998 - 2017 indexes based on substantially smaller sample.

(7) Indexes on a December 2001=100 base.

(8) Indexes on a 1987=100 base.

NOTE: Local area indexes are byproducts of the national CPI program. Each local index has a smaller sample size than the national index and is, therefore, subject to substantially more sampling and other measurement error. As a result, local area indexes show greater volatility than the national index, although their long-term trends are similar. Therefore, the Bureau of Labor Statistics strongly urges users to consider adopting the national average CPI for use in their escalator clauses.

The 32nd Annual Virginia Water and Wastewater Rate Report 2020

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Water Data

	# Residential Water Units	# Non-Residential Water Units	Residential Water Rate Inside (3,000 gal./mo.) ¹	Residential Water Rate Outside (3,000 gal./mo.) ¹	Residential Water Rate Inside (4,000 gal./mo.)	Residential Water Rate Outside (4,000 gal./mo.)	Residential Water Rate Inside (5,000 gal./mo.)	Residential Water Rate Outside (5,000 gal./mo.)	Billing Frequency	Water Rate - Business Inside (1 million gal./mo.)	Last Water Rate Change	Water Source ²	Residential Connection Fee ³	Last Water Connection Fee Change	Residential Capital Recovery Charge ³	Last Water CRC Rate Change
Albemarle County Service Authority	31,804	1,492	\$22.01	\$39.99	\$30.99	\$39.97	\$39.97	\$8,795	M	\$8,795	2019	S	\$1,026	2013	\$6,650	2017
Alleghany County	2,555	187	\$46.00	\$46.00	\$46.00	\$46.00	\$46.00	\$9,499	M	\$9,499	2020	S	\$1,000	2000		
Altavista, Town of	1,615	64	\$14.75	\$22.97	\$17.50	\$28.46	\$20.25	\$2,853	Q	\$2,853	2020	C	\$1,500	2018		
Annelia County	294	147	\$22.50	\$27.00	\$27.00	\$31.50	\$31.50	\$4,725	M	\$4,725	2007	G	COST + 100%	2007	\$3,000	2013
Amherst County Service Authority	6,418	535	\$33.45	\$40.62	\$40.62	\$47.74	\$47.74	\$7,176	B	\$7,176	2020	S	\$1,500	2020	\$3,000	2020
Amherst, Town of	1,131	164	\$38.85	\$77.70	\$46.60	\$93.20	\$54.35	\$12,250	M	\$12,250	2019	S	\$1,250	2019	\$1,700	
Appalachia, Town of	1,126	35	\$26.75	\$38.60	\$32.50	\$47.60	\$38.25	\$6,043	M	\$6,043	2019	S	\$1,500	2019	\$2,500	
Appomattox, Town of	944	231	\$17.50	\$23.70	\$23.70	\$29.90	\$29.90	\$6,199	M	\$6,199	2020	S	\$1,500	2020	\$2,500	
Arlington County	34,807	1,951	\$14.73	\$19.64	\$19.64	\$24.55	\$24.55	\$4,910	Q	\$4,910	2020	S	\$3,200	2008	\$85/DFU	2013
Augusta County Service Authority	14,270	1,101	\$25.23	\$31.10	\$31.10	\$36.97	\$36.97	\$6,099	B	\$6,099	2020	C	\$1,350	2019	\$2,645	
Bedford Regional Water Authority	13,293	986	\$35.60	\$39.80	\$39.80	\$45.40	\$44.00	\$4,788	M	\$4,788	2019	C	\$1,500	2018	\$4,000	2018
Berryville, Town of	1,519	207	\$31.95	\$40.10	\$40.10	\$48.25	\$48.25		M		2020	S				
Big Stone Gap, Town of	3,570	303	\$31.26	\$48.00	\$37.41	\$57.85	\$43.56	\$67.70	M		2018	S	\$550			
Blacksburg, Town of	9,466	315	\$24.99	\$43.75	\$32.29	\$56.53	\$39.59	\$69.31	M	\$7,303	2020	S	\$665	2020	\$1,565	2020
Blackstone, Town of			\$24.90	\$37.35	\$33.20	\$49.80	\$41.50	\$62.25	M	\$8,300	2019	S				
Bluefield, Town of	2,200	100	\$32.60	\$48.90	\$40.50	\$60.75	\$48.40	\$72.60	M	\$6,076	2018	S	\$450	2018		
Boones Mill, Town of	797	96	\$21.08	\$42.16	\$23.12	\$46.24	\$25.16	\$50.32	B	\$2,758	2020	G	\$750	2005	\$6,000	2005
Bowling Green, Town of			\$21.90	\$31.90	\$26.90	\$41.90	\$31.90	\$51.90	M			S				
Boydton, Town of			\$16.56	\$26.88	\$20.43	\$30.75	\$24.30	\$34.62	M	\$4,615	2020	C	\$2,846	2020		
Bridgewater, Town of	2,136	184	\$24.09	\$36.14	\$27.75	\$41.63	\$31.41	\$47.12	M	\$3,278	2019	S	\$485	2019		
Bristol Virginia Utilities Authority	6,931	955	\$18.31	\$27.19	\$23.40	\$28.49	\$28.49		B		2018	S	\$2,500	2018		
Broadway, Town of	1,546	155	\$27.19	\$34.84	\$34.65	\$44.84	\$42.11	\$54.84	M			S				
Brodhax, Town of	148	10	\$29.30	\$29.30	\$36.10	\$42.90	\$42.90		M			S				
Brookneal, Town of			\$48.25	\$72.38	\$48.25	\$72.38	\$51.45	\$77.18	M	\$1,999	2019	G	\$2,200	2010		
Buchanan, Town of	480	68	\$26.12	\$26.12	\$26.12	\$39.72	\$39.72	\$13,572	M	\$13,572	2020	S	\$2,000	1994		
Buckingham County	321	95	\$25.74	\$34.32	\$34.32	\$42.90	\$42.90	\$8,580	M	\$8,580	2020	G	\$2,500	2019		
Buena Vista, City of	2,620	199	\$26.81	\$33.07	\$33.07	\$39.34	\$39.34	\$6,344	B	\$6,344	2012	C	\$1,500	2010	\$2,600	2010
Campbell County Utility & Service Auth.	10,467	561	\$35.57	\$38.20	\$38.20	\$40.83	\$40.83		M		2019	G	\$875	2012	\$4,000	2012
Cape Charles, Town of	1,160	110	\$23.16	\$24.68	\$24.68	\$26.51	\$26.51	\$2,043	M	\$2,043	2018	G	MIN-\$1,000	2018	\$5,000	2018
Caroline County	1,652	138	\$23.16	\$24.68	\$24.68	\$26.51	\$26.51		M		2018	G				

¹ "inside" refers to inside of municipal boundary. "Outside" rates are listed where the utility has implemented higher rates to users outside of the municipal boundary.

² Water Source: S = surface water, G = groundwater, and C = combination.

³ Connection and Capital Recovery Charge (CRC) Fees: "Cost" = customer pays the Cost of making the connection; "Cost +" = the customer pays the Cost to make the connection, plus additional charges, "Fixture" or DFU means the customer is charged that fee per the number of drainage fixture units in the structure. Min = Minimum charge is dollar amount cited.



Water Data

	# Residential Water Units	# Non-Residential Water Units	Residential Water Rate Inside (3,000 gal./mo.)	Residential Water Rate Outside (3,000 gal./mo.)	Residential Water Rate Inside (4,000 gal./mo.)	Residential Water Rate Outside (4,000 gal./mo.)	Residential Water Rate Inside (5,000 gal./mo.)	Residential Water Rate Outside (5,000 gal./mo.)	Billing Frequency	Water Rate - Business Inside (1 million gal./mo.)	Last Water Rate Change	Water Source ²	Residential Connection Fee ³	Last Water Connection Fee Change	Residential Capital Recovery Charge ³	Last Water CRC Rate Change
Carroll County PSA	3,689	165	\$37.80		\$47.25		\$56.70		M	\$4,773	2019	C	-\$2,500	2019	\$ 500	
Charlotte Court House, Town of	257	58	\$37.00		\$41.00		\$45.00		M		2015	S	\$1,450			
Chatham, Town of	717	216	\$15.42	\$25.65	\$20.56	\$34.20	\$25.70	\$42.75	Q	\$5,140	2018	S	\$1,000	2018		
Chesterfield County	131,068	5,591	\$18.80		\$21.66		\$24.55		B	\$3,068	2019	S	\$1,980	2018	\$5,725	2018
Chilhowie, Town of	2,100	144	\$25.34	\$48.95	\$30.39	\$58.76	\$35.45	\$68.57	M	\$5,670	2021	G	\$900	2016		
Chincoteague, Town of	2,500	1,095	\$14.03		\$18.39		\$22.75		Q	\$5,521	2012	G	\$670	2012	\$3,708	2012
Christiansburg, Town of	9,894	787	\$28.00	\$42.00	\$38.00	\$57.00	\$48.00	\$72.00	M	\$7,623	2019	S	\$3,000	2015		
Clarke County Sanitary Authority	451	31	\$38.70		\$51.60		\$64.50		B	\$12,900	2019	G			\$13,800	2006
Clarksville, Town of			\$30.00	\$59.75	\$33.50	\$66.73	\$37.00	\$73.70	B	\$7,039		S				
Coeburn, Town of	1,550	165	\$25.74	\$37.02	\$31.68	\$45.90	\$37.62	\$54.78	M	\$10,013	2020	G	\$2,000	2005		
Craig-New Castle Public Service Authority	425	70	\$24.68		\$30.43		\$36.18		M	\$9,490		G	\$2,000			
Craigsville, Town of			\$37.00		\$37.00		\$37.00		M			G				
Culpeper, Town of	6,841	747	\$19.17		\$25.56		\$31.95		M	\$3,973	2019	G	COST	2019	\$6,500	2006
Danville, City of	17,500	2,500	\$19.25		\$22.63		\$26.27		M	\$3,688	2019	S	\$1,500	2019		
Dinwiddie County Water Authority	3,545	185	\$15.70		\$20.01		\$24.32		M	\$3,902	2017	C	\$1,618	2015		
Dublin, Town of	2,494	204	\$30.87	\$44.14	\$37.25	\$51.95	\$43.63	\$59.76	M	\$5,904	2020	S	\$1,500	2020		2020
Dungannon, Town of	221	5	\$29.25	\$35.25	\$39.00	\$47.00	\$48.75	\$58.75	M		2012	G	\$88			
Edinburg, Town of	561	50	\$28.50	\$42.75	\$56.50	\$84.75	\$63.50	\$95.25	M	\$6,023	2019	G	\$5,000			
Elkton, Town of	1,253	29	\$15.47		\$19.28		\$23.09		M		2020	G	\$7,000			
Fairfax Water	62,062	12,703	\$14.40		\$17.60		\$20.80		Q	\$3,248	2020	S	\$1,370	2020	\$22,350	2020
Farmville, Town of	3,198	646	\$16.81	\$25.22	\$20.49	\$30.74	\$24.17	\$36.26	M	\$5,240	2018	S	\$1,000	2020		
Fauquier County Water and Sanitation Authority	7,251	203	\$44.72		\$51.72		\$57.62		M	\$10,897	2019	G	\$11,120	2016		
Ferrum Water & Sewer Authority	194	30	\$24.00		\$29.50		\$35.00		M	\$5,570	2017	G	COST+\$500	2017	\$1,500	2017
Fincastle, Town of	180	35	\$28.18		\$32.28		\$36.38		M		2020	G	\$2,000	2012	\$2,500	2012
Franklin, City of	3,260	252	\$23.82	\$29.86	\$27.02	\$33.82	\$30.22	\$37.78	M	\$3,214	2016	G	\$3,500			
Frederick Water	15,911	682	\$21.69		\$26.01		\$30.33		B	\$7,796	2019	C	\$14,115	2019		
Galax, City of	3,200	500	\$16.00	\$32.00	\$20.50	\$41.00	\$25.00	\$50.00	B	\$4,503	2020	S				
Gate City, Town of	1,087	140	\$36.05	\$44.96	\$43.95	\$52.05	\$51.85	\$59.95	M	\$7,912	2014	S	\$650	2014		
Glasgow, Town of	516	12	\$31.50	\$47.25	\$36.40	\$56.15	\$41.30	\$65.05	M	\$608	2019	G	\$2,625	2019		
Gloucester, County of	6,552	894	\$30.18		\$40.18		\$50.18		M	\$10,397	2013	C	\$3,500	2008	\$500	2008
Goosland, County of	1,521	305	\$25.52		\$32.05		\$38.58		B	\$9,388	2019	S	\$4,400	2019		
Greensville County WSA	1,725	103	\$18.31		\$24.41		\$30.51		M	\$6,430	2020	C	\$960			
Halifax County Service Authority	3,880	420	\$24.00		\$29.00		\$36.00		B	\$4,049	2018	S			\$1,250	2008
Hamilton, Town of	701	29	\$17.13	\$23.13	\$22.84	\$30.84	\$35.59	\$48.05	B	\$18,100	2019	G		2010		



Water Data

	# Residential Water Units	# Non-Residential Water Units	Residential Water Rate Inside (3,000 gal./mo.) ¹	Residential Water Rate Outside (3,000 gal./mo.) ¹	Residential Water Rate Inside (4,000 gal./mo.)	Residential Water Rate Outside (4,000 gal./mo.)	Residential Water Rate Inside (5,000 gal./mo.)	Residential Water Rate Outside (5,000 gal./mo.)	Billing Frequency	Water Rate - Business (1 million gal./mo.)	Last Water Rate Change	Water Source ²	Residential Connection Fee ³	Last Water Connection Fee Change	Residential Capital Recovery Charge ³	Last Water CRC Rate Change
Hanover County	20,195	1,800	\$13.83	\$18.97	\$24.11	\$30.30	B	\$4,128	2019	C	\$6,281	2019				
Harrisonburg, City of	18,613	3,074	\$12.77	\$18.98	\$19.95	\$30.30	M	\$3,385	2019	S	\$2,500	2010				
Henrico, County of	94,256	6,003	\$22.19	\$25.78	\$31.16	\$30.00	B	\$4,949	2019	S	\$2,625	2018				
Henry Co. Public Service Authority	12,288	926	\$30.00	\$30.00	\$34.70	\$30.00	M	\$7,017	2013	C	\$1,750	2013				
Highland County - McDowell Water System	56	21	\$35.00	\$35.00	\$42.50	\$35.00	B	\$7,470	2006	G	COST+\$200					
Isle of Wight County	4,106	156	\$50.17	\$61.37	\$72.57	\$61.37	B	\$1,108	2020	C	\$4,000					
James City Service Authority	21,986	1,130	\$16.09	\$19.71	\$26.29	\$19.71	M	\$5,877	2020	G	\$3,219	2020				
Kenbridge, Town of	473	97	\$15.15	\$28.11	\$26.15	\$36.15	M	\$5,963	2019	G	\$80					
Kilmarnock, Town of	780	252	\$14.50	\$27.50	\$20.44	\$38.70	B	\$5,209	2020	G	\$2,055	2006				
King George County Service Authority	4,245	183	\$35.73	\$40.56	\$45.73	\$40.56	B	\$6,012	2014	G	\$8,662	2013				
King William County	488	41	\$30.00	\$36.00	\$42.00	\$36.00	B	\$7,164	2020	S	\$4,000	2015				
Leesburg, Town of	17,026	1,148	\$28.66	\$33.59	\$41.54	\$33.59	Q	\$15,965	2020	S	MIN-\$1,863	2020				
Lexington, City of	2,500	600	\$22.50	\$30.36	\$37.50	\$30.36	M	\$10,566	2020	C	\$80	2020				
Loudoun Water	77,662	4,725	\$33.53	\$43.39	\$51.25	\$43.39	Q	\$5,890	2019	C	\$3,750	2004				
Louisa Co. Water Authority Northeast Creek	97	72	\$23.56	\$23.56	\$29.45	\$23.56	M	\$5,890	2019	G	\$3,750	2004				
Louisa Co. Water Authority Zion Crossroads	664	61	\$23.56	\$23.56	\$29.45	\$23.56	M	\$6,697	2019	C	\$4,780					
Luray, Town of	845	154	\$37.32	\$41.92	\$43.98	\$41.92	M	\$6,028	2020	G	\$3,320	2010				
Lynchburg, City of	2,193	126	\$38.19	\$57.28	\$65.64	\$49.33	M	\$3,633	2017	S	\$1,150	2017				
Lynchburg, City of	23,000	2,000	\$13.92	\$17.50	\$21.09	\$17.50	M	\$3,365	2020	S	\$1,200	2010				
Manassas, City of	14,069	1,386	\$17.80	\$20.71	\$23.62	\$20.71	M	\$8,566	2019	S	\$900	2016				
Marion, Town of	3,505	455	\$22.08	\$44.10	\$39.22	\$61.20	M	\$2,675	2016	S	\$900	2014				
Martinsville, City of	7,000	500	\$25.31	\$31.50	\$28.50	\$31.50	M	\$8,003	2013	C	\$4,000	2007				
Mineral, Town of	257	51	\$26.50	\$30.00	\$42.50	\$39.00	M	\$200	2020	G	\$500					
Montross, Town of	228	78	\$21.00	\$31.50	\$21.00	\$31.50	M	\$7,200	2019	G	\$5,000	2019				
Mount Jackson, Town of	710	102	\$21.60	\$32.40	\$36.00	\$43.20	M	2013	S	\$2,000	2013					
Nelson County	88	14	\$29.90	\$29.90	\$36.00	\$36.00	M	2019	C	\$4,000						
Nelson County Service Authority	2,735	200	\$46.00	\$46.00	\$56.50	\$46.00	M	\$8,469	2020	G	\$4,650	2012				
New Kent County	3,140	215	\$24.05	\$31.27	\$38.49	\$38.49	B	\$6,168	2019	S	\$240					
Norton, City of	1,823	347	\$29.25	\$44.45	\$56.75	\$44.05	M	\$200	2020	G	\$1,500	2010				
Onancock, Town of	657	747	\$29.21	\$38.80	\$48.39	\$38.80	B	\$7,000	2019	C	\$4,100					
Pembroke, Town of	747	114	\$34.22	\$46.82	\$50.67	\$41.81	M	\$49,377	2019	S	\$395	2019				
Powhatan County	7	7	\$31.01	\$37.74	\$44.47	\$44.47	B	2014	S	\$1,500	2014					
Purcellville, Town of	2,657	332	\$28.59	\$49.71	\$67.49	\$67.49	B	\$25,754	2019		\$25,754	2019				
Radford, City of	5,385	2	\$16.32	\$20.40	\$24.48	\$20.40	M									



Water Data

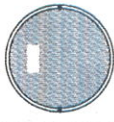
	# Residential Water Units	# Non-Residential Water Units	Residential Water Rate Inside (3,000 gal./mo.) ¹	Residential Water Rate Outside (3,000 gal./mo.) ¹	Residential Water Rate Inside (4,000 gal./mo.)	Residential Water Rate Outside (4,000 gal./mo.)	Residential Water Rate Inside (5,000 gal./mo.)	Residential Water Rate Outside (5,000 gal./mo.)	Billing Frequency	Water Rate - Business Inside (1 million gal./mo.)	Last Water Rate Change	Water Source ²	Residential Connection Fee ³	Last Water Connection Fee Change	Residential Capital Recovery Charge ³	Last Water CRC Rate Change
Rapidian Service Authority	7,854	499	\$19.71	\$19.71	\$25.28	\$32.50	\$38.85	\$38.85	M	\$5,584	2020	S	\$10,000		*	
Richlands, Town of	2,256	269	\$20.50	\$26.50	\$25.00	\$32.50	\$29.50	\$38.50	M	\$6,009	2018	S	\$400	1986		
Rockbridge County PSA (Long Hollow)			\$40.89		\$50.74		\$60.59		B		2019	G	\$1,025	2007	\$4,000	2007
Rockbridge County PSA (Riverview and Riviera)	2,592	380	\$35.79		\$43.94		\$52.09		B	\$8,287	2019	G	\$1,025	2007	\$4,000	2007
Rockingham County	4,064	322	\$12.50		\$16.30		\$20.10		M	\$3,799	2017	G	\$3,275	2017		
Rocky Mount, Town of	2,458	472	\$17.85	\$35.70	\$21.37	\$42.74	\$24.89	\$49.78	M	\$3,381	2019	S	\$1,000	2016		
Rural Retreat, Town of			\$23.60	\$41.10	\$28.90	\$50.20	\$34.20	\$59.30	M	\$7,045	2017	G	\$1,000	2017		
Saint Paul, Town of	556	78	\$24.23	\$41.68	\$30.88	\$52.13	\$37.53	\$62.58	M	\$6,654	2018	S	\$750			
Salem, City of	8,093	1,497	\$30.28		\$35.96		\$41.64		M	\$6,707	2020	S	\$1,500	2016	\$2,000	2016
Scott County Public Service Authority	5,214	109	\$39.30		\$49.42		\$59.54		M	\$10,193	2020	C	\$1,500	2015		
Shenandoah, Town of	971	76	\$25.65	\$38.50	\$30.15	\$46.00	\$34.65	\$53.50	M	\$4,513	2020	G	\$6,000	2020		
Smithfield, Town of	3,260	477	\$24.70	\$29.47	\$31.02	\$37.38	\$37.34	\$45.29	B	\$6,326	2019	G	\$660	1999	\$2,720	2007
South Hill, Town of	2,209	493	\$21.49	\$42.98	\$28.32	\$56.64	\$34.65	\$69.30	M	\$4,590	2020	S	\$1,000	1991		
Southampton County	798	25	\$28.00		\$28.00		\$34.00		M		2017	G	\$1,000	2009	\$4,000	2009
Spotsylvania County	30,312	2,016	\$19.03		\$25.74		\$32.45		M	\$10,868	2019	S	\$1,290	2008	\$4,920	2008
Stafford County	38,643	1,621	\$22.03		\$25.77		\$30.90		M	\$5,128	2019	S	\$1,450	2005	\$6,900	2010
Stanley, Town of	1,539	91	\$22.00	\$29.00	\$23.50	\$32.50	\$25.00	\$36.00	M		2020	G	\$3,825	2017		
Staunton, City of	8,592	1,241	\$14.99	\$23.16	\$18.85	\$28.95	\$24.64	\$37.64	B	\$4,931	2019	S	\$2,100	2016	\$3,500	2016
Stoney Creek Sanitary District	1,400	45	\$39.00		\$44.00		\$49.00		B	\$6,540	2013	G	\$4,000	2010		
Stuart, Town of	627	150	\$25.33	\$35.98	\$29.55	\$41.83	\$33.77	\$47.68	M		2020	S	\$600			
Tazewell, Town of	1,745	228	\$39.25	\$58.81	\$49.75	\$74.97	\$60.25	\$91.13	M		2020	S	\$540			
Toms Brook-Maurettown Sanitary District	650	30	\$30.50		\$36.00		\$41.50		M	\$5,514	2013	G	\$4,000	2010		
Troutdale, Town of	80	4	\$22.50		\$30.00		\$37.50		M		2017		\$900	2017		
Urbanna, Town of	550	67	\$19.85	\$38.28	\$23.54	\$45.66	\$27.23	\$53.03	B	\$3,699	2020	G	MIN-\$4,000	2020		
Victoria, Town of	850	15	\$30.50		\$35.57		\$40.84		M	\$6,080	2017	S	\$275			
Vienna, Town of	9,814	346	\$26.95		\$34.40		\$40.50		Q	\$7,411	2020	S	\$16,720	2020	\$16,190	2020
Virginia Beach Public Utilities	128,153	8,012	\$19.11		\$24.01		\$28.91		M	\$4,959	2019	S	MIN-\$3,363	2014	\$2,267	2014
Warrenton, Town of	4,265	628	\$11.28	\$16.93	\$17.17	\$25.77	\$23.06	\$34.61	M	\$6,048	2020	C	COST+\$5,000	2020	\$4,950	2020
Waynesboro, City of	8,192	899	\$24.40	\$26.84	\$29.61	\$32.57	\$34.82	\$38.30	B	\$5,367	2019	G	MIN-\$800	1999	\$2,725	1999
West Point, Town of	1,134	187	\$22.45		\$22.45		\$22.45		B	\$5,694	2018	G	\$500	2007	\$3,500	2007
Western Virginia Water Authority - Botetourt Co.	1,559	232	\$26.50		\$31.25		\$36.00		M	\$6,430	2020	G	\$2,000		\$3,000	
Western Virginia Water Authority - Franklin Co.	2,661	159	\$30.00		\$30.00		\$30.00		M	\$5,400	2020	C	\$2,000		\$3,000	
Western Virginia Water Authority - Roanoke City/County	52,731	4,382	\$22.35		\$25.55		\$28.75		M	\$4,458	2020	C	\$2,000		\$3,000	
Westmoreland County	56	9	\$22.50		\$22.50		\$22.50		B		2018	G				

* No net fee; fee calculated on per-scenario basis.



Water Data

	# Residential Water Units	# Non-Residential Water Units	Residential Water Rate Inside (3,000 gal./mo.) ¹	Residential Water Rate Outside (3,000 gal./mo.) ¹	Residential Water Rate Inside (4,000 gal./mo.)	Residential Water Rate Outside (4,000 gal./mo.)	Residential Water Rate Inside (5,000 gal./mo.)	Residential Water Rate Outside (5,000 gal./mo.)	Billing Frequency	Water Rate - Business Inside (1 million gal./mo.)	Last Water Rate Change	Water Source ²	Residential Connection Fee ³	Last Water Connection Fee Change	Residential Capital Recovery Charge ³	Last Water CRC Rate Change
Winchester, City of	9,410	1,827	\$37.44	\$56.56	\$44.82	\$67.63	\$52.20	\$78.70	B	\$8,373	2020	S	\$5,300	2017		
Windsor, Town of	1,148	54	\$26.25	\$28.00	\$30.00	\$32.00	\$37.50	\$40.00	B	\$7,500	2018	G	\$1,000	2008	\$5,000	2008
Wise, Town of	2,395	258	\$29.33	\$42.65	\$35.85	\$52.13	\$42.37	\$61.10	M	\$6,530	2019	S	\$500	2000		
Wythe County	2,969	196	\$41.59		\$51.99		\$62.39		M	\$10,410	2020	S	\$1,000			
Wytheville, Town of	4,080	688	\$24.11	\$48.22	\$32.46	\$64.92	\$40.81	\$81.62	M	\$4,003	2019	S	\$1,500+ METER	2005		



Wastewater Data⁴

	# Residential Wastewater Units	# Non-Residential Wastewater Units	Residential WW Rate Inside (3,000 gal./mo.)	Residential WW Rate Outside (3,000 gal./mo.)	Residential WW Rate Inside (4,000 gal./mo.)	Residential WW Rate Outside (4,000 gal./mo.)	Residential WW Rate Inside (5,000 gal./mo.)	Residential WW Rate Outside (5,000 gal./mo.)	Billing Frequency	WW Rate Business Inside (1 million gal./mo.)	Last WW Rate Change	Residential Connection Fee Wastewater	Last WW Connection Fee Change	Residential Capital Recovery Charge	Last WW CRC Rate Change	
Abingdon, Town of	4,076	1,017	\$28.48	\$51.32	\$32.74	\$58.49	\$37.00	\$65.66	M	\$5,701	2018	\$1,500	2018			
Albemarle County Service Authority	28,691	1,162	\$28.41		\$37.88		\$47.35		M	\$9,470	2019	COST	2017	\$6,820	2017	
Alexandria Renew / City of Alexandria	23,318	3,513	\$42.77		\$53.18		\$63.59		M	\$8,996	2020	\$9,204	2020			
Allegheny County	1,904	134	\$46.00		\$46.00		\$46.00		M	\$10,742	2020	\$1,000	2000			
Altavista, Town of	1,236	45	\$8.80	\$17.60	\$11.73	\$23.46	\$14.66	\$29.33	Q	\$3,009	2020	\$2,000	2018			
Annelia County	239	119	\$27.50		\$33.00		\$38.50		M	\$5,751	2020	COST+100%	2007	\$4,000	2013	
Amherst County Service Authority	954	251	\$34.34		\$44.98		\$55.54		B	\$10,617	2020	\$1,500	2020	\$4,500	2020	
Amherst, Town of	680	142	\$47.90	\$95.80	\$54.75	\$109.50	\$61.60	\$123.20	M	\$15,265	2019	\$2,200				
Appalachia, Town of	754	188	\$41.11	\$57.11	\$48.88	\$69.26	\$56.64	\$81.41	M	\$8,163	2019	\$1,250	2019			
Appomattox, Town of	34,546	1,644	\$47.27		\$67.04		\$84.81		M	\$17,766	2020	\$2,200	2013	\$3,000	2019	
Arlington County	8,594	761	\$27.87		\$37.16		\$46.45		Q	\$9,290	2020			\$115/DFU	2013	
Augusta County Service Authority	4,800	679	\$43.00	\$45.50	\$49.50	\$53.00	\$56.00	\$60.50	B	\$10,214	2020	\$1,250	2020	\$4,900		
Bedford Regional Water Authority	1,466	207	\$69.31		\$86.58		\$103.85		M	\$6,448	2019	\$1,500	2019	\$5,000	2018	
Berryville, Town of	2,327	258	\$32.09	\$51.04	\$37.95	\$60.39	\$43.81	\$69.74	M	\$6,023	2019	\$400				
Big Stone Gap, Town of	9,040	126	\$21.02	\$36.80	\$27.04	\$47.34	\$33.06	\$57.88	M	\$6,097	2019	\$1,013	2019	\$2,500	2019	
Blacksburg, Town of			\$24.97	\$37.46	\$31.06	\$46.59	\$37.15	\$55.73	M	\$6,020	2018	\$4,000				
Blackstone, Town of			\$58.00	\$78.00	\$64.00	\$84.00	\$70.00	\$90.00	M	\$6,411	2020	\$750	2005	\$6,000	2005	
Boones Mill, Town of	604	96	\$45.46	\$51.38	\$49.85	\$56.34	\$54.24	\$61.30	B	\$6,411	2020	\$750	2005	\$6,000	2005	
Bowling Green, Town of																



Wastewater Data⁴

	# Residential Wastewater Units	# Non-Residential Wastewater Units	Residential WW Rate (3,000 gal./mo.)	Residential WW Rate (3,000 gal./mo.)	Residential WW Rate (4,000 gal./mo.)	Residential WW Rate (4,000 gal./mo.)	Residential WW Rate (5,000 gal./mo.)	Residential WW Rate (5,000 gal./mo.)	Residential WW Rate Change	Residential Connection Fee Wastewater	Last WW Connection Fee Change	Residential Capital Recovery Charge	Last WW CRC Rate Change
Boydton, Town of			\$26.90	\$36.90	\$31.90	\$46.90	\$36.90	\$56.90					
Bridgewater, Town of	2,080	172	\$30.38	\$37.93	\$37.93		\$45.48	\$7.402	2020				
Bristol Virginia Utilities Authority	6,703	966	\$25.36	\$38.04	\$29.10	\$43.65	\$32.84	\$49.25	2019	\$2,250			
Broadway, Town of	1,488	95	\$13.82	\$17.64	\$17.64		\$21.46	\$4,600	2018				
Broadnax, Town of	148	10	\$29.11	\$40.66	\$38.81	\$54.21	\$48.51						
Brookneal, Town of			\$17.16	\$19.82	\$19.82		\$22.48						
Buchanan, Town of	411	68	\$36.75	\$55.13	\$36.75	\$55.13	\$40.05	\$55.43	2020	\$2,500			
Buckingham County	178	42	\$42.08	\$42.08	\$42.08		\$56.09	\$2,500	1994				
Buena Vista, City of	2,535	167	\$25.62	\$34.16	\$34.16		\$42.70	\$2,000	2020				
Campbell County Utility & Service Auth.	3,264	303	\$25.82	\$32.41	\$32.41		\$39.03	\$1,900	2012	\$1,900	\$4,650	2010	2010
Cape Charles, Town of	1,160	110	\$66.11	\$70.22	\$70.22		\$74.33	\$875	2019	\$875	\$6,600	2012	2012
Caroline County	993	114	\$52.12	\$61.67	\$61.67		\$71.52	MIN-\$1,000	2018	MIN-\$1,000	\$6,000	2018	2018
Carroll County PSA	891	210	\$42.00	\$52.00	\$52.00		\$62.00	\$2,500	2019	\$2,500	\$4,500		
Chatham, Town of	428	123	\$19.17	\$35.70	\$25.56	\$47.60	\$31.95	\$59.50	2018	\$1,000			
Chesterfield County	115,566	3,791	\$25.71	\$28.72	\$28.72		\$31.73		2019		\$5,400	2018	2018
Chilhowie, Town of	1,040	121	\$25.57	\$56.38	\$30.68	\$67.68	\$35.79	\$78.98	2021	\$900			
Christiansburg, Town of	9,222	386	\$30.50	\$45.75	\$40.75	\$61.13	\$51.00	\$76.50	2019	\$3,000			
Clarke County Sanitary Authority	343	26	\$58.50	\$58.50	\$58.50		\$65.96		2019		\$16,200	2006	2006
Clarksville, Town of			\$46.00	\$104.00	\$52.89	\$114.56	\$59.78	\$125.12					
Coeburn, Town of	995	130	\$33.46	\$55.53	\$41.18	\$68.85	\$48.91	\$82.17	2015	COST+\$50			
Craig-New Castle Public Service Authority	347	67	\$38.40	\$44.65	\$44.65		\$50.90	\$2,000	2020	\$2,000			
Craigsville, Town of			\$34.00	\$34.00	\$34.00		\$34.00	\$3,000		\$3,000			
Culpeper, Town of	6,602	653	\$24.15	\$32.20	\$32.20		\$40.25	COST	2019	COST	\$10,000	2006	2006
Danville, City of	16,250	2,300	\$18.37	\$21.46	\$21.46		\$24.80	\$1,700	2019	\$1,700			
Dinwiddie County Water Authority	3,450	140	\$20.82	\$26.82	\$26.82		\$32.82	\$3,910	2015	\$3,910			
Dublin, Town of	1,162	127	\$21.51	\$26.02	\$28.02	\$33.82	\$34.53	\$41.62	2020	\$1,500			
Dungannon, Town of	203	5	\$29.25	\$35.25	\$39.00	\$47.00	\$48.75	\$88	2012	\$88			
Edinburg, Town of	584	42	\$35.00	\$52.50	\$79.00	\$90.00	\$90.00	\$107.50	2019	\$10,000			
Elkton, Town of			\$33.60	\$41.37	\$41.37		\$49.14	\$7,500	2020	\$7,500			
Farmville, Town of	3,173	641	\$20.17	\$30.26	\$24.58	\$36.88	\$29.00	\$43.51	2018	\$1,000			
Fauquier County Water and Sanitation Authority	5,057	277	\$58.21	\$67.83	\$67.83		\$77.45	\$14,000	2016	\$14,000			
Ferrum Water & Sewer Authority	148	30	\$31.50	\$39.00	\$39.00		\$46.50	COST+\$50	2017	COST+\$50	\$2,500	2017	2017
Fincastle, Town of	175	30	\$39.19	\$45.88	\$45.88		\$52.57	\$2,000	2020	\$2,000	\$2,500	2012	2012
Franklin, City of	3,220	252	\$32.30	\$36.95	\$36.73	\$45.62	\$41.16	\$51.29	2016	\$4,000			



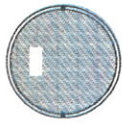
Wastewater Data⁴

	# Residential Wastewater Units	# Non-Residential Wastewater Units	Residential WW Rate Inside (3,000 gal./mo.)	Residential WW Rate Outside (3,000 gal./mo.)	Residential WW Rate Inside (4,000 gal./mo.)	Residential WW Rate Outside (4,000 gal./mo.)	Residential WW Rate Inside (5,000 gal./mo.)	Residential WW Rate Outside (5,000 gal./mo.)	Billing Frequency	WW Rate Business/Inside (1 million gal./mo.)	Last WW Rate Change	Residential Connection Fee Wastewater	Last WW Connection Fee Change	Residential Capital Recovery Charge	Last WW CRC Rate Change
Frederick, Water	15,764	629	\$38.22	\$38.22	\$43.39	\$43.39	\$48.56	\$48.56	B	\$8,649	2019	\$3,076	2019		
Galax, City of	3,200	500	\$16.00	\$32.00	\$20.50	\$41.00	\$25.00	\$50.00	B	\$4,503	2020				
Gate City, Town of	803	131	\$38.25		\$47.65		\$57.05		M	\$10,958	2018	\$900	2014		
Glasgow, Town of	520	12	\$32.08	\$41.00	\$33.38	\$44.30	\$34.68	\$47.60	M	\$2,327	2019	\$2,500	2019		
Gloucester, County of	2,280	690	\$39.59		\$52.36		\$64.95		M	\$11,206	2013	\$5,205	2008	\$1,200	2008
Goochland, County of	1,235	190	\$39.98		\$47.26		\$54.54		B	\$14,207	2019	\$6,300	2019		
Greensville County WSA	1,553	93	\$34.49		\$34.49		\$43.96		M	\$8,008	2020	\$1,320		\$635	
Halifax County Service Authority	4,040	425	\$36.10		\$41.80		\$47.50		B	\$5,355	2019			\$1,500	2008
Hamilton, Town of	608	29	\$32.64	\$44.04	\$43.32	\$58.72	\$69.77	\$94.16	B		2019	\$5,000	2010		
Hanover County	19,751	1,685	\$30.70		\$38.25		\$45.80		B	\$5,690	2019			\$6,456	2019
Harrisonburg, City of	17,351	2,554	\$17.31	\$25.74	\$23.08	\$34.32	\$28.85	\$42.90	M	\$5,620	2019	\$4,500	2010		
Henrico, County of	92,035	5,173	\$31.02		\$34.83		\$40.54		B	\$5,253	2019	\$3,150	2018	\$5,605	2018
Henry Co. Public Service Authority	6,898	7,131	\$30.00		\$30.00		\$34.70		M	\$7,017	2013	\$1,750	2013		
Hopewell Regional Wastewater Treatment Facility	7,982	569	\$16.18		\$19.98		\$23.78		M	\$3,166	2017	\$2,026	2018		
Isle of Wight County	3,357	86	\$44.50		\$59.33		\$74.17		B		2020	\$3,700			
James City Service Authority	23,558	1,305	\$34.85		\$45.80		\$56.75		M	\$11,000	2019	\$3,583	2020	\$1,818	2020
Kenbridge, Town of	417	144	\$52.28	\$75.53	\$60.37	\$86.70	\$68.48	\$97.87	M		2012	\$500			
Kilmarnock, Town of	774	249	\$25.50	\$35.62	\$32.13	\$44.99	\$38.76	\$54.36	B	\$13,272	2019	\$8,040	2006		
King George County Service Authority	1,985	170	\$67.94		\$80.04		\$92.14		B	\$12,147	2020	\$11,183	2013		
King William County	493	53	\$41.46		\$55.28		\$69.10		B	\$13,820	2018	\$8,000	2015		
Leesburg, Town of	16,691	1,156	\$29.56	\$40.27	\$36.43	\$50.71	\$43.30	\$61.15	Q	\$2,537	2020	\$80	2020	\$7,292	
Lexington, City of	2,500	550	\$44.75	\$60.43	\$59.67	\$80.58	\$74.59	\$100.73	M	\$31,776	2020	\$1,809	2020	\$427	2020
Loudoun Water	77,662	4,725	\$58.20		\$73.62		\$89.04		Q	\$15,679	2020	\$80	2020	\$8,540	2020
Louis Co. Water Authority Northeast Creek	38	48	\$35.48		\$35.48		\$44.35		M	\$8,870	2019	\$5,250	2004		
Louis Co. Water Authority Zion Crossroads	664	49	\$35.48		\$35.48		\$44.35		M	\$8,870	2019	\$5,250	2004		
Louis, Town of	739	154	\$34.34	\$50.36	\$34.34	\$50.36	\$41.53	\$58.99	M	\$7,720	2019	\$7,720	2019		
Luray, Town of	2,131	73	\$48.33	\$72.49	\$55.58	\$83.37	\$62.83	\$94.24	M	\$7,838	2020	\$5,940	2010	\$1,200	2010
Lynchburg, City of	19,000	2,000	\$29.14		\$37.35		\$45.56		M	\$8,290	2020	\$1,330	2017	\$1,950	2000
Manassas, City of	13,730	1,042	\$36.45		\$45.80		\$55.15		M	\$10,359	2020				
Marion, Town of	2,705	345	\$21.68	\$43.29	\$29.85	\$59.58	\$38.02	\$75.87	M	\$8,167	2019	\$900	2016		
Martinsville, City of	7,000	500	\$23.64		\$23.64		\$26.37		M	\$2,743	2016	\$850	2014		
Mineral, Town of	112	34	\$35.40		\$44.25		\$53.10		M	\$8,859	2013	\$6,000	2007		
Mount Jackson, Town of	700	96	\$37.95	\$56.94	\$50.60	\$75.92	\$63.25	\$94.90	M	\$12,650	2019	\$10,000	2019		
Nelson County	179	18	\$38.60		\$38.60		\$45.45		M		2013	\$2,000	2013		



Wastewater Data⁴

	# Residential Wastewater Units	# Non-Residential Wastewater Units	Residential WW Rate Inside (3,000 gal./mo.)	Residential WW Rate Outside (3,000 gal./mo.)	Residential WW Rate Inside (4,000 gal./mo.)	Residential WW Rate Outside (4,000 gal./mo.)	Residential WW Rate Inside (5,000 gal./mo.)	Residential WW Rate Outside (5,000 gal./mo.)	Billing Frequency	WW Rate Business Inside (1 million gal./mo.)	Last WW Rate Change	Residential Connection Fee Wastewater	Last WW Connection Fee Change	Residential Capital Recovery Charge	Last WW CRC Rate Change
Nelson County Service Authority	2,447	100	\$54.10	\$54.10	\$54.10	\$54.10	\$64.00	\$64.00	M	\$12,254	2019	\$4,000			
New Kent County	1,718	150	\$33.41	\$43.42	\$43.42	\$53.43	\$53.43	\$53.43	B	\$10,773	2020	\$9,275	2012	\$2,500	2012
Norton, City of	1,551	388	\$42.44	\$78.90	\$53.20	\$103.50	\$63.96	\$128.10	M	\$18,730	2019	\$175			
Onancock, Town of	630	1	\$67.59	\$32.50	\$90.41	\$37.00	\$112.90	\$41.50	B	\$6,951	2020	\$1,200	2010		
Pembroke, Town of	640		\$26.20	\$33.46	\$30.10	\$40.07	\$34.00	\$41.50	M	\$4,425	2016	\$1,250	2010		
Powhatan County	123	110	\$33.46	\$40.07	\$40.07	\$46.68	\$46.68	\$8.100	B	\$500	2019	\$8,100			
Pulaski County Sewerage Authority	845	100	\$27.75	\$29.00	\$29.00	\$30.25	\$30.25	\$167.00	M	\$16,137	2019	\$500	2010	\$21,600	2019
Purcellville, Town of	2,657	332	\$55.35	\$103.20	\$71.30	\$135.10	\$87.25	\$167.00	B	\$1,500	2014	\$1,500	2014		
Radford, City of	5,385	1	\$18.36	\$24.48	\$24.48	\$30.60	\$30.60	\$10,000	M	\$9,707	2020	\$10,000			
Rapidan Service Authority	6,474	350	\$37.10	\$46.78	\$46.78	\$50.00	\$50.00	\$7,500	M	\$300	2018	\$7,500	2009		
Rappahannock County Water & Sewer Authority	187	43	\$50.00	\$25.00	\$50.00	\$32.50	\$32.50	\$38.50	Q	\$50	2018	\$300	1986		
Richlands, Town of	2,178	255	\$20.50	\$26.50	\$25.00	\$29.50	\$29.50	\$850	M	\$5,925	2019	\$850	2007	\$4,500	2007
Rockbridge County PSA (Rivermont and Riveria)	1,411	288	\$46.69	\$56.44	\$56.44	\$26.60	\$26.60	\$1,000	B	\$3,328	2017	\$1,000	2016		
Rockingham County	3,664	225	\$16.30	\$21.45	\$21.45	\$24.79	\$24.79	\$400	M	\$7,320	2018	\$350			
Rocky Mount, Town of	1,752	330	\$17.85	\$35.70	\$21.32	\$42.64	\$24.79	\$49.58	M	\$5,435	2015	\$2,100	2016	\$1,000	2016
Rural Retreat, Town of	326	78	\$26.66	\$28.95	\$28.95	\$33.75	\$33.75	\$350	M	\$2,000	2020	\$2,000	2015		
Saint Paul, Town of	7,703	1,286	\$38.87	\$44.26	\$33.97	\$57.35	\$49.65	\$68.84	M	\$7,000	2019	\$1,580	1999	\$4,120	2007
Salem, City of	1,201	70	\$44.00	\$57.33	\$44.26	\$70.66	\$49.65	\$76.23	M	\$1,500	2020	\$1,500	1991		
Scott County Public Service Authority	910	76	\$25.65	\$38.50	\$30.15	\$46.00	\$34.65	\$53.50	M	\$6,000	2020	\$7,000	2020		
Shenandoah, Town of	3,176	470	\$43.65	\$46.35	\$55.09	\$58.69	\$66.53	\$71.03	B	\$4,513	2019	\$1,580	1999	\$4,120	2007
Smithfield, Town of	1,935	447	\$23.64	\$47.28	\$31.15	\$62.30	\$38.12	\$76.23	M	\$2,100	2020	\$1,500	1991		
South Hill, Town of	1,326	79	\$36.00	\$36.00	\$36.00	\$44.00	\$44.00	\$6,000	M	\$2,100	2017	\$1,800	2009	\$6,000	2009
Southampton County	29,418	1,761	\$20.27	\$25.99	\$25.99	\$31.71	\$31.71	\$47.92	M	\$6,287	2019	\$2,220	2008	\$4,920	2008
Spotsylvania County	35,211	1,253	\$35.20	\$41.56	\$41.56	\$32.00	\$32.00	\$36.00	M	\$2,100	2019	\$2,100	2005	\$3,500	2010
Stafford County	1,417	70	\$29.40	\$31.00	\$30.70	\$33.50	\$32.00	\$36.00	M	\$6,539	2013	\$4,625	2017		
Stanley, Town of	8,276	1,138	\$19.52	\$29.28	\$24.40	\$36.60	\$31.72	\$47.58	B	\$6,000	2012	\$3,100	2020	\$6,850	2016
Staunton, City of	1,385	45	\$51.00	\$56.00	\$56.00	\$33.99	\$33.99	\$40.29	B	\$6,527	2013	\$6,000	2010		
Stoney Creek Sanitary District	364	100	\$24.16	\$27.69	\$29.74	\$33.32	\$35.32	\$84.50	M	\$540	2020	\$600			
Stuart, Town of	1,609	203	\$39.95	\$57.50	\$49.20	\$71.00	\$59.05	\$84.50	M	\$25	2020	\$25	2010		
Tazewell, Town of	615	30	\$29.50	\$36.00	\$36.00	\$42.50	\$42.50	\$20	M	\$8,220	2014	MIN \$7,450	2014	\$1,545	2014
Toms Brook-Mauertown Sanitary District	850	15	\$18.50	\$25.04	\$25.04	\$31.58	\$31.58	\$8,340	M	\$9,950	2020	\$8,340	2020	\$7,625	2020
Victoria, Town of	6,971	325	\$23.85	\$34.40	\$34.40	\$43.00	\$43.00	\$69.98	Q	\$20	2020	\$20	2020	\$1,545	2014
Vienna, Town of	128,208	5,811	\$54.31	\$62.14	\$62.14	\$69.98	\$69.98	\$69.98	M	\$69.98	2014	MIN \$7,450	2014	\$1,545	2014
Virginia Beach Public Utilities															



Wastewater Data⁴

	# Residential Wastewater Units	# Non-Residential Wastewater Units	Residential WW Rate Inside (3,000 gal./mo.)	Residential WW Rate Outside (3,000 gal./mo.)	Residential WW Rate Inside (4,000 gal./mo.)	Residential WW Rate Outside (4,000 gal./mo.)	Residential WW Rate Inside (5,000 gal./mo.)	Residential WW Rate Outside (5,000 gal./mo.)	Billing Frequency	WW Rate Business Inside (1 million gal./mo.)	Last WW Rate Change	Residential Connection Fee Wastewater	Last WW Connection Fee Change	Residential Capital Recovery Charge	Last WW CRC Rate Change
Warrenton, Town of	3,851	596	\$21.95	\$32.90	\$31.62	\$47.41	\$41.30	\$61.92	M	\$10,047	2020	COST + \$8,000	2020	\$10,800	2016
Waynesboro, City of	7,515	778	\$40.62	\$44.68	\$43.93	\$48.32	\$58.20	\$64.02	B	\$8,943	2019	MIN \$800	1999	\$4,250	1999
Western Virginia Water Authority (Botetourt Co.)	2,808	308	\$27.75		\$31.50		\$35.25		M	\$4,195	2020	\$2,000		\$3,000	
Western Virginia Water Authority (Franklin Co.)	49	48	\$29.10		\$33.30		\$37.50		M	\$4,695	2020	\$2,000		\$3,000	
Western Virginia Water Authority (Roanoke City/County)	48,754	4,265	\$27.75	\$40.00	\$31.50	\$40.00	\$35.25	\$40.00	M	\$4,195	2020	\$2,000		\$3,000	
Westmoreland County	2,801	298	\$37.00	\$40.00	\$37.00	\$40.00	\$37.00	\$40.00	B		2018	\$10,022	2018	\$1,539	2018
Winchester, City of	10,608		\$40.41		\$33.88		\$67.35		B	\$13,470	2020	\$7,200	2017		
Wise, Town of	1,984	194	\$36.66	\$53.31	\$44.81	\$65.16	\$52.96	\$77.01	M	\$8,162	2019	\$500	2000		
Wythe County	586	94	\$22.00		\$28.90		\$35.80			\$8,870	2015	\$1,000	2009	\$500 / EDU	
Wytheville, Town of	3,878	688	\$18.43	\$36.86	\$24.56	\$49.12	\$30.69	\$61.38	M	\$6,452	2019	\$1,500			

⁴Participants provided wastewater treatment services by the Hampton Roads Sanitation District (HRSD); Gloucester County, James City Service Authority, Town of Smithfield, and the City of Virginia Beach included the HRSD wastewater charges in their responses. As a result, the data listed in the wastewater section of this report includes the HRSD wastewater treatment charges as follows: 3,000 gallons per month (or 401 cubic feet) - \$23.50; 4,000 gallons per month (or 535 cubic feet) - \$31.33; 5,000 gallons per month (or 668 cubic feet) - \$39.17 and 1,000,000 gallons per month (or 133,681 cubic feet) - \$7,833.68.