

# 2021

## NORTH CAROLINA WATER & WASTEWATER RATES REPORT





## ABOUT THIS REPORT

This report is just one resource in an annual series on North Carolina water and wastewater rates, funded by the North Carolina Department of Environmental Quality's Division of Water Infrastructure (DWI) and compiled by the North Carolina League of Municipalities (NCLM) and the Environmental Finance Center (EFC) at the University of North Carolina at Chapel Hill.

In addition to this report, there is an accompanying set of [tables](#) and [standardized water and wastewater rate information](#) for each participating utility. Furthermore, with the online, interactive [Rates Dashboard](#), users can compare utilities against various attributes such as geographic location, system characteristics, and customer demographics, as well as financial indicators and benchmarks.



## CONTRIBUTORS TO THE REPORT

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# 4 Myths

## About Water Pricing



1

### MYTH: High Rates are Bad

**FACT:** Higher rates do not necessarily reflect poor or inefficient management. Some utilities may not be charging enough to properly maintain assets or have not re-examined rate structures.



2

### MYTH: Comparing Rates is Simple

**FACT:** Rates alone do not tell the entire story. Rates should reflect the cost of providing service and can vary based on many factors. Comparing rates is really just a starting point for more analysis.



3

### MYTH: Pricing is Simple

**FACT:** Utilities employ a variety of pricing structures and should be thoughtful in designing those structures to meet their needs, objectives, and priorities as they evolve over time.



4

### MYTH: Promoting Conservation Requires Increasing Block Rate Structures

**FACT:** Many different types of pricing structures can be employed to encourage conservation, not just increasing block rate. Utilities should aim to focus on all aspects of pricing, not just rate structure design.



For more information on The Four Myths of Water Pricing, visit the original blog post at <http://efc.web.unc.edu/2015/02/12/myths-about-water-rate-setting/>

# INTRODUCTION

Between September 2020 and March 2021 the EFC and NCLM conducted a survey of 512 rate-charging water and wastewater utilities in North Carolina.

A total of **478** utilities participated by providing their rate schedules, yielding a response rate of **93.4%** of utilities. Utilities from all 100 counties in the state are represented in this survey group.

Water and wastewater rate setting is one of a local government's most important environmental and public health responsibilities. This report aims to provide utility professionals and public officials with an up-to-date, detailed survey of current statewide rate structures and trends, and thus assist in the protection of public health, improvement of economic development, and promotion of sustainability

*Continue reading to find out how water and wastewater rates ultimately determine how much revenue a community has to maintain vital infrastructure.*

# BY THE NUMBERS

 **371** utilities serving  
**WATER AND WASTEWATER**

 **89** utilities serving  
**WATER ONLY**

 **24** utilities serving  
**WASTEWATER ONLY**



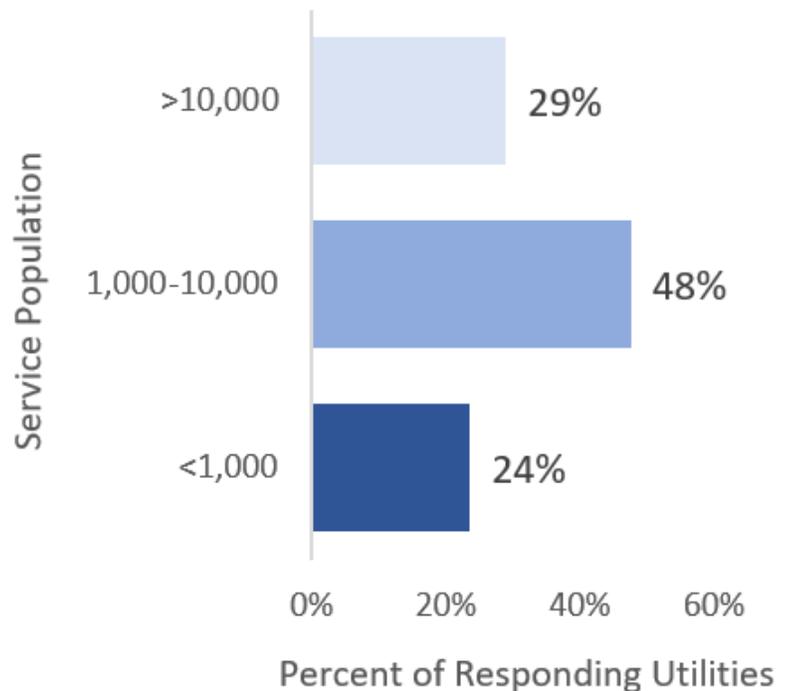
**75%**  
MUNICIPAL

**12%**  
COUNTY/DISTRICT

**6%**  
NOT-FOR-PROFIT

**7%**  
OTHER

Distribution of Utilities  
by Service Population (n=484)



# WHAT DO RATE STRUCTURES LOOK LIKE?

## Base Charges

Considerable variation exists in how utilities model rate structures, but almost all use a combination of a **base charge** and a **volumetric charge**.

Base charges do not vary from one billing period to the next regardless of consumption. These charges can be a constant, universal amount for all customers, or vary based on customer class (e.g. residential vs. commercial) or even meter size.

Base charges sometimes feature a **consumption allowance**, which is a volume of usage included in the base charge.

In North Carolina, **54% of water rate structures** with base charges included a consumption allowance. The median monthly consumption allowance is **2,000 gallons**.

## Median Monthly Base Charge Amounts

\$16.78 

WATER

\$18.50 

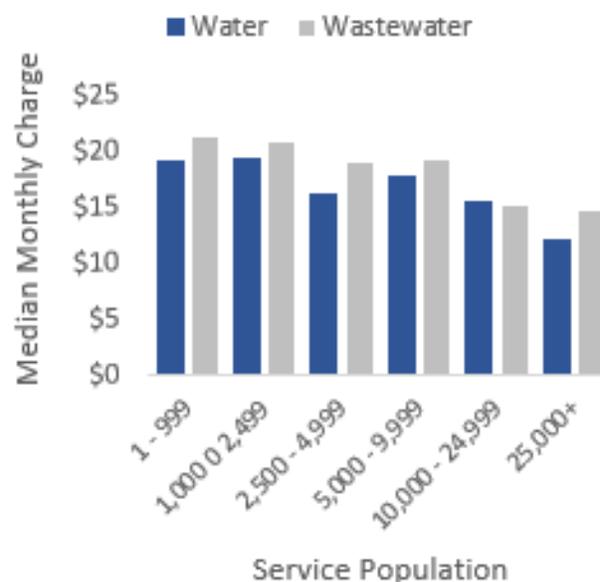
WASTEWATER

\$35.00 

WATER AND WASTEWATER

**Larger** water utilities tend to have **lower** base charges than smaller utilities, likely because they are able to spread **fixed costs** across a greater customer base.

## Median Monthly Base Charge Amounts



# WHAT DO RATE STRUCTURES LOOK LIKE?

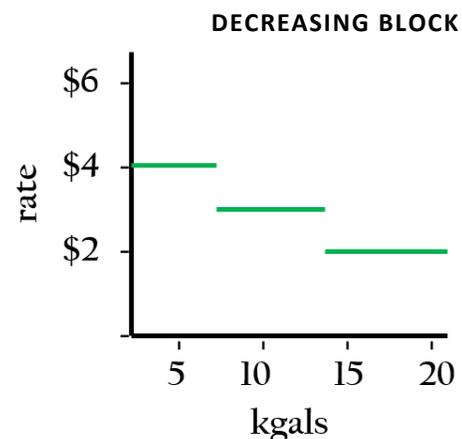
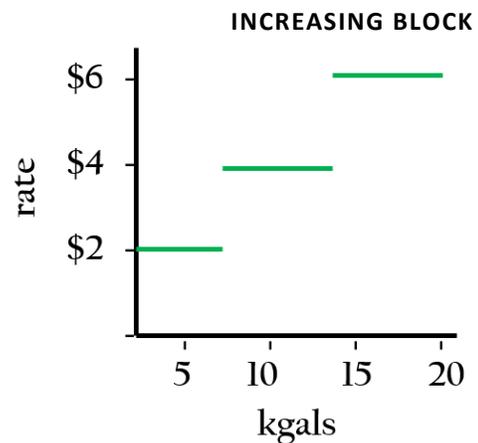
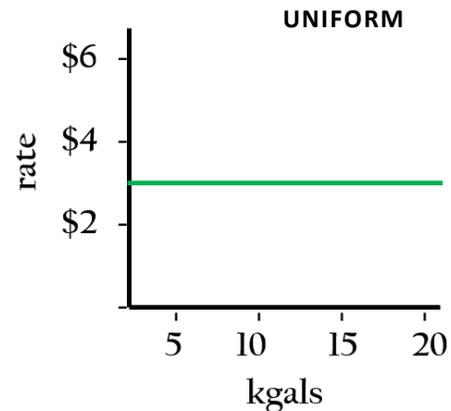
## WAYS TO CHARGE FOR VOLUME

As mentioned, most rate structures are a combination of a fixed base charge plus a volumetric charge. Three common ways to charge for volume are uniform, increasing block, and decreasing block rates.

With a **uniform rate** structure, the rate does not change as the customer consumes more.

In an **increasing block rate** structure, the rate increases as the customer uses more. This structure is often employed by utilities that want to encourage conservation by making higher volumes of consumption more expensive.

The rate per unit decreases with greater consumption in a **decreasing block** structure. This type of rate structure may be used to encourage economic development, but likely will not encourage conservation.



## WHAT IS THE MOST COMMON VOLUMETRIC RATE STRUCTURE ?

In North Carolina, the majority of residential water (58%) and wastewater (72%) rate structures use a **uniform rate** to charge for volume. Standardized to thousands of gallons, the median uniform rate is **\$4.99 for water** and **\$6.44 for wastewater** services.

# WHAT ARE UTILITIES CHARGING?

## North Carolina's Average Bills

Residential (5,000 GALS)

Commercial (50,000 GALS)

WATER

**\$38.45** |  
MONTH

**\$461.41**  
YEAR



**\$299.60** |  
MONTH

**\$3,595.22**  
YEAR

WASTEWATER

**\$47.43** |  
MONTH

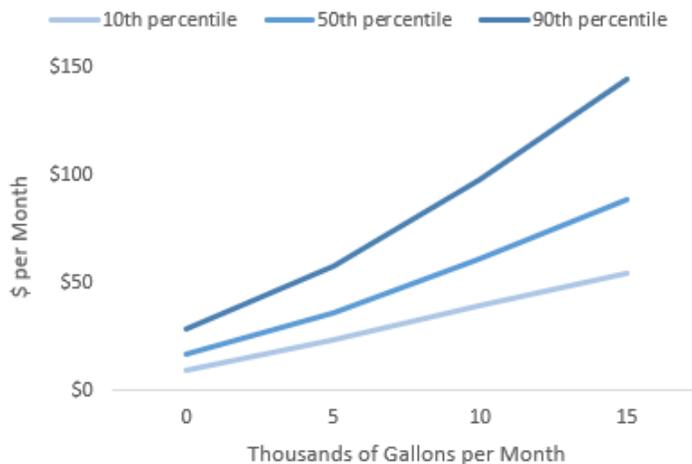
**\$569.17**  
YEAR



**\$384.78** |  
MONTH

**\$4,617.34**  
YEAR

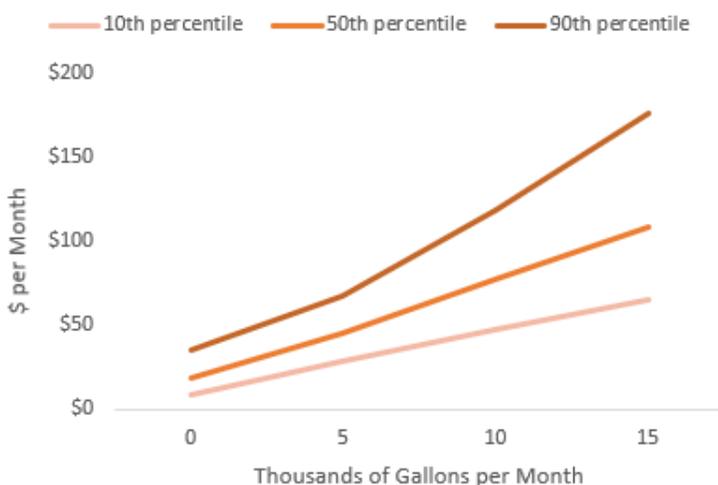
### SPREAD OF MIDDLE 80% OF WATER BILLS



### RANGE OF BILLS

As volume increases, the average wastewater bill tends to rise at a *greater rate* than the average water bill. The 50th percentile wastewater bill is 12% higher than the 50th percentile water bill at 0 gallons of monthly consumption, increasing to 23% higher at 15 thousand gallons.

### SPREAD OF MIDDLE 80% OF WASTEWATER BILLS



While reporting the average bill is helpful for understanding the "big picture" for bills, it does not show the total distribution of bills. The graphs at the left show the range of the middle 80% of bills (from the 10th to the 90th percentile) for 0 to 15,000 gallons.

# HOW DO OUTSIDE RATES COMPARE?

## Inside vs. Outside Rates

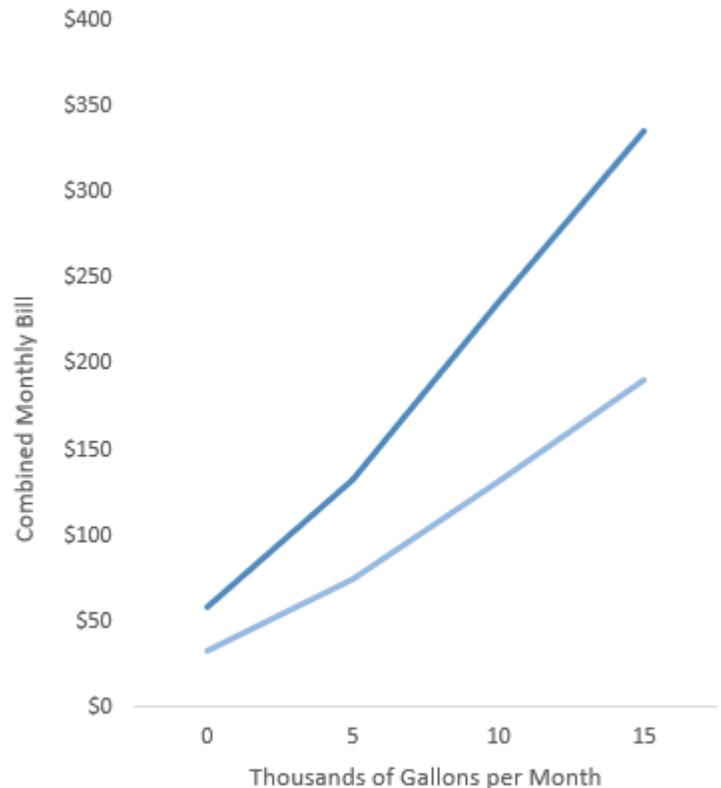
All of the charges presented above refer to what utilities charge customers that live within their political boundaries. Municipal utilities often serve customers who live outside of city limits, and a handful of other utilities specify geographical boundaries within their service areas and identify their customers as residing “inside” and “outside” those boundaries. In many cases, utilities charge different rates for customers living inside or outside the boundary.

In North Carolina **62%** of water rate structures and **64%** of wastewater rate structures charge outside rates

The median monthly outside bill at 6,000 gallons is 1.85 times the inside bill for water and 1.91 times the inside bill for wastewater.

The median combined water and wastewater bill at 5,000 gallons is **\$74.10** for customers inside service boundaries and **\$132.32** for those outside of service boundaries.

Median Combined Water and Wastewater Bill



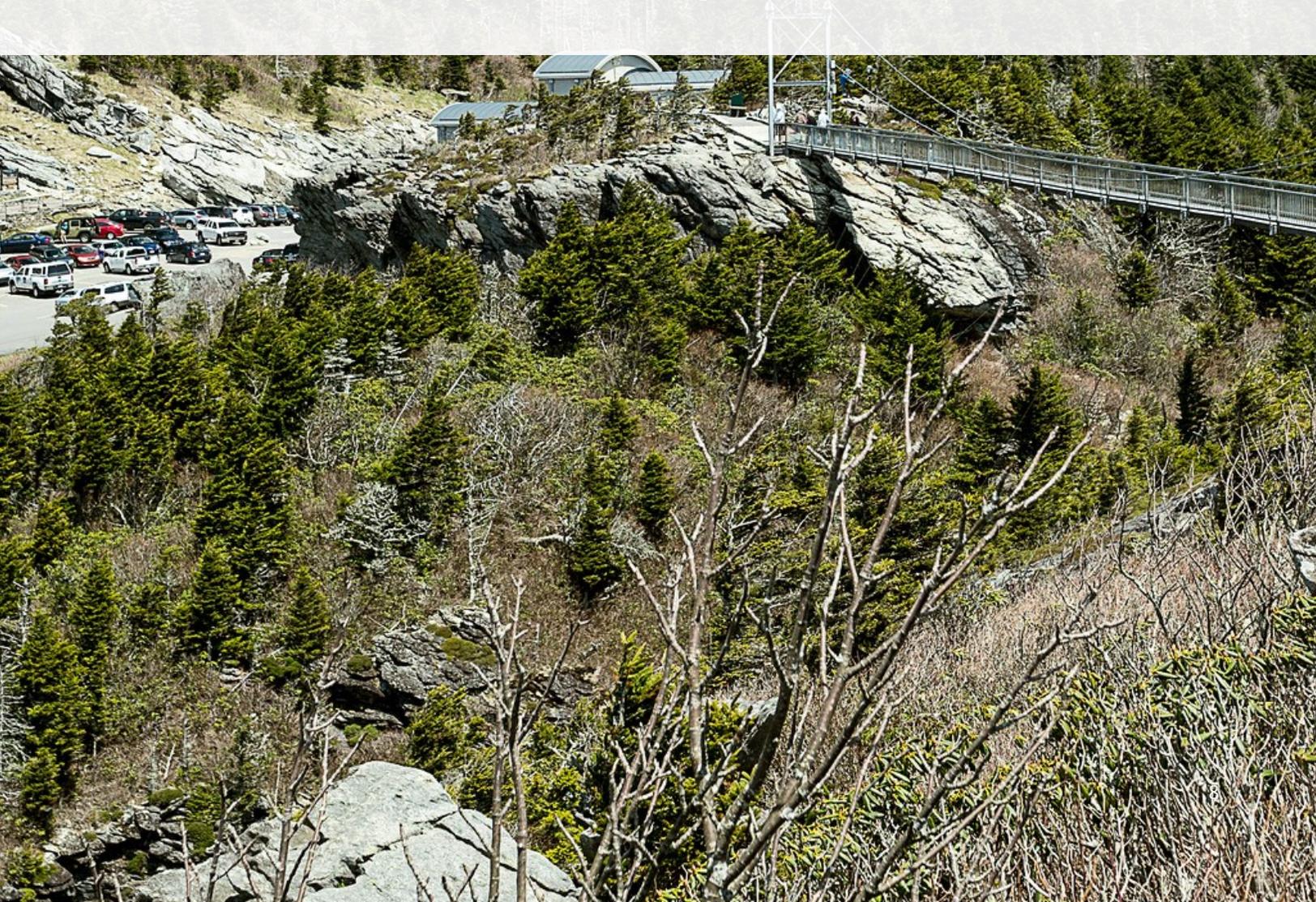
The graph above shows that as volume increases, the median combined water and wastewater bill for outside rates tends to rise at a *greater rate* than the median combined water and wastewater bill for inside rates.

Generally, outside rates are greater than inside rates because customers reside farther, on average, from the water and wastewater treatment plant than inside customers. Extra costs for distribution and collection systems may justify higher rates for outside customers.

# HOW DO IRRIGATION RATES COMPARE?

Some utilities offer unique irrigation rates. When the same utility provides water and wastewater service, the wastewater service is often tied to metered water consumption. To separate outdoor water use, which does not go into the wastewater system, from wastewater use, utilities will sometimes meter separately for irrigation. These unique irrigation rates do not charge customers for the equal wastewater use and, as a result, are often slightly more expensive than water rates, but less than the combined water/wastewater rate if no irrigation rate existed.

In North Carolina, most irrigation rates are equivalent to water rates. Only about 11% of rate structures have unique irrigation rates. Approximately **76% of the 54 unique irrigation rates are greater than water rates.**



# WHEN WERE RATES LAST CHANGED?

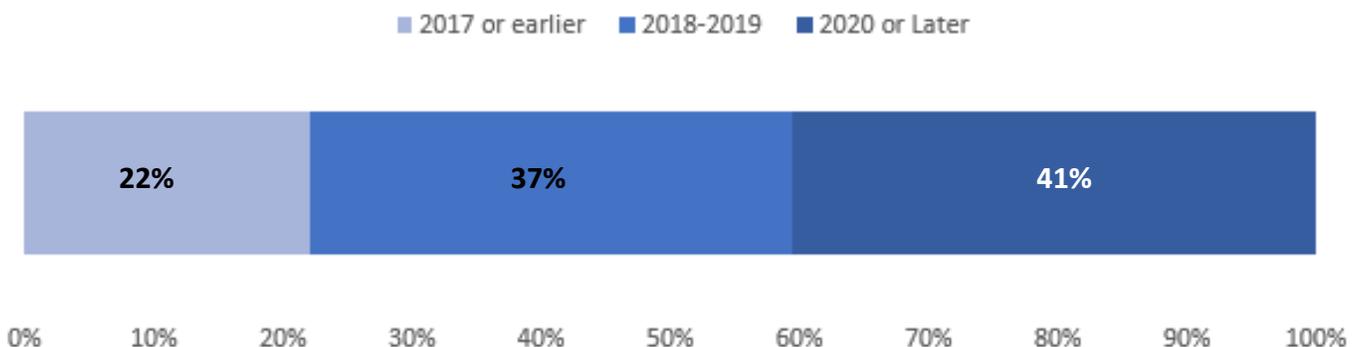
- *The **MAJORITY** of utilities have updated rates as of **AT LEAST 2017**.*
- *Only about **1 IN 5** utilities have not updated their rates since **2017** or earlier.*



In North Carolina **most utilities** are actively evaluating and modifying their rate structures every one to two years. The EFC recommends that utilities review their rates **at least every two years**, at the minimum, to keep in pace with inflation. An annual or biennial review gives utilities the opportunity to evaluate if their current rates are enough to cover the necessary operating expenses and depreciation, not to mention savings goals for capital planning, emergencies, or other funds.

Utilities that modestly raise rates at more frequent intervals accumulate more revenue over time than those that implement less frequent, but more drastic rate increases. Customers are also less likely to balk at more gradual, periodic rate increases than a one-time price hike.

The calendar year when sampled rate structures were first put into effect is shown below.



# HOW HAVE RATES CHANGED?

The annual rates survey has been an ongoing partnership between the NC League of Municipalities and the EFC since 2006. As a result, years of rates data have been collected and are available to analyze trends and changes. As the costs of providing service rise, so should rates. Providing water and wastewater service is costly and infrastructure-intensive. Regular, predictable rate increases are common and recommended.

The **presence** of a change as well as the **level** of that change is important when assessing revenue needs for utilities. The figures below reflect changes in residential rates over the last fiscal year. Each figure reflects data from a cohort. The figures below only represent those rate structures present in both the 2020 and 2021 rates surveys.

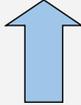
## Percent of Rate Structures with Increased Residential Rates from 2020-2021

Water N=470 Rate Structures, Wastewater N=395 Rate Structures



Given that in most cases bills are quite low, a large percentage rate increase may not translate to a large dollar amount increase. **The median bill increase at 5,000 gallons for rate structures with increases was just \$1.74 for water and \$2.46 for wastewater.**

## Of Those Rate Structures with Increased Rates Since 2020 How Much Did They Increase?

<u>Median Increase</u>		<u>Average Increase</u>
<b>5.1%</b>		<b>9.9%</b>
	<b>WATER</b>	
<b>5.2%</b>		<b>10%</b>
	<b>WASTEWATER</b>	

# DO PRICES REFLECT THE TRUE COST OF SERVICE?

Utilities sometimes fall into the trap of pricing services based on what their customers have always paid, rather than focusing on the bottom line of their balance sheets. This year, financial data were available for **381 utilities** out of the total 484 utilities (79%). Let's start with some essential definitions:

## WHAT IS OPERATING RATIO?

Operating ratio, also known as cost recovery ratio, is a financial benchmark that determines if an entity is operating at a loss, gain, or just breaking even. The ratio is simply the division of operating revenues by operating expenses, which can include or exclude depreciation. A utility's operating ratio must be *at least 1.0* to break even.

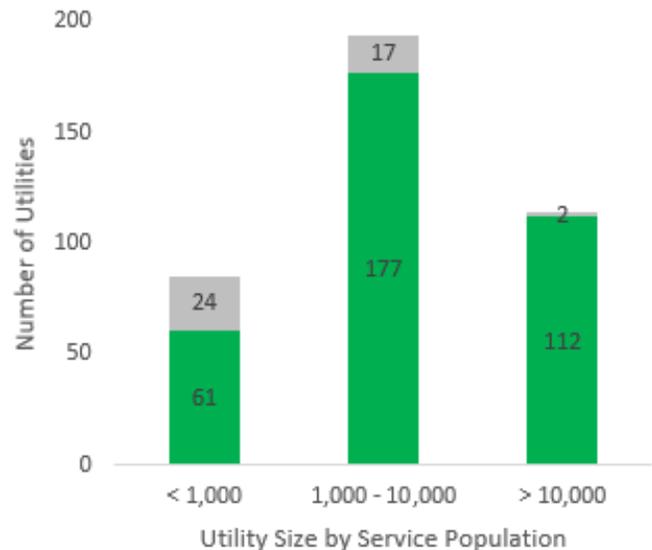
## WHY INCLUDE DEPRECIATION?

Whenever possible, depreciation should be included in operating expenses to account for the inevitable cost of replacing equipment and infrastructure at the end of its expected useful life. Depreciation allows costs to be figuratively parceled out over time, avoiding a sudden, enormous expense when the time comes to replace assets.

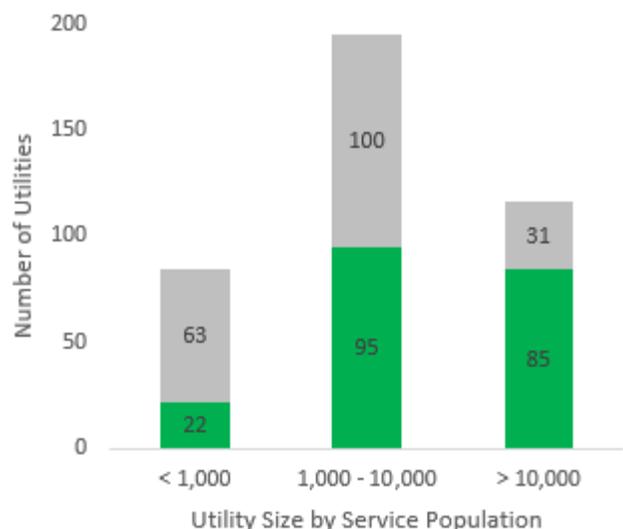
Consider the differences in the graphs below with and without depreciation factored into operating expenses.

- Operating expenses < Operating revenues
- Operating expenses > Operating revenues

Proportion of Utilities with Operating Ratio  $\geq 1$ ,  
Excluding Depreciation (n = 393 utilities)



Proportion of Utilities with Operating Ratio  $\geq 1$ ,  
Including Depreciation (n = 396 utilities)



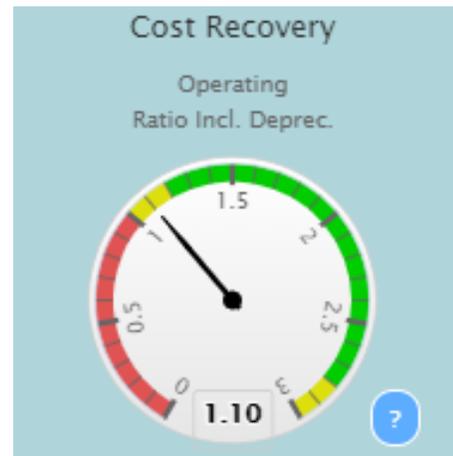
# DO PRICES REFLECT THE TRUE COST OF SERVICE?

*Without* including depreciation, **350 out of 393** utilities for which depreciation data was available (89%) generated enough revenue to recover operating costs (operating ratio of 1.0 or greater. Of the utilities that were not able to recover expenses, 41 out of 43 serve fewer than 10,000 people.

*With* depreciation included, just **202 of the 396** (51%) utilities generated enough revenue to cover operating expenses. All utilities face the issue of generating sufficient revenue to pay for the high fixed costs of providing safe and reliable services. However, smaller utilities must spread out those high fixed costs over a smaller customer base. 63 out of 194 of the utilities with an operating ratio of less than 1.0 serve fewer than 10,000 people.

## WHAT IS CONSIDERED HEALTHY?

The Cost Recovery dial on the [Rates Dashboard](#) uses red, yellow, and green colored bands to give the viewer a simplified idea of the health of the utility's operating ratio at a glance.



While it is clear that being “in the red” is not a good position, there is no universal standard for what constitutes a healthy operating ratio beyond 1.0. Generally, as the Cost Recovery dial shows in the green band above, an operating ratio including depreciation of **at least 1.2** allows utilities to account for day-to-day operations and maintenance expenses, as well as for future capital costs.

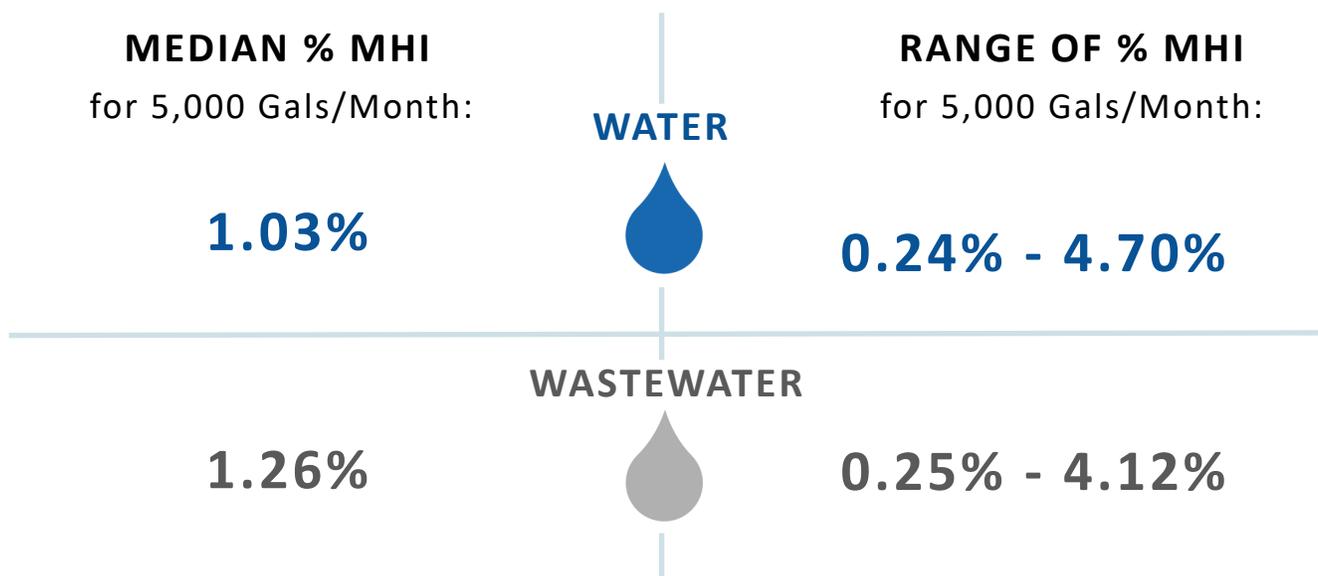
Just **19% of utilities** have an operating ratio including depreciation of **1.2 or greater**.

## ADDITIONAL FINANCIAL DATA

The 2021 [Rates Dashboard](#) features more than 10 financial metrics, including **days cash on hand, quick ratio, asset depreciation**, and more!

## HOW AFFORDABLE ARE RESIDENTIAL BILLS?

Assessing rate affordability remains a challenge, because there is no one true, universal measure of affordability. The most commonly used indicator, **Percent Median Household Income**, or “**Percent MHI**,” calculates how a year’s worth of water and wastewater bills, in this case 5,000 gallons/month, compares to the MHI of the community served by the utility. MHI is provided by the most recent 5-year estimates of the US Census Bureau’s American Community Survey.



As all communities have a range of income brackets, it is important to keep in mind that what may seem like a small percentage of the community’s MHI can have a proportionally larger impact on lower-income populations. This includes households making less than or equal to the **federal poverty guideline, \$26,200 in 2020 for a family of four**, according to the US Department of Health and Human Services. In North Carolina, the 75th percentile water bill and wastewater bill equates to about **2.01% income for water and 2.6% for wastewater**, respectively, at the federal poverty guideline.

As all communities have a range of income brackets, it is important to keep in mind that what may seem like a small percentage of the community’s MHI can have a proportionally larger impact on lower-income populations. For a more in-depth look at the affordability of water and wastewater services in a community, the EFC offers the free, Excel-based [Residential Rates Affordability Assessment Tool](#), available for download on our website.

# Further Resources

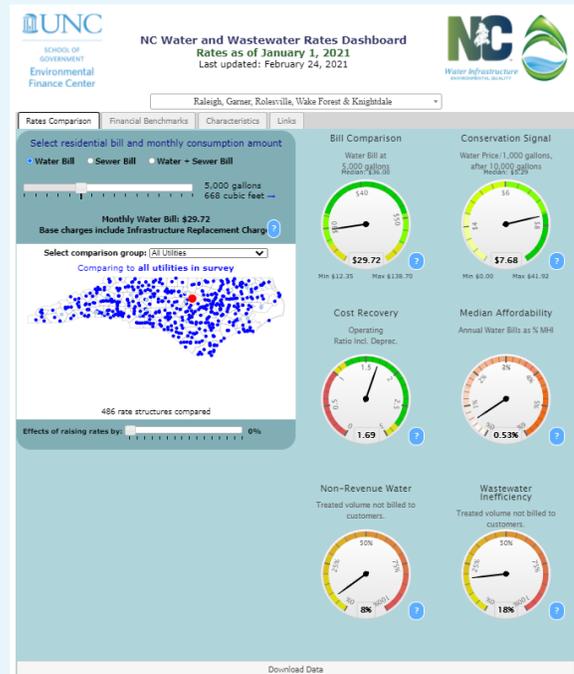
All of the following free resources are available at:

⇒ [go.unc.edu/nc](https://go.unc.edu/nc)

⇒ **2021 Water and Wastewater Rates Dashboard**

⇒ **Downloadable tables of rates and rate structures for residential, commercial, and irrigation customer classes for water and wastewater**

⇒ **Tableau software tool with standardized *rate sheets* for all utilities in the survey**



## Questions? Feedback?



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