

Trends in Water Use and Rates in North Carolina

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Chapel Hill, NC



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Environmental Finance Center

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Shifting Water Use in NC: What does it mean for your utility?

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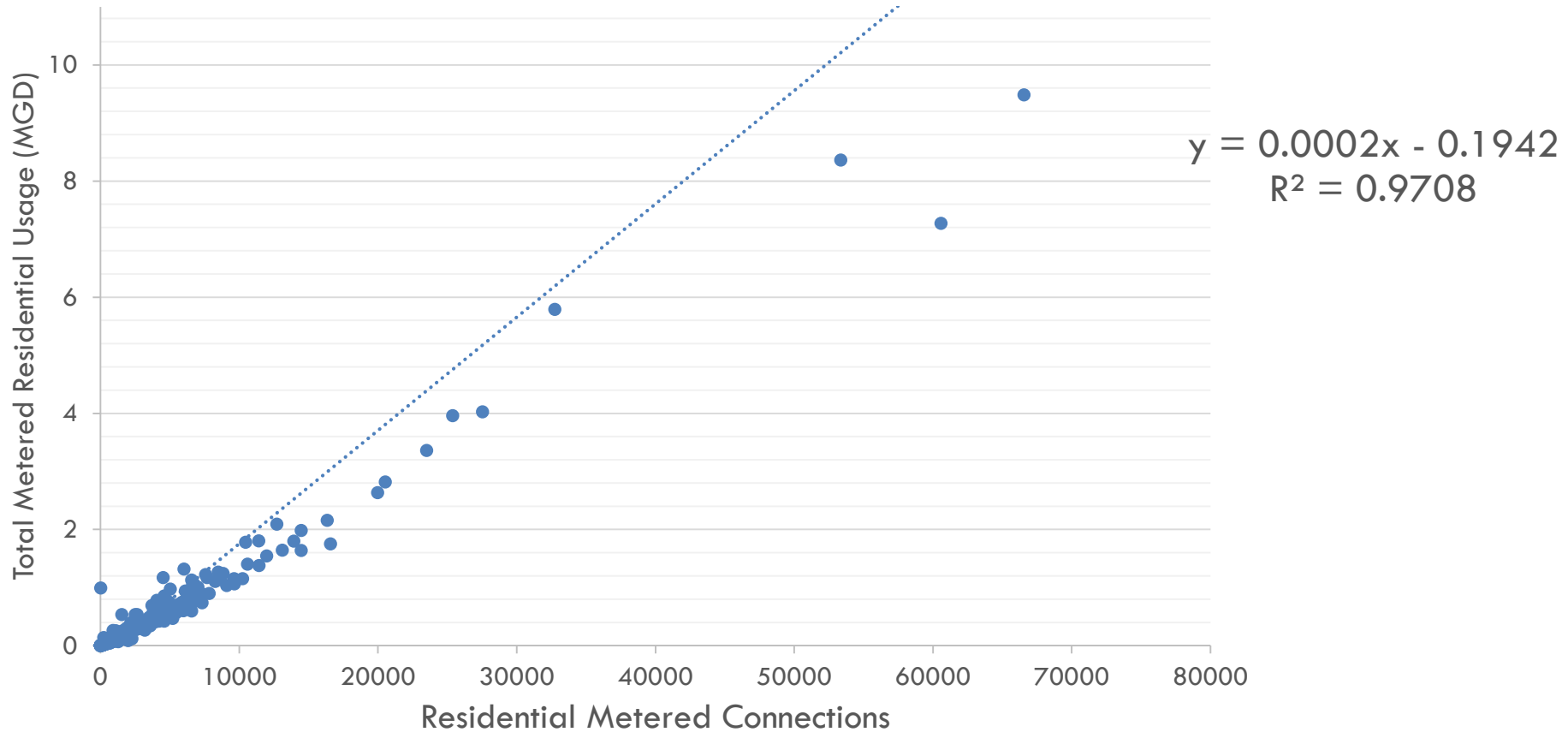
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Residential Water Use Across the State as of 2018

	Residential Metered Connections	Residential Metered Usage (MGD)	Total Metered Connections	Total Metered Usage (MGD)
Min	0	0.00	0	0.00
25th Percentile	354	0.04	379	0.07
Median	1,207	0.14	1,363	0.23
Average	4,456	0.67	4,859	1.12
75th Percentile	3,705	0.47	3,968	0.72
Max	275,346	60.34	300,212	88.13

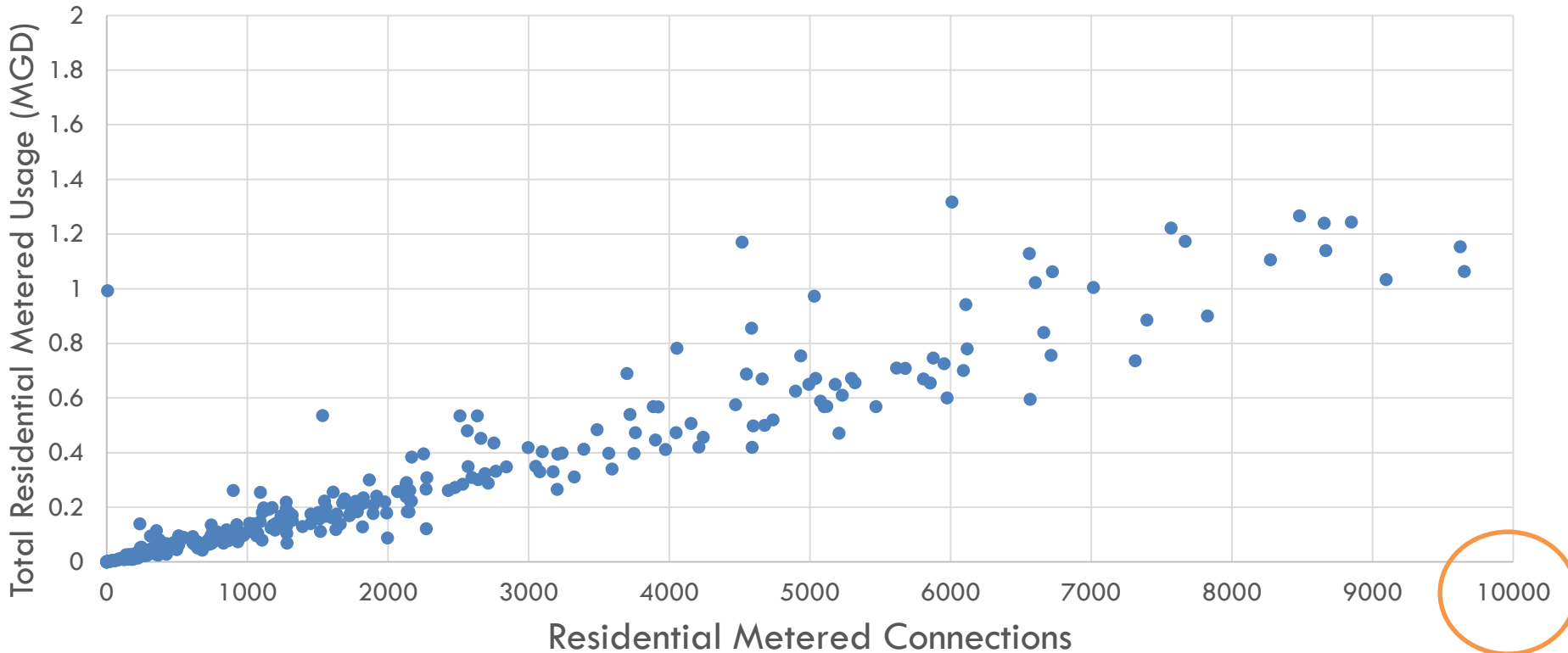
Residential Water Use Across the State as of 2018

2018 Connections and Use Relationship



Residential Water Use Across the State as of 2018

Zooming in



So, that information is great BUT,

- It gives no indication of HOW use is shifting...
 - Is it uniform across space?
 - Is it uniform across time?
 - Are there patterns that provide insights and actionable items for utilities?

Cue, trends analysis!

Takeaways Spoiler!

- Water usage patterns differ in different regions
- Water usage **per connection** is falling across the state
- And, **overall residential water usage is falling** across the state



Not surprising



Again, not surprising



...Despite significant population growth in NC

WHAT ARE THE DRIVERS?



Increased Efficiency



EPA Act On Climate

Use low-flow WaterSense showerheads

EPA #SaveEnergyWk

Just 1 WaterSense showerhead saves:

- 2,900 GALLONS** of water
- \$70** per YEAR on water and energy bills

#actonclimate

www.epa.gov/WaterSense

EPA Act On Climate

Choose WaterSense

WaterSense products are approximately 20 percent more water efficient than their counterparts. Conserving water conserves energy and reduces carbon pollution.

#actonclimate www.epa.gov

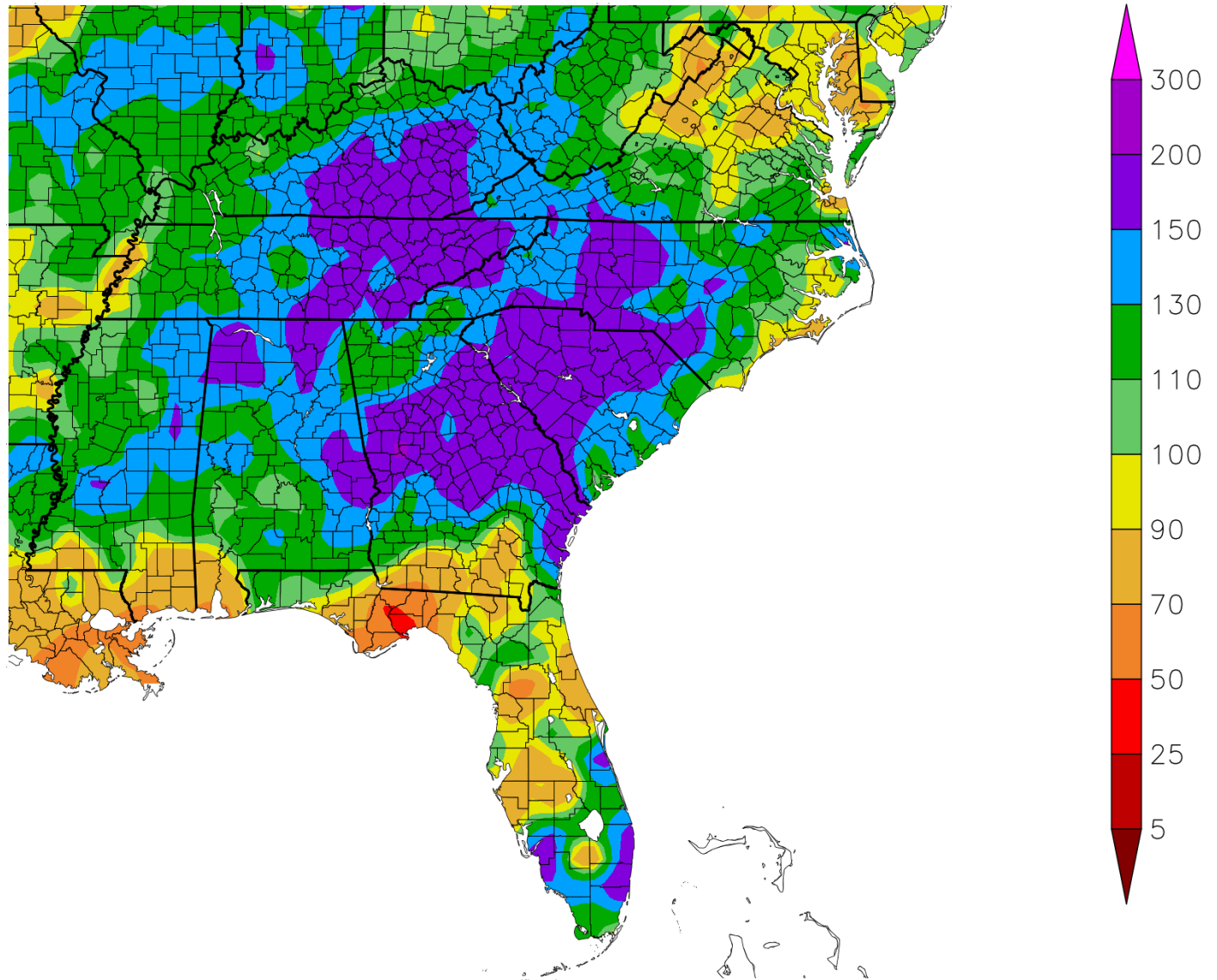


Letting a faucet run for **five minutes** uses as much energy as leaving a **60-watt light bulb** on for **22 HOURS**

EPA
epa.gov/watersense

Percent of Normal Precipitation (%)

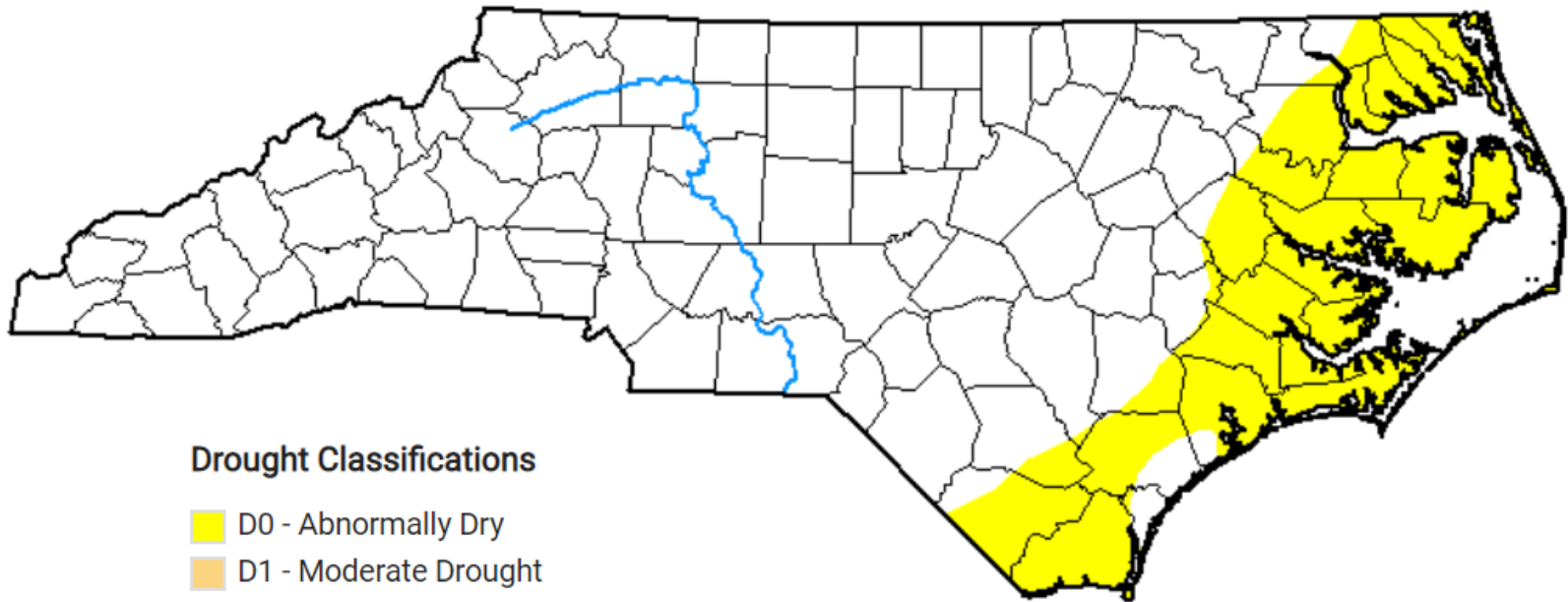
11/12/2019 – 2/9/2020



February 4, 2020

Select a week:

February 4, 2020



Drought Classifications

- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

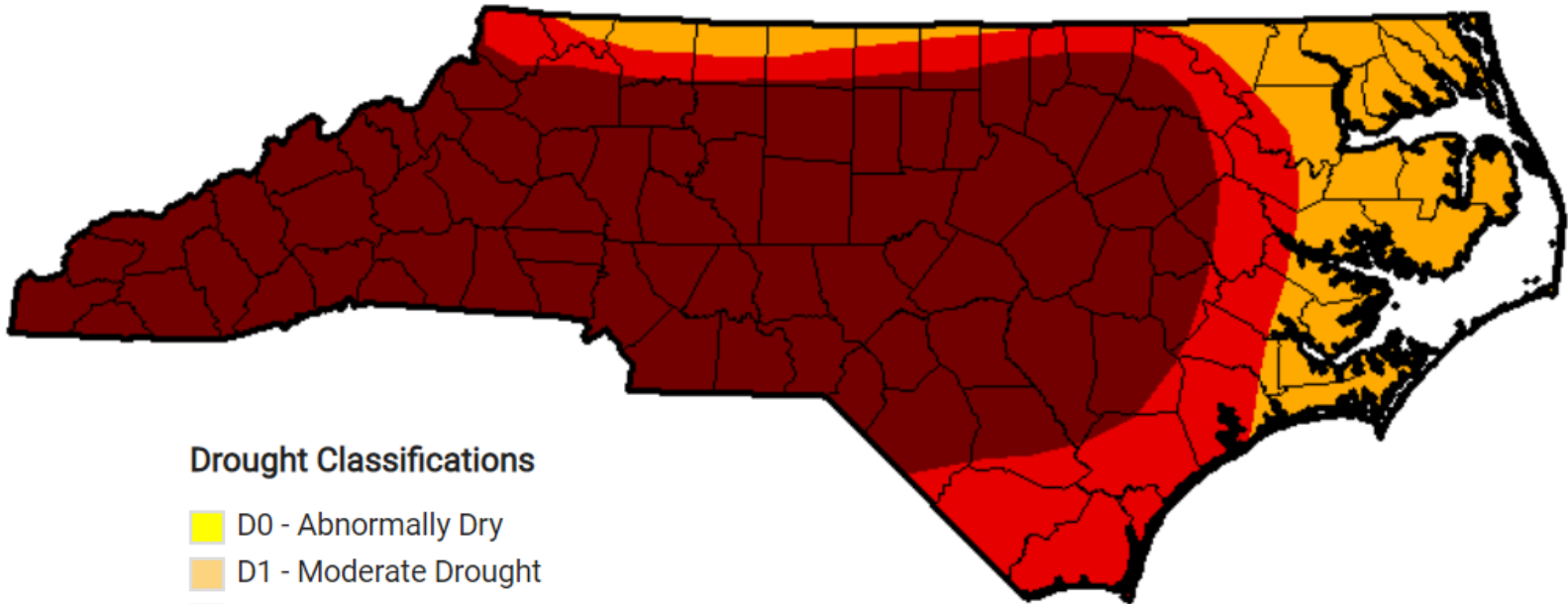
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

December 25th, 2007

December 25, 2007

Select a week:

December 25, 2007 ▼



Drought Classifications

- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

Rate Changes

Figure 1: Average Monthly Customer Water Bill:

THE WALL STREET JOURNAL.

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U.S.

Why Your Water Bill Is Rising Much Faster Than Inflation

Rate increases average 5.5% a year as utilities race to fix corroded pipes and overflowing sewers

By *David Harrison*

March 15, 2018 5:30 am ET

Data analyzed by the Environmental Finance Center at UNC-Chapel Hill's School of Government. Data sources include Bureau of Labor Statistics Consumer Price Index-South, EPA SDWIS Service Populations, and data from the North Carolina Water and Wastewater Rates Surveys. Data from both sources are for years 2009-2018. Any forecasting of data is based on either the entire dataset (2009-2018) or the latest five years of data (2014-2018).

WHY DO WE CARE?



MONEY!



**HOW CAN YOU ASSESS CHANGES IN
DEMAND?**



Types of Available Data

Data Source	Data Reporting	Data Type	Units Used
Local Water Supply Plan	Self reported by utilities	Metered water usage for several categories (residential, institutional, industrial, commercial)	Metered Usage (MGD), Metered Connections
USGS	State, federal sources	Withdrawals used for Municipal Public Supply	Usage by county
Annual Finance Information Report (AFIR)	Self reported by utilities	Water supplied to system and water billed to customers	Amount per year per utility
Customer level usage	Utilities	Monthly sales by customer class	Gallons per month per account

Measuring “Water Demand”

- **Gallons per connection per month**
- **MGD Total**
- Withdrawals vs. treated into system vs. **metered**
- Gallons per capita per day

THE DATA



The Data

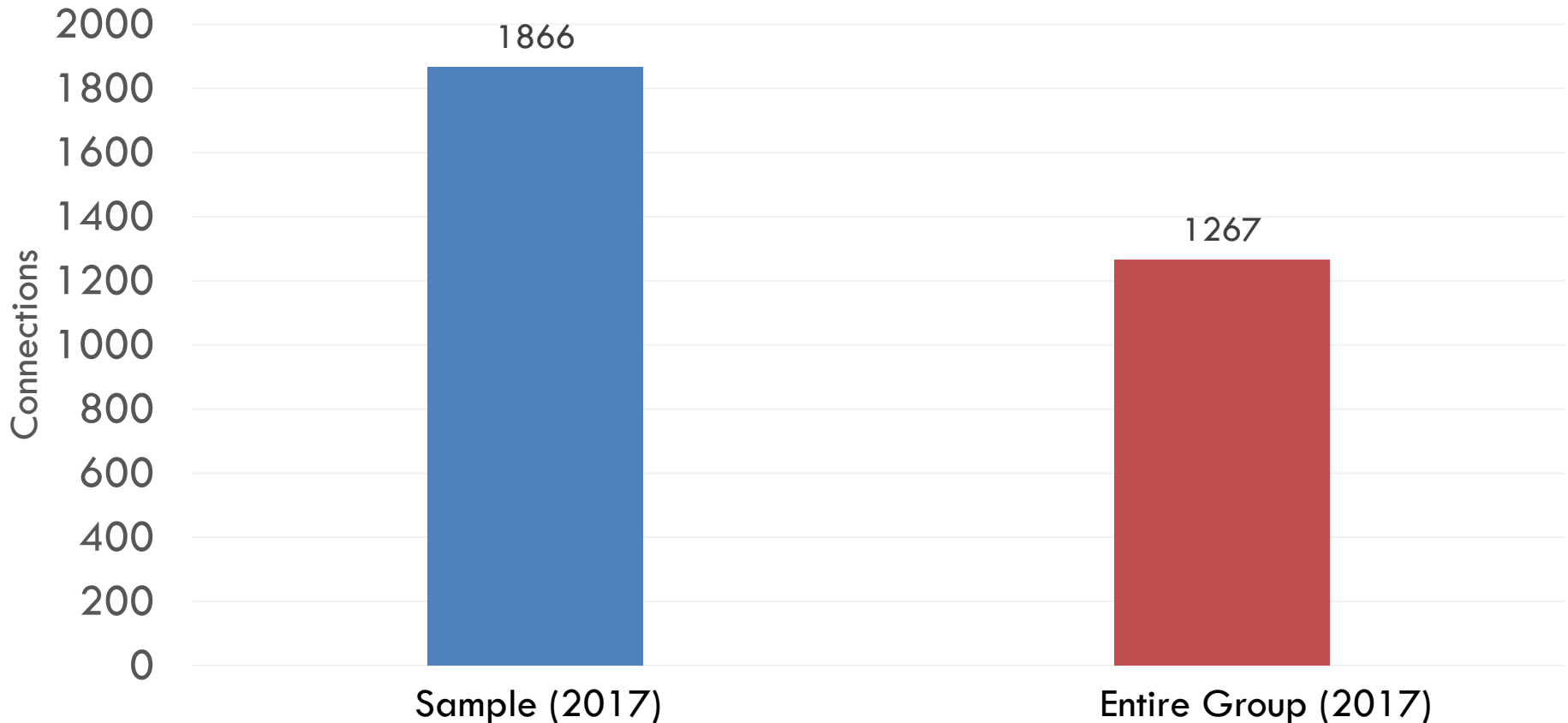
- LWSP Data
 - 2002, 2007, 2012, 2016, 2017
 - 119 utilities
 - Metered usage (MGD)
 - Residential
 - Non-Residential
 - Metered connections
 - Residential
 - Non-Residential



How does the Sample Compare?

Using 2017 Data as an Example

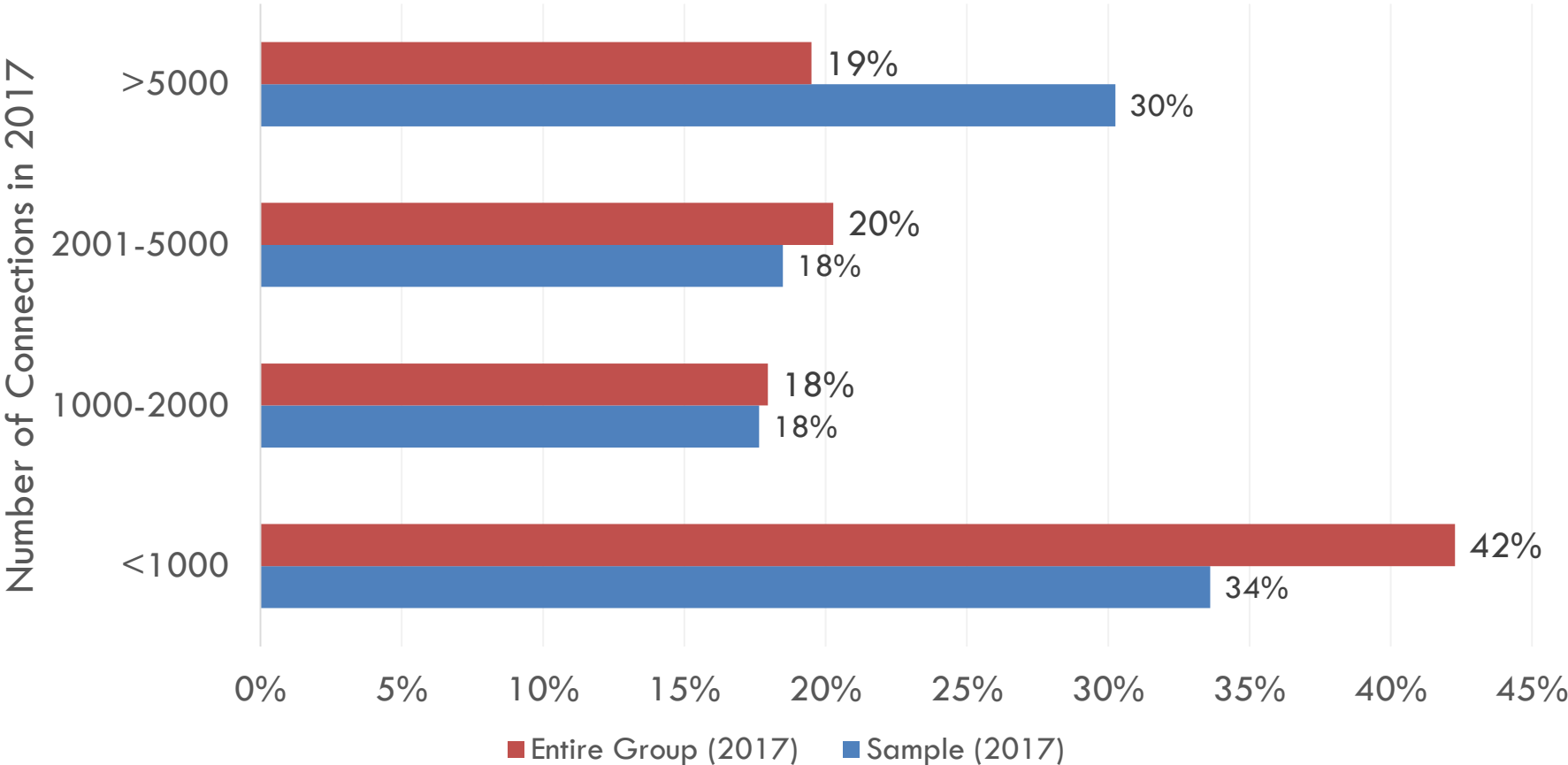
Median Connections



How does the Sample Compare?

Using 2017 Data as an Example

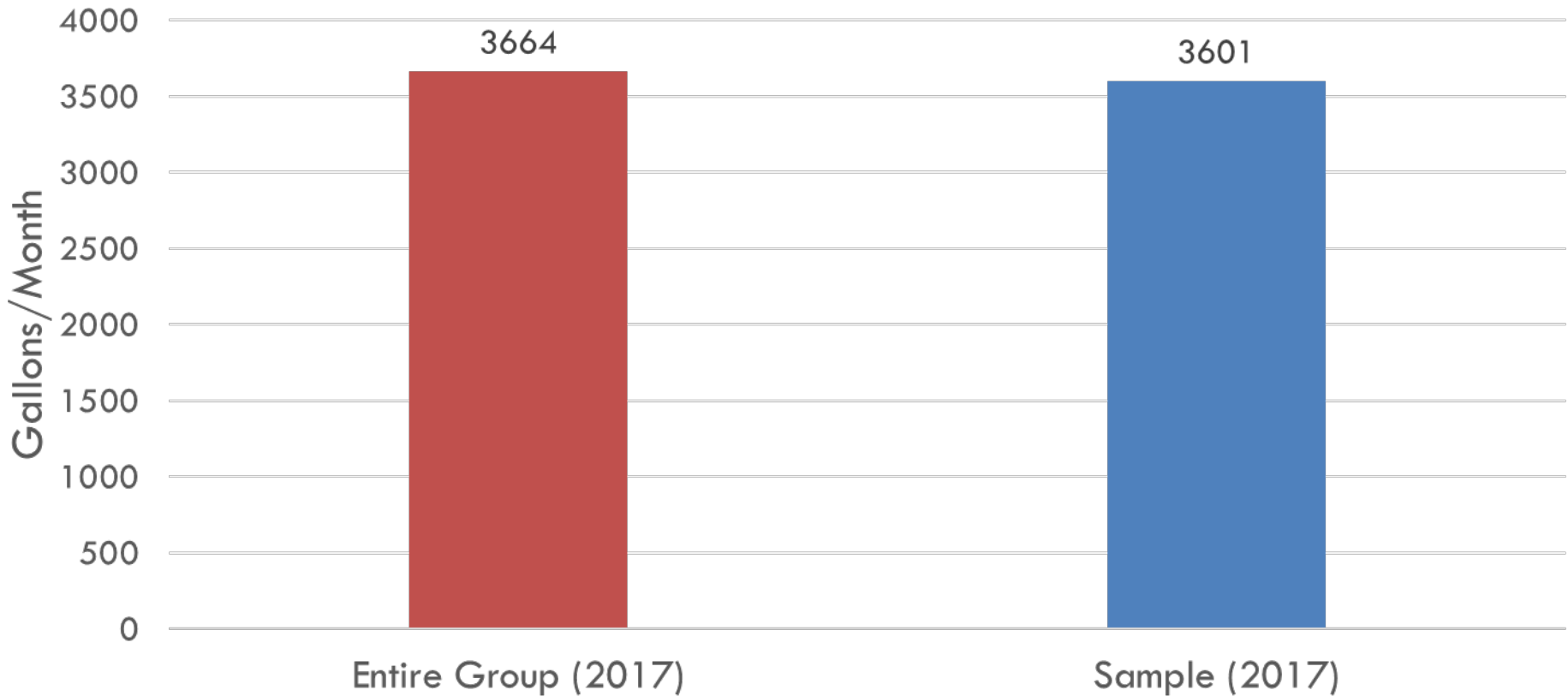
Distribution of Systems by Number of Connections in 2017



How does the Sample Compare?

Using 2017 Data as an Example

Median Monthly Residential Usage/Connection

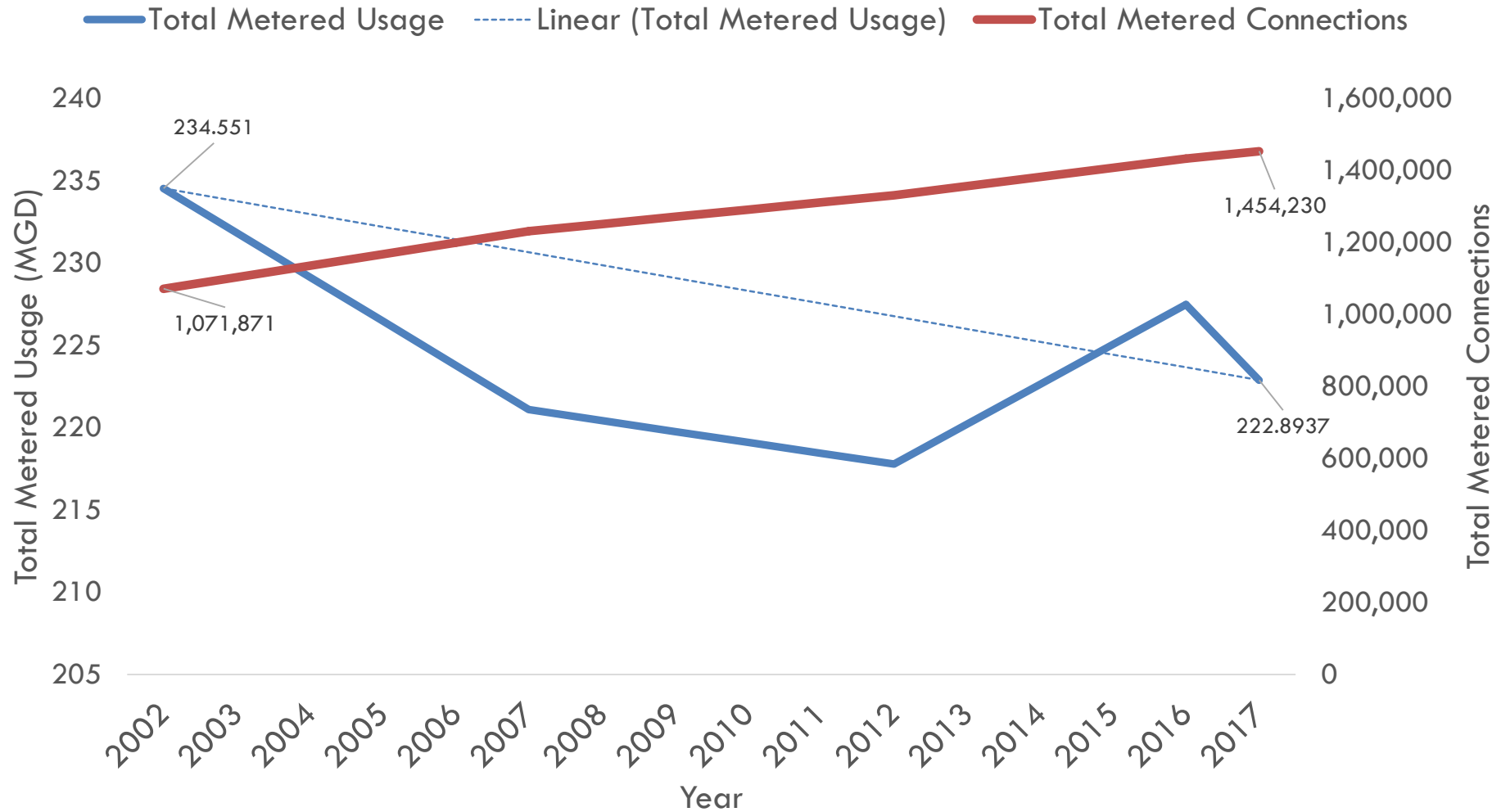


THE RESULTS



Total Residential Usage vs. Total Residential Metered Connections

For the Sample of 119 Utilities Present in 2002, 2007, 2012, 2016, & 2017



Total Non-Residential Usage vs. Total Non-Residential Metered Connections

For the Sample of 119 Utilities Present in 2002, 2007, 2012, 2016, & 2017

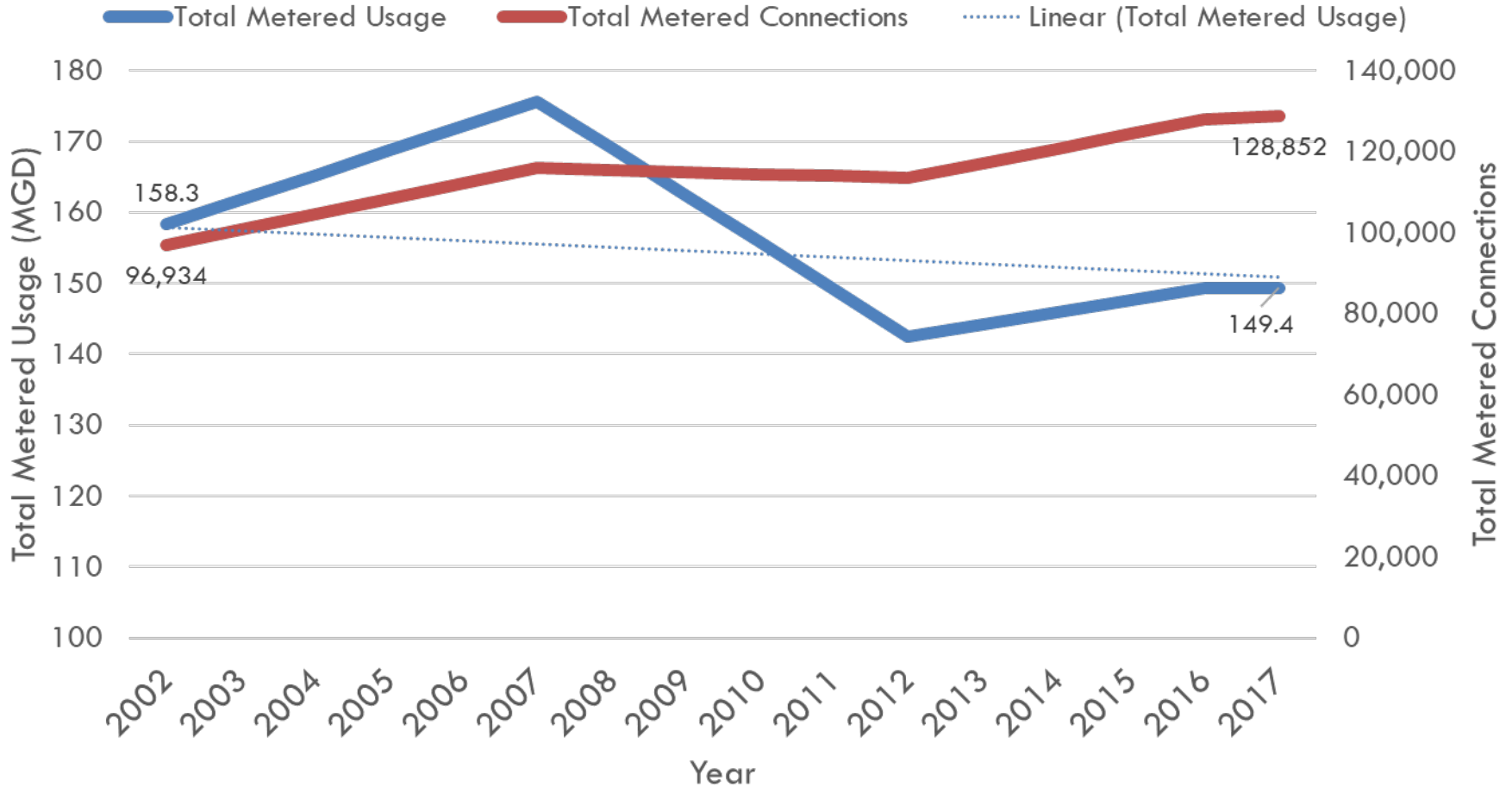


Table of Residential Metered Water Use per Connection

For the Sample of 119 Utilities Present in 2002, 2007, 2012, 2016, & 2017

Year	Median usage per connection
2002	169.7
2007	151.5
2012	128.5
2016	125.8
2017	120.5

*In Gallons/Day

Table of Residential Metered Water Use per Connection

For the Sample of 45 “Small” Utilities and 22 “Large” Utilities

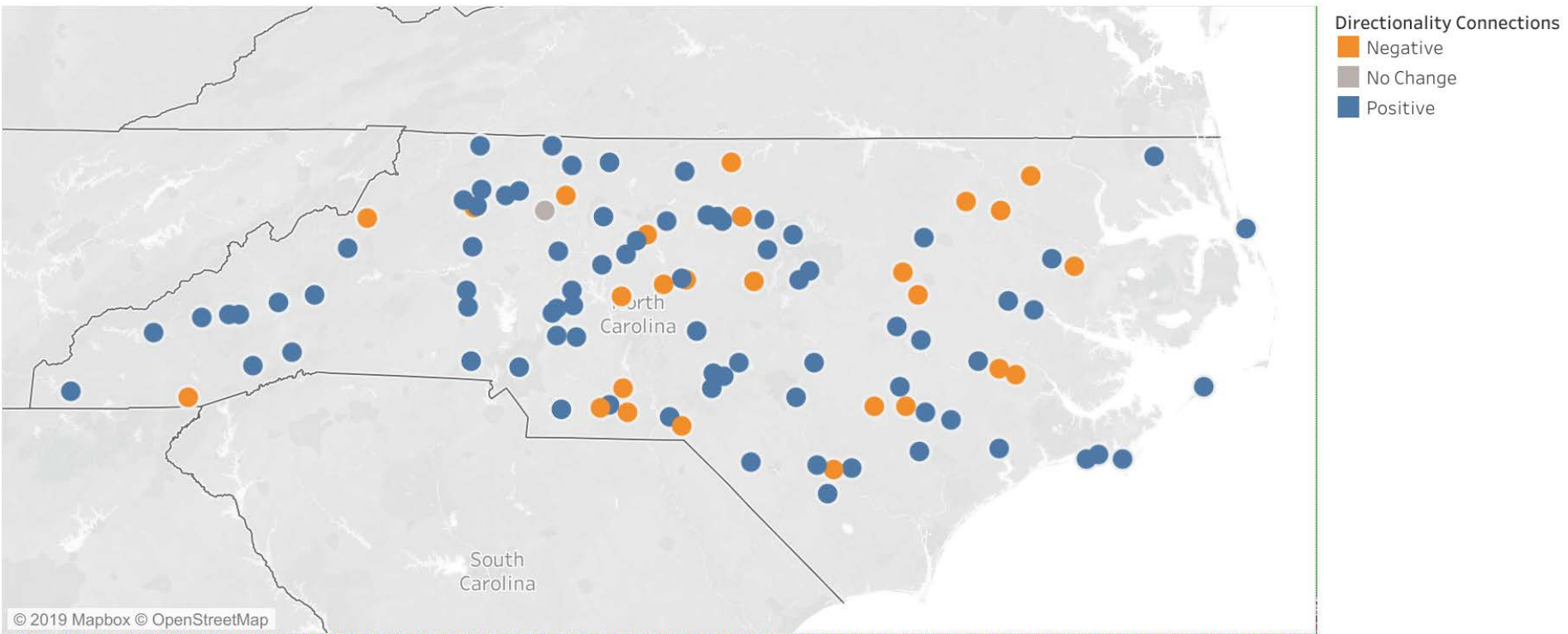
Year	Usage per connection per day <i>For utilities serving 10000 or more connections</i> (N=45)	Usage per Connection per day <i>For utilities serving fewer than 1000 connections</i> (N= 22)
2002	197.1	137.8
2006	169.8	129.8
2012	147.7	113.1
2016	149.1	111.1
2017	142.9	115.5

*In Gallons/Day

Have Connections Trended Differently Across the State?

For the Sample of Utilities Present in 2002, 2007, 2012, 2016, & 2017

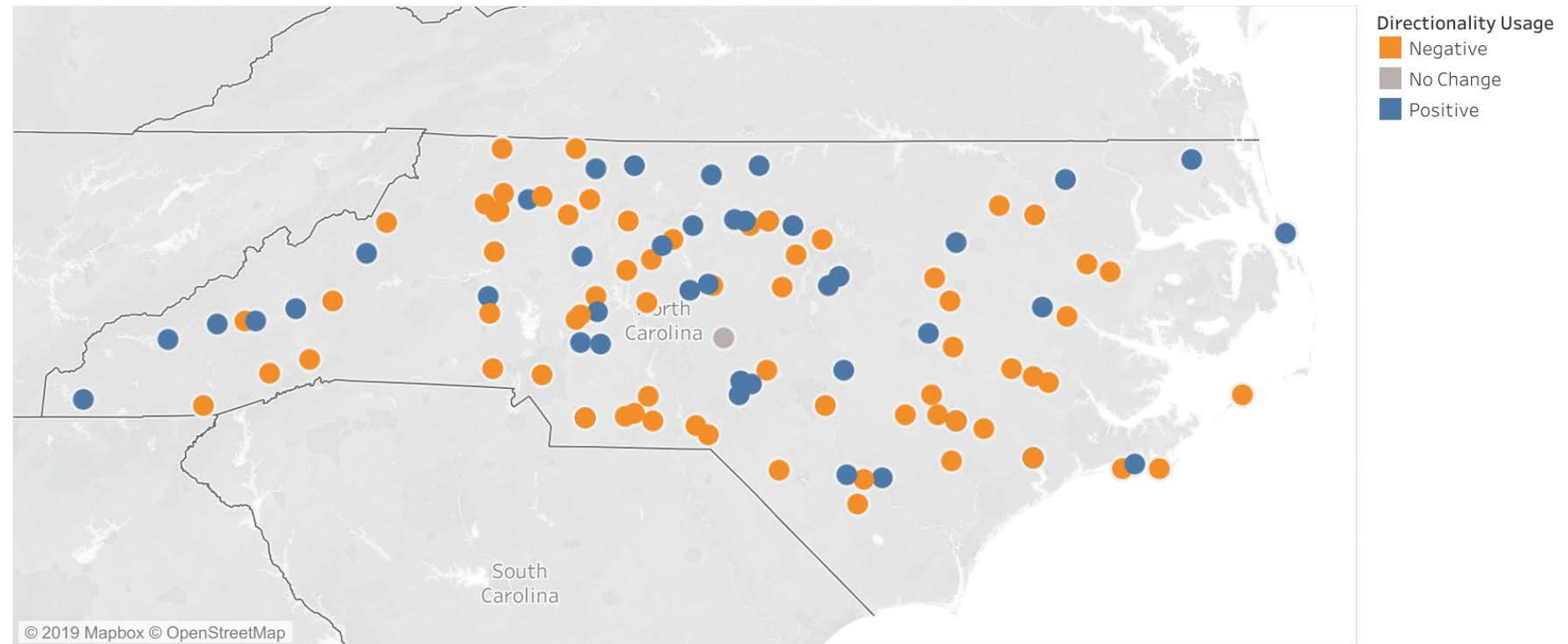
Trends in Metered Residential Connections (2002-2017)



Has Residential Use Shifted Differently Across the State?

For the Sample of Utilities Present in 2002, 2007, 2012, 2016, & 2017

Trends in Total Residential Metered Useage (2002-2017)



So, what does this mean?

**Selling less of your
commodity...**



So, what does this mean?

In some cases, could be caused
by **weather/drought/storms**
that are hard to predict and
plan for...



Thinking big picture...

Resilience

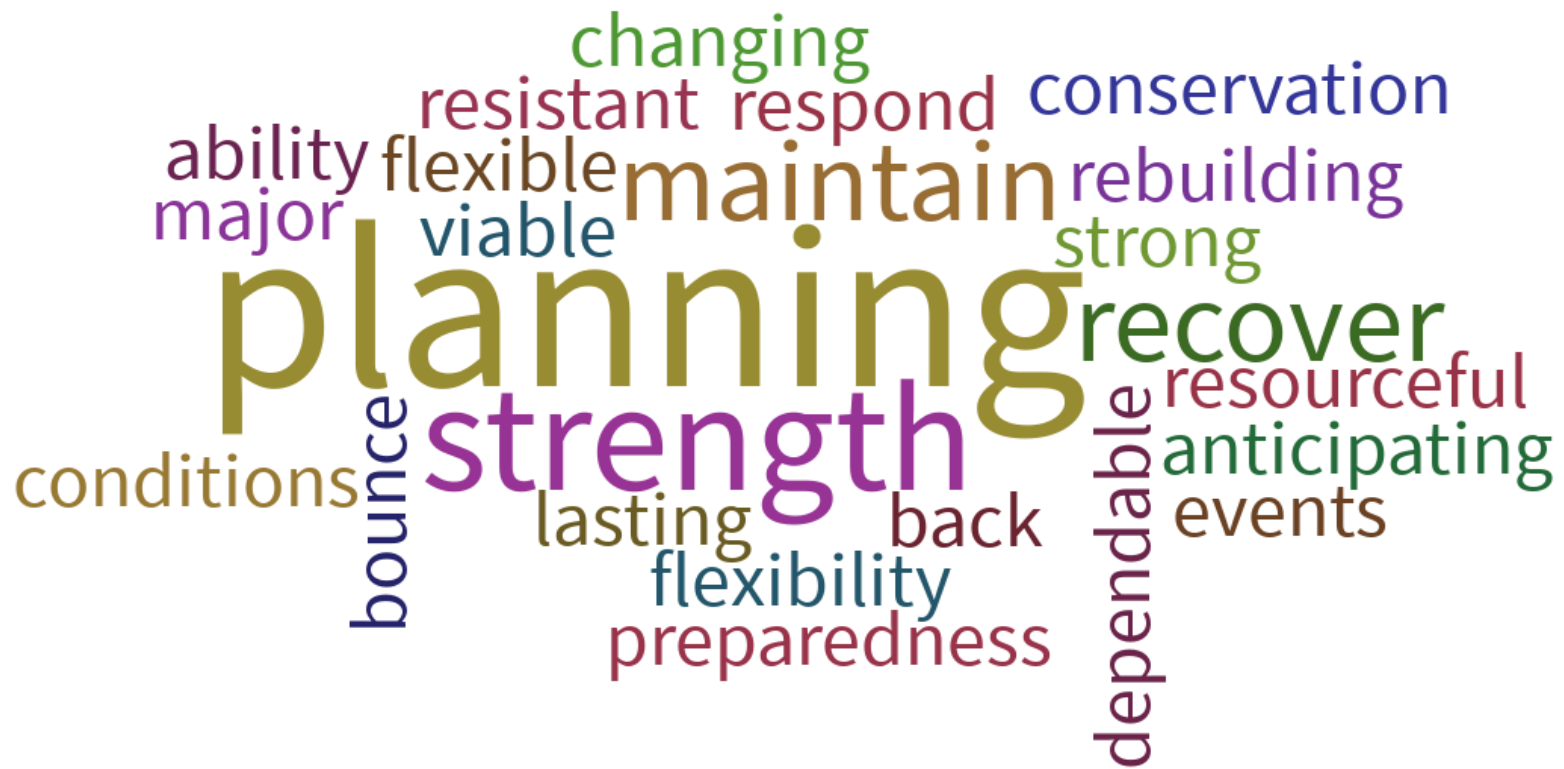


What does it mean to you?

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What word or phrase comes to mind when you hear the term, "resilience?"



“Physical” Resilience

- Based on planning efforts
 - Hardening of Assets
 - Making assets submersible
 - Moving assets out of the flood plain
 - Redundancy of assets
 - Interconnections
 - Emergency plans



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Examples?

Financial Resilience

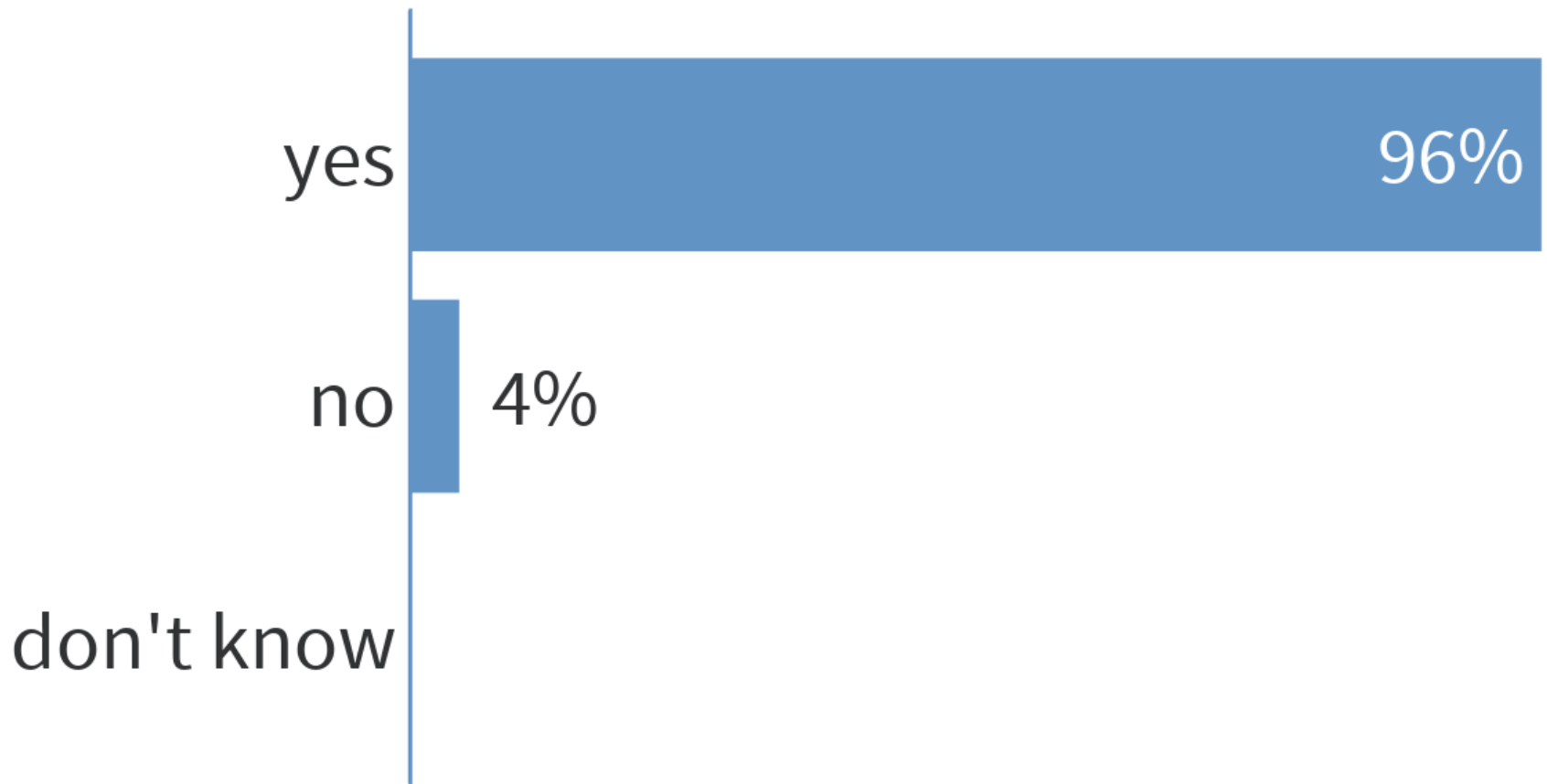
- Rate setting and revenue stability
- Days cash on hand—liquidity
- Emergency fund



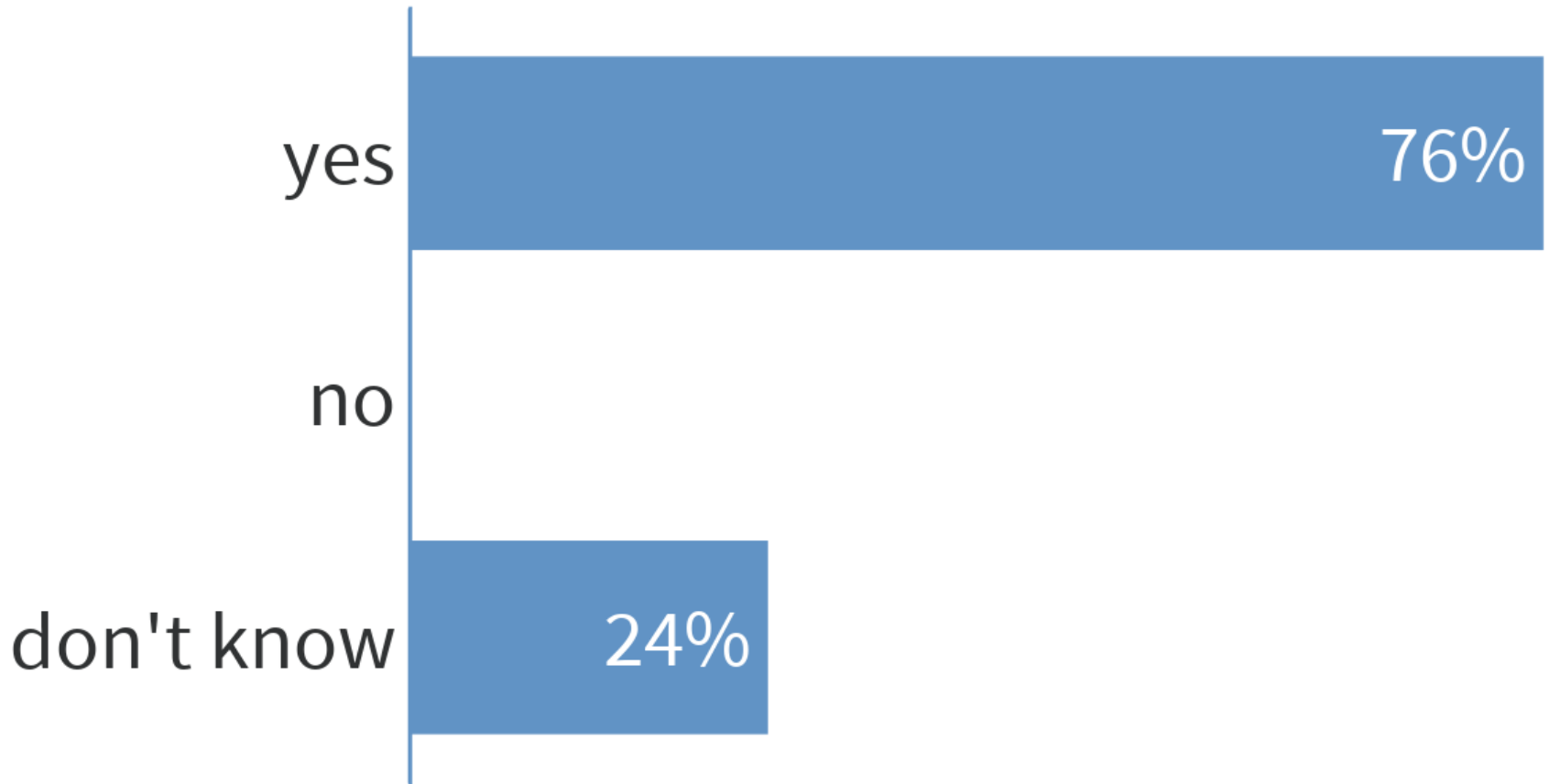
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Other examples?

Has your utility ever been affected by flooding?



Has your utility's infrastructure ever suffered damages from flooding?



Describe any flood related damages your utility's infrastructure has experienced

“Lost all food in fridge ”

“Lost main water lines due to Floyd. Several liftstations under water ”

“All of above ”

“Failed lines ”

“Water line breaks ”

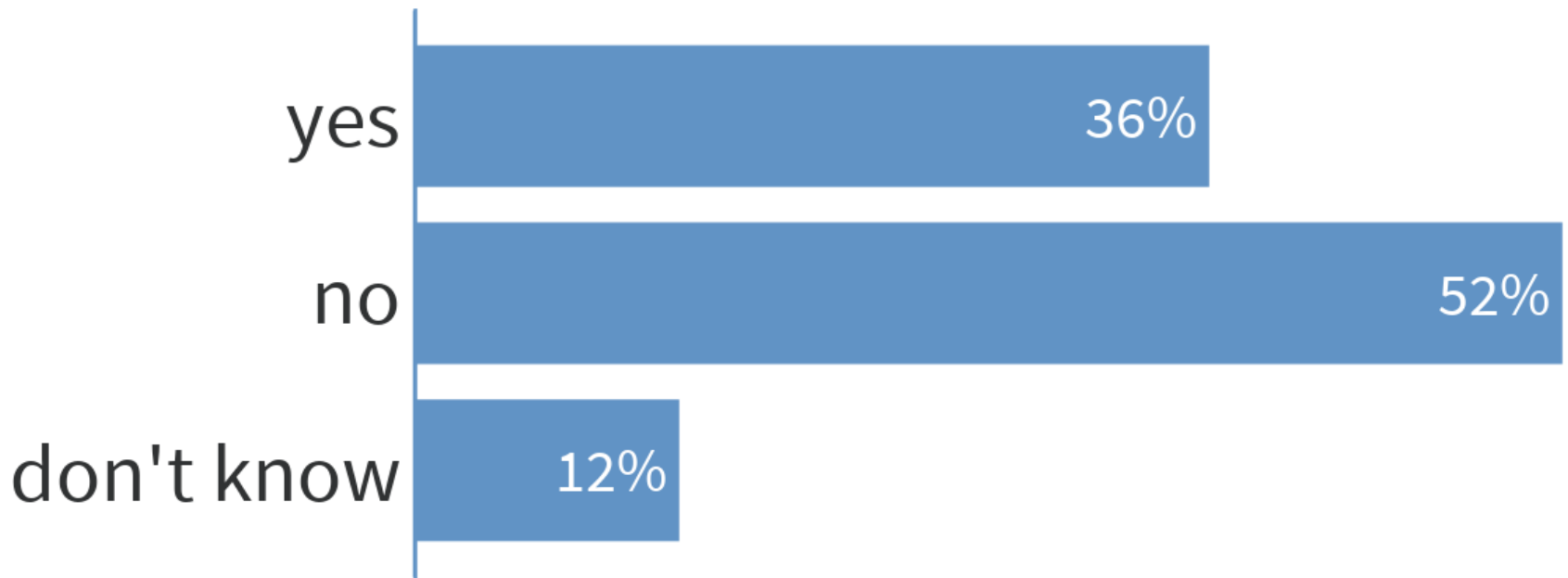
“Equipment damage ”

“Facility under water ”

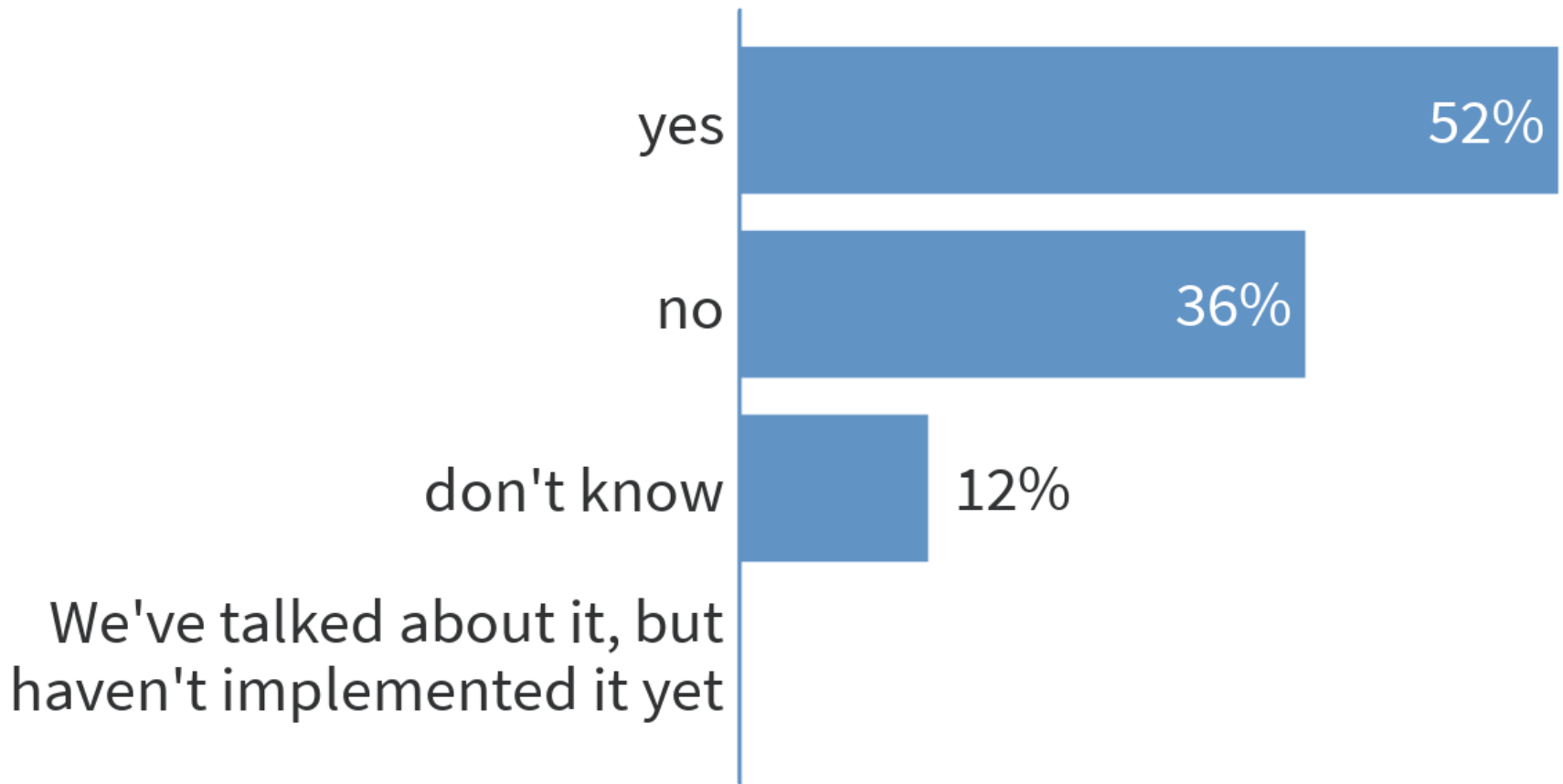
“Lift station failures ”

“I&I ”

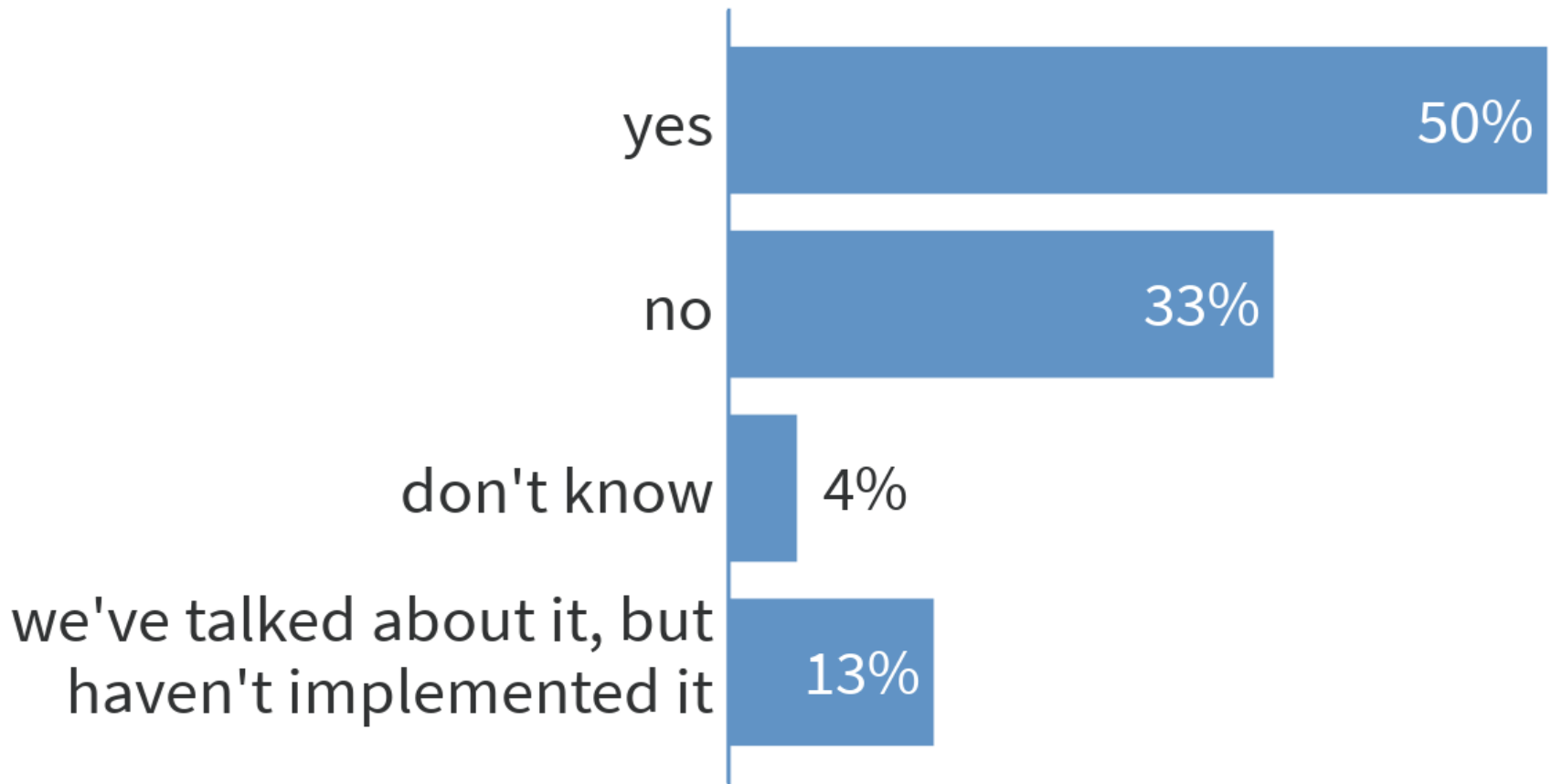
Has flooding ever resulted in lost revenue for the utility (i.e. significant number of homes are damaged and no longer active customers)



Does your utility consider flooding in its capital planning?



Does your utility consider drought in its planning processes?



Assessing Needs... What are you planning for?



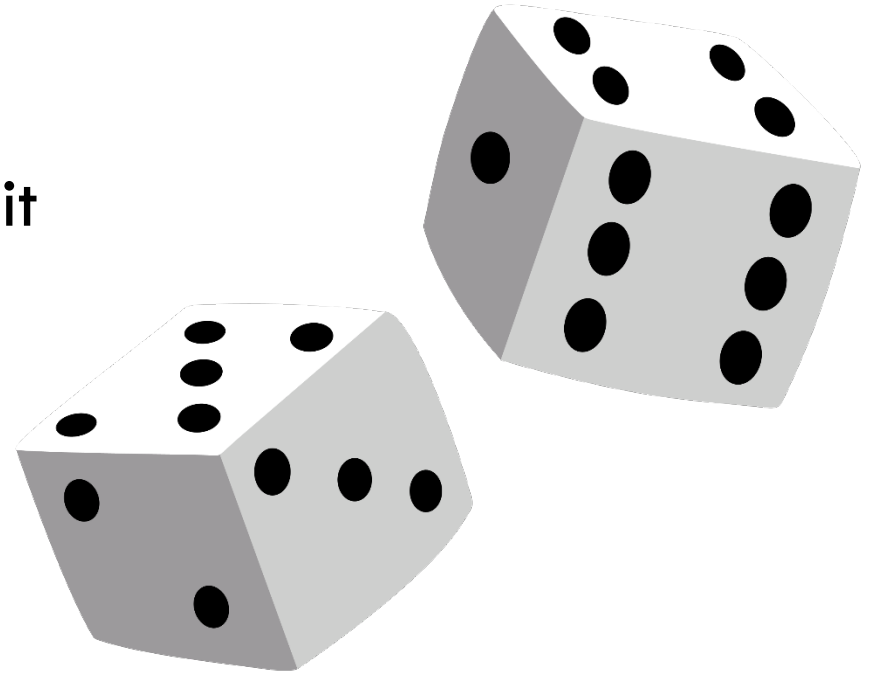
How do you know what to plan for? Are you looking at flood plain maps?

How do you pick which model to choose?

- 100-year flood?
- 500-year flood?
- 1000-year flood?
- None of the above!

It is a universal problem...

- There's a lot of uncertainty in what to prepare for and what to plan for.
- Resilience comes at a cost, but it may pay off in the long-run.
- Looking at how to integrate resilience into capital improvement plans, and needs assessments
 - What are the needs for utilities to “weather the storm?”



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Ways to Help: Using the data

- Water Demand
 - This analysis used aggregated data from each utility
 - This is based on *your data*
 - Can assess own trends in use
 - LWSP data (utility level, w/ customer classes)
 - Billing data (individual user level)
- Use, Rates, Affordability,
 - Putting it all together



THE EFC HAS RESOURCES
TO HELP!

Water Utility Revenue Risk Assessment Tool

Water Utility Revenue Risk Assessment Tool
How Much Revenue Might Be Lost When Residential Customers Reduce Consumption?

Water Research Foundation | UNC ENVIRONMENTAL FINANCE CENTER

Version 1.0
Version date: November 15, 2013

Developed by: The Environmental Finance Center at the University of North Carolina, Chapel Hill
Developed for: Water Research Foundation

[Click here to access a video tutorial on using the tool.](#)

This tool allows utilities and technical assistance providers to quickly determine the proportion of residential revenues from water sales that may be at risk of loss when residential customers change demand patterns. When residential customers reduce demand, whether due to price elasticity effects, or normal weather fluctuations that affect their water demands, or in reaction to shocks (such as new water conservation programs, water shortage periods, change in economic conditions, etc.), utilities collect less revenue from customer sales than anticipated. Utilities often ask how much of their revenues are really and realistically at risk of loss if their customers lower their consumption. This tool allows utilities and their technical assistance providers to quickly determine these estimates based on the utility's own rate structure, customer demand profile and weather conditions.

The tool requires only minimal data input and uses simplifying assumptions as well as detailed models developed after analyzing hundreds of thousands of real customer water records to understand how water customers change demand patterns.

This simplified tool is focused solely on revenue projections and assessment. Costs and revenue requirements based on customer classifications are not incorporated into this model. The tool allows the user to compare two different residential rate structures and determine which rate structure offers greater revenue resiliency.

- Excel tool (simplified)
- Focus on residential revenues
- Utility inputs own:
 - Rate structure details
 - Residential customer water use profile
 - Weather patterns
 - Assumptions on price elasticity
- Tool estimates the proportion of revenues that may be lost due to changes in water use patterns due to:
 - Rate increase, alone or plus:
 - Normal weather pattern changes, or
 - One-time, significant and sudden conservation effort

Free to download and use at

www.waterrf.org

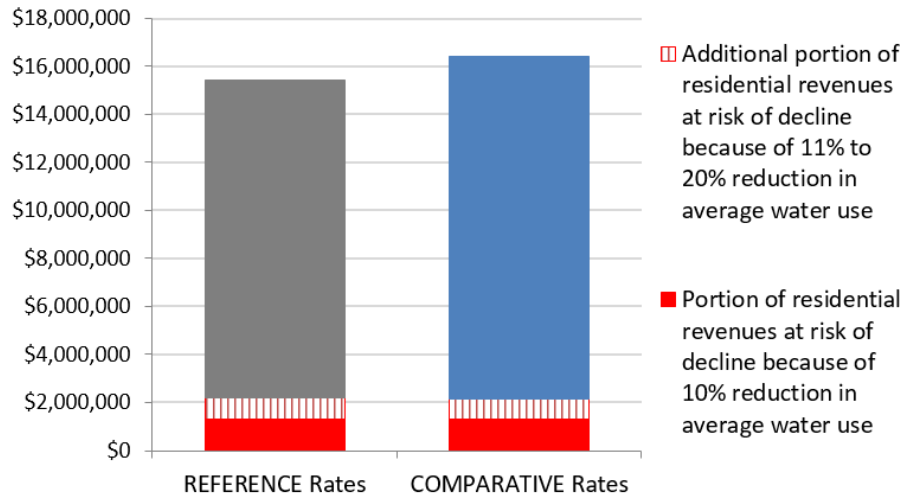
www.efc.sog.unc.edu

Water Utility Revenue Risk Assessment Tool

Comparing Revenues After a Significant Decline in Water Use

How do the total revenues compare under both rate structures if there is a reduction of 10% - 20% in average water use and subsequent demand distribution shifts?

Portions of Annual Revenues under REFERENCE and COMPARATIVE Rate Structures that are at Risk of Loss Due to Significant Reductions in Average Water Use



Decline in Total Annual Revenues for a:	REFERENCE Rates	COMPARATIVE Rates
10% reduction in avg use	\$1,311,000	\$1,319,000
20% reduction in avg use	\$2,181,000	\$2,167,000
10% reduction in avg use	8.5%	8.0%
20% reduction in avg use	14.2%	13.2%

The comparative rate structure generates revenues that are MORE resilient to sudden and significant declines in residential water use than the revenues generated by the reference rate structure. Revenues under the comparative rate structure are projected to drop 8% - 13.2% for a 10% - 20% reduction in average water use, and their related shifts in demand distribution. These declines occur after including the effect of price elasticity when adjusting rates from the reference rate structure to the comparative rate structure. By comparison, revenues under the reference rate structure are projected to drop 8.5% - 14.2% for the same declines in residential water use.

EPA Flood Resiliency Toolkit



FLOOD RESILIENCE

A Basic Guide for Water and Wastewater Utilities

*Select a menu option below.
First time users should start with the Overview.*

Overview



Approach



Mitigation Options



Pilot Project



All About Rates...

2020 Rates, Trends, and Rates Dashboard

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2020 RATES PREVIEW



FINANCIAL PERFORMANCE



Charlotte Water collected

\$424 million

in water and wastewater
operating revenues in FY2019

Highest in North Carolina. Up 11% from FY2018.

Picture Source: Charlotte Water <http://charlottenc.gov/Water/Pages/Home.aspx>





Picture Source: Google Maps Streetview

Town of Proctorville collected

\$22,373

in wastewater operating revenues in FY2019
(no water system)

Lowest in North Carolina. Up 6.2% from FY2018.

Raised monthly flat fee from \$30 to \$40 per customer = 25% increase.



Picture Source: Indio Water Authority <http://www.indiowater.org/index.aspx?page=587>

NC local government utilities collected

more than **\$3.04 billion**

in water and wastewater operating revenues in FY2018

Preliminary projections show that revenues may have exceeded \$3.1 billion in FY2019
(incomplete data)

The largest 10 utilities collected
35%
of all the water and wastewater
operating revenues in FY2018



NC local government utilities had

more than **\$2.47 billion**

in water and wastewater operating expenses in FY2019

Yet: ~ **18%** of local government utilities had lower operating revenues than O&M expenditures plus debt service in FY2018

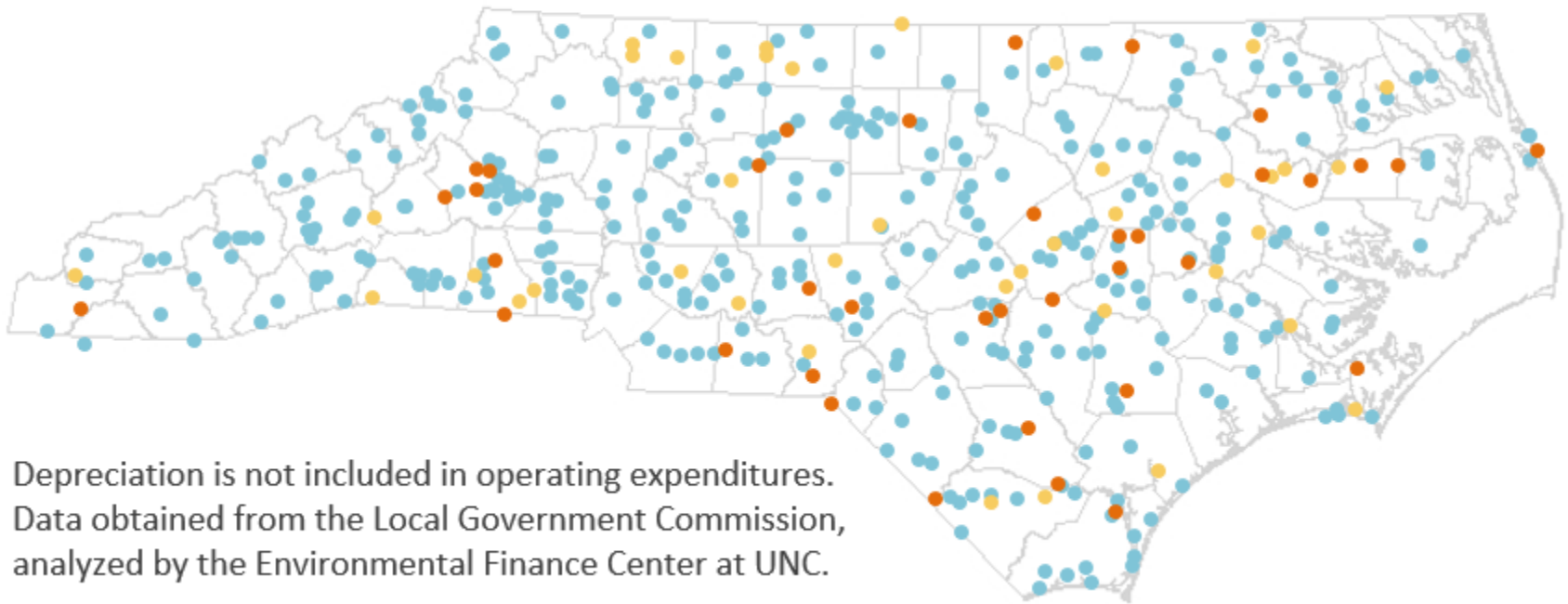
Was 22% in FY2017



Cost Recovery in 417 Local Government-owned Water and Wastewater Utilities during FY2018

Local Government-Owned Water and Wastewater Utilities' Cost Recovery in FY 2018

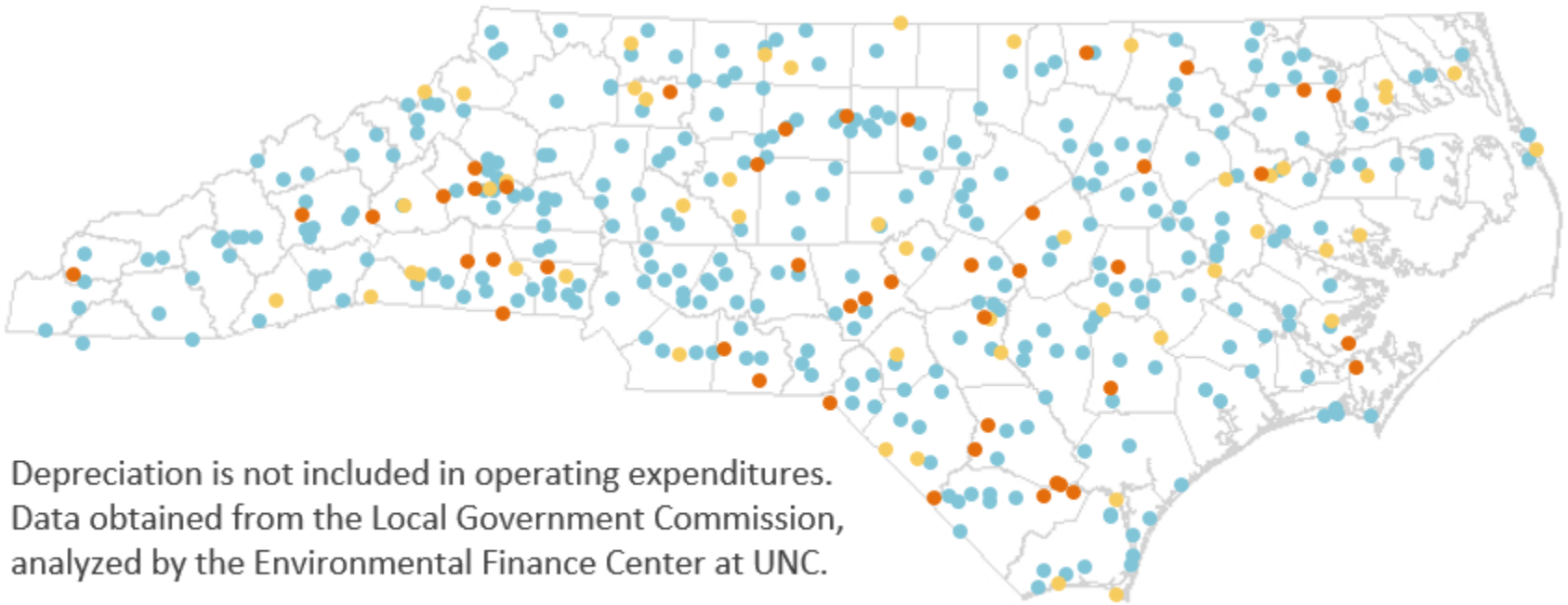
- Operating revenues < operating expenditures (9%)
- Operating revenues < operating expenditures + principal + interest on long-term debt (9%)
- Operating revenues > operating expenditures + principal + interest on long-term debt (82%)



Cost Recovery in 398 Local Government-owned Water and Wastewater Utilities during FY2019

Local Government-Owned Water and Wastewater Utilities' Cost Recovery in FY 2019

- Operating revenues < operating expenditures (11%)
- Operating revenues < operating expenditures + principal + interest on long-term debt (12%)
- Operating revenues > operating expenditures + principal + interest on long-term debt (77%)



Do Rates Cover Costs?

- In recent history, about 20% of utilities **did not** generate enough operating revenues to cover O&M expenditures + debt service
- Small utilities face greater challenges

Number of water service connections	# of water utilities with data	Operating revenues less than...	
		O&M expenditures	O&M expenditures + debt service
< 1,000	140	17%	33%
1,000 - 10,000	177	6%	18%
> 10,000	48	0%	2%
Statewide	365	10%	22%

FT 2017 data. ABOUT 55 local governments data not yet available.

Your sneak peak into...

THE STATE OF RATES IN NC IN 2020

PRELIMINARY RESULTS

Final results may be published in the forthcoming 2020 NCLM/EFC North Carolina Water & Wastewater Rates Survey Report



NC Water and Wastewater Rates Survey



UNC

ENVIRONMENTAL FINANCE CENTER

- Joint annual surveys since 2005
- 2020 survey: 496 utilities included (96%)
- **Rate Dashboard now available!**
- Tables and summary report to be distributed in coming weeks at <http://www.efc.sog.unc.edu> and <http://www.ncim.org>
- Resources for utilities provided and funded by the Division of Water Infrastructure of the NC Department of Environmental Quality



2020 by the Numbers

Operating revenues collected by governmental utilities (FY 2018)	>\$3.04 billion (probably exceeded \$3.1 billion in FY2019)
Highest (FY 2019)	\$424 million (Charlotte Water)
Lowest with active wastewater utility (FY 2018)	\$22,373 (Proctorville – Wastewater only)
Median charged by NC utility at 4,000 gallons/month (January 2019 rates, inside rates)	\$32.81 Water \$44.94 Wastewater \$76.87 Combined
Median multiplier for out-of-city rates @ 4,000 gallons (Among 82% percent of municipalities)	1.81x Water 1.90x Wastewater
Percent of utilities that raised rates (out of 487 water & 411 wastewater rate structures since last year)	41% Water 41% Wastewater
Median increase for those that increased bills (at 5,000 gallons/month; inside rates)	4.6% Water 4.7% Wastewater

Half of the utilities charge residential (inside) customers more than **\$76.87** for combined water and wastewater per month



\$32.81 for water

\$44.94 for wastewater

For “inside” residential customers using 4,000 gallons/month

Picture Source: Wikimedia Commons

https://commons.wikimedia.org/wiki/File:Raleigh_city_limits_sign.jpg



84% of NC's municipalities with water utilities charge different water rates outside city limits

Half of the municipalities charge **1.81x** higher for water and **1.90x** higher for wastewater than they do for inside customers

For residential customers using 4,000 gallons/month

The Average North Carolinian pays...

\$65.82/month

for 4,000 gallons of water and wastewater, combined.

Accounting for service populations and inside/outside rates.



Water rates in **41%** of rate structures and

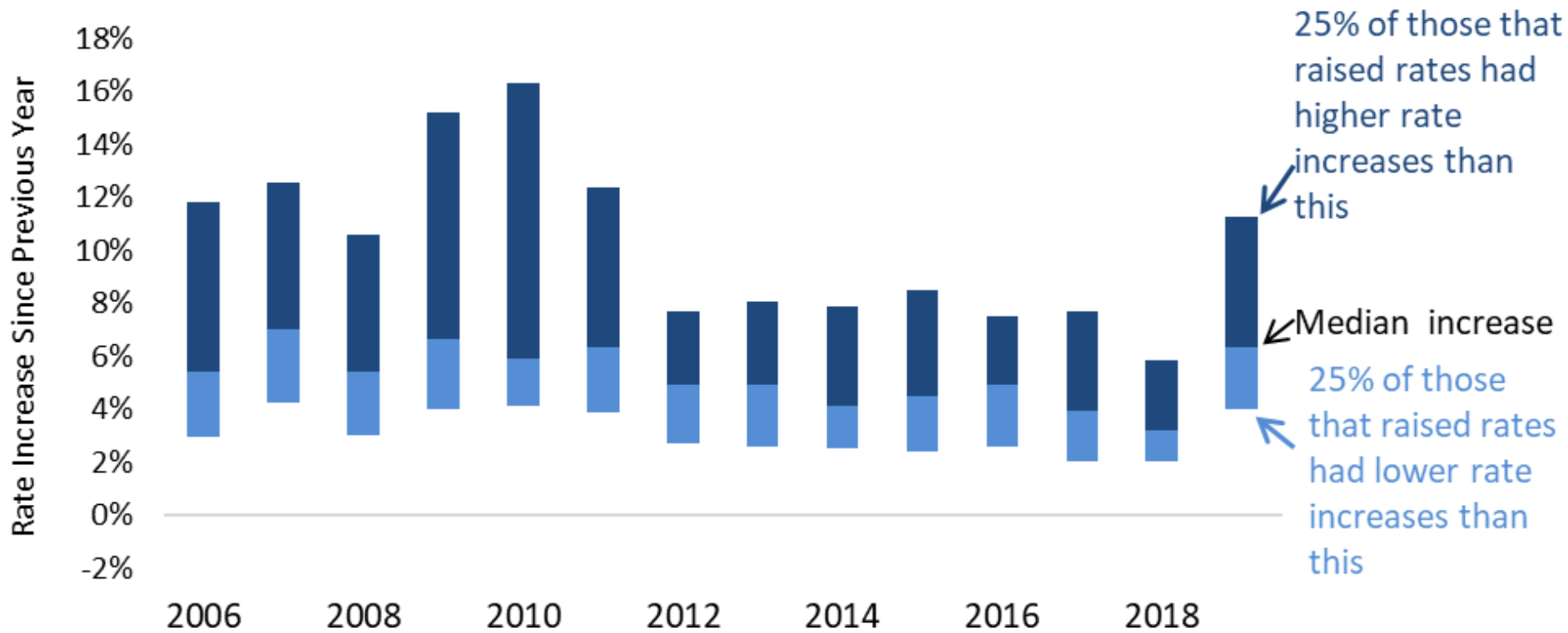
Wastewater rates in **41%** of rate structures were
raised last year

Out of 487 water & 411 wastewater rate structures since last year

Half of the rate increases were greater than
4.6% for water and **4.7%** for wastewater

At 5,000 gallons/month

Water Rate Increases Among the Same 179 Utilities Since 2006



The cohort of rate structures is consistent across all years.
Only rate structures that raised rates are analyzed in each year.

2020 by the Numbers - Inside Rates

Monthly water base charge	Min non-zero: \$3.32 (Cary) Median: \$16.90 Max: \$112.10 (Ocracoke Sanitary District Step C)
Monthly wastewater base charge	Min non-zero: \$2.00 (Laurel Park, Spring Hope) Median: \$18.00 Max: \$69.50 (Lake Lure) <i>Currituck County charges \$100.00 in Moyock Commons</i>
Highest volumetric rate per 1,000 gallons at 4,000 gallons/month	\$14.50/1000 gallons Water (Whitsett) \$25.00/1000 gallons Wastewater (Walstonburg) <i>Yadkin County charges \$19.50/1000 gallons for water in its Jonesville service area (Jonesville outside rates)</i>
Median percentage of customer bill due to base charge at 4,000	55% Water 51% Wastewater



2020 NC WATER AND WASTEWATER RATES DASHBOARD



2020 NC Water and Wastewater Rates Dashboard



NC Water and Wastewater Rates Dashboard
Rates as of January 1, 2020
Last updated: February 28, 2020



New Dials

- Four new dials to be included
- Will be explained in depth on a special blog post
- Will not be included on initial dashboard launch

Questions

- What kinds of information support raising rates?
- Do you ever compare your financial metrics or rate structures with other utilities?



2020 NC Water and Wastewater Rates Dashboard



NC Water and Wastewater Rates Dashboard
Rates as of January 1, 2019
Last updated: February 28, 2020



WHAT ABOUT CHANGES IN RATES?



What data is included in this analysis?

- Utility-Level Rates Data from 2008-2020
- US Census Bureau American Community Surveys Data from 2010-2018
- Bureau of Labor Statistics Consumer Price Index for the South Region from 2008-2020

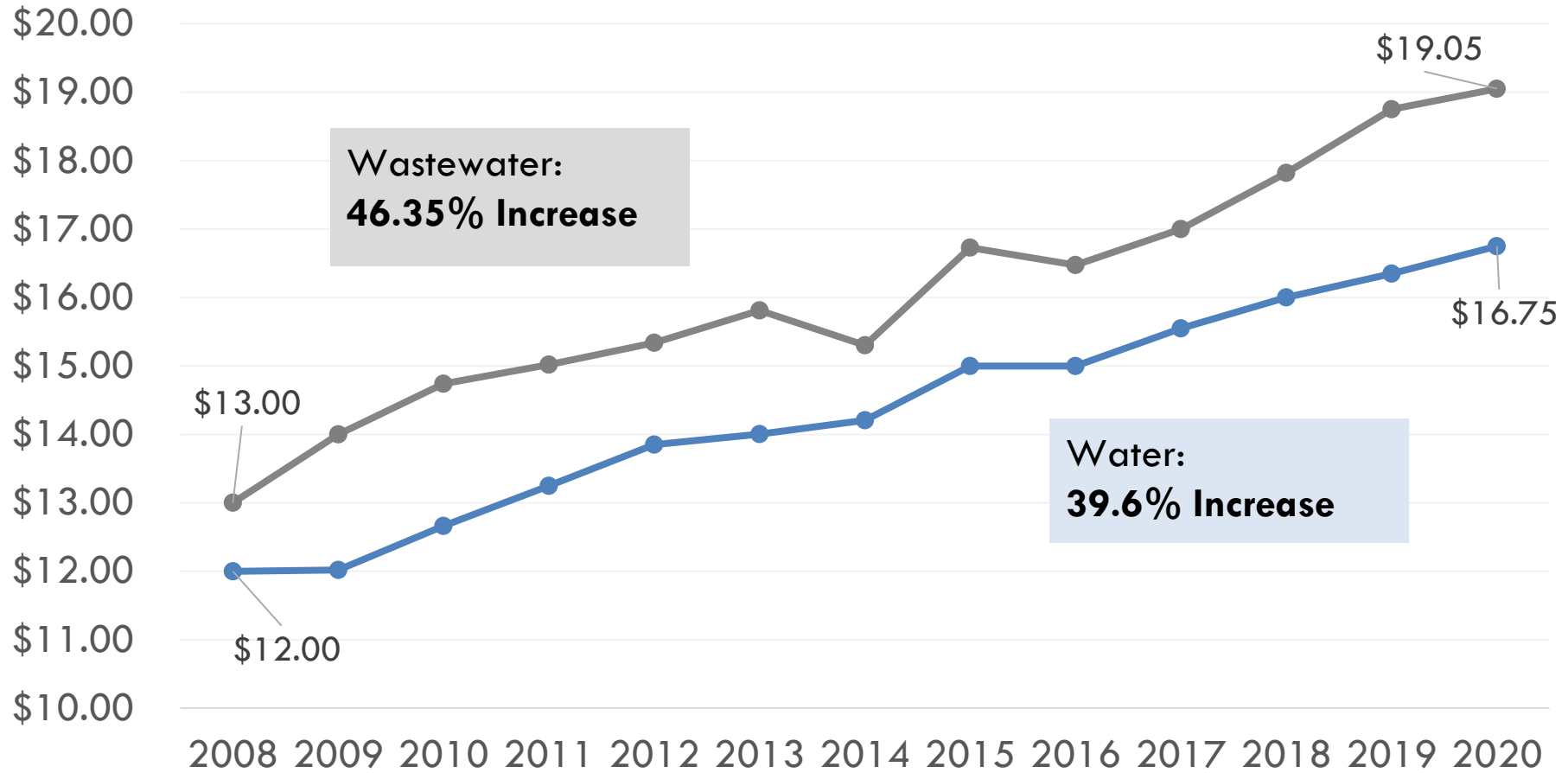
All together, the analysis represents approximately **200-260 utilities**. Each graph represents data from utilities for which we have data in every year.

TRENDS IN PRICING



Median Monthly Water and Wastewater Base Charges, 2008-2020

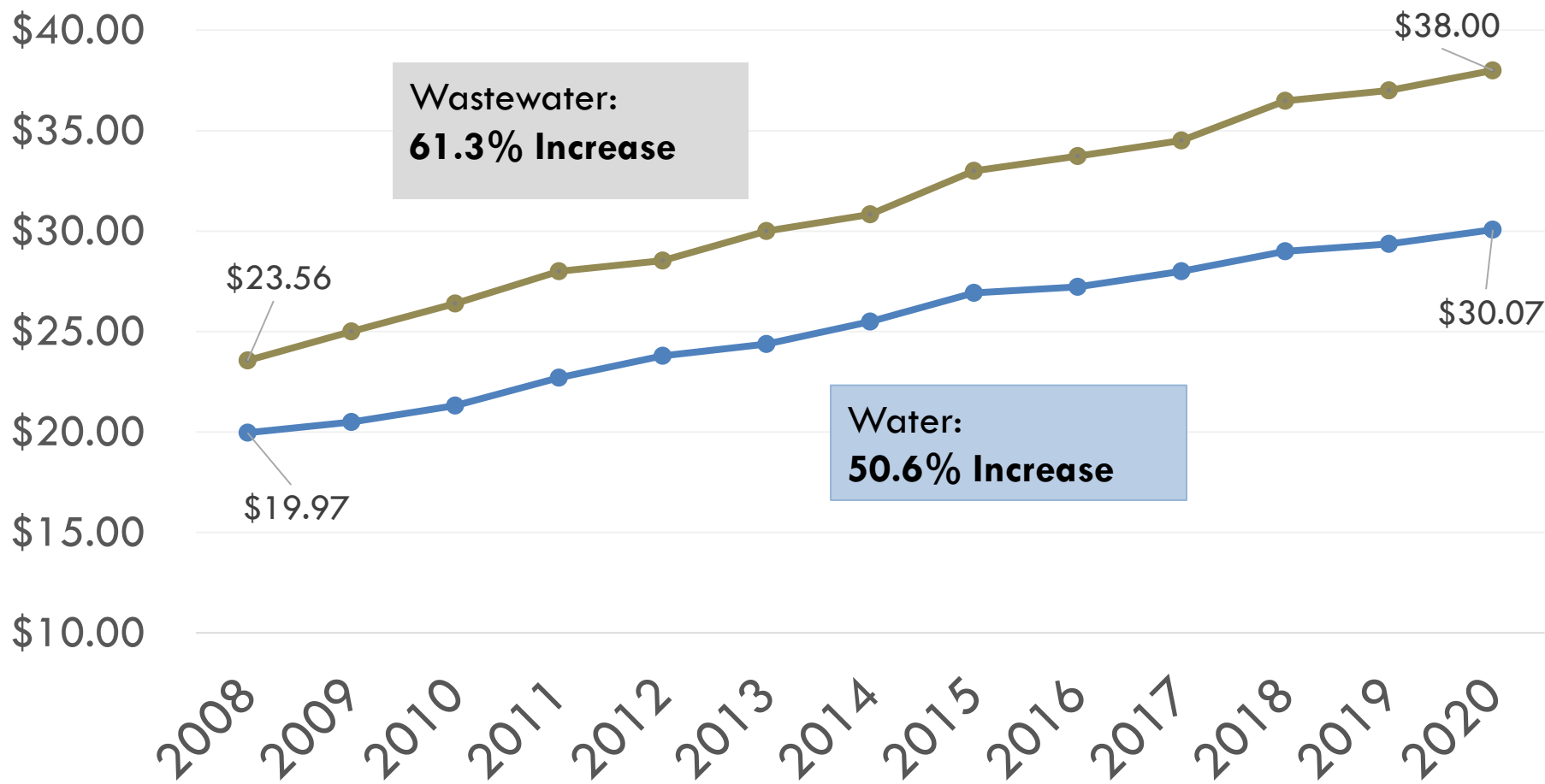
($N_{water}=263$ & $N_{wastewater}=206$)



Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.

Data Sources: NC League of Municipalities and Environmental Finance Center's annual water & wastewater rates surveys. The cohort of utilities is consistent across all years.

Median Water and Wastewater Bills at 4,000 Gallons per Month, 2008-2020, ($N_{water}=263$ & $N_{wastewater}=206$)

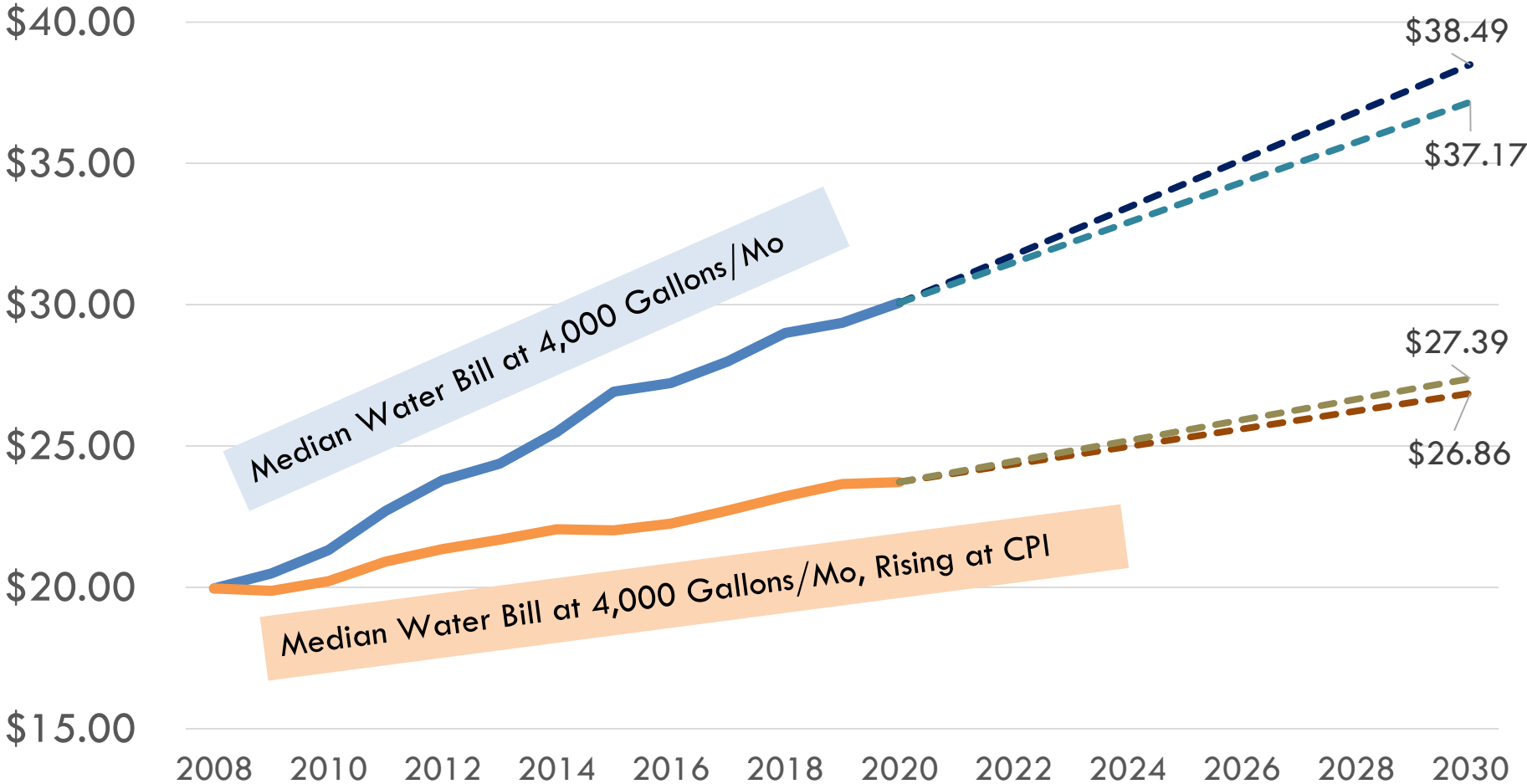


Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.

Data Sources: SDWIS and NC League of Municipalities and Environmental Finance Center's annual water & wastewater rates surveys. The cohort of utilities is consistent across all years.

Median Water Bills at 4,000 Gallons per Month, Relative to CPI-South, 2009-2020

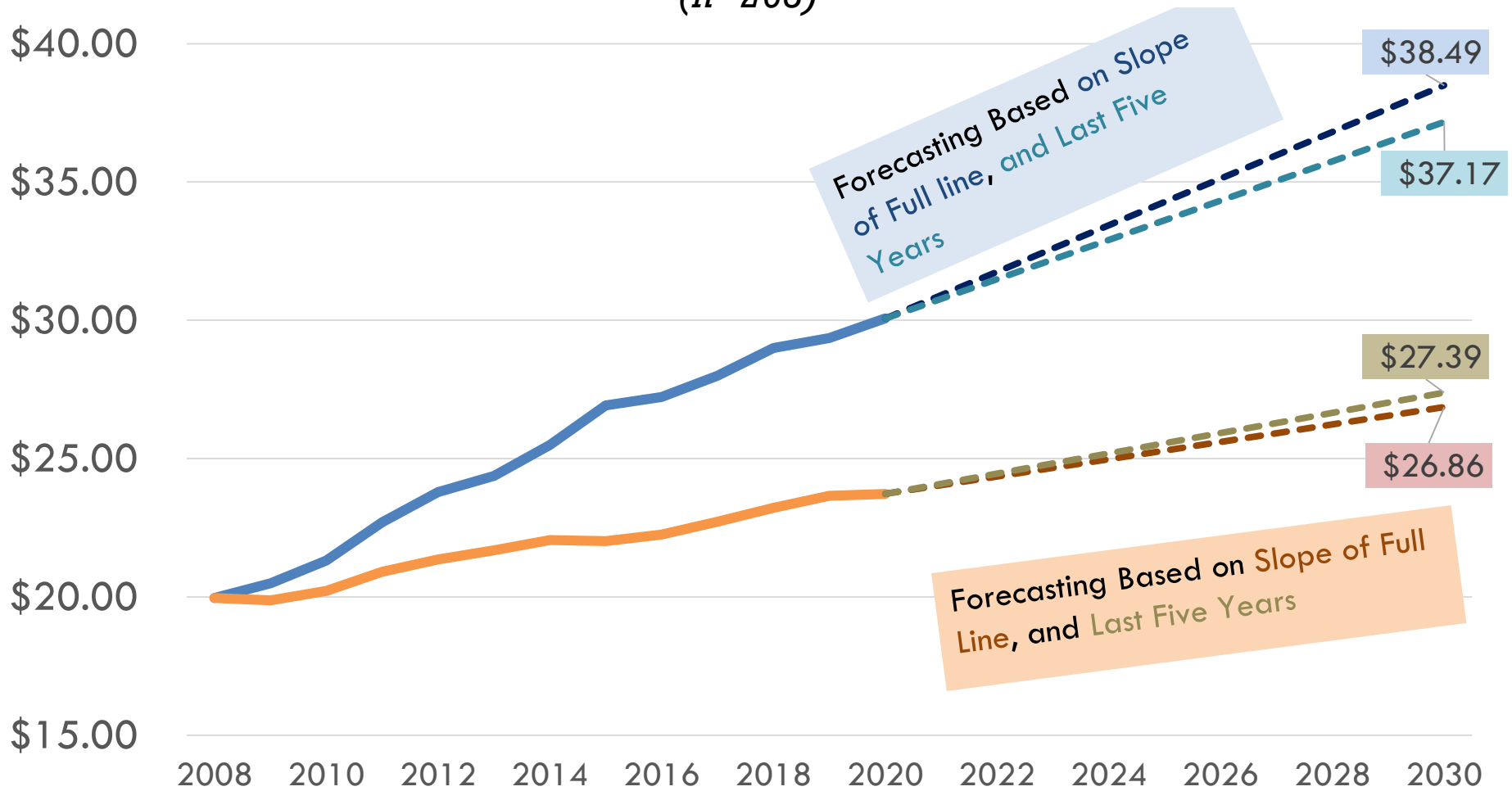
(n=263)



Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.
Data Sources: SDWIS, BLS, and NC League of Municipalities and Environmental Finance Center's annual water & wastewater rates surveys. The cohort of utilities is consistent across all years. SDWIS service population values were linearly interpolated for 2014 and 2015 based on values from 2013 and 2016.

Median Water Bills at 4,000 Gallons per Month, Relative to CPI-South, 2008-2020

(n=263)

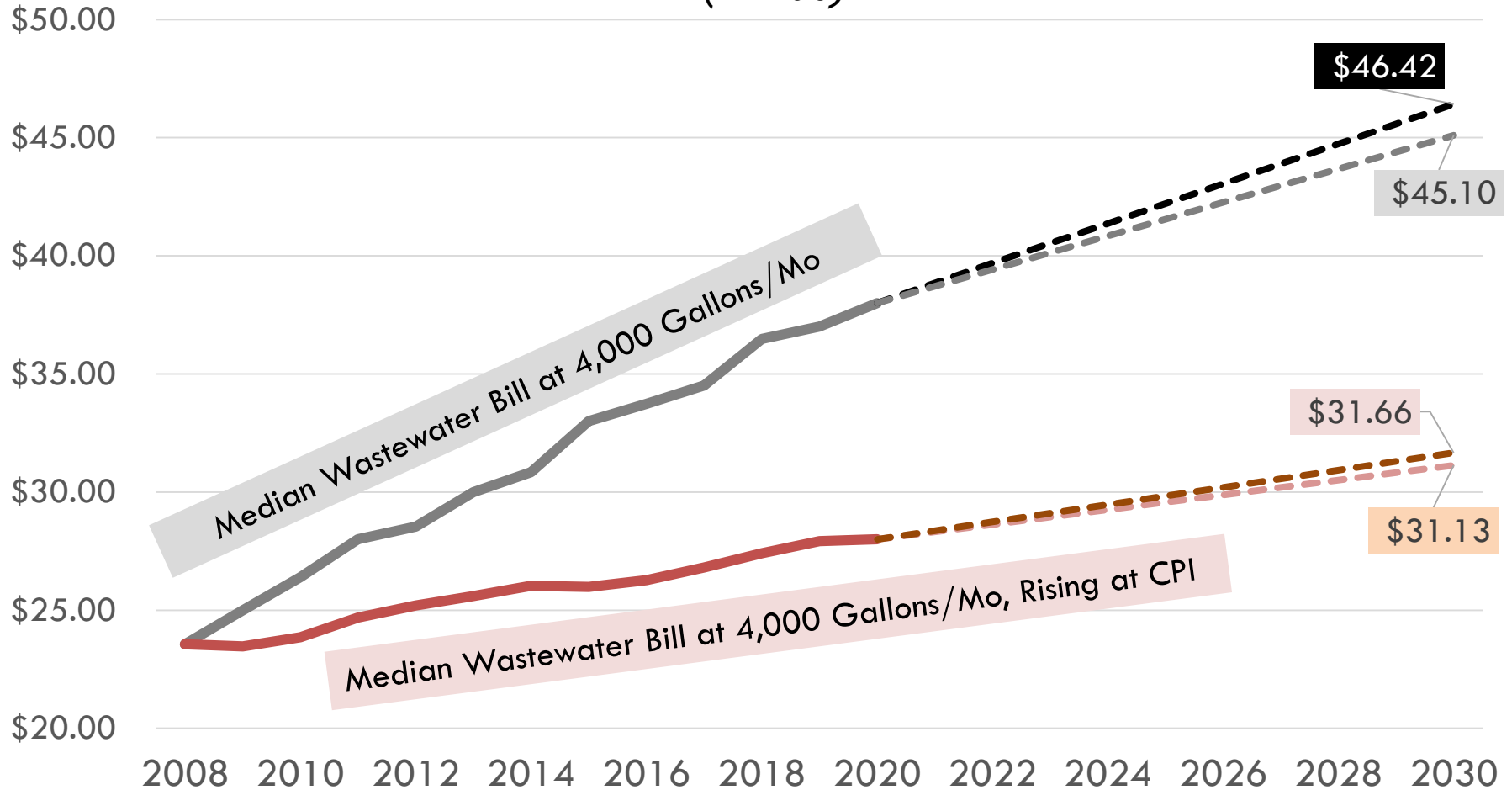


Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.

Data Sources: SDWIS, BLS, and NC League of Municipalities and Environmental Finance Center's annual water & wastewater rates surveys. The cohort of utilities is consistent across all years. SDWIS service population values were linearly interpolated for 2014 and 2015 based on values from 2013 and 2016.

Median Wastewater Bills at 4,000 Gallons per Month, Relative to CPI-South, 2008-2020

(n=206)

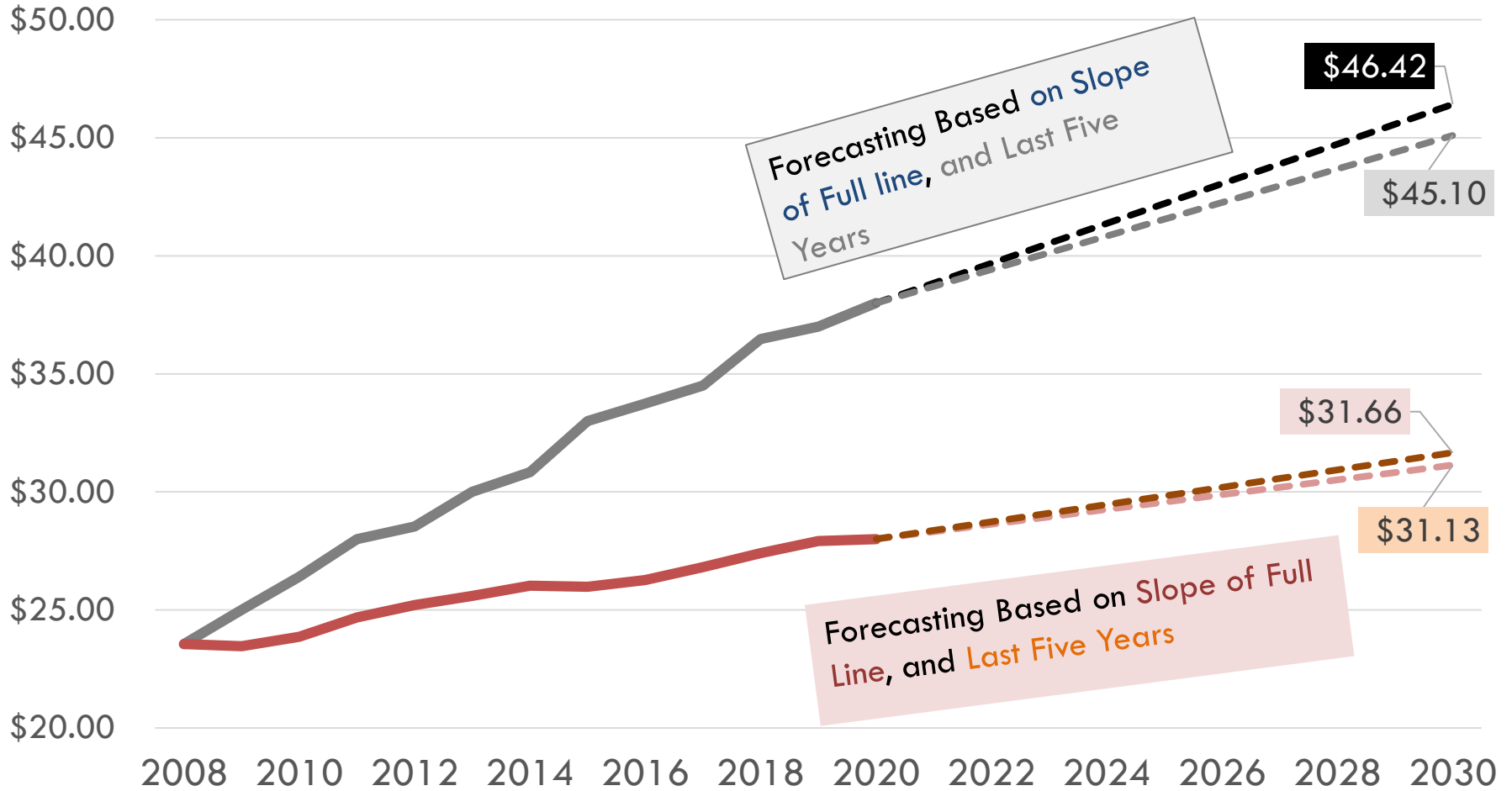


Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.

Data Sources: SDWIS, BLS, and NC League of Municipalities and Environmental Finance Center's annual water & wastewater rates surveys. The cohort of utilities is consistent across all years. SDWIS service population values were linearly interpolated for 2014 and 2015 based on values from 2013 and 2016.

Median Wastewater Bills at 4,000 Gallons per Month, Relative to CPI-South, 2008-2020

(n=206)



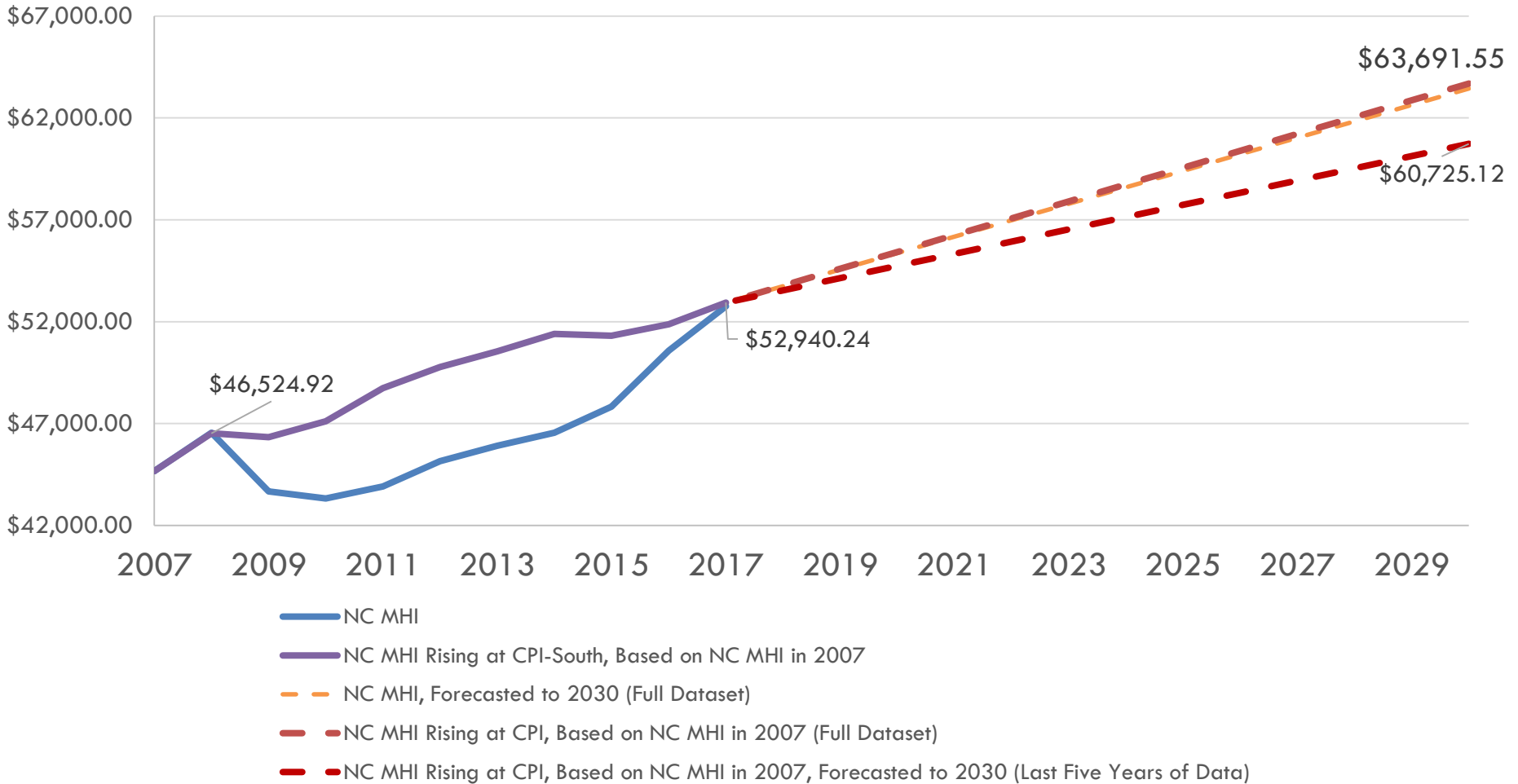
Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.

Data Sources: SDWIS, BLS, and NC League of Municipalities and Environmental Finance Center's annual water & wastewater rates surveys. The cohort of utilities is consistent across all years. SDWIS service population values were linearly interpolated for 2014 and 2015 based on values from 2013 and 2016.

TRENDS IN MEDIAN HOUSEHOLD INCOME



North Carolina Median Household Income, 2007-2017, Forecasted to 2030, Relative to CPI-South (in 2017 dollars)

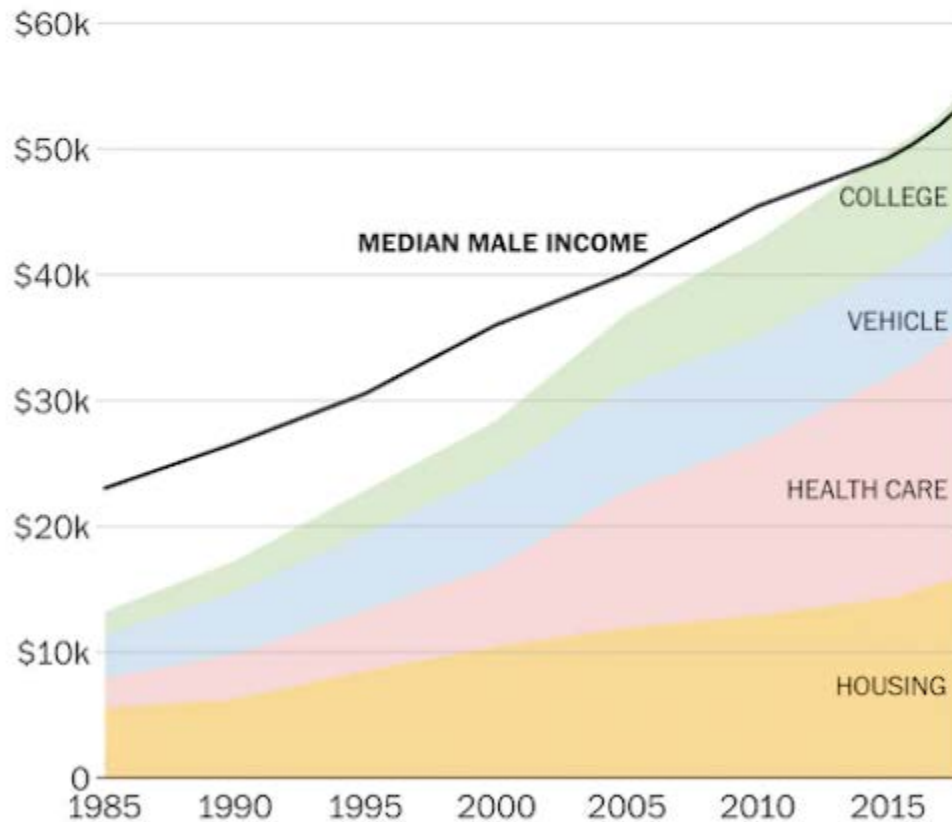


Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.

Data Sources: US Census Bureau American Community Survey, BLS-CPI, and NC League of Municipalities and Environmental Finance Center's annual water & wastewater rates surveys. The cohort of utilities is consistent across all years.

A year of wages no longer covers a year of family expenses

Major annual household expenditures for a family of four vs. median male income, 1985–2018



Source: The Cost-of-Thriving Index

THE WASHINGTON POST

So, what does this all mean?

We're playing catch up...

Affordability may be an issue, which may impact the revenue stability of the utility into the future

We don't see these trends changing.



Looking forward...

- Affordability issues will continue to be a challenge for utilities.
- Although MHI is beginning to rebound post-recession, it is not a good representation of the *distribution of income*.
- More customers are likely to struggle with rising bills in future years. Customer assistance programs will likely be even more crucial for customers in the lowest income brackets.

Takeaways

- Address on the local level
 - State MHI may not be reflective of your community
 - Median bills may not be the bill your community pays
- Cost of service
 - Percent of discretionary income that your bill represents
 - What else do people have to pay for in your community?
 - How much of that is for water/wastewater?

$$AR = (\text{Cost of Basic Water} + \text{Sewer Service}) \div (\text{Household Income} - \text{Essential Non-water Costs})$$

ACTION ITEMS



Water and Wastewater Residential Rates Affordability Assessment Tool

Go to

<http://efc.sog.unc.edu>

and search for
“Affordability Assessment
Tool”

Uses information on rates,
average usage, and census
data

The screenshot shows the title page of the 'Water & Wastewater Residential Rates Affordability Assessment Tool' by the University of North Carolina. It includes a description of the tool's purpose, a 'Data Inputs' section with a flow diagram, and a 'Results' section with a bar chart and a line graph. The tool is designed to help users assess the affordability of their water and wastewater services by comparing their rates to other utilities in the region. It uses data on rates, average usage, and census data to provide a comprehensive affordability assessment.


Water and Wastewater Rates Analysis Model

<http://efc.sog.unc.edu> or <http://efcnetwork.org>


Find the most up-to-date version in Resources / Tools

Water & Wastewater Rates Analysis Model

Version 2.8.2 (last updated August 4, 2015)



Developed by the Environmental Finance Center at the University of North Carolina, Chapel Hill
<http://efc.sog.unc.edu>



Funded by the U.S. Environmental Protection Agency and the Public Water Supply Section of the North Carolina Department of Environment and Natural Resources

Get Started

Download a copy of the model populated with data from an example utility

DESCRIPTION

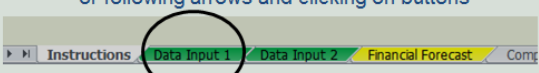
A do-it-yourself, simplified financial model to assist utility managers and private system owners in setting water and wastewater rates.

FEATURES

- Comparisons of annual fund balance projections (for up to 20 years) under proposed new rates vs. staying with existing rates
- Adjust rates for the next 1-5 years
- Up to 12 rate structures
- Uniform or block rates (up to 10 blocks)
- Model changes to accounts and water use
- Customizable list of operating and capital expenses
- Building up reserves through rates
- Compare monthly bills under new rates vs. existing rates
- Assess revenue sufficiency and fund balance
- Error notifications

INSTRUCTIONS

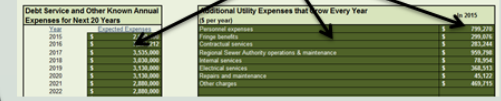
- 1) Navigate using worksheet tabs at bottom of screen or following arrows and clicking on buttons
- 2) In the green "Data Input" worksheets, input data in the dark green cells



View Results

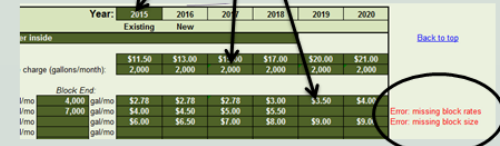
Financial forecast of the next few years under 'Existing' rates versus 'New' rates (graphs of cost recovery and end-of-year fund balance)

How new rates compare to existing rates (graphs of monthly bills)



Year	2015	2016	2017	2018	2019	2020
2015	\$ 2,000,000					
2016		\$ 2,000,000				
2017			\$ 3,500,000			
2018				\$ 3,500,000		
2019					\$ 3,500,000	
2020						\$ 3,500,000
2021						\$ 2,000,000
2022						\$ 2,000,000

Expense	2015
Operational expenses	\$ 220,200
Comp. benefits	\$ 220,000
Operational services	\$ 281,240
Regional Sewer Authority operations & maintenance	\$ 199,750
Interest expense	\$ 18,200
Electrical services	\$ 100,000
Repairs and maintenance	\$ 45,100
Other charges	\$ 403,700



Year:	2015	2016	2017	2018	2019	2020
Block End						
4,000 gal/mo	\$2.78	\$2.78	\$2.78	\$3.00	\$3.50	\$4.00
7,000 gal/mo	\$4.00	\$4.50	\$5.00	\$5.50		
10,000 gal/mo	\$5.00	\$5.50	\$7.00	\$8.00	\$9.00	\$9.00

Watch out for red "Error" messages describing where data entry errors

Created by the Environmental Finance Center at the University of North Carolina, Chapel Hill
Funded by the U.S. E.P.A. and the N.C. Department of Environment and Natural Resources

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