

Perspectives on Assessing System Vulnerability



Jeff Hughes
Environmental Finance Center
School of Government
University of North Carolina
(919) 843-4956

jhughes@sog.unc.edu

www.efc.unc.edu



UNC
ENVIRONMENTAL FINANCE CENTER

www.efc.unc.edu



How you pay for it matters

Supporting the fair, effective, and financially sustainable delivery of environmental programs through:

- **Applied Research**
 - Fees and finance
 - Regulatory and governance approaches
- **Teaching and Outreach**
 - Small to Very Large Systems...
- **Program Design/Evaluation**
 - Dashboard
 - Implementation advising
 - Capital planning tools

Two-Prong Capacity Approach

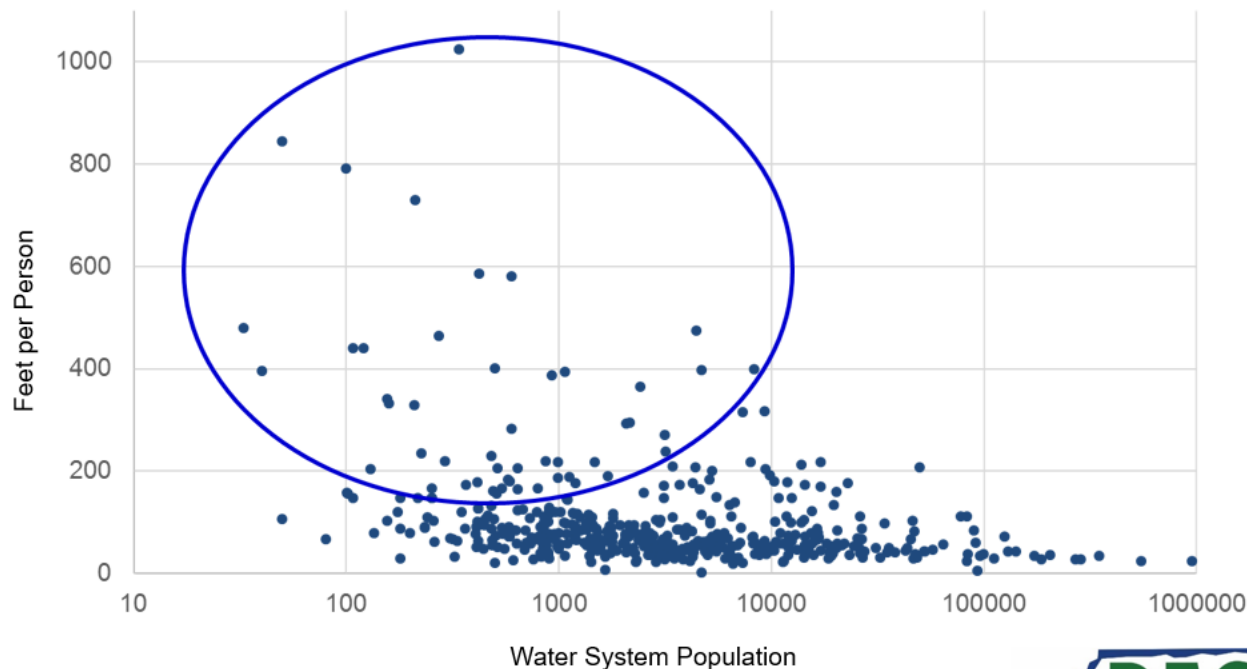
- Tools that help utilities be better service providers and more financially sustainable
- Research to assist funding programs develop/promote programs
 - Needs assessments
 - Debt affordability and market studies
 - Data driven affordability criteria
 - Showing financial benefits of subsidized loans

Five Indicators to Consider

1. Asset value (depreciated or replacement) per customer/account (alternative miles of pipe per account)
2. Population growth/decline – 3 to 10 year trends if possible (alternative average resident age trends)
3. Percent of revenue from top 5 customers and assessment of customer vulnerability
4. Access to management leadership (percent access to full time qualified manager)
5. Current household expenditures for service (can be adjusted/recalculated in several ways to adapt to local conditions)

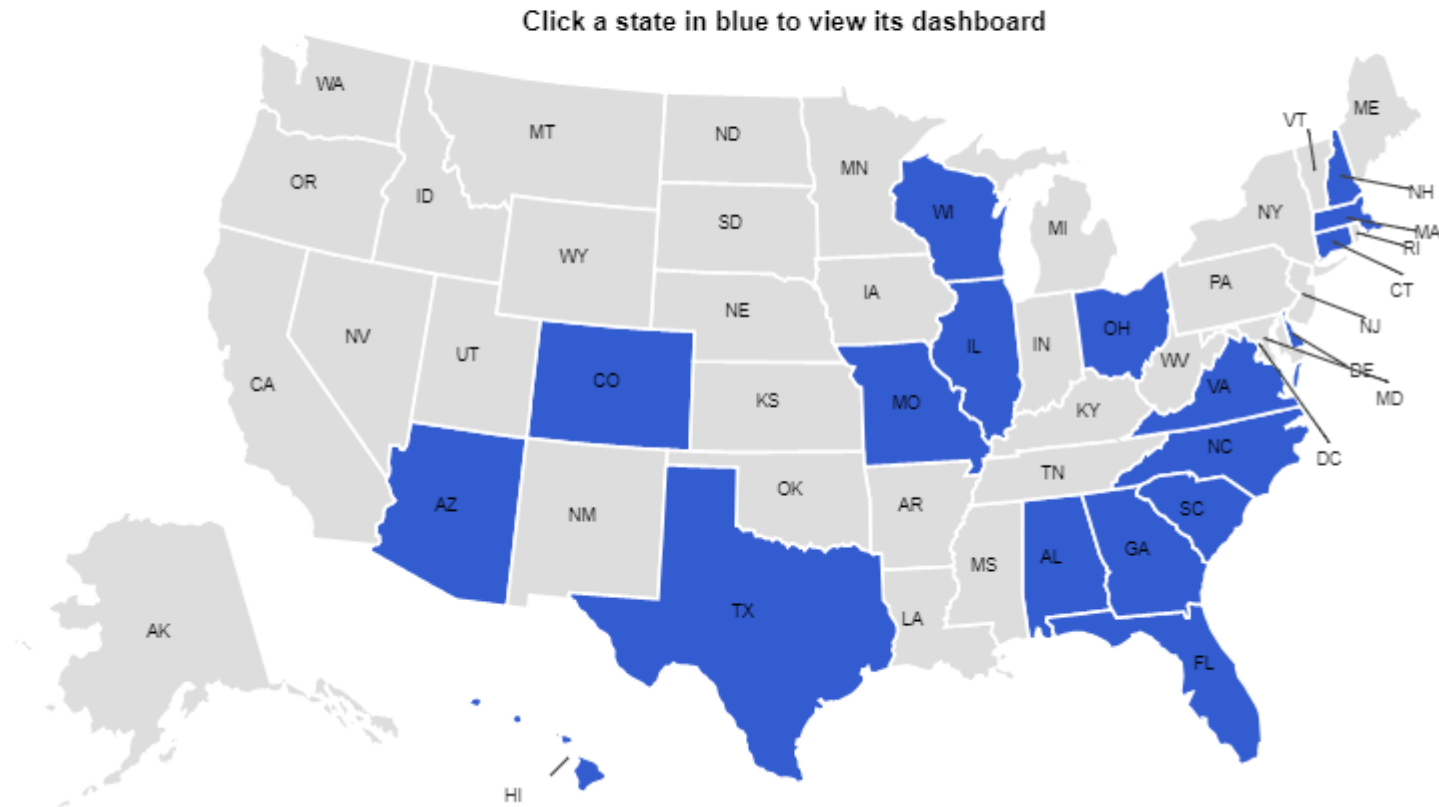
Beyond Indicator Selection

- Multiple indicators improve picture
- Multiple years improve picture
- There are always exceptional circumstances.....
- Start with scatter plots
- Approach scores and combined indexes with healthy skepticism
- Approach data with healthy skepticism



<https://efc.sog.unc.edu/utility-financial-sustainability-and-rates-dashboards>

Access the Dashboards



AZ Water and Wastewater Rates Dashboard

Rates as of July 2017

Last updated: August 28, 2018



Flagstaff

Rates Comparison
Financial Benchmarks
Characteristics
Links
Edit Data or Add Utility

Select residential bill and monthly consumption amount

Water Bill
 Sewer Bill
 Water + Sewer Bill

7,500 gallons
 1,003 cubic feet

Monthly Water Bill: \$49.86

Select comparison group: All Utilities

Comparing to **all utilities in survey**

404 rate structures compared Rates First Effective: 01/01/2017

Effects of raising rates by: 0%

Bill Comparison

Water Bill at
7,500 gallons
Median: \$42.08

Min \$5.00 Max \$210.78

Conservation Signal

Water Price/1,000 gallons, after
10,000 gallons
Median: \$3.72

Min \$0.00 Max \$100.00

Cost Recovery

Operating
Ratio Incl. Deprec. 2016

1.01

Median Affordability

Annual Water Bills as % MHI

1.23%

Example of Failure.....



NORTH CAROLINA
DEPARTMENT OF STATE TREASURER

DALE R. FOLYELL, CPA
Dale R. Folyell, CPA

STATE AND LOCAL GOVERNMENT FINANCE DIVISION
AND THE LOCAL GOVERNMENT COMMISSION

GREGORY C. GASKINS
DEPUTY TREASURER

June 5, 2018

EXHIBIT A

The Honorable [REDACTED], Mayor
Board of Aldermen
[REDACTED]
[REDACTED]
Andrew, NC [REDACTED]

Dear Mayor [REDACTED] and Town Aldermen,

We have been working with the Town [REDACTED] for several years to help identify and correct the financial deficiencies in the Town's operations with little success. The Town's reserves have been depleted to the point that, based on our projections, the Town will run out of cash in October, 2018, if it maintains its current course. The cash could be depleted sooner than that if funds are needed for an unexpected but necessary expenditure, such as a repair at the water or sewer treatment plants.

While it is tempting to look backwards to see who or what is to blame for this predicament, that is not a very effective use of your time other than to make sure you don't repeat the same mistakes going forward. You, as the elected leaders of the Town, have the chance with the 2018-2019 budget, to begin to correct the course for

Utility: [REDACTED]

Rates Comparison | **Financial Benchmarks** | Characteristics | Links | Edit Data or Add Utility

Select service provided. (Display will not change if the utility has a combined water and sewer enterprise fund.)

- Water Bill
- Sewer Bill
- Water + Sewer Bill

Ability to cover expenditures and debt service

Measures of liquidity

Op. Rev. / Op. Expend.



Debt Service Coverage Ratio



Quick Ratio



Days Cash on Hand



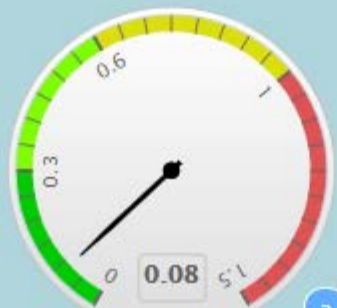
Cost Recovery

Operating Ratio (Incl. Dep.)



Leverage

Debt-to-Equity Ratio



Condition of physical assets

Asset Depreciation



Net Transfers

0



Select comparison group:

Comparing to all

All Utilities

All Utilities

Similar Number Of Accounts

Similar Revenue Generation

My Council Of Government

My Watershed

Same Water Source Type

Using Same Rate Structure

Similar Customer Income

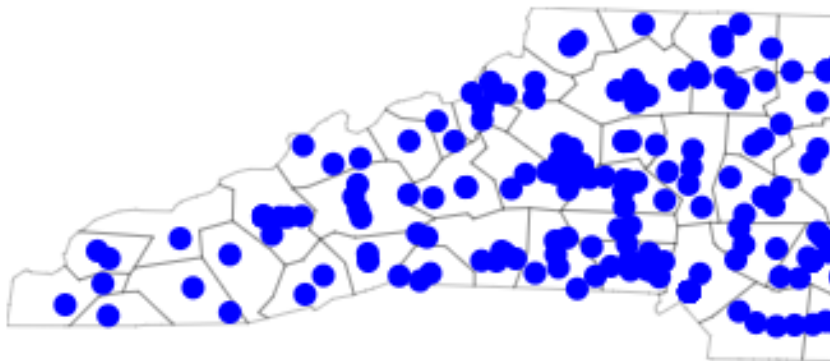
Same Economic Tier Counties

Same Ownership Type

Within 25 miles distance

Within 50 miles distance

Within 100 miles distance



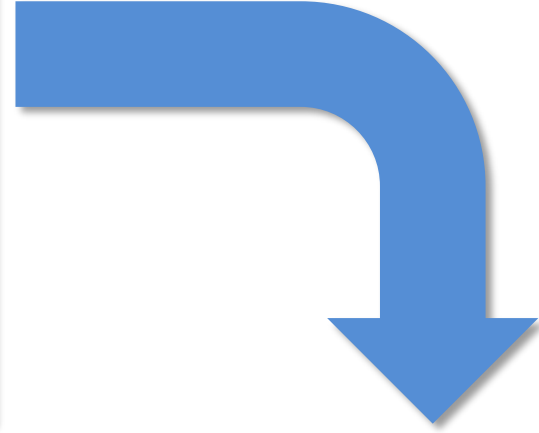
510 rate structures compared

Cost Recovery

Operating Ratio Incl. Deprec. 2017



SARINA STATEMENT OF REVENUES, EXPENSES AND CHANGES IN FUND ASSETS PROCESSED BY SUND FOR THE YEAR ENDED APRIL 30, 2017		Water and Sewer Estimate Fund
Operating Revenue		
Charges for Service	\$ 495,787	
Connection Fees	10,124	
Miscellaneous Income	4,051	
Total Operating Revenue	509,962	
Operating Expenses		
Personal services	183,219	
Compensation	11,239	
Employment Taxes	34,529	
Benefits	209,152	
Total Personal Services	338,139	
Other Operating Expenses		
Purchased Water	8,922	
Supplies	12,079	
Repairs and Maintenance	60,788	
Utilities	118,895	
Miscellaneous	12,789	
Depreciation	212,211	
Insurance	20,369	
Engineering, Lab Fees and Training	4,058	
Total other operating expenses	461,331	
Total Operating Expenses	800,470	
Operating Income (Loss)	289,492	
Nonoperating revenues (expenses)		
Interest income	1,198	
Interest Expense	(60,571)	
Total NonOperating Revenues (Expenses)	(59,373)	
Transfer In	716,475	
Transfer Out	(1,000)	
Change in Fund Net Assets	715,475	
Fund Net Assets Beginning	1,916,140	



Financial Health Checkup

FOR WATER UTILITIES

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

A resource for water systems through the Environmental Finance Center Network's
Smart Management for Small Water Systems project, funded under a cooperative
agreement with the U.S. Environmental Protection. <http://efcnetwork.org>

What does this tool do?
This tool assists in the assessment of the financial performance of a water (and/or wastewater) utility fund. Financial data readily available in annual financial statements are copied into this tool, which computes key financial indicators that measure a variety of important metrics, such as the ability to pay debt service, availability of cash to pay for operations and maintenance, the sufficiency of revenues generated, etc. Each metric is compared against targets that are specified by the user. The tool demonstrates the financial strengths and weaknesses of the utility fund in the past 5 years.

Features:
Simple data entry (uses data already reported in your audited financial statements)
6 financial performance indicators with explanations

Instructions
Enter Financial Data
Key Financial Indicators
View Graphs
Example Statements
Blank worksheet

Median Affordability

Annual Water Bills as % MHI



TOWN OF AULTRYVILLE
 218 South Gray Street
 Post Office Drawer 10
 Aultryville, North Carolina 28318

Mayor: Ron Lamy Aultry
 910-426-4367
 Fax: 910-426-0264

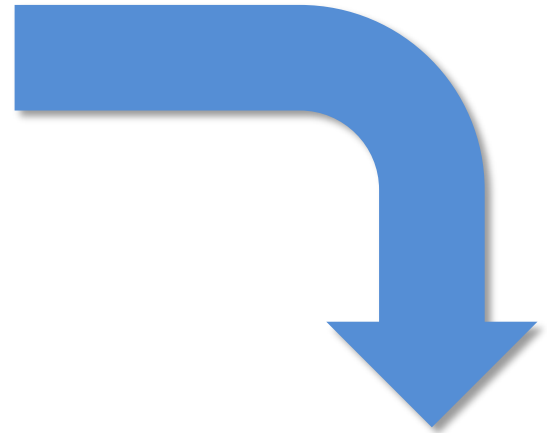
WATER RATES Effective 7-1-2016

INSIDE TOWN:
 0-1000 GALLONS MINIMUM \$20.36
 RATE PER/1000 GALLONS \$7.25
 RATE PER/1000 GALLONS >> (20,000) \$7.75

OUTSIDE TOWN:
 0-1000 GALLONS MINIMUM \$25.45
 RATE PER/1000 GALLONS \$9.06
 RATE PER/1000 GALLONS >> (20,000) \$9.68

GARBAGE RATE (OUT OF TOWN) Effective 7-1-2016

\$20.00



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1				UNC											
2			ENVIRONMENTAL FINANCE CENTER												
3															
4			Water & Wastewater Residential Rates Affordability Assessment Tool												
5			Interactive Spreadsheet Tool												
6			Version 1.5 (December 20th, 2017)												
7															
8			<p>This tool allows users to enter relevant Census data on their service community to help assess the affordability of their water or wastewater rates on their residential customers. The tool also allows for a new rate structure to be entered to see how affordability compares from one rate structure to the next.</p>												
9			<p>In the "Inputs" worksheet, fill in all yellow-colored cells.</p>												
10															
11															
12			<p>Data Inputs</p>												
13			<p>1) Utility Information</p>												
14			<p>Name of the utility:</p>												
15			<p>Select the state, District of Columbia, or Puerto Rico from the dropdown menu:</p>												
16			<p>Assess affordability of water, wastewater or combined water & wastewater rates?</p>												
17			<p>River Run Utility District of Columbia Water & Wastewater</p>												

