

# Asset Management Workshop

Georgia Rural Water Association  
Fall Conference

Buford, GA

Stacey Isaac Berahzer, EFC at UNC

William G. Wingate III (Trey), W.K. Dickson & Co.

October 28, 2014



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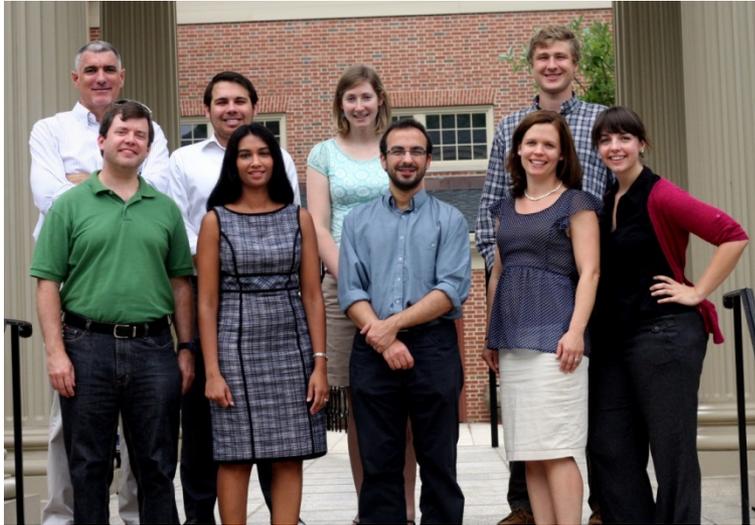
<http://efc.sog.unc.edu>

 @EFCatUNC



# UNC

## ENVIRONMENTAL FINANCE CENTER



UNC SCHOOL of GOVERNMENT

*Dedicated to enhancing the ability of governments and other organizations to provide environmental programs and services in fair, effective, and financially sustainable ways through:*

- Applied Research
- Teaching and Outreach
- Program Design and Evaluation



*How you pay for it matters*



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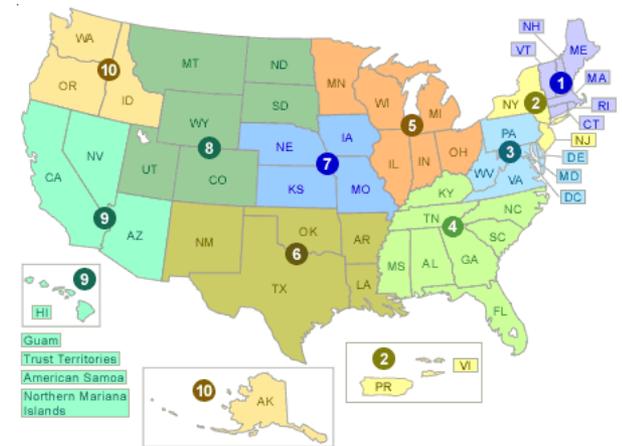
<http://efc.sog.unc.edu>

 @EFCatUNC

# Smart Management for Small Water Systems

under a Cooperative Agreement with the US EPA

- The EFCN provides training and technical assistance to small public water systems in all fifty states and five territories to help local water systems achieve and maintain compliance with the Safe Drinking Water Act.
- Workshops, trainings and direct assistance:
  - Asset Management
  - Water Loss Reduction
  - Water System Collaboration
  - Fiscal Planning and Rate Setting
  - Energy Management
  - Funding Coordination, and
  - Managerial and Financial Leadership
- Sign up for direct assistance at <http://efcnetwork.org/one-on-one/>



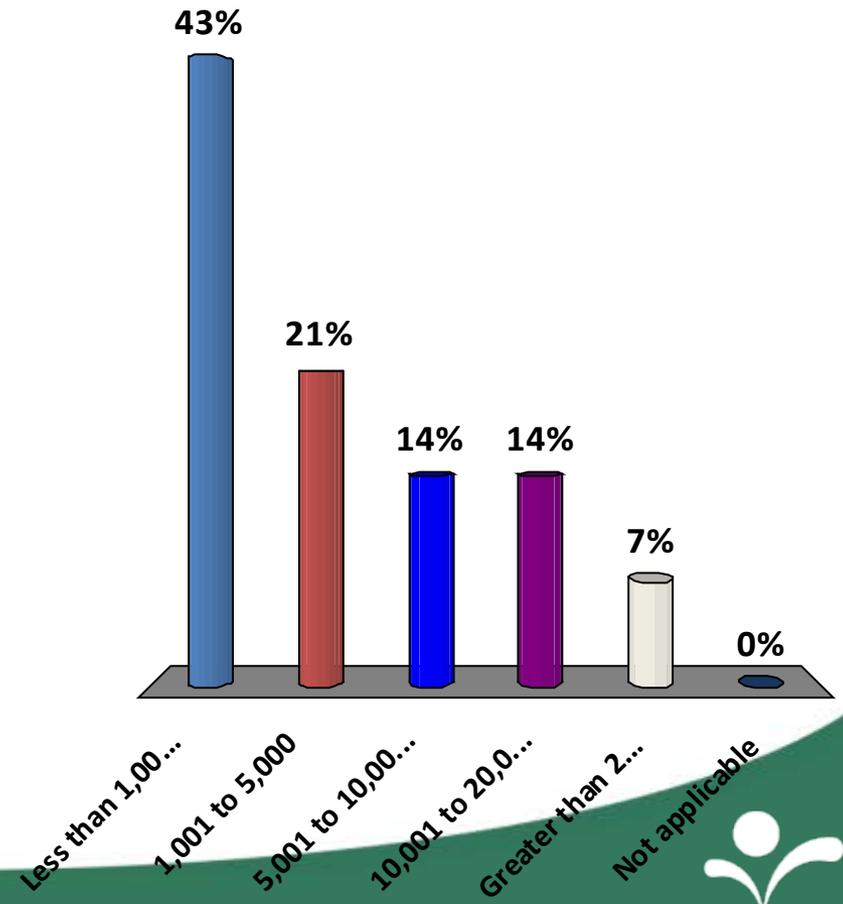
# Objectives

- To introduce Asset Management through 5 key components
- To provide detailed information on “level of service” related to Asset Management
- To provide some interactive hands-on experience on the asset management approach

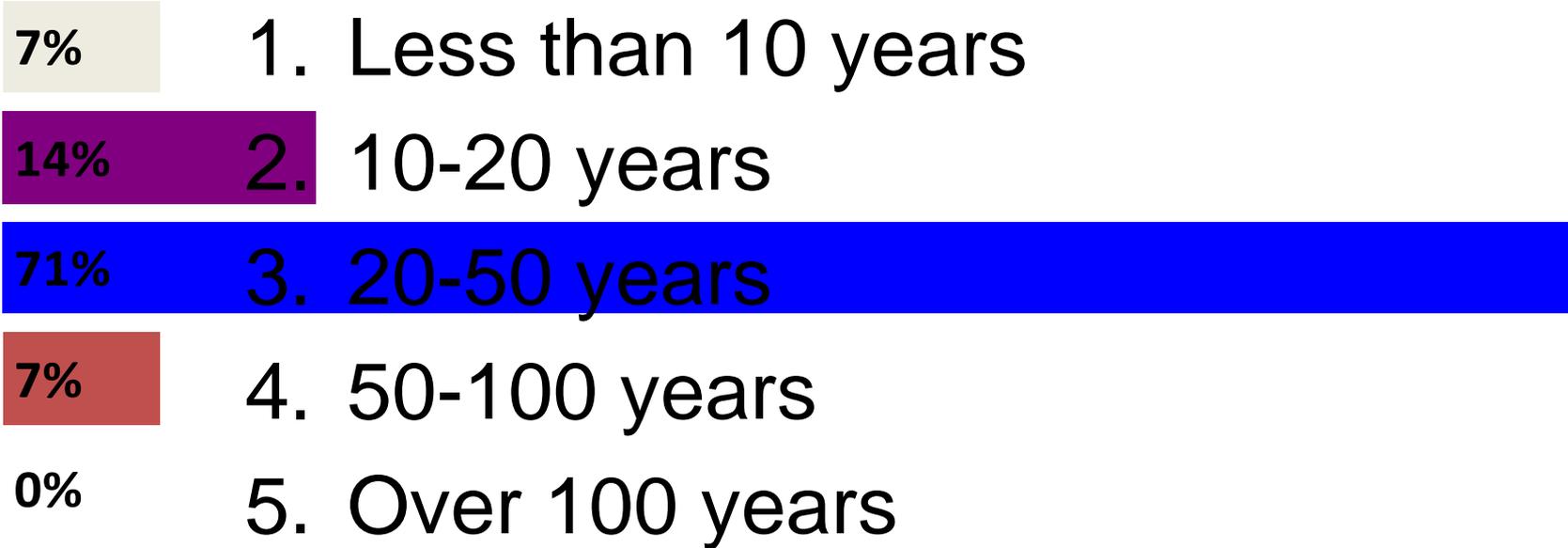


# How many people are served by your water utility?

- A. Less than 1,000
- B. 1,001 to 5,000
- C. 5,001 to 10,000
- D. 10,001 to 20,000
- E. Greater than 20,000
- F. Not applicable

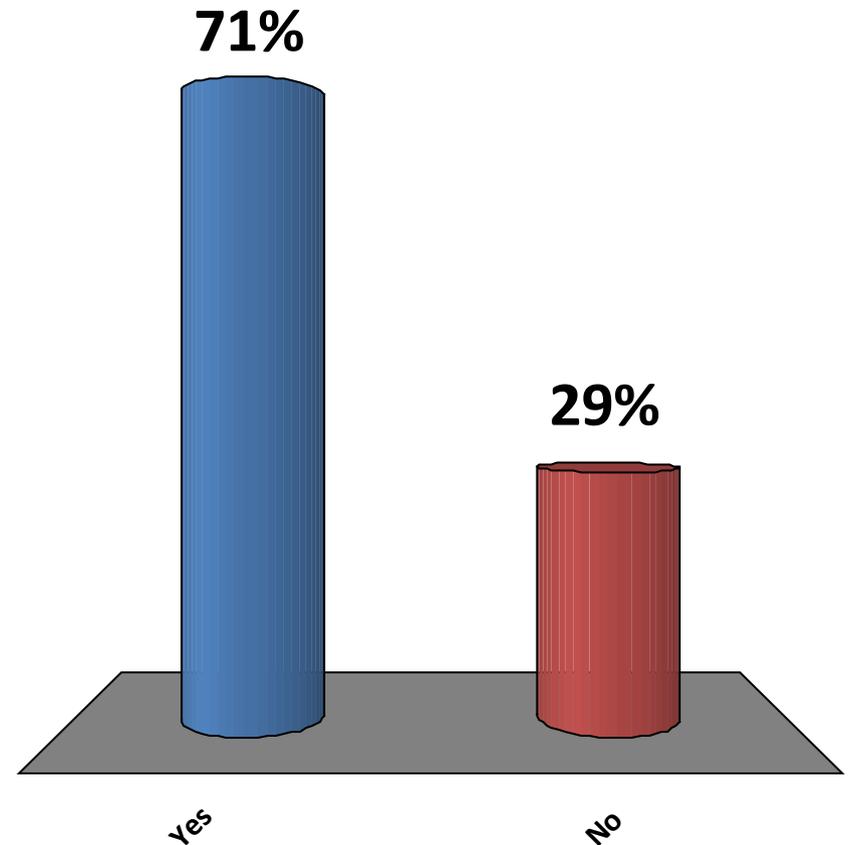


# What is the **average** age of your pipe network system?



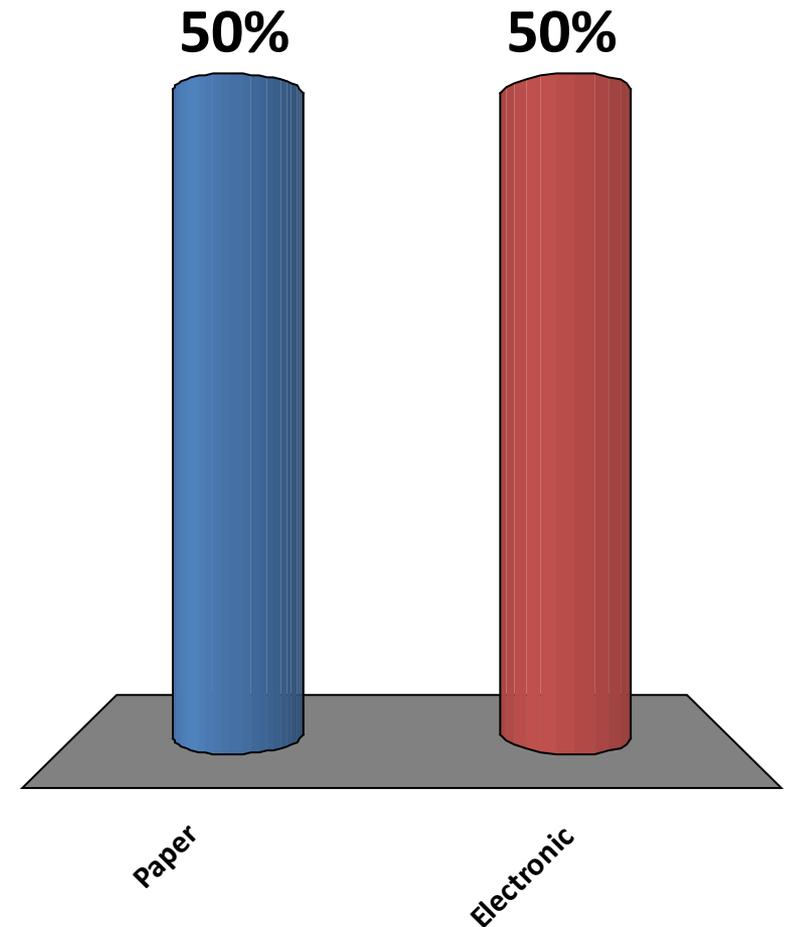
# Do you have a work order management system?

1. Yes
2. No



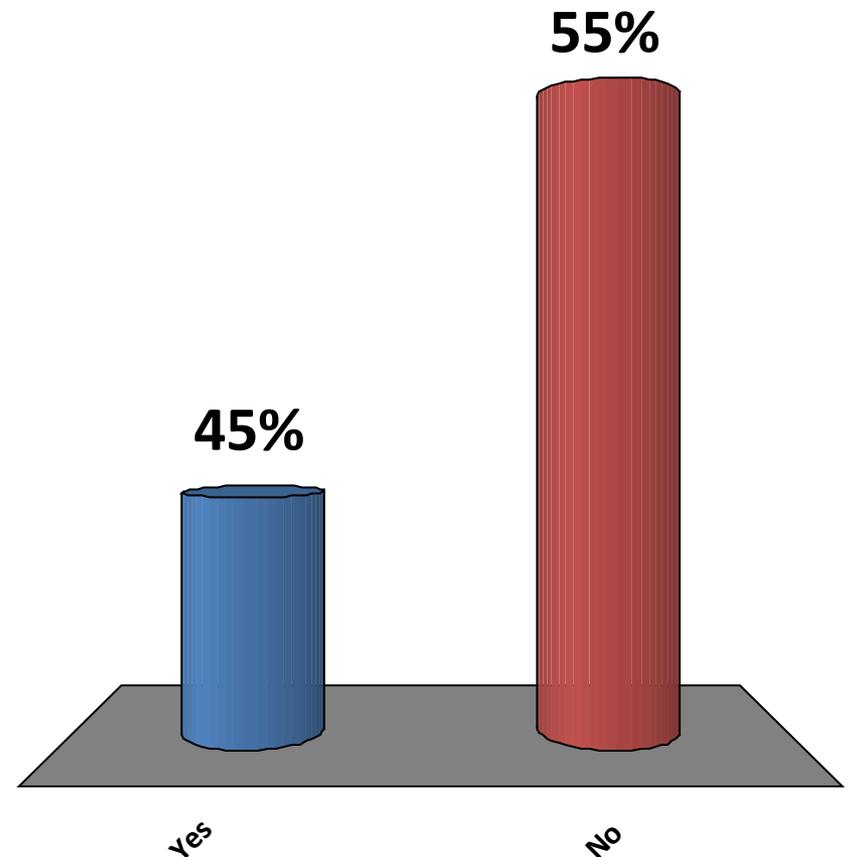
# If you have a work order management system, is it ...

1. Paper
2. Electronic



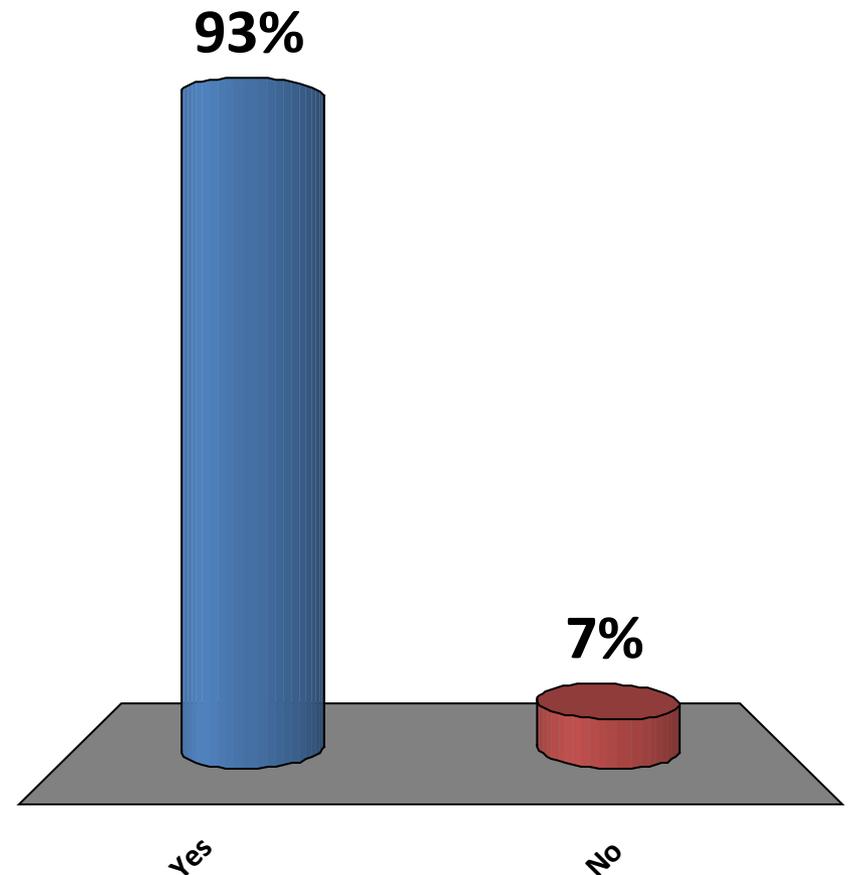
# Do you have a defined inventory program for your system?

1. Yes
2. No



# Do you Plan to Return to this Workshop After Lunch?

1. Yes
2. No



# Five Core Components of AM



Current State of the Assets



**Level of Service**

Criticality



**Life Cycle Costing**



Long-Term Funding



# Five Core Components of AM



Current State of the Assets



Level of Service

Criticality



Life Cycle Costing

Long-Term Funding

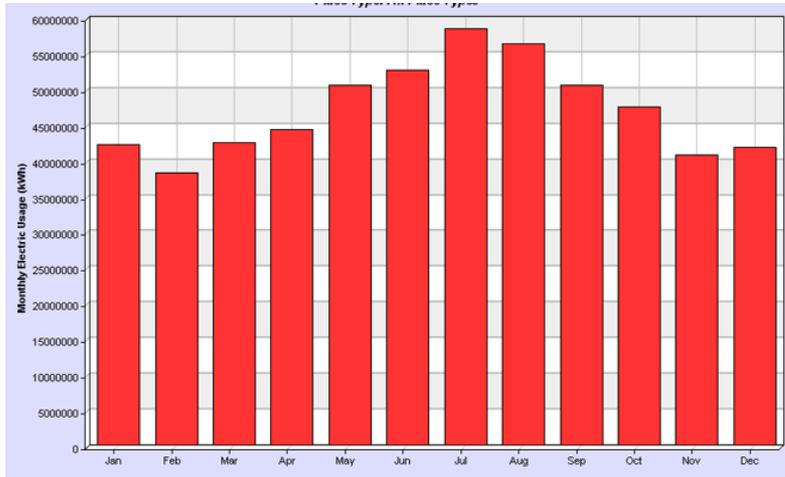


# What Assets Do I Own?



# Do they Use Energy?

## Electricity



**50 KW**



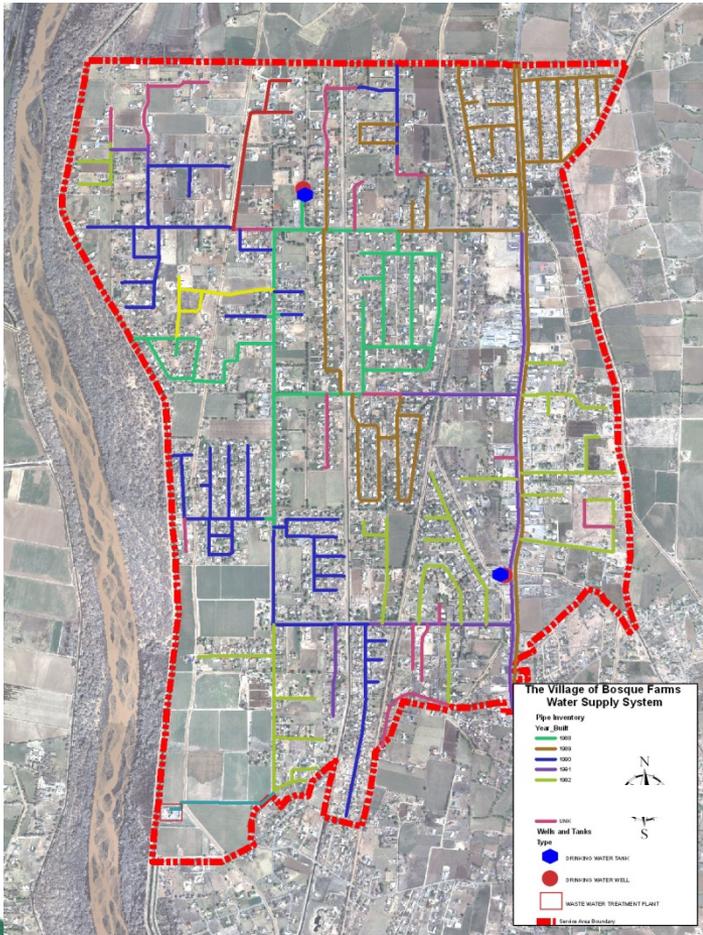
**10 Hp**

**150 Hours  
Run Time**

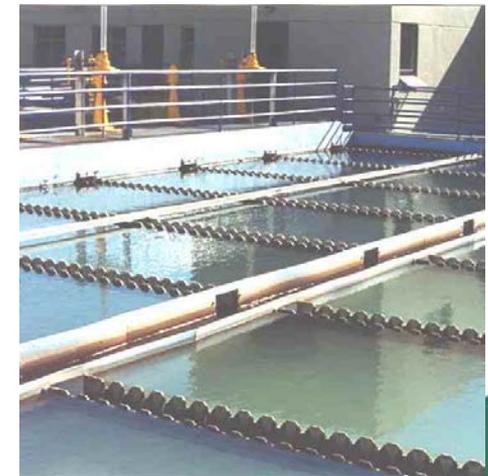
**Solar Powered**



# Where Are They?



# What is Their Condition?



# How Much Longer Will They Last?

**1 Year**

**100 Years**

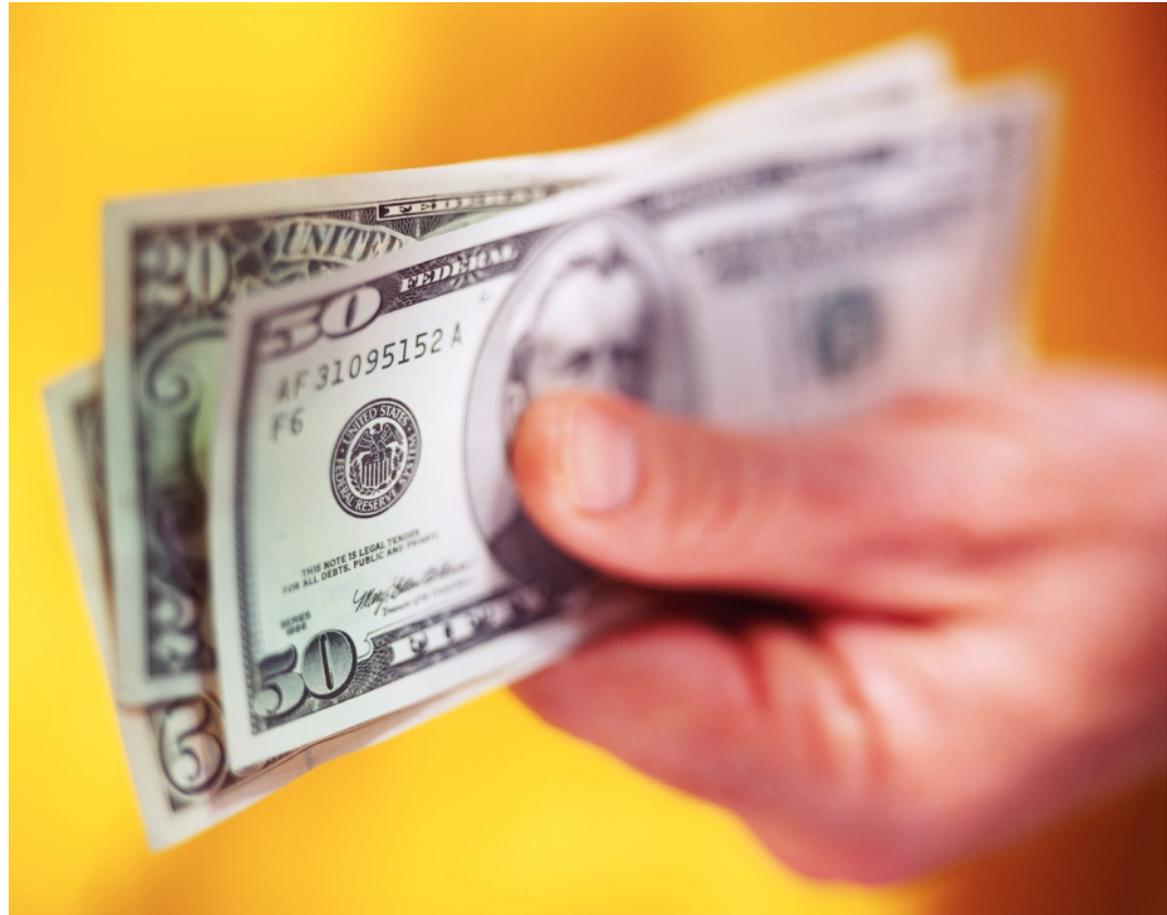
**10 Years**

**15 Years**

**20 Years**



# What Will It Cost To Replace The Assets?



# Five Core Components of AM



Current State of the Assets

**Level of Service**

Criticality



**Life Cycle Costing**

Long-Term Funding





# Level of Service Goals

Set  
Measurable  
Goals To  
Define What  
You Will Do to  
Meet  
Customer  
Expectations



Track Progress  
Towards Meeting  
Goals



# Five Core Components of AM



Current State of the Assets



**Level of Service**

Criticality

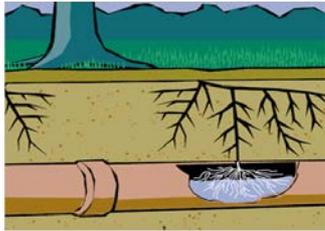


**Life Cycle Costing**

Long-Term Funding

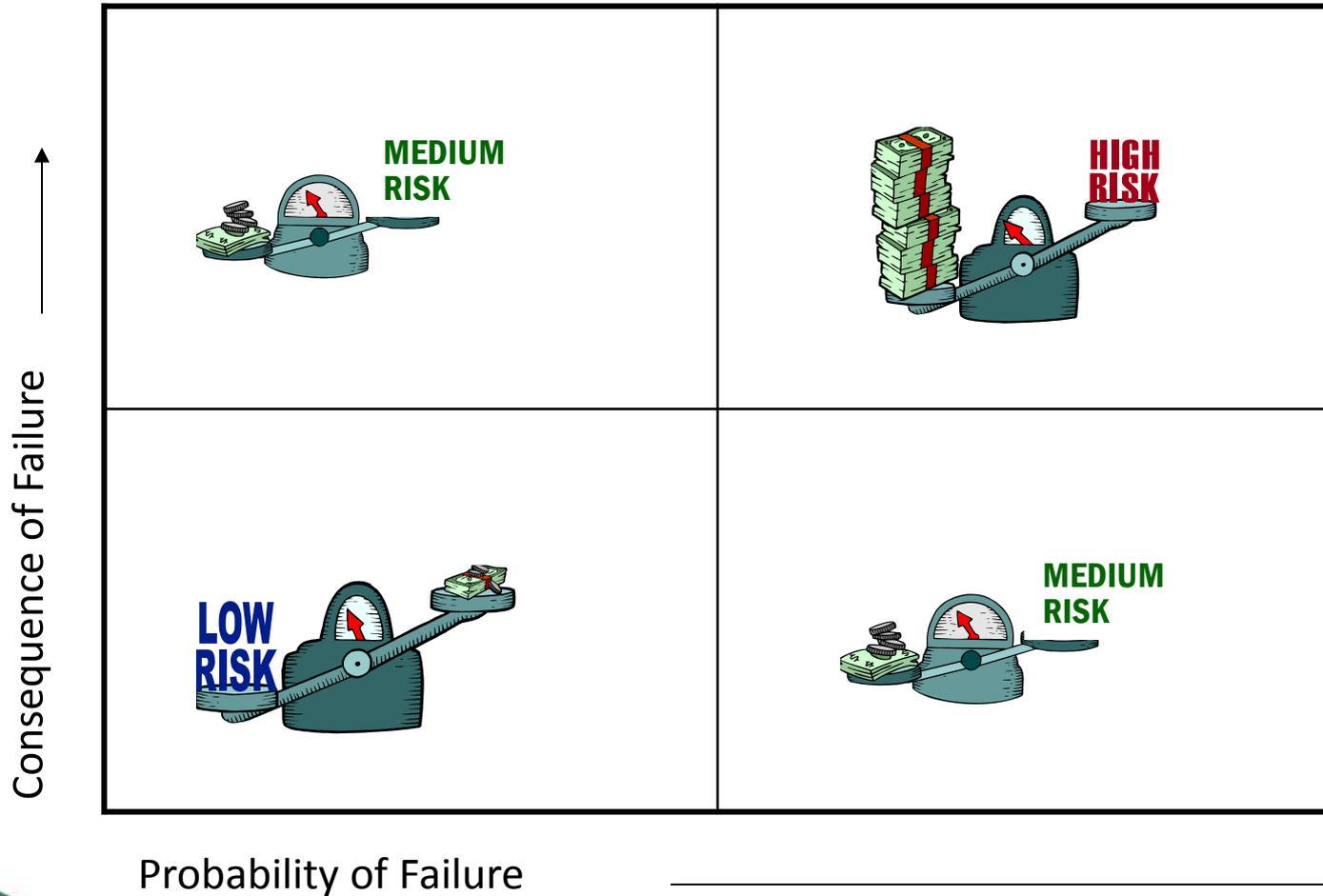


# What is the probability or likelihood that a given asset will fail?



# What is the consequence if the asset does fail?





Which category of assets do I care the most about? The least?



# Five Core Components of AM



Current State of the Assets



**Level of Service**

Criticality



**Life Cycle Costing**

Long-Term Funding



# Maintenance



**Routine**



**Preventative**



**Predictive**



# Asset Replacement



**Repair**

**Low Risk  
Asset**



**Repair or  
Rehabilitate**

**Moderate Risk  
Asset**



**Rehabilitate  
or Replace**

**High Risk  
Asset**



# Five Core Components of AM



Current State of the Assets



**Level of Service**

Criticality



**Life Cycle Costing**



**Long-Term Funding**



# Determine Money Needed For...



**O&M**



# Determine Money Needed For...



## Replacement



**Over Next.....**

**20 Years**

**50 Years**

**100 Years**



# Determine Customer Rate Increases to Cover Costs

City of Petaluma Water and Wastewater Bill [www.cityofpetaluma.net](http://www.cityofpetaluma.net)

**A** Account Number: 555555-55  
BILL DATE: 2/26/2009  
DUE DATE: 3/28/2009

Customer Name: John&Mary Doe  
Service Address: 123 Main St.

**B** Billing Detail:  
Summary of Charges from 12/29/2008 - 2/25/2009

Water Charges			
Tier 1 - (0-18)	\$2.70/hcf	17	\$45.90
Tier 2 - (19-36)	\$3.10/hcf	0	\$0.00
Tier 3 - (37-48)	\$3.73/hcf	0	\$0.00
Tier 4 - (49+)	\$4.13/hcf	0	\$0.00
Base/Service Charge			\$12.40
<b>Total Water Charges</b>			<b>\$58.30</b>
Wastewater (Sewer) Charges			
Sewer Consumption \$8.23/hcf	17.00		\$105.91
Base/Service Charge			\$26.28
<b>Total Wastewater Charges</b>			<b>\$132.19</b>
Other Charges			
Fire Sprinkler Charge			N/A
Hydrant Charge			N/A
<b>Total Other Charges</b>			<b>\$0.00</b>
<b>Total Charges</b>			<b>\$190.49</b>
Winter Sewer Average 20.00			
<small>*Note: both hundred cubic feet, 1 cubic = 7.48 gallons</small>			

**C** Summary of Charges

Previous Balance	\$133.19
Payment - Thank You	\$123.19
Water, Wastewater, and Other Charges	\$190.49
Adjustments/ Deposits	\$0.00
<b>Total Amount Due</b>	<b>\$200.49</b>
Meter Readings:	
Current Meter Reading	880
Prior Meter Reading	863
Water Usage This Period (hcf)	17
Water Usage This Period Last Year (hcf)	25
Meter Number	12345678

**D** Consumption

**E**

Conserve Water: It's the Right Thing to Do!  
Sign up for your FREE Water-Wise HouseCall. A trained water conservation specialist will evaluate your water using devices and irrigation system to find you ways to save water and money. You get free stuff too! Call 1-800-548-1882 today.  
Visit our website for more water conserving tips - [www.cityofpetaluma.net](http://www.cityofpetaluma.net).

PLEASE DETACH AND RETURN BOTTOM PORTION WITH YOUR PAYMENT

**F** CITY OF PETALUMA  
Water and Sewer Invoice  
11 English Street  
P.O. Box 6011  
Petaluma, CA 94953-6011

BILLING PERIOD: 12/29/2008 - 2/25/2009  
SERVICE ADDRESS: 123 Main St.

ADDRESS:  
81032270 8E00 3403027 94904  
000004134 01 0011 0344 4134/3

John&Mary Doe  
123 Main St.  
Petaluma, CA 94953

IF PAYING BY MASTERCARD OR VISA, FILL OUT BELOW:  
 CHECK CARD USING FOR PAYMENT  MASTERCARD  VISA  
CARD NUMBER: SIGNATURE CODE  
SIGNATURE: EXP DATE  
STATEMENT DATE: 2/26/2009 PAY THIS AMOUNT: \$200.49 ACCT #: 555555-55  
Amount Enclosed: \$

REMIT TO:  
CITY OF PETALUMA  
P.O. Box 6011  
Petaluma, CA 94953-6011

Please check this box if address or name has changed. Indicate changes or move-in date. Call 707-778-4300 if service address has changed.

11/11



# Level of Service



<http://www.efcnetwork.org>

# Water & Wastewater...

- are first and foremost customer service “businesses”
- utilities exist because customers want them to
- utilities would have no reason to exist without customers



# So.....

# It's all about the customers



# Customer Service In AM Terms....

- Called “Level of Service”
- Defines the major goals of the utility



Customer Service defines what you do, how you do it, when you do it, how you spend your money to provide what your customers want



# Customer Service And Costs

Customer Service is an opportunity to have a conversation with customers

When customers have a say in what they want, they are more willing to pay for it.



# Customer Service And Costs

Customers can also gain an understanding of how service and cost are related and why costs go up over time

*In general,*

higher levels of service = higher costs

lower levels of service = lower costs



# Goals Should Meet SMART

- Specific
- Measurable
- Attainable
- Realistic
- Timebound (where appropriate)



# Specific

- Not “Provide good water”
- But Rather “Meet Requirements of the SDWA 100 Percent of the Time”
- Not “Have Good Pressure”
- But Rather “Provide water at a minimum of 50 PSI throughout the system 95% of the time”



# Measurable

- There has to be a way to tell if the goal has been met or not
- Must be able to be measured in some way
- For example:
  - Respond to water quality complaints by next business day 95% of the time
- Think about:
  - Can this goal be measured?
  - How would it be measured?
  - Does the data exist?
    - Would it be hard to get employees to collect it if it doesn't already exist?
  - How often would you measure the goal?



# Attainable

- Shouldn't set goals that can be achieved
- So, when setting the goal, think about is it possible to actually achieve this goal if we operate the system properly?
- For example: Selecting a goal of providing customer service response within 15 minutes is not achievable if you have no staff available to respond to complaints.



# Realistic

- Not, “Reduce overall water use by 50% within 2 years through water conservation program.”
- It is not realistic to assume that a water conservation program could achieve this type of water reduction
- Rather, “Reduce per capita water use by 10% within 2 years through water conservation program”



# Timebound

- Not all goals need to be timebound, but a time element should be included whenever appropriate
- Time element can make it easier to measure
- Time element can address situations beyond the control of the system (i.e., sometimes the water will have to be shut off, so don't promise to deliver water 100% of the time)
- “Breaks will be fixed within 8 hours of discovery 90% of the time” rather than “Breaks will be fixed quickly”



# LOS is not set in stone

- Goals can be changed, added, deleted, adjusted over time
  - Key is: must meet what customers want and match what they are willing to pay for



# Take Home Message

- Choose 2 goals to start with
- Check SMART – Do your goals meet this?
- See what data you need to measure the goal
- Start measuring
- Add more goals over time



Level of Service Goal

# EXERCISE 1



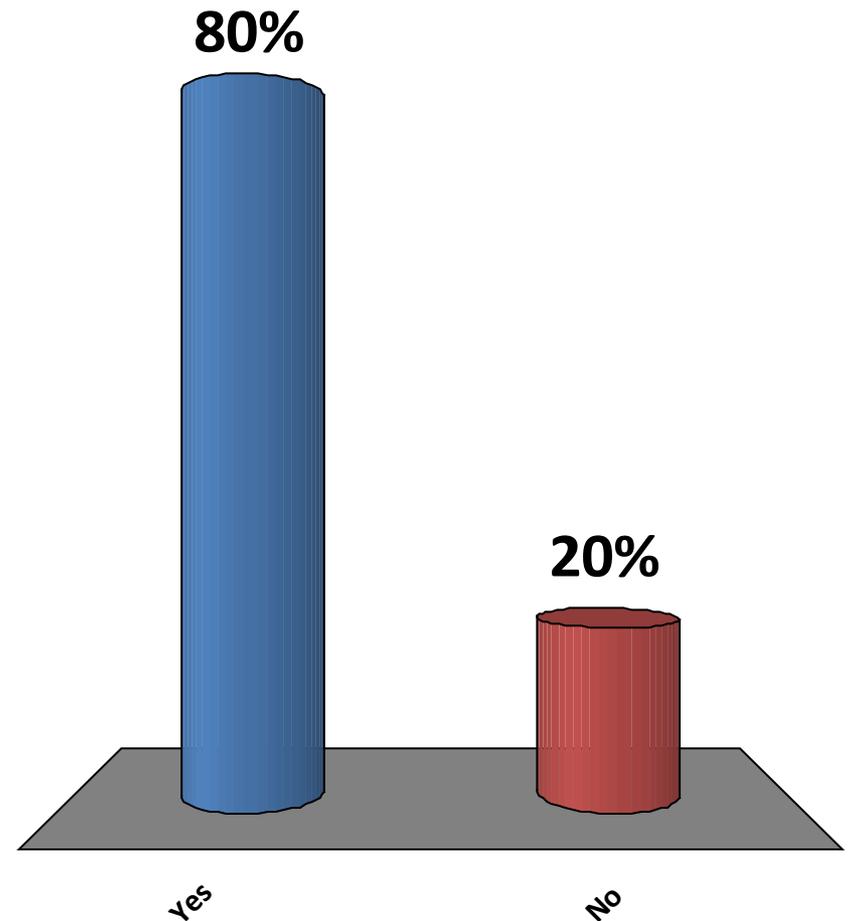
# Long Term Funding ... Rates!



<http://www.efcnetwork.org>

# Were you in this Workshop Before Lunch?

1. Yes
2. No



# Georgia Water and Wastewater Funding Sources

Compiled by UNC EFC, June 2010

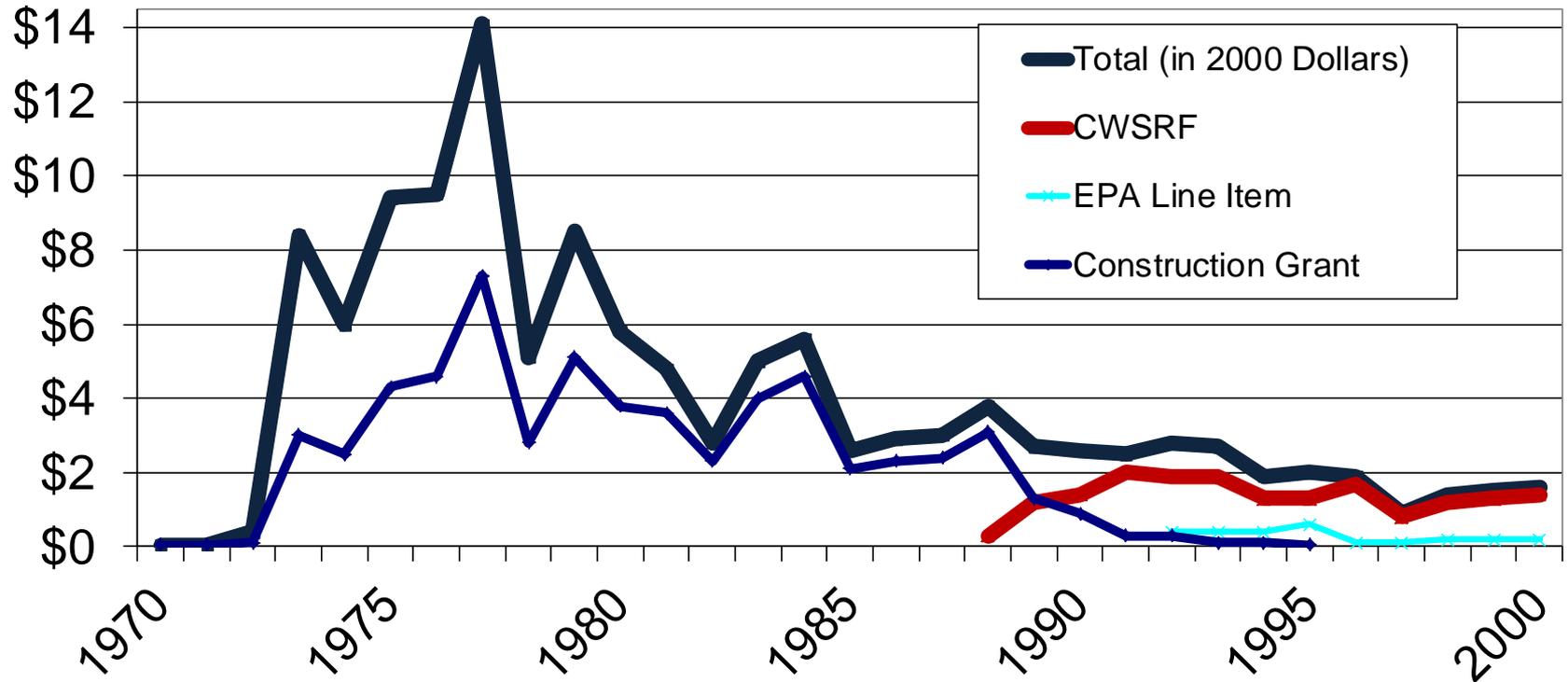
Organization	Program (keywords)	Purpose or Use of Funds	Application Dates	Website	Contact
Georgia Department of Community Affairs	Community Development Block Grant Program (CDBG Annual Competition) (HUD Funds) <i>(water, sewer)</i>	To improve housing and economic & community development for low and moderate income communities.	Typically closes at the beginning of April of each year.	<a href="http://www.dca.state.ga.us/communities/CDBG/programs/CDBGregular.asp">http://www.dca.state.ga.us/communities/CDBG/programs/CDBGregular.asp</a>	Steed Robison steed.robison@dca.ga.gov (404) 679-3168 60 Executive Park South, NE Atlanta, GA 30329-2231
	Appalachian Regional Commission Area Development Fund <i>(water, sewer)</i>	To support the development and improvement of infrastructure, including water and sewer services, and the development and use of Internet access.	Closes at the beginning of April each year.	<a href="http://www.dca.state.ga.gov/economicdevelopment/programs">http://www.dca.state.ga.gov/economicdevelopment/programs</a>	James Thompson, ARC Office Director james.thompson@dca.ga.gov 404-679-1584 60 Executive Park South, N. E. Atlanta, GA 30329-2231
OneGeorgia Authority <i>(water, sewer)</i>	OneGeorgia Authority Equity Fund <i>(water, sewer)</i>	The program provides grants and loans to enhance infrastructure that creates jobs in rural areas.	Applications received year round.	<a href="http://www.onegeorgia.org/programs/equity">http://www.onegeorgia.org/programs/equity</a>	Nancy Cobb, Executive Director ncobb@onegeorgia.org 478-274-7734 1202-B Hillcrest Parkway Dublin, GA 31021
USDA Rural Development	Water and Wastewater Loans and Grants <i>(water, sewer)</i>	Funds are for eligible community water supply, sewer, storm sewer, and sewer treatment plants.	Applications received year round.	<a href="http://www.rurdev.usda.gov/ga/waste.htm">http://www.rurdev.usda.gov/ga/waste.htm</a>	Jerry M. Thomas, Program Director jerry.thomas@ga.usda.gov 706-546-2171 355 East Hancock Avenue Athens, GA 30601-2768
	Emergency Community Water Assistance Grants <i>(water, sewer)</i>	Emergency Community Water Assistance Grants may be available to eligible rural communities in event of natural disaster or other events that cause significant damage to a community water or sewer system.	Contact Georgia state office. Applications received year round.	<a href="http://www.rurdev.usda.gov/ga/">http://www.rurdev.usda.gov/ga/</a>	Jerry M. Thomas, Program Director jerry.thomas@ga.usda.gov 706-546-2171 355 East Hancock Avenue Athens, GA 30601-2768
	Very Low-Income Housing Repair Loans and Grants (Section 504) <i>(individual wells, rural)</i>	Rural Housing Programs-- 504 REPAIR LOANS AND GRANTS -- Single Family Housing makes loans and grants to provide rural residents with safe and affordable homes. Eligibility is based on adjusted household income, with loans available to low and very low income applicants.	Contact a local USDA Rural Development Office.	<a href="http://www.rurdev.usda.gov/GA/rh504.htm">http://www.rurdev.usda.gov/GA/rh504.htm</a>	Ed Peace ed.peace@ga.usda.gov 706-546-2169 Stephens Federal Building 355 East Hancock Avenue Athens, GA 30601-2768

**Source: <http://efc.sog.unc.edu/project/gff>**



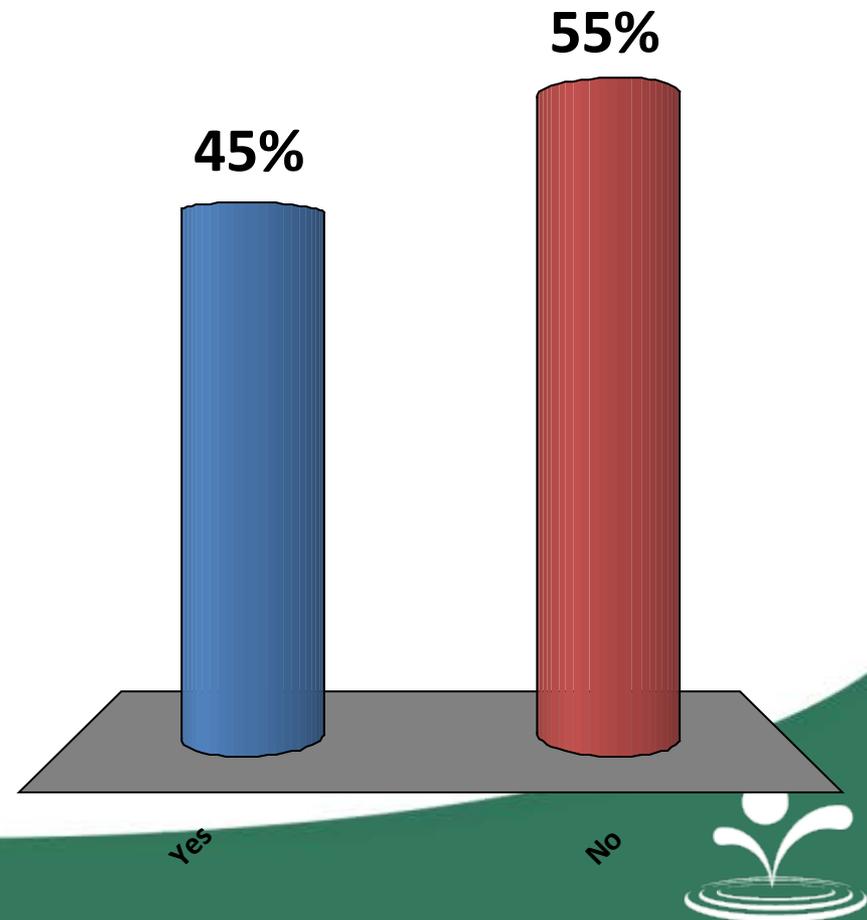
# Major Grants Have Diminished; Replaced by Loans

EPA Wastewater Spending by Type (billions of dollars)



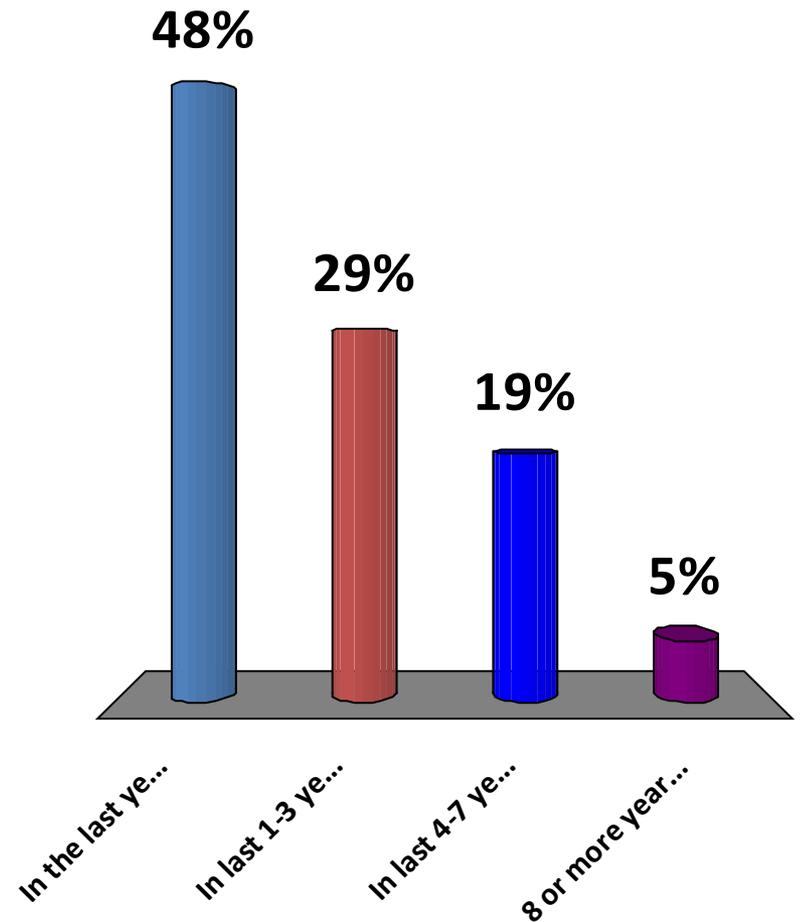
# Are you directly involved in setting rates for your utility?

1. Yes
2. No



# When last did your utility change rates?

1. In the last year
2. In last 1-3 years
3. In last 4-7 years
4. 8 or more years





Example Utility

Rates Comparison Characteristics About and Links

Select residential bill and monthly consumption amount

Water Bill  Sewer Bill  Water + Sewer

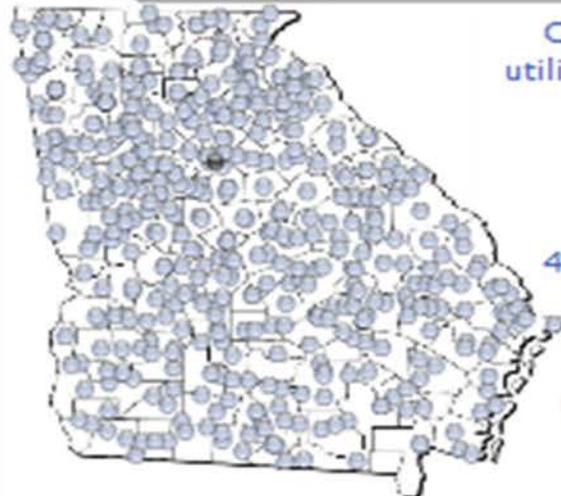


Monthly Water Bill: \$26.18

Statewide Average Basic Cable Bill in 2012: \$38.83

Select your comparison group

All Utilities



Comparing to all utilities in the survey

456 rate structures

Rates First Effective:  
7/1/2012

Observe the effects of raising rates by: 0%

Bill Comparison

Water Bill at 5,000 gallons



Min. \$6.50 Max. \$70.10

Conservation Signal

Water Price/1,000 Gallons after 10,000 gallons



Min. \$0.00 Max. \$16.45

Cost Recovery

Op. Revenues / Op. Expenses (FY2011)



Affordability

Water Bills as % MHI in 2011



# Rates Compared to Capital Strategies

October 27, 2014

William G. Wingate , PE



## ASSET REGISTRY

VISION

CURRENT  
PROCESSES

PREPARATION

IMPLEMENTATION

## MANAGEMENT PROCESS

PEOPLE

TECHNOLOGY

DATA

# Key Components of an Asset Management Plan

- Inventory of Assets
- Assessment of Asset Condition
- Capital Improvement Plan (CIP) with Cost Estimates
- Rate Plan to Implement CIP
- Operation & Maintenance Plan

# Five Key Areas

1. Current state of the assets
2. Levels of service
3. Asset criticality
4. Capital and O&M strategies
5. Budget and finance

# Capital and O&M Strategies

- Determines most cost-effective options for meeting Levels of Service

## WORK ORDER

Planned or Unplanned?

- Estimated bill of quantities
- Actual
  - Labor
  - Plant
  - Materials
- Procedure followed
- Failure mode noted
- Primary cause of failure

### Memos

- Impact on customers
- Unproductive time
- Other issues

# Capital and O&M Strategies

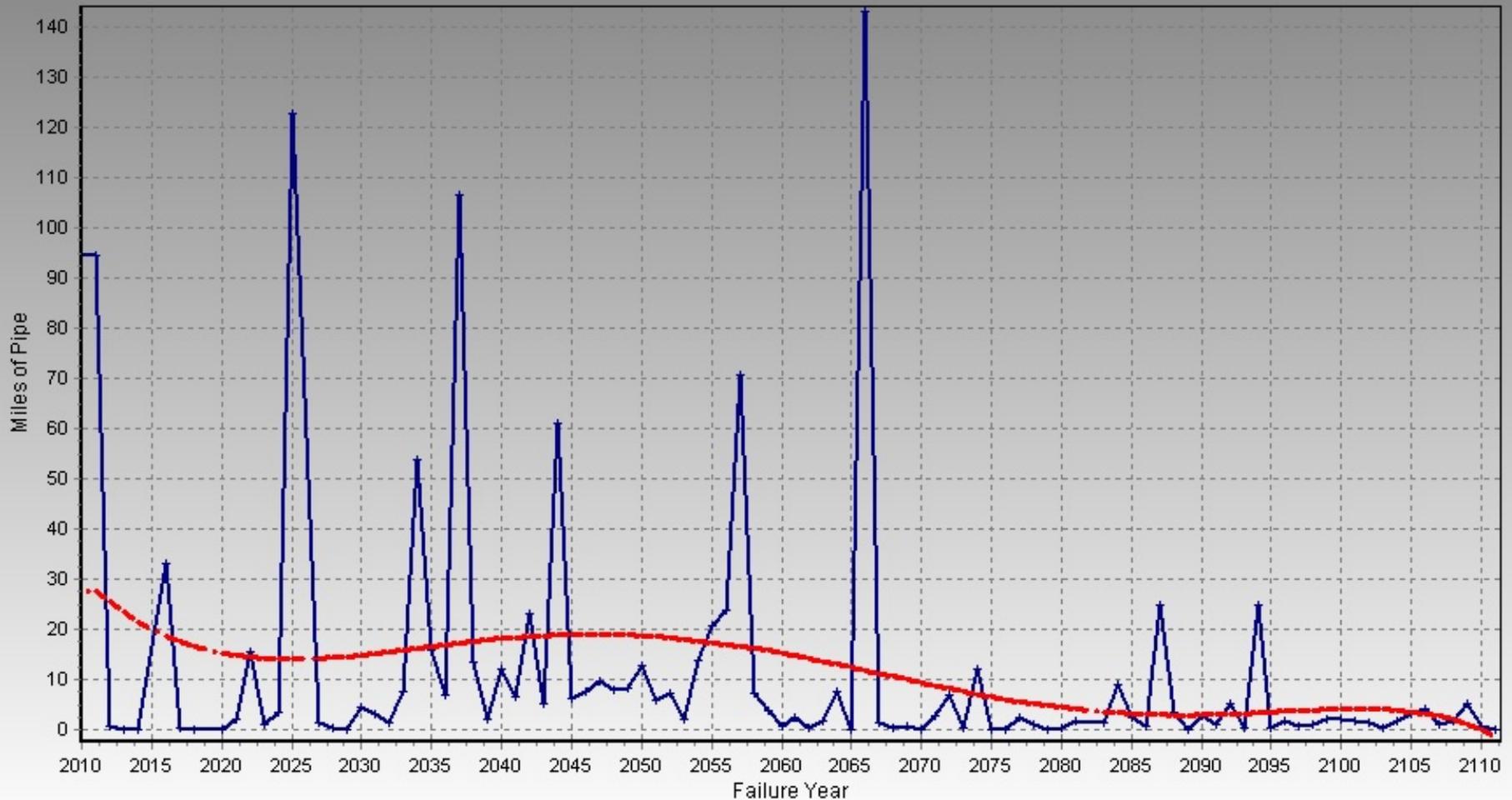
- Move from reactive to proactive maintenance
- Clarify life-cycle costs of capital projects
- Clarify effectiveness of replacement vs. rehabilitation options
- Focus resources based on asset condition and criticality

# Budget and Finance

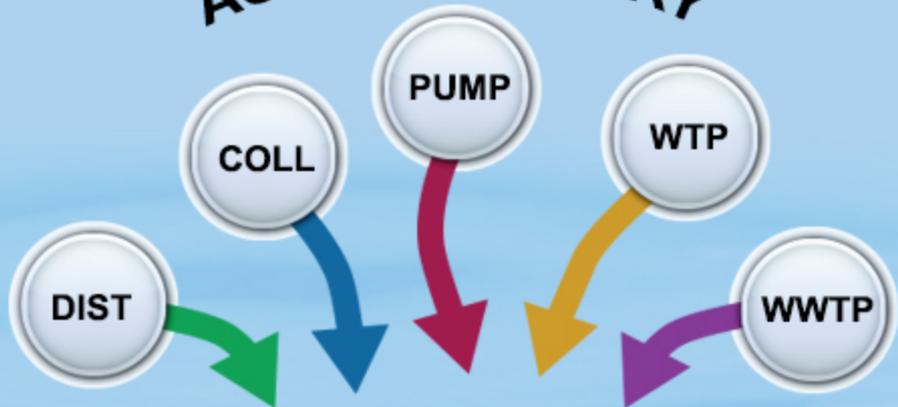
- Capital investment
  - Renewal (repair, refurbish, replace)
  - Augmentation (capacity, functionality)
- Maintenance investment
  - Planned
    - Preventive
    - Predictive
    - Corrective
  - Unplanned
- Operations investment
  - Operations cost trends
  - Debt Service

# Results: Long-term Needs Forecasts

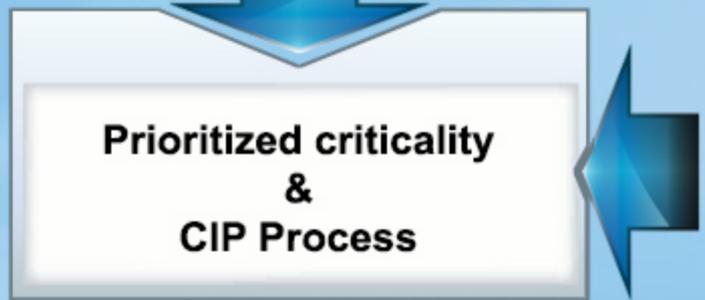
Pipe Replacement Needs

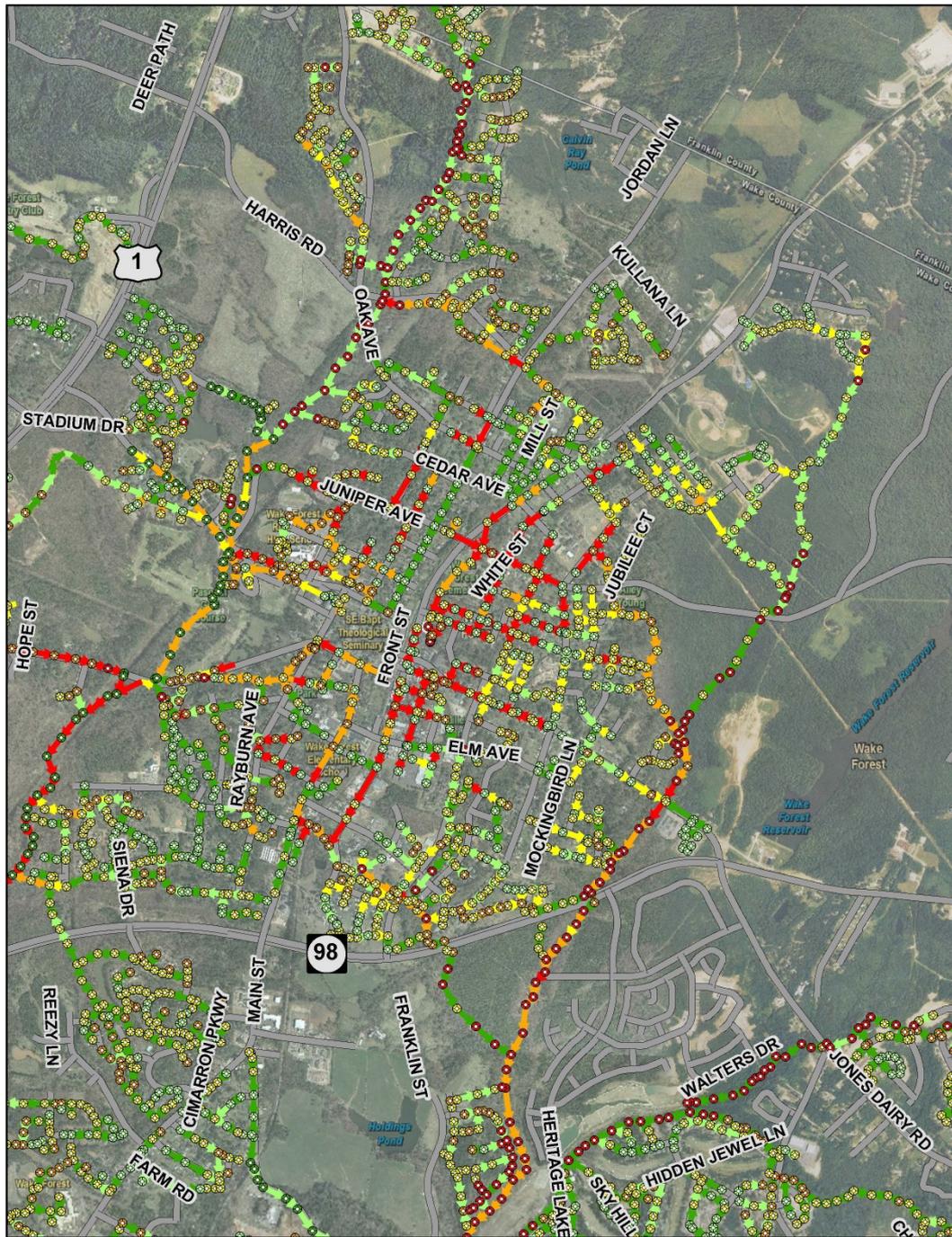


# ASSET REGISTRY

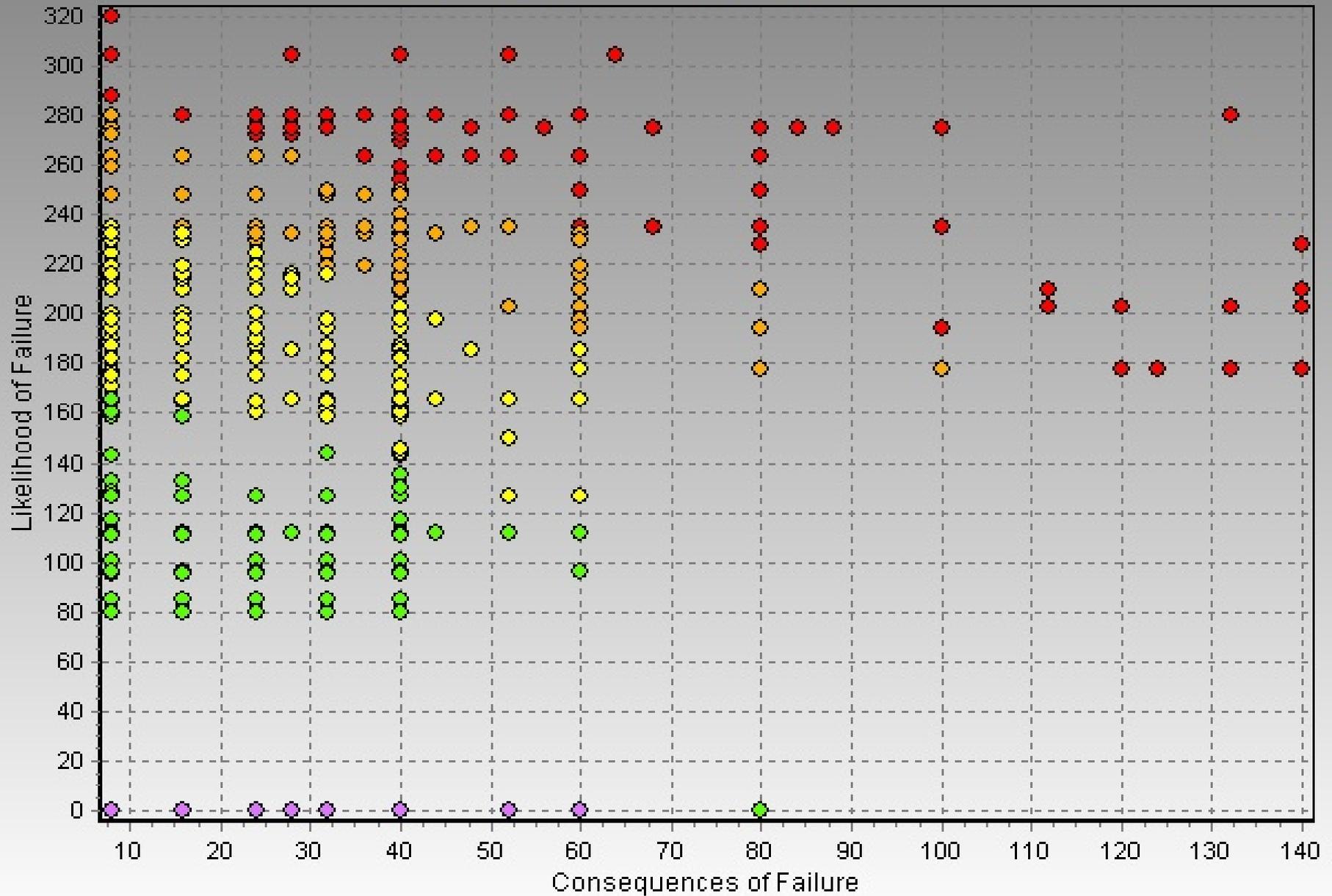


Manage condition information & work orders





Sewer Lines (All Basins) Graph of Assets



# ASSET REGISTRY

VISION

CURRENT  
PROCESSES

PREPARATION

IMPLEMENTATION

# MANAGEMENT PROCESS

PEOPLE

TECHNOLOGY

DATA

Town of Green Village

# EXERCISE 2



# Free Advising and One-on-One Assistance

Thanks to the US EPA, we can provide **free, in-depth one-on-one advising** to any water system serving up to 10,000 people on:

- Asset Management
- Water Loss Reduction
- Fiscal Planning and Rate Setting
- Energy Management



In-depth assistance includes several hours (~20?) of back and forth between the Environmental Finance Center Network and the water system staff or their consultants.

Sign up for direct assistance at <http://efcnetwork.org/one-on-one/> or indicate on the next poll.



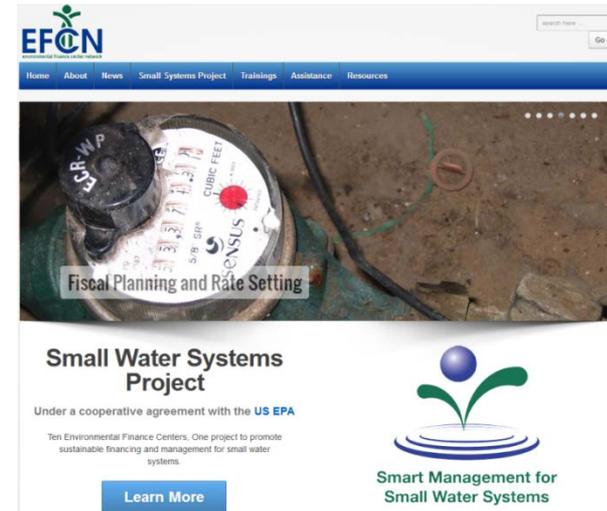
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and resources for small water  
systems from the EFCN



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<http://www.efcnetwork.org>



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Carolina, Georgia Office  
770-509-3887

[berahzer@unc.edu](mailto:berahzer@unc.edu)



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