



Challenges Facing Small Drinking Water Systems and Some Potential Solutions

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Children Are Not Just Small Adults: The Urgent Need for High-Quality Trial Evidence in Children

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In medicine, it is important to know kids are not just small adults.

In water, small systems are not just littler large water systems

Children Are Not Just Small Adults. Does Your Training Support This?



Nearly 1/4 of emergency department visits involve children.¹



The most commonly reported error in pediatrics is incorrect dosing.²



Medication errors affect 1.3 million people annually in the U.S.³



In pediatrics, medication errors can be as high as 1 in every 6 orders.⁴

NM: Systems By Size

Population	Size Range	Category
0-500	378	Extremely Small
501-3,300	119	Very Small
3,301 – 10,000	33	Small
10,000 – 100,000	30	Medium
>100,000	2	Large
Total	562	

NM: Systems By Size

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94% Small (less than 10,000 people)

How are small & large systems alike and different?

Similarities

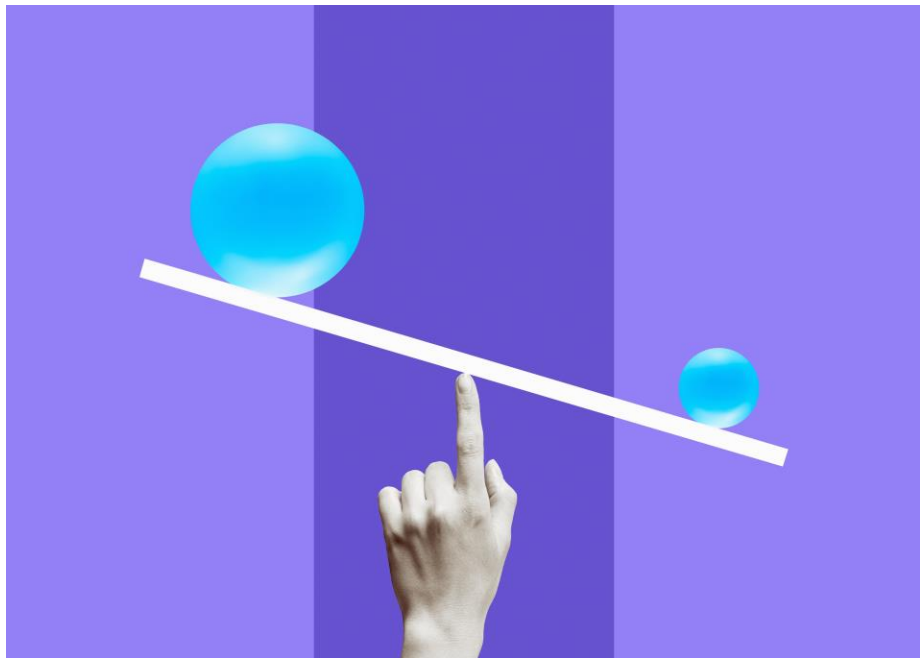
- ❖ Same regulations
- ❖ Same basic infrastructure
- ❖ Minimum size applies to both
- ❖ Same decision-making processes
- ❖ Customers want the same things

Differences

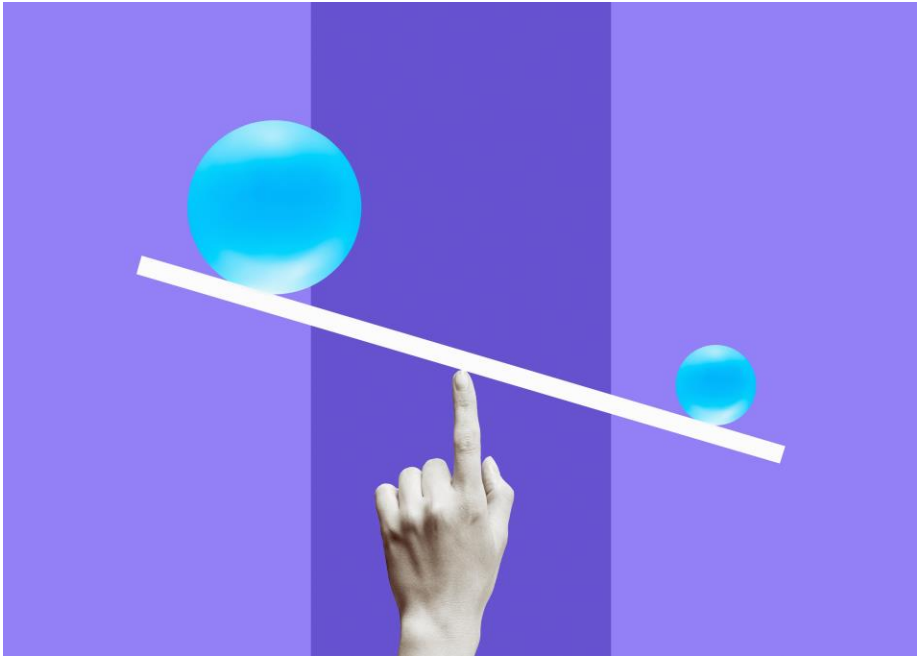
- ❖ Fewer resources (\$ & Time)
- ❖ Leadership by Volunteers or those not well-versed in water
- ❖ Higher costs for supplies, equipment, and infrastructure
- ❖ Hard to get customers to pay for water
- ❖ Hard to get leaders to be willing to charge for water

... And the big one

Economy of Scale



This means that small systems will face technical, managerial, and financial challenges



Technical Challenges

Regulatory
Compliance

Proper Sampling

Flushing

Completing
Maintenance
Tasks

Adequate Spare
Parts

Adequate Training

Understanding
Technologies

Understanding the
Theory Behind
How the System
Works

Lack of Mapping

Decaying
Infrastructure

Lack of Inventory/
Understading of
Assets in the
System

Source Water
Inadequacies
(Quality &/or
Quantity)

Some Examples

Typical spare
parts inventory



Small wastewater
system didn't
understand how
their tertiary
system worked



Small system didn't
flush properly and
spread
contamination
around the system

Managerial Challenges

Proper Staffing

Leadership
Vacancies

Leaders Who Are
Not Well-versed In
Water

Depending on
Volunteer
Operators,
Managers, &
Leaders

Inadequate or No
CIP (short or long
term)

Procuring
Professional
Services

Participating in
Alternatives
Evaluation Process

Recruiting &
Retaining Staff

Construction
Oversight

Accessing Funding

Combining Funding
Sources

Some Examples

Very Small System: Board Members wouldn't show up to meetings: President had to do everything & couldn't get vote on regionalization



Small systems having trouble getting operators hired (at any price)

Small W/W system selecting the wrong alternative



Small System who relied on volunteers for everything so members wouldn't have to pay higher rates

Financial Challenges

Fewer Customers
to Pay for System

Inability to Pay

Paying Debt Back

Completing
Required Audits

Unwillingness to
Charge

Rates that Don't
Cover Full Costs
of Operations

Fees that Don't
Cover Costs of
the Activity

Lack of
Budget/Budget
Not Checked
Against Expenses

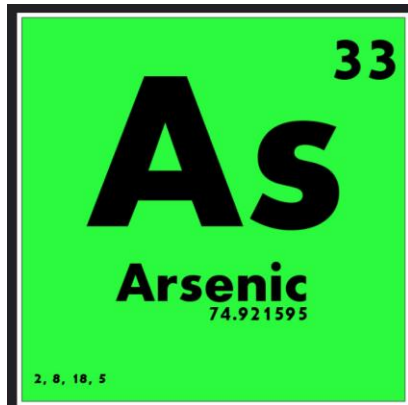
Accessing
Funding

Combining
Funding Sources

Managing Grant
and Loan Funds

Some Examples

Small mobile
home park with
AS contamination



Source:
<https://www.flickr.com/photos/137789813@N06/22559636339>



Small systems
charged fees for
shut offs and turn
ons that did not
cover the costs



Small System who's
leader was not
willing to raise rates
even \$1 even
though rates were
very low to begin
with

Top Issues/Concerns Identified by Small Systems¹

Aging
Infrastructure

Need for
Financial
Resources

Water Loss

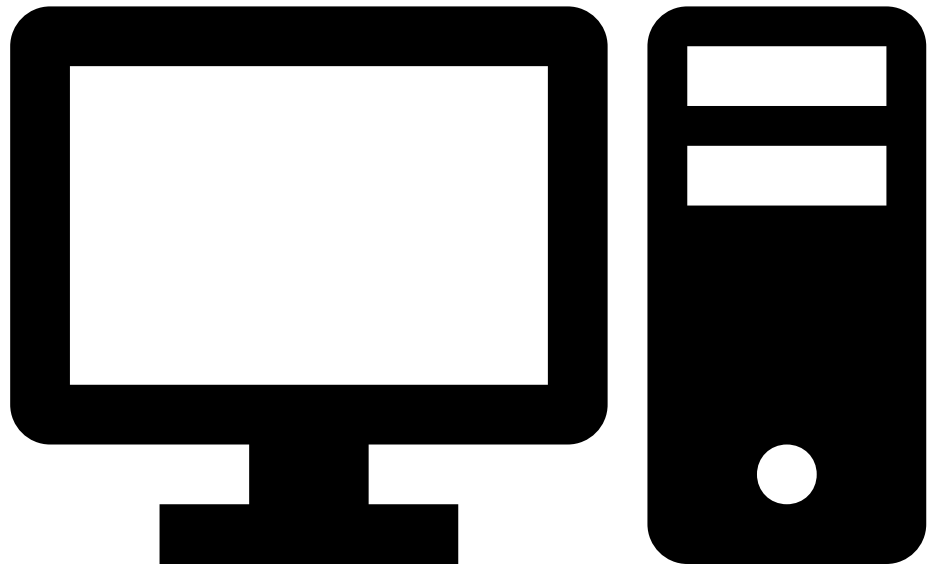
Debt
Concerns

Workforce

Increasing
Rates

¹*During trainings held by SW EFC across the country & including NM*

Some Other Challenges: Cyber & Physical Security



Small System is using AM to address physical security concerns

Challenges are Exacerbated in Small EJ
Communities



Potential Solutions – Here Now

The background of the slide is a dense, overlapping pattern of US dollar bills. The bills are shown from a slightly elevated, angled perspective, creating a sense of depth. They are in various orientations, some face-up and some face-down, and are scattered across the entire frame. The colors of the bills (green, blue, and yellow) are muted and semi-transparent, allowing the text to stand out clearly.

Funding

Unprecedented amounts of funding for
water

Federal & State

Some Funding is Grant

State Revolving Fund – Disadvantaged Communities
Principal Forgiveness

Capital Outlay

Congressional Directed Spending

USDA

Water Trust Board Water Project Fund

CDBG

Technical Assistance

EPA has LOTS of money for TA for both water and more recently wastewater systems

Most is focused on:
small systems (less than 10,000 or for W/W less than 1 MGD)

Tribal systems

EJ or disadvantaged systems

What is Technical Assistance

Direct help to water and wastewater systems (or decentralized wastewater)

Can be in person or virtual or a combination

Can involve technical, managerial, or financial issues or a combination of all of those

Issues might be prioritized; help with one thing first, then another, then next

FREE to the system

Who can help?

Southwest EFC – money for water and wastewater systems of all sizes, with emphasis on small, tribal, rural, EJ systems

RCAC – Systems less than 10,000 (water and wastewater)

Rural Water Association – Systems less than 10,000 (water and wastewater)

COGs

Who can help?

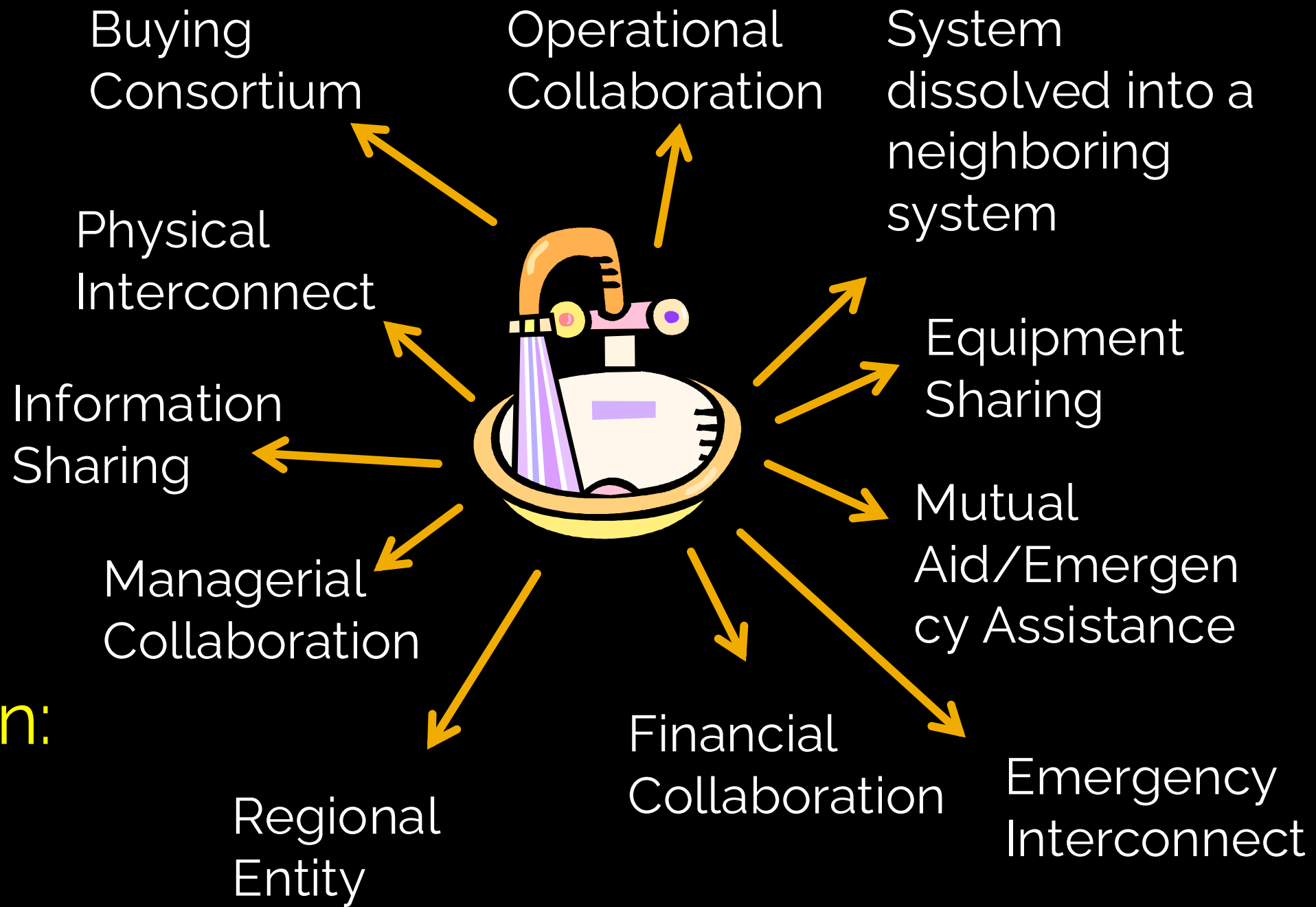
Southwest EFC
system

Please reach out for help!! It is there for you, it is meant for you, especially for those in EJ communities.

If you're not sure what you need, just reach out and we can talk through where you are and what you need.

Only thing you need to do is reach out, we can do the rest.

less than 10,000



System
Collaboration:

At all levels

Buying
Consortium

Operational
Collaboration

System
dissolved into a

NM has several initiatives at the state level to help systems form collaborations:

Legislation (Regional Water System Resiliency Act (Senate Bill 1 2023) passed to try to make it easier and TA to help systems get there

System
Collaboration

At all levels

Entity

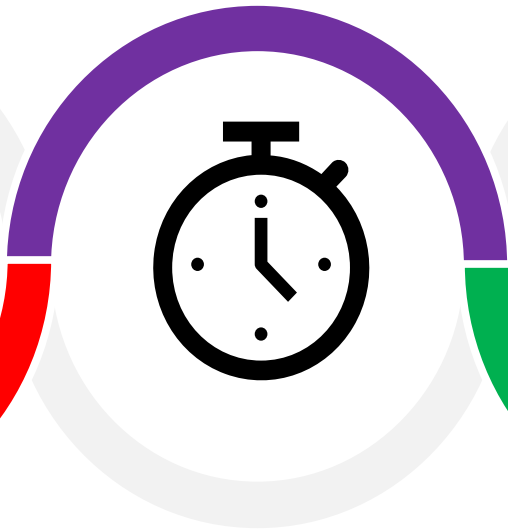
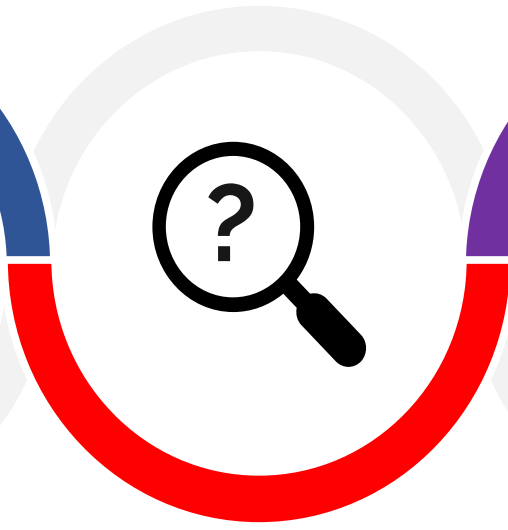
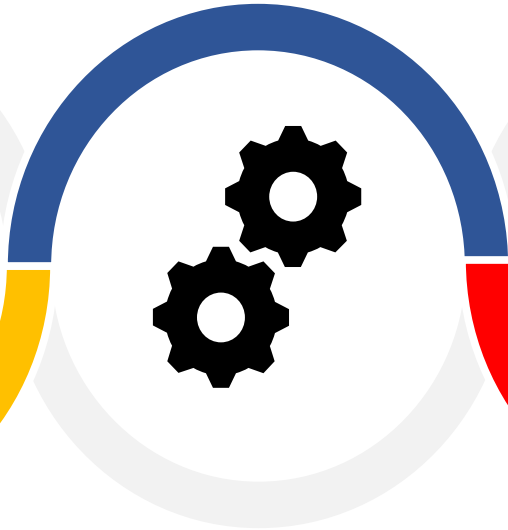
interconnect

The Basic Asset Management Questions

What service level do you want to provide?

Which ones are most critical to provide that service?

Do you have the money to get it all done?



What assets do you have?

How do you ensure the assets do their job over their life spans?

A Basic Premise of Asset Management

We've
Always
Done it
This Way

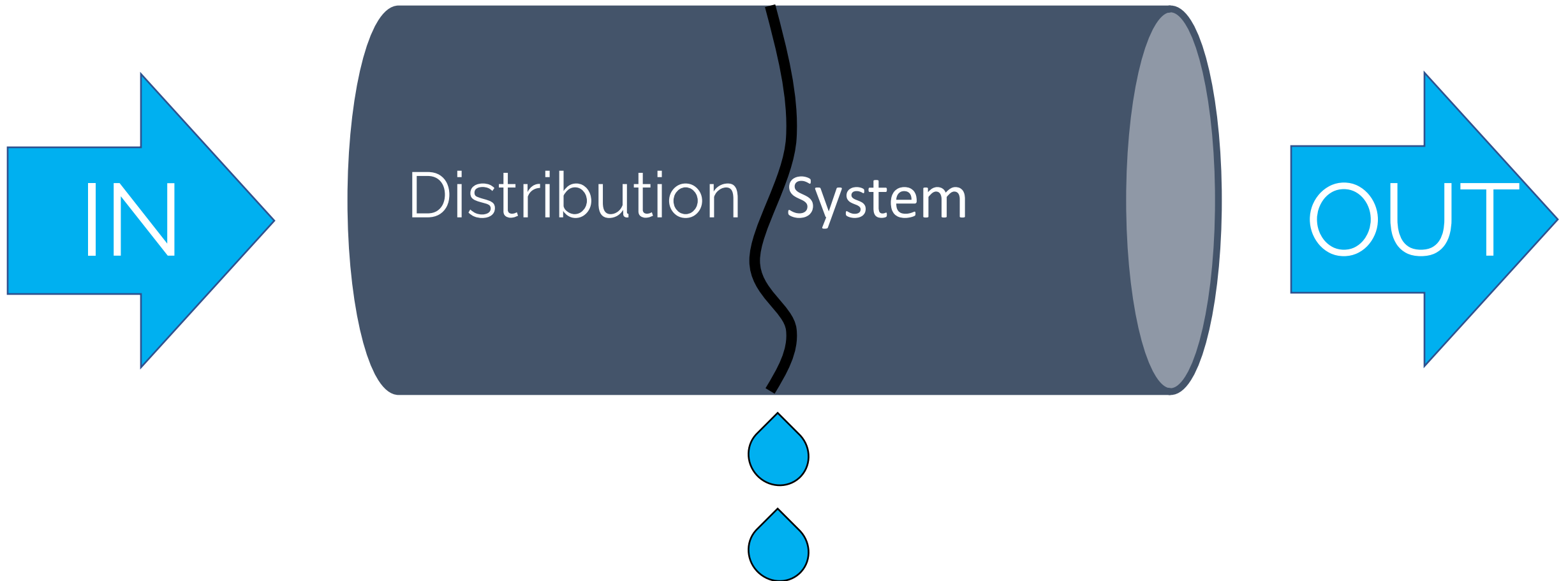


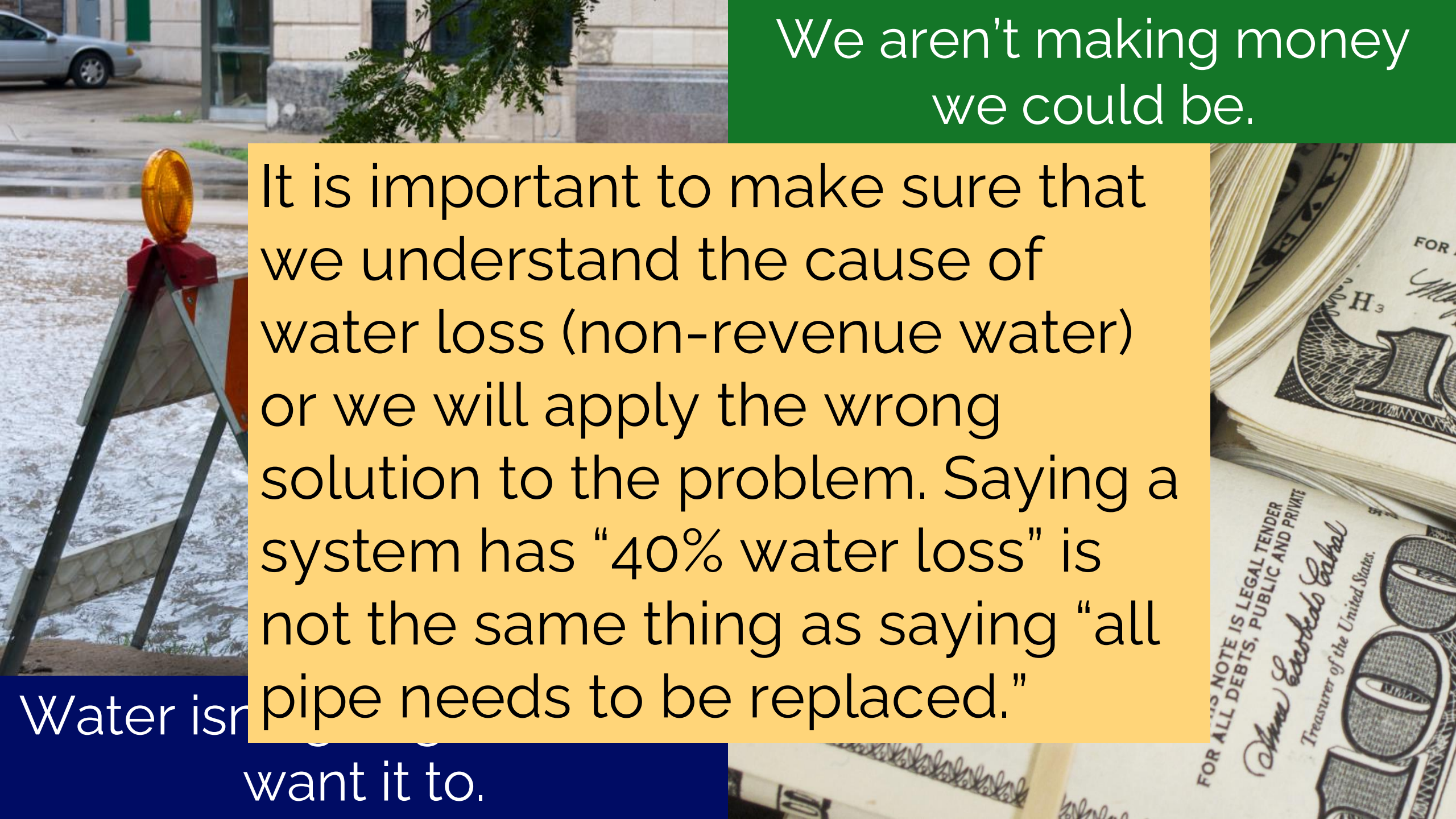
We Have
to Do it
This Way

Being open to
new ways of
thinking and
doing creates
opportunities
for efficiency

Understanding Non-Revenue Water

What goes in... comes out ... somewhere...



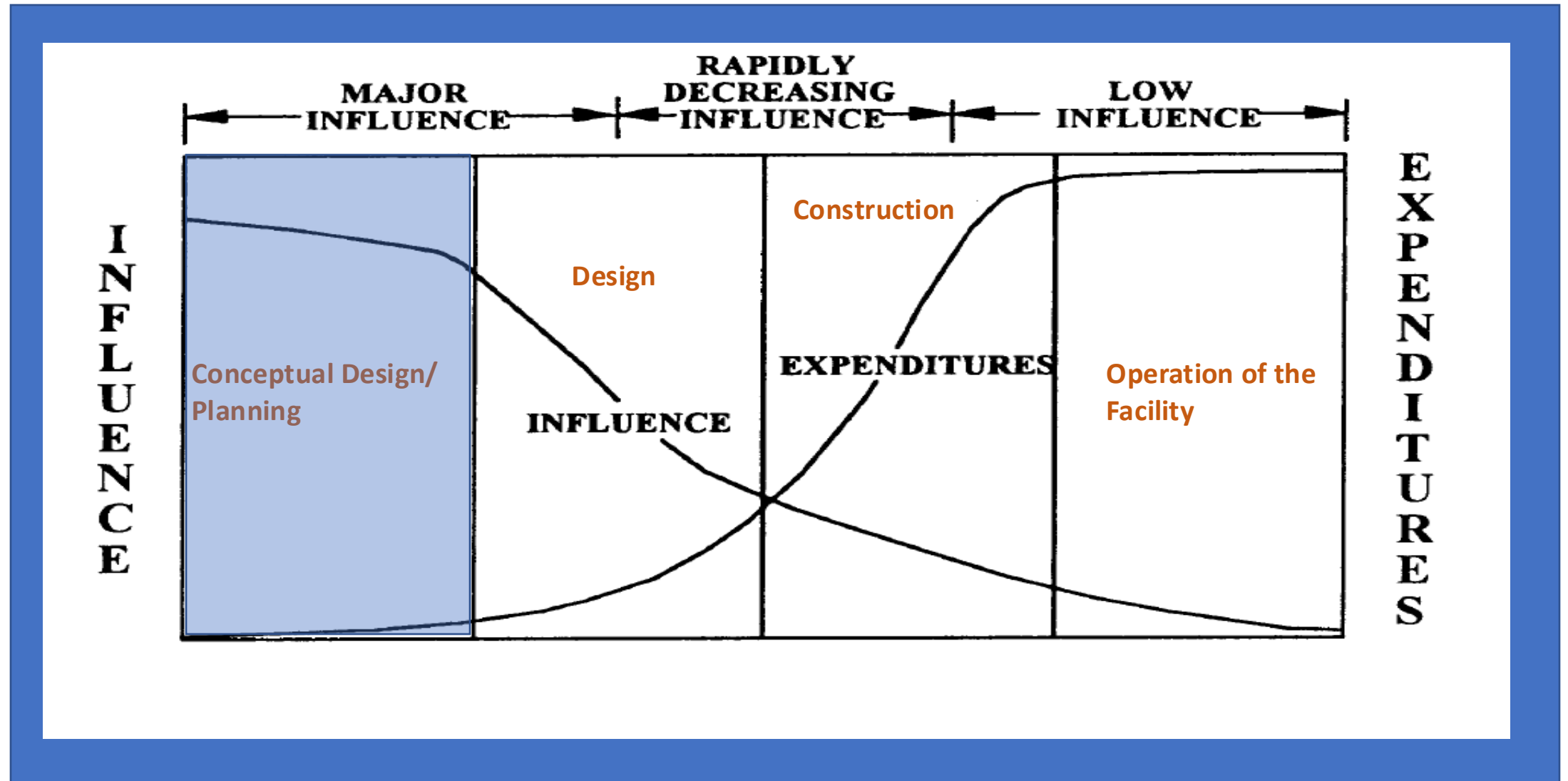


We aren't making money
we could be.

It is important to make sure that we understand the cause of water loss (non-revenue water) or we will apply the wrong solution to the problem. Saying a system has "40% water loss" is not the same thing as saying "all pipe needs to be replaced."

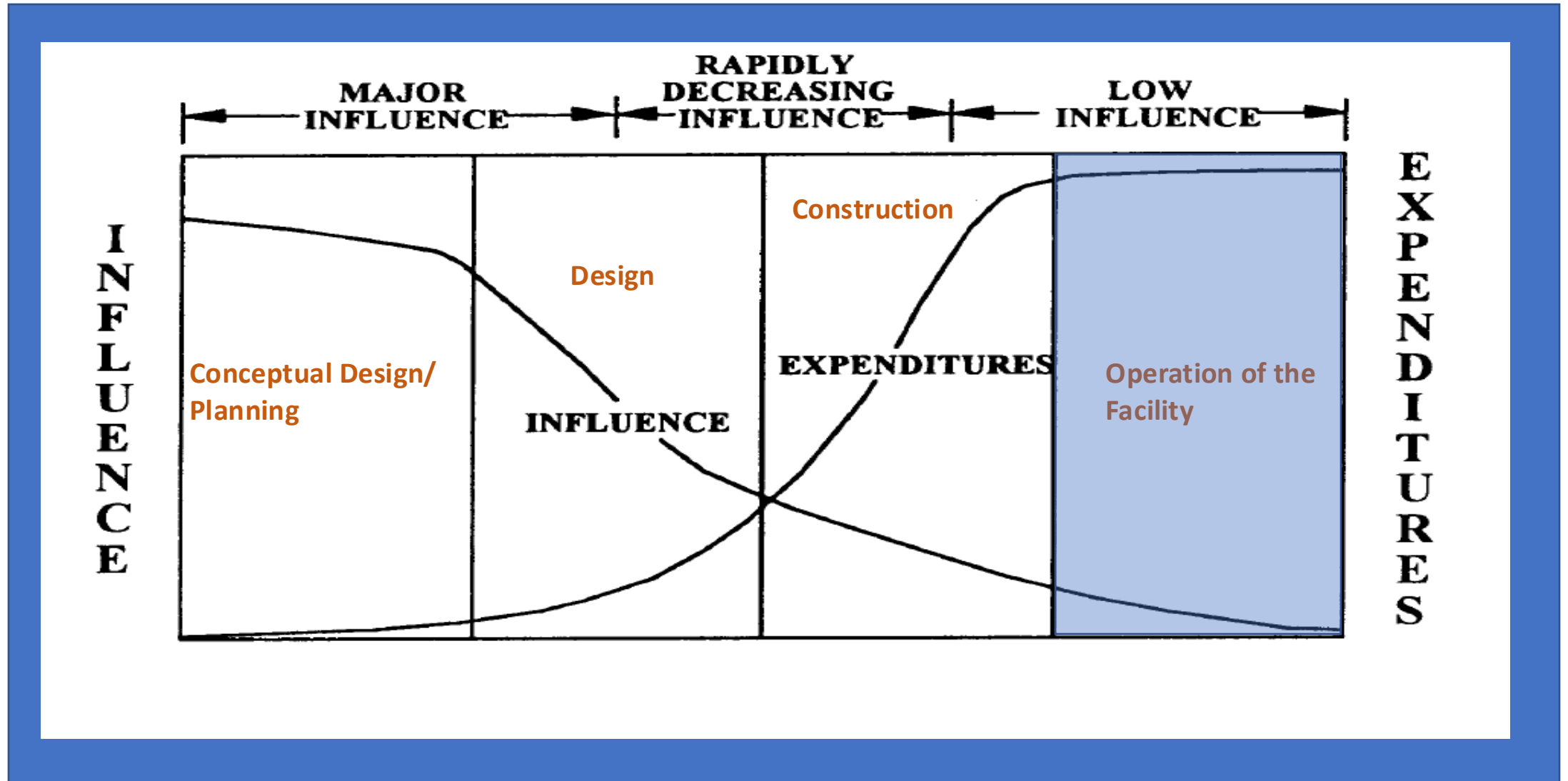
Water isn't free,
we want it to.

Understanding that Planning is critical: Most Influence, Least Cost



Source: Gibson and Hamilton (1994) Analysis of pre-project planning effort and success variables for capital facility projects. Construction Industry Institute Source Document 105.

By Operations: Most Costs Are Sunk



Source: Gibson and Hamilton (1994) Analysis of pre-project planning effort and success variables for capital facility projects. Construction Industry Institute Source Document 105.

It's Not All Gloom &
Doom for Small Systems



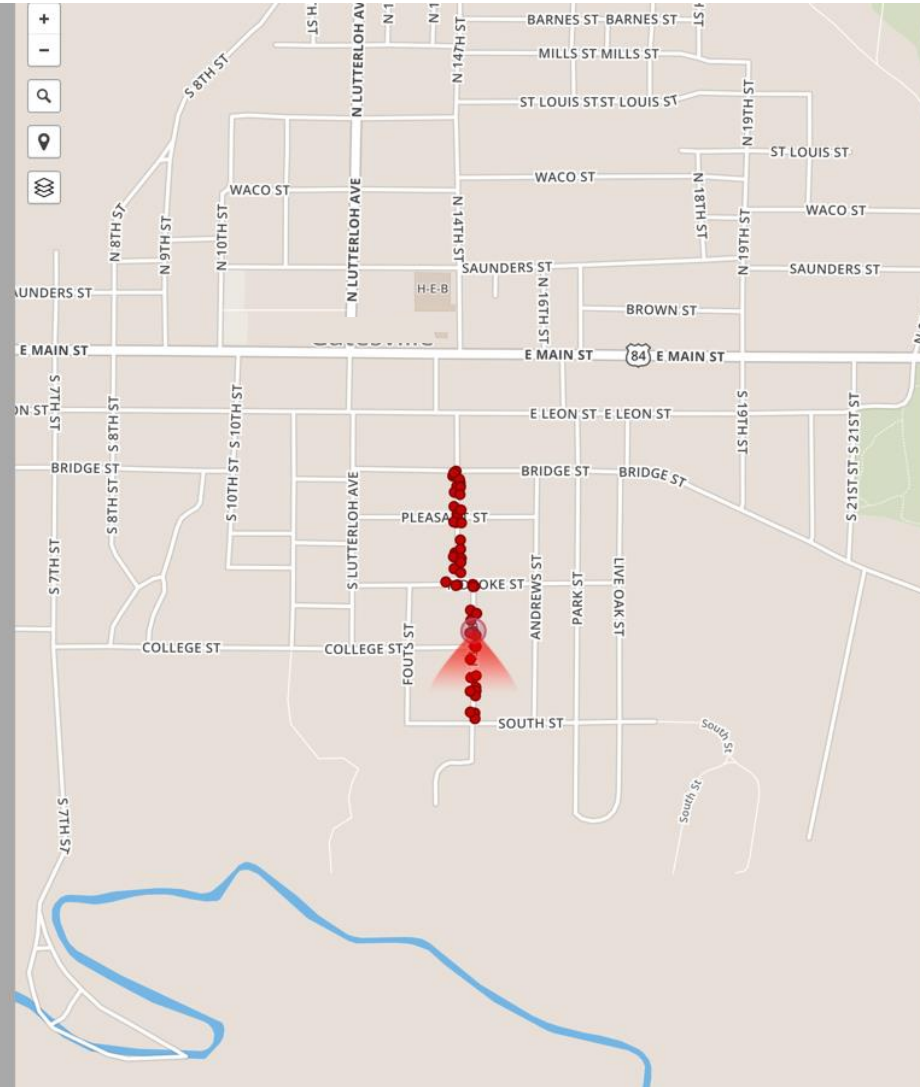
Creating a Map is Relatively
Fast & Easy (few assets & small
geographic area)

Creating an Asset Management Plan is
MUCH easier for small systems (so is
implementing)

Most small systems are simple GW systems



Data can be easy to find:
20 Years of pavement cuts...



Original
Large
Thumbnail

Date:	2017-04-06 13:53:28
Make/Model:	Apple iPhone 6
Software:	Fulcrum iOS 2.14.0 (3057), iOS 10.2.1, Apple, iPhone 6
Dimensions:	810 x 1080 (0.9MP)
Size:	474 KB
Latitude:	
Longitude:	
Accuracy:	
Altitude:	
Direction:	
Distance:	

Make/Model: Apple iPhone 6

Size: 474 KB

Latitude:

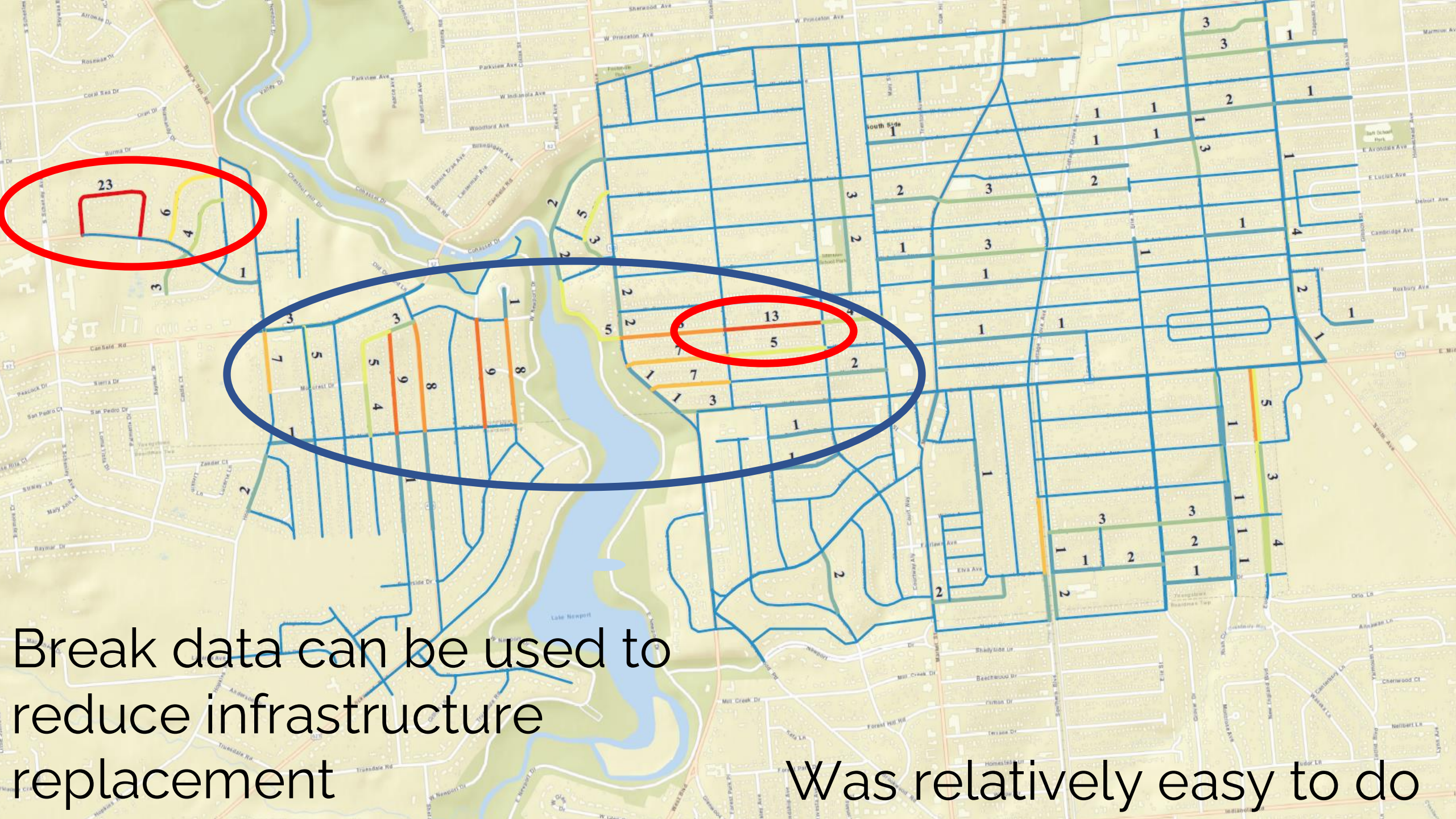
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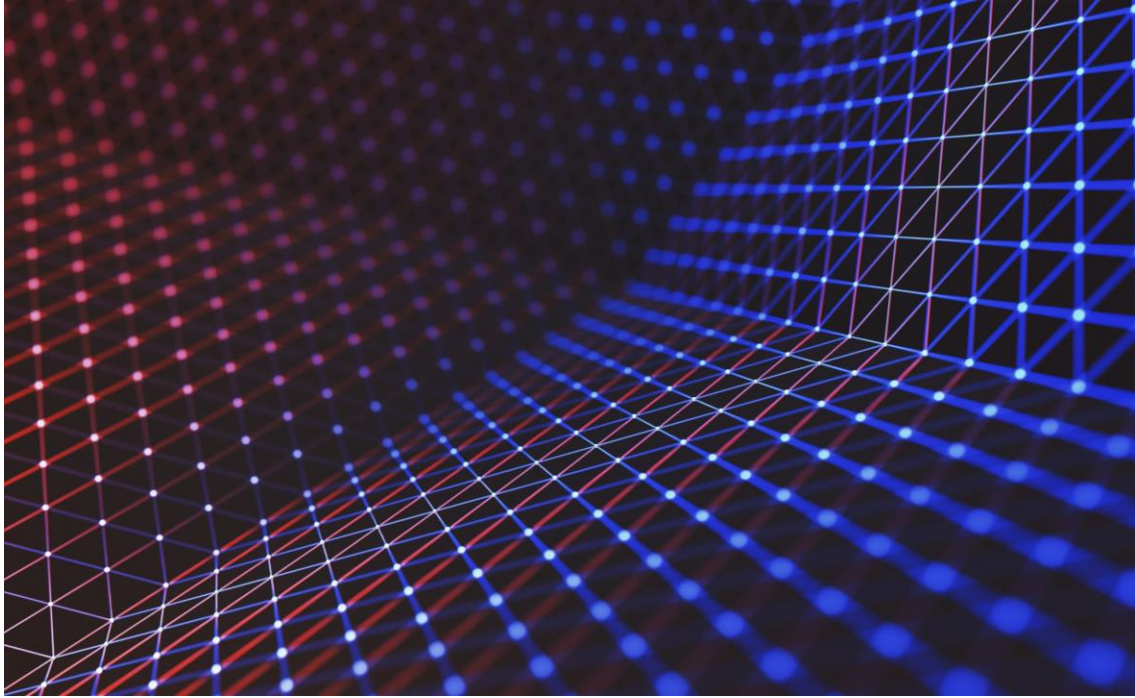
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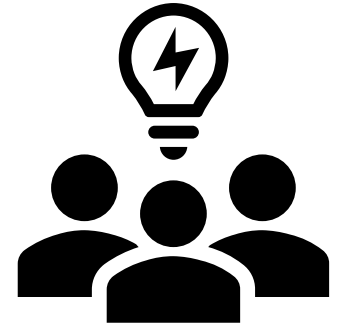
Break data can be used to
reduce infrastructure
replacement

Was relatively easy to do



Other Needed Solutions - Future

What do we need to think about?



**We fund
Infrastructure (new
stuff) not O&M**

We already subsidize systems (not just small systems) so let's think about the best way to do it

O&M to keep infrastructure functioning better & longer rather than replacing early is less expensive.

Why is new infrastructure more acceptable than taking care of the old stuff?

How can we make partnering even easier and more acceptable?



We are working on this but we need to do more

More incentives need to be included for partnering

We need to keep explaining the range of options available

May need to consider pressure in some cases (e.g., ABCWUA)

Wrap Up



Small systems do face challenges, but there is help available. Reach out and use the help that is there.





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