



# Intermediate Asset Management Training New Hampshire

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Presented By Heather Himmelberger, P.E. Director, SW EFC



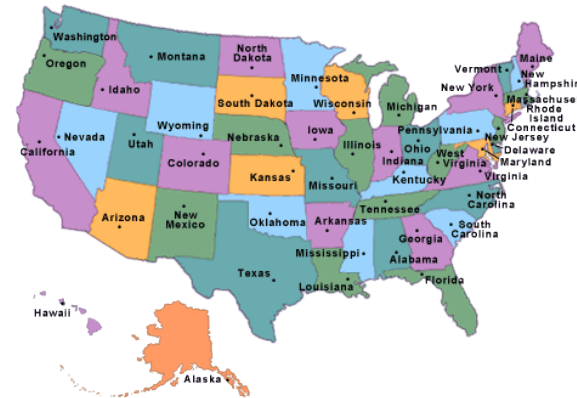
## Part 1: Welcome and Introduction

Presented By Heather Himmelberger, P.E. Director, SW EFC



# Heather

Engineer by training  
Operations, Management,  
and Finance by choice



SOUTHWEST  
ENVIRONMENTAL  
FINANCE CENTER



# Housekeeping ...





Please set cell phones to vibrate ...



When ya gotta go ...





Lunch will be provided...



# Organization of the day...



## Informal ...





**THANKS!**



# About Us

**The Environmental Finance Center Network (EFCN)** is a university-based organization promoting innovative and sustainable environmental solutions while bolstering efforts to manage costs.



Building TMF Capacity  
for Small Systems

**Our Building Technical, Managerial, and Financial Capacity Programs for Small Water and Wastewater Systems** provide free training and technical assistance across every state, territory, and tribal nations. Technical assistance is available on a first-come, first-served basis.



# The Small Systems Water and Wastewater Teams

- Southwest Environmental Finance Center at the University of New Mexico
- Syracuse University Environmental Finance Center
- Environmental Finance Center at The University of North Carolina at Chapel Hill
- Environmental Finance Center at Wichita State University
- Environmental Finance Center at Sacramento State
- New England Environmental Finance Center at the University of Southern Maine
- Environmental Finance Center at the University of Maryland
- Government Finance Officers Association (GFOA)
- National Association of Development Organizations (NADO)
- Mississippi State University Extension
- Environmental Finance Center West
- Great Lakes Environmental Infrastructure Center at MTU

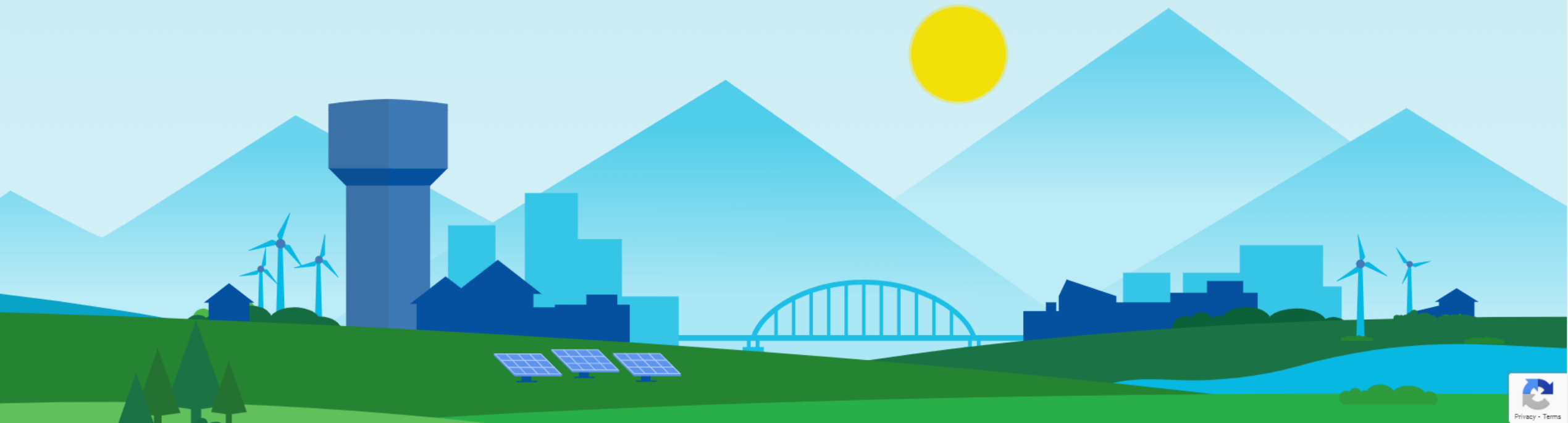


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## Environmental Finance Center Network

Building Capacity | Innovative Resources | Practical Assistance



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In-Person



17 - 01  
JUN JUL

**Small Systems Cohort Learning Program for Maryland and New Jersey Small Systems**

6-17-2022 - 7-1-2022

Virtual Event

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## Resources

Are you looking to better understand the financial challenges of managing environmental infrastructure? Identify a grant or loan? Assess or define a benchmark? We can help! Navigate to our resources below.

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## Tackle the Technical, Managerial, and Financial Challenges of Your Water or Wastewater System Head-on: Services from the EFCN

We offer free services to water and wastewater systems, local governments, and others who seek technical, managerial, and financial solutions to environmental infrastructure challenges. By meeting communities where they are, our team of experts work hand-in-hand with operators, elected officials, utility directors, and other water system staff to identify barriers and take on technical, managerial, and financial challenges.

[Take Me to the Form](#)



## Not a water or wastewater system, but still want to do business with the EFCN?

[Contact us](#) about low-cost contract services or other potential options.



## We Specialize in Helping Small Water & Wastewater Systems

Small drinking water systems serving 10,000 or fewer people or small wastewater systems with an average daily wastewater flow of less than 1 million gallons per day are eligible for free assistance. If we can't help you, we will work hard to link you with another provider.



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Request assistance now or contact us for more information.



Are you requesting assistance on behalf of a drinking water or wastewater system? \*



☐ Send me a copy of my responses

**No Cost** Assistance is available in technical, managerial, or financial capabilities

Fill out Form on  
Website

Talk to me Today

E-mail  
[swefc@unm.edu](mailto:swefc@unm.edu)



Paid for by EPA so take  
advantage of their funds

**Please contact us. We're here to help.**





I go to school and I go to school, but I never learn what I really want to know.

Expanding the use of AM

Asking Questions

Making Connections

Solving Issues to Help You

Your name and  
organization

Water, Wastewater, or  
both

Your role

What is the biggest  
problem facing your  
water utility? – Can be  
anything



Who Are  
you?





# THE BIG PICTURE



## Part 2: Asset Management: The Big Picture

Presented By Heather Himmelberger, P.E. Director, SW EFC

# Asset Management

We've  
Always  
Done it  
This Way



We Have  
to Do it  
This Way

Try to keep  
an open  
mind as we  
go through  
the training

What is the #1 reason water utilities exist?



To serve their customers

What is the best reason for water utilities to take on Asset Management?

To ***Better*** serve their customers





<https://www.piqsels.com/en/public-domain-photo-jfodp>

By its very definition, Asset Management is meeting the desired level of service at the lowest life cycle cost.

By its very definition, Asset Management is meeting the *desired level of service* at the lowest life cycle cost.

utilities exists to serve their customers

By its very definition, Asset Management is meeting the *desired level of service* at the

*lowest life cycle cost.*

To ***Better*** serve their customers



Reliability	Safety	Convenience	Customer Service	Environmental Protection
Quality	Resilience	Responsiveness	Regulatory Compliance	Communication
No service disruptions	no inconvenience (no blocked streets, etc.)	Understandable bills	Easy payment systems	Sustainability

What kind of things do customers want?

Low Cost!!

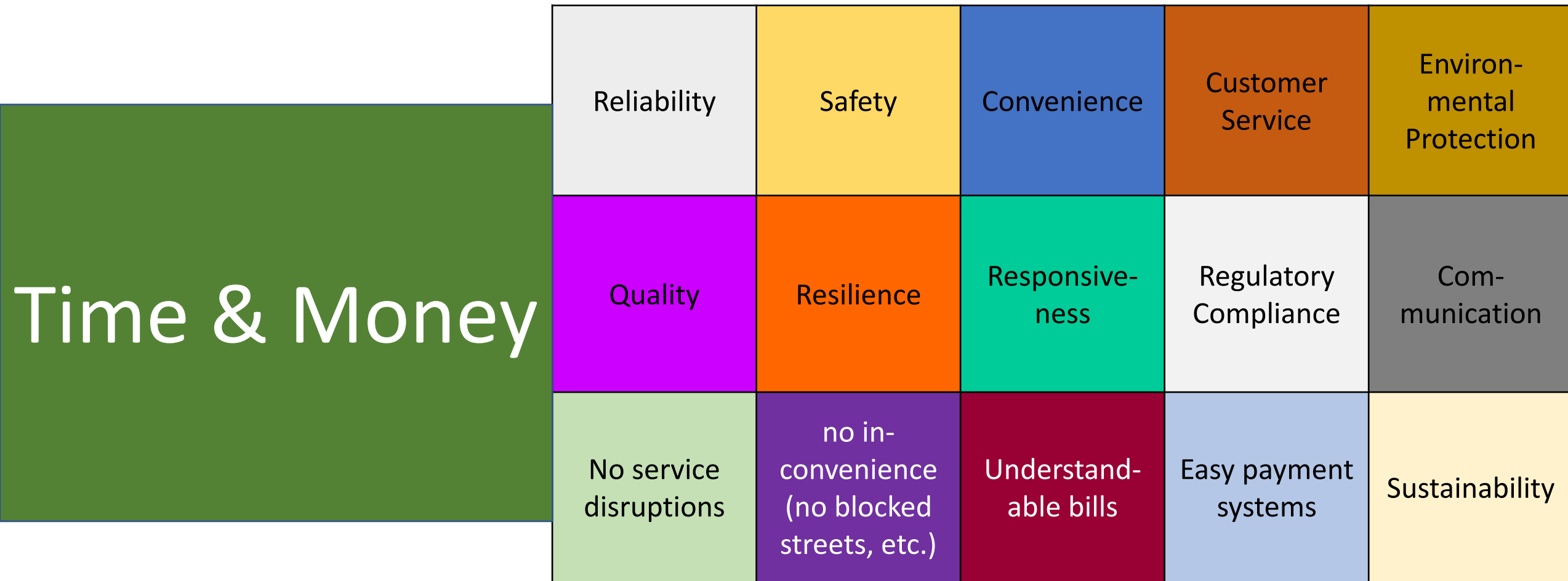
Reliability	Safety	Convenience	Customer Service	Environmental Protection
Quality	Resilience	Responsiveness	Regulatory Compliance	Communication
No service disruptions	no inconvenience (no blocked streets, etc.)	Understandable bills	Easy payment systems	Sustainability

One other big thing they want

Resources (Time  
& Money)

Reliability	Safety	Convenience	Customer Service	Environmental Protection
Quality	Resilience	Responsiveness	Regulatory Compliance	Communication
No service disruptions	no inconvenience (no blocked streets, etc.)	Understandable bills	Easy payment systems	Sustainability

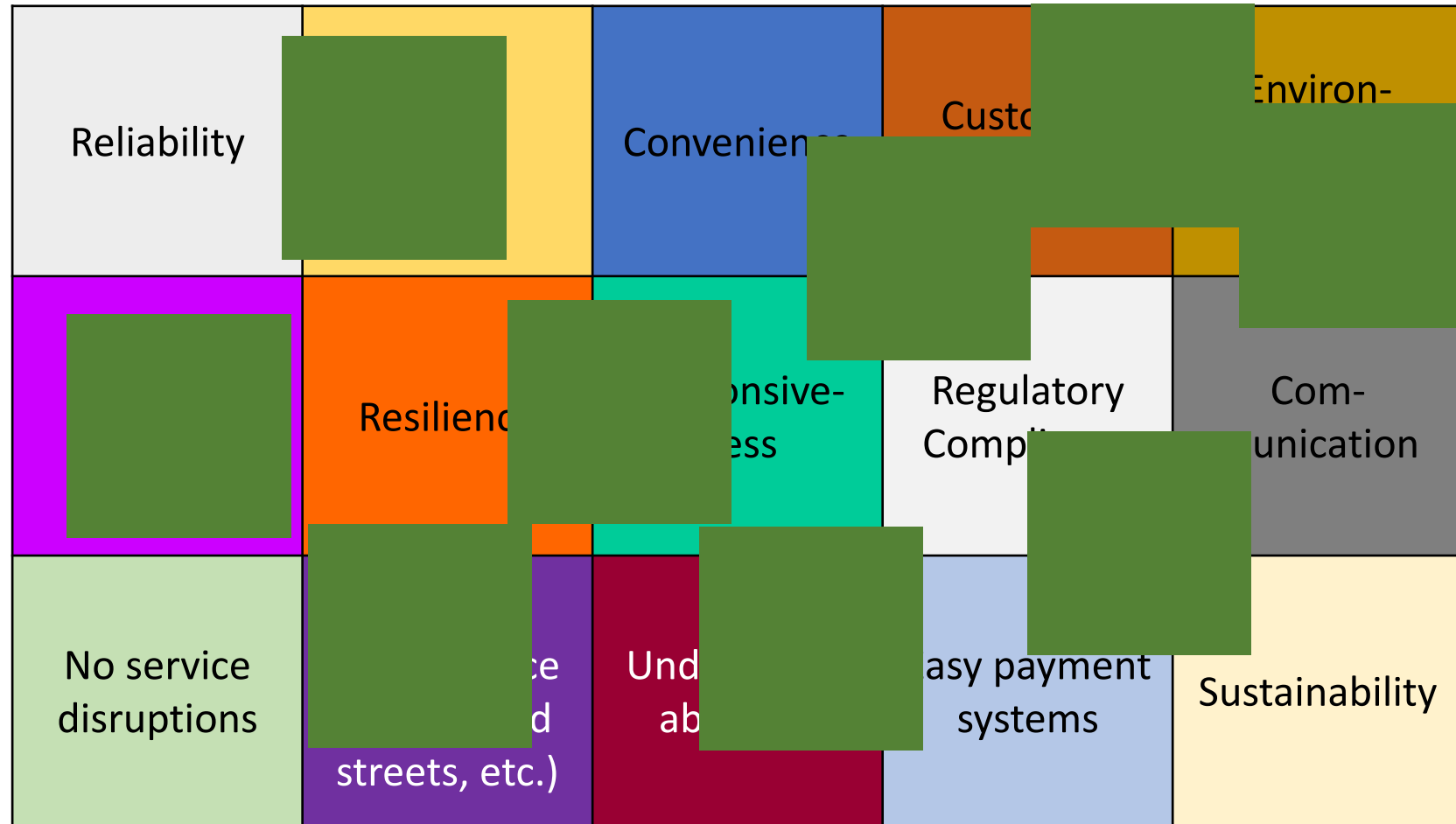
The amount customers pay provides the utility its resources



Revenue doesn't always cover all the items customers want. So, what happens?



Time  
and  
Money



Resources have to be spread around

What's the impact of these choices?

Are the highest priority customer service requirements being met?

How would you know and what would you do if they're not met?



Asset Management provides the  
framework to make these  
decisions in the best way for  
your customers

Picture credit: [Markus Grossalber](#)

<https://www.flickr.com/photos/58883622@N02/8417927326>

Asset Management is  
About Thinking & Asking  
Questions



# Basic Asset Management: The Basic Questions

What assets do you own?

What do you want them to do?

Which ones are critical to doing that?

What is the most efficient, effective way to manage assets over their entire life cycles?

What is the best long-funding strategy to pay for the management of the assets?

# Intermediate Asset Management:

## Digging Deeper

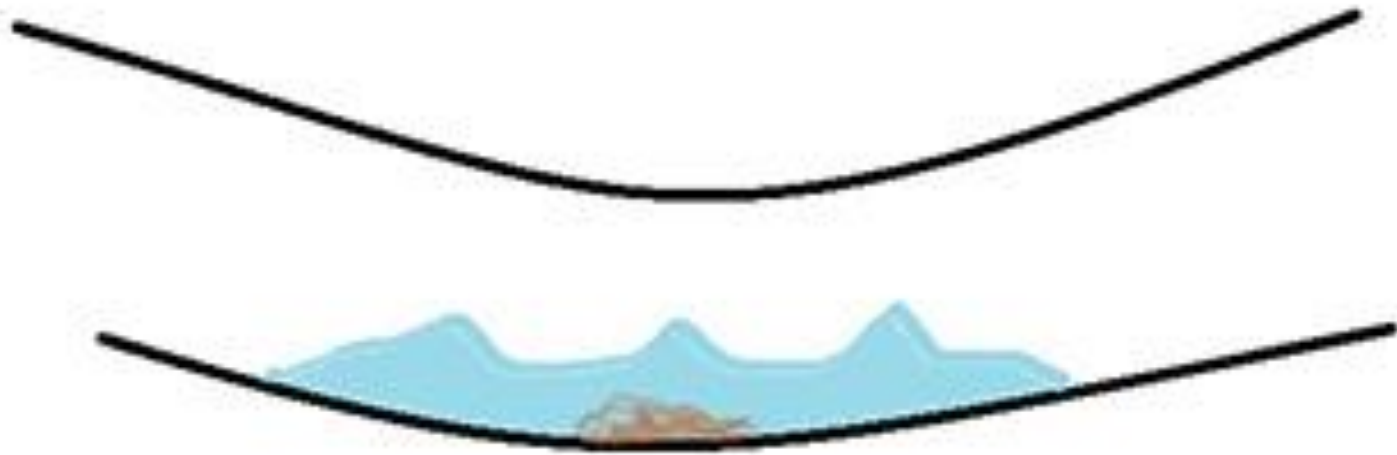
Asking more questions and using AM to answer the question



A question from a wastewater line crew member:

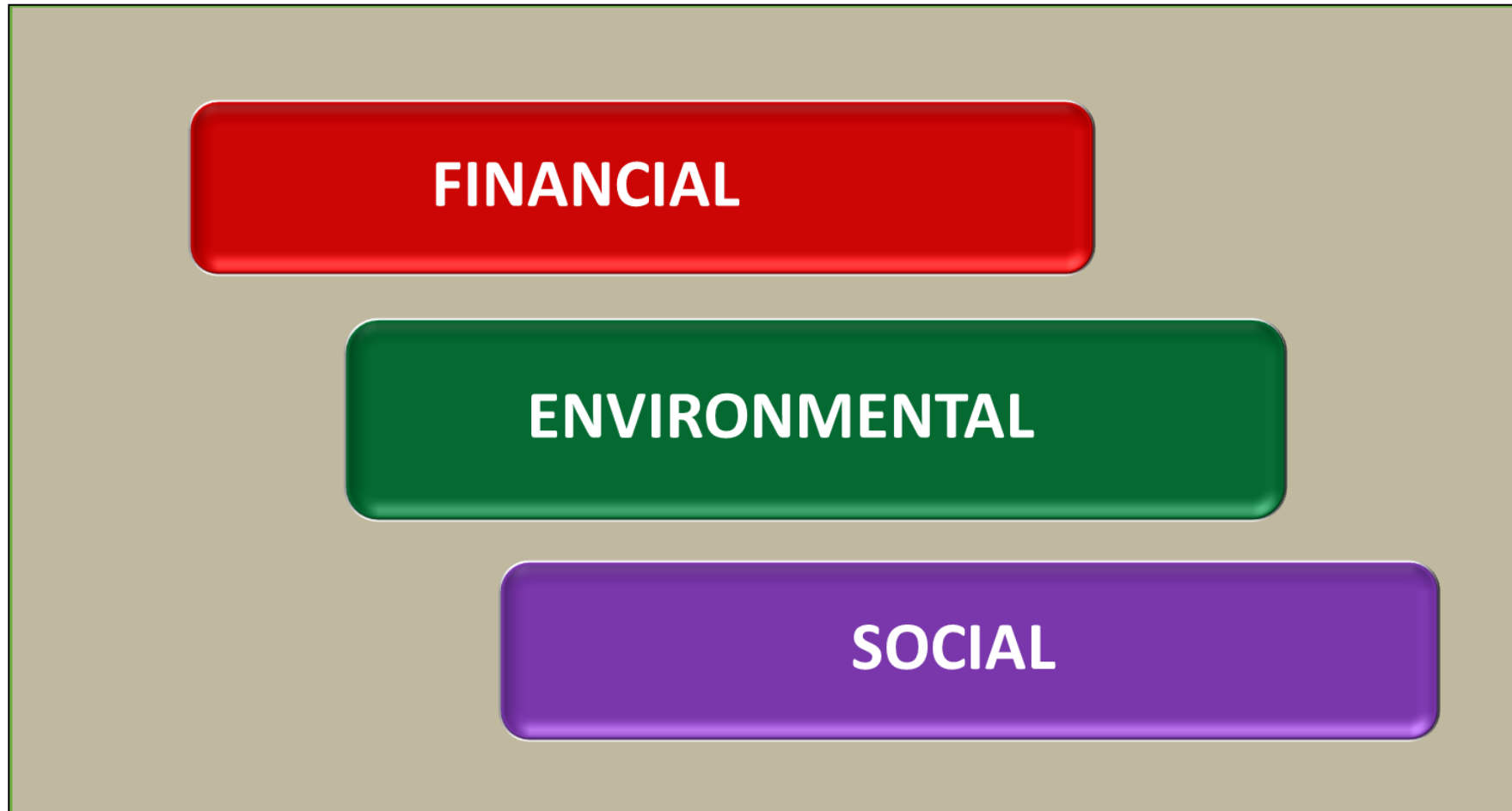
We clean this one sewer line every month, year after year. It's an awful job and we wish we solve the problem another way.

# What's the issue?





# Triple Bottom Line Issues



Cost of  
the  
monthly  
cleaning

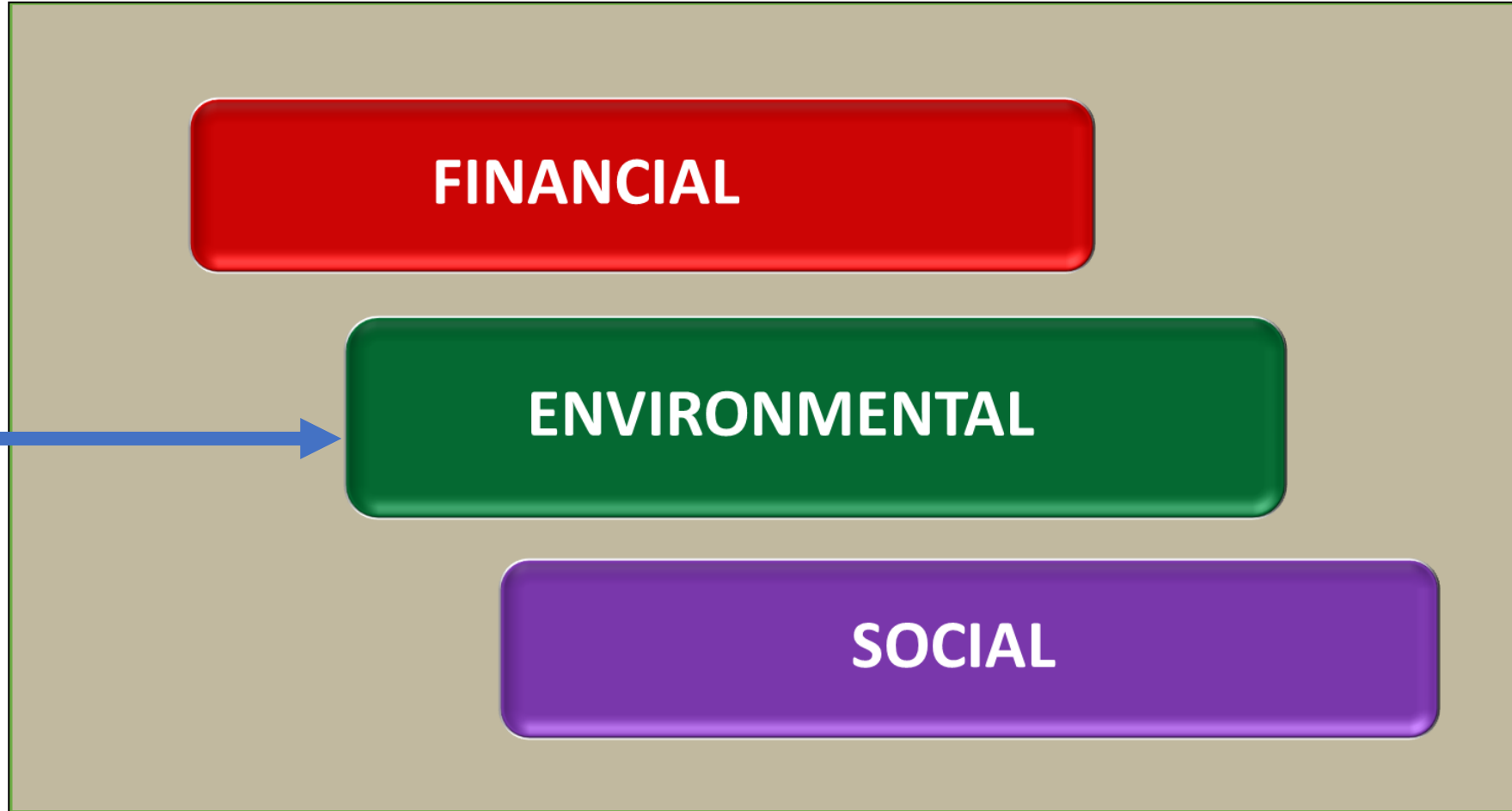


**FINANCIAL**

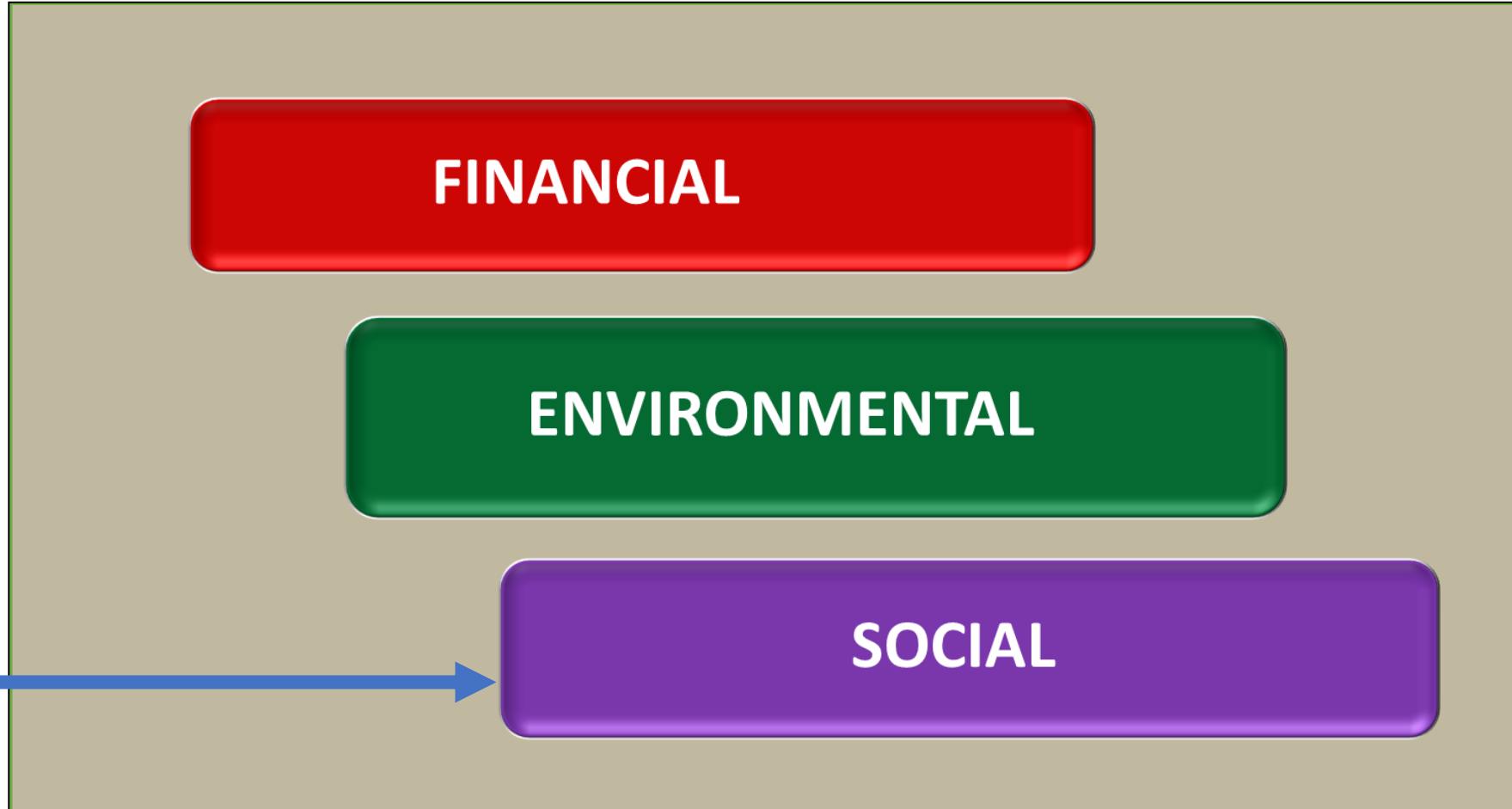
**ENVIRONMENTAL**

**SOCIAL**

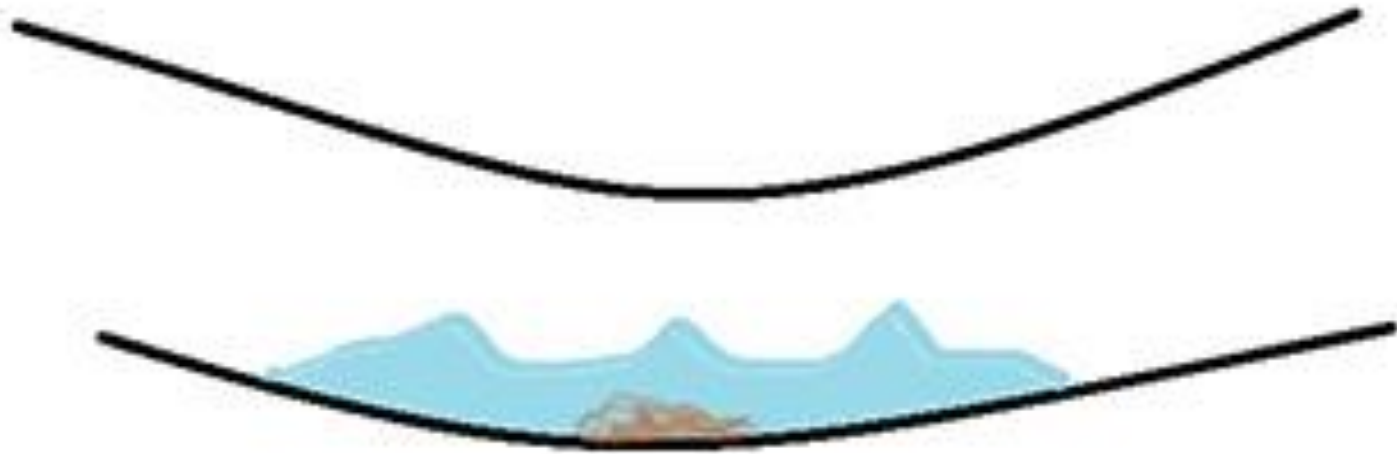
Potential  
overflows;  
Potential  
violations  
at the  
plant;  
Disposal  
of FOGs



Job  
frustration;  
PIA;  
Opportunity  
cost;  
Disruption to  
traffic every  
month

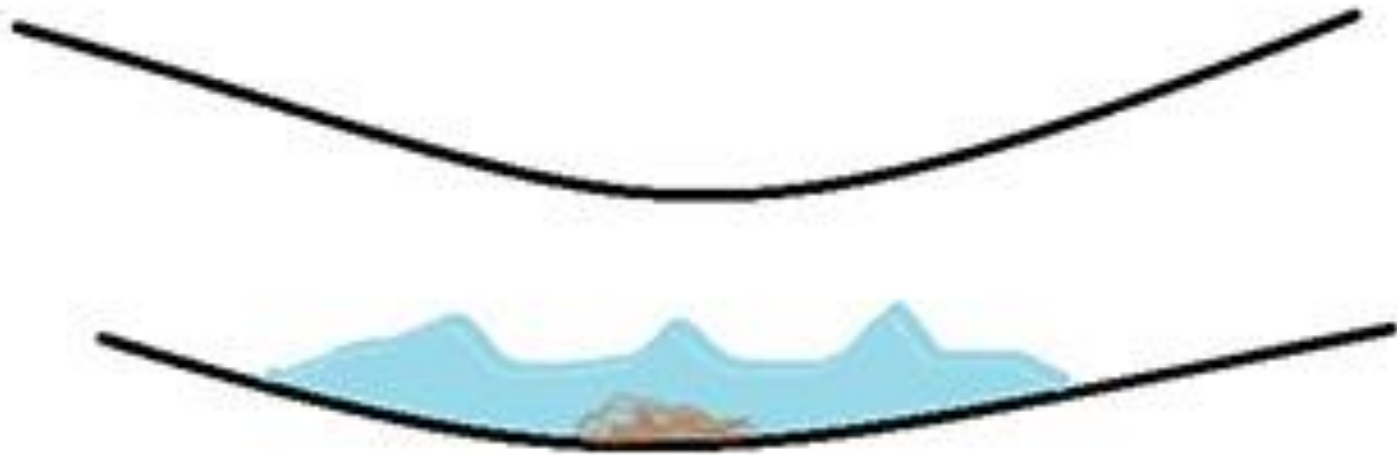


Is there anything that can be  
done other than monthly  
cleanings?





What data is necessary to make a case for a different action?



# Data related to the cleaning

Number of  
Manhours

Use of  
Trucks

Cost of  
Trucks &  
Manhours

Manhours at  
Plant

Cost at  
Plant

# Data related to the replacement

Length  
Needing  
Replaced

Cost of  
Replacement  
(Full Cost)

Years of  
Payback

# Costs of Cleaning

Number of Manhours Cleaning	Cost of Manhours Cleaning	Hours of Vehicles	Cost of Vehicles	Number of Manhours at Plant	Cost of Manhours Cleaning
24 hours/month	\$600	12	\$600	4	\$100
288 hours/year	\$7,200	144	\$7,200	48	\$1,200

Total for a year = \$15,600

# Costs of Replacement

Feet of Pipe Replaced	Cost per foot	Total Cost
100	\$378	\$37,800

# Payback Period

Total Cost for Replacement	Costs Per Year	Number of Years for Payback
\$37,800	\$15,600	2.42



What's the best option?

What keeps people from making a better decision?

# My Thoughts

Lack of asking the question

Not listening to staff when they ask

Not using data to analyze situation

Seeing OpEx  
Differently than Cap  
Ex (a \$ is a \$)

Could the case be made  
without the data?

Probably not. And it shouldn't be  
made without data.

Where would the data come from?

AM System; Operators; Other Staff; Finance Personnel; Other

# Question from a water system maintenance supervisor:

Our wet chlorine scrubber requires a lot of unpleasant, unsafe, time-consuming maintenance. Could we do something else?



# Annual Cleaning of Scrubber

Difficult and  
unpleasant job  
to do

Not liked by  
employees



What are some  
of the issues:

Health & Safety  
(maintenance  
creates a new  
problem)

Time

Money

Hazardous waste

Difficulty





# A solution



Triple  
Bottom  
Line

Old  
System  
and  
New  
System

Year/ Time Period	Initial Construction or Retrofit/ Rehab	O&M Cost	Difference in Cost
2000	Not Known		
2001 - 2011		\$175,992	
2012	\$101,079		
2013 - 2018		\$738.06	
2013 – 2022 (estimated)		\$1,267	Savings of \$73,645.43 over an 11- year period. Savings will grow over time.
Cost/Year for Old		\$20,000	
Cost/Year for New		\$117	\$19,883 per year of savings going forward with new system over the old system.

# The Benefits

Cost  
Savings



**FINANCIAL**

**ENVIRONMENTAL**

**SOCIAL**

# The Benefits

No hazardous  
waste

No more spills



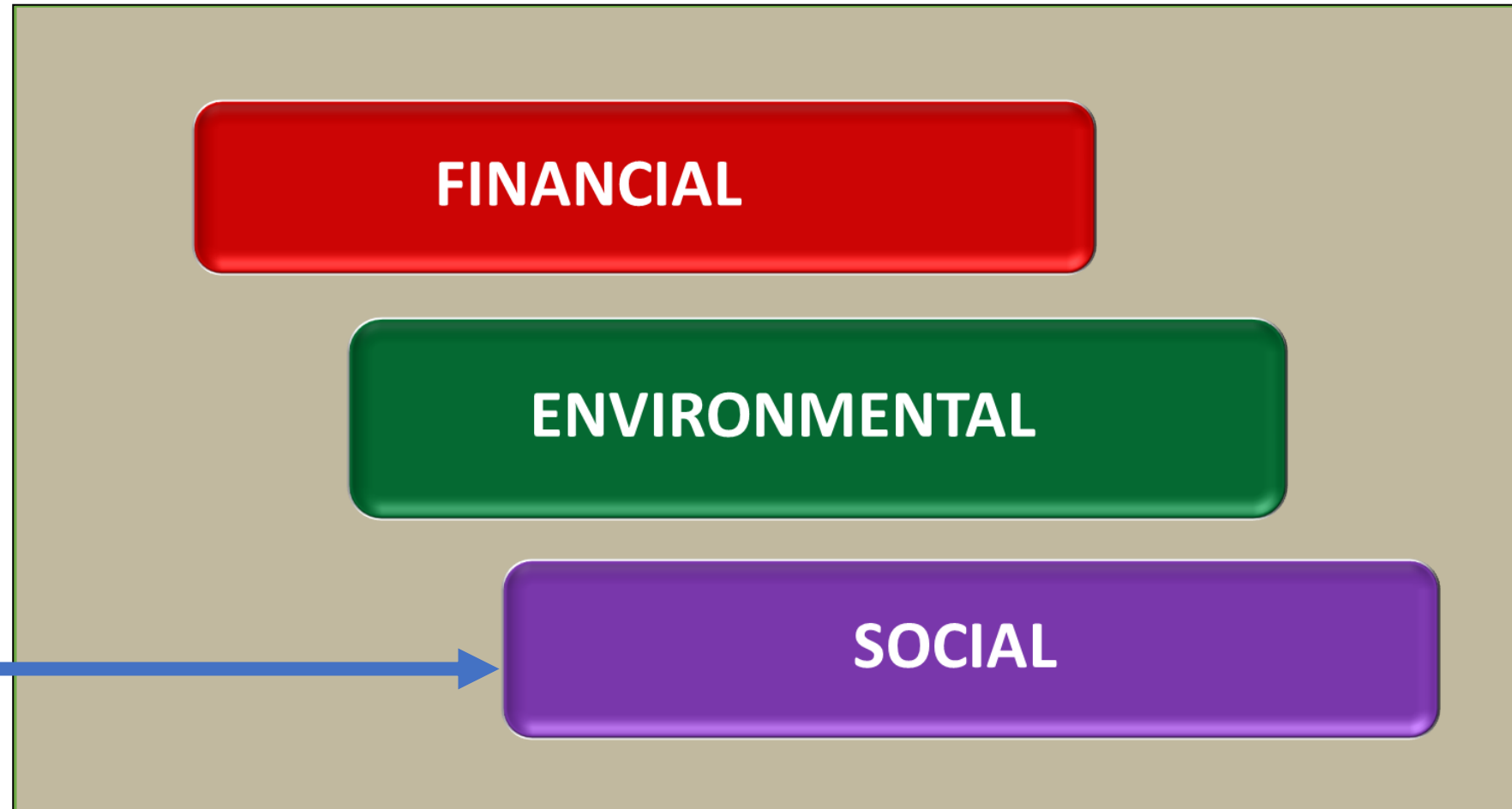
**FINANCIAL**

**ENVIRONMENTAL**

**SOCIAL**

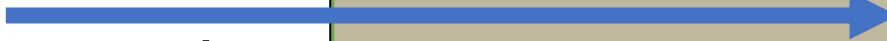


# The Benefits



Elimination of  
terrible job for  
employees

Safety  
improvements



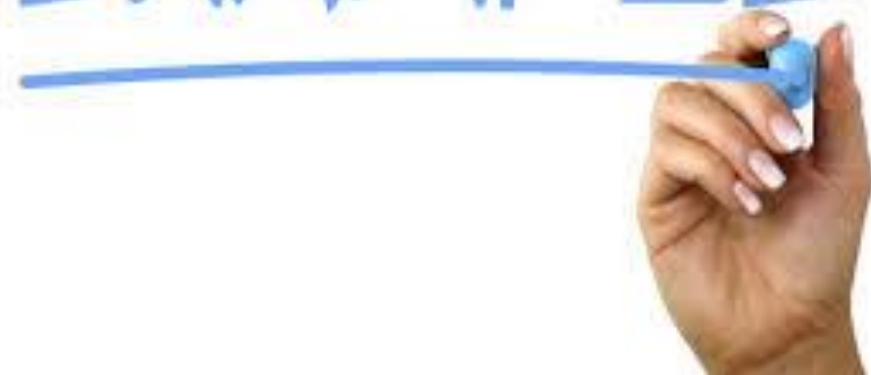
Take a moment and think about  
your own system(s)

What are the things that  
frustrate you?

What feels inefficient?

What could be improved?

EXAMPLE



?'S

How often should the manual bar screen be cleaned at each sewer lift station?

(one utility: cleaned some daily, some monthly, some annually)





Should flow and pressure data be collected at lift stations?

If not, should flow meters and pressure gauges be installed in lift stations?





# Do you know the location of all your fire hydrants (or any other asset)



Why might location be a problem?





# Do you know the condition of all your fire hydrants (or any other asset)



Why might condition be a problem?





Which direction do  
the isolation valves  
turn?

(one utility had  
valves that turned  
both directions)



Are all the meters in the billing system able to be found in the field? Are there meters in the field not in the billing system?

(one utility: largest restaurant in town had a meter not in the billing system)



On the sheet provided, write  
down three questions

JUST THE QUESTIONS

BE CREATIVE

BREAK TIME

Let's dig into some concepts  
that Take Asset Management a  
bit deeper





## Part 3: Level of Service: Mission Statement

Presented By Heather Himmelberger, P.E. Director, SW EFC






One usual  
missing  
element in  
Level of  
Service:  
A Mission  
Statement



The mission statement  
tells the story of what  
you want your utility to  
provide

Sets the priorities of  
the utility

Grounds the organization  
and binds it together



THE STORY

# Characteristics of Mission Statements



Source: <https://nonprophub.org/nonprofit-mission-statements-good-and-bad-examples/>

## The Good and the Bad

A Good Statement...		A Bad Statement...
Uses language your constituents use.	↔	Uses jargon, doesn't understand your audience.
Is emotionally stirring.	↔	Is logical and cold.
Communicates the "why."	↔	Communicates only the "what" or "how."
Is concise.	↔	Is really long.
Is a single, powerful sentence.	↔	Is a rambling paragraph.
Sounds good spoken out loud.	↔	Is full of clauses and hard to say.
Is memorable.	↔	Is forgettable.
Surprises.	↔	Is dull.
Is actionable.	↔	Can't be quantified.
Is specific.	↔	Is vague.

# WaterOne



Water District No. 1 of Johnson County

We provide a safe, reliable, high-quality water supply with superior service and value.

# Use the handout to evaluate WaterOne

We provide a safe, reliable, high-quality water supply with superior service and value.



## The Good and the Bad

### A Good Statement...

### A Bad Statement...

Uses language your constituents use.

Uses jargon, doesn't understand your audience.

Is emotionally stirring.

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Communicates the "why."

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Is memorable.

Is forgettable.

Surprises.

Is dull.

Is actionable.

Can't be quantified.

Is specific.

Is vague.

The mission statement sets priorities for the activities of the utility

Based on the example mission statement from WaterOne, what activities would be important?

# We provide a safe, reliable, high-quality water supply with superior service and value.

Component of the Mission Statement	Activities That Would Help
Safe Water Supply	Routine samples taken and analyzed; flushing completed on schedule; ensuring good supply chain for disinfectants (including back-up supplies); Chlorine samples
Reliable Water Supply	Reducing Breaks/Break Rate; Back-up Sources; multiple sources; Inspections of storage tanks; Pump station inspections; Pump maintenance
High-Quality Water Supply	Process control sampling; removing contaminants below MCLs; Removing secondary contaminants; flushing completed on schedule
Superior Service	Well-trained staff; Certified operators; professional staff; training on customer interaction; Speed and quality of necessary system repairs; addressing customer concerns/complaints in timely manner; fully staffed utility
Value	Cost of service is explained to customers; rate structure is fair and equitable; the level of service is equated with the price paid







## Part 4: Level of Service: Goals

Presented By Heather Himmelberger, P.E. Director, SW EFC

Let's think about

Questions

Connections

Solving

Related to Level of Service Goals

# Questions:

What are the most important functions you are trying to provide for your customers?

How do you know if you are providing this service?

Can you take action if service levels aren't met?

How can you communicate the level of service to customers and elected leaders?



Level of Service goals set the overall policies, objectives, and procedures for the organization.



It puts everyone on the same page...

# Desired Characteristics of Levels of Service Goals

<b>Meaningful</b>	Relevant to staff and stakeholders Provides a clear picture of performance
<b>Measurable</b>	Can be measured in a cost-effective manner Expressed as a qualitative or quantitative measure
<b>Consistent</b>	Consistent with industry practice Measurement is reproducible by others
<b>Useful</b>	Helps manage the utility Encourages improvement
<b>Unique</b>	Describes a specific attribute of utility services or activities Independent of other levels of service







Goals can be internal....

Examples: System Maintenance,  
Employee Safety,  
Energy Management

Goals can be external....

Types of goals:  
Public Health &  
Safety, Customer  
Service, Response  
Time



Communicating Goals

Area	Indicator	FY17 3Q Actual	FY17 Target	Status
Customer Service	Wait Time (minutes)	1:47	< 2 minutes	▲
	Contact Time (minutes)	4:02	< 4 minutes	■
	Abandoned Call Ratio	4%	< 8%	▲
	First Call Resolution	84%	> 90%	■
	Bill Exception Rate (per 10,000 Bills)	11	< 10	■
	Water Quality Complaints Rate (per 1000 customers)	2.6	< 3	▲



On Target/Target Achieved

Work in Progress/Below Target

Target Not Met



**Connections:** Your system's goals are derived from, and support, your mission statement.



We provide a safe, reliable, high-quality water supply and superior service.

Component of the Mission Statement	Activities
Safe Water Supply	Protecting the source; Maintaining the distribution system; Monitoring water quality; Responding to emergencies; Maintaining adequate reserves; Maintaining adequate supplies;
Reliable Water Supply	Protecting the source; Maintaining the distribution system; Monitoring water quality; Responding to emergencies; Maintaining adequate reserves; Inspections
High-Quality Water Supply	Protecting the source; Maintaining the distribution system; Monitoring water quality; Responding to emergencies; Maintaining adequate reserves; Maintenance
Superior Service	Protecting the source; Maintaining the distribution system; Monitoring water quality; Responding to emergencies; Maintaining adequate reserves; Removing contaminants below MCLs; Removing sediment on schedule
Value	Protecting the source; Maintaining the distribution system; Monitoring water quality; Responding to emergencies; Maintaining adequate reserves; Addressing customer concerns; professional staff; training on customer service; timely completion of necessary system repairs; addressing complaints in timely manner; fully staffed utility
	Protecting the source; Maintaining the distribution system; Monitoring water quality; Responding to emergencies; Maintaining adequate reserves; Explaining the cost of service to customers; rate structure is fair and equitable; Quality of service is equated with the price paid

Remember the mission statement and activities. Think about goals that could relate to these activities

# Let's choose a few activities and look for some goals to help

Component of the Mission Statement	Activities That Would Help
Superior Service	Well-trained staff; Certified operators; professional staff; training on customer interaction; Speed and quality of necessary system repairs; addressing customer concerns/complaints in timely manner; fully staffed utility

All staff receive 20 hours of training per year on topics relevant to their job classification. All staff receive an additional 8 hours of training on customer interaction and professionalism within 6 months of being hired and receive 4 hours of refresher training every year thereafter.

The system will maintain the required number of certified operators for all of its facilities and operations and the operators in charge will be certified at the appropriate level. There will be pay incentives for operators to achieve higher level certifications and time off will be granted for up to 2 tests per year for certification purposes.

Emergency complaints/concerns will be addressed within 4 hours of receipt 95% of the time. Water quality complaints will be addressed within the next business day 95% of the time. Other customer complaints will be addressed within 5 business days 95% of the time.



# Let's choose a few activities and look for some goals to help

Component of the Mission Statement	Activities That Would Help
Superior Service	Well-trained staff; Certified operators; professional staff; training on customer interaction; Speed and quality of necessary system repairs; addressing customer concerns/complaints in timely manner; fully staffed utility

**For Water:** All non-emergency breaks in mains will be fixed within 1 day of the line location process being completed.

**All break** repairs will hold at least 5 years after the repair has been made. If the repair fails sooner than 5 years, an investigation will be undertaken to determine the cause of the early failure.

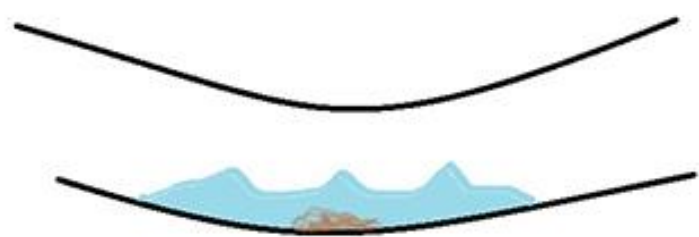
**For Wastewater:** All sewer collapses will be addressed in an emergency fashion (e.g., bypass pumping) within 8 hours of discovery. The sewer will be repaired within 3 months of discovery if it does not require a full pipe replacement (more than 1000 feet) and within 1 year if a full pipe replacement is required.

**Solving:** Setting goals (possibly internal) can support helping you solve the issues important to you.



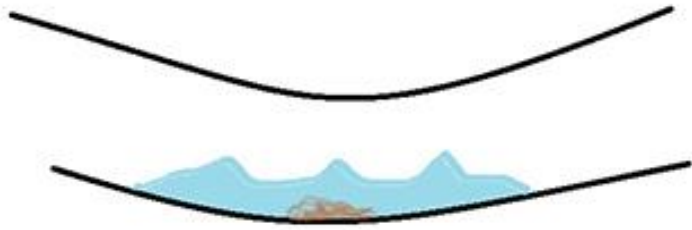
***Written & measured*** goals  
can change your operation  
and management





We clean this one sewer line every month, year after year. It's an awful job and we wish we solve the problem another way.

What kind of goal could we write to help with this type of question?



# Goal?

For any sewer cleaned more than once every 6 months, an analysis will be made at least every 3 years to determine if there is a more cost effective solution than continued cleaning.

# Examples of Goals & Solving Issues



Issue: Too much water loss

Set goals around reducing water loss,  
repairing pipes

Leaks reduced due to strategic replacement



Issue: Too many injuries; inadequate safety  
training, injury reduction  
Goals around safety training, injury reduction  
Reduced injury time from 23,000 hours/yr  
<2,700 hours/yr  
(included employee incentives)



# Help Setting LOS Goals

Resources  
available on our  
website



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## LEVEL OF SERVICE

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Guidelines, Categories and Example Goals

### Guidelines

The Level of Service Goals should define what your customers and employees can expect from the water utility. When customers understand what the utility is providing for them in terms of service and they are given a say in what the utility may provide in the future, they are more willing to pay. Customers need to understand that service is related to cost and typically the higher the level of service desired, the higher the costs associated with producing that level of service. Determining what the customer wants and is willing to pay for drives the decision making for the utility.

When defining your level of service goals, remember to write SMART goals – Specific, Measurable, Attainable, Realistic and Time Bound (when appropriate). This will allow the utility to track its performance, show successes and failures and revise for improvement each year. Goals can be changed or adjusted over time. Goals can also be added or removed from the list.

It's important to involve customers and staff in the process of establishing the goals or service levels. The goals can be either internal or external. External goals are those that directly impact the customers. Internal goals are those that are related to operations and that would not be easily understood by customers. Progress towards meeting the goals should be tracked and reported to upper management and the public.

Determining your Level of Service goals should not be overwhelming. Keep it simple; develop 10 – 12 goals around the most important aspects for your utility. The information below can be used as a resource in setting your utility's goals.

### Categories


No matter where the water utility is located, customers desire roughly the same types of things from their utility – water that is safe and reliable, delivered at an adequate pressure, and that their concerns are addressed. Thankfully, this list is relatively small, allowing the utility to develop a targeted list of goals that address the major customer requirements. Level of Service Goals will typically fall into one of the following categories: Public Health and Safety, Customer Service, System Maintenance, Response Time, Water Loss





## Part 5: Current State of the Assets

Presented By Heather Himmelberger, P.E. Director, SW EFC



Current State of the Assets is the  
**foundation** upon which  
**everything else** is built.

Can't manage what you don't know!!



Let's think about

Questions

Connections

Solving

Related to Current State of the Assets



Answers the Basic Questions...

What assets do I have?

Where are they located?

What do I need to know about them?



**Question:** If you won the lottery and left your system tomorrow, would your replacement know where the assets were located? How hard would it be for him/her to find them?



**Yes**

**Not Sure?**

**No**





If your answer was no, or  
not sure, consider creating  
a map very soon.



**Question:** If you won the lottery and left your system tomorrow, would your replacement know information about your assets?



**Yes**

**Not Sure?**

**No**



If no or not sure, create an asset inventory. The map and inventory are a chance to create a legacy of information from a long-term operator or manager to new people

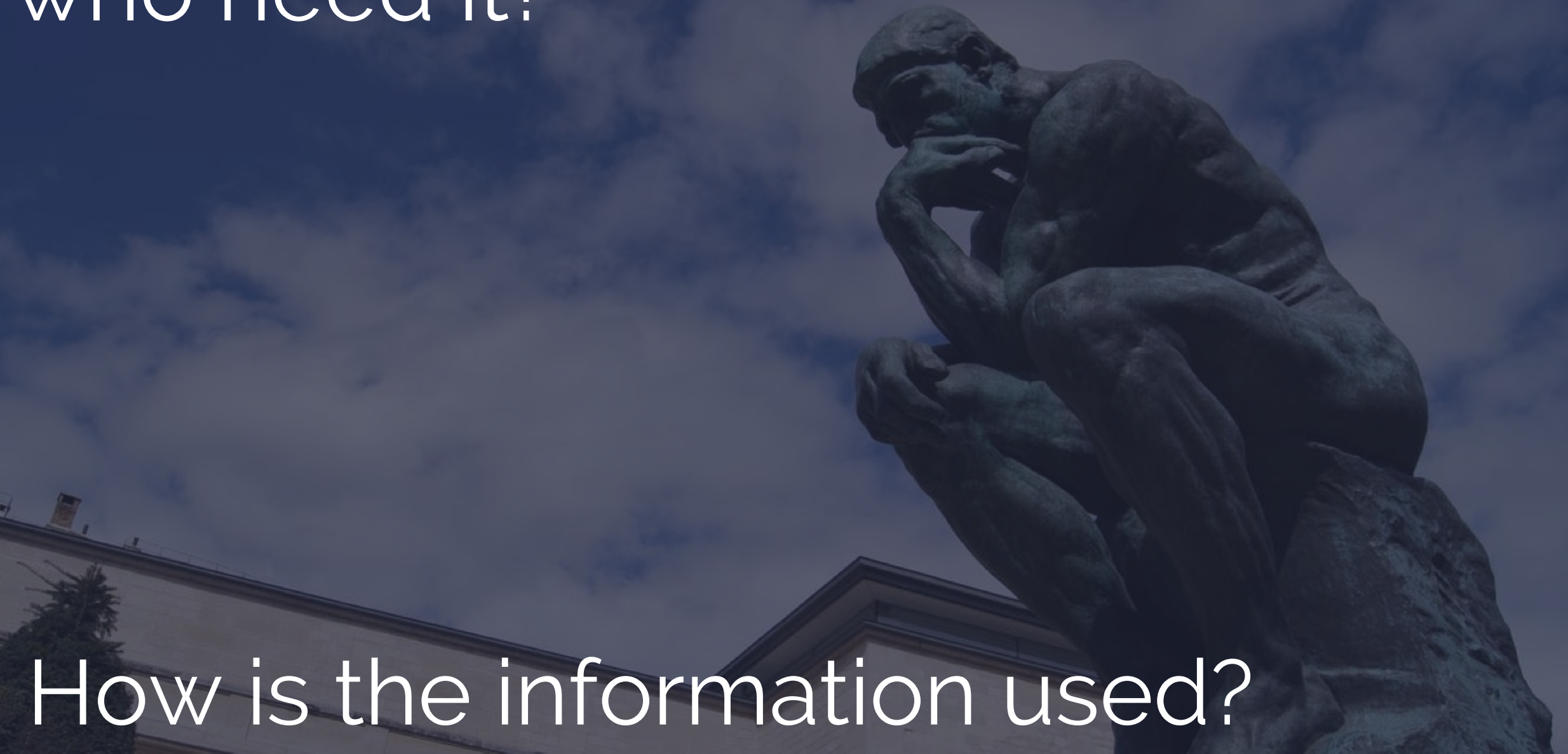


If the answer was yes, you have a  
map and inventory,

Does it include the right information?



Is the information accessible to all  
who need it?



How is the information used?



We're not going to cover the basics here but there are several recorded webinars that you can watch that would cover this information.

We're going to assume some kind of asset map or inventory exists

A person's hands are shown typing on a laptop keyboard. In the background, a tablet displays a dashboard with various charts and graphs, including a pie chart and a line graph. The text "Consider 'mapping' or analyzing how you use the data you collect" is overlaid in white on a dark background.

Consider “mapping” or  
analyzing how you use the data  
you collect

Asset Type	What Data Is Collected?	How is it Collected?	Is it Widely Accessible?	Who Uses It?	For What Purpose is the Data Used?	If it isn't Used Now Should it Be? And How?
Pipe						
Pumps						
Valves						



A person's hands are visible typing on a laptop keyboard. In the background, a tablet displays a dashboard with various data visualizations, including a pie chart, a line graph, and a bar chart. The scene is dimly lit, with the primary light source coming from the screens of the devices. The overall tone is professional and analytical.

What's missing? What data is not being collected? What data isn't in the right format? What data isn't readily accessible?

# A Few Examples

No data on when defects were addressed/ repaired

No data on pipe lining

All stormwater assets in one big category "stormwater management device"

Data on alarm conditions only written in log book (not accessible)

Paper records vs. electronic

No pump run time records



We provide a safe, reliable, high-quality water supply with superior service and value.

Component of the Mission Statement	<b>Connections:</b> Back to the Mission Statement, the activities that come out of the mission statement, and potential goals. What assets are required to meet the goals and activities? What information about the assets would be helpful?		
Safe Water Supply			schedule; up supplies);
Reliable Water Supply			ces; Inspections e
High-Quality Water			s; Removing
Superior Service			ng on customer Addressing d utility
Value	Cost of service is explained to customers; rate structure is fair and equitable; the level of service is equated with the price paid		

# Let's choose a few activities and look for some goals to help

Component of the Mission Statement	Activities That Would Help
Superior Service	Speed and quality of necessary system repairs;

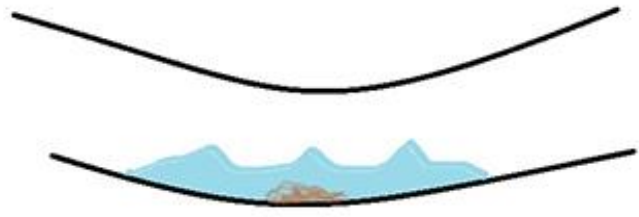
**For Water:** All non-emergency breaks in mains will be fixed within 1 day of the line location process being completed. **All break** repairs will hold at least 5 years after the repair has been made. If the repair fails sooner than 5 years, an investigation will be undertaken to determine the cause of the early failure.

**For Wastewater:** All sewer collapses will be addressed in an emergency fashion (e.g., bypass pumping) within 8 hours of discovery. The sewer will be repaired within 3 months of discovery if it does not require a full pipe replacement (more than 1000 feet) and within 1 year if a full pipe replacement is required.

## Water Assets & Data:

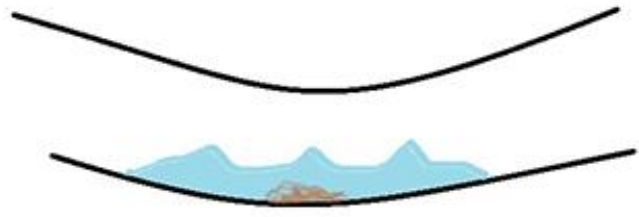
## Wastewater Assets & Data:





What kind of asset data  
would help our sewer  
sag example?

Solving Problems



# What kind of data would help our sewer sag example? – My thoughts

Type, size, age, and location of pipe

Location and type of all defects (above and below the sag as well)

# of years of doing monthly cleanings

# of hours spent cleaning & # of staff (incl. WWTP)

Trucks/equipment needed

Soil conditions

Pre-treatment plants before sag

Suspected grease contributing locations







## Part 6: Current State of the Assets: Selecting Asset Management Software

Presented By Heather Himmelberger, P.E. Director, SW EFC

# Where can information about assets be stored?

	A	B	C	D	E	F	G	H	I	J	K	L
1	System Name:											
2	Current Year	2018										
3												
4	ID Number	Asset Class or Category	Sub Asset Class or Sub Category	Asset Name	Type	Size	Length (if Pipe)	Operational Status (A = Active, I = Inactive, N = Non-Operational, S= standby/spare)	Manufacturer	Model Number	Serial Number	Supplier Name
5												
6												
7												
8												
9												
10												
11												
12												
13												

<http://southwestefc.unm.edu/asset-management/>

Lots of commercial products



# How are you storing your information?

	A	B	C	D	E	F	G	H	I	J	K	L
1	System Name:											
2	Current Year	2018										
3												
4	ID Number	Asset Class or Category	Sub Asset Class or Sub Category	Asset Name	Type	Size	Length (if Pipe)	Operational Status (A = Active, I = Inactive, N = Non-Operational, S = standby/spare)	Manufacturer	Model Number	Serial Number	Supplier Name
5												
6												
7												
8												
9												
10												
11												
12												
13												

How many use some type of free product that is not specifically for AM (e.g., Excel, Access, etc.)



How many of you use some type of CMMS or AM software?

How many of you are considering the selection of some type of AM software?

# Why might you want commercial software?

More  
Features

More Analysis  
Capabilities

More  
Sophisticated

Mobile Apps

Ties to Other  
Functions

# What's the downside?

Cost (initial  
and annual)

Need for  
buy-in from  
all staff

Training,  
possibly on-  
going

It should be  
a long-term  
commitment

Need to keep  
up data entry  
and data  
quality





Do the  
benefits  
outweigh  
the cost?

Only you can  
answer that

If you choose to purchase a software package.....



# 8 Step Process for Selecting Software

Step 1: Form your software  
selection team



# ASSET MANAGEMENT

The screenshot shows a software interface for asset management. A large red 'CMMS' watermark is centered over the interface. The interface includes a form for creating or editing a work order. Fields include ID (523), Priority (1), Status (Scheduled), Description (PM Packer each 7), Class (MP), Sched Date (12/30/2017), Asset (BANTRAP), Schedule (P\_BANT...), Procedure (PEMP), Supervisor (1202), Reason, and Delay. A 'Notes' section at the bottom contains the text: 'WO is scheduled WO: 523', 'Date: 26/10/2017 10:19:01', and 'User: Admin: VINCENT BICKLE'. On the right, there is a 'Change of status' section with a table showing status transitions and their frequencies.

From Status	To Status	Description	Frequency
Scheduled	Scheduled		39
Scheduled	Completed		90
Scheduled	Cancelled		90
Scheduled	Rejected		90

Step 2: Understand  
Your AM/CMMS  
Needs



# Step 3: Understand Your IT Needs





## AM/CMMS Software Criteria

Item	Must Have	Highly Desirable	Desirable	Only if Standard with the Software
<b>Cloud-based platform</b>				
Ability for local data backup				
<b>Asset inventory</b>				
Ability to add new assets in the future in a user-friendly way				
Ability to change/modify asset inventory information in a user-friendly way				
Ability to search for assets in a variety of ways (e.g., by asset ID, by asset names, by asset type, etc.)				
Ability to tie assets to asset ID numbers				
Ability to assign user-created asset ID numbers (i.e., a deliberate numbering system, not just randomly generated ID numbers)				
<b>Use existing asset hierarchy structure (e.g., facility, group, parent, child, etc.)</b>				
<b>Asset criticality and risk assessment</b>				
Ability to integrate existing asset risk data				
Asset risk analysis tools				
Mechanism to use asset risk to facilitate decision-making (e.g., prioritize work orders and repairs, inform capital improvement planning)				
Ability to integrate asset useful life estimates				
<b>Standalone capital improvement planning feature</b>				
Ability to use asset data (inventory, risk, etc.) to generate a capital improvement plan or suggested list of capital improvements				
<b>Spare parts inventory</b>				
<b>Work order system</b>				
Easy to create work orders (preventive and corrective)				
Work order status tracking				
Ability to schedule preventative maintenance work orders based on operational parameters (e.g., by pump run time) or frequency				
Ability to track total cost of work order (at least in a simplified way)				
Ability to use mandatory entry fields for work orders (i.e., to ensure critical data capture)				
Ability to integrate safety (e.g., lockout/tagout, confined space)				
<b>Coordination or integration with ESRI-based GIS</b>				
<b>Ability to track progress towards key performance indicators (KPIs) and level of service goals</b>				
Ability to create and display KPI dashboards				

Step 4: Create your mandatory, preferred, & optional features list

Step 5: Establish  
Your Method of  
Procurement



**R**request  
**F**or  
**P**roposal



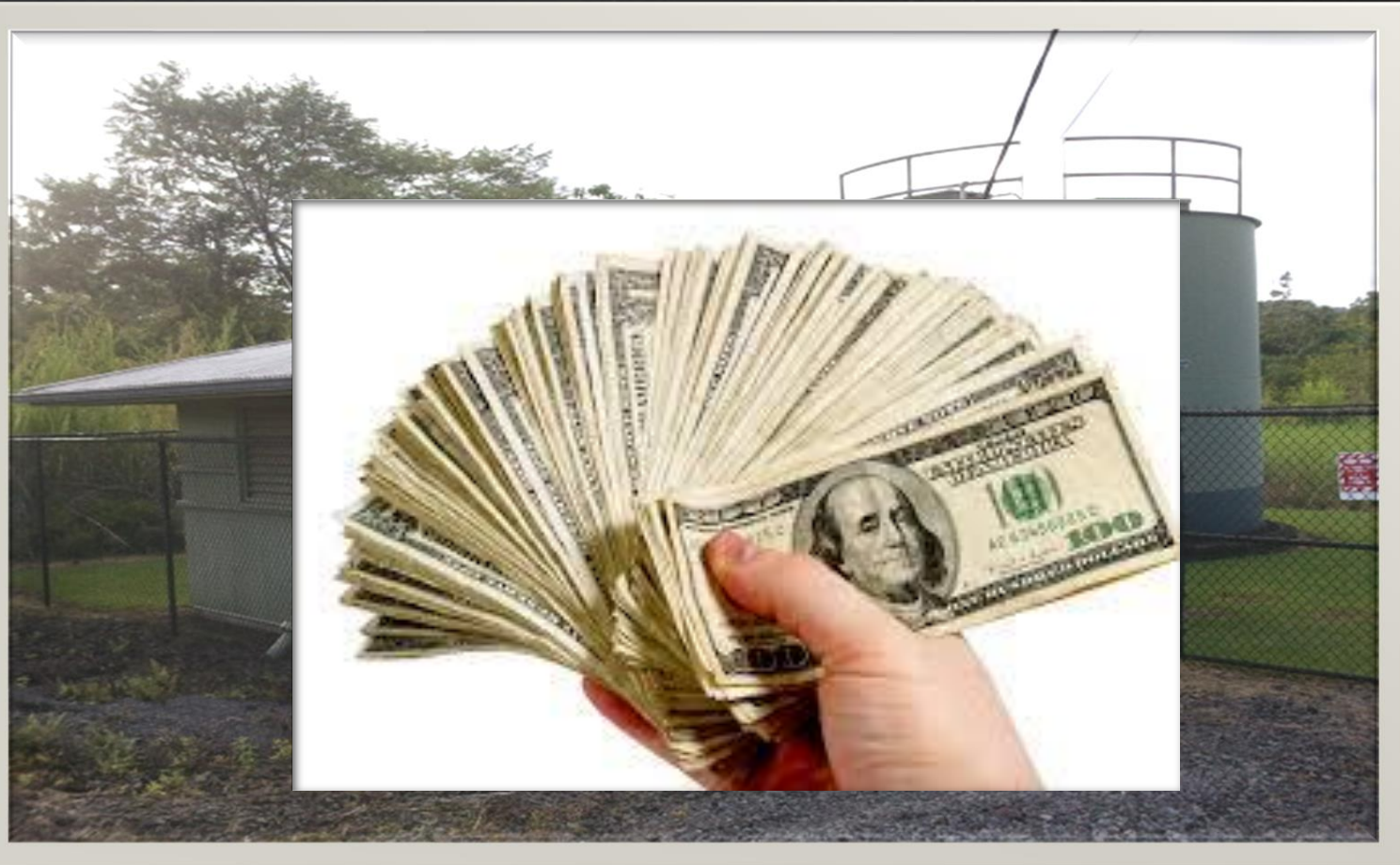
## Step 6: Demo



Step 7: Price

Initial

Ongoing







Step 8: Technical  
Support

Initial

Ongoing



# Some Common Mistakes/Issues with Software

Overbuying (more technology than you need)

Buying something for way into the future instead of now

Not being able to make changes to the software yourself

Not being clear on what you want the software to provide for you

Fitting yourself to the software rather than fitting the software to you

# Group Discussion



What software have you tried or investigated, if any? Positives and negatives of the process and/or results?

## ASSET RISK

↑ CONSEQUENCE OF FAILURE	Moderate Risk	High Risk
	Low Risk	Moderate Risk
	→ PROBABILITY OF FAILURE	



## Part 7: Criticality

Presented By Heather Himmelberger, P.E. Director, SW EFC



What is the likelihood that each individual asset (in this case a hydrant) will fail?



What is the consequence if the asset does fail?





4 Modes to Consider

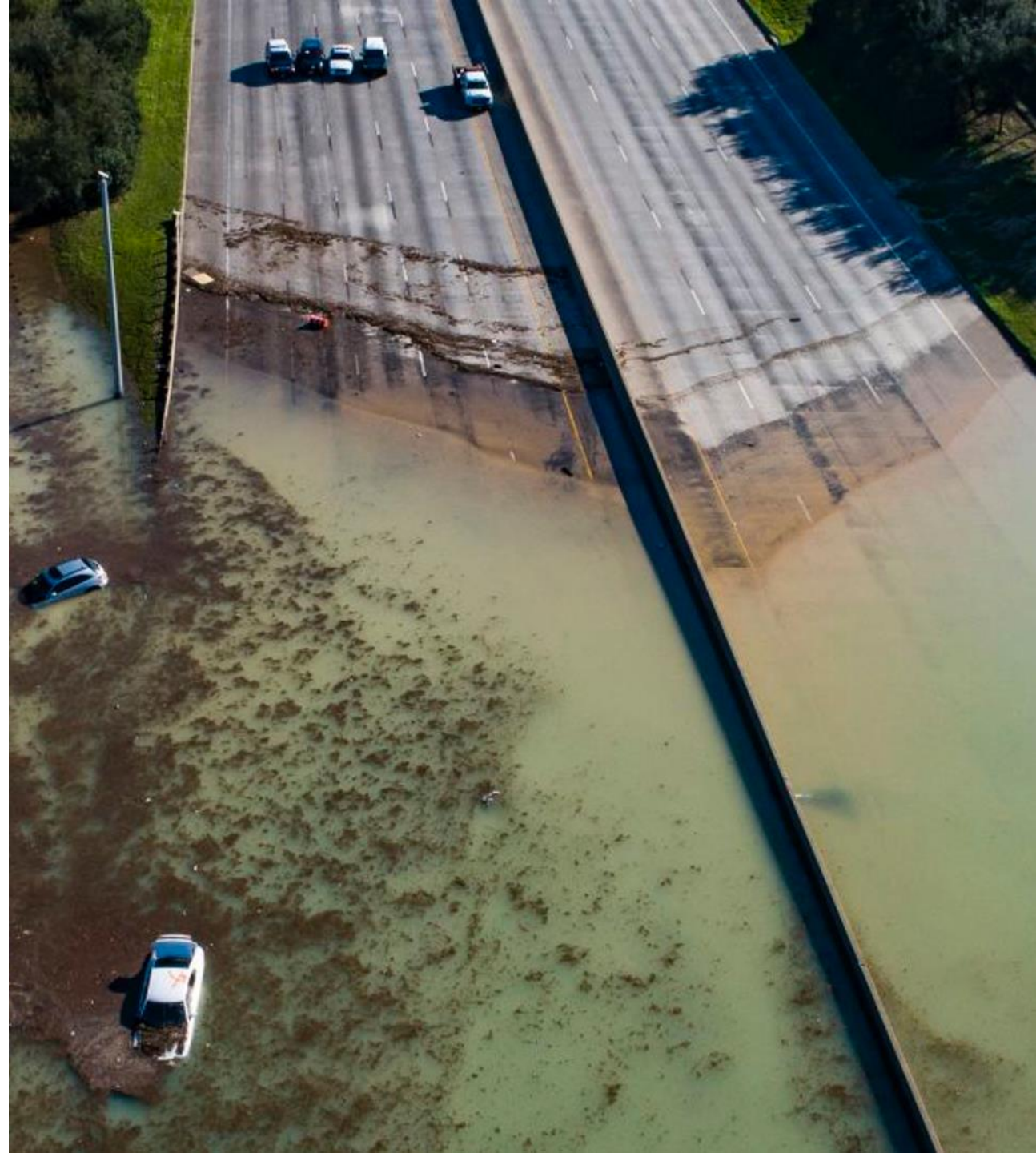


# PoF Rankings from 1 to 5

<b>1</b>	Extremely low probability of failure
<b>2</b>	Low probability of failure
<b>3</b>	Average probability of failure
<b>4</b>	High probability of failure
<b>5</b>	Extremely high probability of failure

Consider the  
triple bottom line:

1. Financial
2. Environmental
3. Social

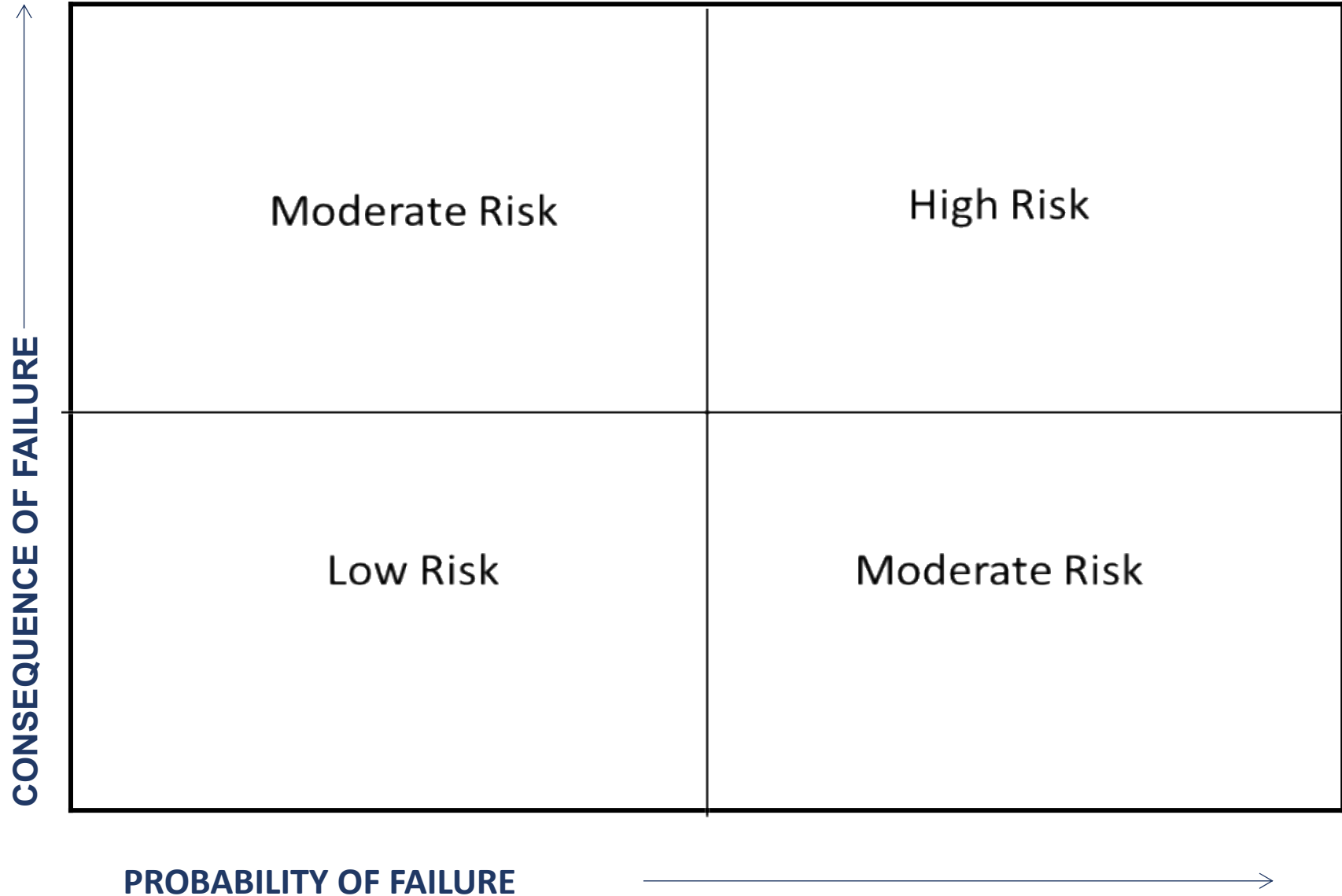


# CoF Rankings from 1 to 5

<b>1</b>	Extremely low consequence of failure
<b>2</b>	Low consequence of failure
<b>3</b>	Average consequence of failure
<b>4</b>	High consequence of failure
<b>5</b>	Extremely high consequence of failure



# ASSET RISK





# Ways to Reduce Risk

Routine &  
Preventative  
maintenance

Monitoring

Spare Parts

Specialized  
Training

Replace  
Assets Early

Redundancy

Let's think about

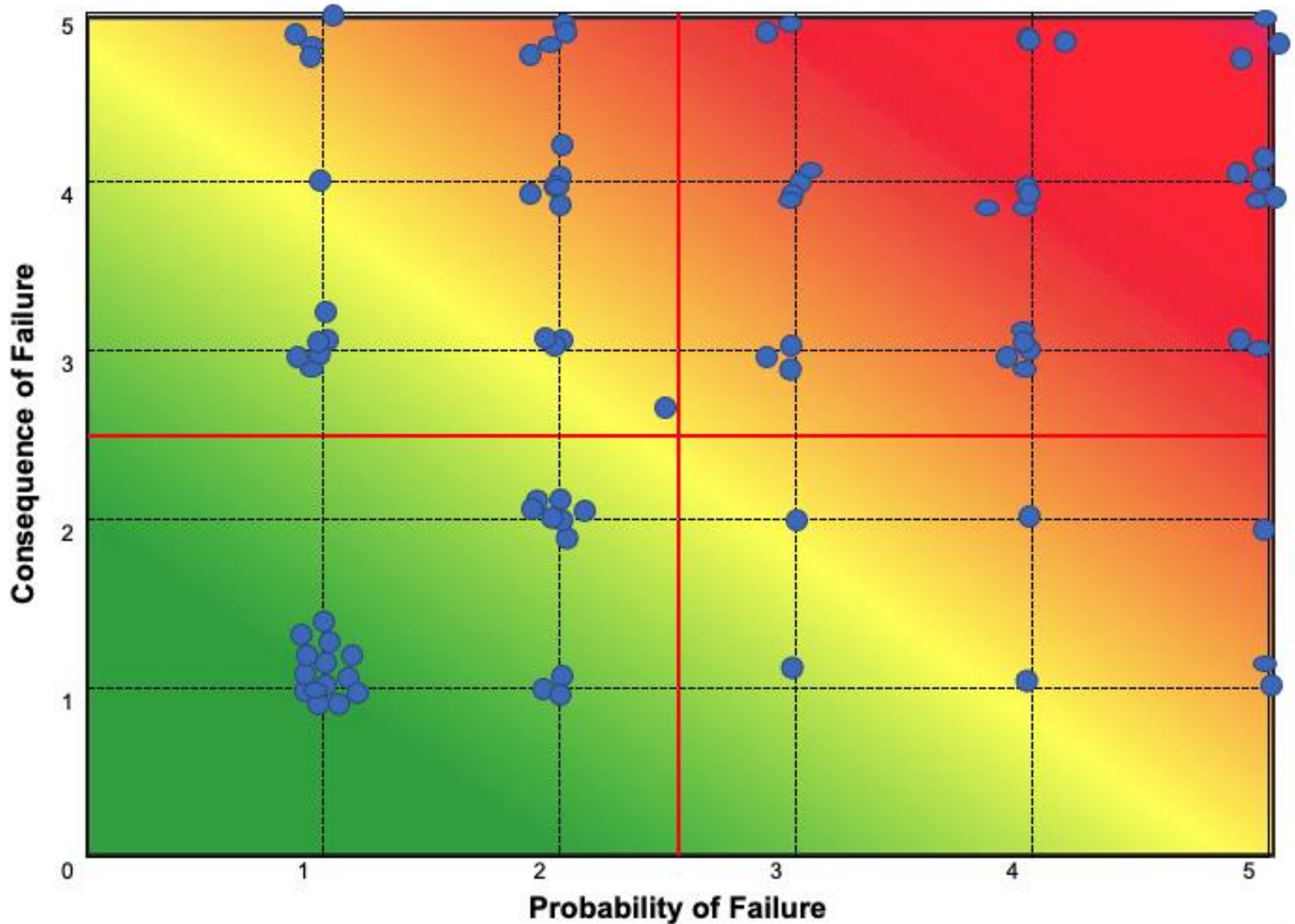
Questions

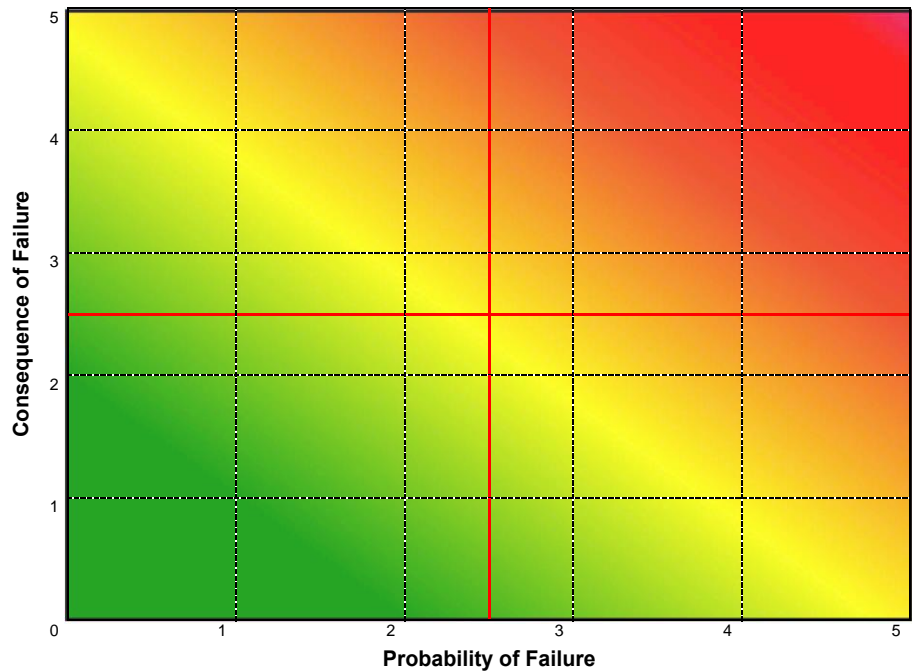
Connections

Solving

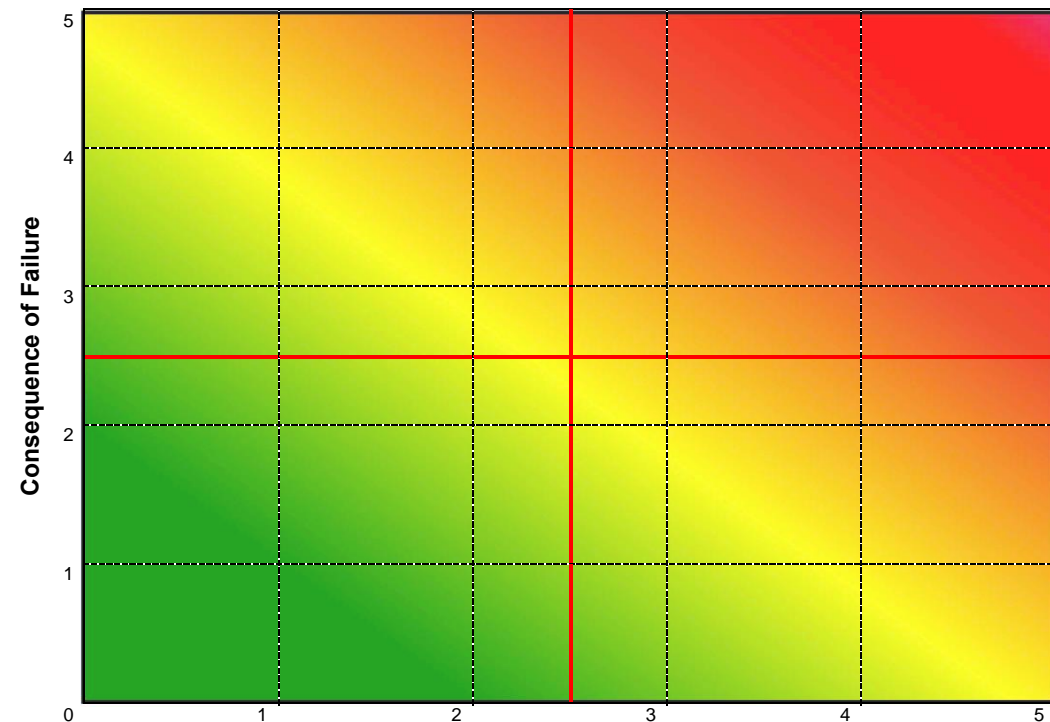
Related to Criticality

Question:  
Do you  
know what  
your risk  
profile looks  
like?

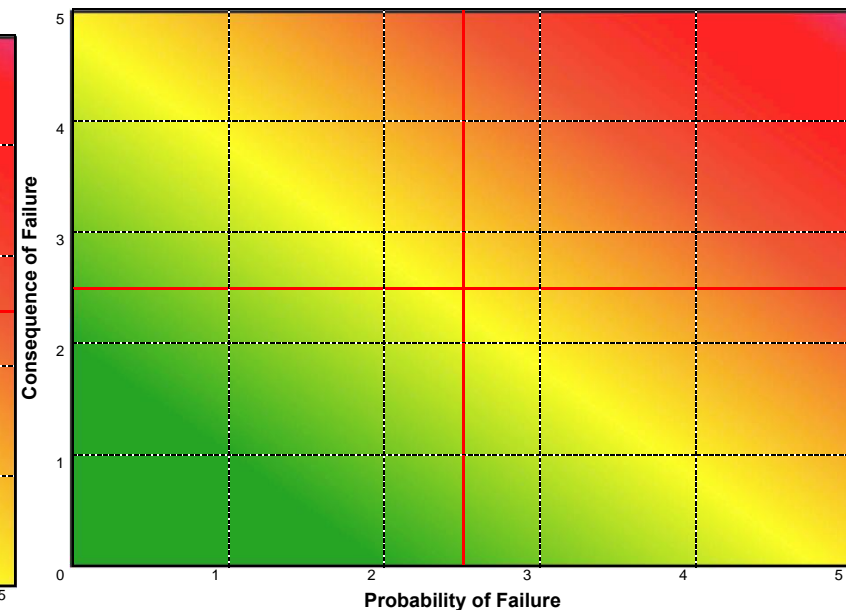
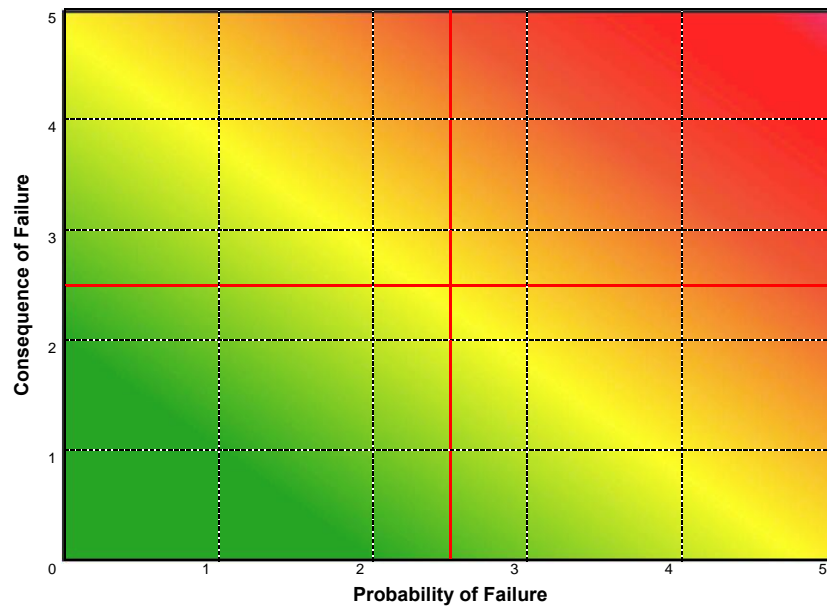
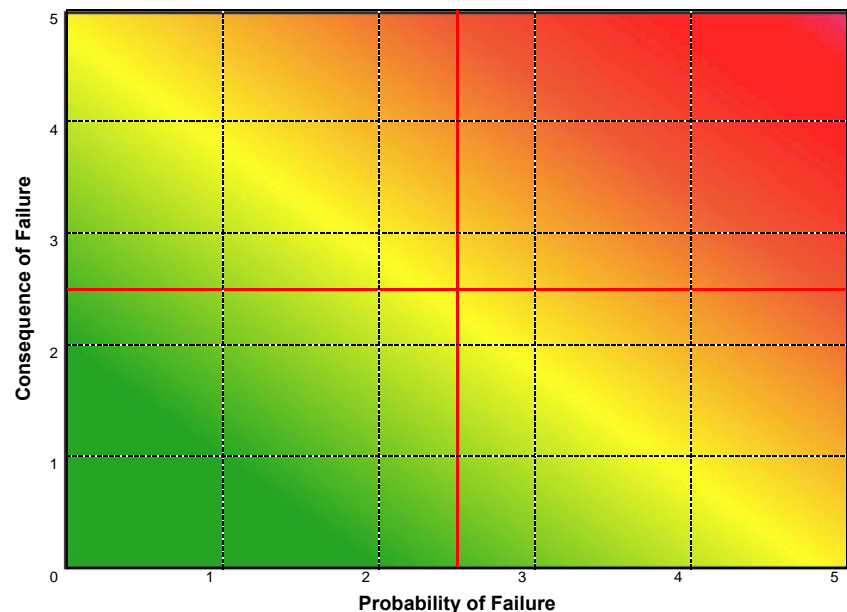




What are  
the costs  
and  
benefits of  
different  
portfolios?

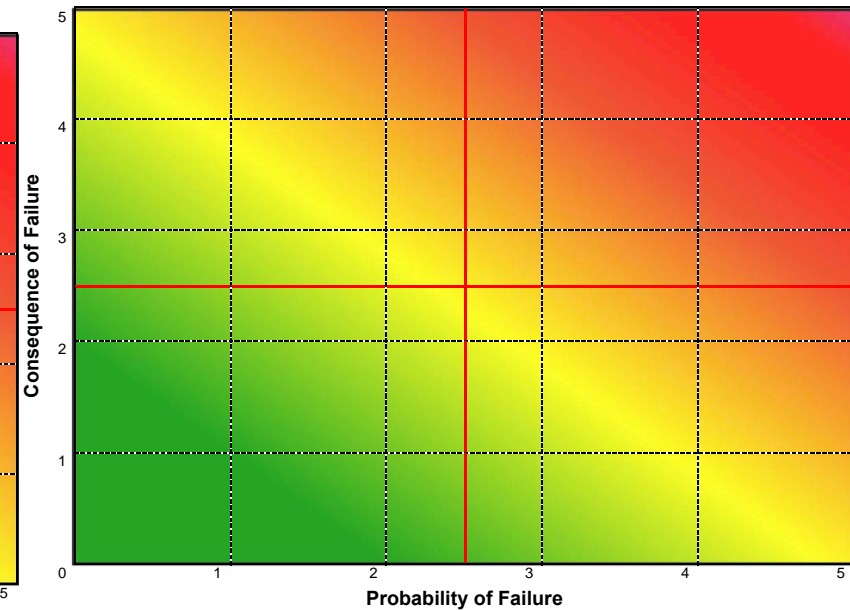
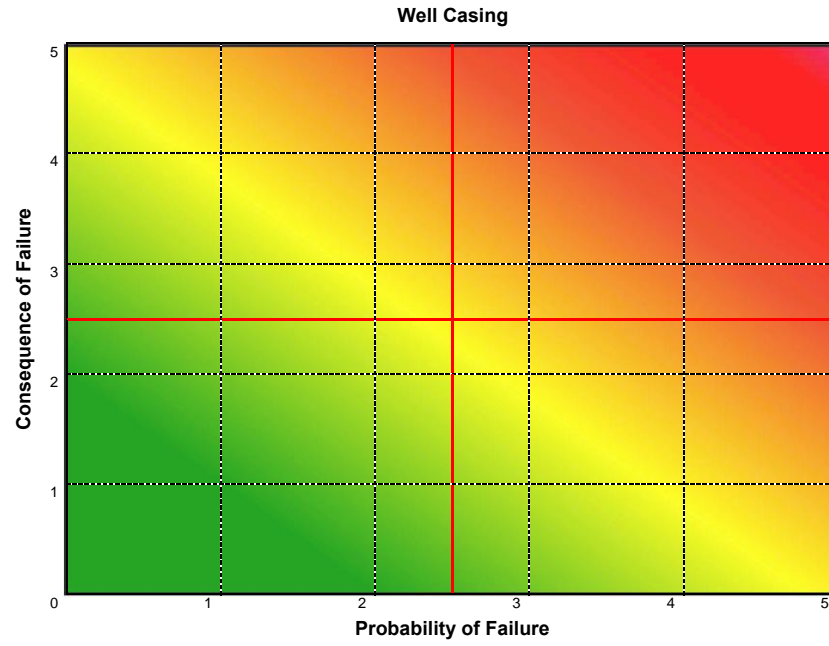
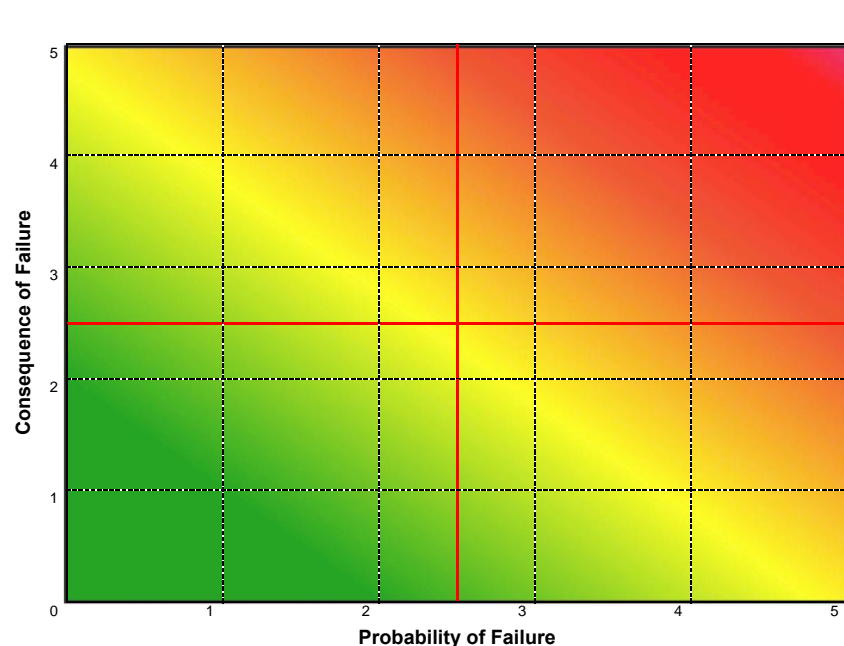
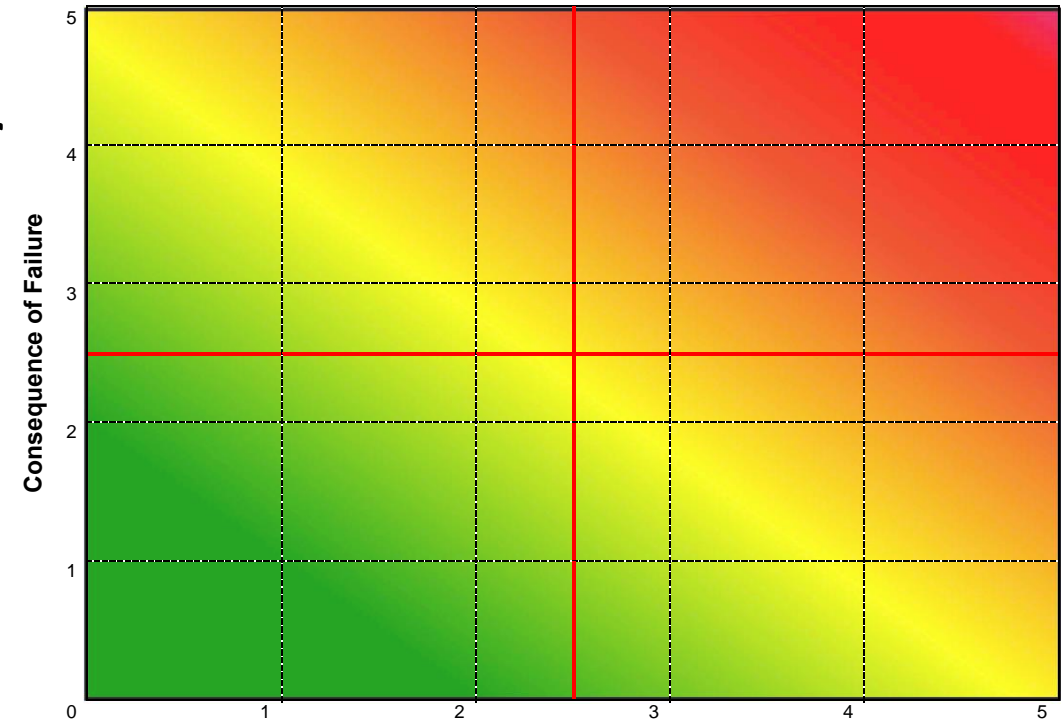
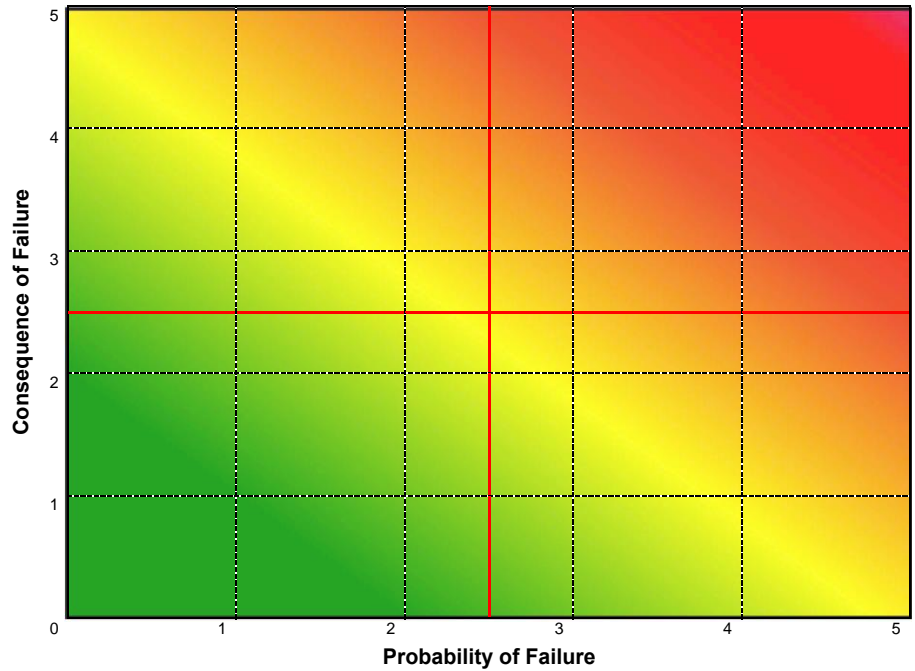


Well Casing





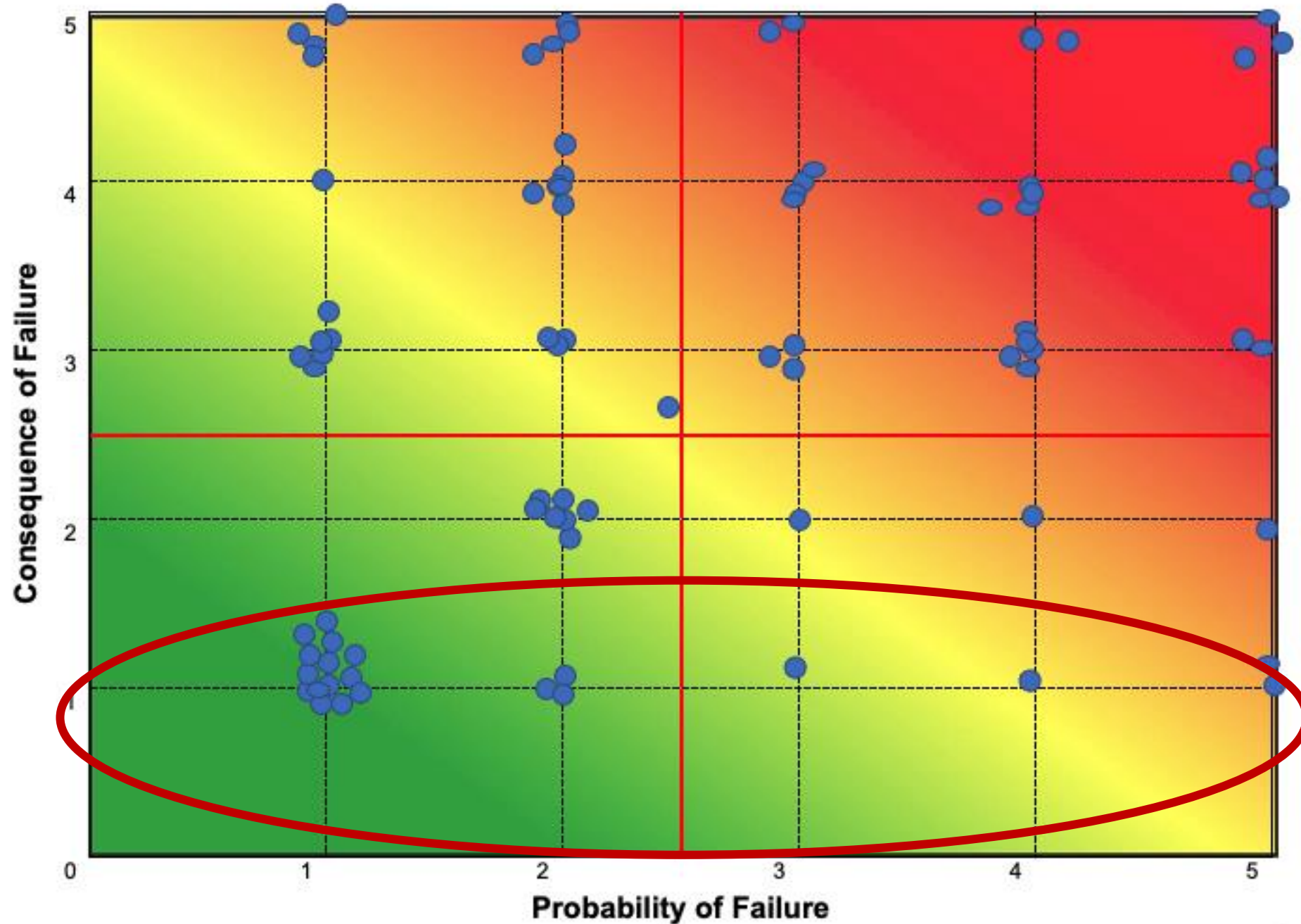
Question:  
What is your  
risk  
tolerance  
how does  
that match  
your actual  
profile?





Question:  
When is a  
run to  
failure/  
managed  
failure  
approach  
appropriate?

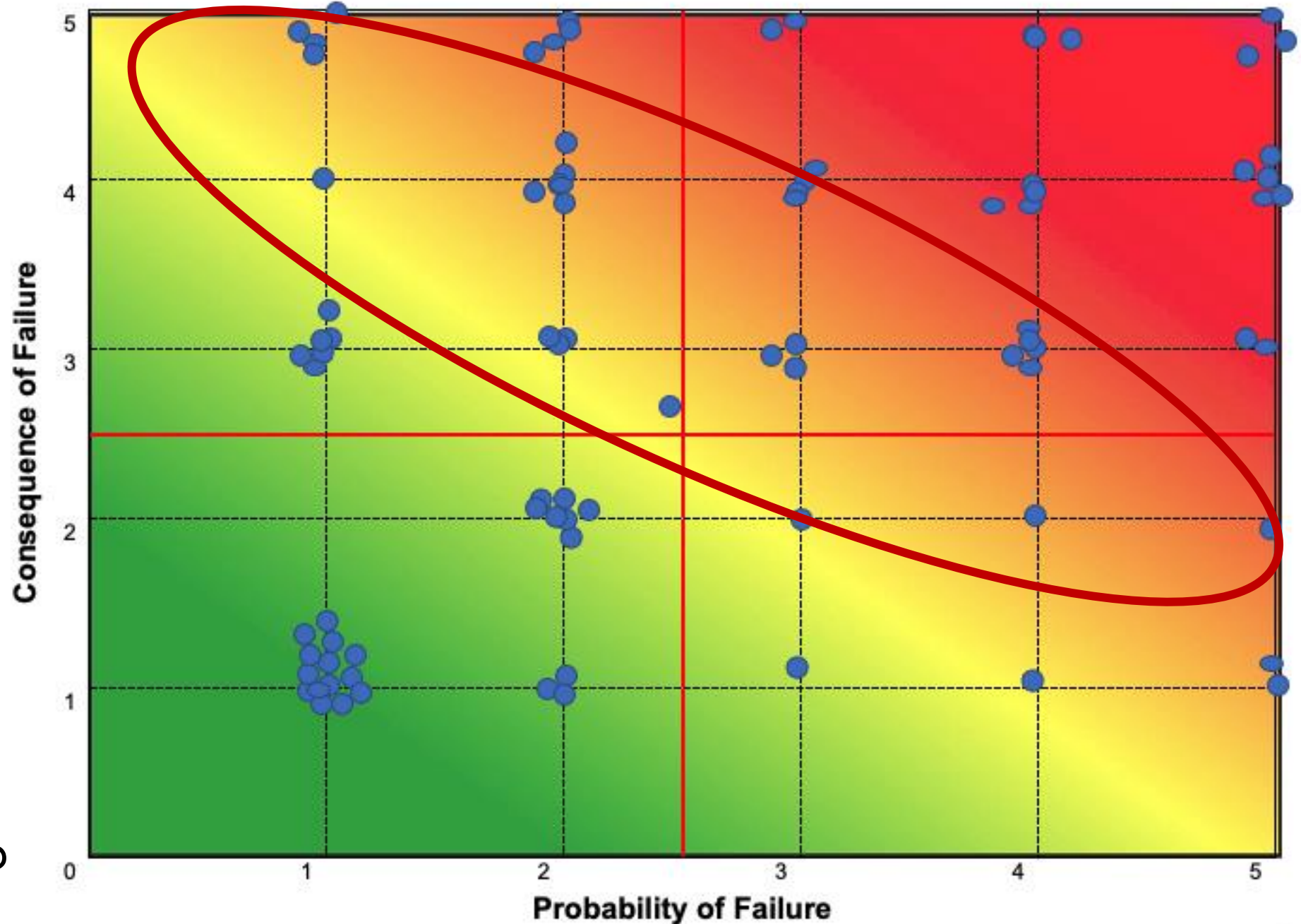
Which  
assets are  
these?



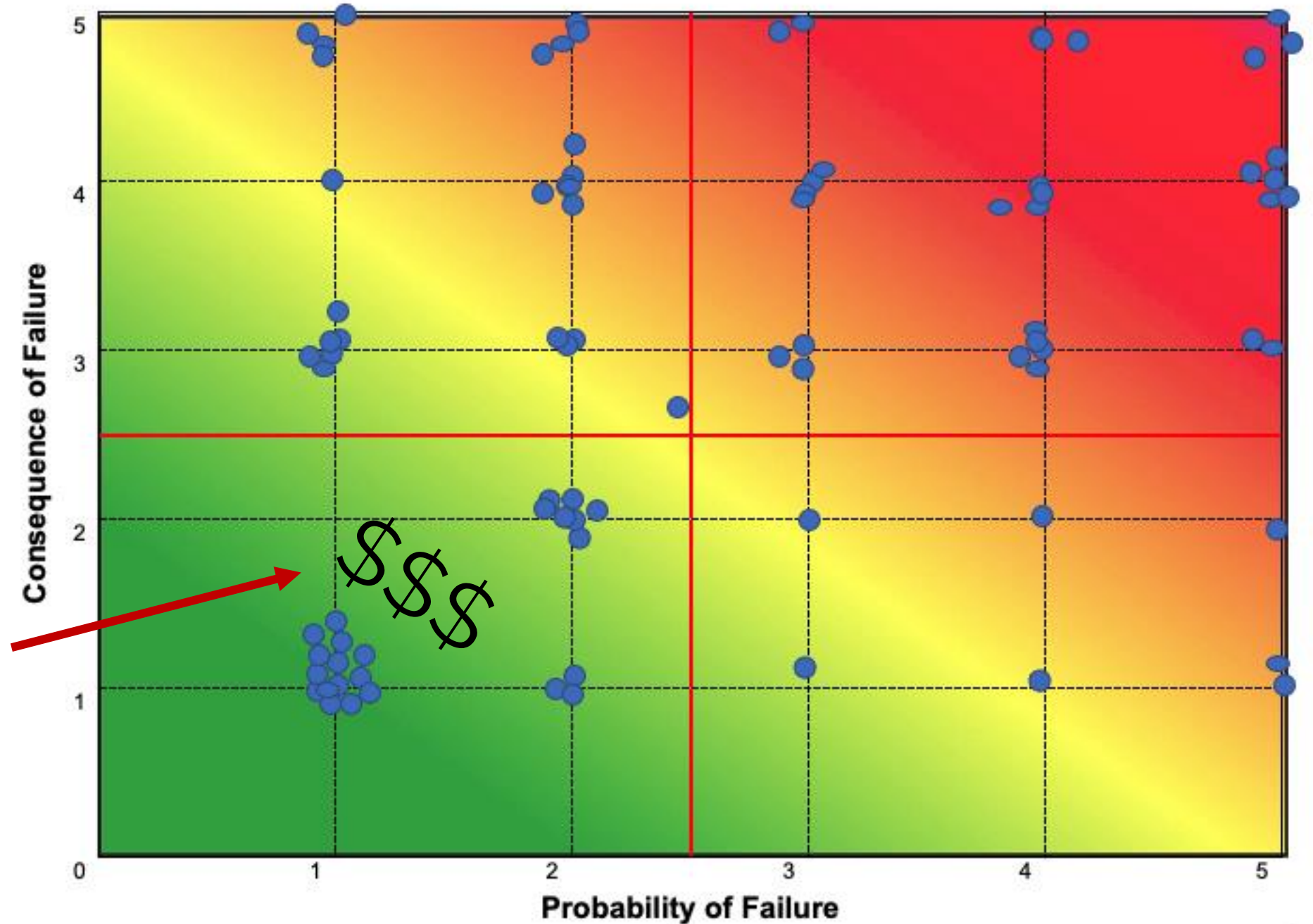
## Question:

Which assets should be monitored for potential failures?

How can they be monitored?  
How will the data be used?

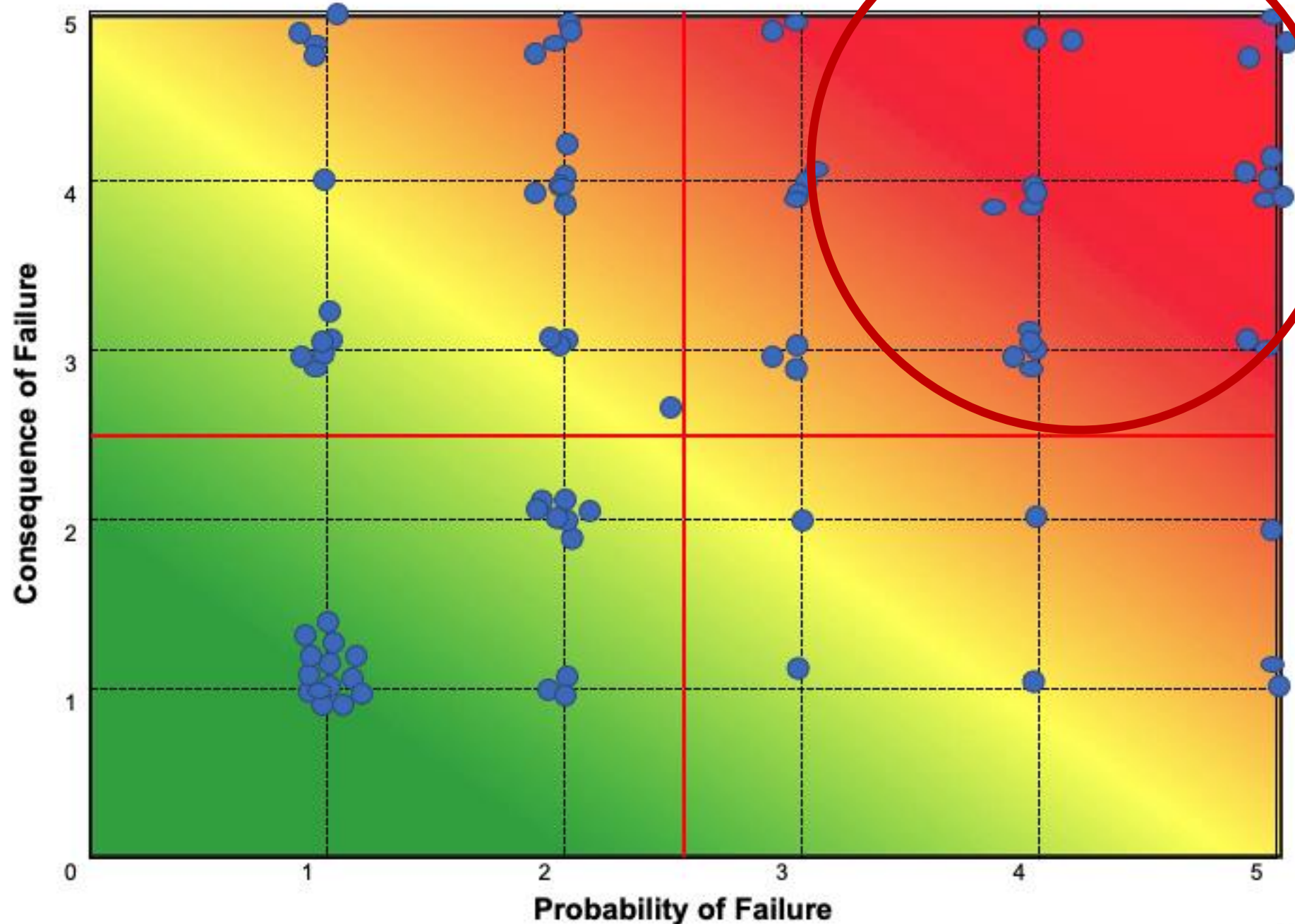


Question:  
Are you  
over-  
expending  
in this area?

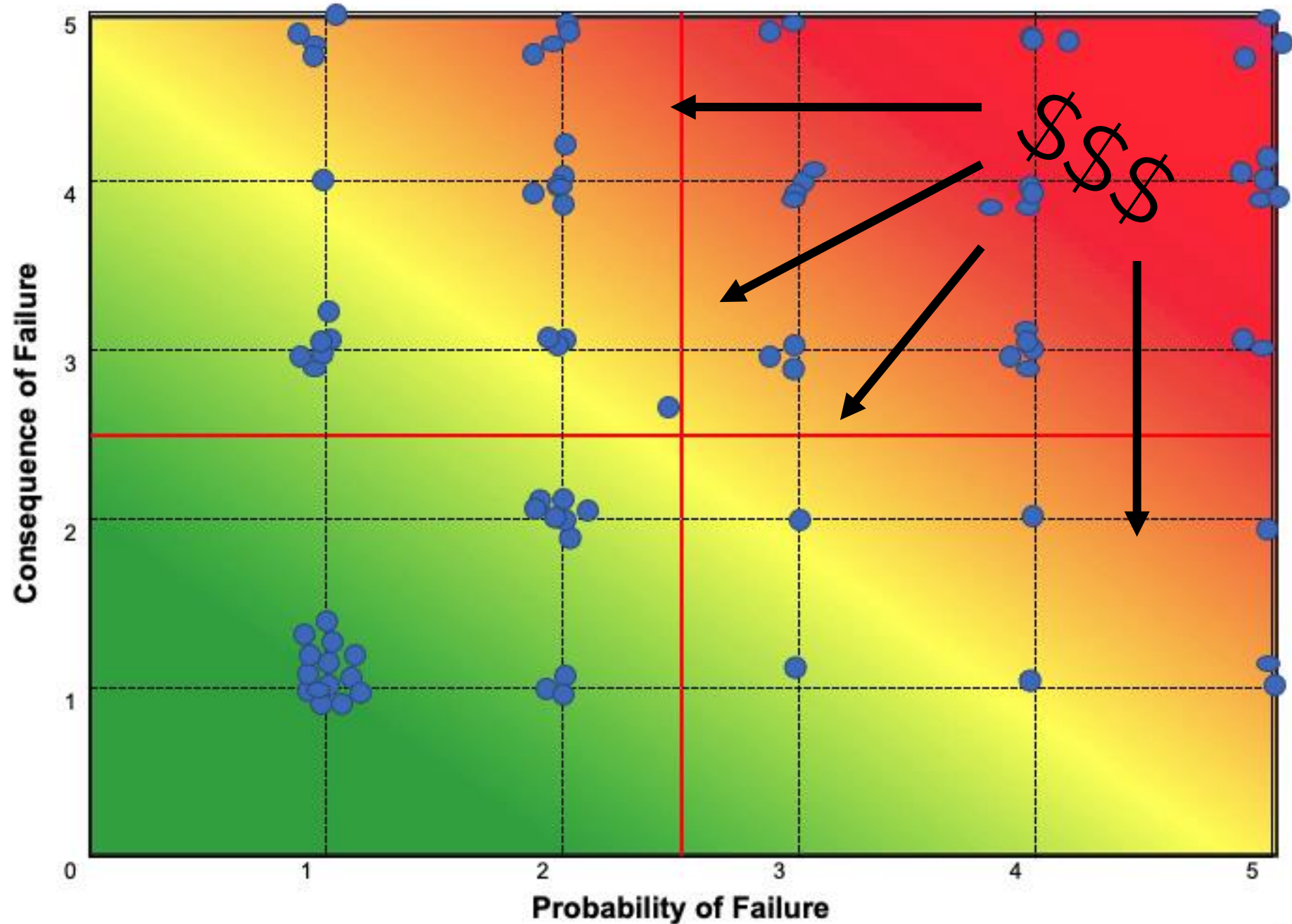




Connections:  
High risk  
assets that  
require  
replacement  
should be  
included on  
the CIP



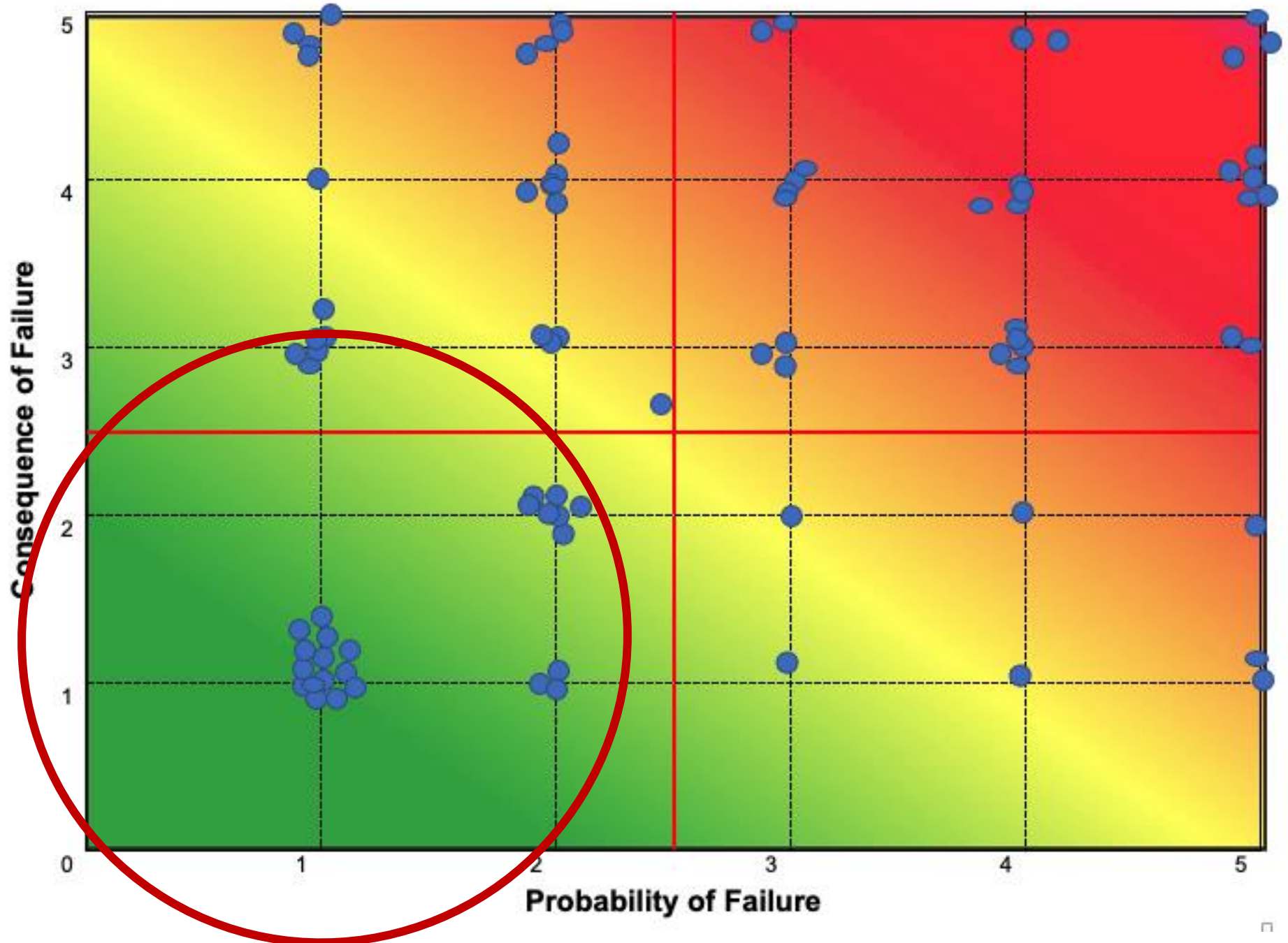
Connections:  
Use  
expenditures  
– CIP, O&M,  
Repair,  
Replacement,  
Rehabilitation  
– to drive  
down risk



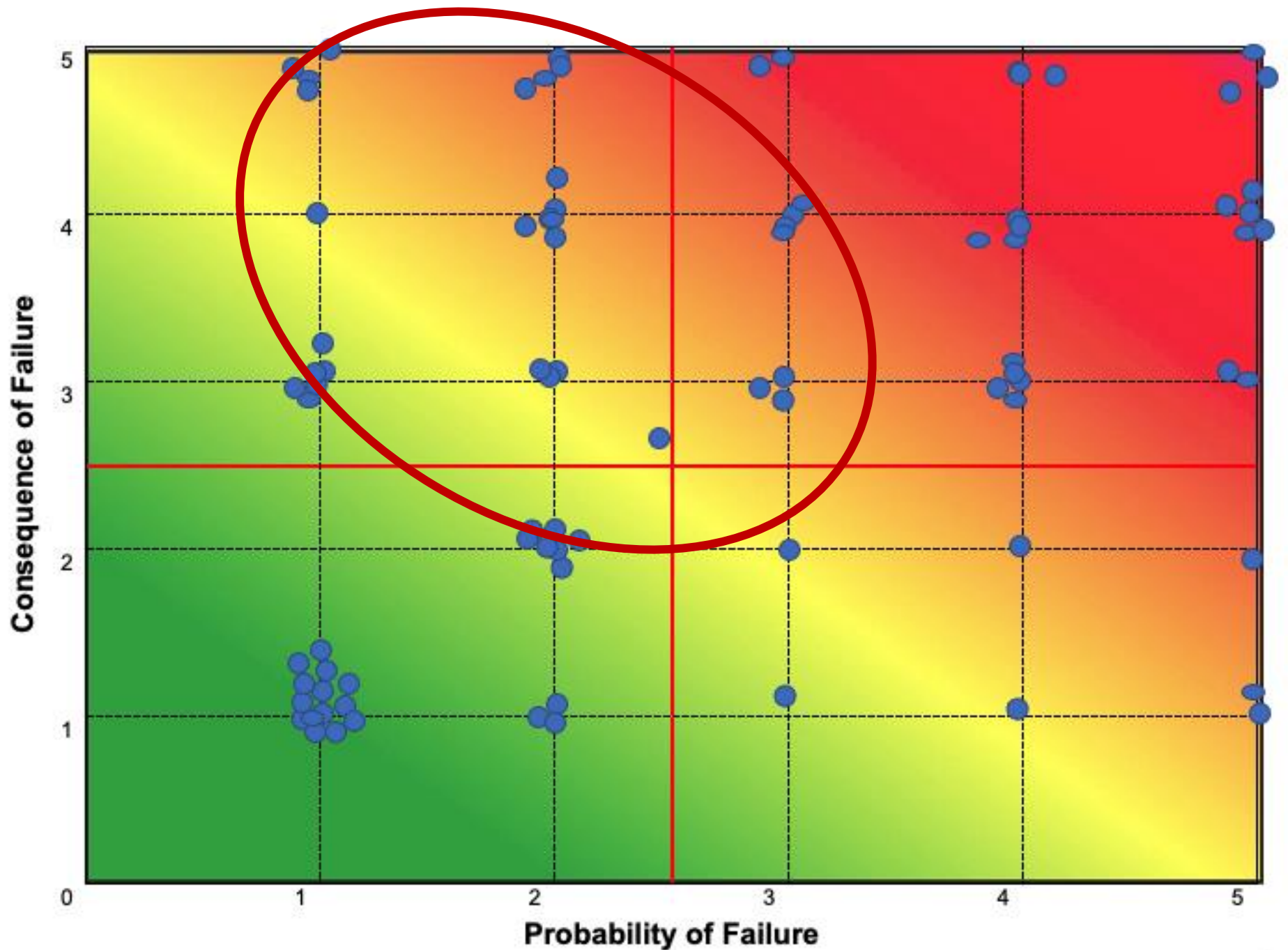


Connections:  
Connecting  
criticality to  
maintenance  
activities

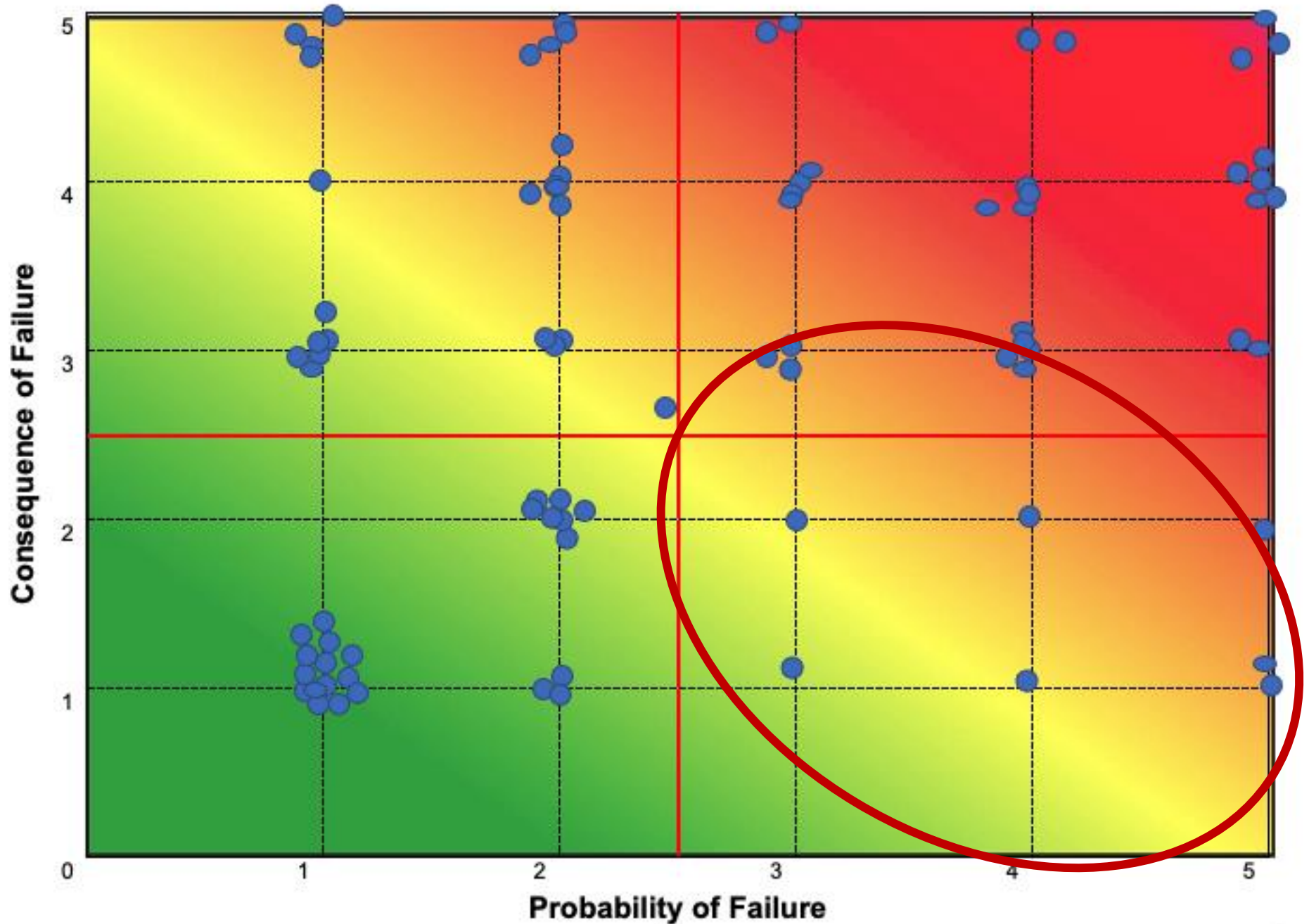
Routine  
maintenance  
not much  
else



Connections:  
Routine  
maintenance,  
Predictive  
maintenance,  
preventive  
maintenance,  
condition  
monitoring

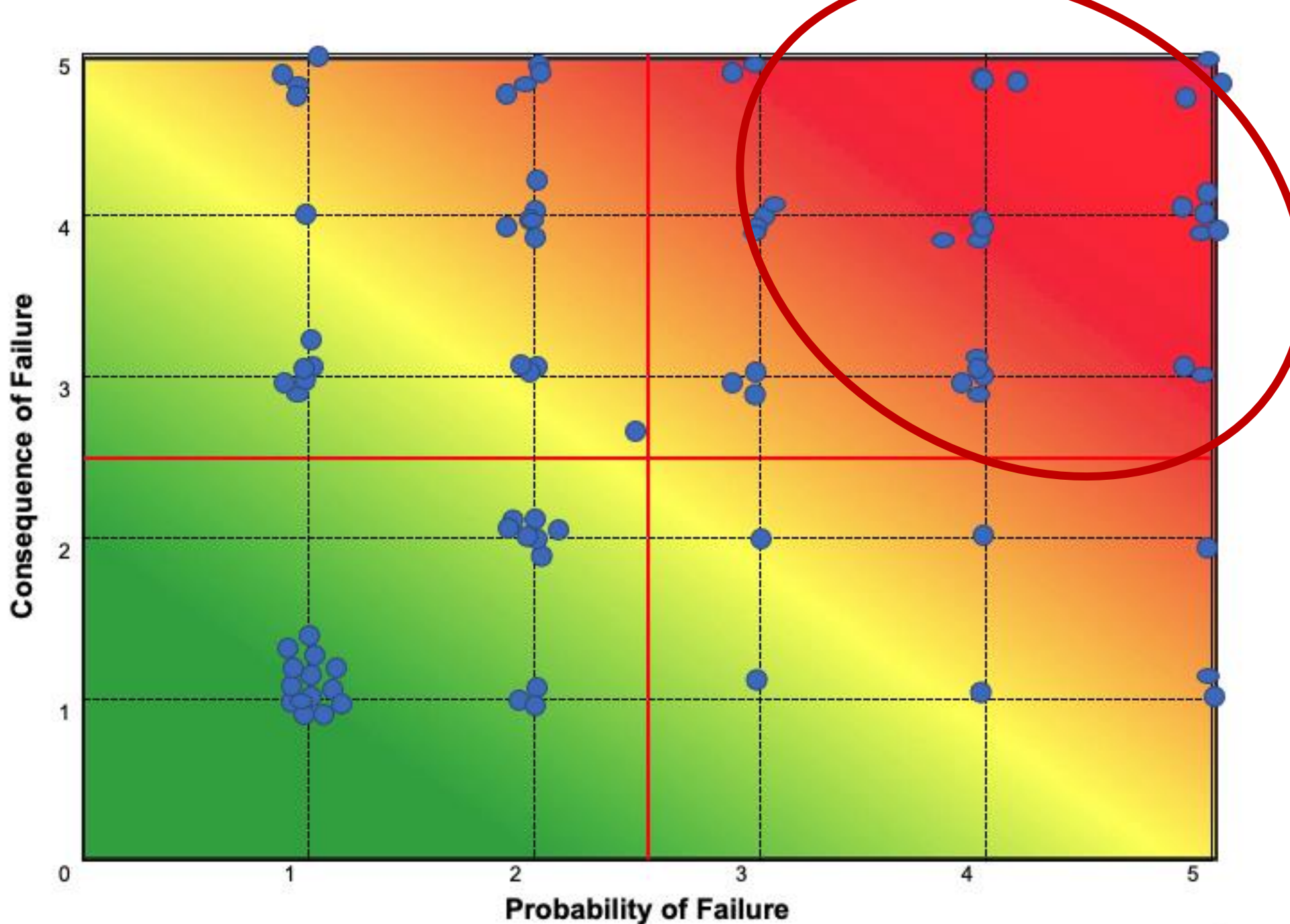


Connections:  
Routine  
maintenance,  
Predictive  
maintenance,  
preventive  
maintenance,  
when  
potential  
failure is  
noted



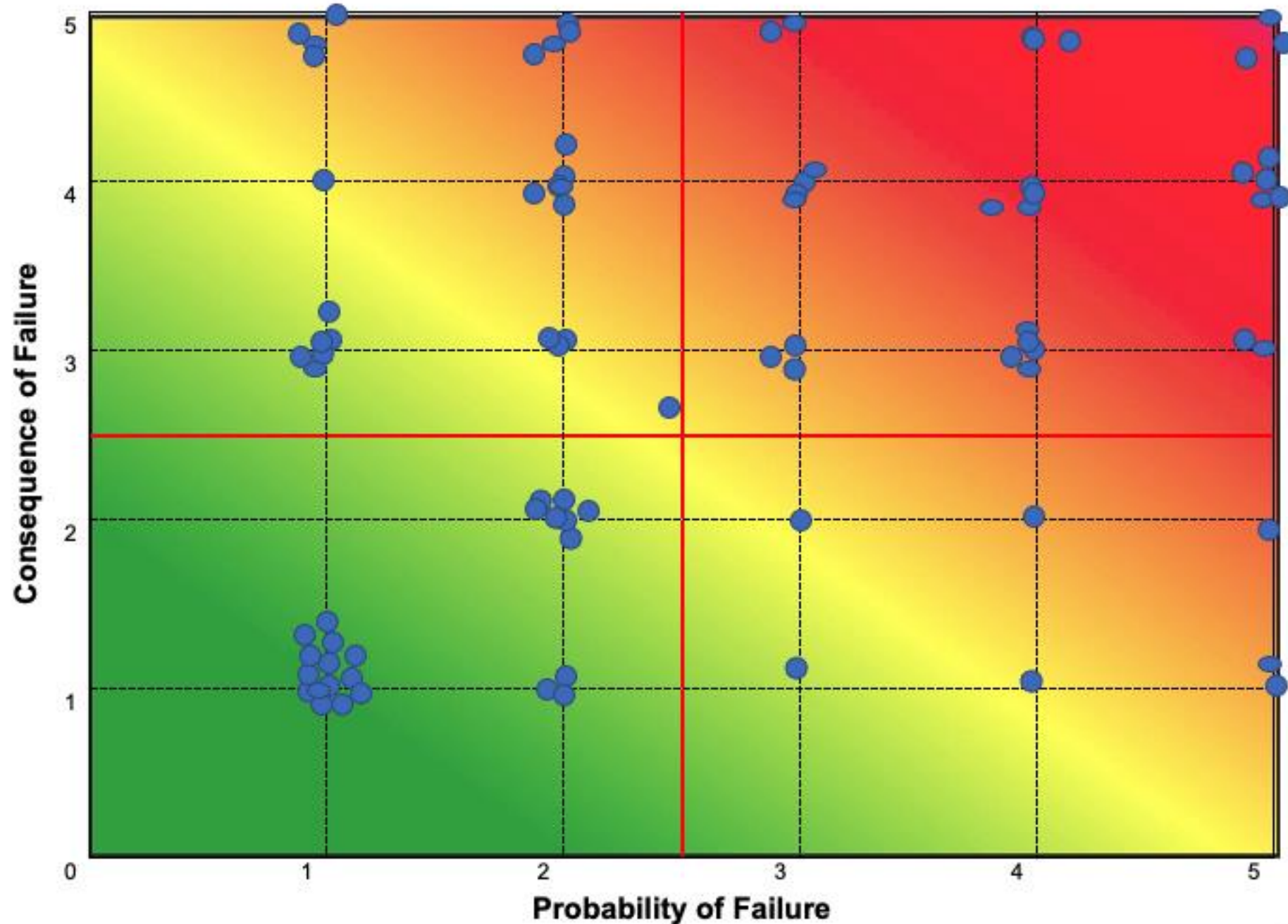


Connections:  
Routine  
maintenance,  
Predictive  
maintenance,  
preventive  
maintenance,  
condition  
monitoring,  
until  
replacement  
scheduled



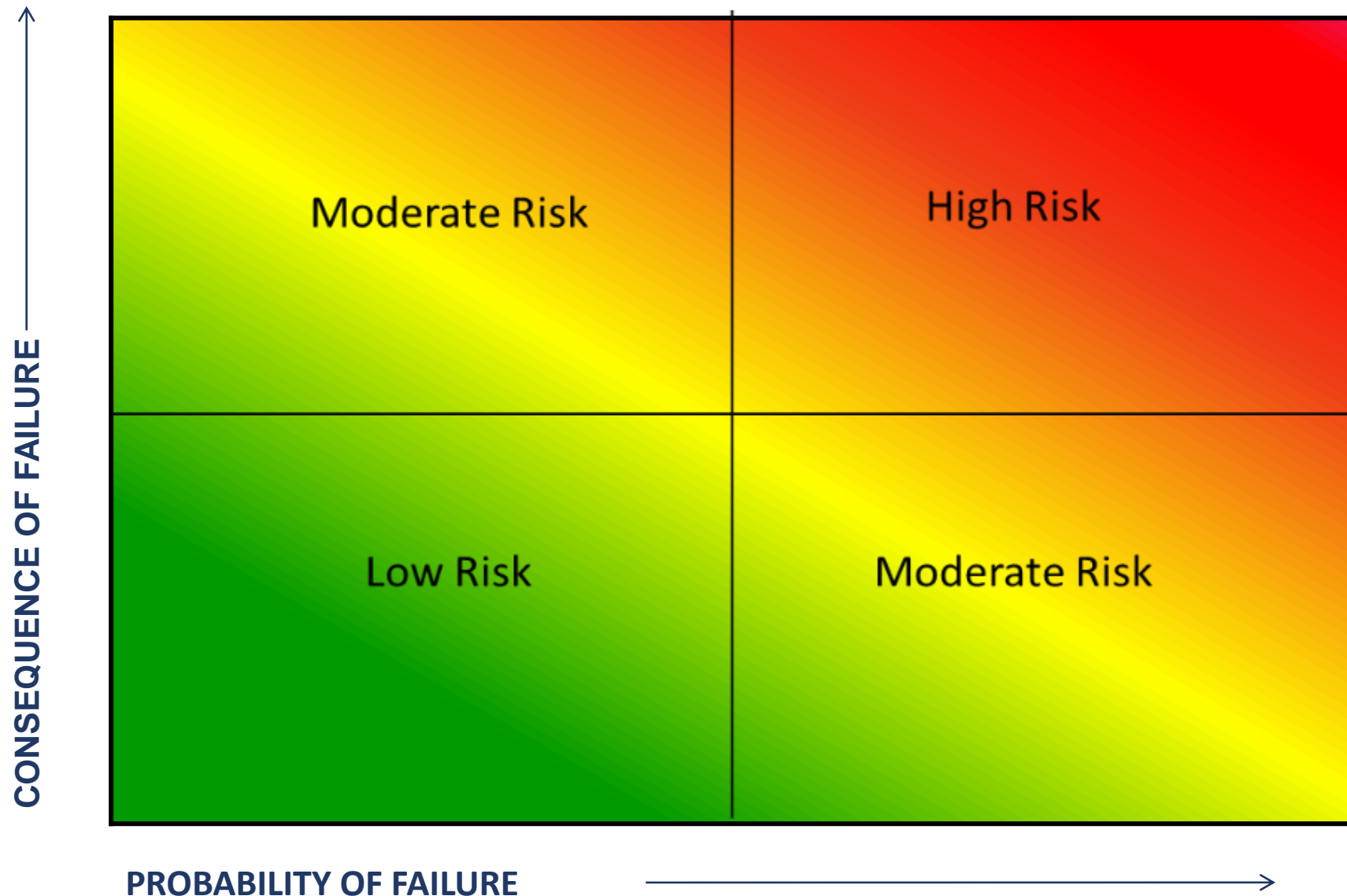
## Solving Issues:

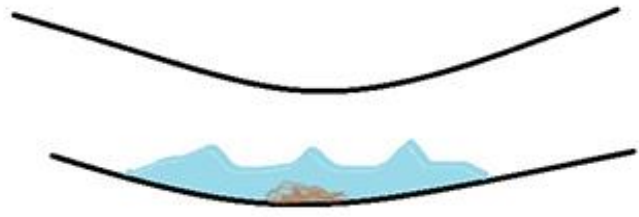
Where do the assets that you need to address the goals/mission statement fall on the criticality chart?





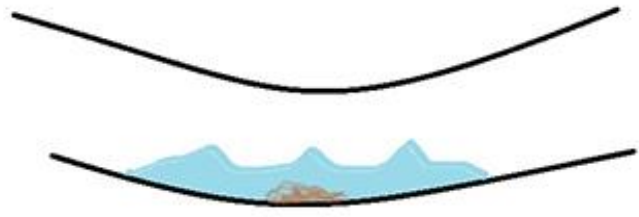
**Solving Issues:**  
The assets' placement on the chart drive potential actions to help with asset actions





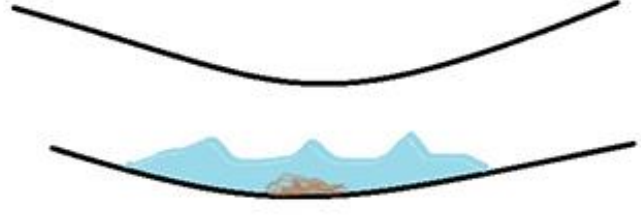
What might be the POF score (1 – 5 scale) for the pipe with the sag?

POF = 4 (has defects but will still convey sewage)

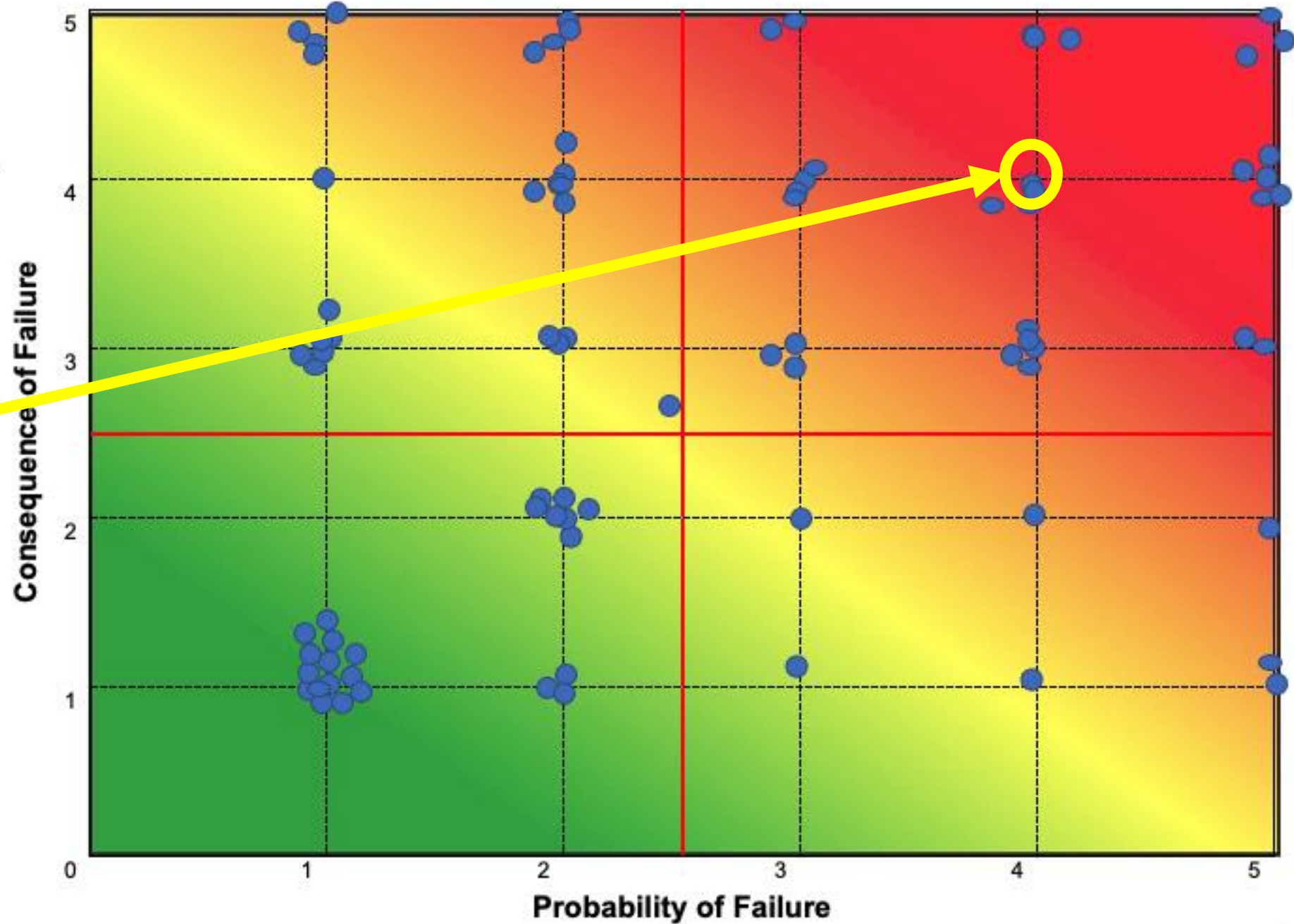


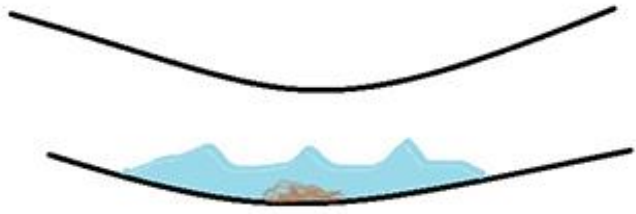
What might be the COF score (1 – 5 scale) for the pipe with the sag?

COF = 4 (potential financial, env. and social impacts; pipe can overflow, public is inconvenienced, violations may occur)



Pipe location  
on the chart





# How can that placement help?

The pipe is in the high risk category. Assets in this category should be on the CIP. While it's not the highest risk asset, it has the cost/benefit ratio to warrant it's placement pretty high on the list.



# Remember these goals?

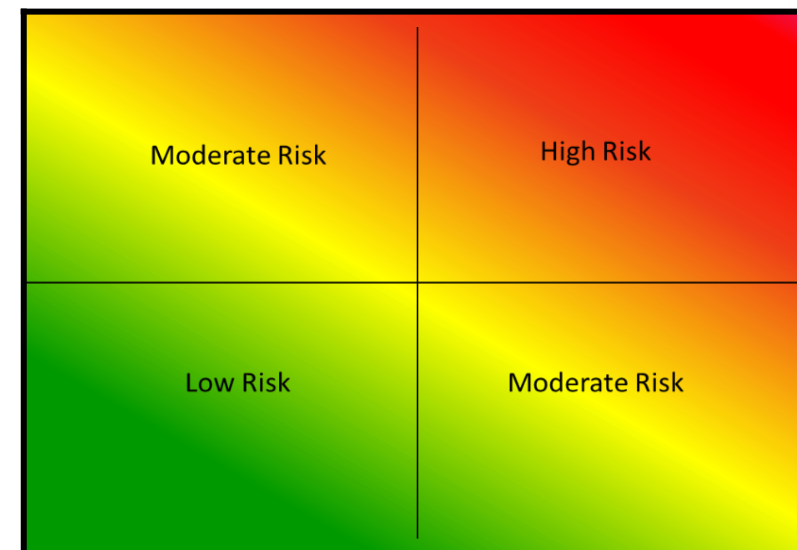
**For Water:** All non-emergency breaks in mains will be fixed within 1 day of the line location process being completed.

**All break** repairs will hold at least 5 years after the repair has been made. If the repair fails sooner than 5 years, an investigation will be undertaken to determine the cause of the early failure.

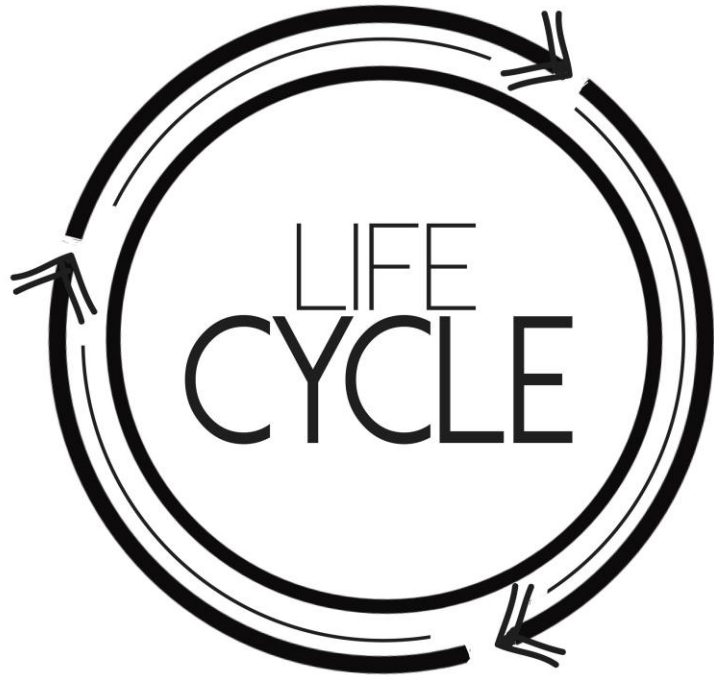
**For Wastewater:** All sewer collapses will be addressed in an emergency fashion (e.g., bypass pumping) within 8 hours of discovery. The sewer will be repaired within 3 months of discovery if it does not require a full pipe replacement (more than 1000 feet) and within 1 year if a full pipe replacement is required.

What would it mean if  
a water or ww pipe  
were in each of these  
categories?

Group Discussion





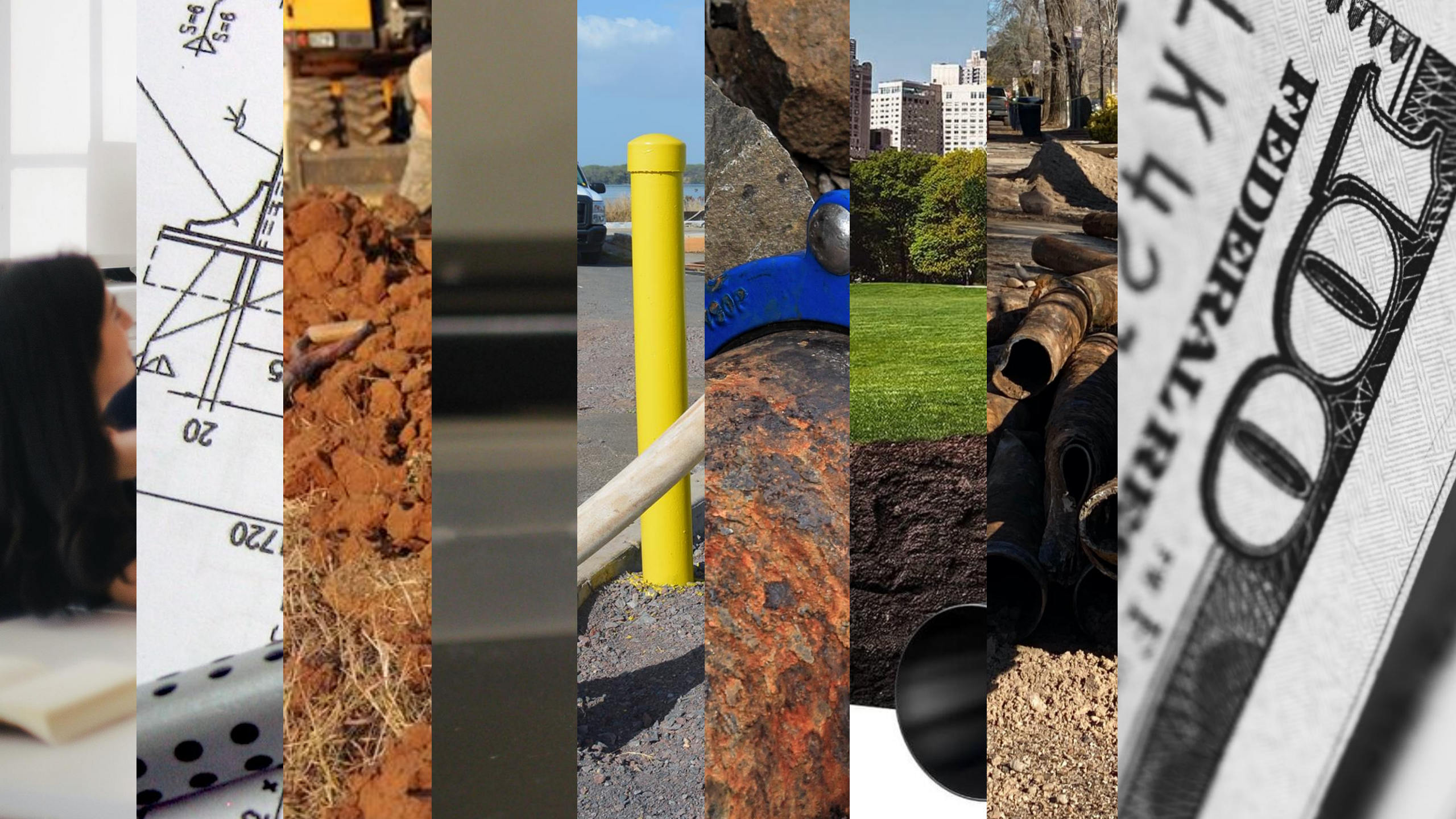


## Part 8: Life Cycle Costing: Overview

---

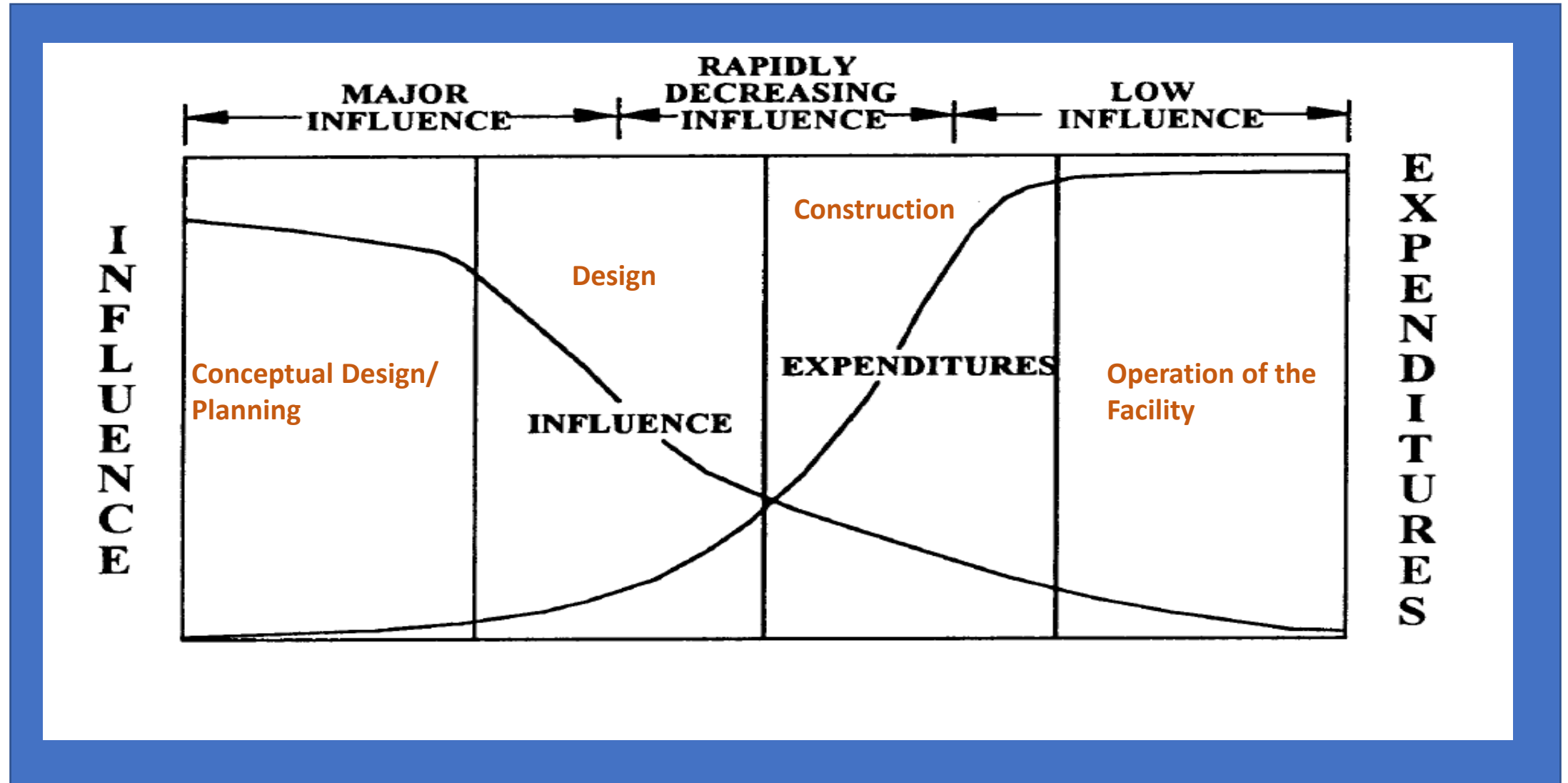
What is an asset's **life cycle**?





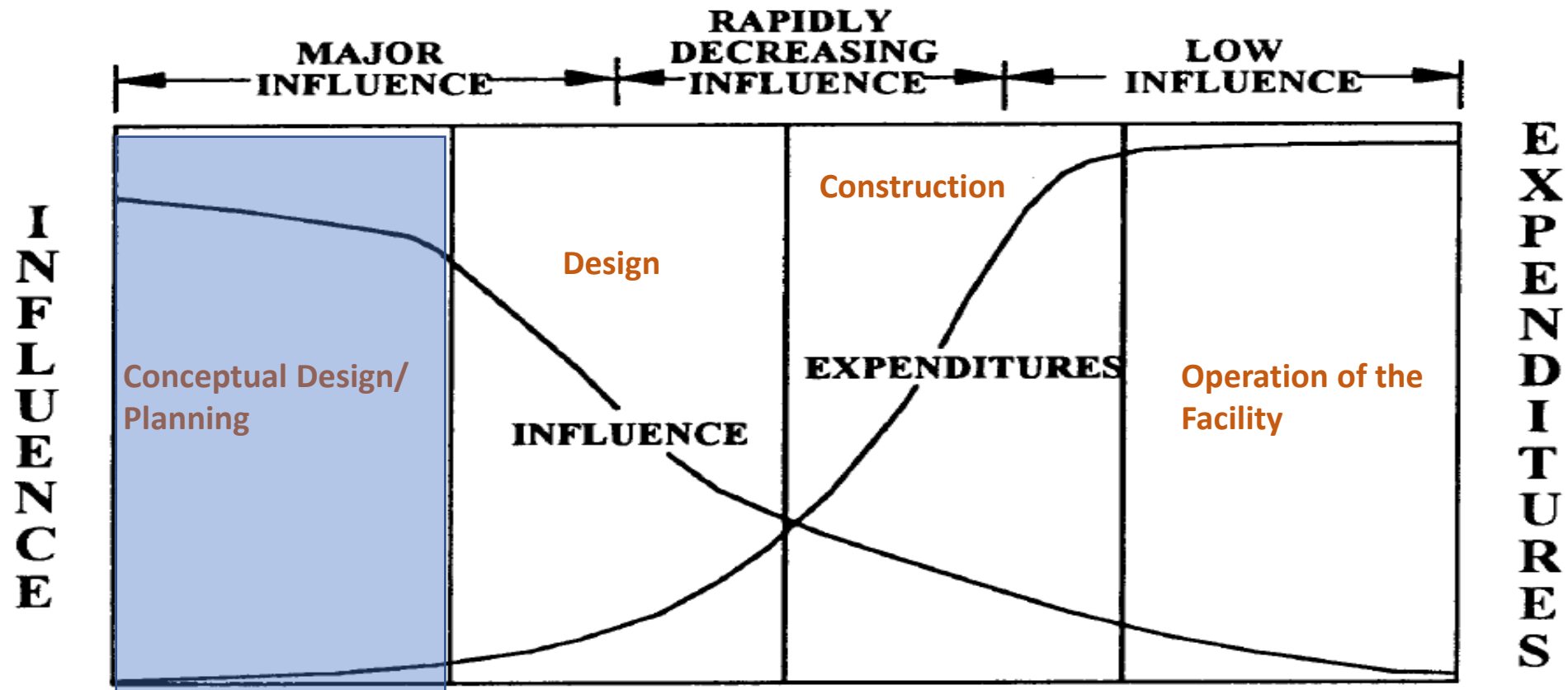


# Asset's Life Starts During the Planning Phase



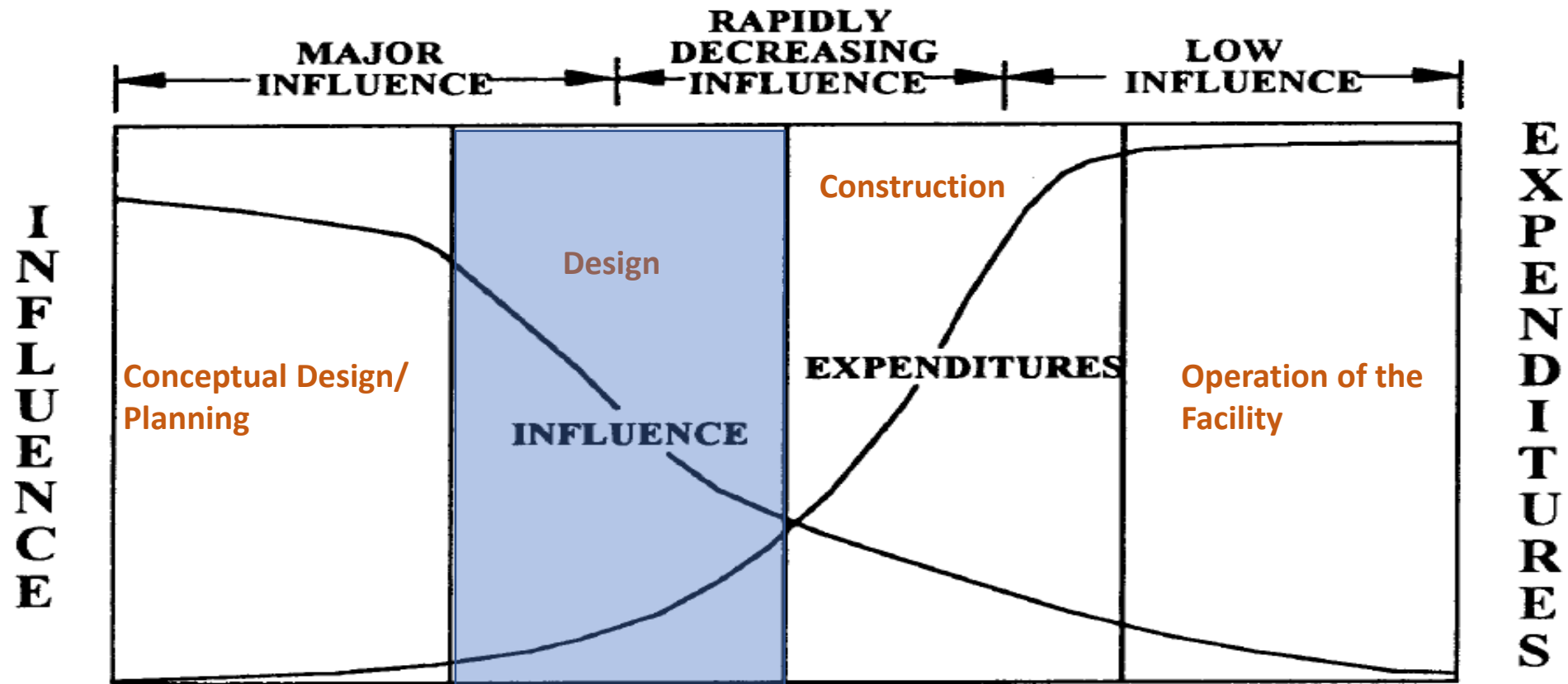
Source: Gibson and Hamilton (1994) Analysis of pre-project planning effort and success variables for capital facility projects. Construction Industry Institute Source Document 105.

# Initial Planning: Most Influence, Least Cost



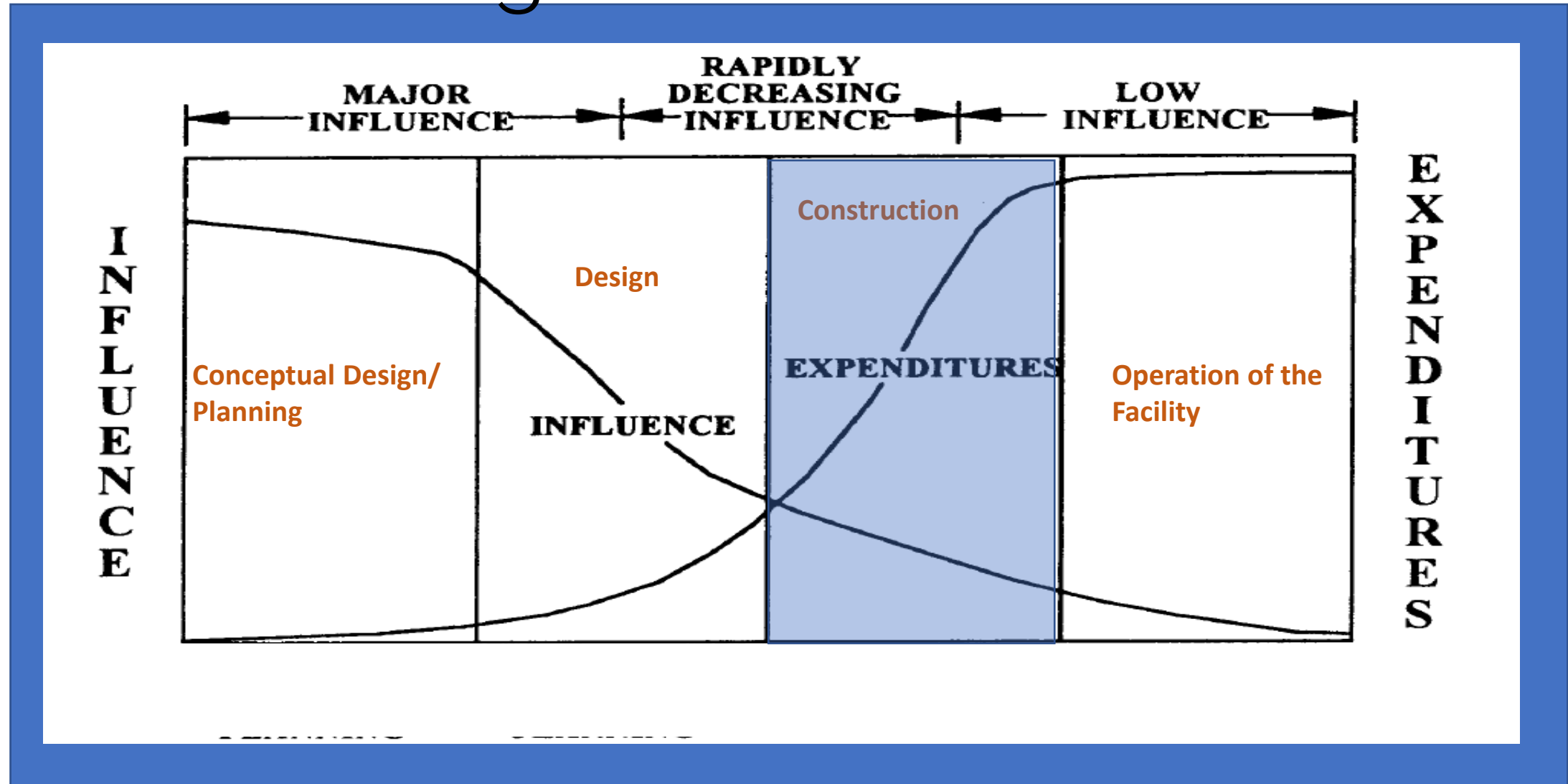
Source: Gibson and Hamilton (1994) Analysis of pre-project planning effort and success variables for capital facility projects. Construction Industry Institute Source Document 105.

# Detailed Design: Fix Concerns Now



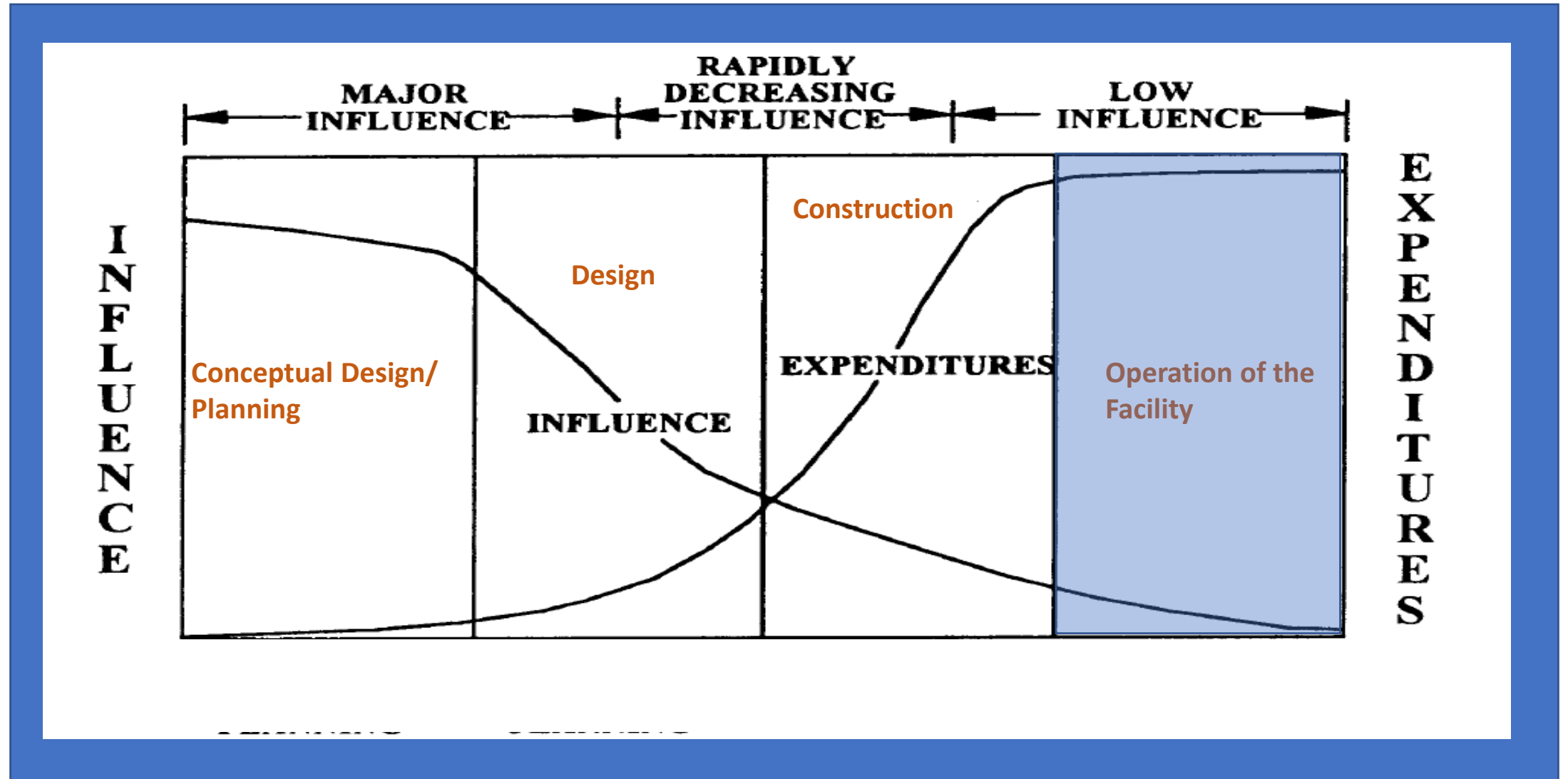
Source: Gibson and Hamilton (1994) Analysis of pre-project planning effort and success variables for capital facility projects. Construction Industry Institute Source Document 105.

# Construction: Costly To Make Changes, But Still Worth Doing




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.





Interventions are possible at each stage in the asset's life cycle to try to improve its performance and extend the asset's life

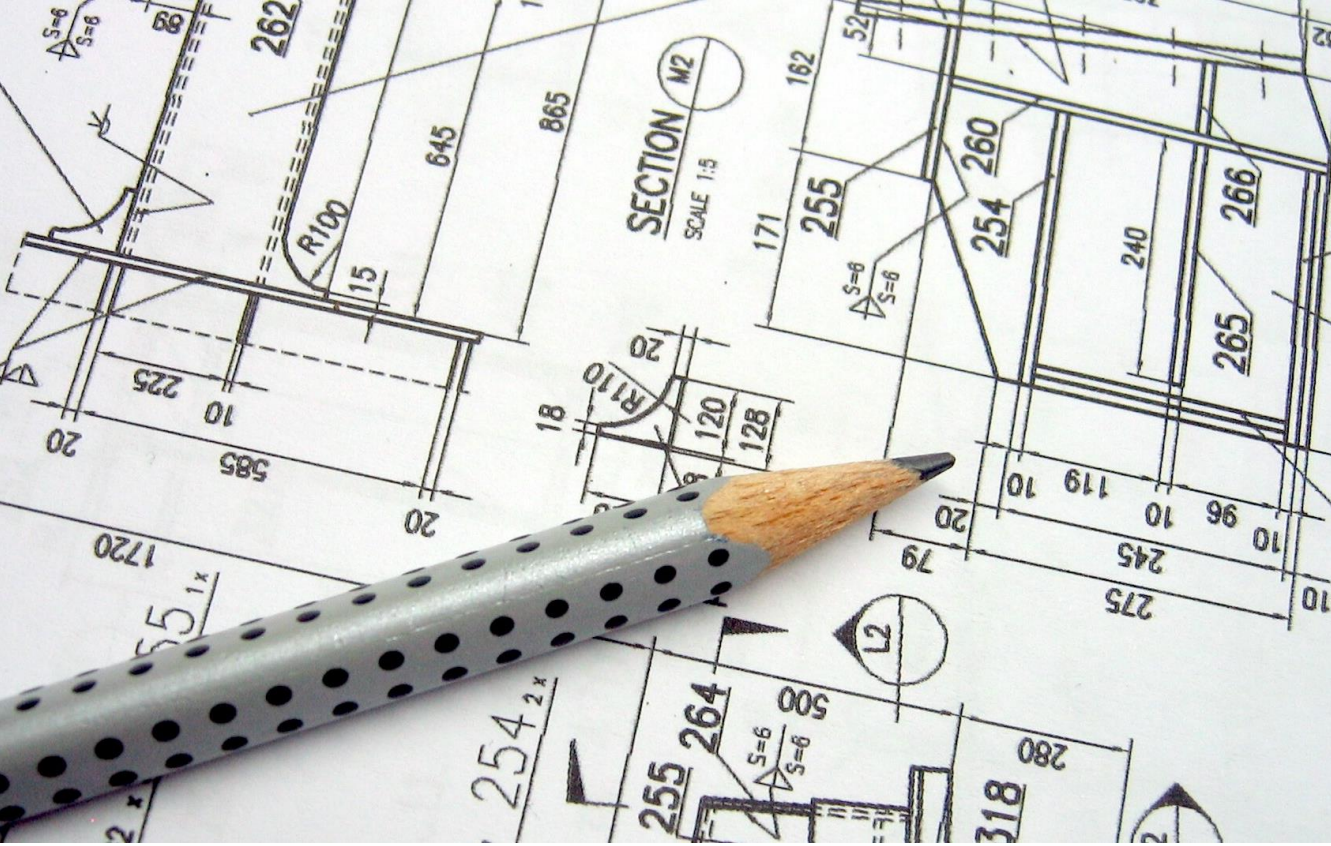


# Planning Interventions

Types of interventions:

- Overall need for the asset/project
- Benefits of the project; risk of not doing it
- Is there a non-asset solution
- Alternatives evaluation
- Location – General location of assets





# Design Interventions

Types of interventions:

- Operation and maintenance considerations of the chosen option
- Materials of construction
- Manufacturer (may be limited ability to influence due to procurement)
- Match to existing system
- Design out known points of failure
- Location – Specific location of assets

# Construction Interventions



Types of interventions:

- Specifying construction techniques to improve asset performance or asset life

- Addressing construction concerns as they occur

- Fixing observed problems/incorrect design

- Pictures of assets for asset inventory

- Gathering asset attribute information for inventory

- Location – Documenting exact location of assets





Operation and  
maintenance (O&M)  
Interventions



An aerial, high-angle photograph of a busy city intersection. The image shows multiple lanes of traffic with white dashed and solid line markings. Several cars are visible, including a red sedan in the lower center, a white SUV, and a white pickup truck. Pedestrians are walking on the sidewalks, and a group of cyclists is riding across the intersection. The scene is overlaid with a semi-transparent dark blue filter, and large white text is centered over the middle of the image.

O&M interventions are the **intersection** of asset management and managing assets.



The background of the slide features a pattern of overlapping hexagons in various colors including red, green, blue, purple, and yellow. The hexagons are outlined and have a slight 3D effect with shadows.

Asset Management is Thinking  
About the Collective: What is  
Strategic for All Assets

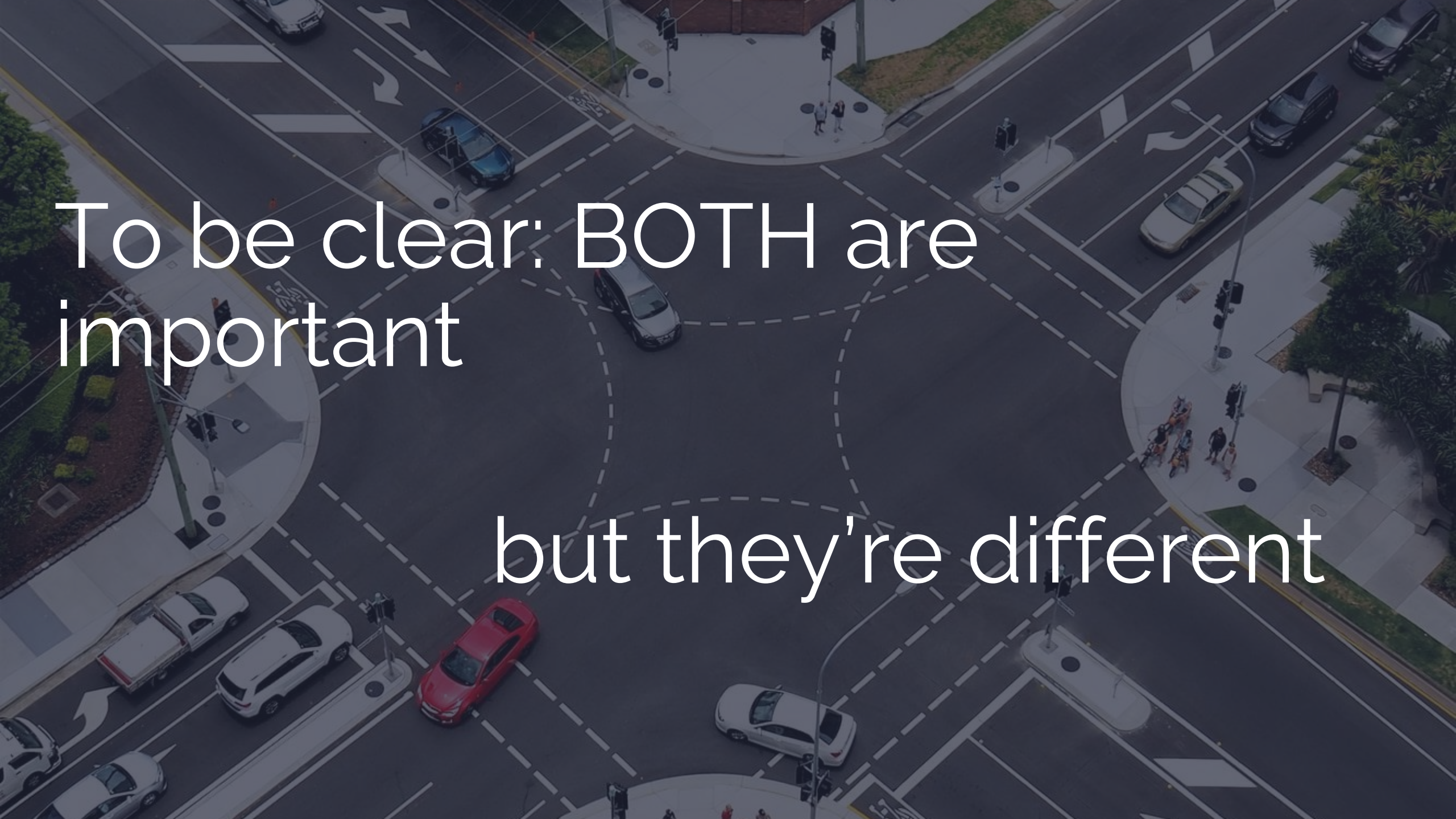


Managing Assets is Thinking  
About Individual Assets: What is  
Strategic for an Individual Asset

# Asset Management or Managing Assets?

Activity	Asset Managing/Managing Assets
Development of an Operation and Maintenance Plan	Asset Management
Preventative work order to exercise a valve	Managing Assets
Work order system to track proactive vs. corrective maintenance	Asset Management
Timeframe to lubricate all pumps in the system based on a study of lubricant and pump performance	Asset Management
Repair on a piece of pipe	Managing Assets
A study of break repairs on all pipes to assess the effectiveness in extending pipe life	Asset Management
Replacement of a inefficient pump with a more efficient pump	Managing Assets





To be clear: BOTH are  
important

but they're different



# Types of Operation & Maintenance interventions

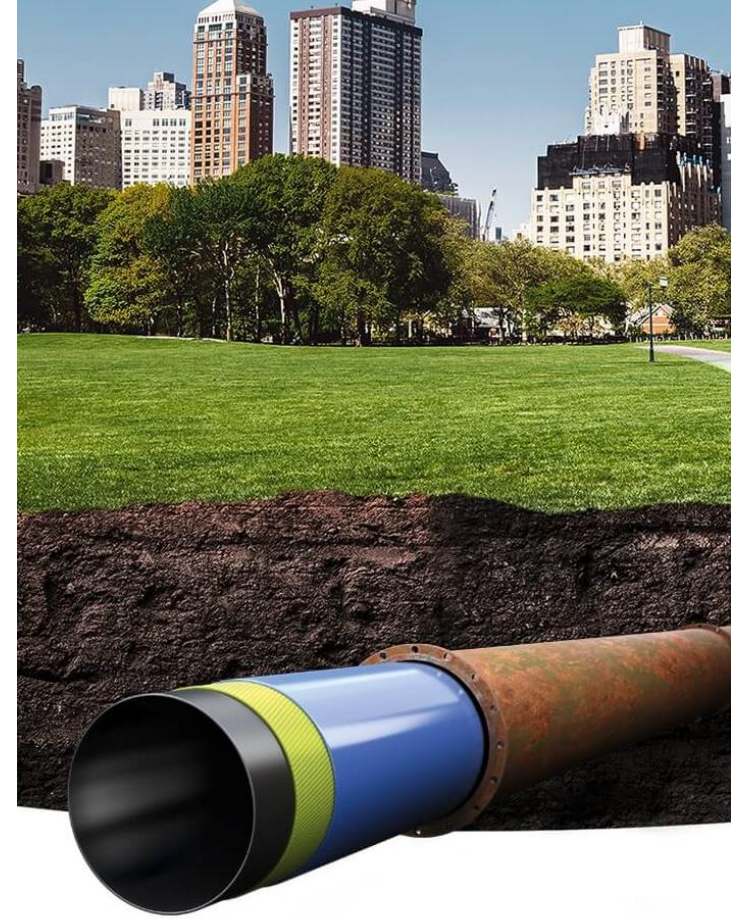


How the system is operated  
How an asset is operated  
Routine maintenance  
Preventive maintenance  
Predictive maintenance  
Changes to redundancy  
Development of an O&M plan  
Documentation in a work order system



## Types of interventions:

- Specifying repair techniques that are most effective
- Conducting a study of potential repair, rehabilitation, and replacement options, including costs and ability to increase useful life
- Corrective maintenance
- Selection of assets for replacement
- Capital improvement plan (short and long-term)
- Documenting all repairs, rehabilitation, and replacement in a CMMS or AM System



## Repair, Rehabilitation & Replacement Interventions



# Disposal/Abandon in place Interventions

Types of interventions:

- Proper abandon in place techniques

- Are any parts salvageable for \$

- Proper disposal (not the yard of the treatment facility)

- Tracking of assets that have been abandoned in place in inventory and on maps





Let's think about

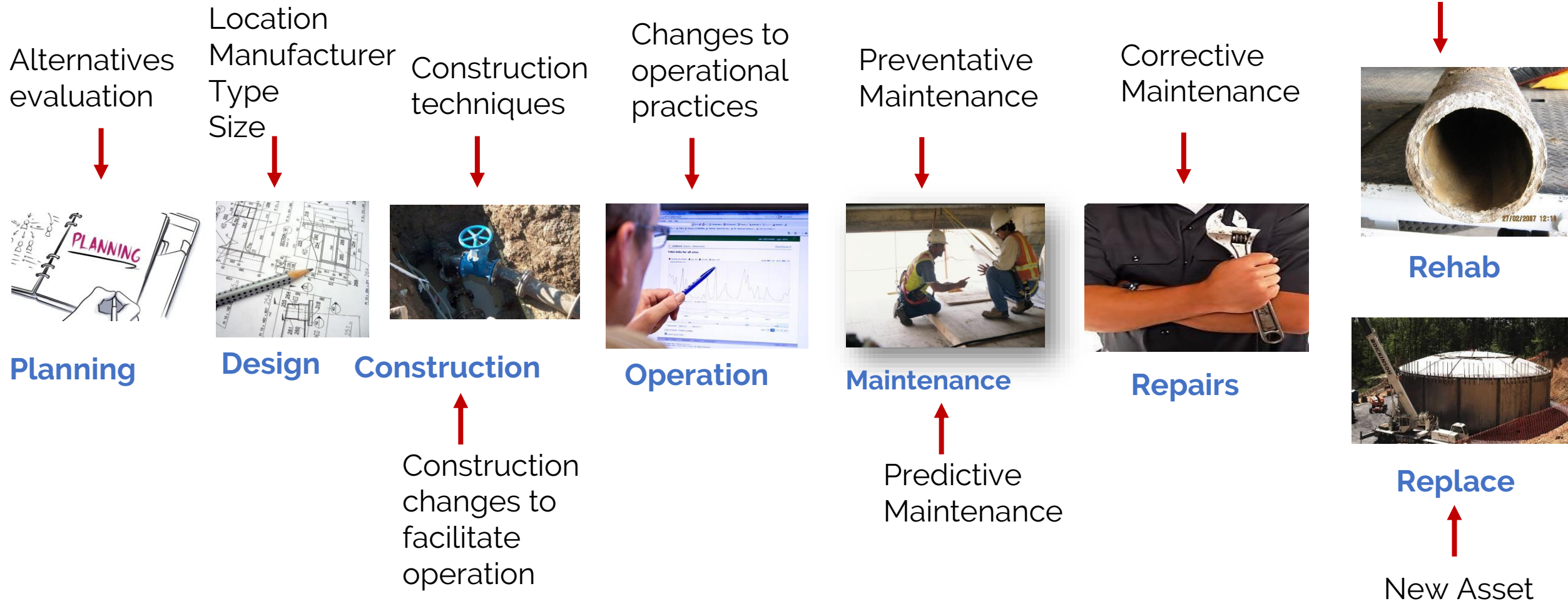
Questions

Connections

Solving

Related to Life Cycle Costing

# During the whole life cycle of an asset, there are many possible interventions at many points during the asset's life



During the whole life cycle of an asset, there are many possible interventions at many points during the asset's life

Almost new asset

**Question:** We don't have enough money and time to do every intervention on every asset

How do we decide which to do?

Alternative evaluation



Planning

changes to facilitate operation

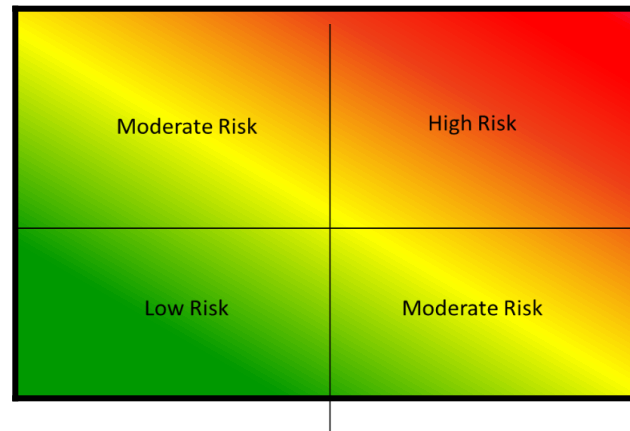
Maintenance

New Asset



**Connections:** The other 4 parts of asset management play a role in determining what interventions to do at each stage

**LoS**  
Level of Service





# Level of Service

Level of Service goals help set priorities and determine which assets warrant higher levels of intervention.

Fewer interventions on assets that don't impact level of service goals as much.



**Level of Service**

# Condition Assessment: Where maintenance, repair, and replace interventions are necessary

1

No visible signs of rust or decay; No visible signs of damage; pant in good condition; all caps in place; all components operational; does not require maintenance interventions (only routine maintenance)

2

No visible signs of rust or decay; No visible signs of damage; pant in good condition; all caps in place; most or all components operational; requires minimal maintenance interventions to improve service

3

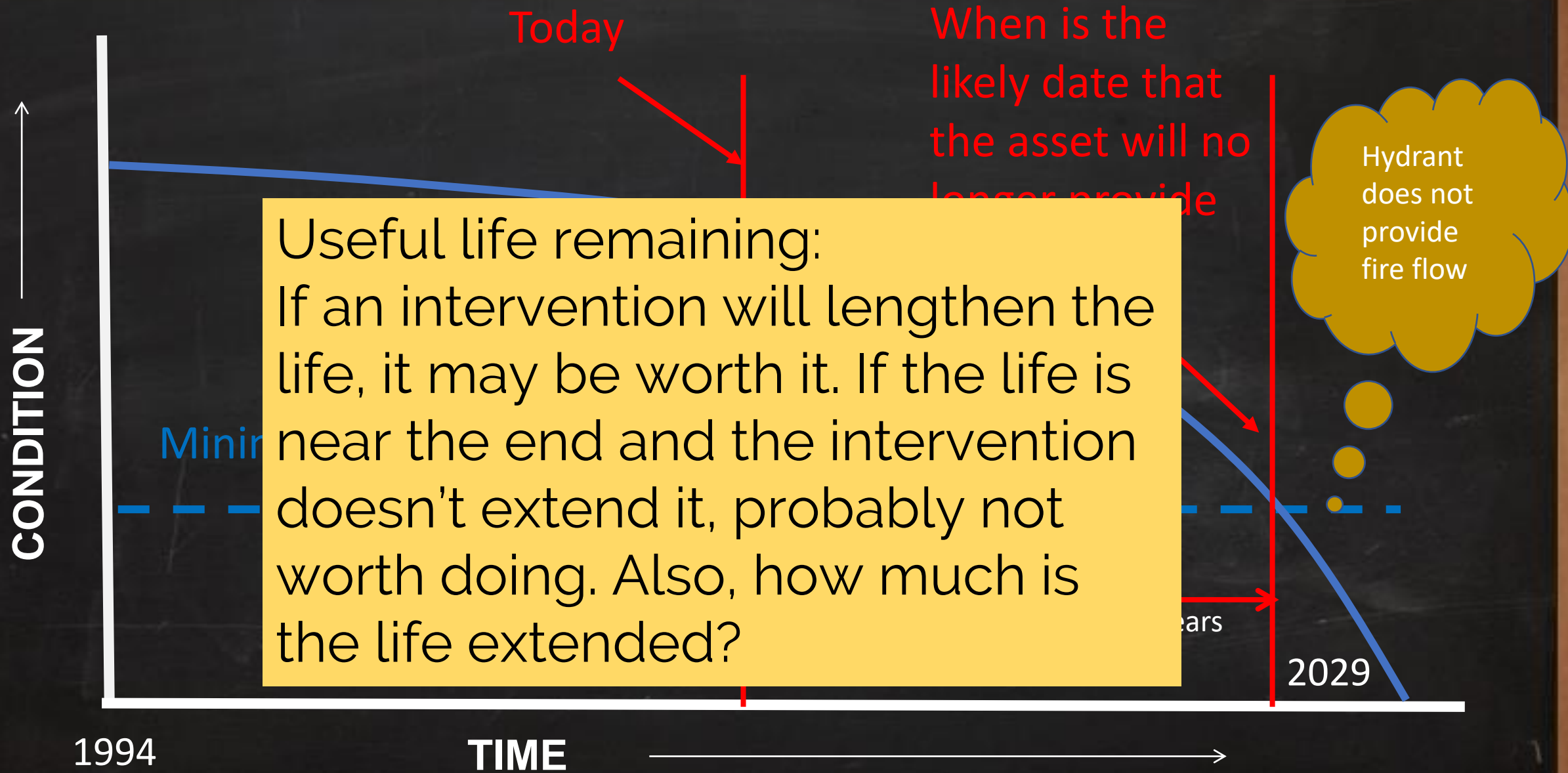
Some visible signs of rust or decay; Possible visible signs of damage; pant in decent condition; all caps in place; some components non-operational; requires maintenance interventions to improve operations

4

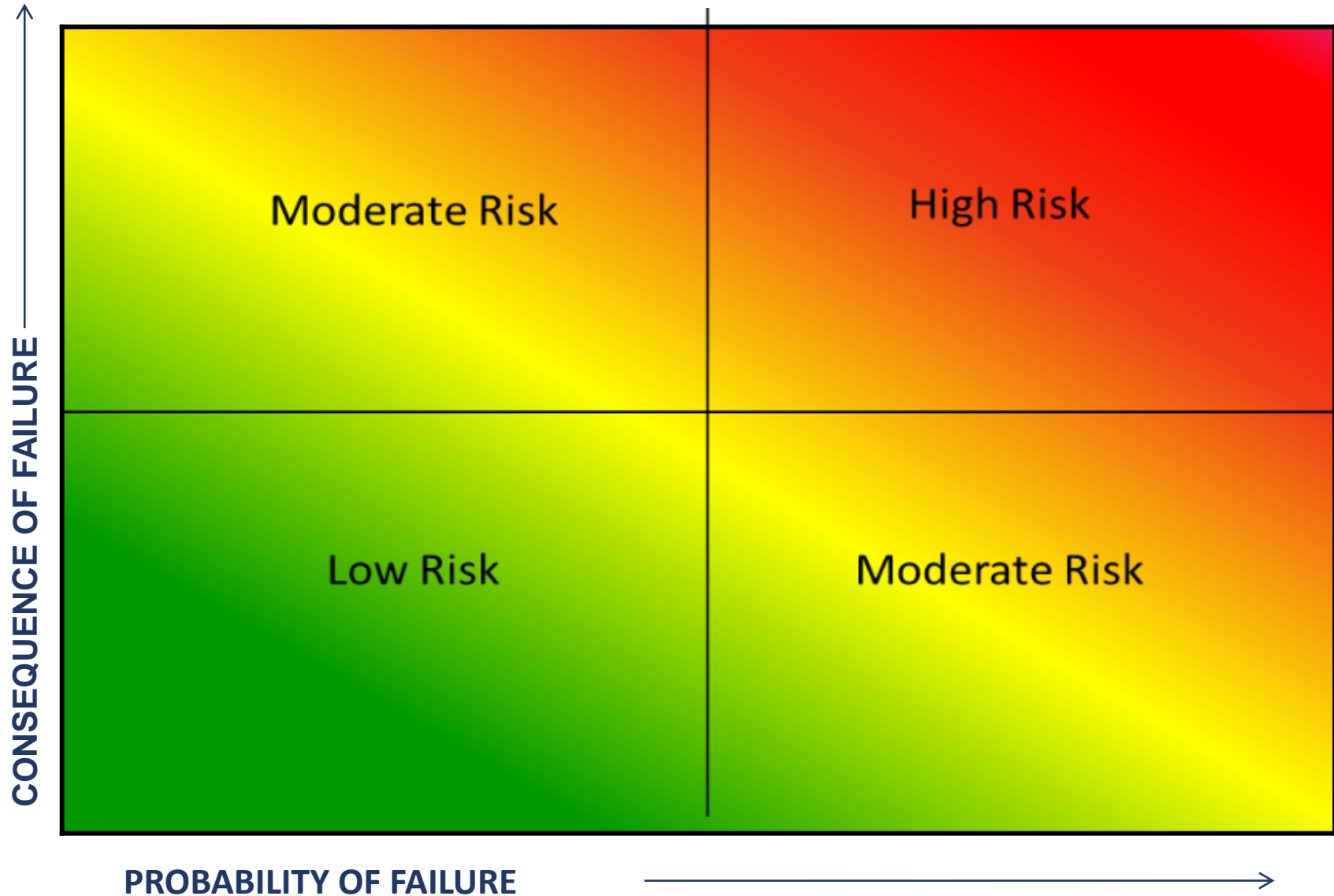
Visible signs of rust or decay; visible signs of damage; pant in poor condition; some caps may be missing; some components non-operational; requires significant maintenance or renewal

5

Visible signs of rust or decay; visible signs of damage; pant in poor condition; some caps may be missing; some components non-operational; requires replacement of some or all of the asset



# Criticality



More interventions on high criticality assets

Fewer interventions on low criticality assets



# Funding

We can only do interventions to the extent we have funding

In the future, we can make a case for additional funding



Solving Problems: A system having to make an infrastructure decision without much data





# The Situation



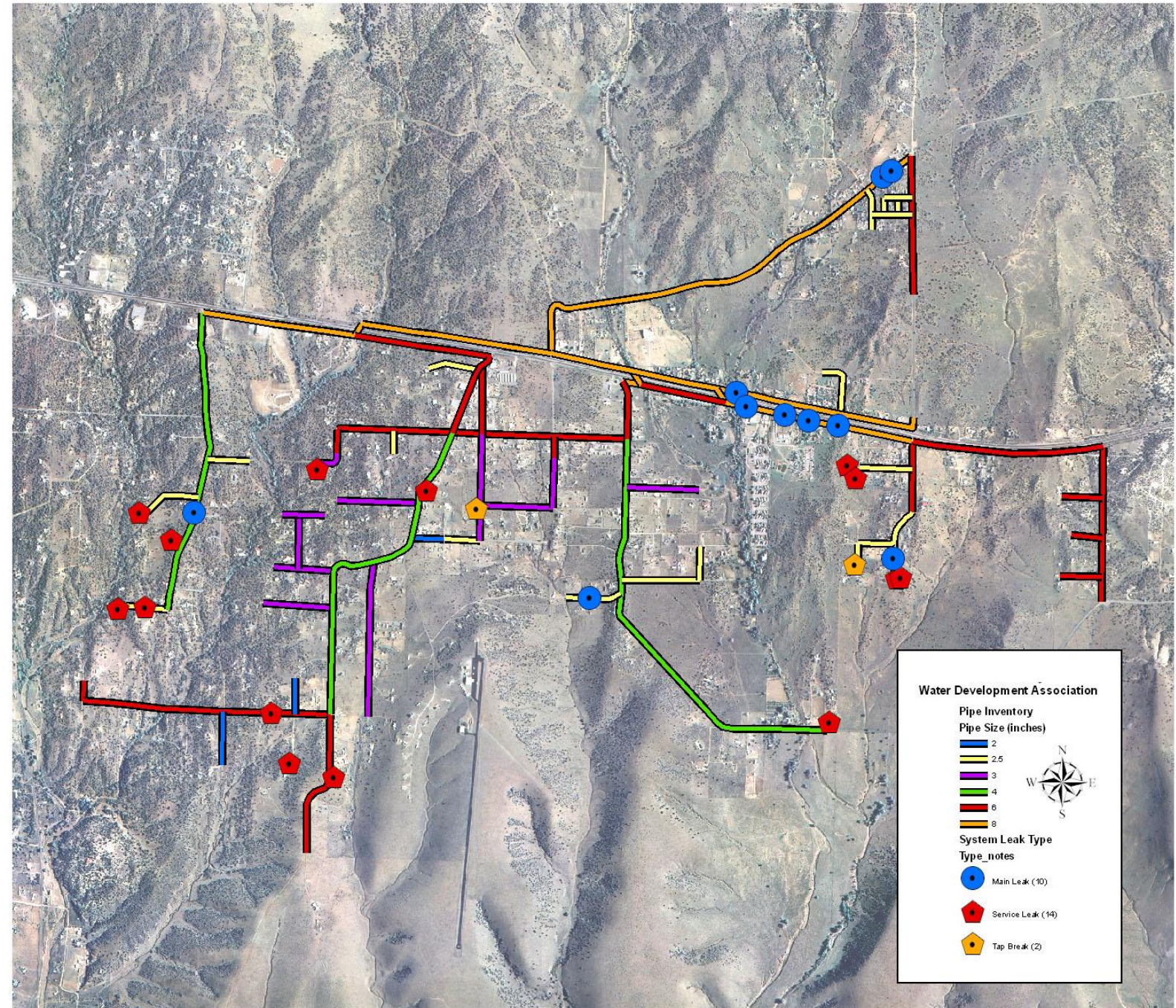


# What did the data show?



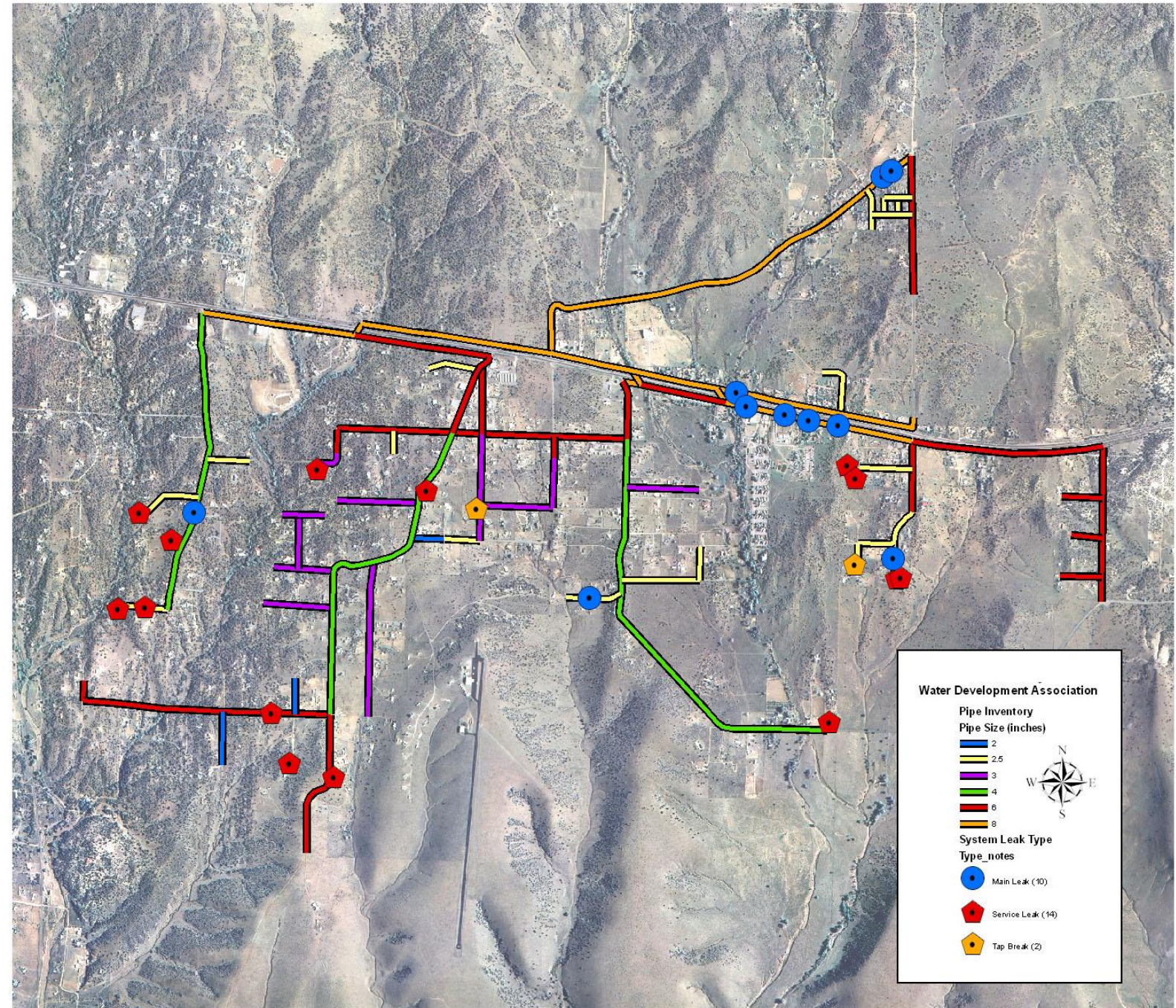


Do they really  
need the  
project?





What was the outcome?

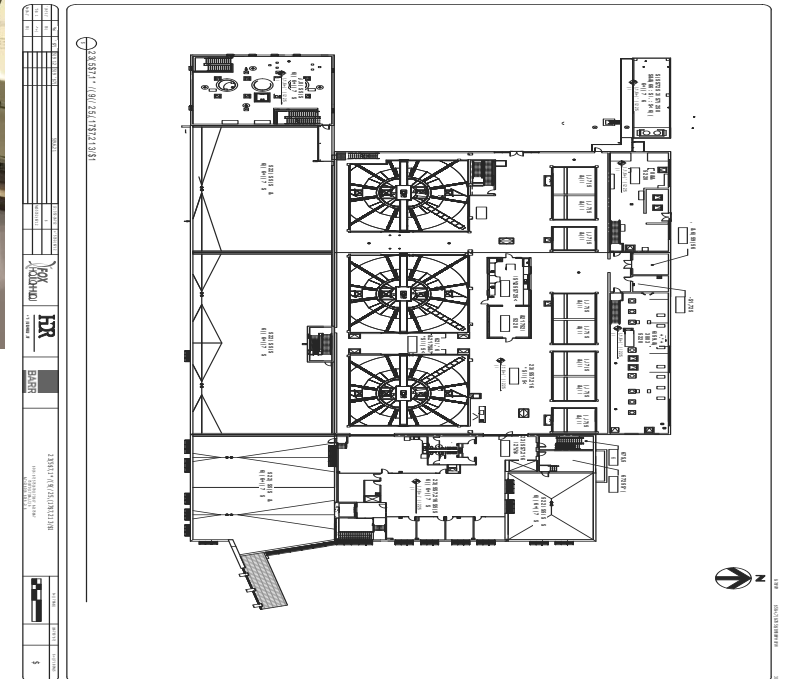




# Involving Operators in the design process for better outcomes



EXAMPLE



# Benefits: Insufficient Data to Monetize

Compared to other projects

- Change orders were minimized

- Staff training was easier and minimized

- Fewer maintenance issues

Others are handed a system and told to make it work. We were involved the whole time and it was our system.

(Paraphrased Quote)

Collecting benefits data will help get bosses to support this approach going forward




*A Real World Example.*

# BPU Mission Statement

**Focus** on the needs of our customers,  
**Improve** the quality of life in our community  
thru **safe, reliable** and **sustainable** utilities

# BPU Mission Statement

**Focus** on the needs of our customers,  
**Improve** the quality of life in our community  
thru **safe, reliable** and **sustainable** utilities



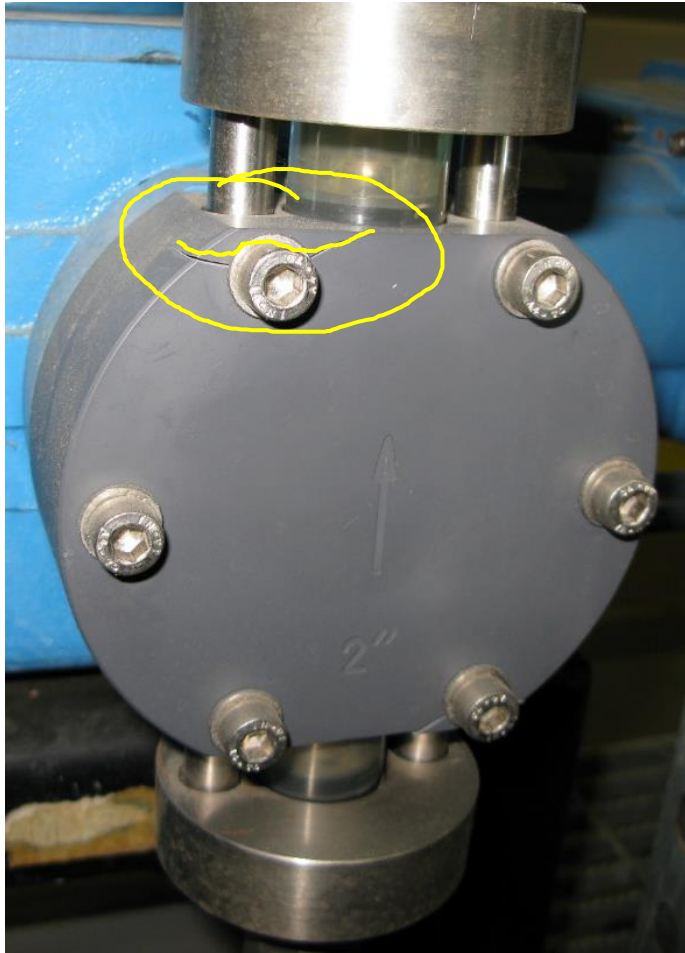
The terms reliable and sustainable tie to the maintenance department. The maintenance department takes this very seriously

# Energy and Water Savings

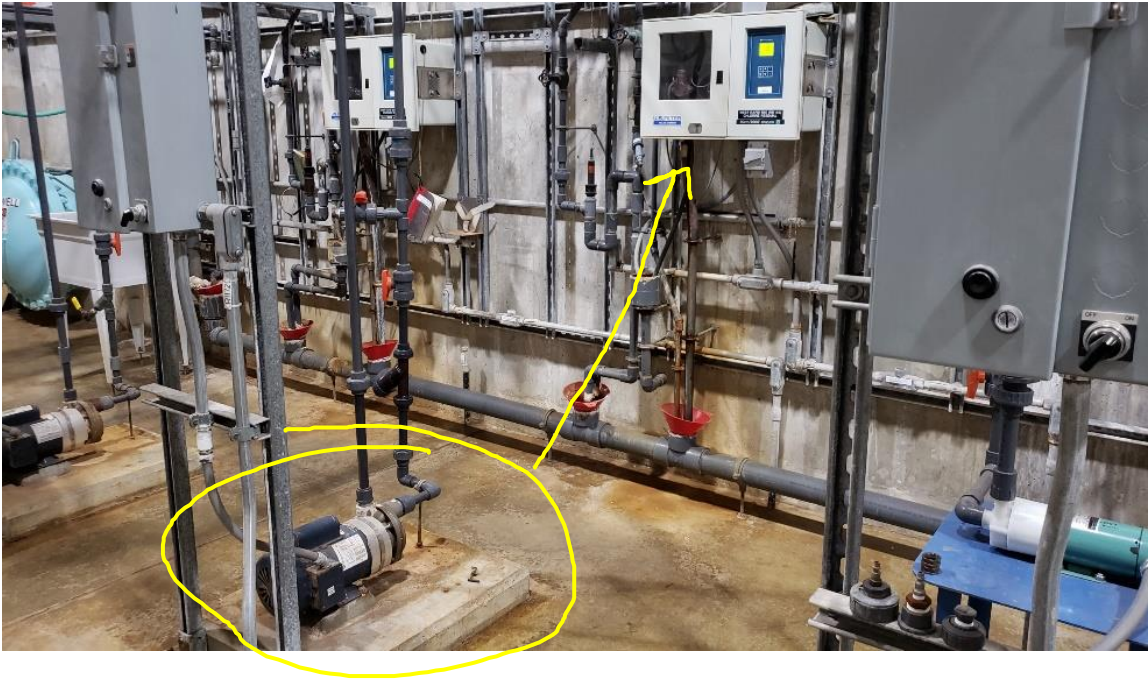




# Defect Elimination



# Energy and Spare Parts Reduction





# Vendor Managed Inventory (PVF)





# Long Lead Spare





# Emergency Use Analyzers



# Group Discussion

What jumps out at you from hearing these examples?

Do you have any examples of this type from your own experience?

Can you see a blend of “asset management” and “managing assets”?

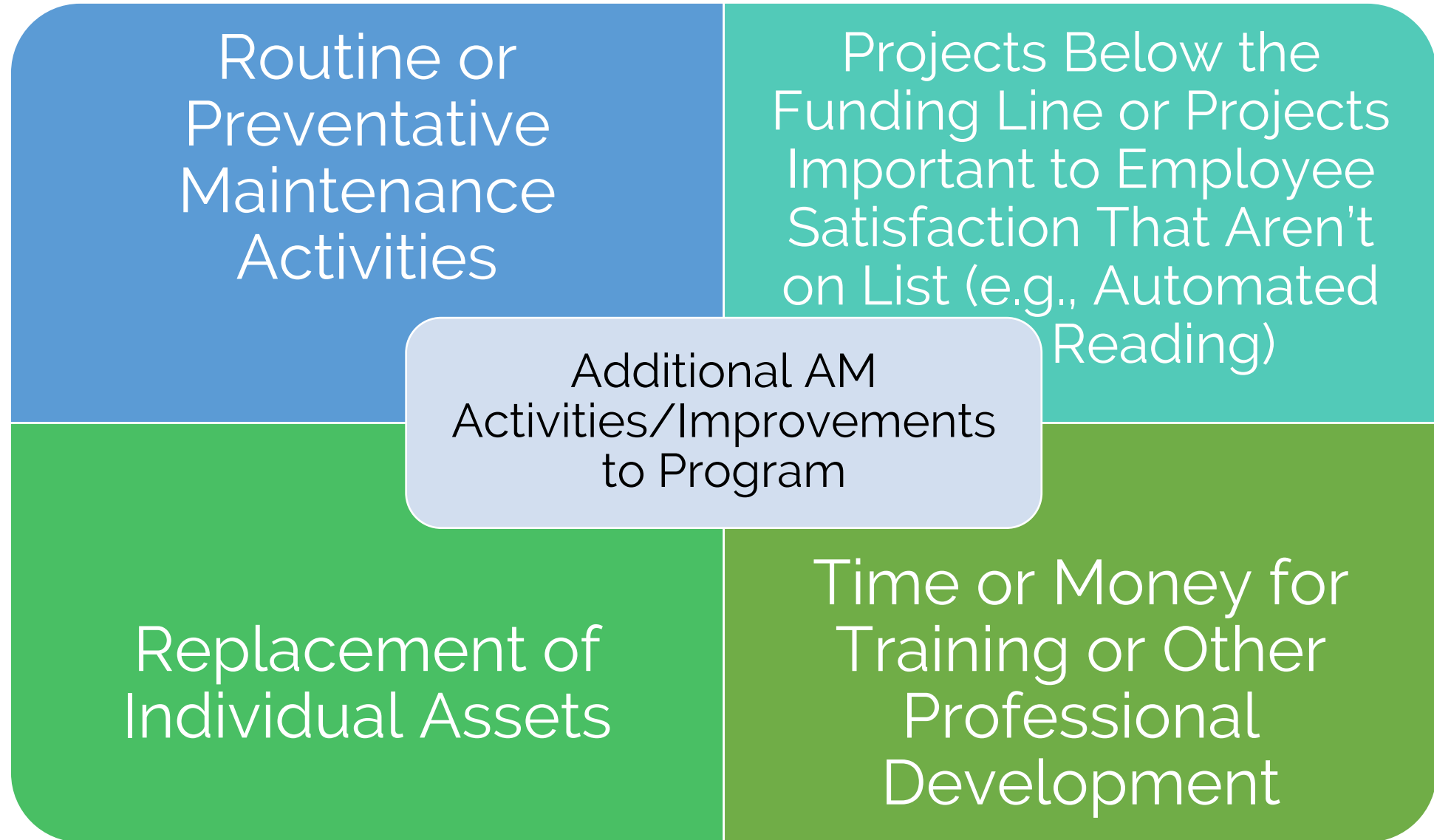
Did you catch evidence of triple bottom line benefits?



Triple Bottom Line

# If monetary benefits are realized...

## What to Do With the Savings?





Think About an Answer  
to the Question:

What would I do if I had  
an extra \$1,000?  
\$10,000? \$100,000?



Remember our sag example.. After payback, \$15,600 to spend elsewhere

Total Cost for Replacement	Costs Per Year	Number of Years for Payback
\$37,800	\$15,600	2.42



Or: What would I do if I had an extra 2 hours per week? 500 hours per year? 1,000 hours per year?

Remember our sag example.. After payback,  
lots of extra hours

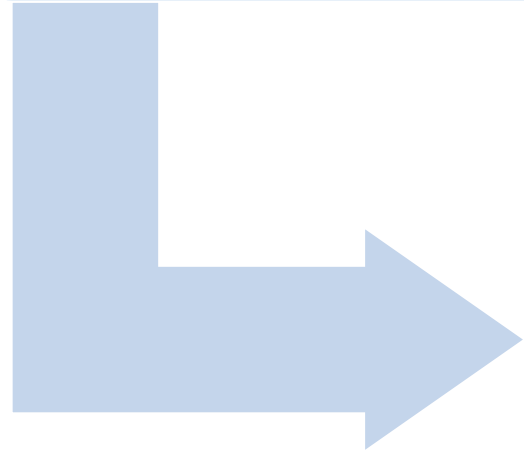
Additional Hours/year line crew	Additional Hours/year operators	Time Gained
288	48	line crews 1 month; operators 1 week

What could you do with an extra week, an  
extra month?



Saving Money  
or Time in  
One Area

Not About Reducing  
Overall Budget



To Use it In  
Another Area

**Let's face it, every  
utility faces a back-  
log of work that  
needs to be done.**

Everyone  
should  
see a  
win!!





We want to collect and analyze data to be able to make *data-informed* decisions

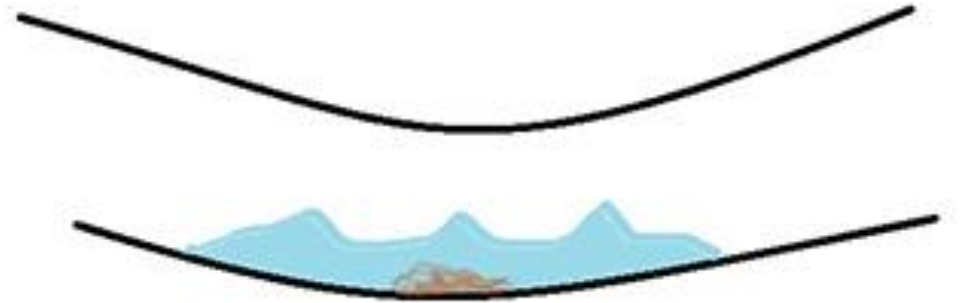





You may or may not be collecting all the data you need; you can always change what you collect, how you collect it, and how to store it










Planning, Design, and  
Construction Interventions  
to address this sag and  
prevent potential future  
ones





Operation & Maintenance  
Interventions to address  
this sag and prevent  
potential future ones





Repair, Replace,  
Rehabilitate Interventions  
to address this sag and  
prevent potential future  
ones







Disposal and funding  
Interventions to address  
this sag and prevent  
potential future ones







## Part 9: Long-Term Funding

---

Time & Money

Reliability	Safety	Convenience	Customer Service	Environmental Protection
Quality	Resilience	Responsiveness	Regulatory Compliance	Communication
No service disruptions	no inconvenience (no blocked streets, etc.)	Understandable bills	Easy payment systems	Sustainability

Let's go back to this concept

Time & Money

Reliability	Reliability	Safety	Convenience	Customer Service	Environmental Protection	Environmental Protection
Quality	Quality	Resilience	Responsiveness	Regulatory Compliance	Communication	Communication
No service disruptions	No service disruptions	no inconvenience (no blocked streets, etc.)	Understandable bills	Easy payment systems	Sustainability	Sustainability
No service disruptions	streets, etc.)			systems		

The first 4 concepts are attempting to increase efficiency



# Time & Money

Reliability	Safety	Convenience	Customer Service	Environmental Protection
Quality	Resilience	Responsiveness	Regulatory Compliance	Communication
No service disruptions	no inconvenience (no blocked streets, etc.)	Understandable bills	Easy payment systems	Sustainability

This portion is aimed at having funding better match needs (including growing funding)

# Potential Sources of Funding

User Charges/Fees/Penalties

Outside Funding – State and Federal

Other Outside Funding

Other?



# Need to fund Full Costs of Operation

Operations

- Salaries
- Treatment
- Electricity

Maintenance

Repairs

- Spare Parts

Replacement

- How much to do?

Debt Service

- Loans
- Bonds

Reserves

- Emergencies
- Debt Service
- Repair & Replacement

Let's think about

Questions

Connections

Solving

Related to Long-Term Funding



**Question:** Are you incrementally investing in the facility?



# Replacement Cycle – One measure of where you are

$$\text{Replacement Cycle} = \frac{\text{Total Cost of Replacement}}{\text{Average Annual Incremental Investment}}$$

# An Example

$$\textit{Replacement Cycle} = \frac{50,000,000}{250,000}$$

$$\textit{Replacement Cycle} = 200 \textit{ years}$$

# Compare Replacement Cycle with average (weighted) expected useful life

*Replacement Cycle = 200 years*

Scenario 1: Replacement cycle is more than the average useful life estimate for the facility

Scenario 2:  
Replacement cycle is equal to the average useful life estimate for the facility

Scenario 3: Replacement cycle is less than the average useful life estimate for the facility





**This was a  
major event in  
Los Angeles**




Can you guess the replacement cycle



300 Years





**Over time consequences  
are severe: catastrophic  
failures, backlog, reduced  
customer service**

# Example in Action: What is your guess of the overall replacement value of Albuquerque's Water and Wastewater Treatment System?



## A Few System Specifics:



2,500 Miles of Water Main

2,500 Miles of Wastewater Pipe

1 Surface Water Treatment Plant (supplies about 1/3 of water)

Over 90 wells

Over 20 pump stations

1 Wastewater Treatment Plant with tertiary treatment

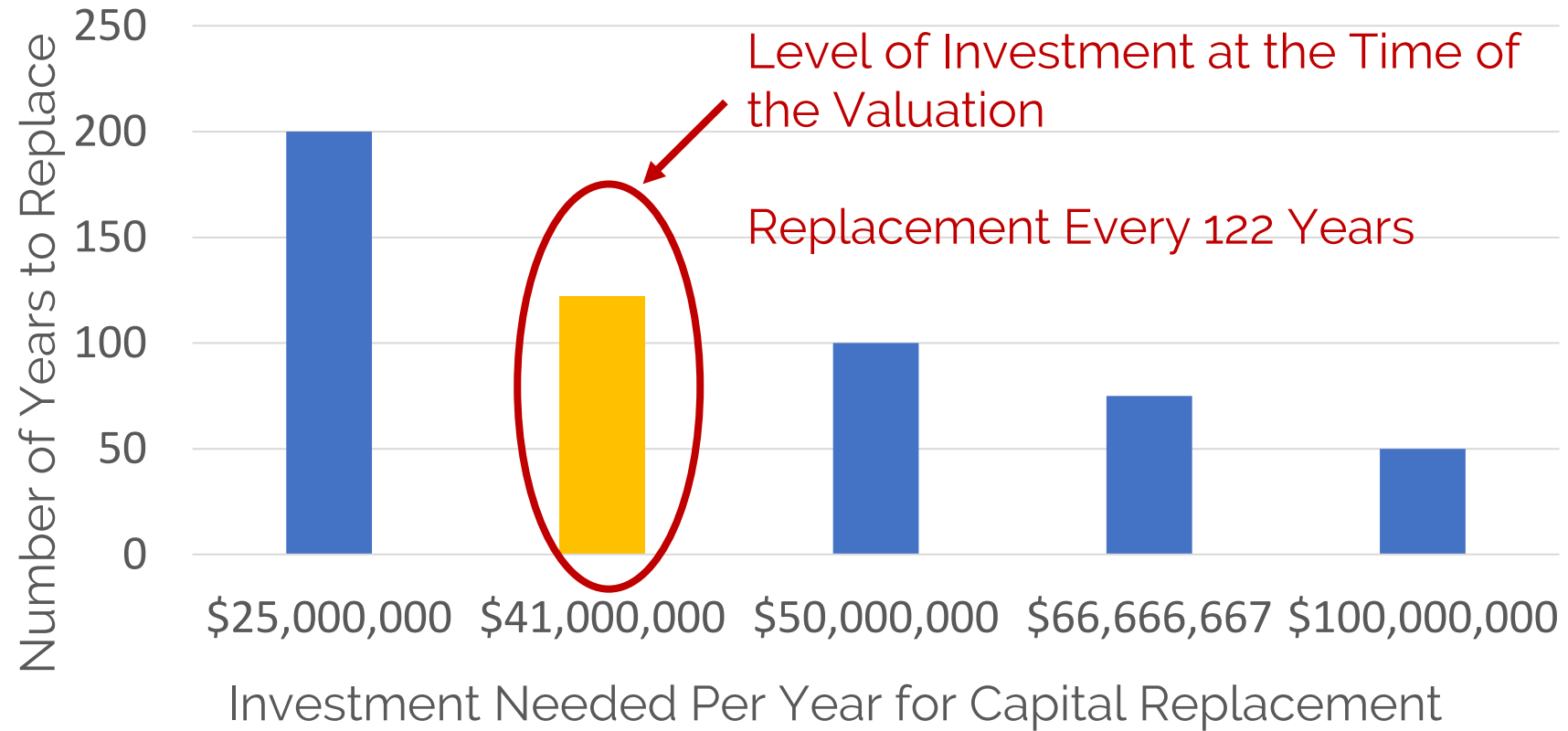
Over 20 pump stations

Service population of approximately 350,000

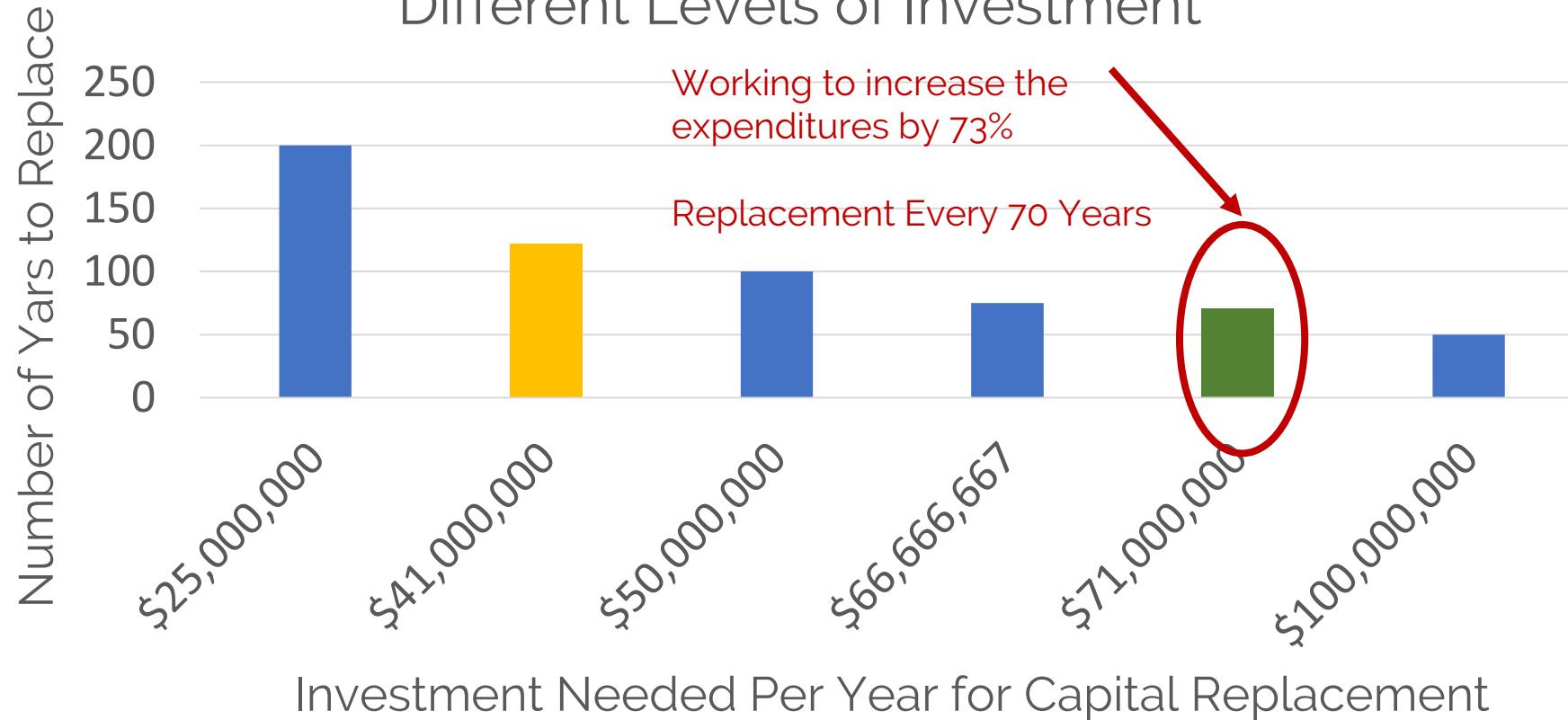




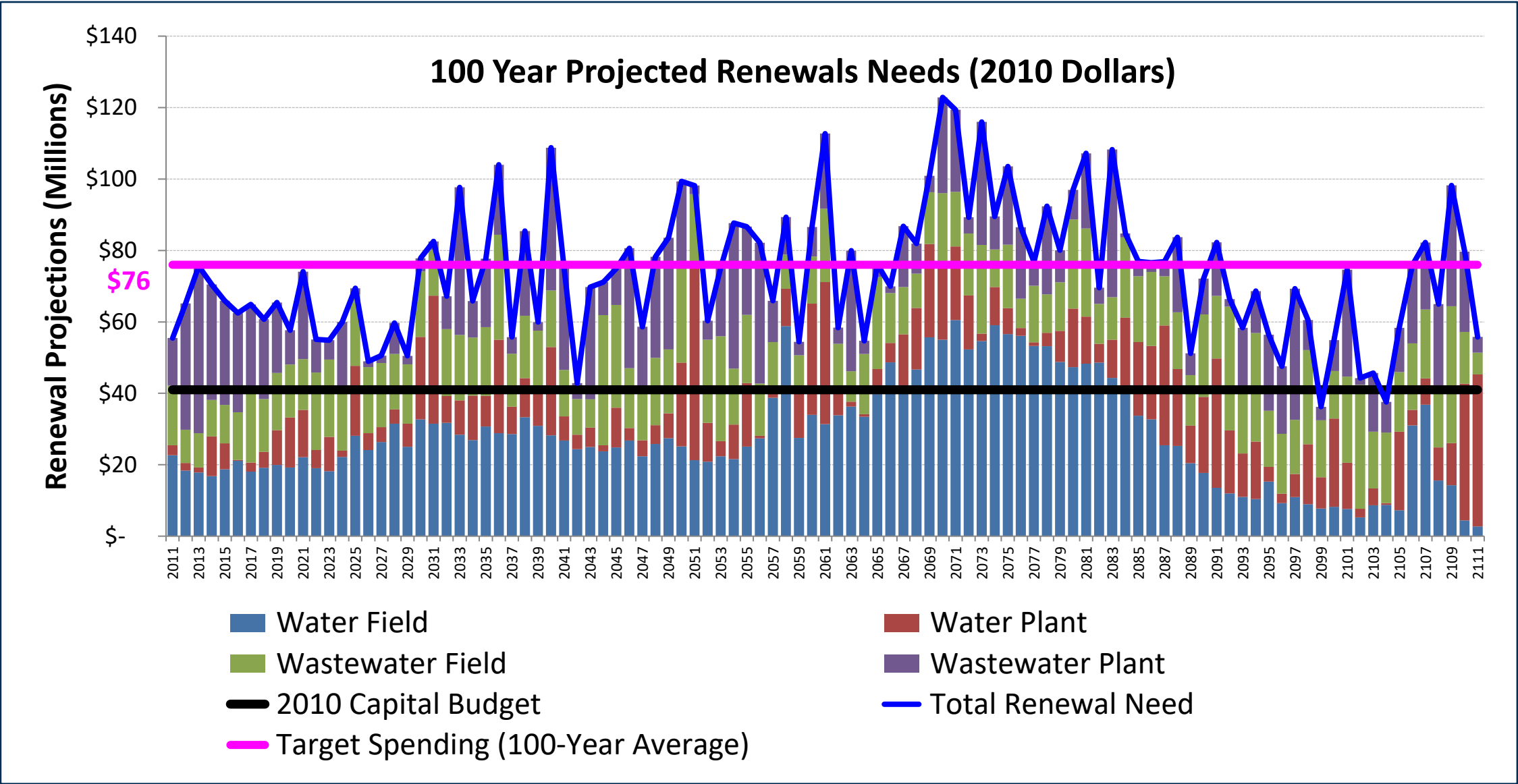
## Number of Years to Replace System At Different Levels of Investment



## Number of Years to Replace System At Different Levels of Investment



# Albuquerque's Increasing Infrastructure Needs



**Question:** Do you know your replacement cycle?

Is it Enough?

What happens if it's not?



**Connections:** Capital  
Improvement Planning is  
connected to Risk, Life Cycle  
Costing

# Capital Improvement Plan Components

List of capital projects, major equipment, major studies

Ranking of projects

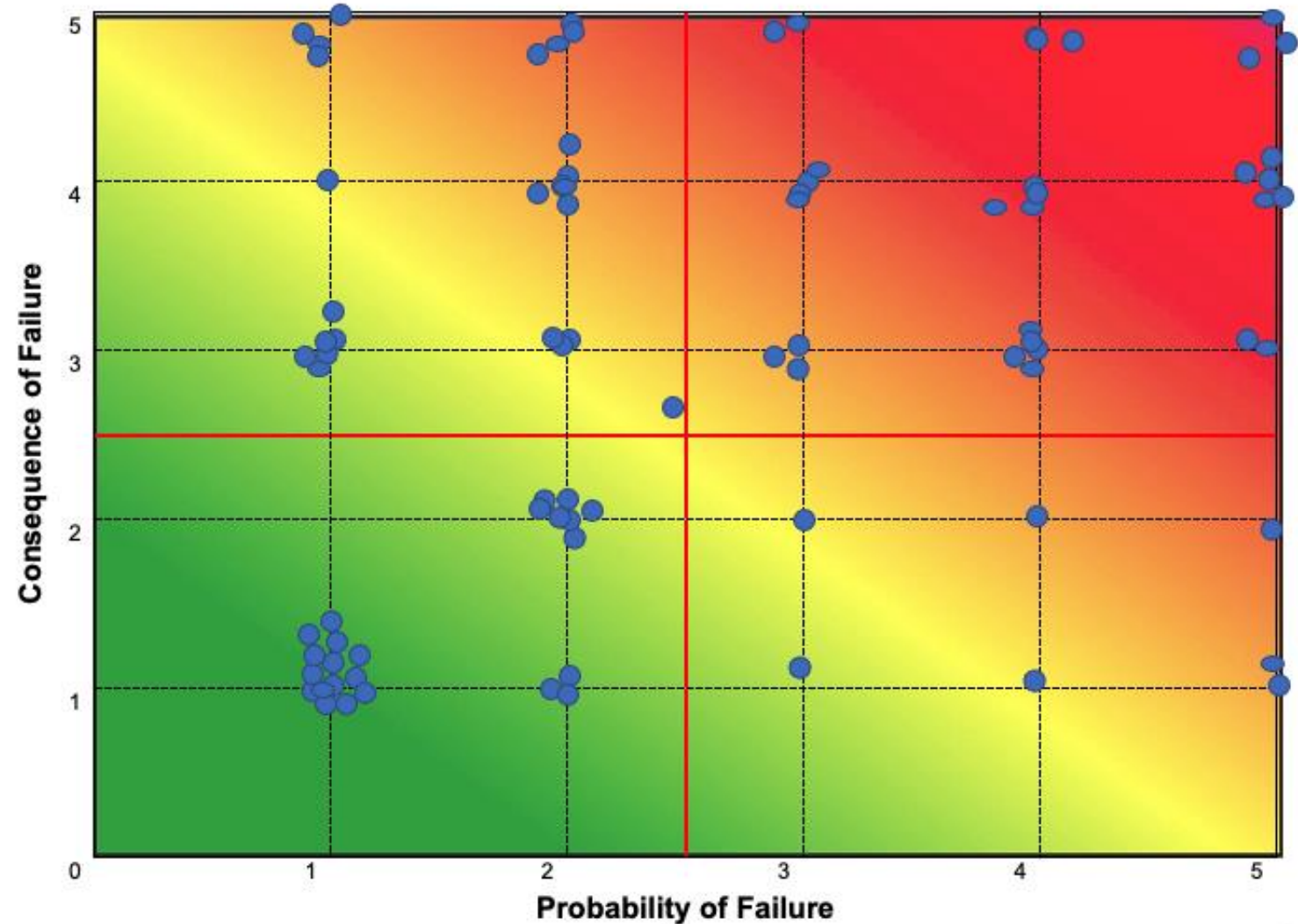
Financing Plan

Timetable for the construction or completion of the project

Project Justification

# Capital Improvement Planning

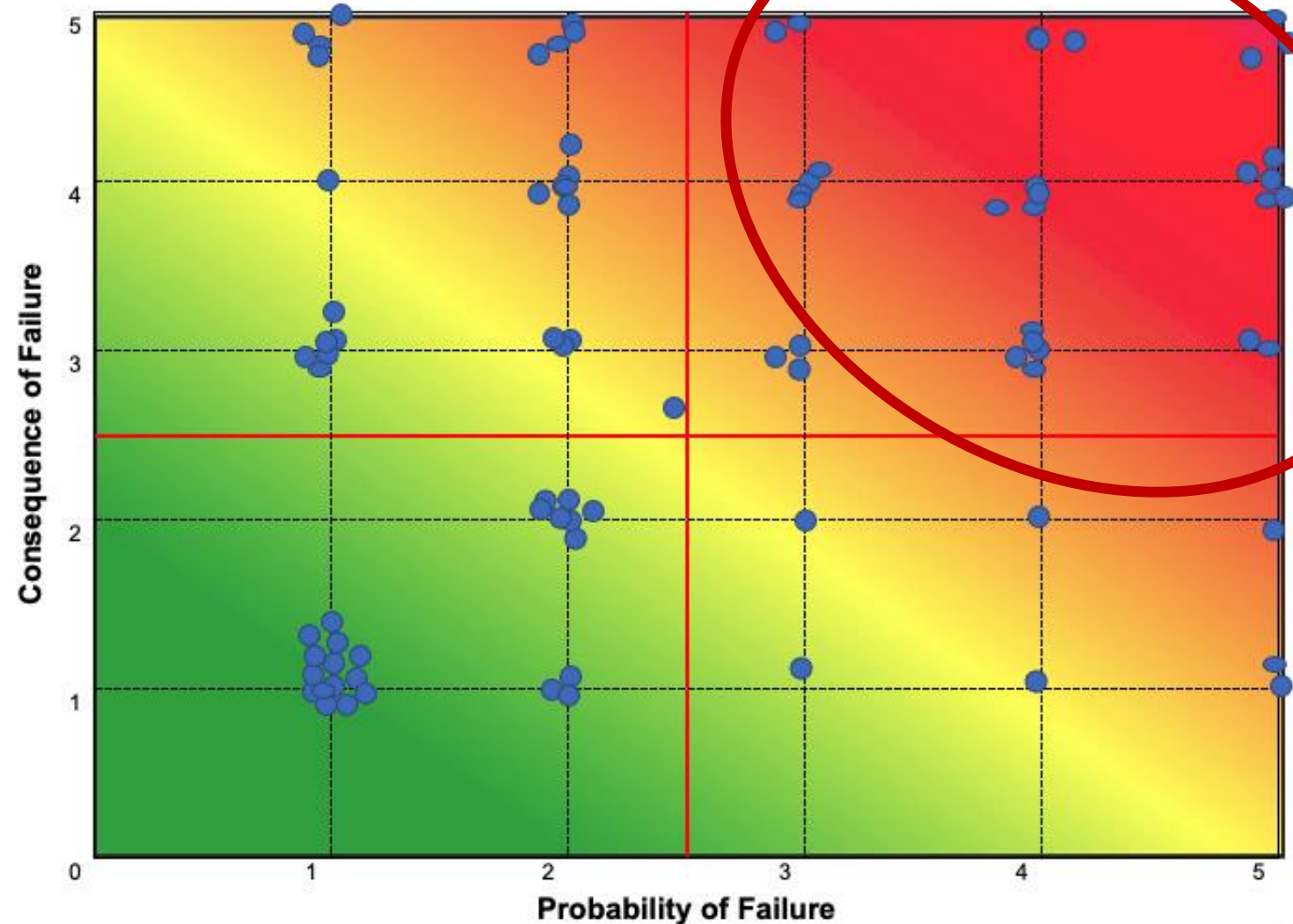
Risk feeds into  
CIP Planning



# Capital Improvement Planning

Short-term  
replacements

1 to 10 years

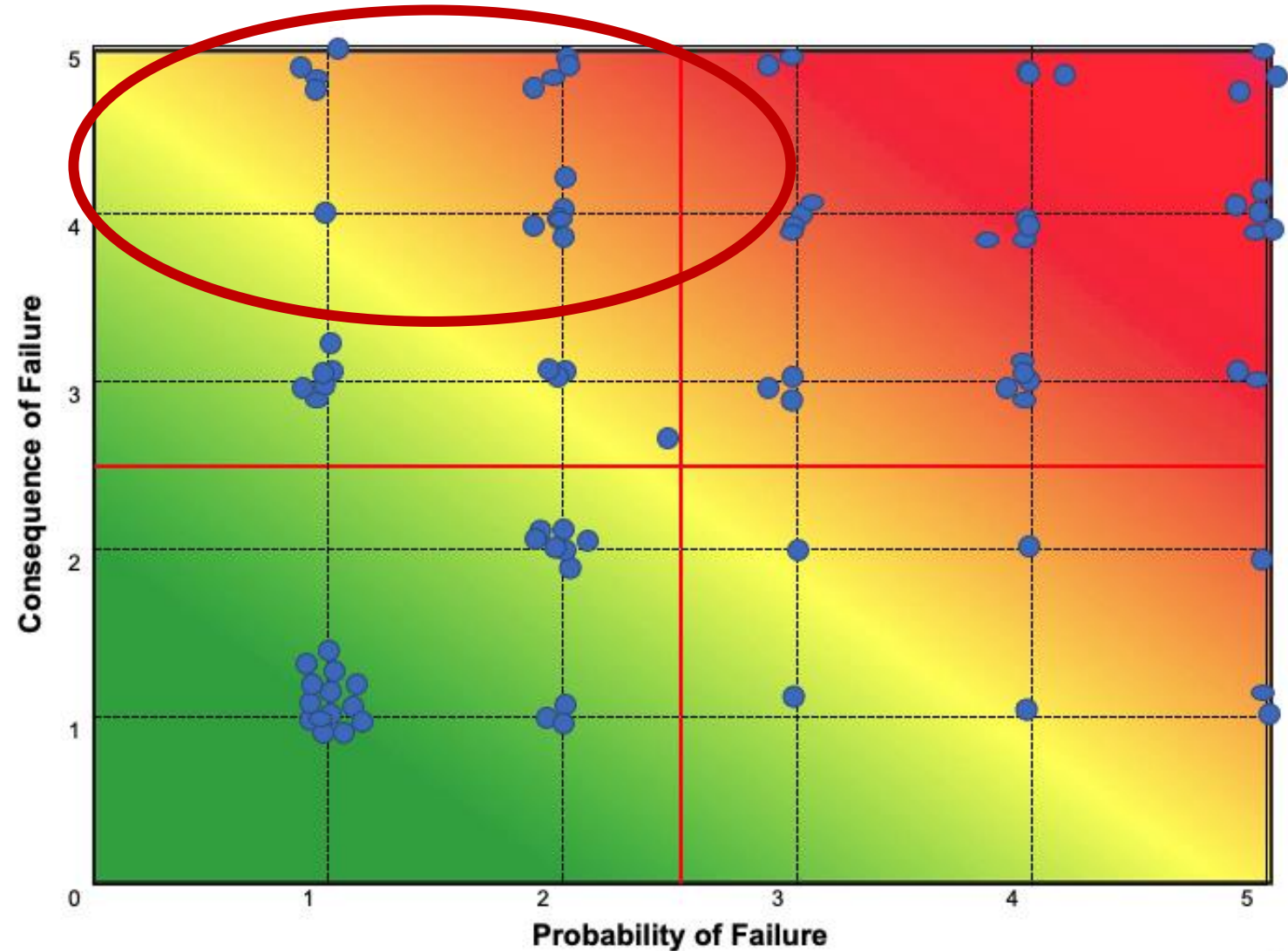




# Capital Improvement Planning

mid-term  
replacements

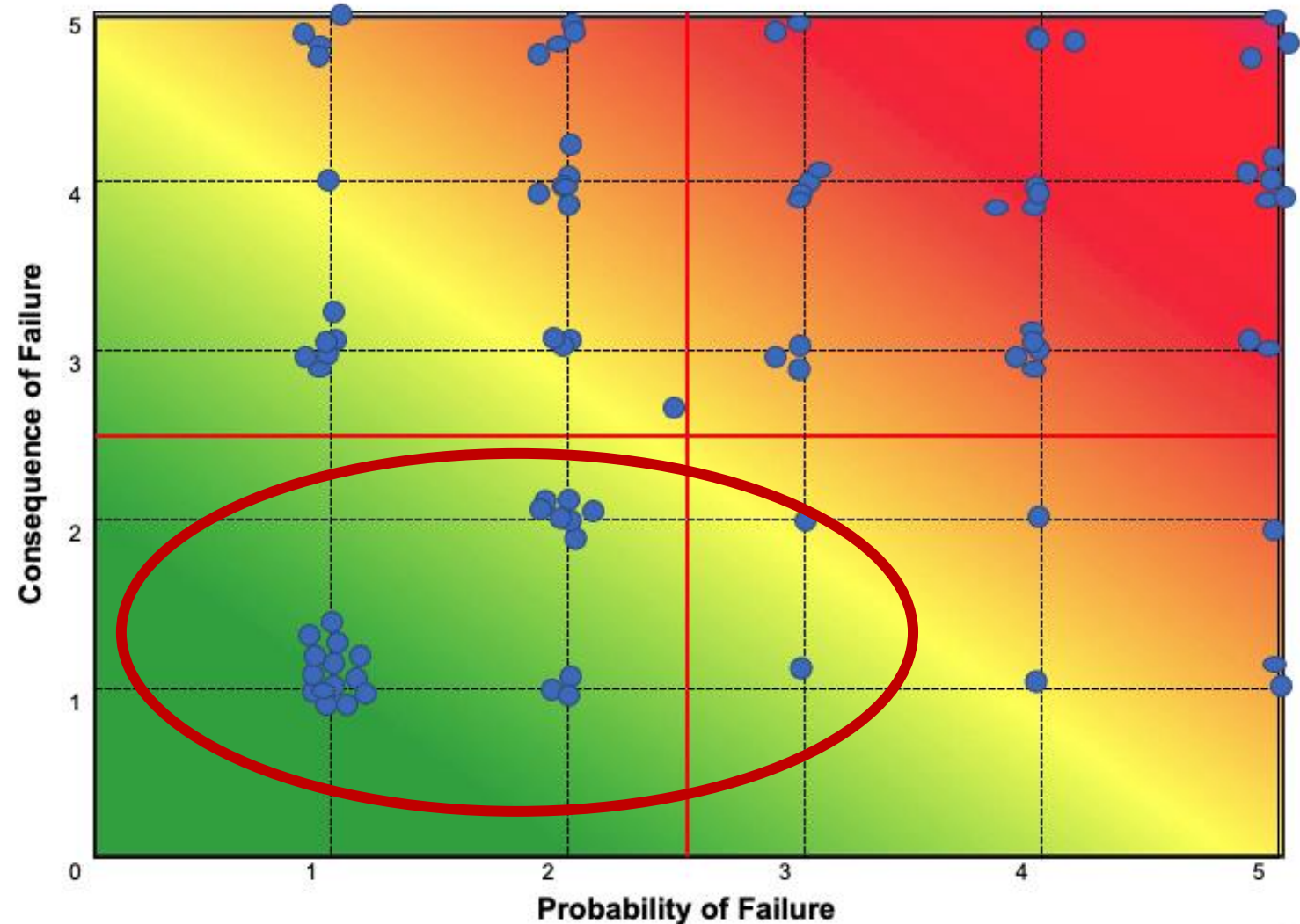
10 to 50 years



# Capital Improvement Planning

long-term  
replacements

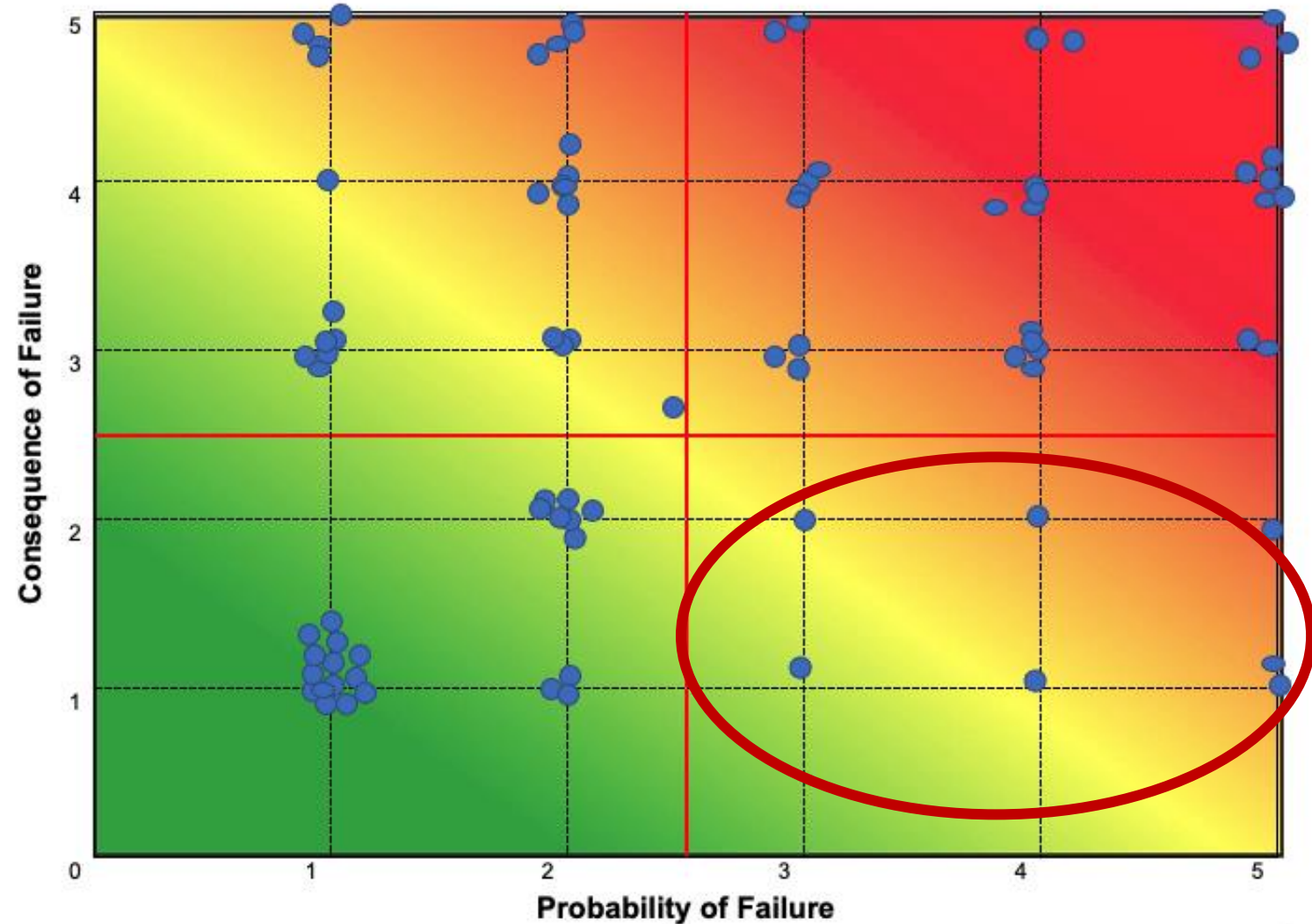
30 to 100 years



# Capital Improvement Planning

Emergency  
replacements

1 to 20 years



# Solving Issues: The Case for Increased Rates to Address Particular Issues



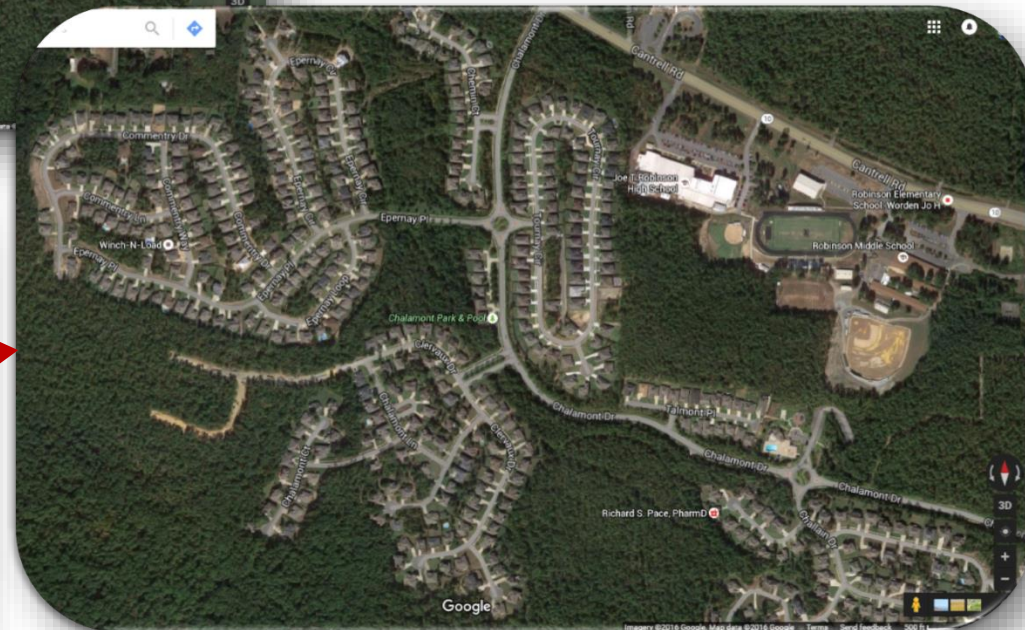
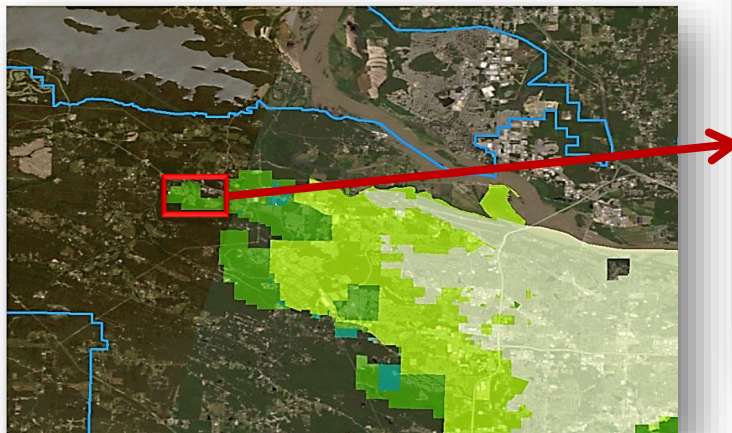


# Using Rates to Support Source Water Protection: Central Arkansas Water

- Serves over 450,000 Arkansans with safe, high quality water
- One in every 7 Arkansans benefit from CAW's service
- Supply from 2 reservoirs: Lake Maumelle & Lake Winona

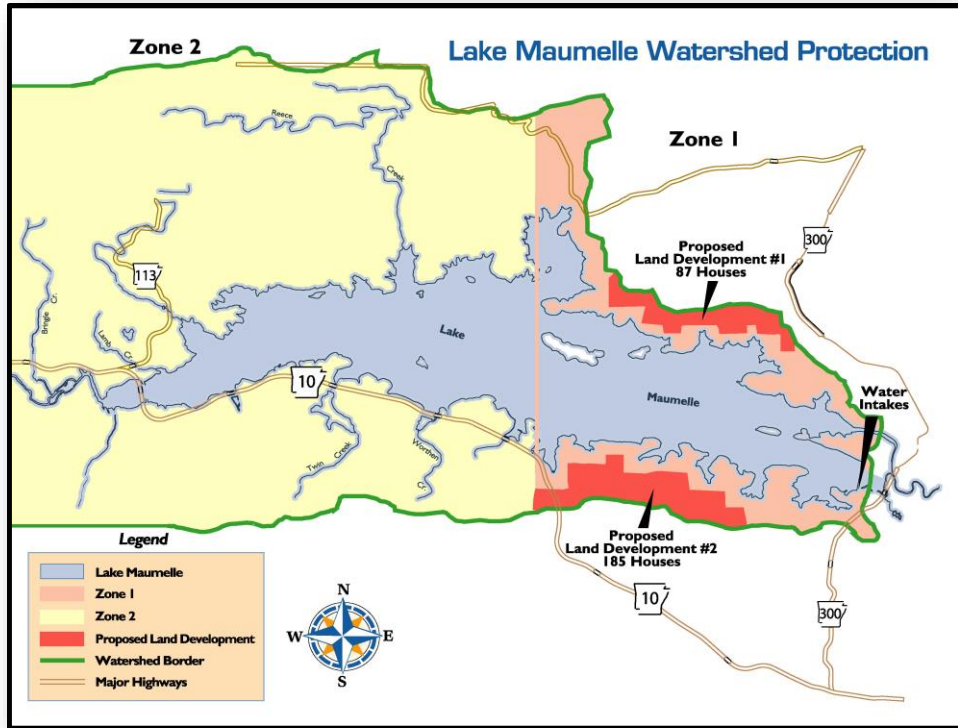


# Development Pressures





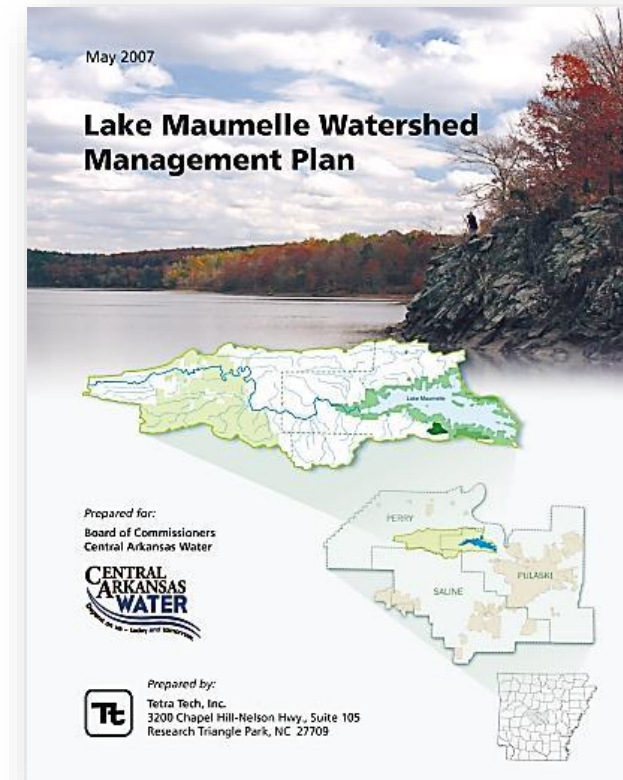
# Proposed Developments Pre-2004



## 2007 Management Plan

### Findings:

- Existing water quality is very good
- Future water quality will not meet goals under build-out scenarios



Set targets for Total Organic Carbon (TOC), Turbidity, and Phosphorous

- Recommended Management Strategies
- Recommended New Regulations
- Recommended Actions

**Acquire 1,500 acres of Conservation Land** (by 2017)





# Economic Value

2015 report by Earth Economics

## Value of Primary Benefits

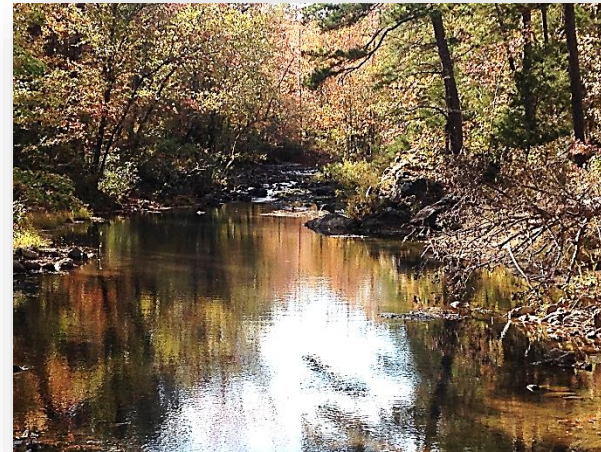
- Lake Maumelle: \$19.7M to \$91.7M per year

## Value of Co-Benefits

- Lake Maumelle: \$44.7M to \$380.6M per year

## 100 year Asset Value

- Lake Maumelle: \$1.5B to \$11B



# Plan Implementation - WPF

- Implemented a \$0.45 watershed protection fee per meter.
- Displayed on bills to increase consumer knowledge of watershed protection.
- Wholesale fee calculated based on their number of accounts.
- Generates approximately \$1 million per year.

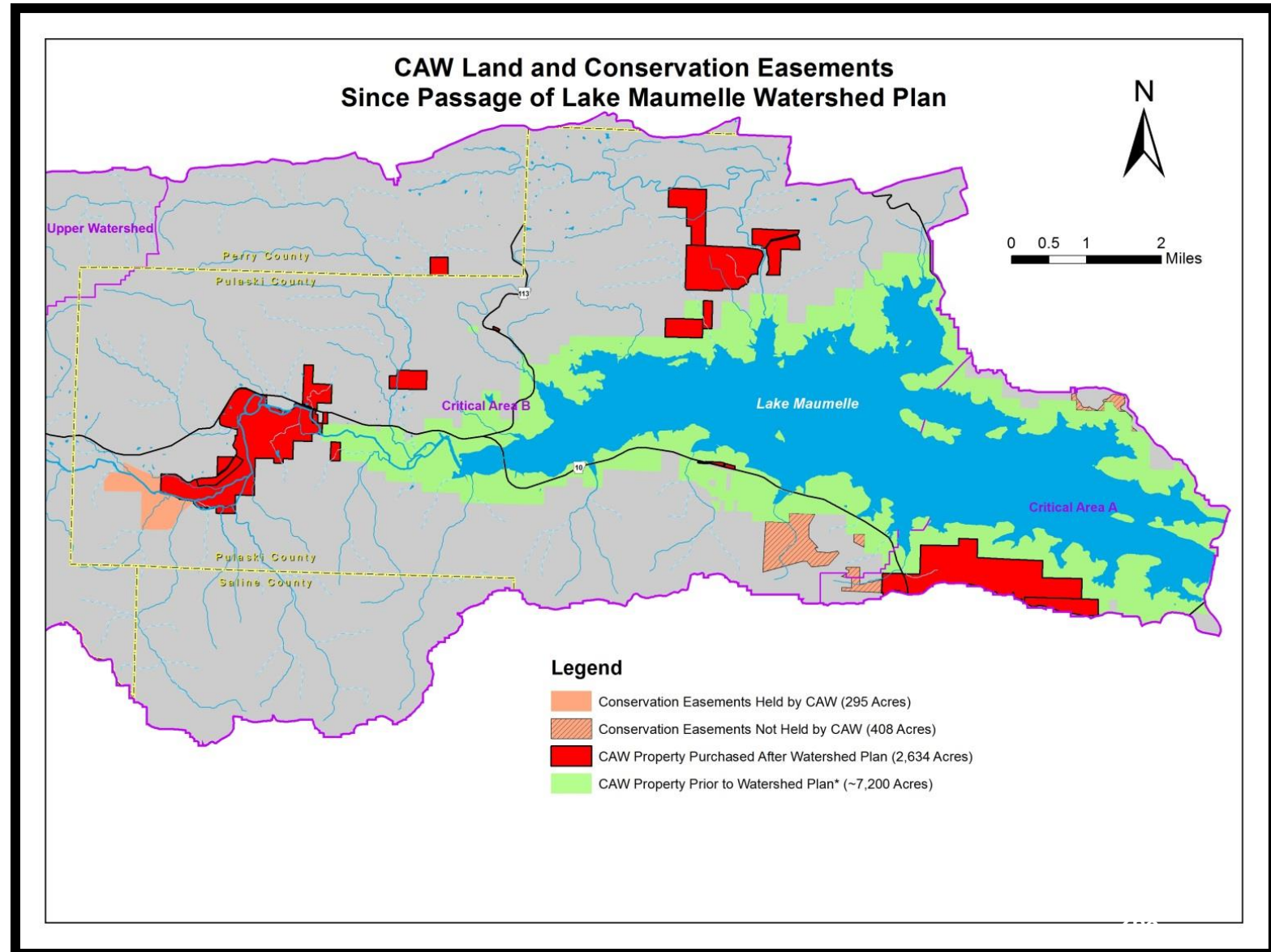
<b>Utility Billing Services</b> P.O. Box 8100 Little Rock, AR 72203-8100		ACCT NO:		SERVICE ADDRESS:	
CUSTOMER SERVICE 501-372-5161 FOR CUSTOMER SERVICE INFORMATION, PLEASE, SEE REVERSE SIDE.		BILLING DATE		CITY	
		2/04/15		LITTLE ROCK	
		DUE DATE		CLASS	
		2/25/15		RESIDENTIAL	
		NAME ON ACCOUNT			

METER NUMBER(S)	BILLING PERIOD			METER READINGS				CONSUMPTION 100 CUBIC FEET	DESCRIPTION
	FROM	TO	DAYS	PREVIOUS	READ CODE	PRESENT	READ CODE		
274095	12/19/14	1/23/15	35	1052		1056		4	WATER
YOUR AVERAGE WINTER CONSUMPTION FOR SEWER IS:									4

CURRENT ACTIVITY				
Monthly Charges	9.07	24.57	22.02	55.66
<b>Watershed Protection</b>	<b>.45</b>			.45
Franchise Fee	.95	2.46		3.41
Sales Tax	.94		1.98	2.92
Fed. Safe Drinking Water Act	.30			.30
Service Line Replacement Fee		1.00		1.00
<b>TOTAL CURRENT CHARGES</b>	<b>\$11.71</b>	<b>\$28.03</b>	<b>\$24.00</b>	<b>\$63.74</b>
<b>TOTAL AMOUNT NOW DUE</b>	<b>\$32.63CR</b>	<b>\$28.03</b>	<b>\$24.00</b>	<b>\$19.40</b>

# Acquisitions & Conservation

Fee is being increased to 65 cents per customer and ultimately to a dollar a customer



There are lots of ways to reach customers

Be Creative!!!

Use what works for your community

Use lots of approaches





# One option

## Customer Opinion Survey

Randomly Selected

Telephone Survey using  
Landlines and Cellphones



# Customer Conversation Meetings

## Customer Conversations Meetings

Focus Group Meetings

Recruitment through Website,  
Email, and any other approaches that  
work

Keep it Interactive, Engaging

Have Governing Board attend  
meetings







A rate hike will be needed to replace the aging preliminary treatment facility at Albuquerque's sewage plant, officials say.

# Aging Pipes Mean Higher Water Bills

## Rate Hikes Proposed To Fix Area's Aging Infrastructure

Copyright © 2012 Albuquerque Journal

By JOHN FLECK  
Journal Staff Writer

Albuquerque's water and sewer utility, facing hundreds of millions of dollars in costs over the next decade to replace aging pipes and treatment plants, is considering a series of rate increases in the next five years.

When the last of the proposed rate hikes takes effect, the average residential customer's bill would rise to \$64 per month, up from \$45 today, according to Mark Sanchez, executive director of the Albuquerque Bernalillo County Water Utility Authority — an additional \$108 per year for the average customer by 2017.

More than 400 miles of metro area water and sewer pipe are at high risk of failure, according to a study done for the water utility and the backlog of aging pipes that need replacement is growing because of inadequate



Albuquerque's sewage treatment plant is in need of \$250 million worth of work.

By the numbers	
<b>\$45 per month</b>	Current average Albuquerque water and sewer bill
<b>\$54 per month</b>	Estimated average bill in 2017, after increases
<b>3,000</b>	Miles of water pipe
<b>95</b>	Miles of water pipe at high risk of failure
<b>2,400</b>	Miles of sewer pipe
<b>326</b>	Miles of sewer pipe at high risk of failure

Source: ARROW

## Higher rates a fair price for H2O conservation

Take away the hit to the wallet and accounting blunder, and it could be called a nice problem to have.

Customers of the Albuquerque Bernalillo County Water Utility Authority have achieved a 10-year conservation goal in less than a year — from 148 gallons per person per day a year ago to a projected 135 this year, when 135 was the long-term water conservation goal to be reached by 2024.

Unfortunately, the flip side of less water going out is less money coming in. And so the utility is seeking an unplanned 5 percent rate increase not only to keep pace with operational costs, but to chip away at a \$383 million backlog of water and sewer line maintenance work.

While a \$9 million accounting error and 2012-13 financial reports that have yet to be published make for easy criticism, the bottom line is unchanged: less water going out, less money coming in, largely fixed operating costs that don't fluctuate with the amount of water delivered, more infrastructure aging. The proposed increase amounts to an extra \$3 a month for the average homeowners and is sandwiched in a 5 percent rate increases last July and in 2011.

Critics say the utility hasn't sought routine efforts to keep pace with inflation, adequately face the conservation trend or provided enough transparency in its financial difficulties. These are all important issues the utility will have to grapple with forward — even though predicting conservation as much art/luck as it is science, and depends on a wide range of things including what kind of season we have.

But there is no question the utility has a backlog of infrastructure, that leaks are becoming more common, that repairs done before a line breaks save money for everyone involved.

Sure, nobody likes the bitter pill of rate increases, but adequately maintaining water and sewer infrastructure is an essential investment in any good metropolitan area. The fact the utility has pushed hard on conservation, and Albuquerque/Bernalillo County water customers have done such a great job responding, means at least there's plenty of water to take that medicine.

## Water rates could rise for third summer

Water Utility Authority board will review proposed increase in water and sewer rates

By OLLIE REED JR.  
JOURNAL STAFF WRITER

Consumers are facing their third consecutive summer of water/sewer rate hikes if a proposal up for review at tonight's meeting of the Albuquerque Bernalillo County Water Utility Authority board ultimately wins approval.

No final action is scheduled for tonight's meeting, which convenes at 5 p.m. at the city/county government center. But if the board approves the increase at its June 17

## Water rate hikes inevitable and necessary for system

It's pennies to dollars, but either way Albuquerque-area water customers face higher bills again, despite a stellar track record of increased conservation and lower usage.

A couple of rate increases are on the table. One is a previously announced 5 percent hike that would raise a typical homeowner's monthly bill by slightly more than \$4 during the winter and nearly \$5 in summer.

Albuquerque Bernalillo County Water Utility Authority consumers at one point were told — and likely forgot — that it was coming. It is the second of a three-part rate hike plan pre-approved in 2013 to raise revenues so the utility can replace and upgrade its infrastructure. It's a fact. Underground pipes wear out.

Also last year, the utility board OK'd another rate increase to make up for decreased consumer usage. Conservation is important, but a certain revenue level is required.

## 5% water rate hike approved

Change will cost the typical ABQ homeowner an extra \$3 a month



JOURNAL FILE

The city-county water board on Wednesday approved a rate hike intended to compensate for a drop in consumption.

Utility officials told board members the rate hike is needed to compensate for a 9 percent drop in water consumption over the past year by customers of the Albuquerque

"There are folks who can't afford this," he said. "We could have planned this a little sooner."

Customers also saw a 5 percent rate hike last July 1.

Utility officials told board members the rate hike is needed to compensate for a 9 percent drop in water consumption over the past year by customers of the Albuquerque

Sure, nobody likes the bitter pill of rate increases. But adequately maintaining water and sewer infrastructure is an essential investment in any good metropolitan area.

Morris said an estimated pass-through charge would amount to about 4 cents per unit for every customer. That would come to 24 cents

and \$90 exp con goo



# What about creating a water utility resume

Ability to Meet Goals

Describe Goals and whether each was met for the year

Your Water Utility Staff

Describe the utility staff (how many, qualifications, certifications)

The daily duties of the Operators

Water Utility Resume (Your Water Utility's Story)	
Basic Description:	Size (flow and customers)
	Source of Water
	Number of Miles of Pipe
	Number of Tanks
	Number of Valves, Hydrants, Meters
Major Accomplishments:	Replaced 20 miles of pipe
	Switched to automated meter reading devices
	Conducted leak detection on 10 miles of pipe
Financial Health:	Money in reserve accounts
	Financial Ratios
Funding Received for Capital Replacements:	SRF Loan for \$2 million
Awards:	Best tasting water
	Operator of the Year Award, 2017
Average Cost of Water:	Rate for an average water use in the community
	Comparison to other types of products, including bottled water
	Cost per gallon



# Other options

Bill inserts, public service announcements,  
newspaper inserts, billboard ads

Provide information on website, social media

Conduct plant tours



Albuquerque Bernalillo County  
Water Utility Authority


**Inside:  
How Your Rate  
Dollars Are Invested**

## Water and Infrastructure: The Price of Delivering a Priceless Resource

IT'S EASY TO TAKE FOR GRANTED the tap water that's available to us every day at the turn of a faucet handle. This is the safe and reliable water that provides fire protection, makes commerce and industry possible, and sustains our very lives.

Our drinking water is treated and delivered to us via a vast and complex network of pipelines and equipment that – like any manmade technology – requires maintenance, upkeep and periodic replacement. This is also true of our sewer and wastewater treatment infrastructure.

Much of this infrastructure is invisible, hidden underground or behind walls and fences. It's not exciting to look at, like a new convention center or airport, but it is vitally important. And because it is aging, it's going to require a greater investment of resources if it's to continue serving us reliably and safely in the years ahead.



Contents:	
Water and Infrastructure: The Price of Delivering a Priceless Resource	1
Infrastructure: An Investment in Our Future	2
The Benefits of Renewal	3
How Your Rate Dollars Are Spent	4
Water Authority Assets	4
Asset Management: Guiding the Renewal Process	4
Pursuing Efficiency	4
How to Reach Us	4
Governing Board	4

# An innovative approach from Cincinnati, OH





Think about ways you could make a case for additional funding to your elected leaders and your customers for a project. For example, to replace sags.

**Have any of you  
been successful  
with rate  
increases? What  
has worked?**





## Part 11: Workshop

---

Presented By Heather Himmelberger, P.E. Director, SW EFC



# Small Group Workshop: Solving Your Issues

Break Up Into Small Groups

Introduce Yourselves to Each Other

Share the Questions You Wrote Down In the Beginning

Choose a Question Your Group Will Work On (If there is time you can do additional questions from the rest of the group)

Go through each part of the process – Level of Service, Current State of the Assets, Criticality, Life Cycle Costing, and Long-Term Funding – to think through how asset management could be used to help solve your issue (Remember the sag example we've used throughout)



## Part 12: Summary & Wrap-Up

---

Presented By Heather Himmelberger, P.E. Director, SW EFC

Asset Management  
is a Thought  
Process not a  
Computer Program



Asset Management  
is a Journey not a  
Destination



the  
conclusion.

Enjoy the  
Journey!!!



Remember

Ask Questions

Make Connections

Solve Issues that will Help You



It's better to walk on  
the right road than  
run on the wrong one



the  
conclusion.

Don't let what you can't  
do stop you from doing  
what you can do

There are resources to help.



Some of the Southwest EFC Resources.





# AM Switchboard



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## Asset Management Switchboard

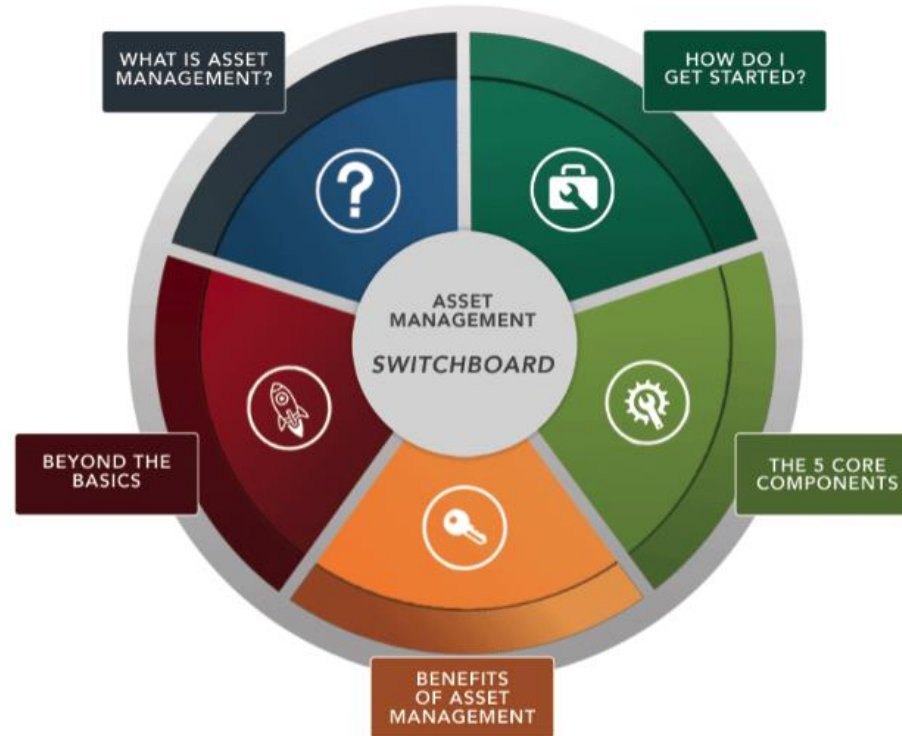
The Southwest Environmental Finance Center has partnered with EPA to create a repository of documentation and tools related to Asset Management.

Whether you are [new to the Asset Management process](#) or just need a refresher on a specific topic, the resource you are looking for is probably here. If you're unable to find what you're looking for, reach out and tell us about it.

If you would like to contribute by having a resource added to the repository, please email the Southwest Environmental Finance Center (by clicking on the link below) and tell us about it. We welcome your feedback and strive to serve your utility and water systems at large.

[Email SW EFC](#)

[Phone \(505\) 277-0644](#)



[Why should I Implement Asset Management?](#)

## Why should I implement Asset Management?

Just a few of the benefits.



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Thanks @ncnmedd and @SantaFeInc for  
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## Southwest Environmental Finance Center

**“If we wonder often,  
the gift of knowledge will come.”**

- Arapaho

Photo by: ian svendsplass

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Southwestefc.unm.edu or google “Southwest EFC”

# AM Integrated Framework



The screenshot displays the 'Integrated Asset Management Framework: Combining Green and Gray Assets' website. The interface features a dark blue sidebar on the left with a navigation menu and a search bar. The main content area has a blurred background of green foliage and a central blue box with the title. The footer contains logos for the Southwest Environmental Finance Center and Spring Point, along with contact information.

**Integrated Asset Management Framework: Combining Green and Gray Assets**

**Integrated Asset Management Framework:  
Combining Green and Gray Assets**

Introduction  
Level of Service  
Current State of the Assets  
Criticality  
Life Cycle Costing  
Long-Term Funding

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 **spring point**

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The SW EFC is here to help!







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