

Abstract

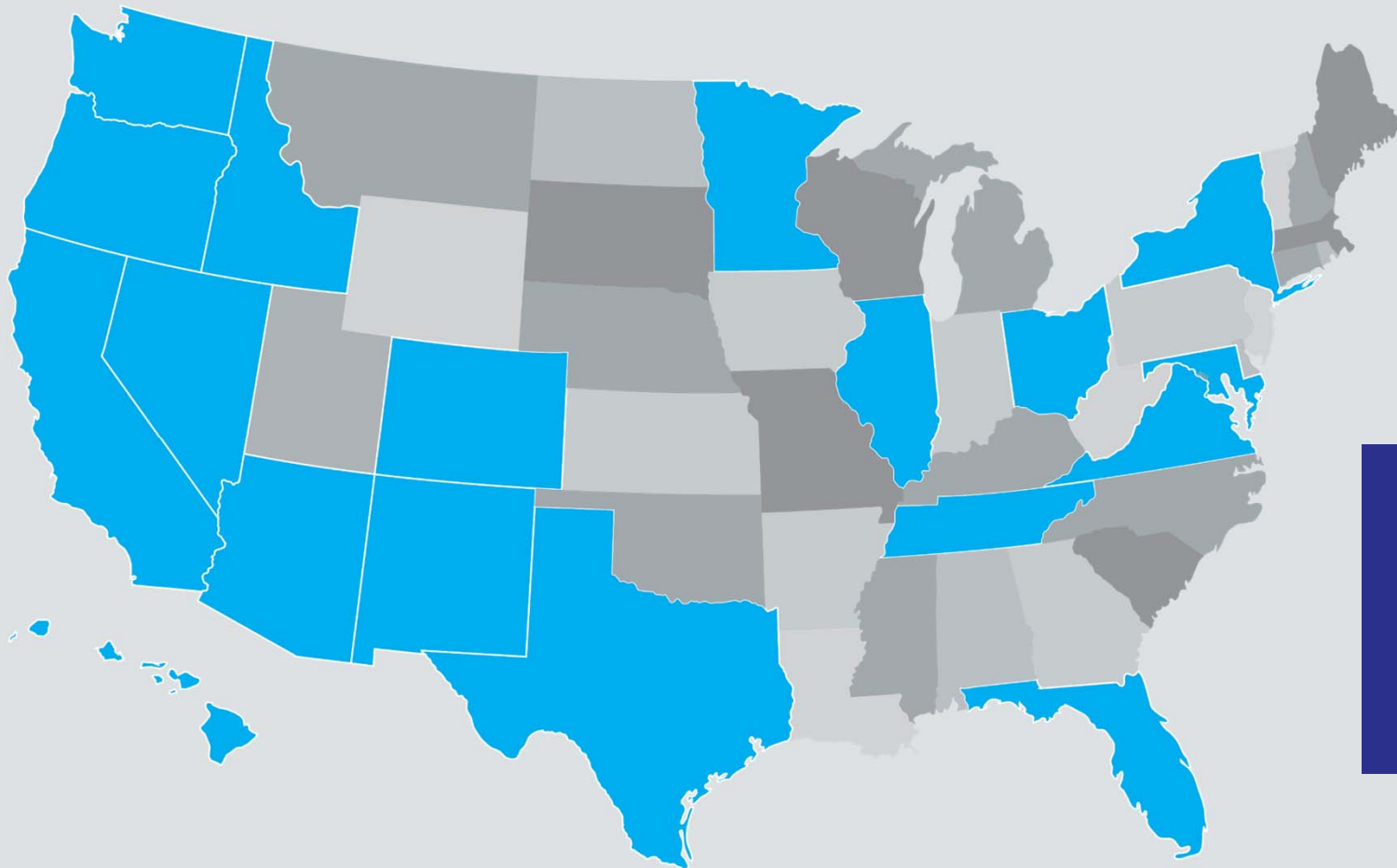
Andrew Ohrt, Resilience Practice Area Lead. West Yost Associates.

The Business of Cybersecurity for Your Organization. *Cybersecurity investments not only impact your organization's ability to protect its data, physical systems, and people, but the financial health as well. With the recent rollout of the U.S. EPA's mandatory requirements for cybersecurity, the regulatory environment for public water systems is dynamic. This presentation will discuss the new requirements, how an organization can understand the benefits of meeting the requirements, and how financial planning may be done to support the investment.*



The Business of Cybersecurity for Your Organization

May 16, 2023



Water/Wastewater Focused

- 215 staff
- Across 19 states

The New Cybersecurity Rule

WEST YOST

Big News...

EPA Cybersecurity for the Water Sector

Implementing cybersecurity best practices is critical for water and wastewater utilities to reduce the risk of cyber threats. The resources below can bring your utility one step closer to cyber resilience.

NEW EPA released a memorandum stressing the need for states to assess cybersecurity risk at drinking water systems to protect our public drinking water. The memorandum conveys EPA's interpretation that states must include cybersecurity when they conduct periodic audits of water systems (called "sanitary surveys") and highlights different approaches for states to fulfill this responsibility. [Read the memo and guidance.](#)

On this page:

- [Report Cybersecurity Incidents](#)
- [Assessing Cybersecurity in Sanitary Surveys](#)
- [Technical Assistance](#)
- [Cybersecurity Training for the Water Sector](#)
- [Additional Cybersecurity Resources and Tools](#)
- [Funding Options](#)
- [Alerts – National Cyber Awareness System](#)
- [Other US Government and Partner Cybersecurity Resources](#)
- [Cybersecurity Reports to Congress](#)




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

March 3, 2023

MEMORANDUM

SUBJECT: Addressing PWS Cybersecurity in Sanitary Surveys or an Alternate Process

FROM: Radhika Fox
Assistant Administrator 

TO: State Drinking Water Administrators
Water Division Directors, Regions I-X

More Recent News...

No. 23-____

**United States Court of Appeals
For the Eighth Circuit**

STATES OF MISSOURI, ARKANSAS, IOWA,

Petitioners,

v.

MICHAEL REGAN, IN HIS OFFICIAL CAPACITY AS ADMINISTRATOR OF THE
U.S. ENVIRONMENTAL PROTECTION AGENCY; U.S. ENVIRONMENTAL
PROTECTION AGENCY, AND RADHIKA FOX, IN HER OFFICIAL CAPACITY AS
ASSISTANT ADMINISTRATOR OF THE U.S. ENVIRONMENTAL PROTECTION
AGENCY,

Respondents.

PETITION FOR REVIEW

1. The U.S. Environmental Protection Agency appears to believe that “cooperative federalism” means EPA issues orders and States must fall in line—or else.

The General Process

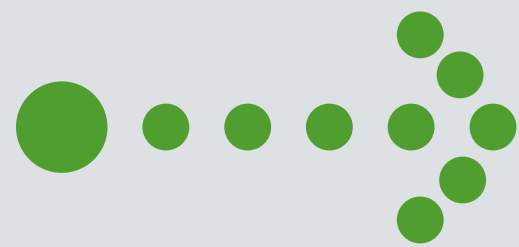
Option 1 – PWS/3rd Party Conducts the Assessment



Option 2 – State Surveyor Conducts the Assessment



Option 3 – Alternate State Program



What are Potential Cybersecurity Significant Deficiencies?

The EPA considers the absence of a practice or control, or the presence of a vulnerability, that has a high risk of being exploited either directly or indirectly, to compromise an Operational Technology system as a significant cybersecurity deficiency.

- The following factors helped the EPA the scope for identifying these significant deficiencies:
 - High risk and history of exploitation in the water sector or other critical infrastructures
 - Technically feasible for most PWSs to address
 - Significant capital expenditures are not typically required
 - Near-term implementation timeframe (usually less than one year)
- States retain their existing authority and discretion to determine when a cybersecurity gap identified during a sanitary survey should be designated as a significant deficiency.

EPA Cybersecurity Significant Deficiencies – Areas to Assess

Technical

- Access Security
 - Individual accounts
 - Least Privilege Principal
 - Multi-Factor Authentication
- Device Security
 - Network Segmentation
 - Vulnerability Management
- Disaster Recovery
 - Recovery systems in place & tested

Non-Technical

- Governance
 - Policies
 - Supply Chain Service Level Agreements (SLA)
- Training
 - Cyber 101 basic cyber understanding for all employees
 - OT-specific cyber training for operations & maintenance
 - Incident Response (IR) Plans

Resources to Build Compliance



American Water Works
Association



CPG

Cross-Sector Cybersecurity
Performance Goals

March 2023 Update



The NIST
Cybersecurity
Framework



Risk Mitigation Planning

Topic	Topic Number	Checklist Number	Question	Response	Recommendation	Explanation of Response		
Account Security	1.0	1.1	Does the PWS detect and block repeated unsuccessful login attempts?	Yes	Where technically feasible, System Administrators should be notified after a specific number of consecutive, unsuccessful login attempts in a short amount of time. At that point, future login attempts by the suspicious account should be blocked for a specified time or until re-enabled by an Administrator.	Lorem Ipsum		
		1.2	**Does the PWS change default passwords?	No	When feasible, change all default manufacturer or vendor passwords before equipment or software is put into service.	Lorem Ipsum		
		1.3	**Does the PWS require multi-factor authentication (MFA) wherever possible, but at a minimum on (OT) networks?					
		1.4	**Does the PWS require multi-factor authentication (MFA) wherever possible, but at a minimum on (OT) networks?					
		1.5	Does the PWS require multi-factor authentication (MFA) wherever possible, but at a minimum on (OT) networks?					
		1.6	Does the PWS require multi-factor authentication (MFA) wherever possible, but at a minimum on (OT) networks?					
		1.7	**Does the PWS require multi-factor authentication (MFA) wherever possible, but at a minimum on (OT) networks?					
		Account Security						
				Checklist Number	Question	Response	Explanation of Response	
				1.1	Does the PWS detect and block repeated unsuccessful login attempts?	Yes	Lorem Ipsum	
		1.2	**Does the PWS change default passwords?	No	Lorem Ipsum			
		1.3	**Does the PWS require multi-factor authentication (MFA) wherever possible, but at a minimum on (OT) networks?					
		1.4	**Does the PWS require multi-factor authentication (MFA) wherever possible, but at a minimum on (OT) networks?					
		1.5	Does the PWS require multi-factor authentication (MFA) wherever possible, but at a minimum on (OT) networks?					
		1.6	Does the PWS require multi-factor authentication (MFA) wherever possible, but at a minimum on (OT) networks?					
		1.7	**Does the PWS require multi-factor authentication (MFA) wherever possible, but at a minimum on (OT) networks?					
			Account Security	1.1				
			Question:		Does the PWS detect and block repeated unsuccessful login attempts?			
			Planned Risk Mitigation Action:		Where technically feasible, System Administrators should be notified after a specific number of consecutive, unsuccessful login attempts in a short amount of time. At that point, future login			
			Current Status:		In progress			
			Target Completion Date:		5/21/2023			
			PWS Personnel Responsible:		Director of Operations			
			Involved Departments and/or Agencies:		Operations, OT, IT			
			PWS Notes:		Project underway.			

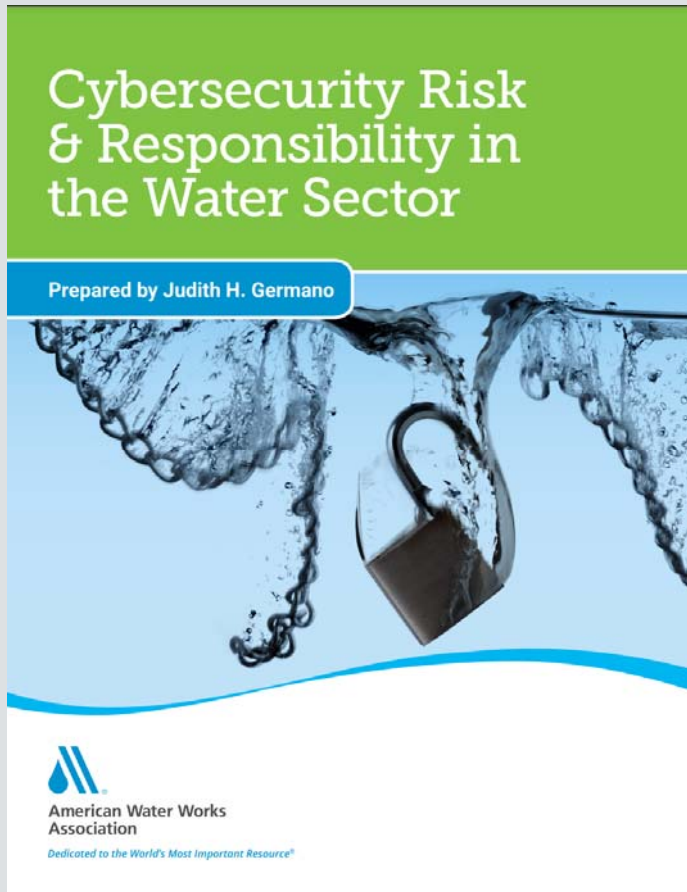
So, what are we doing about it?

- Reaching out to clients – to educate and be educated
- Updating our cybersecurity assessment scope of work template
- Adjusting how we document relevant cybersecurity controls

Financial Aspects of Cybersecurity

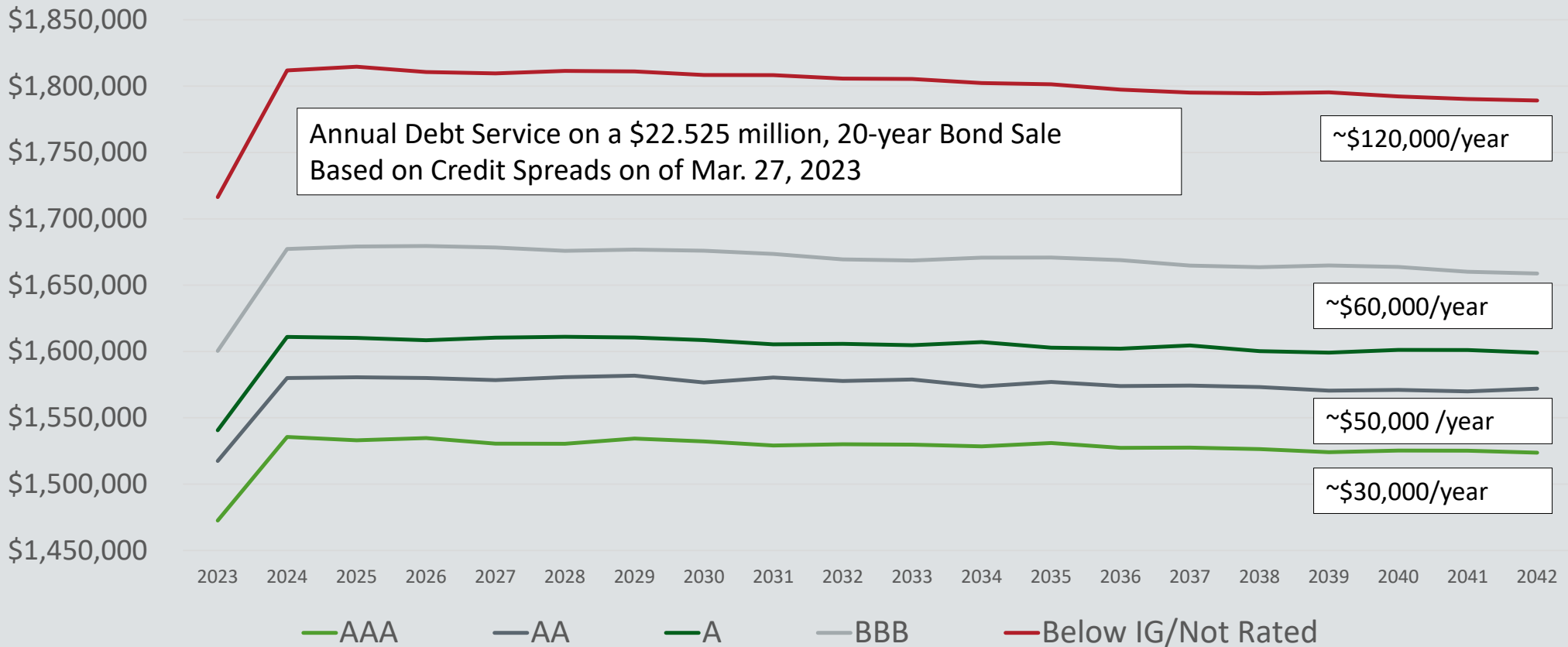
Borrowing and Insurance

Cybersecurity Risk & Responsibility

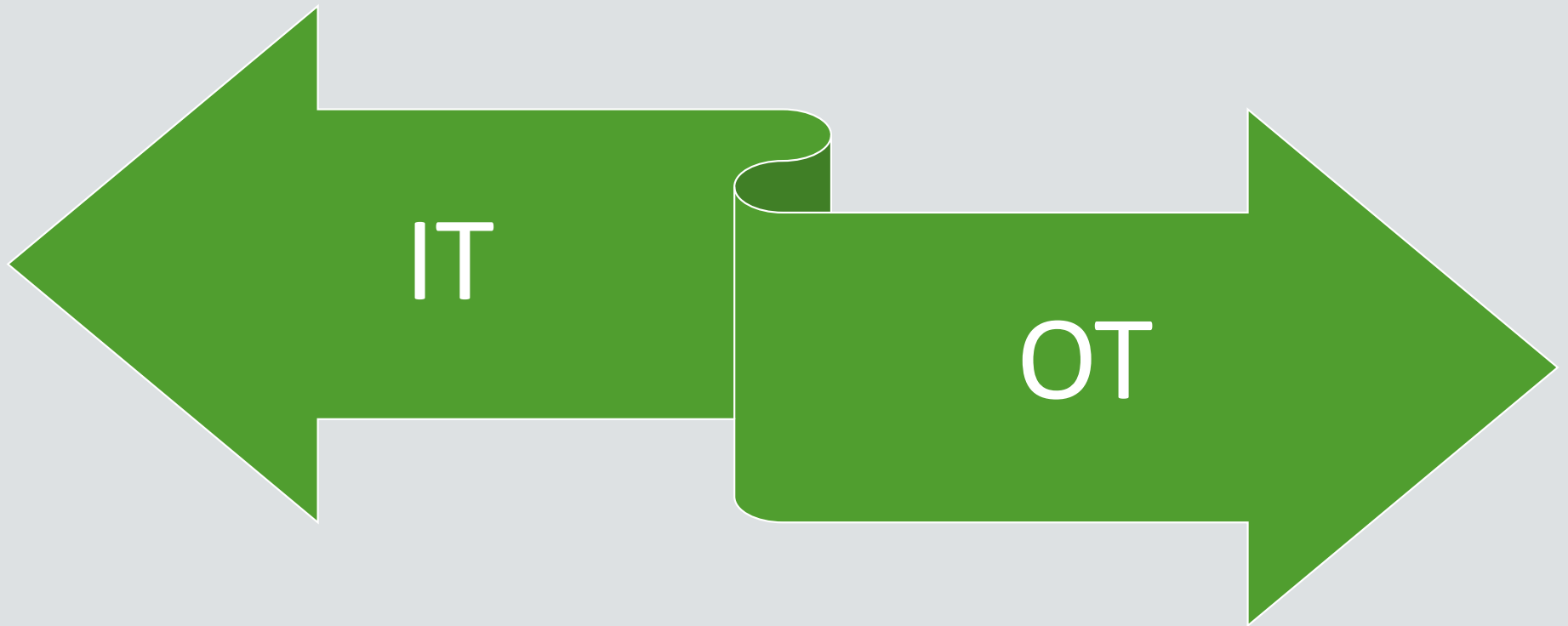


- Cyber Threats are Foreseeable
- Implement Best Practices
- Demonstrate Due Diligence
- Insurance & risk transfer
- ***Fiduciary Responsibility***

Borrowing Examples – Hypothetical Annual Repayment Schedule



Cyber Insurance



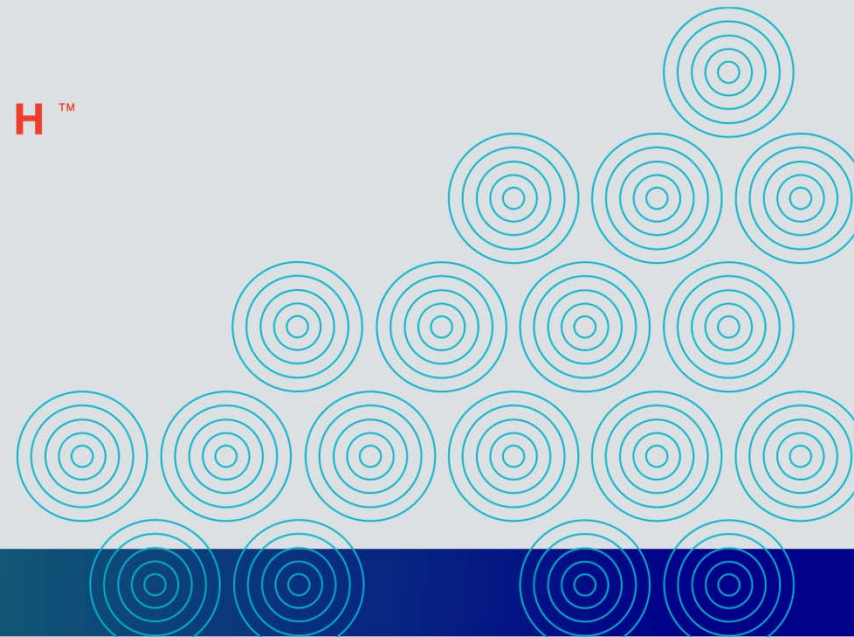
Grant Funding Post Cybersecurity Rule



Financial Planning for Cybersecurity Improvements with Waterworth



WATERWORTH™

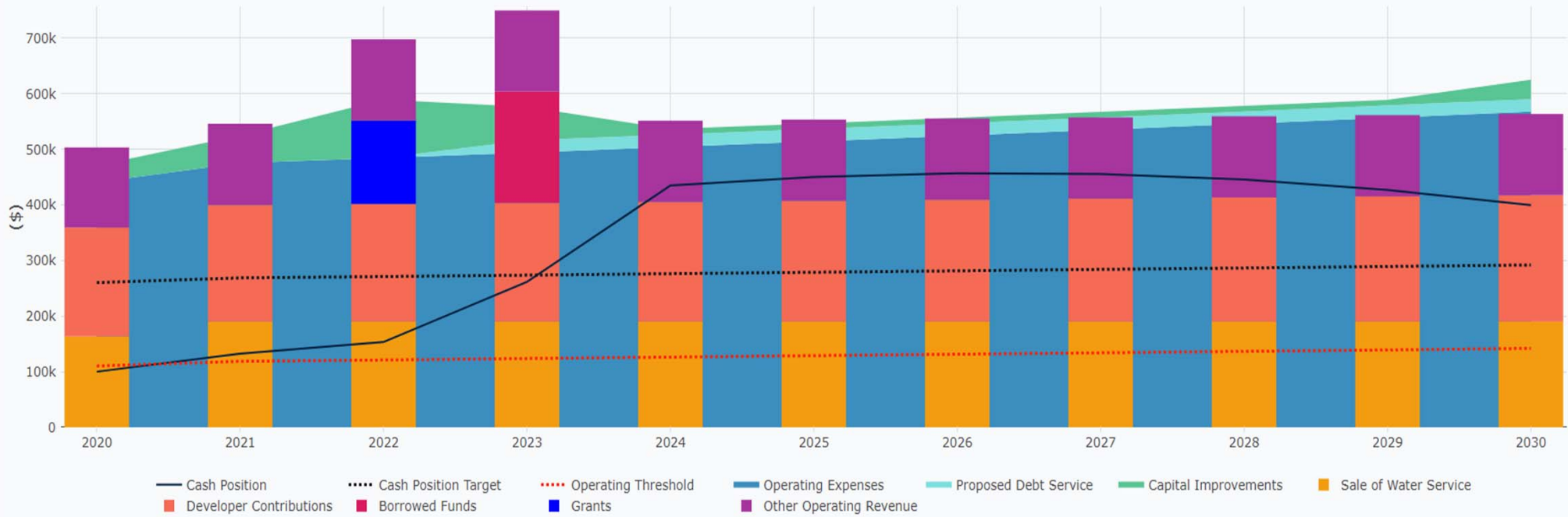


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LFM Dashboard

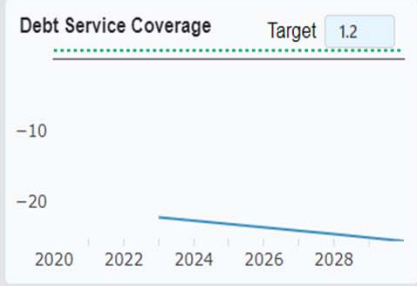
← Back Next →

Financial Model - Baseline (No epa)



CapEx Future Budget

Capital Improvements	Capital Expansion
2030	2023
25,000	0
0.0%	0.0%



Cash Reserve Policies

Working Capital	<input type="text" value="0.0%"/>
Operating Contingency	<input type="text" value="25.0%"/>
Debt	<input type="text"/>
Rate Stabilization	<input type="text"/>
General Policy	<input type="text"/>
Capital Reserve Target	<input type="text" value="100.0%"/>

Interest on Surplus

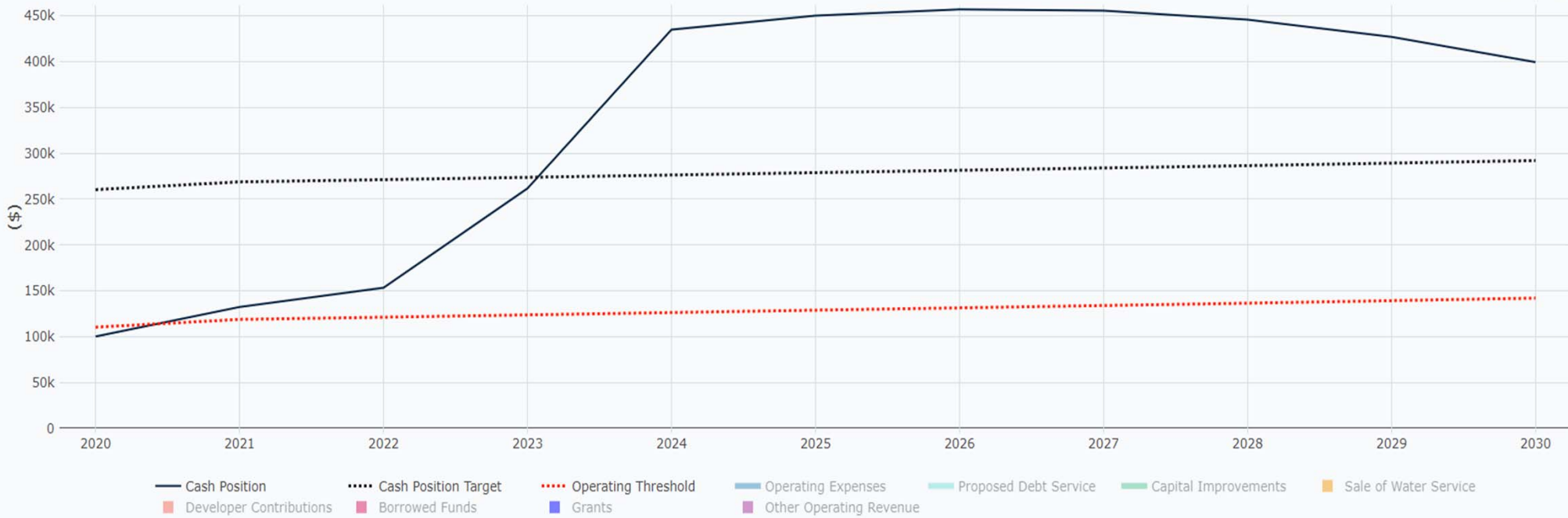
Start Year	<input type="text" value="2023"/>
Rate	<input type="text" value="0.0%"/>



LFM Dashboard

← Back Next →

Financial Model - Baseline (No epa)

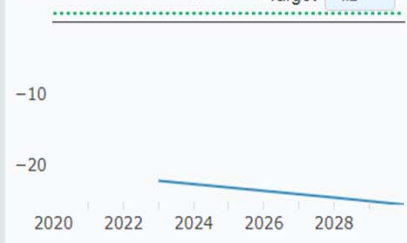


CapEx Future Budget

Capital Improvements	Capital Expansion
2030	2023
25,000	0
0.0%	0.0%

Debt Service Coverage

Target 1.2



Cash Reserve Policies

Working Capital	0.0%
Operating Contingency	25.0%
Debt	
Rate Stabilization	
General Policy	
Capital Reserve Target	100.0%

Interest on Surplus

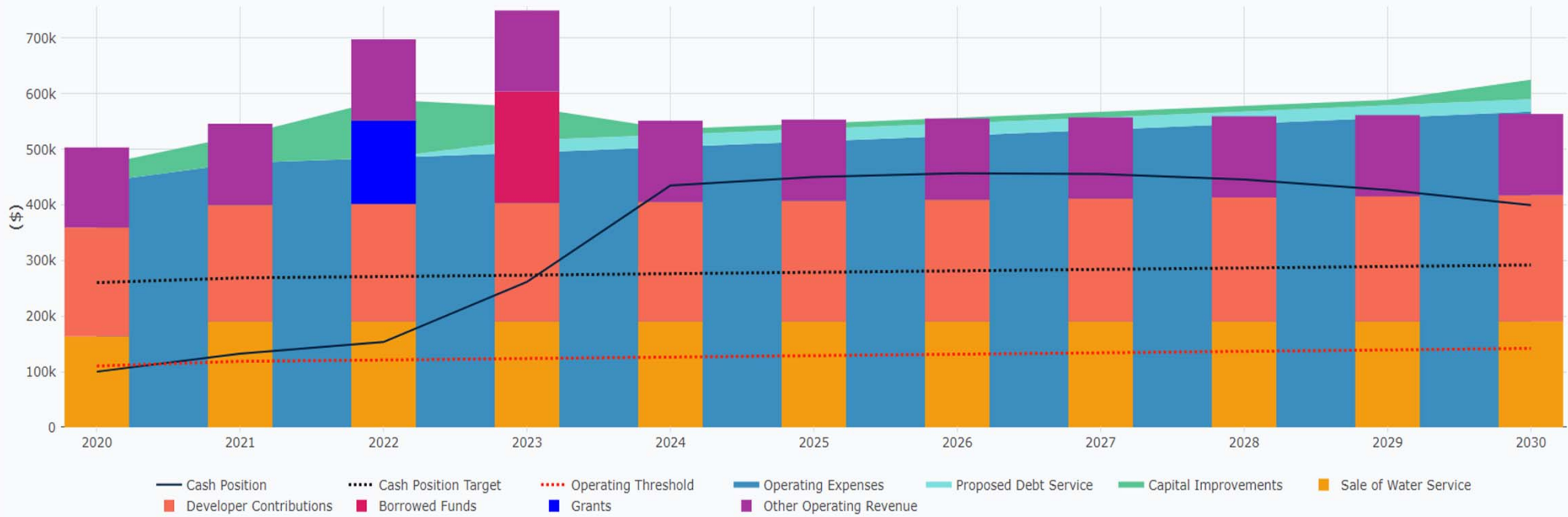
Start Year	2023
Rate	0.0%

Count: 3 Average: 50,000 Sum: 150,000

LFM Dashboard

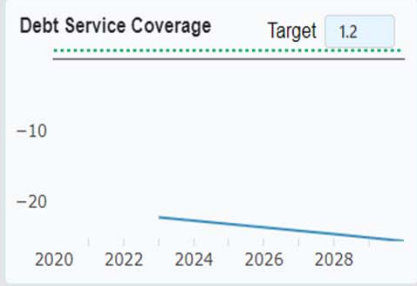
← Back Next →

Financial Model - Baseline (No epa)



CapEx Future Budget

Capital Improvements	Capital Expansion
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Working Capital	<input type="text" value="0.0%"/>
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Interest on Surplus

Start Year	<input type="text" value="2023"/>
Rate	<input type="text" value="0.0%"/>

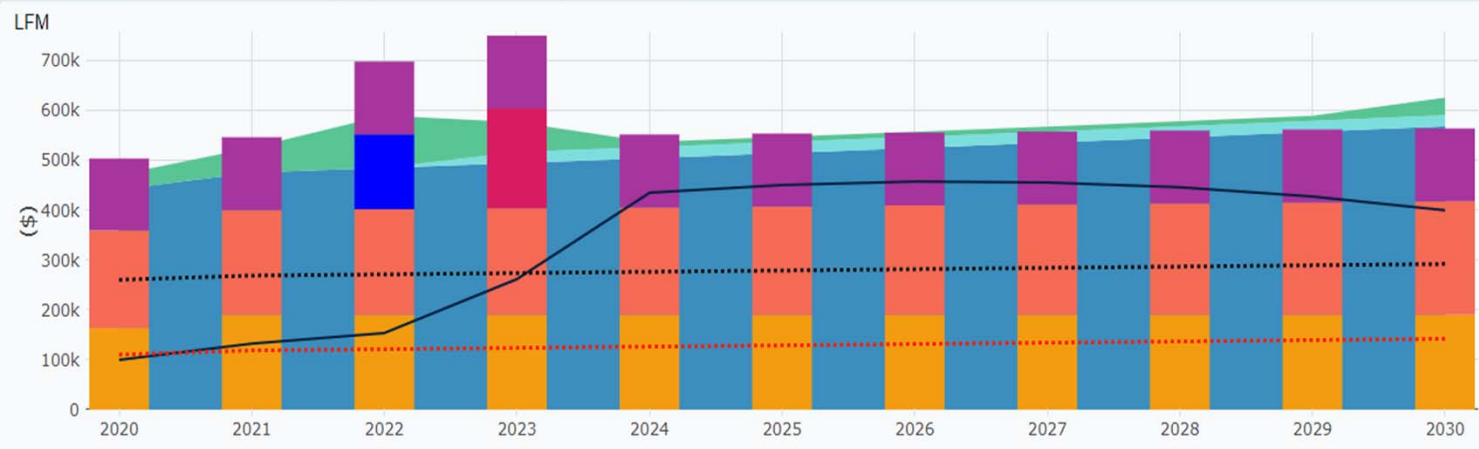


Filter scenarios by name

All ★ ☆

★ 🔒 📄 ⚙️ Baseline (No epa) Copy Clone Compare Reports 🗑️

Scenario Last Edited Tuesday, May 16, 2023 at 10:38 AM PDT by Ben MacDonald



COSA

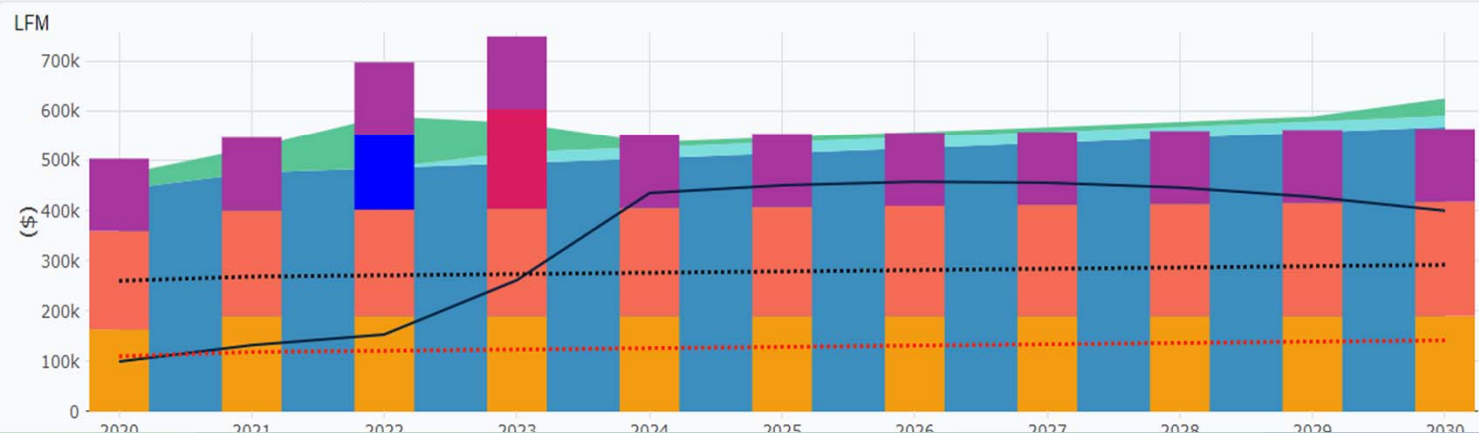
Start a cost-of-service model.
Billing Data
Asset Inventory
Financials

Rate Design

Start a rate structure
Billing Data

★ 🔒 📄 ⚙️ Baseline (No epa) Clone Compare Reports 🗑️

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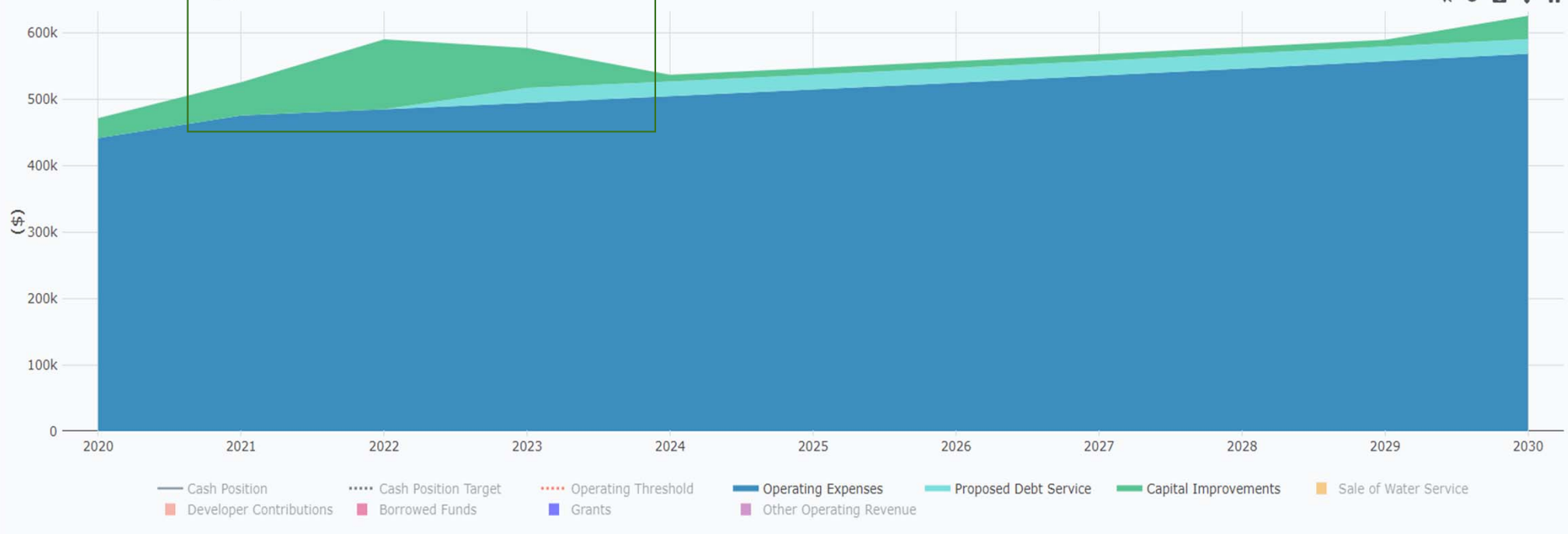
Start a rate structure
Billing Data



LFM Dashboard

← Back Next →

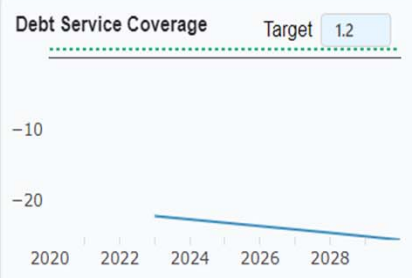
Financial Model - Baseline (No epa)



— Cash Position
 Cash Position Target
 Operating Threshold
 ■ Operating Expenses
 ■ Proposed Debt Service
 ■ Capital Improvements
 ■ Sale of Water Service
■ Developer Contributions
 ■ Borrowed Funds
 ■ Grants
 ■ Other Operating Revenue

CapEx Future Budget

Capital Improvements	Capital Expansion
2030	2023
25,000	0
0.0%	0.0%



Cash Reserve Policies

- Working Capital:
- Operating Contingency:
- Debt:
- Rate Stabilization:
- General Policy:
- Capital Reserve Target:

Interest on Surplus

- Start Year:
- Rate:

Count: 3 Average: 50,000 Sum: 150,000

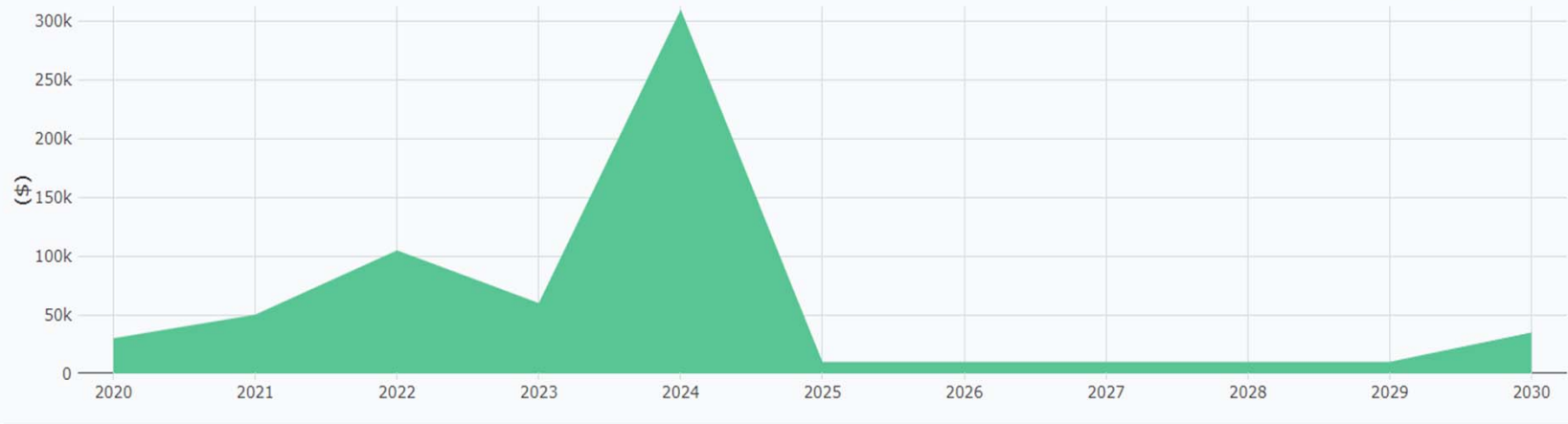
LFM Actuals & Budget Capital Expenses Description

← Back Next →

CapEx Future Budget

Capital Improvements	Capital Expansion
2030	2023
25,000	0
0.0%	0.0%

Financial Model - Baseline



\$ % Excel

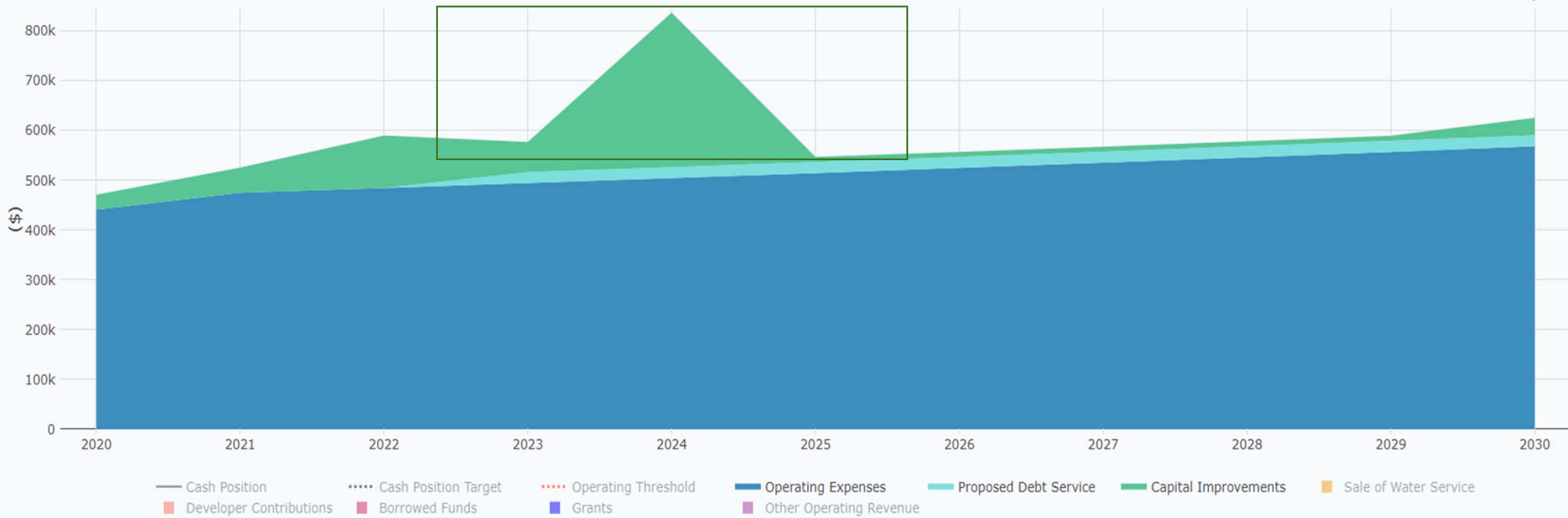
Id	Item Descriptor	Category	Inflation	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	Hydrant/Valve Replacements	Capital Improvements	0.00%	0	20,000	20,000	0	0	0	0	0	0	0	0
2	New Meters	Capital Improvements	0.00%	0	0	0	50,000	0	0	0	0	0	0	0
3	Valves	Capital Improvements	0.00%	20,000	20,000	0	0	0	0	0	0	0	0	0
4	New Equipment	Capital Improvements	0.00%	0	0	75,000	0	0	0	0	0	0	0	0
5	Capital Improvements	Capital Improvements	0.00%	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
6	EPA mandate cyber	Capital Improvements	0.00%	0	0	0	0	300,000	0	0	0	0	0	0
7		Capital Improvements	0.00%	0	0	0	0	0	0	0	0	0	0	0
Y	Total			30,000	50,000	105,000	60,000	310,000	10,000	10,000	10,000	10,000	10,000	35,000



LFM Dashboard

← Back Next →

Financial Model - Baseline

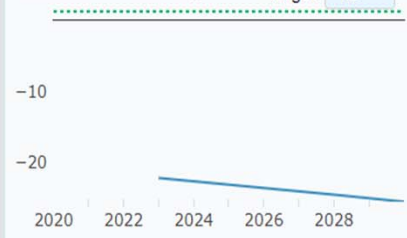


CapEx Future Budget

Capital Improvements	Capital Expansion
2030	2023
25,000	0
0.0%	0.0%

Debt Service Coverage

Target 1.2



Cash Reserve Policies

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Operating Contingency	25.0%
Debt	
Rate Stabilization	
General Policy	
Capital Reserve Target	100.0%

Interest on Surplus

Start Year	2023
Rate	0.0%

Count: 3 Average: 50,000 Sum: 150,000

LFM Dashboard

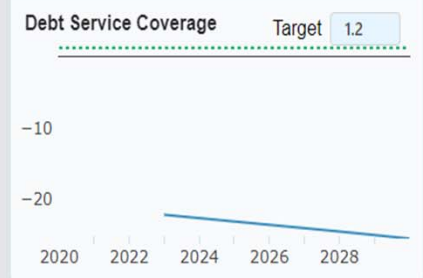
← Back Next →

Financial Model - Baseline



CapEx Future Budget

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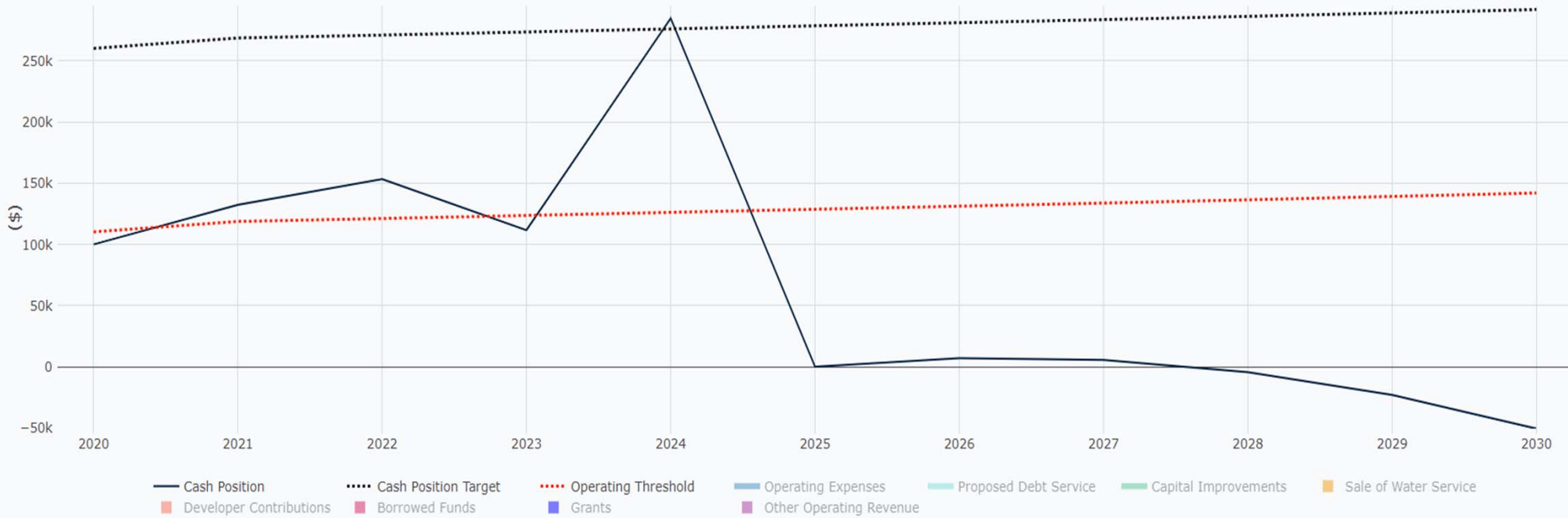
Start Year	2023
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LFM Dashboard

← Back Next →

Financial Model - Baseline

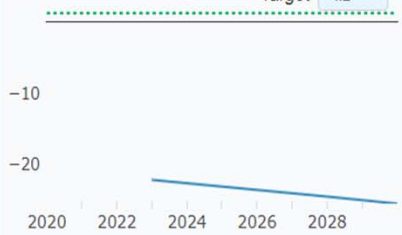


CapEx Future Budget

Capital Improvements	Capital Expansion
2030	2023
25,000	0
0.0%	0.0%

Debt Service Coverage

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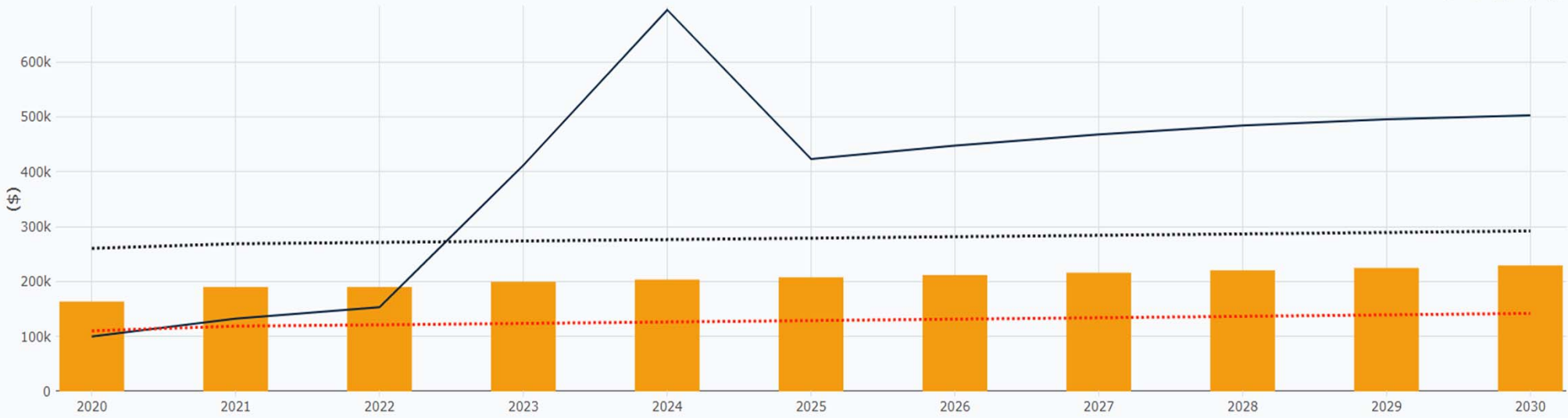
Start Year	2023
Rate	0.0%

Count: 3 Average: 50,000 Sum: 150,000

LFM Sale of Service Forecasting Rates and Demand Adjust Description

← Back Next →

Financial Model - Baseline (With Rate Increases)



Rate Schedule

Details Excel

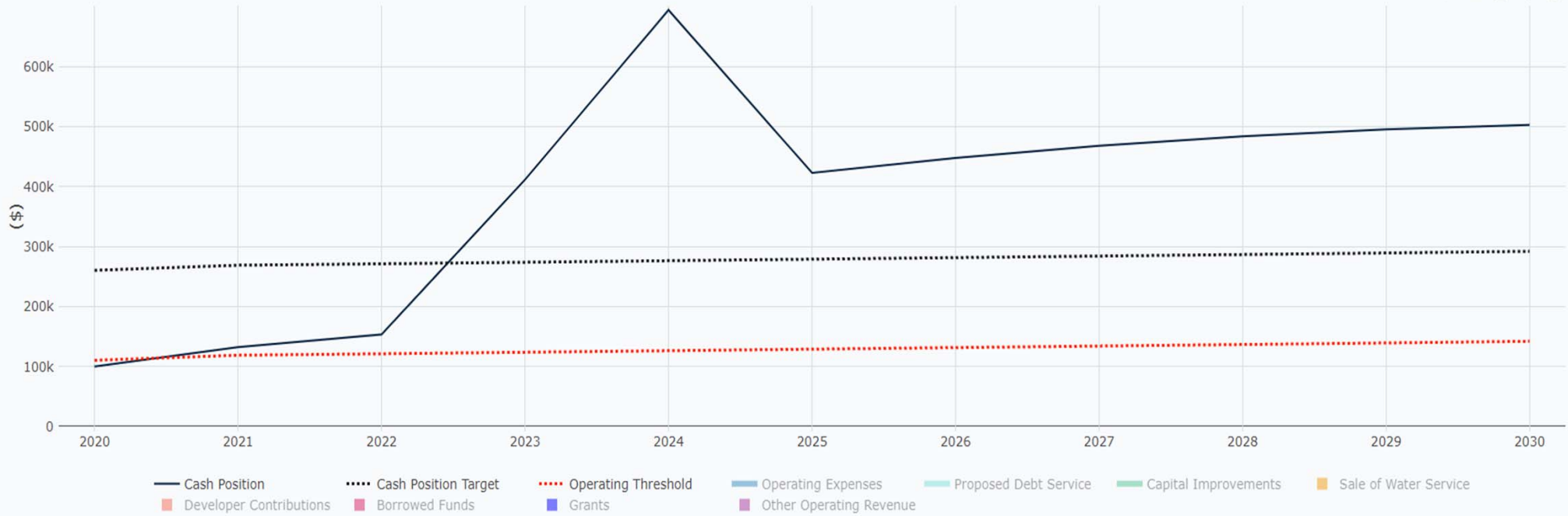
Id	Escalation Rates	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
▼ Sale of Water Service												
S1	Population Growth	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
S2	Decline	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
S3	Rate Increase	0.00%	0.00%	0.00%	5.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
▶ Sale of Water Service2												
Sale of Water Service Total												
T	Revenue (1 Row)	163,443	190,000	190,000	199,500	203,490	207,560	211,711	215,945	220,264	224,669	229,163



LFM Dashboard

← Back Next →

Financial Model - Baseline (With Rate Increases)

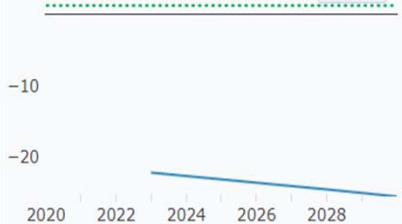


CapEx Future Budget

Capital Improvements	Capital Expansion
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25,000	0
0.0%	0.0%

Debt Service Coverage

Target 1.2



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General Policy	
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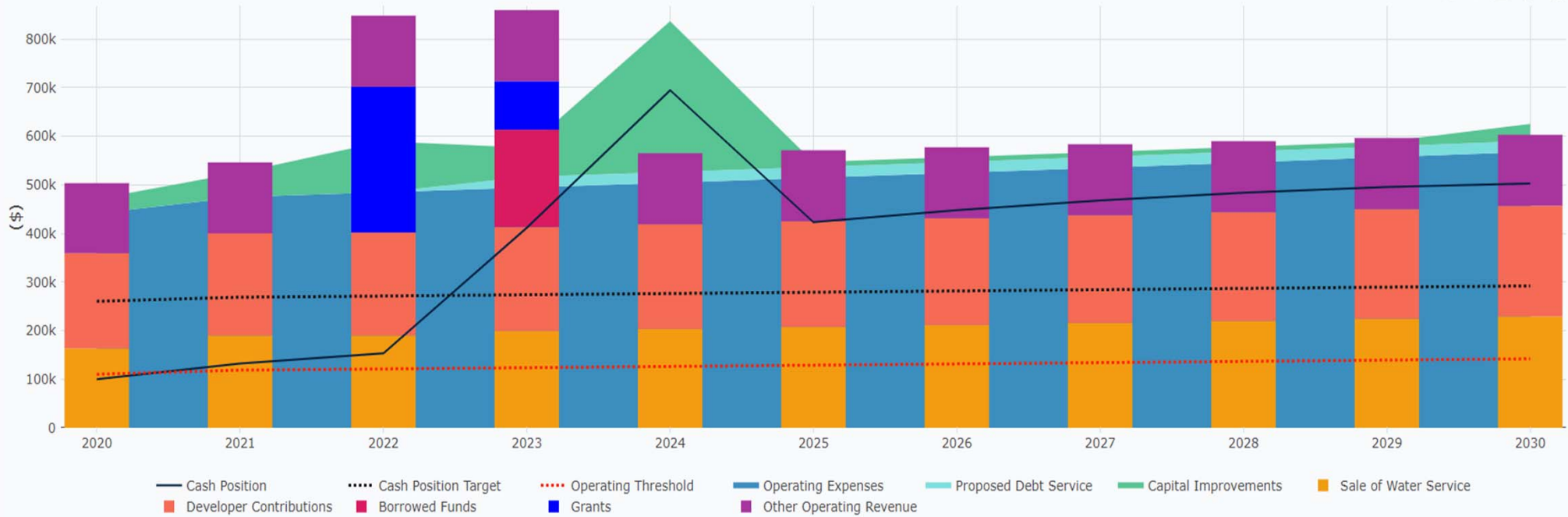
Start Year	2023
Rate	0.0%

Count: 3 Average: 50,000 Sum: 150,000

LFM Dashboard

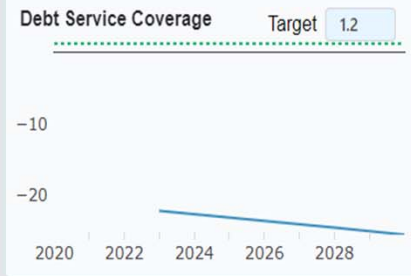
← Back Next →

Financial Model - Baseline (With Rate Increases)



CapEx Future Budget

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25,000	0
0.0%	0.0%



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Operating Contingency	<input type="text" value="25.0%"/>
Debt	<input type="text"/>
Rate Stabilization	<input type="text"/>
General Policy	<input type="text"/>
Capital Reserve Target	<input type="text" value="100.0%"/>

Interest on Surplus

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Rate	<input type="text" value="0.0%"/>

Count: 3 Average: 50,000 Sum: 150,000

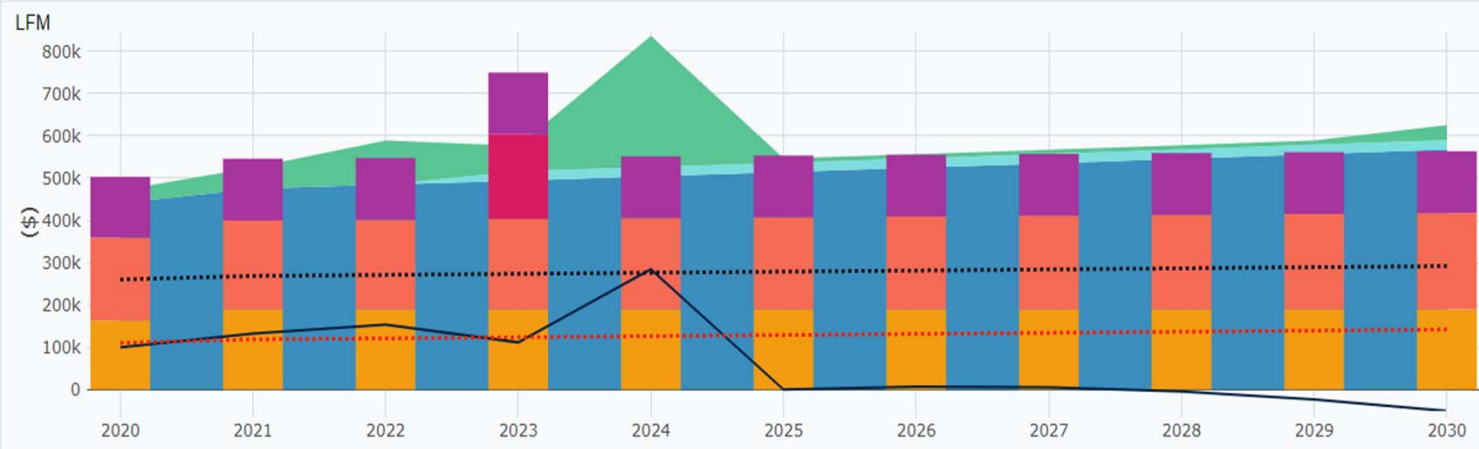
Filter scenarios by name

All ★ ☆

★ Baseline

Clone Compare Reports

Scenario Last Edited Friday, May 12, 2023 at 11:04 AM PDT by Ben MacDonald



COSA

Start a cost-of-service model.
Billing Data
Asset Inventory
Financials

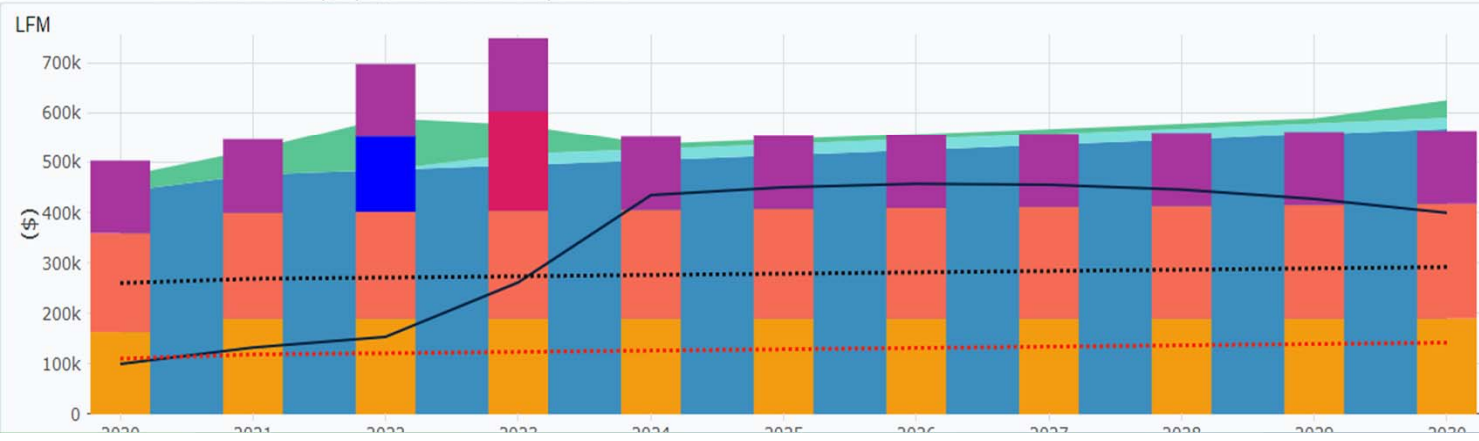
Rate Design

Start a rate structure
Billing Data

★ Baseline (No epa)

Clone Compare Reports

Scenario Last Edited Friday, May 12, 2023 at 10:16 AM PDT by Luke Gaba



COSA

Start a cost-of-service model.
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Rate Design

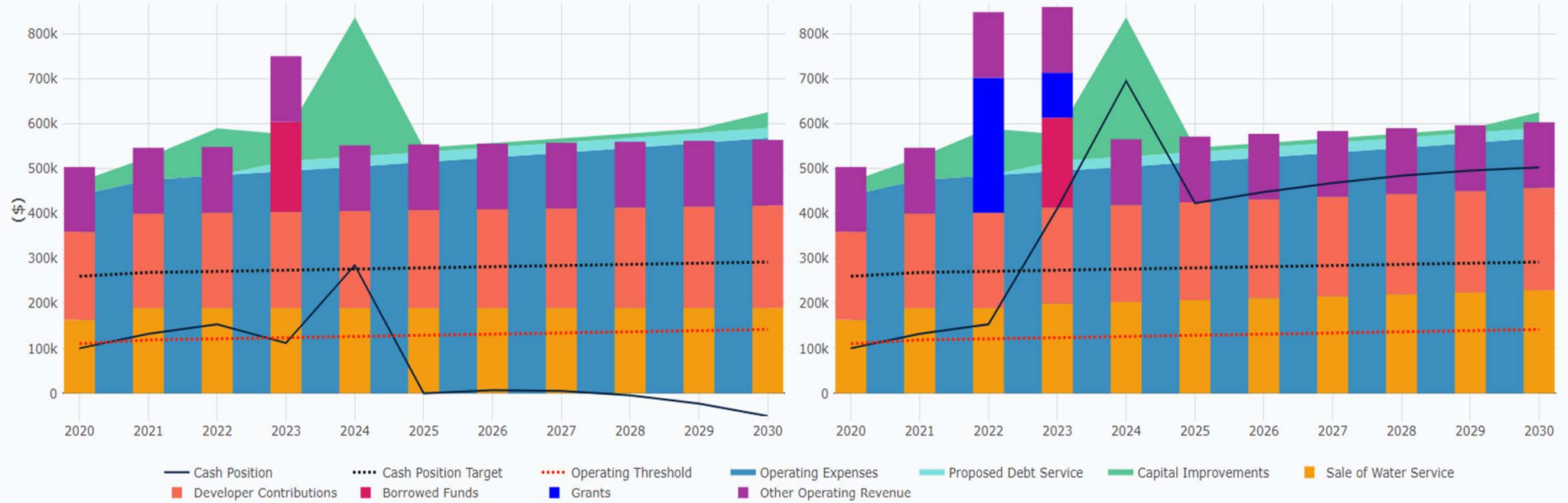
Start a rate structure
Billing Data



Difference Side-by-Side Overlay

Baseline Scenario ↕ Baseline (With Rate Increases) Scenario

Financial Models: Baseline, Baseline (With Rate Increases)

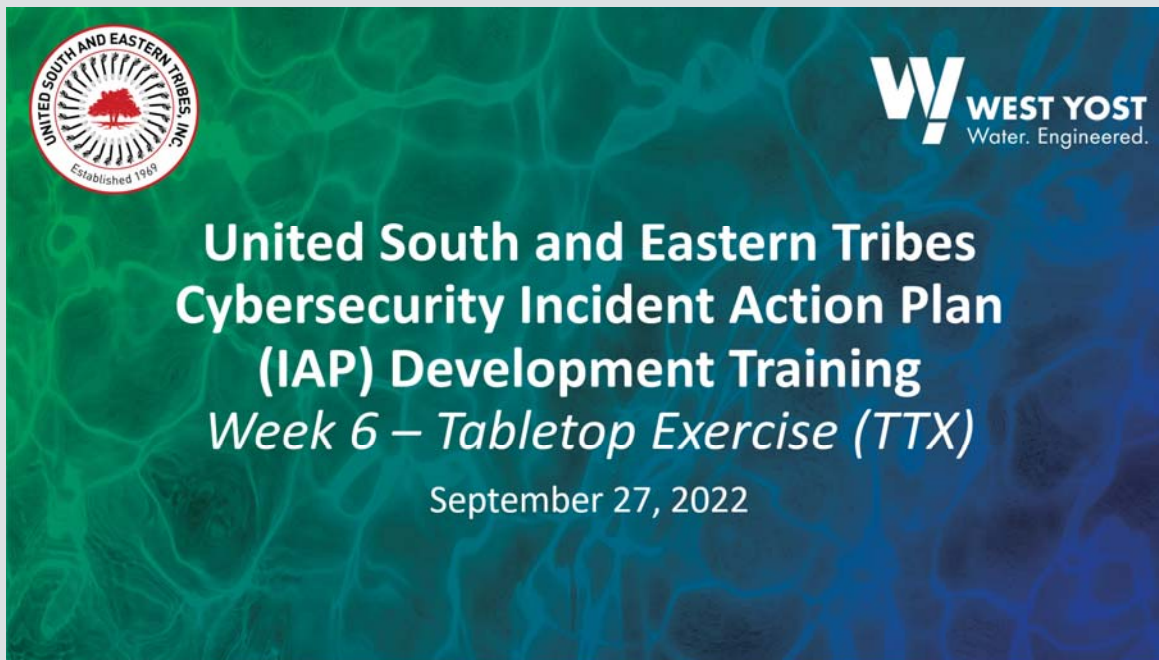


	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1 Cash Position Opening Balance	100,000	132,319	153,319	111,619	284,794	-55	6,906	5,505	-4,431	-23,08
Revenues										
10 Sale of Water Service	163,443	190,000	190,000	190,000	190,000	190,000	190,000	190,000	190,000	190,000
11 Sale of Water Service2	0	0	0	0	0	0	0	0	0	0
12 Developer Contributions	195,894	210,000	211,800	213,636	215,509	217,419	219,367	221,355	223,382	225,44
13 Grants	0	0	0	0	0	0	0	0	0	0

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1 Cash Position Opening Balance	100,000	132,319	153,319	411,619	694,294	422,935	447,455	467,766	483,775	495,39
Revenues										
10 Sale of Water Service	163,443	190,000	190,000	199,500	203,490	207,560	211,711	215,945	220,264	
11 Sale of Water Service2	0	0	0	0	0	0	0	0	0	0
12 Developer Contributions	195,894	210,000	211,800	213,636	215,509	217,419	219,367	221,355	223,382	225,44
13 Grants	0	0	300,000	100,000	0	0	0	0	0	0

Conclusion

USET Cybersecurity Incident Response Planning Resources

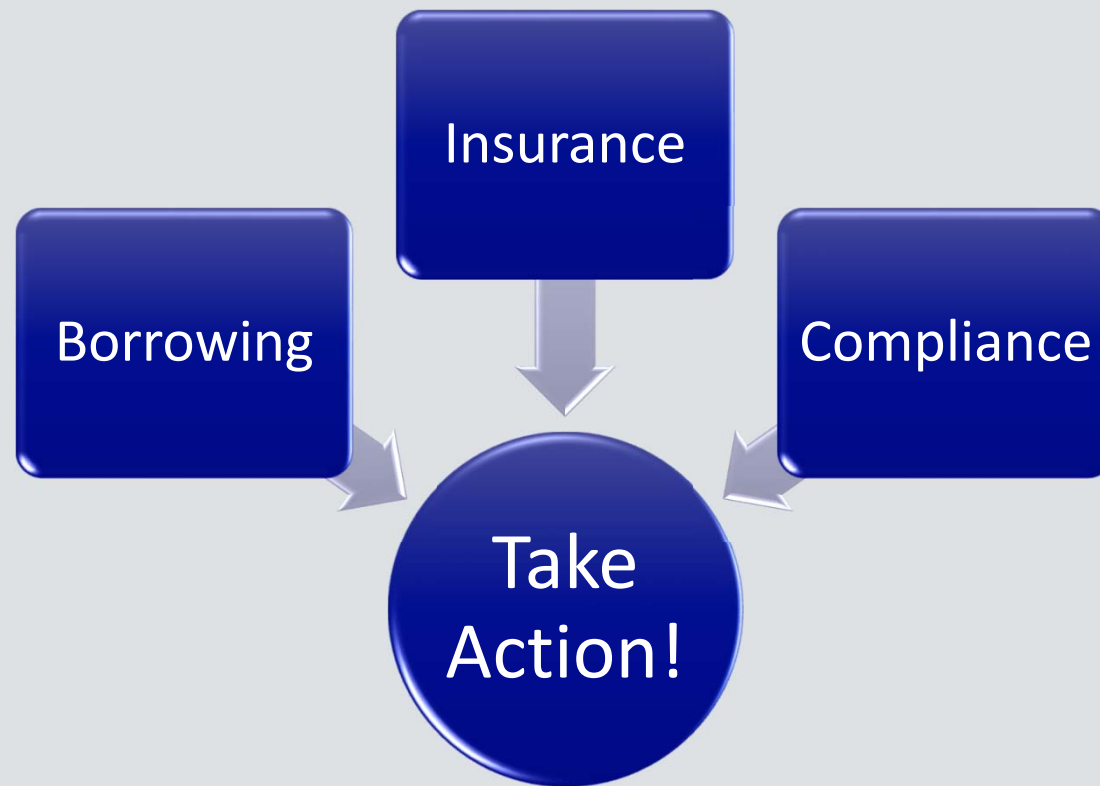


The poster features a green and blue background with a circular logo for the United South and Eastern Tribes, Inc. (USET) on the left, established in 1969. On the right is the West Yost logo, which includes a stylized 'WY' and the text 'WEST YOST Water. Engineered.' The main text is centered and reads: 'United South and Eastern Tribes Cybersecurity Incident Action Plan (IAP) Development Training Week 6 – Tabletop Exercise (TTX) September 27, 2022'.



The cover features a blue background with a glowing padlock icon and circuitry patterns. The text is centered and reads: 'USET Cybersecurity Incident Action Plan Development Training CISA Tabletop Exercise Package – Water Systems September 27, 2022 U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency'. There are 'TLP:WHITE' labels in the top right and bottom right corners.

In Conclusion –



Thank you!



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THANK YOU

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