MAKING THE RIGHT CHOICES FOR YOUR UTILITY

How EPA's Water Infrastructure Planning Tool Can Help Utilities Engage Community & Make Cost-Effective Multi-Benefit Investments



Today's Speakers



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Water Utilities are Anchor Institutions





Safeguarding public health



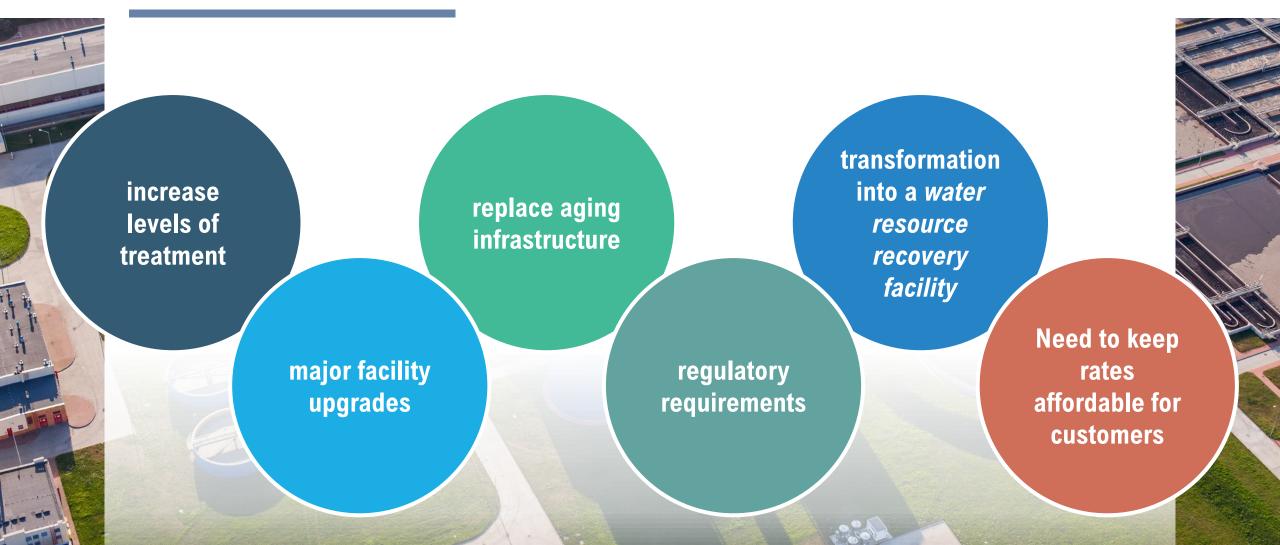
Sustaining critical infrastructure investments

Providing clean and safe water for hundreds of millions

Protecting and enhancing the environment



Water Utilities & Large Capitol Investments



Investments last for decades



Costly, Long Term Financial Commitment

Customer Funded

Service lives 50+ Years

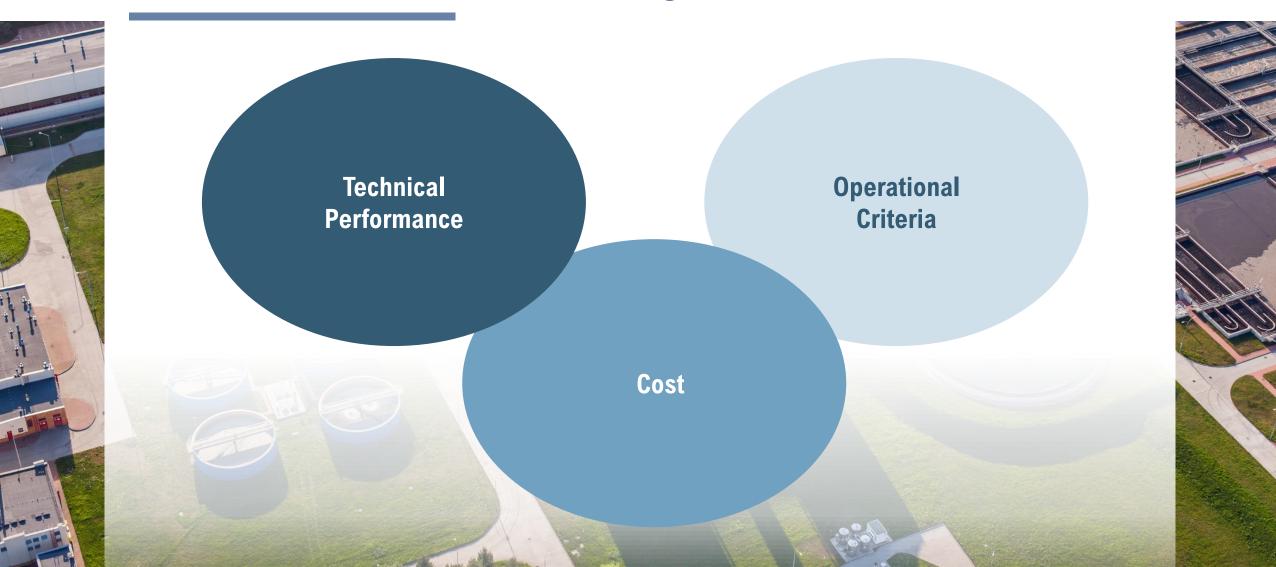
Today's capital project decisions are the foundation for decades of commitment to funding both the operating and capital costs over decades of service.

Investments last for decades – and it's more than cost

Investments can provide economic, environmental, and social benefits to the community



Conventional alternatives analysis



Conventional alternatives analysis *may fall short:*



EPA's capital project decision-making method, Augmented Alternatives Analysis (AAA), was developed to address these challenges in modern-day project decision-making.

Augmented Alternatives Analysis (AAA)

Adds to the core tenets of conventional alternatives analysis benefitting your utility in a few key ways:

Begins with goals, not cost

Drills down from goals to metrics

Creates common scale for metrics (-5 to +5)

Considers cost as final step (cost-benefit ratio)

Pilot Tested Method, Real World Results

City of Saco Water Resource Recovery Department

- Small Town
- Water Resource Recovery Utility

High Line Canal Conservancy

- Non-profit
- Works with 11 jurisdictions and water districts

Camden County Municipal Utilities Authority

- Large City
- Water Resource Recovery Utility

Camden County Municipal Utilities Authority (2016)



Public wastewater utility serving
City of Camden, City of Gloucester, and Camden County



Revenues: ~\$100 million/annually



Residents served Lines Plant capacity 510,0000 125 mi. 58 mgd



Receiving water: Delaware River



LTCP required to be in place by 2020 (Camden Goal: 2018)



Average number of Combined Sewer Overflows annually: 70

Camden County Municipal Utilities Authority (2016)

AAA Provided:

- An organizing framework for **meaningful** community input
- Systematic process to identify optimal project from a triple bottom line standpoint

Outcomes:

- Significantly more greenspace created for community benefit
- Fewer overflows and less flooding for environmental and public health benefit
- Only slightly greater cost, mitigated by SRF funding

AAA Process

A step-by-step walkthrough



How does AAA add to a conventional analysis?

	Conventio	nal Alternatives Analysis 🚽 Augmented Steps of AAA							
•	1	Understand Community Priorities							
	2	Determine Project Goals							
	3	Define Objectives							
•	4	Rank the Importance of Goals							
	5	Establish Criteria							
	6	Choose Metrics for Your Criteria							
	7	Create Performance Ranges							
n	8	Evaluate Performance of Each Alternative							
T	9	Compare Across Alternatives							
-	10	Incorporate Cost Considerations							

Step 1: Understand Community Priorities



Attending Community Meetings

Step 1: Understand Community Priorities



Step 1: Understand Community Priorities



Step 2: Determine Goals

Goal are **broad**, **high-level statements** that provide a snapshot of the **desired final results** that you hope to achieve (both within the utility and broader community).

Step 2: Determine Goals – Camden Example



Enhance Public Health and Environment



Produce Economic and Neighborhood Benefits



Optimize Existing Public Resources Meet or Exceed **Permit Requirements**

Enhance Overall System Resiliency

Increase Public



Understanding and Support for CSO Solutions

Step 2: Determine Goals – Camden Example

Goal

Enhance Public Health and Environment



Step 3: Define Objectives – Camden Example



An **objective** is an outcome that contributes to the achievement of the goal.

Step 3: Define Objectives – Camden Example



Reduce human contact with sewage

Improve receiving water quality



Increase compatibility with regional redevelopment efforts

Improve livability in neighborhoods



Identify and establish an affordable CSO strategy

Reduce the amount of stormwater and groundwater entering system

Support ongoing collection system operations



Increase resilience to storm surges

Increase adaptability to changing hydrologic conditions



Meet/exceed capture targets

Meet/exceed treatment targets



Transfer knowledge of CSO problems and value of wastewater services

Step 4: Rank the Importance of Goals – Camden Example

Ranking is the importance, prioritization, or "weight" of one goal in relation to another.

Step 4: Rank the Importance of Goals – Camden Example



Step 5: Establish Criteria – Camden Example

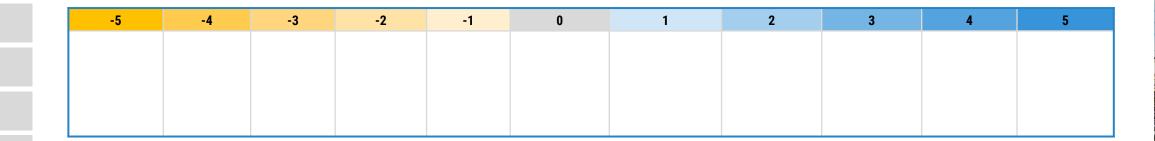


Criteria reveal an alternative's strengths and weaknesses. They demonstrate how an alternative will perform relative to goal and objective.

Step 6: Choose Metrics – Camden Example



Metrics measure performance of each alternative. They can be quantitative or qualitative.





-5	-4	-3	-2	-1	0	1	2	3	4	5
					Alternative					
					has no					
					impact on the flood					
					the flood					
1	1 - Cal	5.3			quantity	and the second			2	



-5	-4	-3	-2	-1	0	1	2	3	4	5
										Alternative
			-		Alternative					reduces
					has no					flood
					impact on					quantity
					the flood					by more
					quantity					than 40%
TV			- all be	6	E Artho	P. Circhill	A manage	Contraction of the second		annually



-5	-4	-3	-2	-1	0	1	2	3	4	5
					Alternative has no impact on the flood quantity					Alternative reduces flood quantity by more than 40% annually



-5	-4	-3	-2	-1	0	1	2	3	4	5
					Alternative has no impact on the flood quantity	Alternative reduces flood quantity by up to 10% annually	Alternative reduces flood quantity by 11- 20% annually	Alternative reduces flood quantity by 21- 30% annually	Alternative reduces flood quantity by 31- 40% annually	Alternative reduces flood quantity by more than 40% annually

Met		flood quantity % reduction in residential areas of concern										
-5 -4 -3	-2 -1		0	1		2		3	4			5
			no impact or flood quantity	vitantity	by up to c	reduces flood Juantity by 11-2 annually	20% quantity	es flood by 21-30% nually	reduces flo quantity by 31 annually	-40%	quant	uces flood tity by mor 0% annua
Met	ric	Area	of recreati	onal snace	in acres							
-5	-4		-3	-2	-1	0	1	2	3		4	5

Alternative 1: All Grey

Alternative 2: Moderate Green

Alternative 3: Heavy Green

flood quantity % reduction in residential areas of concern

-5	-4	-3	-2	-1	0	1	2	3	4	5	
					has no impact on the flood quantity	reduces flood quantity by up to 10% annually	reduces flood quantity by 11-20% annually	reduces flood quantity by 21-30% annually	reduces flood quantity by 31-40% annually	reduces floc quantity by m than 40% annu	ore
								Alternative 1	: All Grev	0	

-	
Alternative 2: Moderate Green	3
Alternative 3: Heavy Green	3

Metric

	Unweighted Score						
Criteria	Alternative A	Alternative B	Alternativ C				
Goal 1 - Reduction in flooding events	0	3	3				

Criterie	Unweighted Score					
Criteria	Alt A	Alt B	Alt C			
Goal 1 - Reduction in flooding events	0	3	3			
Goal 1 - Reduction in CSO discharge volume						
Goal 2 - Annual system-wide CSO volume capture						
Goal 3 - Flexibility in siting project						
Goal 4 - Flexibility in timing of implementation of project						
Goal 4 - Flexibility in phasing implementation of alternatives						
Goal 4 - Green space						
Goal 4 - Reduction in heat island effect						
Goal 5 - Cost effectiveness						
Goal 6 - Visibility to citizens						

Step 8: Evaluate Performance – Camden Example

Oritorio	Unweighted Score				
Criteria	Alt A	Alt B	Alt C		
Goal 1 - Reduction in flooding events	0	3	3		
Goal 1 - Reduction in CSO discharge volume	4	4	4		
Goal 2 - Annual system-wide CSO volume capture					
Goal 3 - Flexibility in siting project					
Goal 4 - Flexibility in timing of implementation of project					
Goal 4 - Flexibility in phasing implementation of alternatives					
Goal 4 - Green space					
Goal 4 - Reduction in heat island effect					
Goal 5 - Cost effectiveness		and the second			
Goal 6 - Visibility to citizens					

Step 8: Evaluate Performance – Camden Example

Oritorio	Unweighted Score			
Criteria	Alt A	Alt B	Alt C	
Goal 1 - Reduction in flooding events	0	3	3	
Goal 1 - Reduction in CSO discharge volume	4	4	4	
Goal 2 - Annual system-wide CSO volume capture	5	5	5	
Goal 3 - Flexibility in siting project	1	1	1	
Goal 4 - Flexibility in timing of implementation of project	4	3	2	
Goal 4 - Flexibility in phasing implementation of alternatives	3	3	3	
Goal 4 - Green space	0	1	1	
Goal 4 - Reduction in heat island effect	0	1	1	
Goal 5 - Cost effectiveness	2	-1	-3	
Goal 6 - Visibility to citizens	1	5	5	

Step 8: Evaluate Performance – Camden Example

Oritoria	Un	Unweighted Score			
Criteria	Alt A	Alt B	Alt C		
Goal 1 - Reduction in flooding events	0	3	3		
Goal 1 - Reduction in CSO discharge volume	4	4	4		
Goal 2 - Annual system-wide CSO volume capture	5	5	5		
Goal 3 - Flexibility in siting project	1	1	1		
Goal 4 - Flexibility in timing of implementation of project	4	3	2		
Goal 4 - Flexibility in phasing implementation of alternatives	3	3	3		
Goal 4 - Green space	0	1	1		
Goal 4 - Reduction in heat island effect	0	1	1		
Goal 5 - Cost effectiveness	2	-1	-3		
Goal 6 - Visibility to citizens	1	5	5		
TOTAL	. 20	25	22		

	Cuitorio				Un	weighted Sc	ore
Criteria					Alt A	Alt B	Alt C
Goal 1 - Reduction i	in flood	ling events		100	0	3	3
Goal 1 - Reductio		Enhance Public Health and Environment	10		4	4	4
Goal 2 - Annual s	\wedge	Meet or Exceed Permit Requirements	9		5	5	5
Goal 3 - Flexibility					1	1	1
Goal 4 - Flexibility		Enhance Overall System Resiliency	8		4	3	2
Goal 4 - Flexibility		Produce Economic & Neighborhood Benefits	8		3	3	3
Goal 4 - Green sp	\$	Optimize Existing Public Resources	7		0	1	1
Goal 4 - Reductio					0	1	1
Goal 5 - Cost effe	0	Increase Public Understanding & Support for CSO Solutions	6	R. Co	2	-1	-3
Goal 6 - Visibility to	citizer	IS			1	5	5
				TOTAL	20	25	22

		Criteria		Weight			
Unterna				Weight	Alt A	Alt B	Alt C
Goal 1 - Reduction	in floo	ding events			0	3	3
Goal 1 - Reductio		Enhance Public Health and Environment	10		4	4	4
Goal 2 - Annual s	\wedge	Meet or Exceed Permit Requirements	9		5	5	5
Goal 3 - Flexibility					1	1	1
Goal 4 - Flexibility		Enhance Overall System Resiliency	8		4	3	2
Goal 4 - Flexibility	000	Produce Economic & Neighborhood Benefits	8		3	3	3
Goal 4 - Green sp		Optimize Existing Public Resources	7		0	1	1
Goal 4 - Reductio		Increase Public Understanding &	6	1.5-	0	1	1
Goal 5 - Cost effe		Support for CSO Solutions	6		2	-1	-3
Goal 6 - Visibility t	o citize	ns			1	5	5
			TOTAL		20	25	22

		Criteria		Weight			
		Gillella		weight	Alt A	Alt B	Alt C
Goal 1 - Reduction	in floo	ding events		*	0	3	3
Goal 1 - Reductio		Enhance Public Health and Environment	10	•	4	4	4
Goal 2 - Annual s	\wedge	Meet or Exceed Permit Requirements	9	-*	5	5	5
Goal 3 - Flexibility				-	1	1	1
Goal 4 - Flexibility		Enhance Overall System Resiliency	8	-	4	3	2
Goal 4 - Flexibility	000	Produce Economic & Neighborhood Benefits	8	•	3	3	3
Goal 4 - Green sp		Optimize Existing Public Resources	7		0	1	1
Goal 4 - Reductio		Increase Public Understanding &	6		0	1	1
Goal 5 - Cost effe		Support for CSO Solutions	6		2	-1	-3
Goal 6 - Visibility t	o citize	ns			1	5	5
			TOTAL		20	25	22

		Criteria		Woigh			
		Gillella		Weigh	Alt A	Alt B	Alt C
Goal 1 - Reduction	in floo	ding events	-	10	0	3	3
Goal 1 - Reductio		Enhance Public Health and Environment	10	• 10	4	4	4
Goal 2 - Annual s	\wedge	Meet or Exceed Permit Requirements	9	• 9	5	5	5
Goal 3 - Flexibility				8	1	1	1
Goal 4 - Flexibility		Enhance Overall System Resiliency	8	8	4	3	2
Goal 4 - Flexibility	000	Produce Economic & Neighborhood Benefits	8	▶ 8	3	3	3
Goal 4 - Green sp		Optimize Existing Public Resources	7	8	0	1	1
Goal 4 - Reductio		Increase Public Understanding &	6	8	0	1	1
Goal 5 - Cost effe		Support for CSO Solutions	6	7	2	-1	-3
Goal 6 - Visibility t	o citize	ns		6	1	5	5
			TOTAL		20	25	22

Criteria	Weight	Alt A	Alt B	Alt C
Goal 1 - Reduction in flooding events	10	0	3	3
Goal 1 - Reduction in CSO discharge volume	10	4	4	4
Goal 2 - Annual system-wide CSO volume capture	9	5	5	5
Goal 3 - Flexibility in siting project	8	1	1	1
Goal 4 - Flexibility in timing of implementation of project	8	4	3	2
Goal 4 - Flexibility in phasing implementation of alternatives	8	3	3	3
Goal 4 - Green space	8	0	1	1
Goal 4 - Reduction in heat island effect	8	0	1	1
Goal 5 - Cost effectiveness	7	2	-1	-3
Goal 6 - Visibility to citizens	6	1	5	5
τοται				

Criteria	Weight		-	_
		Alt A	Alt B	Alt C
Goal 1 - Reduction in flooding events	10	0	10	30
Goal 1 - Reduction in CSO discharge volume	10	40	40	40
Goal 2 - Annual system-wide CSO volume capture	9	45	45	45
Goal 3 - Flexibility in siting project	8	8	8	8
Goal 4 - Flexibility in timing of implementation of project	8	32	24	16
Goal 4 - Flexibility in phasing implementation of alternatives	8	24	24	24
Goal 4 - Green space	8	0	8	8
Goal 4 - Reduction in heat island effect	8	0	8	8
Goal 5 - Cost effectiveness	7	6	18	30
Goal 6 - Visibility to citizens	6	0	10	30
TOTAL				

Criteria	Weight	Alt A	Alt B	Alt C
Goal 1 - Reduction in flooding events	10	0	10	30
Goal 1 - Reduction in CSO discharge volume	10	40	40	40
Goal 2 - Annual system-wide CSO volume capture	9	45	45	45
Goal 3 - Flexibility in siting project	8	8	8	8
Goal 4 - Flexibility in timing of implementation of project	8	32	24	16
Goal 4 - Flexibility in phasing implementation of alternatives	8	24	24	24
Goal 4 - Green space	8	0	8	8
Goal 4 - Reduction in heat island effect	8	0	8	8
Goal 5 - Cost effectiveness	7	6	18	30
Goal 6 - Visibility to citizens	6	0	10	30
TOTAL		<u>155</u>	<u>185</u>	<u>209</u>

Criteria	Weight	Alt A	Alt B	Alt C
Goal 1 - Reduction in flooding events	10	0	10	30
Goal 1 - Reduction in CSO discharge volume	10	40	40	40
Goal 2 - Annual system-wide CSO volume capture	9	45	45	45
Goal 3 - Flexibility in siting project	8	8	8	8
Goal 4 - Flexibility in timing of implementation of project	8	32	24	16
Goal 4 - Flexibility in phasing implementation of alternatives	8	24	24	24
Goal 4 - Green space	8	0	8	8
Goal 4 - Reduction in heat island effect	8	0	8	8
Goal 5 - Cost effectiveness	7	6	18	30
Goal 6 - Visibility to citizens	6	0	10	30
TOTAL		<u>155</u>	<u>185</u>	<u>209</u>

Step 10: Incorporate Cost Considerations – Camden Example

	Alt A	Alt B	Alt C
Total Score	155	185	209
Project Capital Cost (Millions)	25	27	30
Benefit-Cost Ratio			

Step 10: Incorporate Cost Considerations – Camden Example

	Alt A	Alt B	Alt C
Total Score	155	185	209
Project Capital Cost (Millions)	25	27	30
Benefit-Cost Ratio	6.2	6.7	7

The AAA Process

	Convention	nal Alternatives Analysis 🚽 Augn	nented Steps of AAA
•	1	Understand Community Priorities	
	2	Determine Project Goals	
	3	Define Objectives	
•	4	Rank the Importance of Goals	
	5	Establish Criteria	
	6	Choose Metrics for Your Criteria	
+	7	Create Performance Ranges	
1	8	Evaluate Performance of Each Alternati	ive
T	9	Compare Across Alternatives	and the second second
-	10	Incorporate Cost Considerations	Contraction of the second

Camden Experience with AAA

- Identified an investment alternative with **significant community input**
- Improved community & environmental benefits (without significant cost & impact to ratepayers)
- Allowed Camden to **apply unique values** & weigh them systematically
- Put competing components of the project together to evaluate the full picture

The AAA process was applied – *not theoretical* – and allowed us to talk about the **where** and **how** of green infrastructure

Questions?

AAA Resources



Making the Right Choices for Your Utility: Using Community Priorities and Sustainability Criteria for Water Infrastructure Decision-Making

May 2022

SEPA United States Environmental Protection Approx

EPA's AAA Guide (Revised May 2022) Making the Right Choices for Your Utility - Worksheets | Page 4

Step 1: Engage Your Community



A central component of the AAA process is to establish a clear and transparent way for a utility to incorporate community priorities into major capital projects. AAA provides an effective way to convey the decision-making process used to help ensure public support on often costly but necessary infrastructure projects

As a fast step in your process, consider who in your community may have an important role in the success of your project. These individuals may include those who are regularly regularly on the suffer resources and third planning, but in they benefit your project to also enagge with individuals representing output of the suffer enauro such as and a would be impacted by potential future projects, hourd or council members that in what plan is an and they benefit your project. These and would be impacted by potential future projects, hourd or council members that it may play a role in approving your project plans, local crice or non-potInt granizations, or emountered jusces granus. These examples of tablicabilet syntee are impacted Community Meeting. Chinocometal lacks granus, hous examples of tablicabilet syntee are impacted community Meeting. Chinocometal and granus and the sum plant and the ange of interest community future. Summarized and any plant and the ange of interest community the summarized and any plant and the summarized and any plant and the sum pl

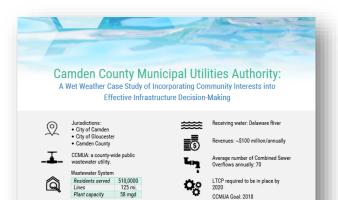
Stakeholder Type & Contact Inform

Stakeholder Type:		
Name:		
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Worksheets Fillable PDF & Excel



Webinar Recording



Executive Summary

The following case example describes the ways in which the Canden County Municipal Utility Authority (COMUA), together with the U.S. EPAOffice of Vastevater Management (OWM) and regresentatives from the community-based Canden SMART Initiative, used an augmented infrastructure a bitematives analysis approach to help COMUA identity an optimal and cost-ffective mic of green and gray infrastructure to augment tacheomica Sever Long-Term Control Plan (LTOP). The method used by CCMUA is designed to engage community stateholders in the infrastructure alternatives analysis process at a very early stage. The method allows cultities and community members to use a range of environmental, social, and economic criteria (also known as "Triple Bottom Line" criteria) and create a broad basis for comparison of infrastructure altenatives.

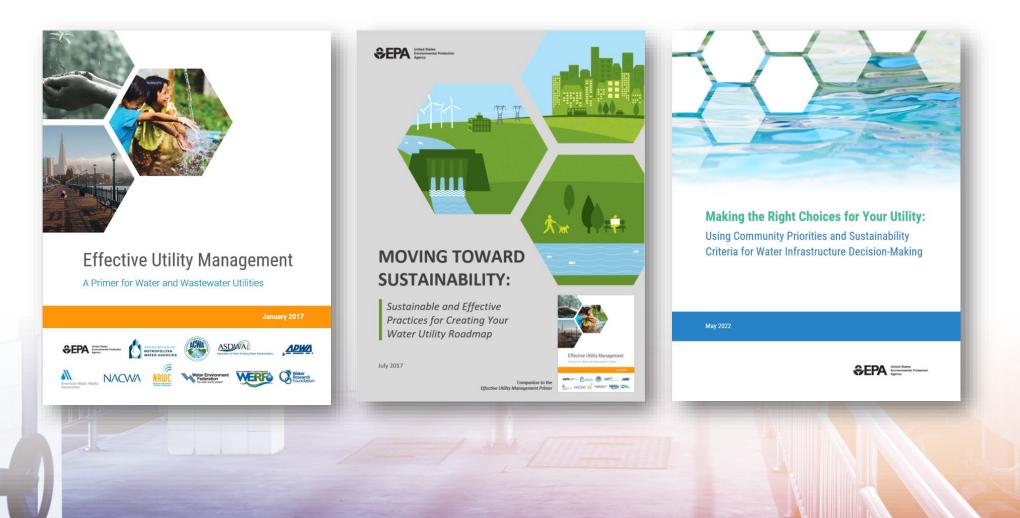
By using this broad range of criteria to assess infrastructure alternatives, CCMUA was able to better understand the optimal mix of green and gray infrastructure necessary to protect the health of its critizens, consistent with a set of community goals agreed to by the Canden SNART statcholders. With this method, utilities can accomplish internal infrastructure objectives and community goals as well as enhance their standing as an integral, engaged, and dynamic part of the connomis and social fabrics of the community.

Just as importantly, the approach described in this case example will help CCMUA communicate with their board members and other decision makers to ensure these individuals have a clear understanding of the choices before



Case examples

EPA's Sustainable Utility Management





To view resources:



Or search online for EPA's "Planning For Sustainability" webpage



Contact us with questions and to learn more!

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