



# Envisioning Smarter Infrastructure Investments

Courtney Eaton, PE, ENV SP



COMMITMENT & INTEGRITY DRIVE RESULTS



# Top Issues Facing the Wastewater Industry

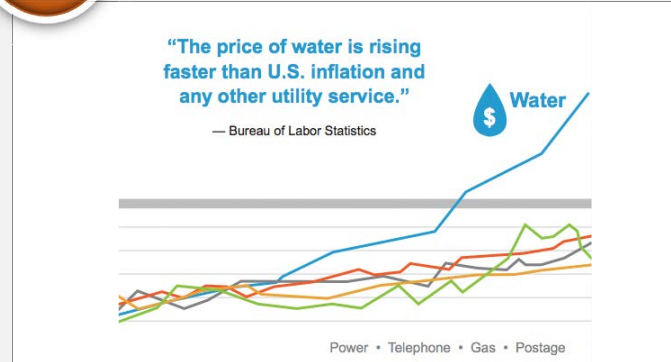
1

Aging Infrastructure R&R



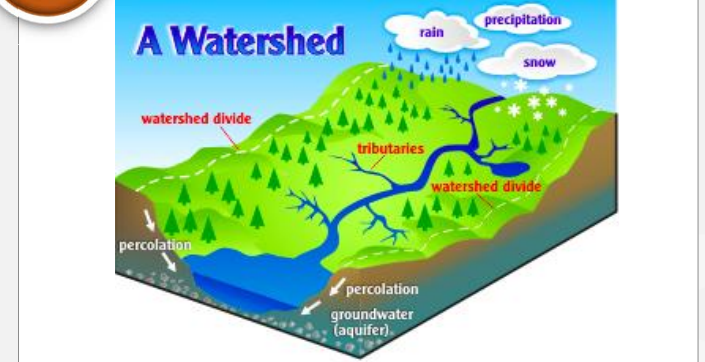
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Rising Costs and Reduced Funding



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Water Supply Availability / Protection



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Changing Climate / Emergency Planning



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Public Understanding / Support for the Value of Water Resources and Systems



6

Expanding Regulations



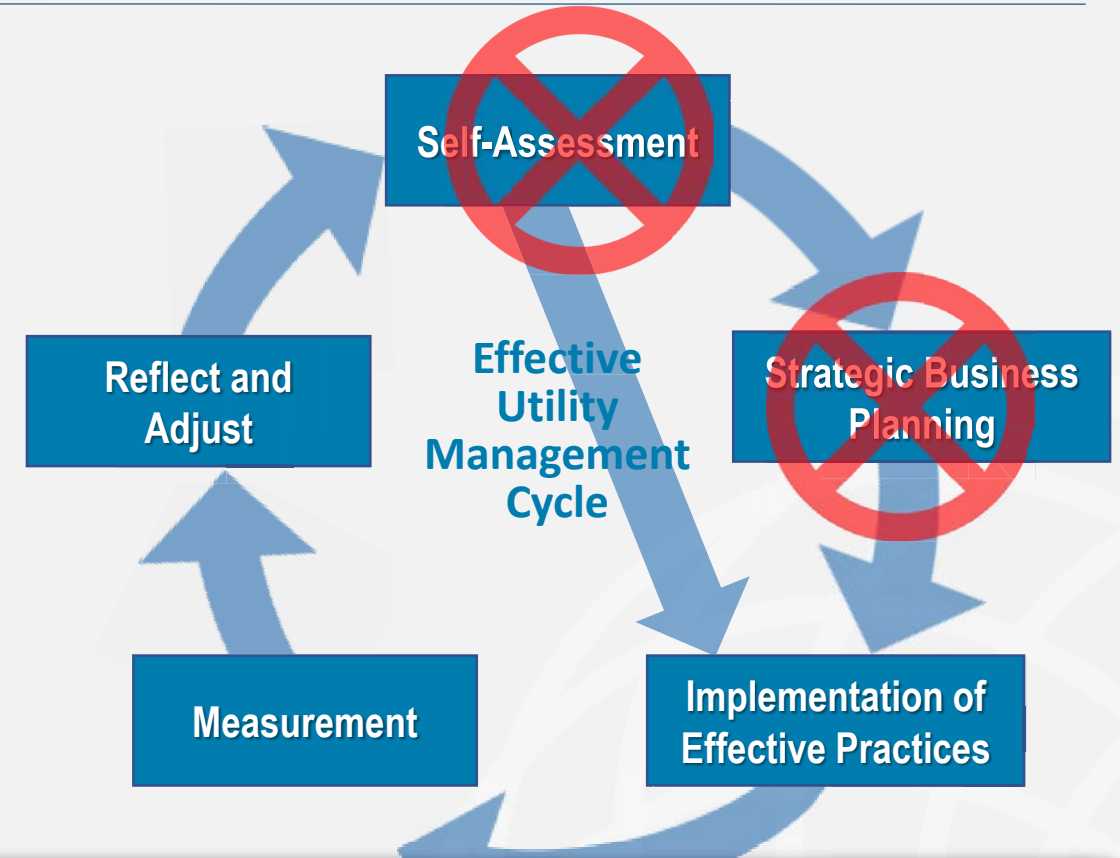
# How Do We Effectively Manage to Competing Priorities?

- Effective Utility Management Framework
  - Framework to take a 360-degree look at your utility
  - Helps protect your current investments
  - Encourages sustainable workforce
  - Moves you from reactive to proactive planning
  - Engages staff and stakeholders in process
  - Based on 10 attributes (inner ring)
  - Success relies on 5 key steps to implement (outer ring)



# Successful Implementation of EUM

- Where are we now?
- Where do we want to go?
- How do we get there?
- Are we meeting our goals?
- How can we better meet or exceed our goals?



***Often leads to reactive responses and unintended consequences***

# How Do We Limit Reactive Responses & Unintended Consequences?

*“Meeting the needs of the present without compromising the ability of future generations to meet their own needs.”*

- Brundtland Commission Report, 1987  
(UN Commission on Environment and Development)

*“Sustainably managing our nation’s water infrastructure is critical to protecting human health and the environment, as well as securing clean, safe water for the American public.”*

- EPA, 2011



<http://water.epa.gov/infrastructure/sustain>

**SUSTAINABLE**  
Water Infrastructure

Get the Facts on Sustainable Water Infrastructure & EPA's New Sustainability Policy

Sustainably managing our nation's water infrastructure is critical to protecting human health and the environment, as well as securing clean, safe water for the American public.

Yet, as aging drinking water, wastewater and stormwater systems require significant upgrade and repair, it is one of the biggest challenges facing the water sector. The investments made now in water sector infrastructure can have profound impacts on long-term community sustainability.

With input from federal, state and local stakeholders, the Environmental Protection Agency (EPA) has issued the Clean Water and Drinking Water Infrastructure Sustainability Policy as part of its efforts to promote sustainable infrastructure within the water sector. Recognizing that the first priority of water infrastructure is to protect public health and water quality, EPA will work with its partners to build upon existing efforts that support sustainable water infrastructure and community sustainability. This partnership will be built around the following areas:

- Promoting planning processes that support sustainability
- Encouraging community sustainability
- Promoting sustainable water and wastewater systems
- Targeting State Revolving Fund (SRF) assistance
- Measuring success

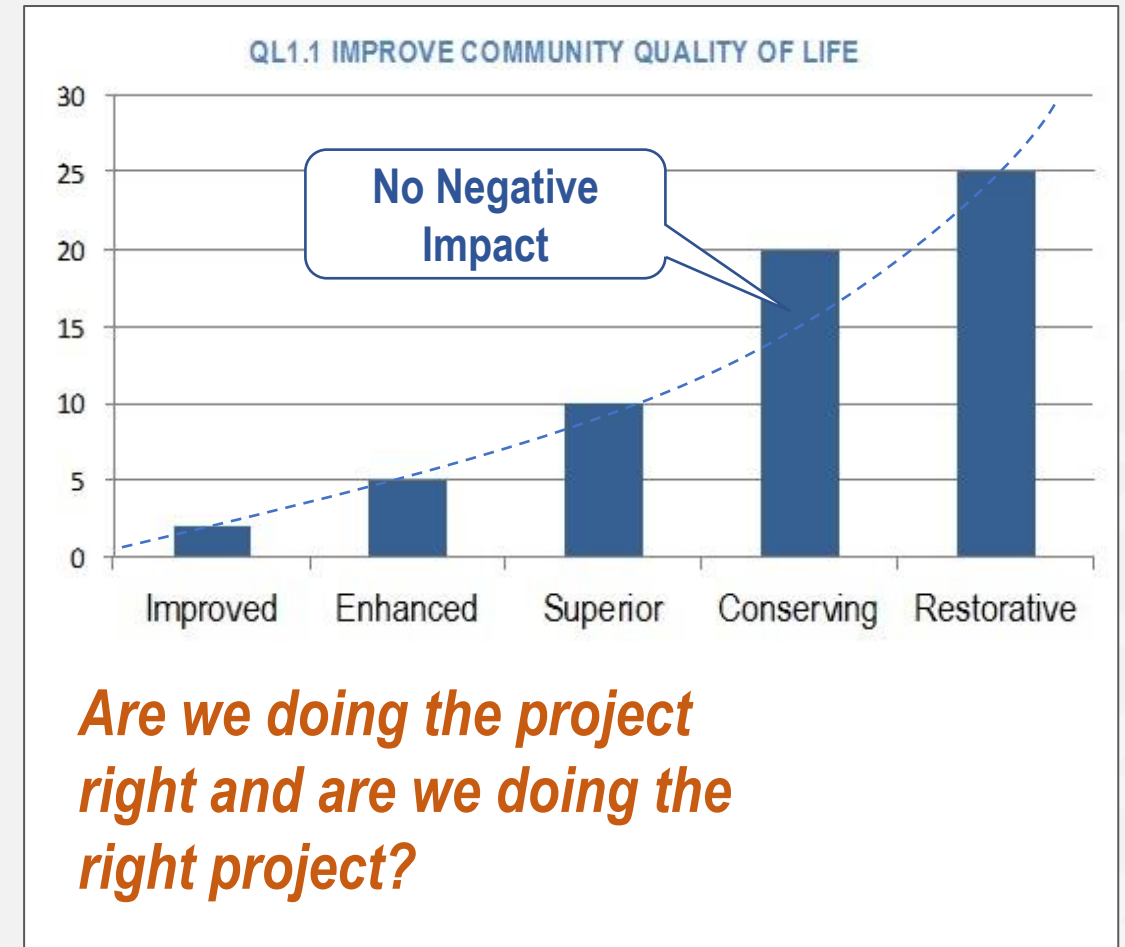
The complete Policy is available at <http://water.epa.gov/infrastructure/sustain>. Read on for answers to frequently asked questions on what the Policy means and how EPA is supporting ongoing initiatives in sustainable water infrastructure.

**EPA**








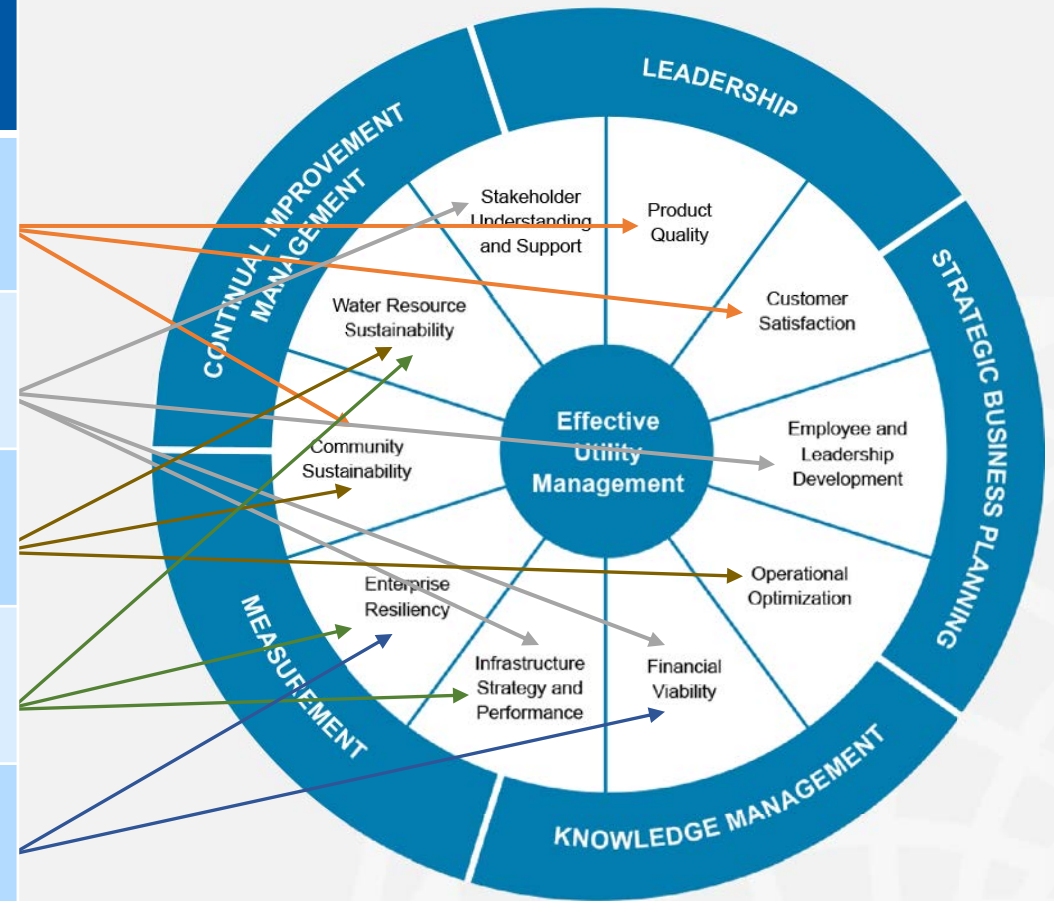
# Envision Based on Creating Sustainable Infrastructure

- Shared, transparent framework for creating sustainable infrastructure
- Includes triple bottom line principles of social, economic and environmental goals
- 5 main categories, 60+ credits with varying levels of achievement for each



# Significant Overlap in Intention and Content between Envision and EUM

Envision Categories		Areas of Focus
	Quality of Life	Purpose, Community, Wellbeing
	Leadership	Collaboration, Management, Planning
	Resource Allocation	Materials, Water, Energy
	Natural World	Siting, Land and Water, Biodiversity
	Climate and Risk	Emission, Resilience



# Synergy Between the Two Frameworks

## EUM Core Area: Product Quality / Operational Optimization

- Maintain compliance with regulatory requirements
- Manage operation for energy and materials usage
- Establish standard operating procedures

## Envision Credits

**RA 1.1**

Reduce net embodied energy

**RA 1.3**

Use recycled materials

**RA 2.1**

Reduce energy consumption

**LD 2.1**

Pursue by-product synergy

**LD 3.1**

Plan for long-term monitoring and maintenance

**CR 1.1**

Reduce GHG emissions



# Start by Incorporating Sustainable Thinking in Planning

## Strategic Business Planning

### Step 1: Identify Goals

- Use Envision® as framework
- Establish sustainable goals

# Use Envision to Inform Goal and Objective Setting Steps

## EUM Core Area: Product Quality / Operational Optimization



- **Scope:** compliance with regulatory standards, energy and material usage, technology, standard operating procedures



### Resource Recovery

Credit		Improved	Enhanced	Superior	Conserving
RA 2.1	Reduce energy consumption	At least 10 % reduction over baseline (3)	At least 30% reduction (7)	At least 50% reduction (12)	At least 70% reduction (18)

- **Goal:** Be an energy efficient utility.

# Start by Incorporating Sustainable Thinking in Planning

## Strategic Business Planning

### Step 1: Identify Goals

- Use Envision® as framework
- Establish sustainable goals

### Step 2: Establish Objectives & Strategies

- Identify SMART Objectives
- Analyze Baseline using Envision®
- Identify key strategies



# Use Envision to Inform Goal and Objective Setting Steps

## EUM Core Area: Product Quality / Operational Optimization



- **Scope:** compliance with regulatory standards, energy and material usage, technology, standard operating procedures

Resource Recovery		More Effort		Most Effort	
Credit		Improved	Enhanced	Superior	Conserving
RA 2.1	Reduce energy consumption	At least 10 % reduction over baseline (3)	At least 30% reduction (7)	At least 50% reduction (12)	At least 70% reduction (18)

- **Goal:** Be an energy efficient utility.
- **Objective:** Perform energy use assessment; identify low/no cost strategies for energy efficiency improvements for existing assets; consider setting energy reduction targets form new projects

# Use Envision to Inform Goal and Objective Setting Steps

## EUM Core Area: Infrastructure Strategy & Performance



- **Scope:** Relates the management of infrastructure and other physical assets

Leadership		Baseline	More Effort		Most Effort
Credit		Improved	Enhanced	Superior	Conserving
LD 1.2	Establish a sustainable management system	Sparse Mechanisms (1)	A basic plan (4)	"Plan-do-check-act" (7)	Full implementation (14)

- **Goal:** Create a risk-based asset management approach including social, economic, and environmental considerations
- **Objective:** Proactive risk-based management of maintenance and replacement, SCADA incorporated with CMMS / GIS Enterprise system to optimize asset management

# Use Envision Scoring System to Set Objectives

	Baseline	More Effort	Most Effort
Quality of Life	30	70	95
Leadership	25	40	60
Resource Allocation	50	95	120
Natural World	75	90	100
Climate & Risk	25	55	60
Total	205	350	435

Baseline: What you are doing now

More Effort: “low-hanging” fruit

Most Effort: significant resource change



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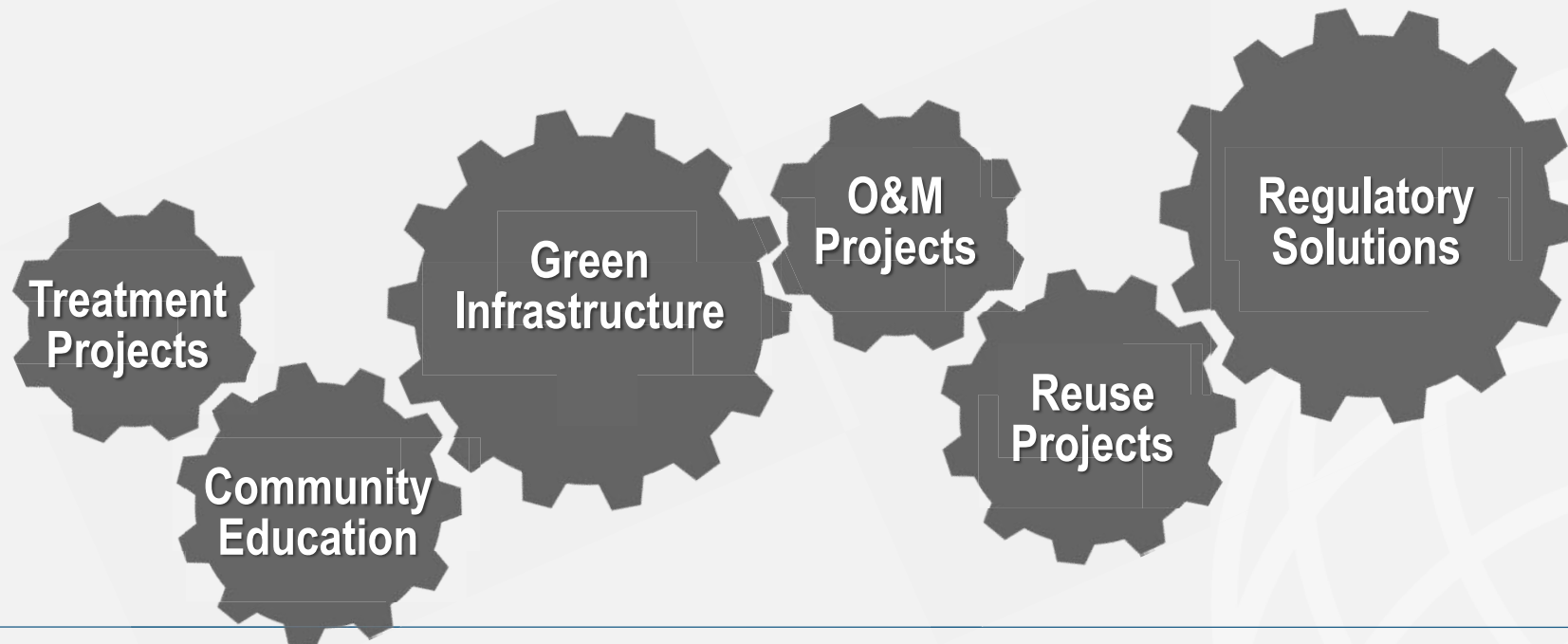
- Identify SMART Objectives
- Analyze Baseline using Envision®
- Identify key strategies

### Step 3 & 4: Alternatives & Financial Analysis

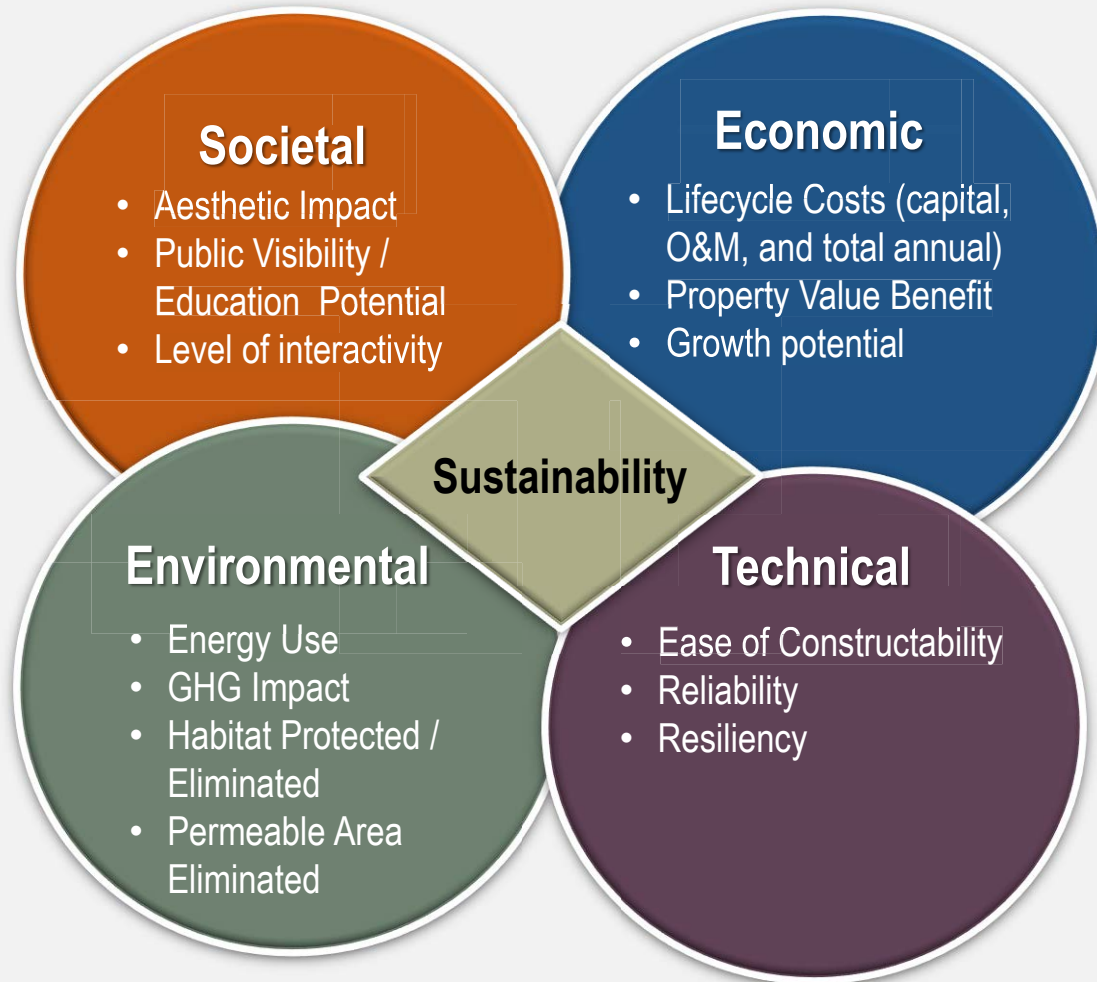
- Identify Alternatives
- Evaluate Alternatives
  - Lifecycle Costs
  - TBL+

# Incorporating Sustainable Thinking Will Broaden Your Alternatives / Strategies...

- Break down the silos
- Promote integration – utilities, stakeholders, community
- Encourage structural & non-structural solutions



# And Your Evaluation Criteria



## EUM Core Area: Community Sustainability

- **Scope:** social, economic and environmental impacts to relevant utility operations



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### Step 3 & 4: Alternatives & Financial Analysis

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### Roadmap of Potential Sustainable Practices

- Outlines Sustainable Strategies/ Action Plans
- Uses Envision® assessment as guide for implementation

# How Do We Get Started?

- Start simply and simply start
- Make planning a priority
  - Use the Envision framework as a guide
  - Start with the end in mind
- Look for low hanging fruit
  - Energy use assessment, low cost / high payback energy improvements risk-based asset management plans,
  - Apply to critical assets / processes
  - Consider immediate reachable goals, then stretch goals (3, 5, 10 years and beyond)
- Allow Envision to inform implementation
  - Require principles be used in design and construction
  - Train specific staff in use of Envision



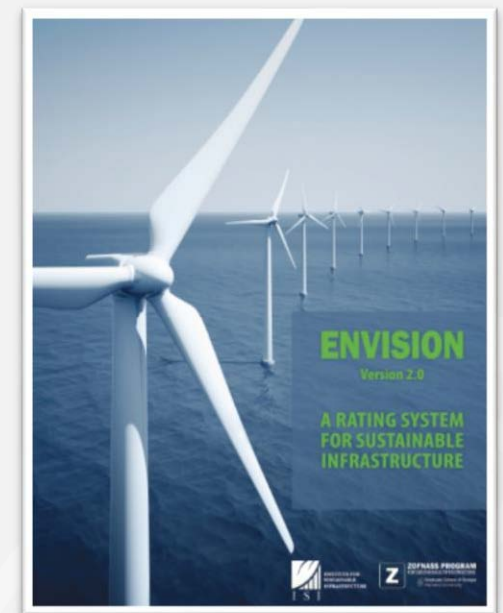
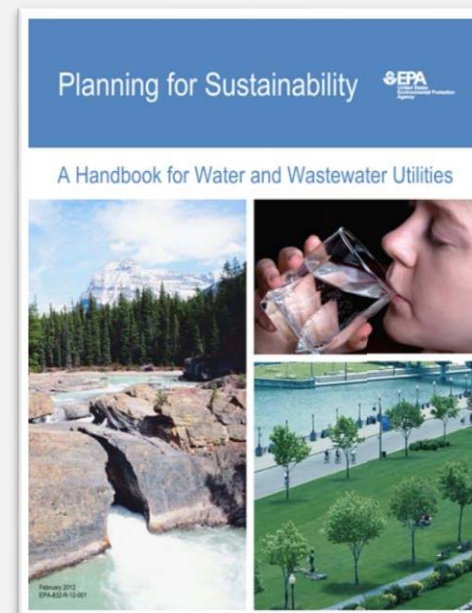
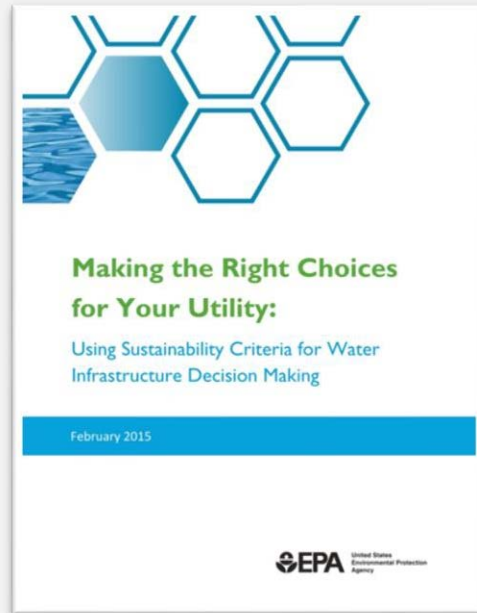
# Benefits of Incorporating Sustainability into your Utility and Asset Management

- Changes reactive responses to proactive plans
  - Maximizes results of investments
- Risk-based approach allows for multi-benefit opportunities
  - Engenders public support for utility
- Inherently reduces risk and adds sustainability and resiliency
  - Protects environment and uses resources efficiently
- Leads to track sustainable management
  - Adds to reliability





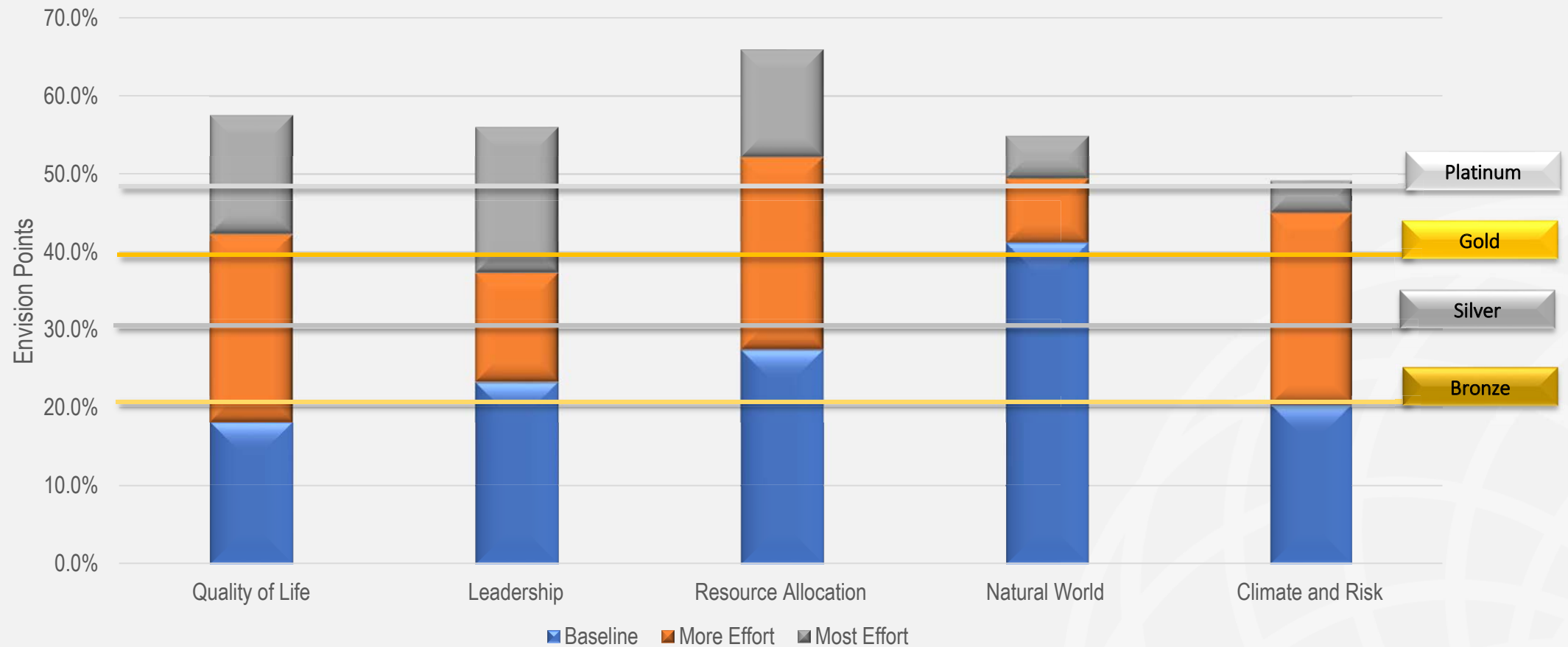
# THANK YOU!



## Questions?

[ceaton@woodardcurran.com](mailto:ceaton@woodardcurran.com)

# Use Envision Rating as a Goal



# Benefits of Incorporating Sustainability into Your Planning

## Economics

- Minimizing costs by optimizing investments
- Maximizing results of investments
- Ensuring financial and revenue strategies

## Social

- Recruit and retain workforce
- Engendering support for utility

## Environmental

- Protecting the environment consistently
- Using resource-efficient strategies

## Technical

- Ensuring a reliable water source for community
- Becoming more resilient to short and long-term disasters