

# Putting Envision<sup>®</sup> to Work in Sustainable Planning Projects

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# Today's Agenda

- Envision<sup>®</sup> Overview
- Steps for Planning with the Tool
- Case Study No. 1 – City of Oxnard, CA
- Case Study No. 2 – City of Kansas City, MO
- Closing
- Q & A

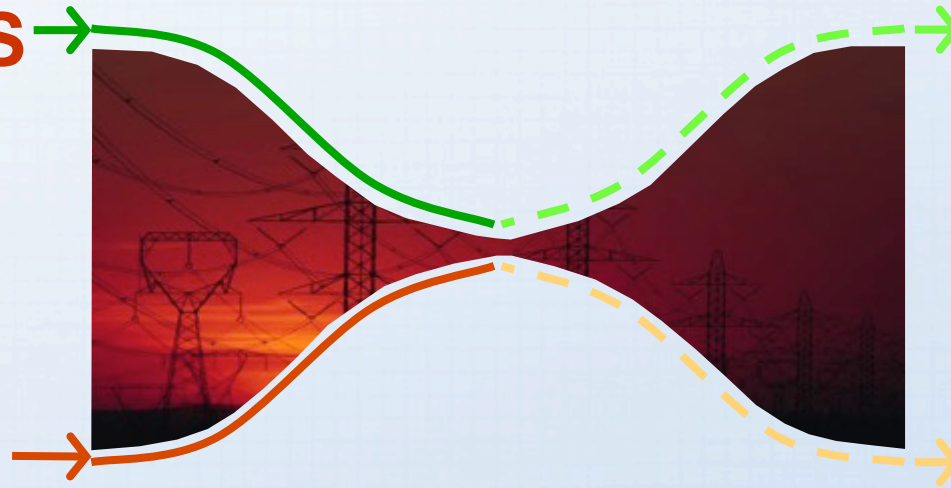
# Why plan sustainably?

## RESOURCES

Life supporting resources are decreasing ...

Demand for resources is increasing ...

## DEMAND



Through **innovation** and **integration** the walls of the funnel can be opened

- Sustainability is...

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

- Our economic, social and environmental systems must be resilient to short-term shocks, adaptable to longer-term change, healthy and functioning, and efficient in production



# Envision<sup>®</sup> Uniquely Addresses America's Infrastructure

- Envision<sup>®</sup> applies to all civil infrastructure
- Addresses design, planning, construction and maintenance
- Applicable at any point in an infrastructure project's life cycle
- Speaks to the triple bottom line: social, economic and environmental goals
- Designed to keep pace with a changing concept of sustainability



# Key similarities and differences between LEED® and Envision®

- Framework for sustainable thinking and design
  - Incentivize project teams to stretch toward sustainable goals

## LEED® v4

- Focus on occupied buildings
- Energy reduction is a major component of rating system

## Envision®

- Focus on infrastructure, which impacts broad sections of community
- Resource use and sustainable siting are major components
- Stakeholder and community involvement also included

# Envision<sup>®</sup> : 5 Categories, 60 Credits and Varying Levels of Achievement

## 5 Major Categories



Quality of Life



Leadership



Resource Allocation

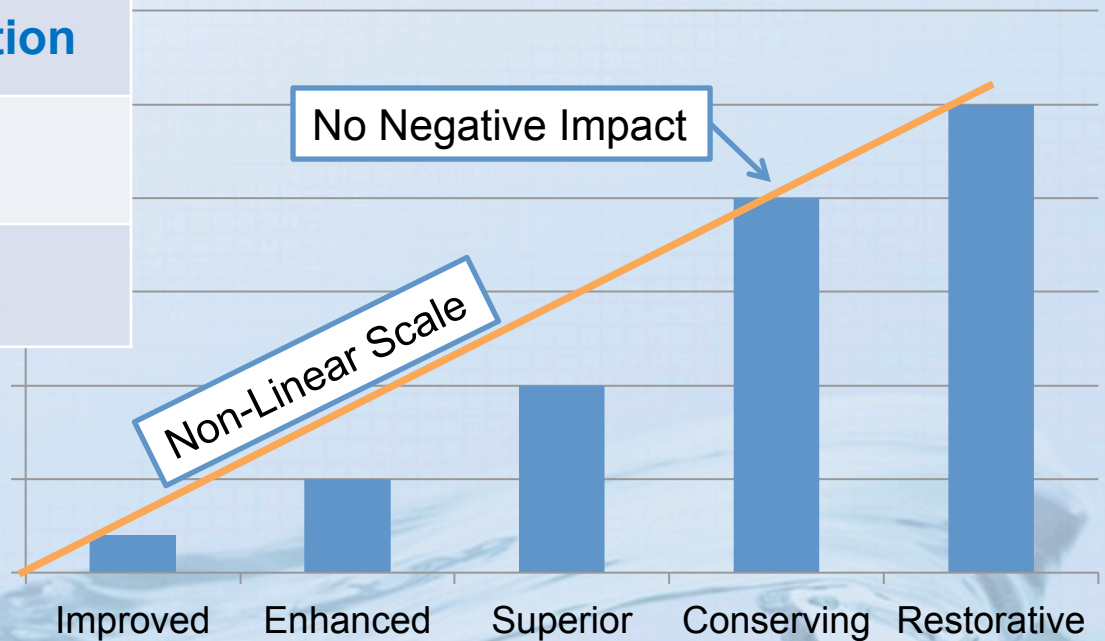


Natural World



Climate and Risk

## Levels of Achievement



# Envision<sup>®</sup> award levels

Recognition Level	Minimum Applicable Points	Minimum in Each Category
Bronze	 20%	No minimum category percentage required
Silver Award	 30%	
Gold Award	 40%	
Platinum Award	 50%	



# Steps for Using Envision<sup>®</sup> in Project Planning

1. Perform Initial Assessment
2. Use Initial Assessment and Project Goals/ Objectives to Inform Development of Evaluation Criteria
3. Revisit Initial Assessment to Identify Programmatic Credits versus Project/Plan Specific Credits
4. Set credit targets / goals that carry through to design / implementation phases
5. Develop Envision<sup>®</sup> Roadmap for Preliminary / Final Design and Implementation



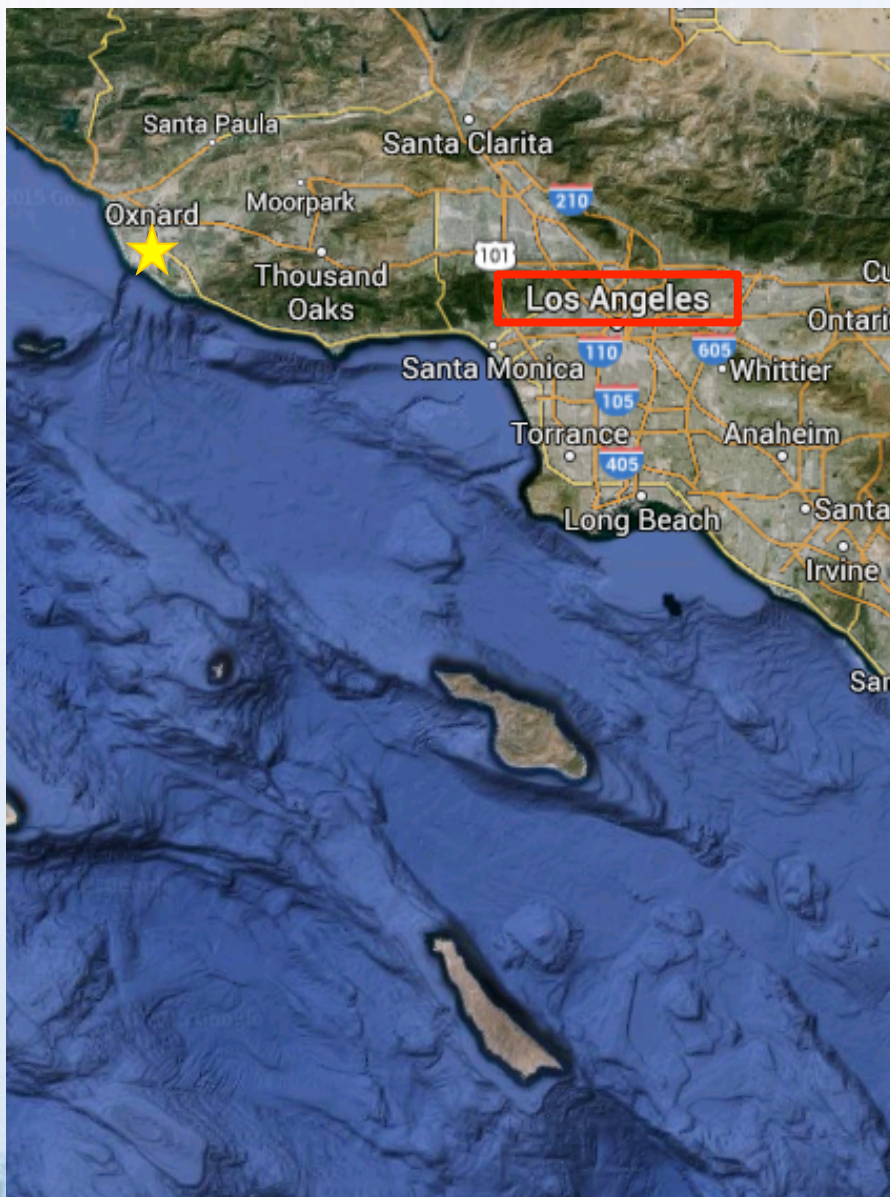


# **Case Study No. 1: Planning Oxnard's Future Water Supply**

# Project Background

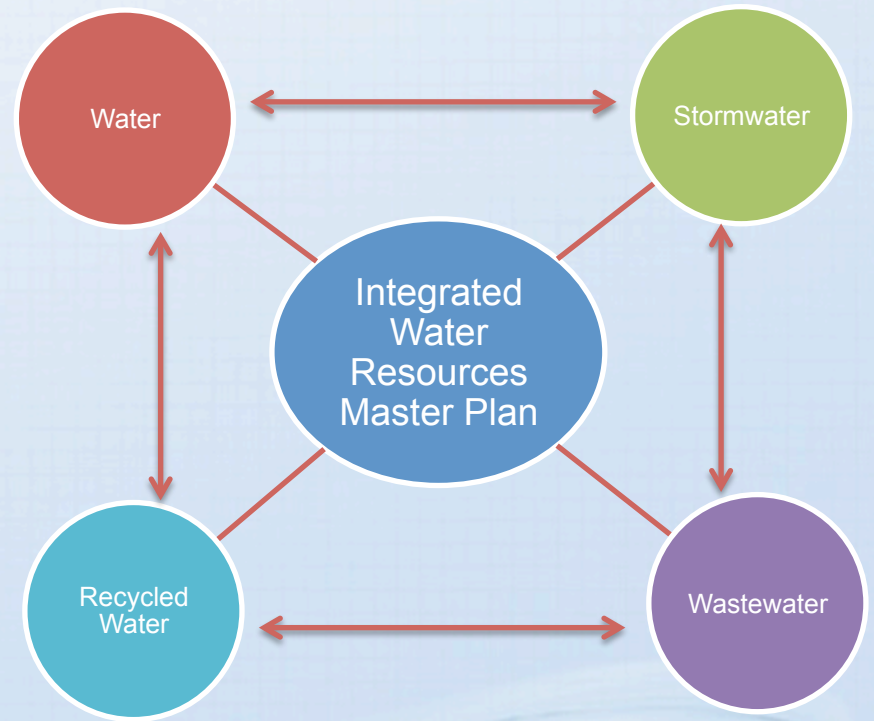
## Oxnard:

- 2010 US Census Population: 197,899
- Oxnard Plain → Agriculture
- Port Hueneme and Naval Base
- Water supplied from local groundwater and imported sources
- Has a WWTP that discharges to the Ocean
- Has an AWWPF that produces recycled water








# Purpose of Oxnard's Public Works Integrated Master Plan (PWIMP)

- Develop a vision for the future
- Develop 25-yr Capital Improvement Plan (CIP)
- Develop the financial analysis and rate structure to support the PWIMP





# Initial Envision<sup>®</sup> Assessment for the PWIMP

Category	Minimum Target for Points Achievable	Stretch Goal for Points Achievable
 <b>QUALITY OF LIFE</b>	12%	26%
 <b>LEADERSHIP</b>	26%	42%
 <b>RESOURCE ALLOCATION</b>	26%	51%
 <b>NATURAL WORLD</b>	28%	43%
 <b>CLIMATE AND RISK</b>	26%	56%
<b>Total</b>	<b>23%</b>	<b>43%</b>

# Proposed Evaluation Criteria Based on Envision<sup>®</sup> Assessment

Objective	Metric	Unit of Measure
<b>Goal #1: Provide compliant, reliable, resilient and flexible systems</b>		
Ability to implement in a timely manner	Implementation time (design + permitting + construction/ start-up)	Years
<b>Goal #2: Investigate green and grey infrastructure with an emphasis on energy efficiency</b>		
Maximize energy efficiency / sustainable energy use	Net non-renewable Energy use (Total E- E produced – Renewable E Purchased?)	kWh / year
<b>Goal #3: Manage assets effectively (economic sustainability)</b>		
Maximize cost / benefit ratio	Capital Costs	\$ (Total Project Cost)
	O&M Costs	\$ (O&M costs) per year
	Life-cycle costs	\$ (Total Annual Costs) per year
	Benefit / cost ratio	\$ Benefits / \$ costs

# Proposed Evaluation Criteria (cont.)

Objective	Metric	Unit of Measure
<b><i>Goal #4: Mitigate and adapt to potential impacts of climate change</i></b>		
Minimize contribution to climate change through reduction/minimization of GHG emissions	GHG emissions	Metric tons of CO2 equivalent emissions per year
<b><i>Goal #5: Protect / enhance environmental / resource sustainability</i></b>		
Maximize sustainable water use	Potable Water Offset (Potable Water Used – Reuse)	MG per year
	Groundwater Replenishment	MG per year
Maximize beneficial reuse of biosolids	Biosolids reused	Dry tons per year



# Using the Envision<sup>®</sup> Identified Criteria to Compare Alternatives

No.	Goal	1 – GW Treatment	2 – Combined GW & ASR / IPR	3 – ASR / IPR
('+' = good, '++' = better, '+++ = best)				
#1	Reliability / Redundancy	+	+++	++
#3	Lifecycle Costs	+++	++	+
# 2/4	Energy Use / GHGs	+	++	++
#5	Potable Water Offset	+++	++	+
#5	Groundwater Replenishment	+	++	+++
	Water Quality	+++	+++	+++
	Maximize GW Pumping	+++	+++	+++
	Minimize Imported Water	++	++	++
	Local Control of Water Supply	+	++	+++
		<b>18+</b>	<b>21+</b>	<b>20+</b>

# **Case Study No. 2: Kansas City's Overflow Control Program**

# Sewer Separation / Green Infrastructure Project Overview

- Establish layout of new sanitary or storm sewer to provide sewer separation of 280 acres of combined sewer watershed
- Consider green infrastructure opportunities to improve water quality

## Opportunities for Green Infrastructure:

- Improve water quality
- Enhance bike/walking path aesthetics
- Restore areas disturbed with community amenity
- Opportunity to educate public about green infrastructure – highly visible area

Re-grade of Existing Bioswale

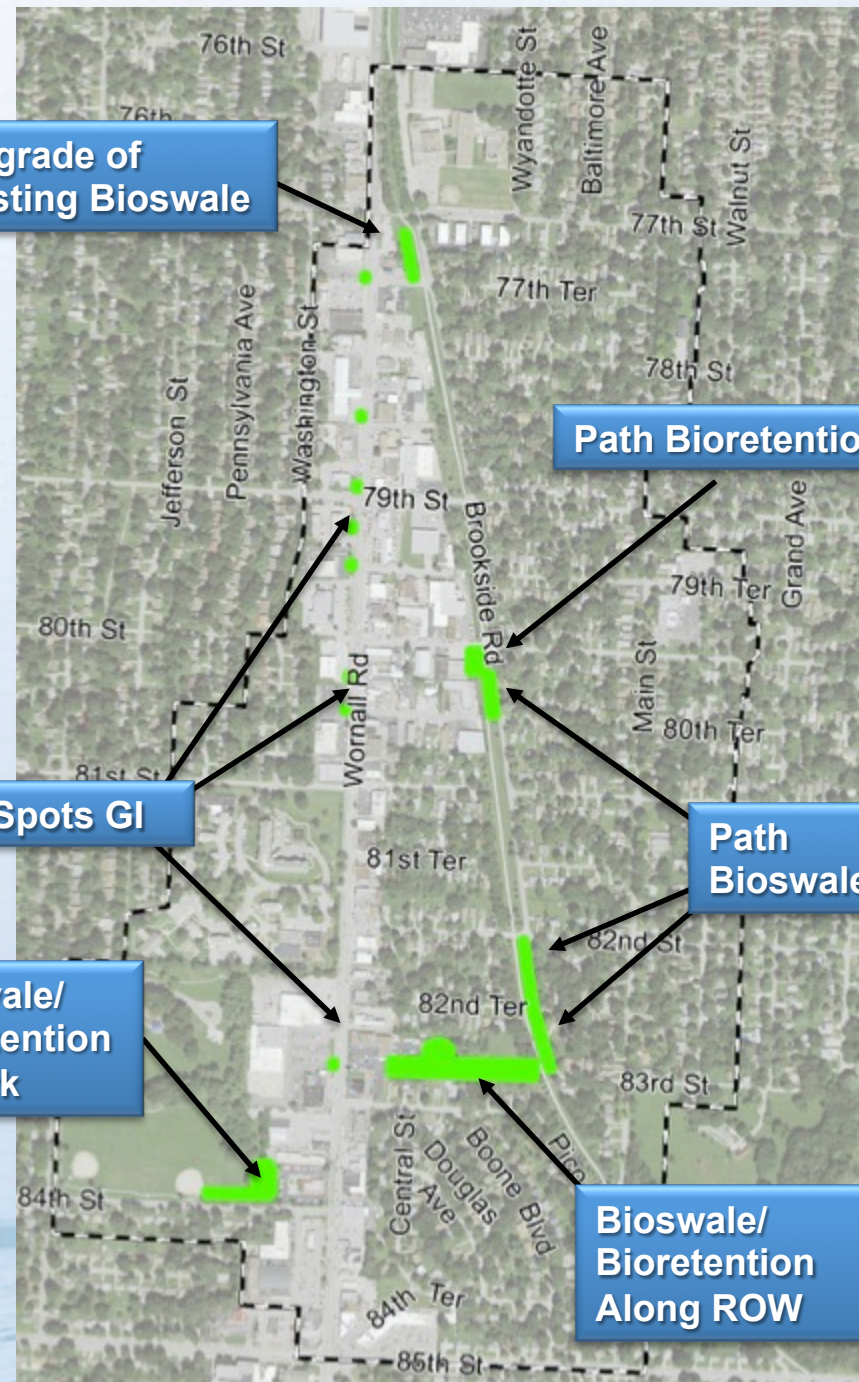
Path Bioretention

Hot Spots GI

Path Bioswales

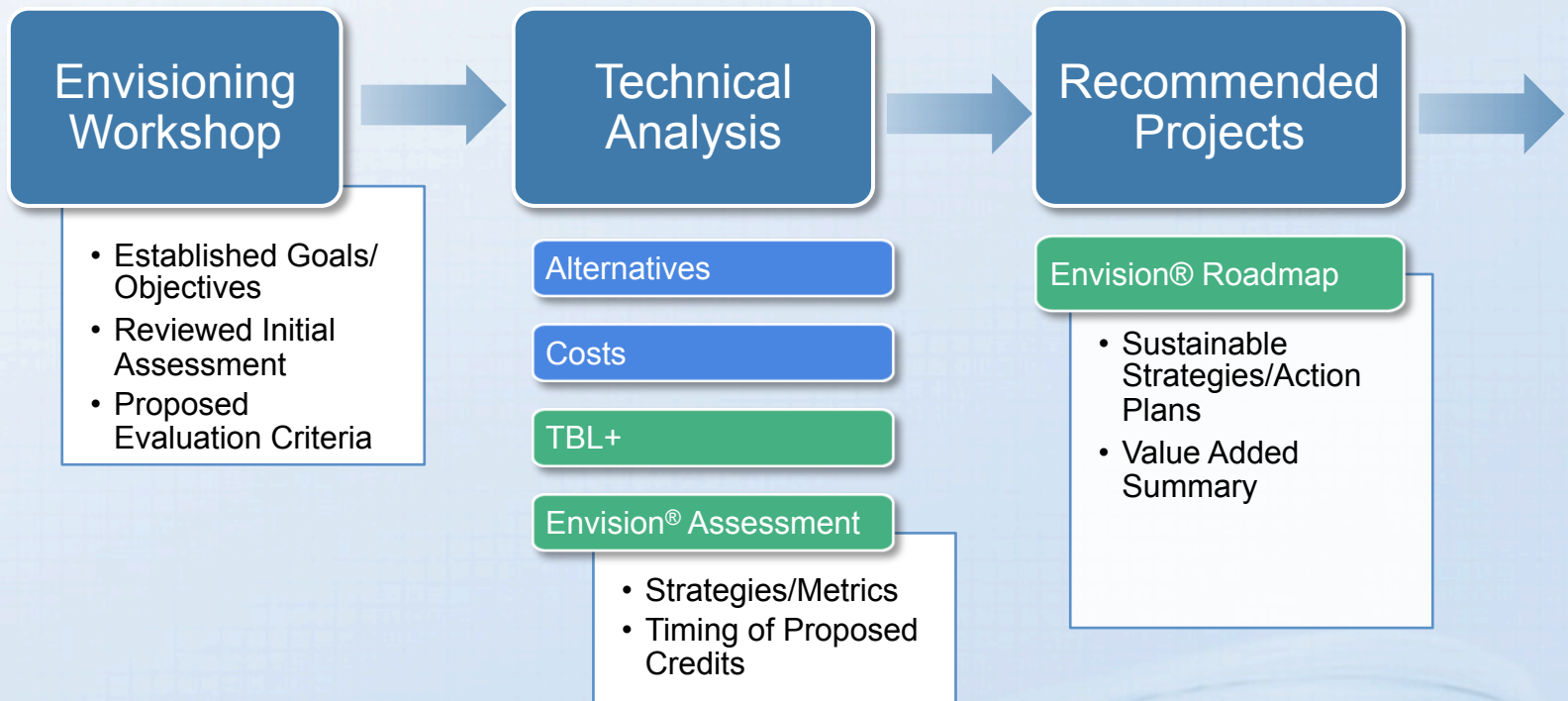
Bioswale/  
Bioretention  
@ Park

Bioswale/  
Bioretention  
Along ROW

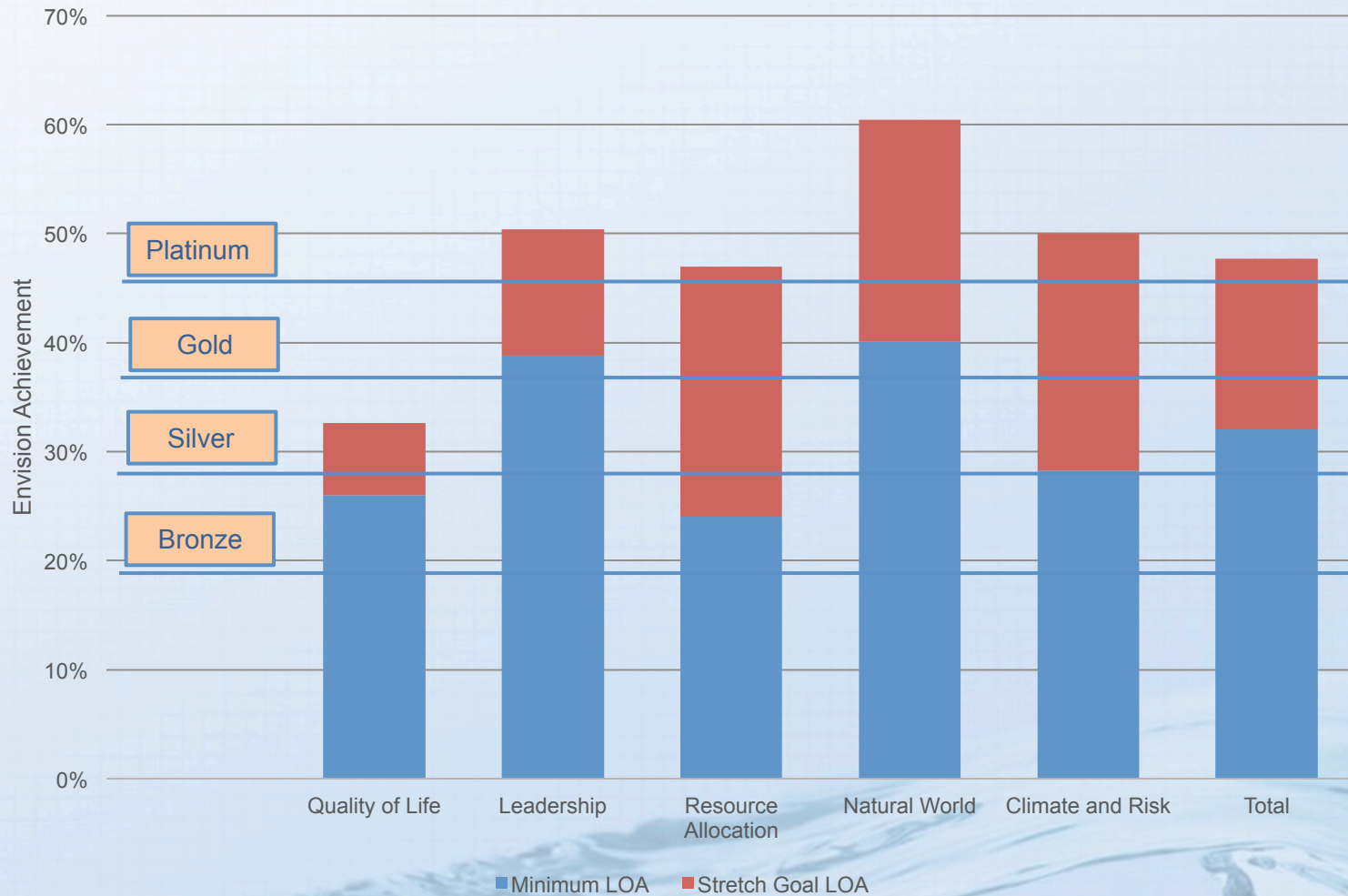




# Envision® Incorporated into Each Project Step



# Initial Envision<sup>®</sup> Assessment for Project as a Whole



# TBL+ Evaluation Criteria Derived from Envision<sup>®</sup> Assessment

## Societal

- Aesthetic Impact
- Public Visibility / Education Potential

## Economic

- Lifecycle Costs (capital, O&M and total annual)
- Gray Infrastructure Offset
- Property Value Benefit

## Environmental

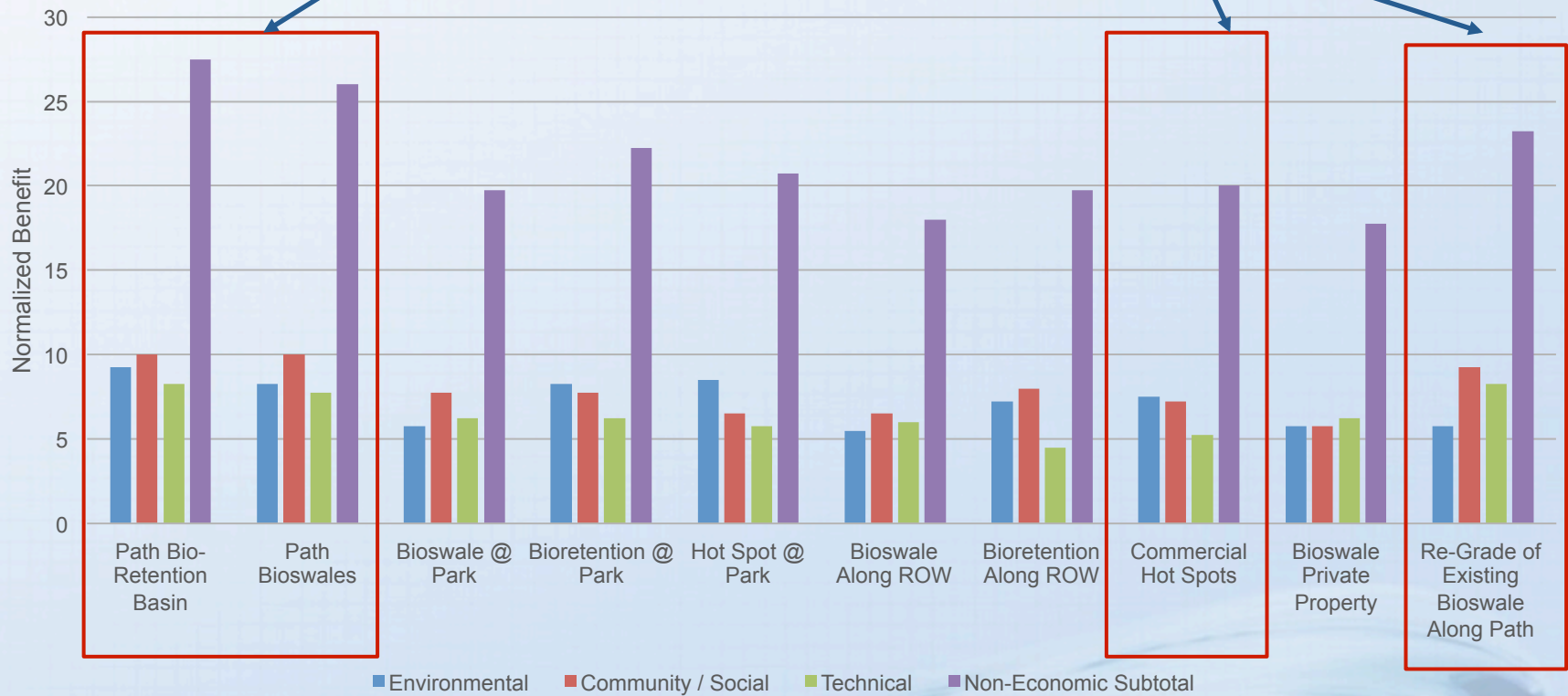
- Water Quality Improvement
- Storage/Peak Flow Shaving
- Habitat / Vegetation
- Air Quality Impact
- GHG Impact

## Technical

- Site Grading Related to BMP Needs
- Ease of Constructability
- Obtaining Use of Land
- Site Disturbance Mitigation Potential

# TBL+ Analysis of Green Infrastructure Alternatives

## Recommended Projects





# Creating the Envision<sup>®</sup> Roadmap for Preliminary and Final Design

- Identifying implementation strategies / metrics
- Understanding documentation needs
  - Additional studies
  - Drawings
  - Specifications
- Value Added Analysis
  - Consider Envision<sup>®</sup> credit points vs. estimated cost to implement

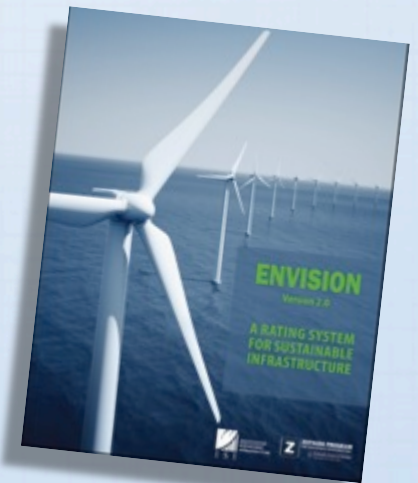
# Value Added Summary

	Standard Practice (Level 1)	Enhanced Sustainable Practice (Level 2)	Ultimate Sustainable Practice (Level 3)
Total Envision Points Achievable	107 - 154	205 – 293	215 – 320
% of Maximum Envision Points	16 – 23%	31 – 44%	32 – 48%
Projected Award	None – Bronze	Silver – Gold	Silver – Gold
Estimated Added Cost, % of total project	\$25 – \$45k	\$115 – \$185k	\$200 - \$300k
Estimated Added Cost, % of total project	~0.1%	~0.5%	~0.8%

# Envision<sup>®</sup> Employed Early On Leads to Sustainable Decision Making

*Are we doing the project right **AND** are we doing the right project?*

- Envision<sup>®</sup> provides framework for doing both throughout a project's planning and design
- At ***planning level***, use to establish criteria for moving the project forward toward sustainable solutions
- At ***preliminary/final design***, use to implement sustainable practices and meet sustainable goals





# Questions?



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# Examples of Envision™ Credits at the Programmatic Level



## Quality of Life

### QL. 1.1 Improve community quality of life

Sustainable water supply and improved quality boosts overall quality of life throughout City

### QL 1.2 Stimulate sustainable growth and development

Securing a sustainable water supply allows modest growth of the community to continue while preserving sufficient resources for all



## Leadership

### LD 1.1 Provide effective leadership and commitment

Create and uphold specific sustainability policies like Energy and Climate Action Plan

Pursuit and funding of GREAT Program

### LD 1.3 Foster collaboration and team

Hold Project Visioning and Eco-Alternatives Charrettes involving project team and stakeholders



# Examples of Credits Specific to Water Supply Plan



## Resource Management

### RA 2.1 Reduce energy consumption

Consider energy efficient pumps/ strategies for all new conveyance facilities/ASR wells

### RA 3.1 Protect fresh water availability

Use recycled water in ASR / IPR application to boost city's water supply and reduce reliance on imports



## Climate and Risk

### CR 1.1 Reduce Greenhouse Gas Emissions

Conduct GHG emissions analysis of project alternatives, both grey and green.

### CR 2.3 Prepare for long-term threats

Addition of ASR / IPR provides a more sustainable water supply even in drought conditions

# Key Envision® Credits to be Pursued Moving into Final Design



## Leadership

### LD 1.3 / 1.4 Foster Collaboration and Team and Stakeholder Involvement

Hold Project Visioning and Eco-Alternatives Charrettes involving project stakeholders



## Quality of Life

### QL 2.1 Enhance Public Health & Safety

Improving water quality and reducing CSOs in urban stream

### QL 3.3 Enhance Public Space

Enhancing the existing Trolley Trail corridor using bioswales, rain gardens, and other public amenities (benches, public education tools)



## Resource Allocation

### RA 1.3 Use Recycled Materials

Maximize reuse of the existing system components to the extent possible





# Key Envision<sup>®</sup> Credits to be Pursued Moving into Final Design



## Natural World

### NW 2.1 Manage Stormwater

Use green BMPs to reduce storm water quantity and improve water quality

### NW 2.3 Prevent Surface and Groundwater Contamination

Eliminating CSOs into the urban stream which can contaminate the surface water

### NW 3.4 Maintain Wetland and Surface Water Functions

Improve surface water function by enhancing water quality and habitat



## Climate and Risk

### CR 2.3 Prepare for long-term hazards

Addition of green infrastructure will provide added stormwater storage capacity, to handle larger storms and prevent flooding

