Institute for Sustainable Infrastructure's

Envision™ Sustainability Rating System: What, Why, and WTD's Journey

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Can't Wait for Happy Hour?

Why am I here?

Huh?

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Presentation Path

- King County Sustainability
- What is Envision™?
- Why Use Envision™?
- WTD's Journey through a Pilot Project?
- Questions

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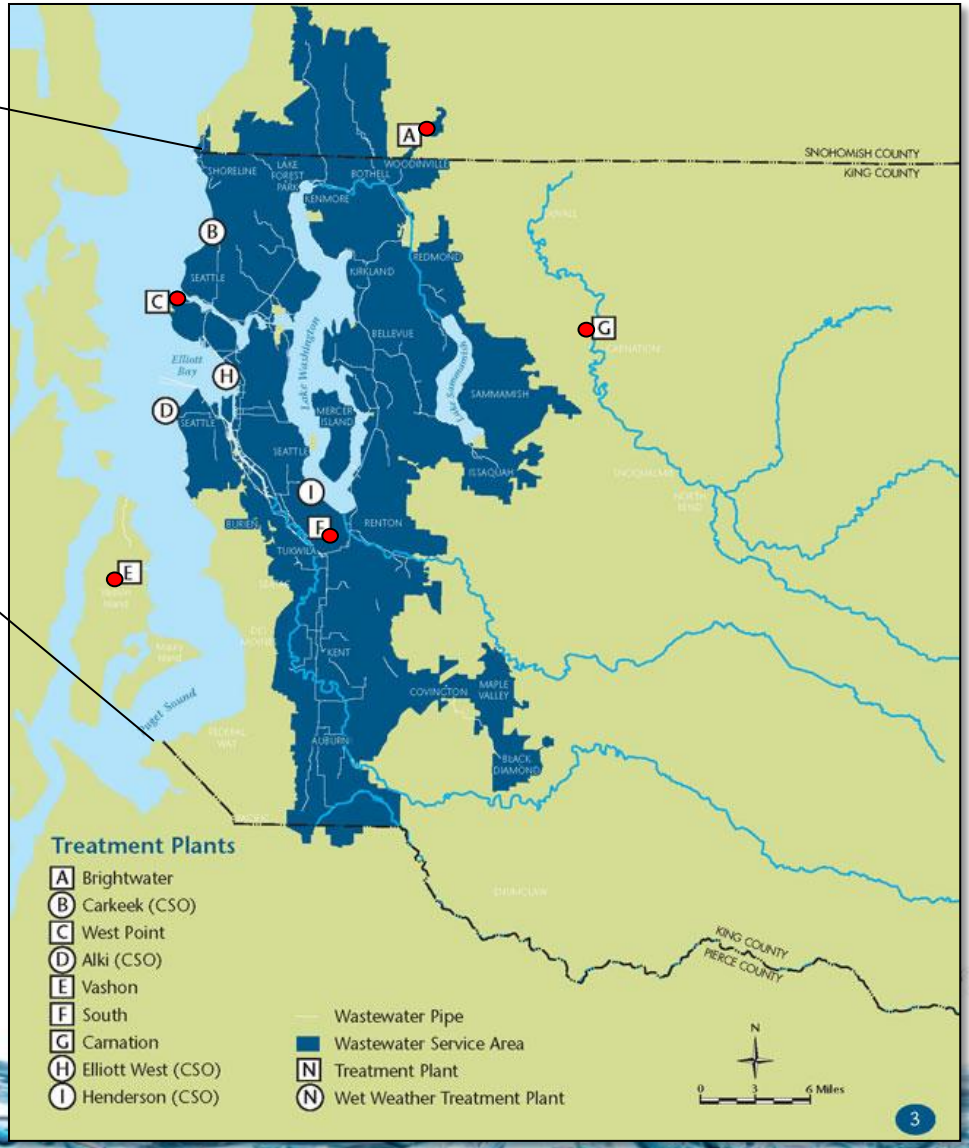
King County Wastewater Treatment Division

- Serves 1.5 M people (2.4 M by 2030)
- 420 sq.mi.
- 43 pump stations
- 19 regulator stations
- 391 miles of pipe
- 200 mgd average treatment
- 34 local agencies contribute flow
- $200 M/yr. capital construction
- $127 M/yr O&M



King County Sustainability - The Beginning (Green Bldg)

($$ - 2% Rule)

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King County Sustainability - The Scorecard

WTD SUSTAINABILITY SCORECARD

Project Name/Number:

Project Manager:

Brief Description of Project:

Date: **Current Project Phase(30%, 60%, 100%)**

Y	N/A		REQUIRED PREREQUISITES
		Prerequisite 1	Hold an eco-charrette or similar meeting
		Prerequisite 2	Use Life Cycle Cost Assessment
		Prerequisite 3	Account and mitigate for greenhouse gas emissions
		Prerequisite 4	Implement erosion and sedimentation control best management practices
		Prerequisite 5	Reduce energy use by at least 10% over local code
		Prerequisite 6	Install water saving fixtures
		Prerequisite 7	Implement Green Operations & Maintenance program, including a green cleaning program

Y	?	N		Sustainable Sites	
o	o	o		Possible Points	27
			Credit 1.1	**Erosion & Sedimentation** (Beyond Permit Requirements)	1
			Credit 1.2	**Site Selection Process** (Minimize Environmental Impacts)	3
			Credit 2.1	**Process/Site Flow Analysis** (Energy & Staff Efficiency)	3
			Credit 2.2	**Reduce Impact on Site Characterisitics**	2
			Credit 2.3	**Yard Operations Plan** (Operations Efficiency and Safety)	1
			Credit 3	**Control Site Contaminants** (Reduce Use and Discharge)	1
			Credit 4.1	**Minimize Transportation Impacts.** Management Plan	1
			Credit 4.2	**Minimize Transportation Impacts.** On-Site Strategies	1
			Credit 4.3	**Minimize Transportation Impacts.** Emission Control	1
			Credit 5.1	**Reduce Footprint,** Retain or Create Open Space	2

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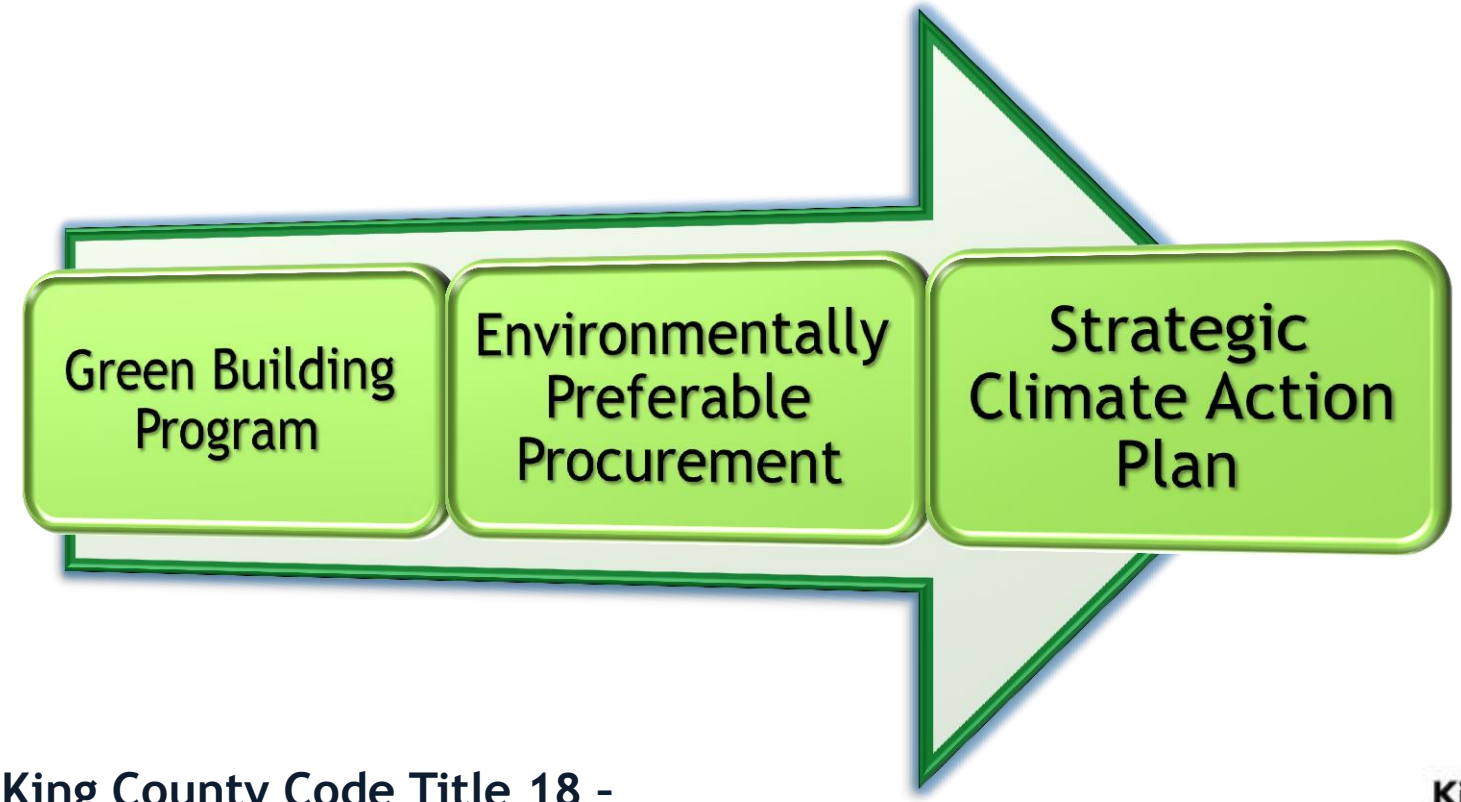
King County Sustainability - V1.0 (Environmental)



King County Code Title 18 – Environmental Sustainability Programs

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King County Sustainability - Equity and Social Justice Initiative

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Sunset/Heathfield Project Manager Adé Franklin's Bright Idea – Let's do LEED

Stumbled upon Envision™

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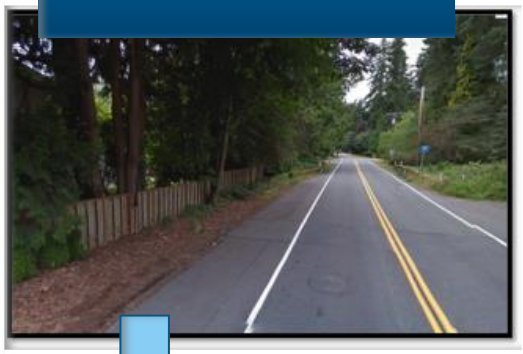
Sunset and Heathfield Pump Stations and Force Main Upgrade Project

Project Overview

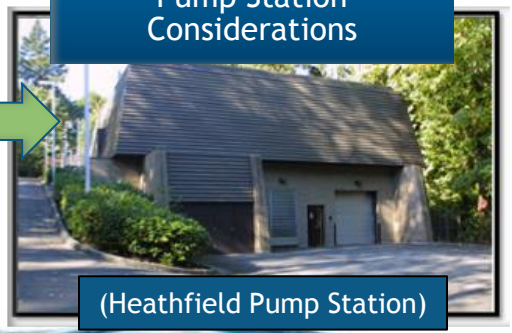
Force Main Considerations



- ROW
- Stream Crossings
- Residential
- Trees
- Newly Paved Road

Pump Station Considerations

- Lake Front
- Community Views
- Residential
- Large Pumps/Standby Generator



(Heathfield Pump Station)

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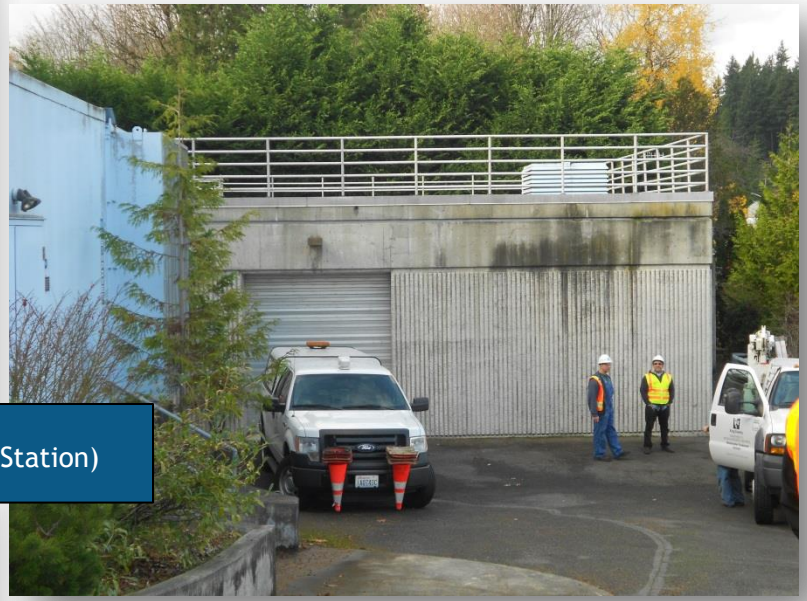
Sunset and Heathfield Pump Stations and Force Main Upgrade Project

(Sunset Pump Station)



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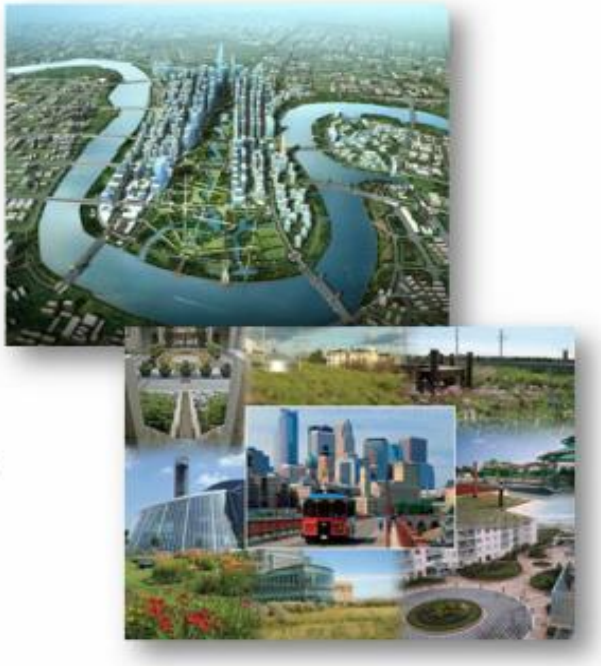
What is Envision™? (Evolution)

Improving Infrastructure Integration

- Infrastructure elements aren't like buildings
  - Buildings
    - Under the control of a single entity
    - Can readily optimize building systems
  - Infrastructure
    - No single responsible entity
    - Multiple departments with different issues, agendas, schedules, budgets, customers
    - Integration needed at the city/community and regional levels



THE SUSTAINABLE SITES INITIATIVE

U.S. GREEN BUILDING COUNCIL LEED USGBC

Greenroads

- **Current rating systems for infrastructure in the U.S. are sector specific**
- **Envision™ is designed to fill the gap**

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What is Envision™?

Five Categories / 2-3 Subcategories / 60 Credits

QUALITY OF LIFE (13 Credits)	LEADERSHIP (10 Credits)	RESOURCE ALLOCATION (14 Credits)	NATURAL WORLD (15 Credits)	CLIMATE AND RISK (8 Credits)
1 PURPOSE	1 COLLABORATION	1 MATERIALS	1 SITING	1 EMISSIONS
2 WELLBEING	2 MANAGEMENT	2 ENERGY	2 LAND+WATER	2 RESILIENCE
3 COMMUNITY	3 PLANNING	3 WATER	3 BIODIVERSITY	

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What is Envision™?

QUALITY OF LIFE
13 Credits

1 PURPOSE
QL1.1 Improve Community Quality of Life
QL1.2 Stimulate Sustainable Growth & Development
QL1.3 Develop Local Skills & Capabilities

2 WELLBEING
QL2.1 Enhance Public Health & Safety
QL2.2 Minimize Noise and Vibration
QL2.3 Minimize Light Pollution
QL2.4 Improve Community Mobility & Access
QL2.5 Encourage Alternative Modes of Transportation
QL2.6 Improve Site Accessibility, Safety & Wayfinding

3 COMMUNITY
QL3.1 Preserve Historic & Cultural Resources
QL3.2 Preserve Views & Local Character
QL3.3 Enhance Public Space

QL0.0 Innovate or Exceed Credit Requirements

LEADERSHIP
10 Credits

1 COLLABORATION
LD1.1 Provide Effective Leadership & Commitment
LD1.2 Establish A Sustainability Management System
LD1.3 Foster Collaboration & Teamwork
LD1.4 Provide for Stakeholder Involvement

2 MANAGEMENT
LD2.1 Pursue By-Product Synergy Opportunities
LD2.2 Improve Infrastructure Integration

3 PLANNING
LD3.1 Plan For Long-Term Monitoring & Maintenance
LD3.2 Address Conflicting Regulations & Policies
LD3.3 Extend Useful Life

LD0.0 Innovate or Exceed Credit Requirements

RESOURCE ALLOCATION
14 Credits

1 MATERIALS
RA1.1 Reduce Net Embodied Energy
RA1.2 Support Sustainable Procurement Practices
RA1.3 Use Recycled Materials
RA1.4 Use Regional Materials
RA1.5 Divert Waste From Landfills
RA1.6 Reduce Excavated Materials Taken Off Site
RA1.7 Provide For Deconstruction & Recycling

2 ENERGY
RA2.1 Reduce Energy Consumption
RA2.2 Use Renewable Energy
RA2.3 Commission & Monitor Energy Systems

3 WATER
RA3.1 Protect Fresh Water Availability
RA3.2 Reduce Potable Water Consumption
RA3.3 Monitor Water Systems

RA0.0 Innovate or Exceed Credit Requirements

NATURAL WORLD
15 Credits

1 SITING
NW1.1 Preserve Prime Habitat
NW1.2 Protect Wetlands & Surface Water
NW1.3 Preserve Prime Farmland
NW1.4 Avoid Adverse Geology
NW1.5 Preserve Floodplain Functions
NW1.6 Avoid Unsuitable Development on Steep Slopes
NW1.7 Preserve Greenfields

2 LAND+WATER
NW2.1 Manage Stormwater
NW2.2 Reduce Pesticide & Fertilizer Impacts
NW2.3 Prevent Surface & Groundwater Contamination

3 BIODIVERSITY
NW3.1 Preserve Species Biodiversity
NW3.2 Control Invasive Species
NW3.3 Restore Disturbed Soils
NW3.4 Maintain Wetland & Surface Water Functions

NW0.0 Innovate or Exceed Credit Requirements

CLIMATE AND RISK
8 Credits

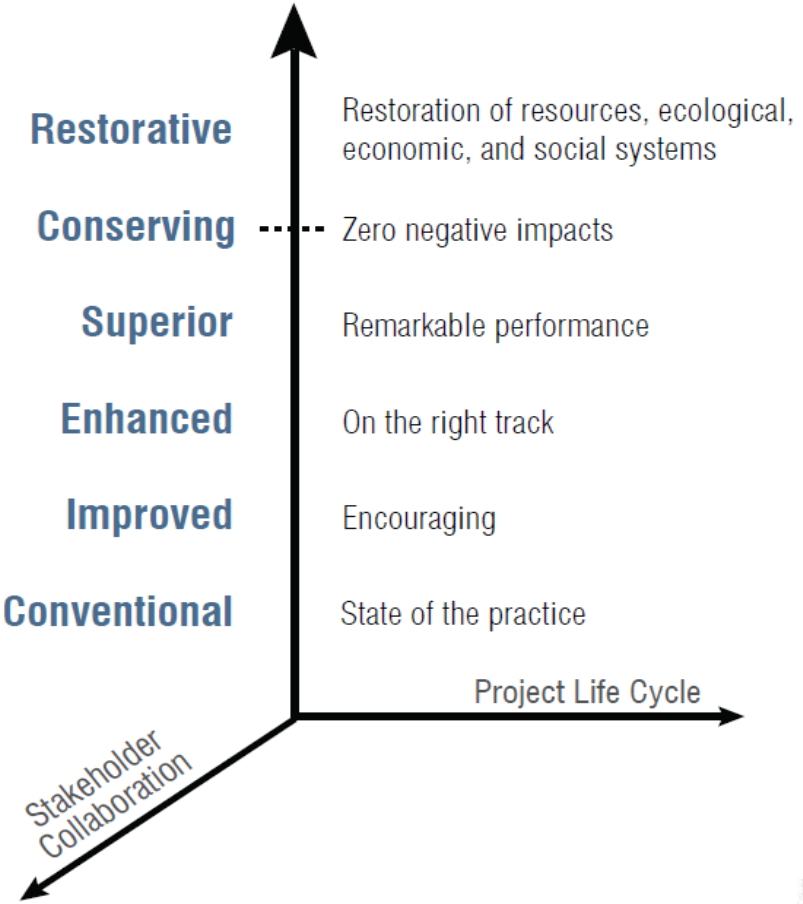
1 EMISSIONS
CR1.1 Reduce Greenhouse Gas Emissions
CR1.2 Reduce Air Pollutant Emissions

2 RESILIENCE
CR2.1 Assess Climate Threat
CR2.2 Avoid Traps & Vulnerabilities
CR2.3 Prepare For Long-Term Adaptability
CR2.4 Prepare For Short-Term Hazards
CR2.5 Manage Heat Island Effects

CR0.0 Innovate or Exceed Credit Requirements

What is Envision™?

- Each credit scored on five levels of achievement.
  - Not all credits have all 5 levels of achievements.



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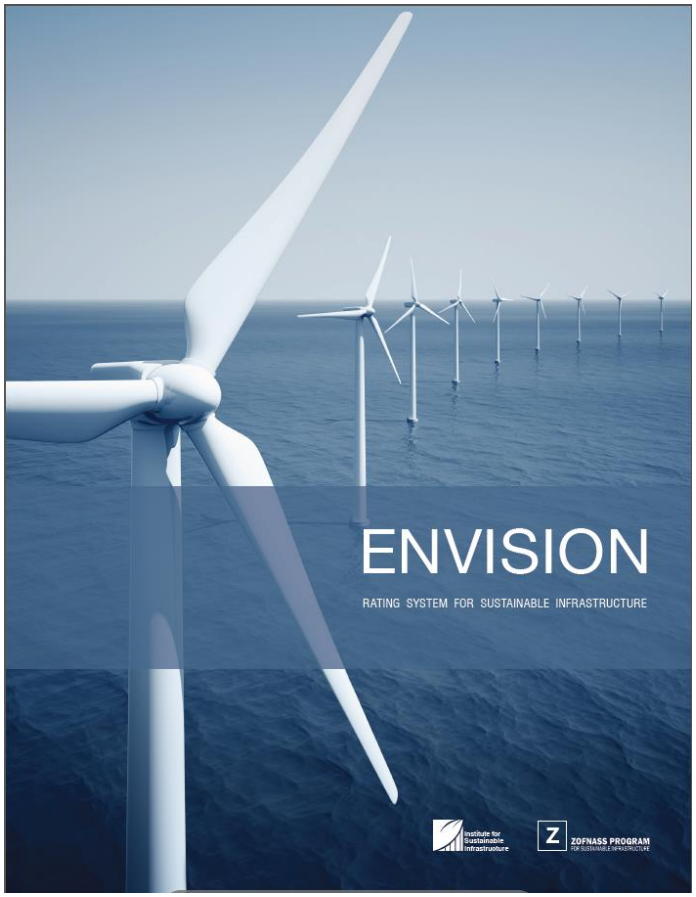
What is Envision™?

- Each level of achievement in each credit corresponds to a number of points.
- Total points earned is divided by total possible points to find award level.
- Requires documentation submittal and evaluation
- Fee based

Award Levels

Award	Minimum Applicable Points
Bronze	20%
Silver	30%
Gold	40%
Platinum	50%

What is Envision™?



- **Self-Assessment**
  - Can be used by anyone
  - Envision Guidance Manual
  - Scorecard to use for tracking and determine the possible award level, if desired
  - Can be used as a rubric or standard
  - Data sharable with community
  - http://sustainableinfrastructure.org
  - Free online tools

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What is Envision™?

QL2.3 MINIMIZE LIGHT POLLUTION

INTENT:

Prevent excessive glare, light at night, and light directed skyward to conserve energy and reduce obtrusive lighting.

LEVELS OF ACHIEVEMENT

IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
(1) Cost savings focus. The project team conducts an overall assessment of lighting needs for the project. The team looks for opportunities to reduce or eliminate outdoor lighting based on potential cost savings. Appropriate measures are taken to prevent light spillage and glare in the design. Design specifications require the use of energy-efficient lighting and use of automatic turnoff of outdoor lighting during off hours. The design meets requirements for digital signage. Specify lighting requirements and limitations for the construction contractor. (A, B)	**(2) Non-lighting alternatives.** The project team makes additional reductions in the amount of lighting required by using nonlighting alternatives (e.g., clear signage and clearly painted roadway lines). The design reduces light-spillage effects and glare through strategies such as high barriers and planted trees and shrubs. (A, B, C)	**(4) Cohesive zoning.** The project team aligns the project with appropriate lighting zones and existing zoned districts. The team establishes lighting zones based on lighting needs balanced against the needs and limitations posed by sensitive environments and receptors. The team assesses street lighting needs and specifies the removal of unneeded street lighting. (A, B, C)	**(8) Preserving the night sky.** The project team performs an audit of lighting needs for all the areas affected by the project. The team assesses lighting needs and makes recommendations for overall lighting needs and reducing light spillage. The design specifies outdoor lighting with full cutoff lenses and reductions in lighting intensity for preserving the night sky. The team optimizes energy efficiency, considering time-of-day lighting needs and the use of energy-efficient lamps. (A, B, C)	**(11) Restoring the night sky.** The project team works with lighting experts to assess true lighting needs as well as areas where exterior lighting is directed upward. The team identifies more fully where, when, and to what levels lighting is needed to meet wayfinding, safety and other illumination requirements. The team identifies and appropriately reduces or eliminates lighting where existing lighting is negatively impacting dark sky conditions. Extensive use of appropriate time-of-day lighting schedule. Broad application of full cutoff lenses. Optimize energy efficiency and assess and optimize energy expenditures. Focus on reducing unnecessary upward illumination. (A, B, C)

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What is Envision™?

11 POINTS

QUALITY OF LIFE

WELLBEING

METRIC:

Lighting meets minimum standards for safety, but does not spill over into areas beyond site boundaries or create obtrusive and disruptive glare.

C. Has the project team designed the lighting components of the project in a way that reduces or eliminates light spillage into sensitive environments and preserves the night sky?

1. *Plans, drawings, and specifications showing reductions in lighting intensity, the use of high barriers and planted trees and shrubs, and the use of full cutoff lenses.*
2. *Demonstration that signage for the constructed works will meet the following standards for digital signs, digital billboards, electronic message boards or displays, electronic message centers, and marquee signs and electronic display systems: during daylight hours between sunrise and sunset, luminance shall be no greater than 2000 candelas per square meter. At all other times, luminance shall be no greater than 250 candelas per square meter. There shall be no display movement such as twirls, swirls, blinking, video clips, or other forms of animation. Sign copy cannot change more than once per hour.*

SOURCES

CEEQUAL Assessment Manual for Projects Version 4, December 2008, Roger K. Venables, Section 11.5.

Municipal Research and Services Center of Washington, Light Nuisances—Ambient Light, Light Pollution Glare, www.mrsc.org/subjects/legal/nuisances/nu-light.aspx.

Royal Astronomical Society of Canada, www.rasc.ca/dark-sky-site-designations

International Dark Sky Association, www.darksky.org.

The New England Light Pollution Advisory Group, www.cfa.harvard.edu/nelpag/nelpag.html.

RELATED ENVISION CREDITS

QL1.1 Improve Community Quality of Life

QL2.6 Improve Site Accessibility, Safety, and Wayfinding

RA2.1 Reduce Energy Consumption

NW1.1 Preserve Prime Habitat

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Why Envision™?
Pilot Project - Sunset and Heathfield Pump Stations and Force Main Upgrade

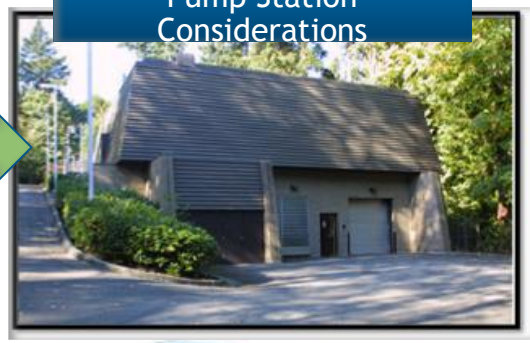
Project Overview

Force Main Considerations

- ROW
- Stream Crossings
- Residential
- Trees
- Newly Paved Road

Pump Station Considerations

- Lake Front
- Community Views
- Residential
- Large Pumps/Standby Generator



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Why Envision™?

Envision Fits Perfectly

LEED Doesn't Fit

Go Beyond Scorecard

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WTD's Envision™ Journey

- Provide Envision Overview to Team
- Conduct Envision Charrette/Complete Envision Scorecard
- Develop Project Tools/Assign Responsibilities
- Envision on Project Meeting Agenda

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Project Application

Sunset/Heathfield Pump Station and Forcemain Upgrade - High Estimate

I want to: ---CHOOSE AN OPTION---

Jump to category: QL LD RA NW CR

View the Guidance Manual: PDF / HTML

Do You Need Help?

QUALITY OF LIFE			
QL1.1	**Improve community quality of life.** Improve the net quality of life of all communities affected by the project and mitigate negative impacts to communities.		
ENV SP	INCLUDE	Conserving (20 / 25)	-For Conserving level, need to gather and review community/stakeholder plans -Possible public access at Sunset (community ammenity), mitigate eyesores due to resident's storage at Heathfield -Talk to community/stakeholders about their needs and goals -Identify adverse impacts
	...stainable growth and development. ...and stimulate sustainable growth and development, including improvements in job growth, capacity building, productivity, business ...ractiveness and livability.		
ENV SP	INCLUDE	Superior (5 / 16)	-Pump station upgrade supports growth projections -Possible mentorship(s)/internship(s) during design and construction (Bellevue College, local high schools, minorities/disadvantaged groups (ESJ), skill developement programs, etc.)
QL1.3	**Develop local skills and capabilities.** Expand the knowledge, skills and capacity of the community workforce to improve their ability to grow and develop.		
ENV SP	INCLUDE	Restorative (15 / 15)	-For Restorative level, engage WTD Management for establishing contacts on this, and future projects -Engage Community Relations, ESJ and Procurement groups -Washington Conservation Corps for green infrastructure work -Mentorships/internships during design and construction, with a focus on disadvantaged/minority groups (ESJ)
QL2.1	**Enhance public health and safety.** Take into account the health and safety implications of using new materials, technologies or methodologies above and beyond meeting regulatory requirements.		

Document Thoughts in Note Section

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Project Envision Scorecard

Sunset/Heathfield Pump Station and Forcemain Upgrade - High Estimate

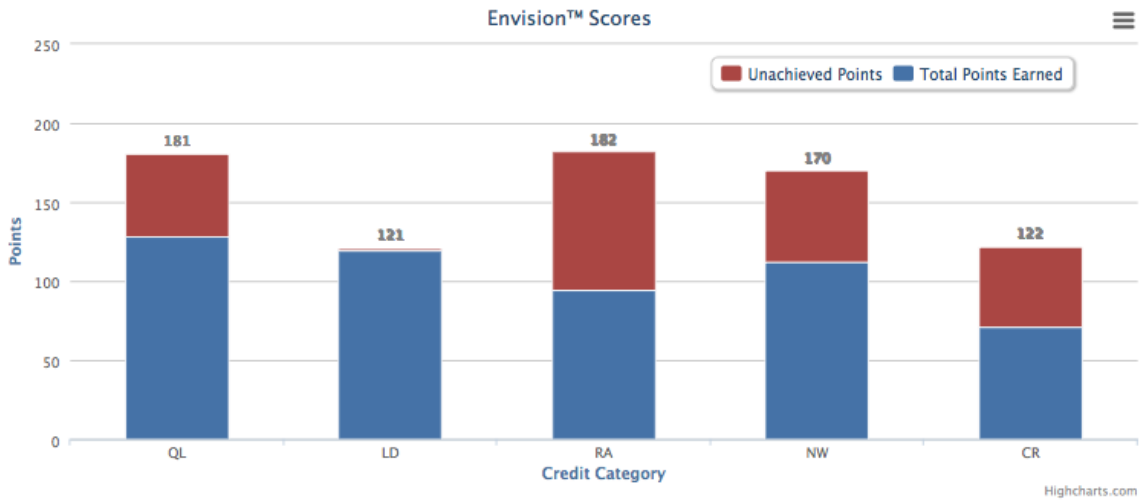
I want to: ---CHOOSE AN OPTION---

QL LD RA NW CR

View the Guidance Manual: PDF / HTML

Do You Need Help?

Credit Category	Applicable Points	Points	Innovation Points	Total Points Pursued	Percentage of Available Points
QUALITY OF LIFE	181	128	0	128	71%
LEADERSHIP	121	117	2	119	97%
RESOURCE ALLOCATION	182	94	0	94	52%
NATURAL WORLD	170	112	0	112	66%
CLIMATE AND RISK	122	71	0	71	58%
Total Workbook Points	776	522	2	524	67%



PLATINUM

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WTD's Envision™ Journey – Project Elements

- City of Bellevue engagement – materials collaboration, proactive community impacts planning, standards clarification (recycled asphalt, low VOC stripping, reused bedding & backfill)
- Recycled grates
- Community engagement – community meetings, project website, design input
- Arborist input on moving trees
- Native plantings and decorative fencing (community input)
- Snags, onsite mulch, brush piles, invasives removal (community involvement), bat boxes
- Green roof, rain garden, high SRI roof
- Construction fencing mural, community interpretative sign
- Climate change/vulnerable sites analysis – added resilience

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WTD's Envision™ Journey – Project Elements

- Limit use of PVCs
- Interior & exterior LED lighting/"task" level exterior lights/central lighting panel
- Sustainable Contractor facilities and County Project Representative's office
- Using HDD for pipelines to avoid steep slopes – Force main alternatives including "non-monetary" benefits
- Better air quality at construction site - equipment idling time, covered VOC releasing materials, material removal
- Recipients for salvage materials – Green River Community College Outreach/Standby Generators
- Limiting construction noise, pump station housekeeping, reduced toxic fumes
- Vibration and noise analysis – maintain current levels

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WTD's Envision™ Journey – Project Elements

- On-site reuse of excavated materials
- Programmable thermostats for unit heaters
- Automated OSA turndown controls per NFPA 820
- New Variable Refrigerant Volume A/C (A/C only where req'd for process needs)
- Pump selection - energy efficiency analysis comparison among alternatives
- Regional materials
- Equipment reuse
- Vegetable based form release
- Recycled, reused, or FSC wood forms

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WTD's Envision™ Journey – Project Elements

- **Opportunities:**
  - **Collaboration:**
    - Research/form partnerships – "Envision™" sharing
    - City of Bellevue
    - Other agencies
    - Educational/community service organizations
  - The Contractor - identify **synergy** opportunities
  - Greater **Construction Management collaboration**
  - **More robust, efficient, resilient, well received infrastructure**

- **Challenges:**
  - Maintain Momentum – project deadlines
  - Contract document **enforcement** – precon conversation
  - **Incorporate Envision requirements into contract documents** – long project design time, procurement rule
  - "Delta" **cost tracking** – 2% rule is only portion attributable to additional sustainability effort/requirement
  - Determine/Gather Credit Documentation - **Proof**

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Wrap Up

- **Problem Statement** – How Can King County WTD best incorporate and implement Sustainability Initiatives into Project Delivery?
  - ESJ, GBO, SCAP, EPPP
  - Could a (revised) WTD Scorecard be sufficient
- **Solution** – Envision™ provides comprehensive 5 category rating system that encapsulates King County initiatives
  - Pay for certification
  - Use free online tools for guidance
- **WTD Piloting Envision™** for Award on Sunset/Heathfield:
  - National ISI demonstration project
  - Envision gives credit for many things WTD already does
  - Encourages more comprehensive, wide reaching considerations
  - Challenges will help develop new partnerships and project implementation solutions, e.g., contract document language/enforcement

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Questions/Discussion

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