THE ENVISION™ RATING SYSTEM
Envision was developed in joint collaboration between the Zofnass Program for Sustainable Infrastructure at the Harvard University Graduate School of Design and the Institute for Sustainable Infrastructure.

The Institute for Sustainable Infrastructure is a not-for-profit education and research organization founded by the American Public Works Association, the American Council of Engineering Companies and the American Society of Civil Engineers.
THE IMPORTANCE OF INFRASTRUCTURE

Planet Earth is a dangerous place for humans. Infrastructure provides:
• A basis for public health
• Physical Security
• A quality of life worth living

THE REALITIES OF THE WORLD IN WHICH WE LIVE

• Population Growth
• Diminished Resources
• Climate Change
• Adaptation

A NEW FACT OF LIFE

It is no longer enough that infrastructure work, that it be constructed on time and within budget, or even that it last. It now must be sustainable.
WHAT DO WE MEAN BY “SUSTAINABLE”? 

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

- World Commission on Environment and Development, 1987
WHAT IS ENVISION?

Envision™ is a tool, which itself is part of a larger system, developed to help evaluate the sustainability of civil infrastructure.

This system includes:

- A self assessment checklist
- The Envision™ Rating Tool
- A credential program for individuals
- A Project Evaluation and Verification Program
- A Recognition Program for Sustainable Infrastructure
The criteria and organization of the envision framework are applied in different forms (tools), for different purposes, depending on the need.

**CHECKLIST**
- 60 criteria to introduce sustainability principles
- Questions guide users in understanding important considerations
- Checklist can prepare users for detailed requirements in the Assessment Tool

**ASSESSMENT**
- Uses 60 criteria to measure improvement over four phases of a project's life
- Assessments are conducted at conclusion of each phase
- Meant to reward effort and improve performance toward overall sustainability

**AUDIT**
- Uses objective indicators connected to the 60 criteria
- Gives users an unbiased view of where a project falls relative to similar projects
- Does not reward effort or improvement, only results
WHAT MAKES ENVISION™ UNIQUE?

• It applies to civil infrastructure

• It includes design, planning, construction and maintenance elements

• It is applicable at any point in an infrastructure project's life cycle

• It speaks to the triple bottom line: social, economic and environmental goals

• It is designed to keep pace with a changing concept of sustainability
METRICS MATTER

- Envision™ measures outcomes, not intentions
- Five areas of achievement; 60 credits
- The business case for sustainability…why it is important
<table>
<thead>
<tr>
<th>FIVE LEVELS OF ACHIEVEMENT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPROVED</td>
<td>Performance that is at or above conventional</td>
</tr>
<tr>
<td>ENHANCED</td>
<td>Indications that superior performance is within reach.</td>
</tr>
<tr>
<td>SUPERIOR</td>
<td>Sustainable performance that is noteworthy.</td>
</tr>
<tr>
<td>CONSERVING</td>
<td>Performance that has achieved essentially zero impact.</td>
</tr>
<tr>
<td>RESTORATIVE</td>
<td>Performance that restores natural or social systems.</td>
</tr>
</tbody>
</table>
WHAT TYPES OF INFRASTRUCTURE CAN ENVISION™ RATE?

**ENERGY**
- Geothermal
- Hydroelectric
- Nuclear
- Coal
- Natural Gas
- Oil/Refinery
- Wind
- Solar
- Biomass

**WATER**
- Potable water distribution
- Capture/Storage
- Water Reuse
- Storm Water Management
- Flood Control

**WASTE**
- Solid waste
- Recycling
- Hazardous Waste
- Collection & Transfer

**TRANSPORT**
- Airports
- Roads
- Highways
- Bikes
- Pedestrians
- Railways
- Public Transit
- Ports
- Waterways

**LANDSCAPE**
- Public Realm
- Parks
- Ecosystem Services

**INFORMATION**
- Telecommunications
- Internet
- Phones
- Satellites
- Data Centers
- Sensors
HOW WILL ENVISION IMPROVE SUSTAINABILITY?

Technology Advancement
Performance Goals

DRIVE TOWARD RESTORATIVE PERFORMANCE

Restore
Sustain
Improve

Whole System Design
Reduce, reuse, recycle
Phased development
Adaptive
Post-life

Design  Construct  O&M  Reuse  Disassembly

Team Chartering
Understand/Integrate Community Needs
Deliver as Part of Owner Organization
Partner with Regulators

Project team
Owner organization
Affected stakeholders
Partner organizations
Regulatory bodies

EXTEND THE USEFULNESS OF THE PROJECT

EXTEND PROJECT BOUNDARIES
CATEGORIES

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 & Vibration
QL2.3 Minimize Light Pollution
QL2.4 Improve Community Mobility & Access
QL2.5 Encourage Alternative Modes of Transportation
QL2.6 Improve 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
WW1.1 Preserve Prime Habitat
WW1.2 Protect Wetlands & Surface Water
WW1.3 Preserve Prime Farmland
WW1.4 Avoid Adverse Geology
WW1.5 Preserve Floodplain Functions
WW1.6 Avoid Unsuitable Development on Steep Slopes
WW1.7 Preserve Greenfields

2 LAND + WATER
WW2.1 Manage Stormwater
WW2.2 Reduce Pesticide & Fertilizer Impacts
WW2.3 Prevent Surface & Groundwater Contamination

3 BIODIVERSITY
WW3.1 Preserve Species Biodiversity
WW3.2 Control Invasive Species
WW3.3 Restore Disturbed Soils
WW3.4 Maintain Wetland & Surface Water Functions
WW0.0 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 Requirement
QUALITY OF LIFE

1. Does the project preserve and enhance local resources?
2. Does the project help the surrounding community grow and develop?
3. Does the project make a minimal negative impact on the surrounding community?
4. Are there health risks for employees or nearby residents?
5. Is the project located near public transportation?
6. Are local residents employed?
1 PURPOSE
QL1.1 Improve Community Quality of Life
QL1.2 Stimulate Sustainable Growth and Development
QL1.3 Develop Local Skills and Capabilities

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

3 COMMUNITY
QL3.1 Preserve Historic and Cultural Resources
QL3.2 Preserve Views and Local Character
QL3.3 Enhance Public Space
QL0.0 Innovate or Exceed Credit Requirements
LEADERSHIP

DOES THE PROJECT PURSUE SYNERGIES WITH BOTH PRODUCTS AND OTHER SYSTEMS?

ARE ALL STAKEHOLDERS ADEQUATELY INVOLVED?

DOES THE PROJECT PLAN FOR LONG-TERM MONITORING AND MAINTENANCE?

HOW LONG IS THE USEFUL LIFE OF THE SYSTEM?

IS THERE A SUSTAINABILITY MANAGEMENT SYSTEM IN PLACE?
1 COLLABORATION
LD1.1 Provide Effective Leadership & Commitment
LD1.2 Establish a Sustainability Management System
LD1.3 Foster Collaboration and 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 Long-Term Maintenance and Monitoring
LD3.2 Address Conflicting Regulations and Policies
LD3.3 Extend Useful Life
LD0.0 Innovate or Exceed Credit Requirements
RESOURCES

Allocation

1. Does the project minimize the use of fossil-fuel based energy?
2. Does the project utilize local materials?
3. How is waste from the project handled?
4. Does the project use sustainable materials, such as recycled, reused, or certified materials?
5. Does the project consider the life cycle of the materials used, and plan for their end-of-life?
6. Does the project protect freshwater availability by minimizing its potable water use?
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
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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

Does the project avoid development on land that is better used for habitats, recreation, or the production of food?

Does the project preserve local habitats and biodiversity?

Does the project minimize disruption to surface water and wetlands?

Does the project manage pollution in stormwater and groundwater?

How are invasive species managed?

How does the project manage soils disturbed during construction?
1 SITING
NW1.1 Preserve Prime Habitat
NW1.2 Preserve Wetlands and 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 Pesticides and Fertilizer Impacts
NW2.3 Prevent Surface and Groundwater Contamination

3 BIODIVERSITY
NW3.1 Preserve Species Biodiversity
NW3.2 Control Invasive Species
NW3.3 Restore Disturbed Soils
NW3.4 Maintain Wetland and Surface Water Functions
NW0.0 Innovate or Exceed Credit Requirements
CLIMATE AND RISK

Does the project minimize greenhouse gas emissions?

Does the project reduce air pollutant emissions?

Does the project manage heat islands?

Does the project prepare for short-term hazards?

Does the project prepare for long-term adaptability?
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 and 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
QL1.1 IMPROVE COMMUNITY QUALITY OF LIFE

INTENT:

Improve the net quality of life of all communities affected by the project and mitigate negative impacts to communities.

LEVELS OF ACHIEVEMENT

<table>
<thead>
<tr>
<th>IMPROVED</th>
<th>ENHANCED</th>
<th>SUPERIOR</th>
<th>CONSERVING</th>
<th>RESTORATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Local actions taken at the project level to improve community quality of life.</td>
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</tr>
<tr>
<td>(b) Actions taken at the project level to improve community quality of life.</td>
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</tr>
<tr>
<td>(c) Actions taken at the project level to improve community quality of life.</td>
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<td>(c) Actions taken at the project level to improve community quality of life.</td>
</tr>
</tbody>
</table>

DESCRIPTION

This credit addresses the extent to which the project contributes to the quality of life of the community by addressing community needs, goals, and objectives, and incorporates them into the project. Key stakeholders are involved in the project decision-making process. (A. B, C)

ADVANCING TO HIGHER ACHIEVEMENT LEVELS

Benchmark: The project team has identified and assessed community needs, goals, and objectives, and incorporated them into the project. Key stakeholders are involved in the project decision-making process. (A. B, C)

EVALUATION CRITERIA AND DOCUMENTATION

A. Has the project team identified and taken into account community needs, goals, plans, and issues?

1. Site visits, community meetings, and surveys can be used to gather information.
2. Community forums and workshops can be used to engage community members.
3. Interviews with key stakeholders can be conducted to gather information.

B. Has the project team sought to identify the project's impacts on the community and its goals and objectives?

1. Site visits, community meetings, and surveys can be used to gather information.
2. Community forums and workshops can be used to engage community members.
3. Interviews with key stakeholders can be conducted to gather information.

SOURCE:


RELATED CREDITS

QL1.2 upstream sustainability, QL1.3 Local skills and capabilities, QL1.4 Provide meaningful stakeholder involvement.
ENVISION™ Sustainable Infrastructure Rating System

"Bridge"

ENVISION™ Stage 2 User's Guide

The ENVISION™ Sustainable Infrastructure Rating System is an objective framework of criteria and performance achievements. It is designed to help users identify ways in which sustainable approaches can be used to plan, design, construct and operate infrastructure projects. The goal is to improve the sustainable performance of infrastructure projects in terms of not only the technical performance but also from a social, environmental and economic perspective. ENVISION™ provides an opportunity for infrastructure owners and designers to provide higher performing solutions by using a lifecycle approach, by working with communities and by using a restorative approach to infrastructure projects.

The rating system includes a matrix calculator of objectives and performance levels along with associated Guidance documents, references, glossaries and case studies that illustrate practical applications where sustainability performance has been enhanced.

ENVISION™ Stage 2 Instructions

The ENVISION™ Sustainable Infrastructure Rating System, Version 2.0, Stage 2, (ENVISION™ Stage 2) is designed to help users consider the array of objectives that enhance the sustainability performance of an infrastructure project. Consideration of those objectives is measured against a ranking of increasing sustainable achievements that will develop a numeric indicator of overall performance.
Envision™ Sustainable Infrastructure Rating System

"Bridge"

Section Menu

Please click on the links to take you to the relevant sections:

- Quality of Life
- Leadership
- Resource Allocation
- Natural World
- Climate and Risk
## Section 1: QUALITY OF LIFE

<table>
<thead>
<tr>
<th>Section and Objective Numbers</th>
<th>Objectives</th>
<th>Required for Project</th>
<th>Level Of Achievement</th>
<th>Score</th>
<th>Objective Available Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>QL1.1</td>
<td>Improve community quality of life. Improve the net quality of life of all communities affected by the project and mitigate negative impacts to communities. details / guidance</td>
<td>YES</td>
<td>Superior</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>QL1.2</td>
<td>Stimulate sustainable growth and development. Support and stimulate sustainable growth and development, including improvements in job growth, capacity building, productivity, business attractiveness and livability. details / guidance</td>
<td>YES</td>
<td>Improved</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>QL1.3</td>
<td>Develop local skills and capabilities. Expand the knowledge, skills and capacity of the community workforce to improve their ability to grow and develop. details / guidance</td>
<td></td>
<td></td>
<td>12</td>
<td>15</td>
</tr>
</tbody>
</table>

**Score:** 23  
**Max Score:** 181
### QL.1.1 IMPROVE COMMUNITY QUALITY OF LIFE

**INTENT:** Improve the net quality of life of all communities affected by the project and mitigate negative impacts to communities.

**METRIC:** Measures taken to assess community needs and improve quality of life while minimizing negative impacts.

#### LEVELS OF ACHIEVEMENT

<table>
<thead>
<tr>
<th>IMPROVED</th>
<th>ENHANCED</th>
<th>SUPERIOR</th>
<th>CONSERVING</th>
<th>RESTORATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) Internal focus. The project team has located and reviewed the most recent and relevant community planning information. Some, but not all, systematic outreach to stakeholders and decision makers has taken place. Some relatively easy, but not particularly important or meaningful changes made to the project. No significant adverse community impacts are caused by the project. (A, B, C)</td>
<td>(5) Community linkages. More substantive efforts to locate, review, assess and incorporate the needs, goals and plans of the host community into the project. Most potential negative adverse impacts of the project on the host community are reduced or eliminated. Key stakeholders are involved in the project decision-making process. (A, B, C)</td>
<td>(10) Broad community alignment. All relevant community plans are reviewed and verified through stakeholder input. The project team works to achieve good project alignment with community plans, recognizing that the scope of the project is a limiting factor. Potential negative impacts on nearby affected communities are reduced or eliminated. (A, B, C)</td>
<td>(20) Holistic assessment and collaboration. The project makes a net positive contribution to the quality of life of the host and nearby affected communities. The project team makes a holistic assessment of community needs, goals and plans, incorporating meaningful stakeholder input. Project needs or excesses important identified community needs and long-term requirements for sustainability. Remaining adverse impacts are minimal, mostly accepted as reasonable tradeoffs for benefits achieved. The project has broad community endorsement. (A, B, C)</td>
<td>(25) Community renaissance. Through rehabilitation of important community assets, upgraded and extended access, increased safety, improved environmental quality and additional infrastructure capacity, the project substantially reinvigorates the host and nearby communities. Working in genuine collaboration with stakeholders and community decision makers, the project owner and the project team scope the project in a way that elevates community awareness and pride. Overall quality of life in these communities is markedly elevated. (A, B, C, D)</td>
</tr>
</tbody>
</table>

#### DESCRIPTION

This credit addresses the extent to which the project contributes to the quality of life of the host community: the community in which the constructed works is situated and directly affects. This determination is based on how well the project team has identified and assessed community needs, goals and objectives, and incorporated them into the project. Relevant community plans are assumed to be a viable expression of those needs, goals, objectives and aspirations. In a real sense, they are the community’s expression of their desired quality of life.
### Section Totals Summary

**Prairie Waters Project**

<table>
<thead>
<tr>
<th>Section</th>
<th>Maximum Possible Score</th>
<th>Section Points</th>
<th>Innovation Points</th>
<th>Total Points Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>QL</td>
<td>155</td>
<td>11</td>
<td>5</td>
<td>16</td>
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<tr>
<td>LD</td>
<td>121</td>
<td>10</td>
<td>1</td>
<td>11</td>
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<tr>
<td>RA</td>
<td>182</td>
<td>29</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td>NW</td>
<td>203</td>
<td>46</td>
<td>8</td>
<td>54</td>
</tr>
<tr>
<td>CR</td>
<td>122</td>
<td>12</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total Project Points</strong></td>
<td><strong>783</strong></td>
<td><strong>108</strong></td>
<td><strong>14</strong></td>
<td><strong>122</strong></td>
</tr>
</tbody>
</table>

**Envision™ Section Scores**

- QL: 155 (Unachieved: 155, Total Points Earned: 0)
- LD: 121 (Unachieved: 121, Total Points Earned: 0)
- RA: 182 (Unachieved: 182, Total Points Earned: 0)
- NW: 203 (Unachieved: 203, Total PointsEarned: 0)
- CR: 122 (Unachieved: 122, Total Points Earned: 0)
Envision™ Sustainable Infrastructure Rating System

"Prairie Waters Project"

Report (All Sections)

See only Notes

<table>
<thead>
<tr>
<th>Section and Objective Numbers</th>
<th>Objectives</th>
<th>Required/Applicable</th>
<th>Level Of Achievement</th>
<th>Score</th>
<th>Max Available Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>QL.1</td>
<td><strong>QUALITY OF LIFE</strong></td>
<td>REQUIRED</td>
<td>Improved</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Improve community quality of life. Improve the net quality of life of all</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>communities affected by the project and mitigate negative impacts to</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>communities.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>QL.2</td>
<td>Stimulate sustainable growth and development. Support and stimulate</td>
<td>REQUIRED</td>
<td>Improved</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>sustainable growth and development, including improvements in job</td>
<td></td>
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<tr>
<td></td>
<td>growth, capacity building, productivity, business attractiveness and</td>
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<tr>
<td></td>
<td>livability.</td>
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</tr>
<tr>
<td>QL.3</td>
<td>Develop local skills and capabilities. Expand the knowledge, skills and</td>
<td>EXCLUDE</td>
<td>-----</td>
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<tr>
<td></td>
<td>capacity of the community workforce to improve their ability to grow</td>
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<tr>
<td></td>
<td>and develop.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QL.2.1</td>
<td>Enhance public health and safety.</td>
<td>REQUIRED</td>
<td>Improved</td>
<td>2</td>
<td>16</td>
</tr>
</tbody>
</table>