THE ENVISION™ RATING SYSTEM Driving Success for Sustainable Infrastructure Projects

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America's Infrastructure Today















ASCE Infrastructure Report Cards



Illinois 2018 Report Card GPA: C-USA 2017 Report Card GPA: D-



ENVISIONTM Infrastructure Rating System













EnvisionTM Is Uniquely Qualified to Address America's Infrastructure

- Envision[™] applies to all civil infrastructure
- Addresses design, planning, construction and maintenance
- Applicable at <u>any</u> 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



Why Was Envision™ Developed?

- Current US rating systems are sector-specific
- No system covers entire life cycle
- Designed to fill the gap















ENVISIONTM – Incorporates a New Sustainability Paradigm

□ Are we doing the right project?

Are we doing the project right?







Envision Helps Project Teams:

- Incorporate Sustainable Philosophies
- Quantify Soft Benefits
- Apply a Consistent, Transparent Approach
- Benchmark and Track Infrastructure

Performance



Envision Helps Decision Makers:

- Meet Sustainability Goals
- Guide Decisions
- Evaluate Environmental Benefits
- Address Community Priorities
- Demonstrate Good Governance



What Types of Infrastructure Does EnvisionTM 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



60 Criteria in 5 Categories



Purpose, Community, Wellbeing



→ Collaboration, Management, Planning



→ Materials, Energy, Water



→ Siting, Land & Water, Biodiversity



➡ Emissions, Resilience







1 PURPOSE

- QL1.1 Improve Community Quality of Life
- QL1.2 Stimulate Sustainable Growth & 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 Site 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

10 Credits

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 for Long-Term Monitoring & Maintenance
- LD3.2 Address Conflicting Regulations and Policies
- LD3.3 Extend Useful Life
- LD0.0 Innovate or Exceed Credit Requirements



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 and Recycling

2 ENERGY

- RA2.1 Reduce Energy Consumption
- RA2.2 Use Renewable Energy
- RA2.3 Commission and Monitor Energy Systems

3 WATER

- RA3.1 Protect Fresh Water Availability
- RA3.2 Reduce Potable Water Consumption
- RA3.3 Monitor Water Systems
- RAO.0 Innovate or Exceed Credit Requirements







1 SITING

- NW1.1 Preserve Prime Habitat
- NW1.2 Protect 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



1 EMISSIONS

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

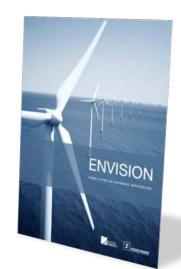
2 RESILIENCE

- 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



Envision Components:

- ✓ Guidance Manual
- ✓ Pre-Assessment Checklist
- ✓ Online Scoresheet
- ✓ Verification & Award Program
- ✓ Professional Credential







Credit Levels of Achievement

The number of points earned in each credit depends on the Level of Achievement:

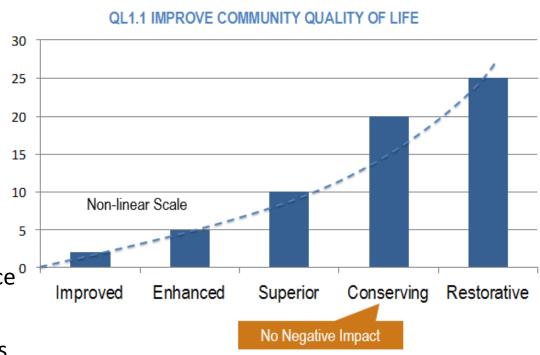
Improved: Performance that is above conventional

Enhanced: Sustainable performance that is on the right track; indications that superior performance is in reach

Superior: Sustainable performance that is noteworthy

Conserving: Performance that has achieved essentially zero impact

Restorative: Performance that restores natural or social systems





On-line Guidance Manual

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

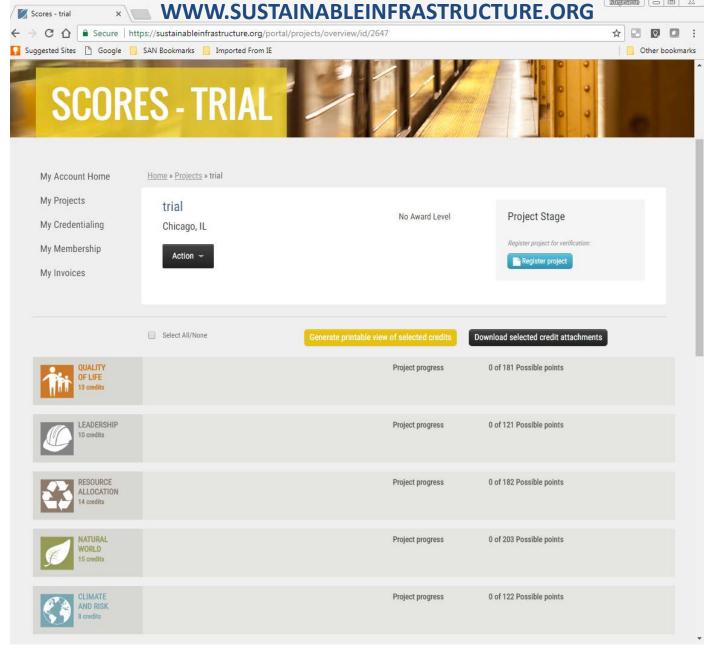
IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
(2) Internal focus. The project team has located and reviewed the most recent and relevant community planning information. Some, but not systematic outreach to stakeholders and decision makers has taken place. Some relatively easy, but not particularly important or meaningful changes made to the project. No significant adverse community effects are caused by the project (A, B, C)	(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 the project decisionmaking process. (A, B, C)	(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)	(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 meets or exceeds 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)	(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)



Pre-Assessment Checklist

uality of Life	1/2				
Purpose					
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.					
Assessment Questions:	Y	es	No	N/A	
Are the relevant community needs, goals and issues being addressed in the project?		0	0	0	?
Are the potentially negative impacts of the project on the host and nearby communities been reduced or eliminated?)	0	0	0	?
Has the project design received broad community endorsement, including community leaders and stakeholder groups?		0	0	0	?
	Total	0	of	0	







Online Scoresheet



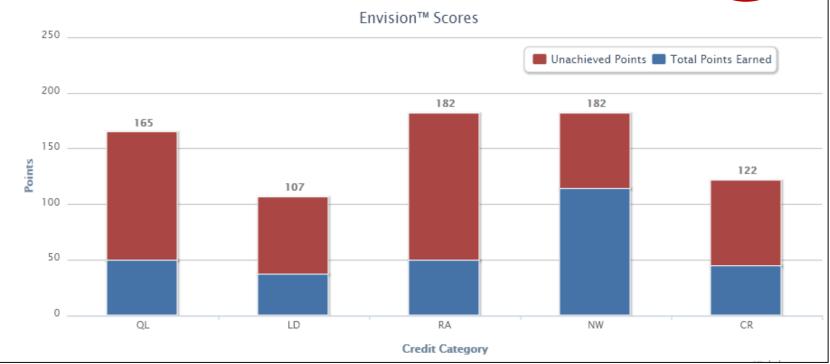
13 credits in progress, 13 credits completed Last updated 03/24/2016 by Staff ISI 109 of 165 Possible points - 66%

				1	Ε	S	C	R
Purpose	QL1.1 Improve Community Quality of Life	N/A	0	2	5	10	20	25
	QL1.2 Stimulate Sustainable Growth and Development	N/A	0	1	2	5	13	16
	QL1.3 Develop Local Skills and Capabilities	N/A	0	1	2	5	12	15
Wellbeing	QL2.1 Enhance Public Health and Safety	N/A	0	2	-	-	16	-
	QL2.2 Minimize Noise and Vibration	N/A	0	1	-	-	8	11
	QL2.3 Minimize Light Pollution	N/A	0	1	2	4	8	11
	QL2.4 Improve Community Mobility and Access	N/A	0	1	4	7	14	-
	QL2.5 Encourage Alternative Modes of Transportation	N/A	0	1	3	6	12	15
	QL2.6 Improve Site Accessibility, Safety and Wayfinding	N/A	0	-	3	6	12	15
Community	QL3.1 Preserve Historic and Cultural Resources	N/A	0	1	-	7	13	16
	QL3.2 Preserve Views and Local Character	N/A	0	1	3	6	-11	14
	QL3.3 Enhance Public Space	N/A	0	1	3	6	11	13
Innovate or Exceed	QL0.0 Innovate or Exceed Credit Requirements	N/A		Maximum Level of 8 8			8	
				Submitte	ed 109)	Verified	93



Scoring Summary

Credit Category	Applicable Points	Points	Innovation Points	Total Points Pursued	Percentage of Available Points
QUALITY OF LIFE	165	45	5	50	27%
LEADERSHIP	107	31	6	37	29%
RESOURCE ALLOCATION	182	50	0	50	27%
NATURAL WORLD	182	114	0	114	63%
CLIMATE AND RISK	122	45	0	45	
Total Workbook Points	758	285	11	296	38%





Award Levels

Minimum Percentage of Total Points Achieved:

20%

30%

40%

50%











Fee Schedule

✓ Registration Fee: \$1,000

✓ Verification Fee:

Project Size (M)	Non-Member Price	ISI Member Price			
Up to \$5M	\$11,000	\$9,000			
\$5-25M	\$17,000	\$14,000			
\$25-100M	\$25,000	\$21,000			
\$100-250M	\$34,000	\$28,000			
\$250-500M	\$42,000	\$35,000			
Over \$250M	Contact ISI for large or multi-phase projects				

✓ Optional Appeals Fee: \$500 per credit



Who is Using Envision^{TM*}?













Town of Nederland, CO





*Partial List of Envision Supported Agencies from ISI Website



Registered Projects Verified and Pursuing an Envision Award



Madison Metropolitan Sewerage District Pump Station Replacement

Marshall Park, A Madison Park on Lake Mendota



Madison Metropolitan Sewerage District Pump Station Replacement

- Existing Pump Station Underground
- Next to Highway
- West of Parking lot
- Design Team lead by Baxter & Woodman
- Kabbes Engineering Inc, Envision professional

Public Meetings and Coordination Sparked Park Renovation and Local Business* Participation

- Boat House Revitalization*
- Bike repair station*
- New washroom to be maintained by Madison Parks & water provided by City of Middleton
- Boat washing station to address invasive species, requested by local fishing club
- Signage to explain site and MMSD operation
- Roof partially solar, partially green



City of Dixon, California Waste Water Treatment Facility



City of Dixon



Facility Improvements

- Upgrade aging wastewater treatment facility without an undue burden on ratepayers
- Meet increased capacity demands
- Address long-term salinity issues affecting groundwater resources in the area
- Address salinity limits placed on the facility by the state



- Collaboration, Management, Planning
- Project took over 20 years to bring to fruition
- City established Wastewater Citizens Advisory
 Committee in 2007
 - Determine options
 - Robust public outreach
- ☐ Full life-cycle thinking to extend useful life



Resource Allocation

- Materials, Energy, Water
- Removed 130-acre treatment ponds
- Implemented oxidation ditch design
 - Smaller exposed surface area reduces evaporative water losses by 100-fold
 - Retained water keeps dissolved wastewater salts diluted
 - a cost-effective and energy-efficient method to minimize salinity impacts to groundwater



- ➡ Emissions, Resilience
- Comprehensive assessment of vulnerabilities that could lead to long term costs and risks
- Project designed to be resilient and adaptive to identified risks:
 - Potential seismic activity
 - Flooding / extreme rainfall
 - Long-term drought / water supply shortages
 - Changing economic conditions



City of Atlanta Water Supply Program



Pending Award 2018

City of Atlanta Water Supply Program

- City of Atlanta's highest priority infrastructure project
- Reservoir at former quarry site
- Protect and supplement fresh water availabilityup to 30 days worth
- Remaining quarry site conversion to parkland connecting Atlanta's BeltLine park & trail system
- Sustainable design practices throughout project to capture energy efficiency and environmental benefits

City of Atlanta Water Supply Program

- Connects to existing Atlanta water treatment network and Chattahoochee River through innovative trenchless tunneling technology
- ☐ The project includes:
 - 5 miles of 10-foot diameter tunnel in bedrock (250 feet to over 500 feet in depth)
 - 2.4-billion-gallon quarry for raw water storage (one of the largest in the world)
 - 10 shafts, raw water intake, pump station retrofit, and three new pump stations.

Bellwood Quarry



* Fun Fact *
Filming site for:
The Hunger Games
AMC's Walking Dead
Netflix Stranger Things



Boring Drill and Shaft Construction





- Siting, Land & Water, Biodiversity
- Pre-existing, abandoned site reuse for water storage reservoir
- Parkland amenities at quarry



- Siting, Land & Water, Biodiversity
- Contamination reduction measures
 - Sediment, erosion, and pollution control plans for runoff control
 - Contractor pollution prevention practice training
 - 150-foot buffer from storage boundary
 - Water to construct tunnel system tested, treated
 - Nearby landfill soils remediated





Resource Allocation

- Materials, Energy, Water
- Main purpose of the projects was to protect and supplement fresh water availability
- City conducted several studies to assess water demand, availability, and supply sources
- Reservoir will not contribute to any net withdrawal from the rivers or surface waters



- → Emissions, Resilience
- Comprehensive assessment of vulnerabilities that could lead to inform design and planning decisions
- Project designed to be resilient and adaptive to identified risks:
 - Short-term natural and human-induced hazards
 - Long-term climate change

EnvisionTM Sustainability Professionals (ENV SP)

- □ ISI Credentialed Practitioner Trained to Use the Envision Rating System
- Credentialed as an ENV SP
 - Currently no time limitation for expiration
 - V3 may have Continuing Education Requirements
- Role
 - ☐ Lead Project Team in Using Envision





Credential Fees

Applicant Type	Training Fee	Exam Fee
Standard	\$500	\$250
ISI Member	\$400	\$250
Government Employees	\$150	\$0
Full-Time Faculty	\$150	\$0
Full-Time Students	\$100	\$0

- ☐ Training: 7, 1-hour modules
- ☐ Web Based, Open Book Exam
- □ 75 question, multiple-choice
- ☐ Successful score of 75%
- Registration includes 3 attempts



EnvisionTM Verifiers

- ISI Verifiers are qualified experts contracted to ISI to authenticate project assessments
- They are independent from the projects they verify
- They provide the rigorous, transparent, third party validation of the Envision Assessment

Qualifications

- Credentialed as an ISI Sustainability Professional
- At least 10 years of professional experience
- Current licensure, certification or credentialing, if applicable, to their professional field.
- Must be active in the profession(e.g. 1,000 hours work in the profession per year)



Envision TM Version 3

- Version 3 is expected out later this spring
- Will keep the general outline and credits from V2, but include updates based on the last several years of rating projects.
- ☐ Test and training materials are expected to be using V2 until summertime.
- If taken V2 training class will still be able to take V3 test.



www.sustainableinfrastructure.org

Regional Sustainability LinkedIn Group: Sustainability Midwest

