



ENVISION[®]

Effectively Incorporating Sustainability in Freight Rail and Transit Design: Using the Envision[®] Manual in the Decision Making Process



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Purpose of Envision[®]

An aerial photograph of a city skyline at sunset. The sun is low on the horizon, casting a warm, golden glow over the city. The skyline features several prominent skyscrapers, including one with a distinctive spherical top. The foreground shows a complex network of roads and green spaces. A solid blue vertical bar is positioned on the right side of the image.

to foster a dramatic and necessary improvement in the performance and resiliency of our physical infrastructure across the full dimensions of sustainability.

History of Envision[®]

Created by a strategic alliance



ZOFNASS PROGRAM
FOR SUSTAINABLE INFRASTRUCTURE



Graduate School of Design
Harvard University

ISI Founders (2010)



Highways



Railways



Public Transit

Roads

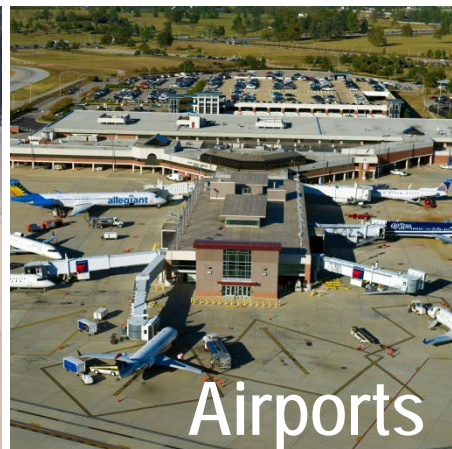


Waterways

Ports



Bridges



Airports



Bike Paths

What infrastructure will Envision[®] rate?

Rail Infrastructure Types



Rail
Corridors
and Routes



Railroad
Technology



Rail Yards and
Intermodal
Facilities



Bridges and
Structures



On-site
Operations

Benefits of Envision[®]

Framework for consistently integrating sustainability



Competitive advantage



Holistic approach

Long-term cost savings

Community betterment

Risk reduction



Environmental stewardship

Burden of proof on 3rd party

5 Categories

60 Credits



QUALITY OF LIFE



LEADERSHIP



RESOURCE ALLOCATION



NATURAL WORLD



CLIMATE & RISK

Categories and Credits



QUALITY OF LIFE

13 Credits



LEADERSHIP

10 Credits



RESOURCE ALLOCATION

14 Credits



NATURAL WORLD

15 Credits



CLIMATE AND RISK

8 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 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

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

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

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

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 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 Site Accessibility, Safety, and 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

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
<p>(2) Internal focus.</p> <p>The project team has located and reviewed the most recent 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 serious adverse community effects are caused by the project.</p> <p>(A, B, C, D)</p>	<p>(5) Community linkages.</p> <p>More efforts to locate, review, assess, and incorporate the needs, goals, and plans of the host community to 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.</p> <p>(A, B, C, D)</p>	<p>(10) Broad community alignment.</p> <p>All 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.</p> <p>(A, B, C, D)</p>	<p>(20) Holistic assessment and collaboration.</p> <p>The project makes a 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.</p>	<p>(25) Community renaissance.</p> <p>Through rehabilitation of important community assets (e.g., 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</p>
<p>No serious adverse effects</p>	<p>Understand community needs</p>	<p>Align with community plans</p>	<p>Positive contribution to quality of life</p>	<p>Reinvigorates communities</p>

Increasing benefit to the community



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

Understand community needs—beyond the project

DESCRIPTION

This credit addresses the extent to which the project contributes to the quality of life of the host and affected communities. This determination is based on how well the project team has identified, assessed, and incorporated community needs, goals, and objectives 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.

Communication and interactions with community stakeholders are essential to reaffirm and improve the assessment. The project team works closely with community stakeholders to identify and address issues and concerns. When operational, the completed project is expected to contribute to the efficiency and effectiveness of community infrastructure while having minimal impact on the environment. Its benefits should be seen as equitably distributed throughout the community.

A project designed to benefit one community may have adverse effects on others. The purpose of this credit is to recognize projects that provide significant benefits to affected communities and reduce or eliminate negative impacts. Because positive effects on all dimensions of performance may not be practical, the credit seeks a net positive impact.

Consider all communities that could be affected

EVALUATION CRITERIA AND DOCUMENTATION

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

1. *Lists and examples of documents obtained and reviewed; minutes of meetings with key stakeholders, community leaders, and decision makers; letters; and memoranda.*

B. Has the project team sought to align the project vision and goals to the needs and goals of the host and affected communities?

1. *Evidence showing a comparison of the project vision and goals to the needs, goals, plans, and issues of the community.*

C. Has the project team sought to identify and address potential adverse impacts to the host and affected communities?

1. *Comprehensive impact assessments conducted, identifying and evaluating the positive and negative impacts of the project on affected communities. Planned actions for mitigating adverse impacts.*

2. *Minutes of meetings, letters, and memoranda with key stakeholders, community leaders, and decision makers for obtaining input and agreement regarding the impact assessment and planned actions.*

Show documented interaction with stakeholders

Include impact analysis documentation

Envision[®] Points Table

		Improved	Enhanced	Special	Conserving	Restorative		
QUALITY OF LIFE	PURPOSE	QL 1.1	2	5	10	20	25	
		QL 1.2	1	2	5	13	16	
	WELLBEING	QL 1.3	1	2	5	13	16	
		QL 2.1	2	-	-	16		
		QL 2.2	1	-	-	8	11	
		QL 2.3	1	2	4	14	19	
		QL 2.4	1	4	7	14	19	
		QL 2.5	1	3	6	12	15	
		QL 2.6	-	3	6	12	15	
		QL 3.1	1	7	11	16	16	
COMMUNITY	QL 3.2	1	3	6	11	14		
	QL 3.3	1	3	6	11	13		
Maximum QL Points 181*								
LEADERSHIP	COLLABORATION	LD 1.1	2	4	9	17		
		LD 1.2	1	4	7	14		
		LD 1.3	1	4	8	15		
	MANAGEMENT	LD 1.4	1	5	9	14		
		LD 2.1	1	3	6	12	15	
		LD 2.2	1	3	7	11	16	
	PLANNING	LD 3.1	1	3	-	10		
		LD 3.2	1	2	4	8		
		LD 3.3	1	3	6	12		
		Maximum LD Points 121*						
RESOURCE ALLOCATION	MATERIALS	RA 1.1	2	6	12	18		
		RA 1.2	2	3	6	9		
		RA 1.3	2	5	11	14		
		RA 1.4	3	6	9	10		
		RA 1.5	3	6	8	11		
		RA 1.6	2	4	-	-		
		RA 1.7	1	4	8	12		
		RA 2.1	3	7	12	18		
		RA 2.2	4	6	13	16	20	
		RA 2.3	-	3	-	11		
ENERGY	RA 3.1	2	4	9	17	21		
	RA 3.2	4	9	13	17	21		
	RA 3.3	1	3	6	11			
	Maximum RA Points 187*							
NATURAL WORLD	SITING	NW 1.1	-	-	9	14	18	
		NW 1.2	1	4	9	14	18	
		NW 1.3	-	-	6	12	15	
		NW 1.4	1	2	3	5		
		NW 1.5	2	5	8	14		
		NW 1.6	1	-	4	6		
		NW 1.7	3	6	10	15	23	
		NW 2.1	-	4	9	17	21	
		NW 2.2	1	2	5	9		
		NW 2.3	1	4	9	14	18	
LAND & WATER	NW 3.1	2	-	-	13	16		
	NW 3.2	-	-	5	9	11		
	NW 3.3	-	-	-	8	10		
	NW 3.4	3	6	9	15	19		
Maximum NW Points 203*								
CLIMATE & RISK	EMISSIONS	CR 1.1	4	7	13	18	25	
		CR 1.2	2	6	12	15	20	
		CR 2.1	1	2	5	9	15	
		CR 2.2	2	6	12	16	20	
		CR 2.3	3	6	12	16	20	
		CR 2.4	3	10	17	21		
		CR 2.5	1	2	4	6		
		Maximum CR Points 127*						
		Maximum TOTAL Points 809*						

QUALITY OF LIFE
PURPOSE
WELLBEING
COMMUNITY

LEADERSHIP
COLLABORATION
MANAGEMENT
PLANNING

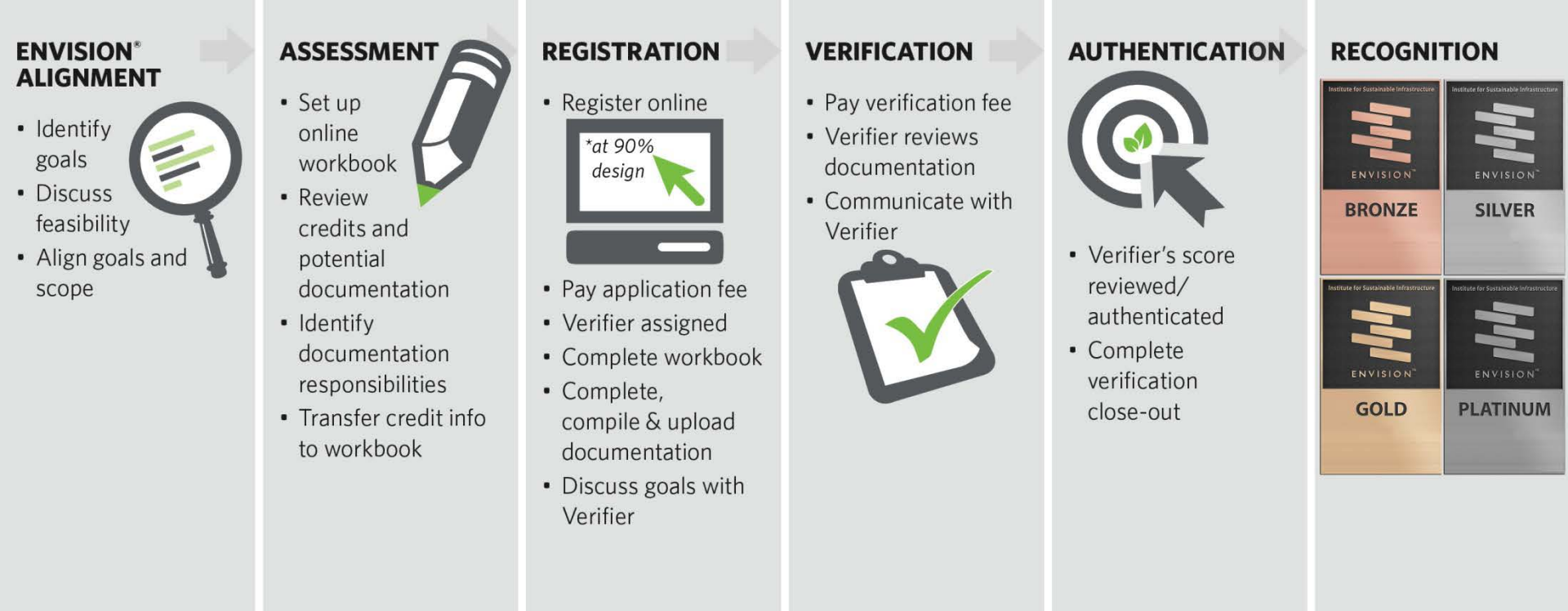
		Improved	Enhanced	Superior	Conserving	Restorative
QL 1.1	Improve Community Quality of Life	2	5	10	20	25
QL 1.2	Stimulate sustainable growth and development	1	2	5	13	16
QL 1.3	Develop local skills and capabilities	1	2	5	12	15
QL 2.1	Enhance public health and safety	2	-	-	16	
QL 2.2	Minimize noise and vibration	1	-	-	8	11
QL 2.3	Minimize light pollution	1	2	4	8	11
QL 2.4	Improve community mobility and access	1	4	7	14	
QL 2.5	Encourage alternative modes of transportation	1	3	6	12	15
QL 2.6	Improve site accessibility, safety and wayfinding	-	3	6	12	15
QL 3.1	Preserve historic and cultural resources	1	-	7	13	16
QL 3.2	Preserve views and local character	1	3	6	11	14
QL 3.3	Enhance public space	1	3	6	11	13
Maximum QL Points						181*

		Improved	Enhanced	Superior	Conserving	Restorative
LD 1.1	Provide effective leadership and commitment	2	4	9	17	
LD 1.2	Establish a sustainability management system	1	4	7	14	
LD 1.3	Foster collaboration and teamwork	1	4	8	15	
LD 1.4	Provide for stakeholder involvement	1	5	9	14	
LD 2.1	Pursue by-product synergy opportunities	1	3	6	12	15
LD 2.2	Improve infrastructure integration	1	3	7	13	16
LD 3.1	Plan for long-term monitoring and maintenance	1	3	-	10	
LD 3.2	Address conflicting regulations and policies	1	2	4	8	
LD 3.3	Extend useful life	1	3	6	12	
Maximum LD Points						121*

*Not every credit has a restorative level. Therefore totals include the maximum possible points for each credit when conserving or restorative.

Project Award Levels

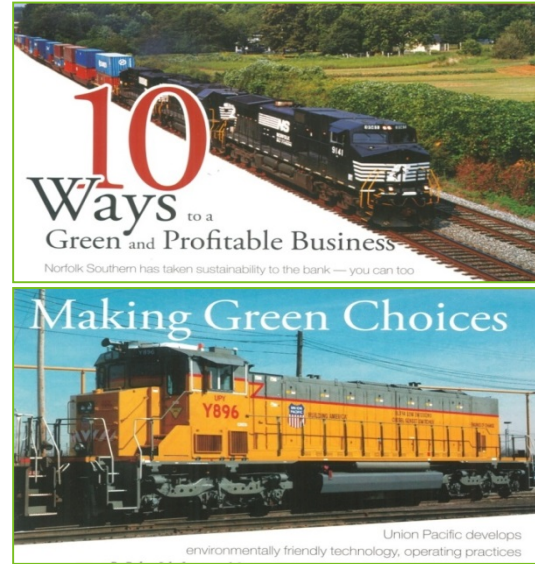
Recognition Level	Total Applicable Points* (%)
Bronze Award	20
Silver Award	30
Gold Award	40
Platinum Award	50



Envision[®] Verification Process

Railroad System Changes

- Changing mindset
- Changing Technologies
 - GenSet locomotives
 - Increased fuel efficiency
 - Lower emissions
 - NextGen locomotives
 - Hybrid power
 - Solar power
- Solar signals and switches
- Composite or recycled ties
- Water conservation
- Opportunity – 10% shift from trucks to railroad = saving 1B gallons of fuel/year



We embraced sustainability through responsible and efficient practices. We try to align our performance with purpose and devotion to environmental, social and community stewardship. That's the key focus for us.

Carl Gerhardstein, CSXT



Holding the team accountable

Wave Streetcar Program Management, Fort Lauderdale, FL

Supporting GreenDOT's sustainability goals



Green Line Extension, Boston, MA

Benefits for railroads from using envision



- Facilitates multiple-agency collaboration and decision-making
- Increases stakeholder support
- Can shorten schedules/streamline permitting process
- Yield cost savings
- Allows funding participation
- Results in long-term quality projects

www.sustainableinfrastructure.org

The screenshot shows the website of the Institute For Sustainable Infrastructure (ISI) in a Windows Internet Explorer browser window. The browser's address bar displays the URL <http://www.sustainableinfrastructure.org/>. The website features a navigation menu with links for Home, About Us, Join ISI, Contact Us, and a prominent green Login button. The ISI logo, consisting of a green leaf and the letters 'I S I', is positioned on the left side of the page. A search bar is located on the right side of the header. Below the navigation menu is a dark horizontal bar with links for News, FAQs, Rating System, ISI Credentials, Project Application, Education & Training, ISI Blog, and Presentation Templates. A large banner image of a lake and mountains is displayed below this bar. The main content area is highlighted with a semi-transparent orange overlay and contains several key sections: a central banner with the text "Building Tomorrow's Infrastructure Today"; a "Rating System" section with a "Click Here" button; an "Envision Checklist" section with a "Click Here to Download Checklist" button; a "Verifiers" section with a list of names and roles; a "Latest News" section with a list of recent articles and their dates; an "ISI Credentials Application" section with a list of project names and dates; and a "Verification Requirements" section with a list of requirements. The footer of the website includes the ISI logo and the text "ISI | 10100 S. DEER CREEK ROAD, SUITE 100, DENVER, CO 80231 | 303.733.1100 | www.isiinfrastructure.org".