Sustainable Infrastructure and the Role of Envision

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Institute for Sustainable Infrastructure

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Who we are

Non-profit education and research organization

Hub of a unique community:

- 230 A/E/C Companies
- 120 Government departments, agencies, towns, cities
- + Academic institutions, associations

Developer and manager of the Envision framework & rating system for sustainable infrastructure
There is a water main break every two minutes and an estimated 6 billion gallons of treated water lost each day in the U.S., enough to fill over 9,000 swimming pools.

Growing wear and tear on our nation's roads have left 43% of our public roadways in poor or mediocre condition, a number that has remained stagnant over the past several years.

There are 30,000 miles of inventoried levees across the U.S., and an additional 10,000 miles of levees whose location and condition are unknown.
Administration Goals

• Climate change
• Resilience
• Equity and social justice
• Environmental protection and biodiversity
• Public health
• Economic recovery

• Infrastructure is critical in achieving all of these goals. The $2 trillion American Jobs Plan is a once-in-a-century opportunity to leverage greater outcomes to create the infrastructure that will address the challenges of the 21st century.
What are the Challenges?

- Accountability for federal and state spending
- Understanding and addressing complex tradeoffs
- Prioritization of higher performing projects
- Guidance to embed high-level goals into project delivery
- A standardized national approach
- Initiating systemic change within the infrastructure industry

- We need a consistent framework that evaluates tradeoffs, supports higher quality infrastructure, and delivers accountability to communities.
Is There a Model for Success?

- Federal adoption of sustainable building requirements in 2000’s led to:
  - Third-party accountability and reporting
  - Learning and escalating performance goals
  - Cascading requirements at state and local levels
  - Market transformation from design, construction, and manufacturing
  - Transformation of professional practice and education
  - Rapid scaling of sustainability efforts

- Envision is industry-proven and poised to provide the same benefits for infrastructure—the other half of the built environment.
We are building the infrastructure of 2050 now!

- Highways: 20-50 years
- Bridges: 30-75 years
- Pipelines: 50-100 years
- Dams: 50-100 years
It’s a framework that enables a thorough examination of the sustainability of infrastructure.

Provides a common language among stakeholders.

Used by governments, public agencies, utilities, planners, designers, engineers, and others.
Applicable to all types & sizes of infrastructure

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

WATER
- Potable water distribution
- Water/wastewater treatment
- Capture/storage
- Stormwater Management
- Flood control

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

TRANSPORT
- Airports
- Roads
- Bridges
- Highways
- Active transportation
- Railways
- Public Transit
- Ports
- Waterways

LANDSCAPE
- Public realm
- Parks
- Ecosystem services
- Natural / Green infrastructure

INFORMATION
- Telecomm.
- Internet
- Phones
- Data Centers
- Sensors
Embedding Sustainability from the Start

<table>
<thead>
<tr>
<th>Planning</th>
<th>Design</th>
<th>Construction</th>
</tr>
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- **Ability To Make Changes**
- **Cost to Make Changes**

PROJECT TIMELINE
Components of the Envision framework

- Guidance Manual
- Project self-assessment tool
- Professional training & credentialing
- Project verification and awards/recognition based on % of applicable points achieved
  - Verified (20-29%)
  - Silver (30-39%)
  - Gold (40-49%)
  - Platinum (50% or more)
5 categories of sustainability indicators

- Quality of Life (14 Credits)
  - Wellbeing, Mobility, Community

- Leadership (12 Credits)
  - Collaboration, Planning, Economy

- Resource Allocation (14 Credits)
  - Materials, Energy, Water

- Natural World (14 Credits)
  - Siting, Conservation, Ecology

- Climate & Resilience (10 Credits)
  - Emissions, Resilience
64 sustainability and resilience indicators ("credits")
**QUALITY OF LIFE: WELLBEING**

**QL1.1 Improve Community Quality of Life**

<table>
<thead>
<tr>
<th>POINTS</th>
<th>INTENT</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>Improve the net quality of life of all communities affected by the project and mitigate negative impacts to communities.</td>
<td>Measures taken to assess community needs and improve quality of life while minimizing negative impacts.</td>
</tr>
</tbody>
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**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 + B</td>
<td>A + B + C + D</td>
<td>A + B + C + D + E</td>
<td>A + B + C + D + E + F</td>
<td>A + B + C + D + E + F + G</td>
</tr>
<tr>
<td>(2) Community Considerations</td>
<td>(5) Community Linkages</td>
<td>(10) Broad Community Alignment</td>
<td>(20) Holistic Assessment &amp; Collaboration</td>
<td>(26) Protecting The Future</td>
</tr>
</tbody>
</table>

**A** The project team identifies and takes into account community needs, goals, and issues. For example, the project team has located and reviewed the most recent community planning information and assessed relevant community needs, goals, and/or issues.

**B** The project meets or supports community needs and/or goals.

**C** The project assesses the social impacts it will have on the host and affected communities’ quality of life.

**D** The affected communities are meaningfully engaged in identifying how the project supports community needs and/or goals.

**E** Based on the social assessment, potential negative impacts on the host or nearby affected communities are mitigated following a hierarchy that prioritizes avoidance, minimization, restoration, and offsetting.

**F** Community satisfaction is demonstrated by feedback from the stakeholder engagement process verifying actions taken in criteria A, B, C, and D.

**G** The project proactively addresses trends in changing social, economic, and/or environmental conditions within the community in order to ensure a high quality of life over the long term.
Common language

• Encourages multidisciplinary teamwork and collaboration
  • Exploration of trade-offs and benefits
  • Finding the “best” pathway to improving project performance

• Common language for collaboration and communication
  • Sustainability planning sessions
  • Design charrettes
  • Public consultations
Envision use

$106 billion in infrastructure development
100+ rated projects since 2013
~6,000 active credentialed professionals
More than 120 public agencies using Envision
Projects in Verification Program by Location

Number of Envision Projects

Location

- California: 41
- New York: 23
- British Columbia: 12
- Florida: 10
- Virginia: 9
- Iowa: 5
- Texas: 5
- Italy: 5
- Washington: 4
- Quebec: 4
- Michigan: 4
- Massachusetts: 4
- Indiana: 4
- Arizona: 4
- Georgia: 3
- South Carolina: 3
- Alabama: 3
- North Carolina: 3
- District of Columbia: 3
- Colorado: 3
- Ontario: 3
- Alberta: 3
- Missouri: 2
- Tennessee: 2
- Wisconsin: 2
- Illinois: 2
- Ohio: 2
- Oregon: 2
- Rhode Island: 1
- Pennsylvania: 1
- Nebraska: 1
- New Mexico: 1
- Saudi Arabia: 1
- New Jersey: 1
- Maine: 1
- Manitoba: 1
- Israel: 1
- Alaska: 1
- Hawaii: 1
- Maryland: 1
Large Envision Supported Agencies

- Los Angeles County Public Works (231 ENV SPs)
- City of Los Angeles Bureau of Engineering (83 ENV SPs)
- NYC Department of Design and Construction (70 ENV SPs)
- Harris County Engineering Department (59 ENV SPs)
- Port Authority of New York & New Jersey (57 ENV SPs)
- City of Kansas City, MO (46 ENV SPs)
- Sound Transit (Seattle) (38 ENV SPs)
How Envision is Being Applied

• State Legislation
• City and County Resolutions
• Funding
• RFP Requirements
• Portfolio Assessments
• Design Guidelines
State Legislation

- Proposed California Bill SB-44 (2021)
  - Streamlined judicial review for environmental transit projects that meet sustainability goals.
  - “(F) The public agency demonstrates how it has incorporated sustainable infrastructure practices to achieve sustainability, resiliency, and climate change mitigation and adaptation goals in the project, including principles, frameworks, or guidelines as recommended by one or more of the following:

  (i) The sustainability, resiliency, and climate change policies and standards of the American Society of Civil Engineers.

  (ii) The Envision Rating System of the Institute for Sustainable Infrastructure.”
Resolutions

• Miami-Dade Board of County Commissioners (2017)
  • “Resolution adopting the Institute for Sustainable Infrastructure “Envision” sustainable infrastructure rating system for Miami-Dade County infrastructure projects; directing the County Mayor to incorporate Envision into the planning, design, construction, and operation of county-funded infrastructure projects where practicable and feasible.”

• St. Petersburg Code of Ordinances
  • “It is the objective of the City that any new qualified City infrastructure project shall be designed and constructed to achieve the current Envision gold standard.”
Funding

• Grant Funding or Cost-Share with State Agencies
  (California Department of Water Resources Division of Flood Management)

  • “Contribution to the State Sustainability Objective... The applicant should provide evidence that their project has been rated at the Gold or Platinum Award recognition level by the Institute for Sustainable Infrastructure (ISI). The applicants will be entitled to a 5% increase in the State cost share of the Total Project Cost if their project has received a Gold Award from ISI, and a 10% increase in the State cost share of the Total Project Cost if their project has received a Platinum Award from ISI.”
RFPs

- **Requiring an ENV SP**
  - “As part of the County’s goal to incorporate environmentally sustainable design in infrastructure improvements, the Consultant is required to identify and provide a certified Envision Sustainable Professional (ENV-SP) on its staff to assist with design.”

- **Requiring an Envision self-assessment**
  - “For a project which requires Envision the Consultant will be responsible for completing an Envision rating assessment using ISI’s online rating tool and following the Envision guidance manual, a copy of which is available...”

- **Requiring ISI third-party verification**
  - “If third party verification is required the Consultant shall be responsible for registering the project with ISI; gathering, preparing, and submitting all documentation to ISI that is required to complete the verification process; and paying all verification fees.”
EXAMPLE

NYC DDC PORTFOLIO APPROACH
Results

Zofnass Program for Sustainable Infrastructure, Business Case for Sustainable Infrastructure, NYC DDC Project & Portfolio Management: an Envision-based Approach
Design Guidelines

• LA DPW Sustainable Infrastructure Guidelines
  
  “As the application of Envision continues to be expanded within the department, the SIG have been developed to complement Envision. Although all SIG strategies are specific to LA County, they address every Envision credit... An analysis was completed to determine that achievement of all required SIG credits equates to an approximate Envision rating equivalency of Bronze. It is intended that project teams pursue additional strategies, based on specific scope, to reach an Envision equivalency of Silver.”

• Port Authority of New York and New Jersey Sustainable Infrastructure Guidelines
  
  “With this update, the Port Authority Sustainable Infrastructure Guidelines Version 2.0 now leverages the Envision system, bringing PANYNJ into alignment with industry best practices while maintaining custom application criteria relevant to the Authority’s unique assets and operations.”
Envision at the Federal Level

• A training and education resource
• A reporting and third-party accountability tool
• A prioritization and funding mechanism
• A nationalized approach to sustainable infrastructure
Available Credits

ENV SP TRAINING CREDIT
0

Expand your Account

Select an option below to either connect to an existing member organization or to become a new member organization. To learn more about what type of membership your organization qualifies for, review our membership page.

Connect Organization  Become a member

Become an ENV SP

Take the Envision Sustainability Professional (ENV SP) training course and earn your ENV SP credential.

Become an ENV SP

Resources

- ENVISION
  - Envision Guidance Manual (v2) 17.67 MB
  - Envision Guidance Manual (v3) 24.54 MB
  - Manuel de référence Envision v3 11.66 MB
  - Envision Checklist (v2) 0.66 MB
  - Envision Checklist (v3) 3.14 MB

- VERIFICATION RESOURCES
  - PRESENTATIONS AND BROCHURES

Terms and Conditions
Thank you!

ISI: www.sustainableinfrastructure.org

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