SUSTAINABLE INFRASTRUCTURE & THE ENVISION™ FRAMEWORK

PUBLIC WORKS COMMISSION
CITY OF BEVERLY HILLS
SUSTAINABLE INFRASTRUCTURE

Infrastructure designed to maximize environmental, social, and economic benefits throughout the asset lifecycle.
ASSET LIFECYCLE

PLANNING
• Align with community goals
• Evaluate alternatives
• Project selection

DESIGN
• Use EPDs to inform material selection
• Incorporate or improve public amenities
• Enhance biodiversity & ecosystem services
• Energy & water efficiency, renewables
• Assess climate vulnerability and design for resilience

CONSTRUCTION
• Divert waste from landfill
• Reduce emissions through electric & alternative fuel/low-emission equipment
• Preserve & enhance natural & cultural resources

OPERATIONS & MAINTENANCE
• Commissioning & ongoing monitoring
• Allocate resources for maintenance

END-OF-LIFE
• Implement circular practices & eliminate waste through reuse, refurbishing, remanufacturing, repurposing, & recycling

STAKEHOLDER ENGAGEMENT
GUIDING FRAMEWORKS

- Envision
- TRUE
- GRESB Infrastructure
- USGBC
- Alliance for Water Stewardship
- Sustainable Sites Initiative
ENVISION™
A framework for sustainable infrastructure.

Governing organizations

ISI Founding Organizations

Source: Institute for Sustainable Infrastructure 2019, slide 2
INFRASTRUCTURE TYPES

**Energy**
- Distribution
- Hydroelectric
- Coal
- Natural Gas
- Wind
- Solar
- Biomass

**Water**
- Treatment
- Distribution
- Capture / Storage
- Stormwater
- Flood Control
- Nutrient Management

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

**Transportation**
- Airports
- Roads / Highways
- Bikes / Pedestrians
- Railways
- Transit
- Ports
- Waterways

**Landscape**
- Public Realm
- Parks
- Ecosystem Services
- Natural Infrastructure
- Environmental Remediation

**Information**
- Telecom
- Cables
- Internet
- Phones
- Data Centers
- Sensors

Image Source: Institute for Sustainable Infrastructure 2018, p. 7
### CATEGORIES

#### WELLBEING
14 Credits

**Q.0.1** Improve Community Quality of Life
**Q.0.2** Enhance Public Health & Safety
**Q.0.3** Improve Construction Safety
**Q.0.4** Minimize Noise & Vibration
**Q.0.5** Minimize Light Pollution
**Q.0.6** Minimize Construction Impacts

#### MOBILITY

**Q.2.1** Improve Community Mobility & Access
**Q.2.2** Encourage Sustainable Transportation
**Q.2.3** Improve Access & Wayfinding

#### COMMUNITY

**Q.2.1** Advance Equity & Social Justice
**Q.2.2** Preserve Historic & Cultural Resources
**Q.2.3** Enhance Views & Local Character
**Q.2.4** Enhance Public Space & Amenities

**Q.0.0** Innovate or Exceed Credit Requirements

#### COLLABORATION

12 Credits

**Q.0.1** Provide Effective Leadership & Commitment
**Q.0.2** Foster Collaboration & Teamwork
**Q.0.3** Provide for Stakeholder Involvement
**Q.0.4** Pursue Byproduct Synergies

#### PLANNING

**Q.0.1** Establish a Sustainability Management Plan
**Q.0.2** Plan for Sustainable Communities
**Q.0.3** Plan for Long-Term Monitoring & Maintenance
**Q.0.4** Plan for End-of-Life

#### ECONOMY

**Q.0.1** Stimulate Economic Prosperity & Development
**Q.0.2** Develop Local Skills & Capabilities
**Q.0.3** Conduct a Life-Cycle Economic Evaluation
**Q.0.4** Innovate or Exceed Credit Requirements

#### MATERIALS

14 Credits

**Q.0.1** Support Sustainable Procurement Practices
**Q.0.2** Use Recycled Materials
**Q.0.3** Reduce Operational Waste
**Q.0.4** Reduce Construction Waste
**Q.0.5** Balance Earthwork On Site

#### ENERGY

**Q.0.1** Reduce Operational Energy Consumption
**Q.0.2** Reduce Construction Energy Consumption
**Q.0.3** Use Renewable Energy
**Q.0.4** Commission & Monitor Energy Systems

#### WATER

**Q.0.1** Preserve Water Resources
**Q.0.2** Reduce Operational Water Consumption
**Q.0.3** Reduce Construction Water Consumption
**Q.0.4** Monitor Water Systems

#### SITTING

**Q.0.1** Preserve Sites of High Ecological Value
**Q.0.2** Provide Wetland & Surface Water Buffers
**Q.0.3** Preserve Prime Farmland
**Q.0.4** Preserve Undeveloped Land

#### NATURAL WORLD

14 Credits

#### CLIMATE AND RESILIENCE

10 Credits

**Q.0.1** Reduce Net Embodied Carbon
**Q.0.2** Reduce Greenhouse Gas Emissions
**Q.0.3** Reduce Air Pollutant Emissions

#### RESILIENCE

**Q.2.1** Avoid Unsuitable Development
**Q.2.2** Assess Climate Change Vulnerability
**Q.2.3** Evaluate Risk & Resilience
**Q.2.4** Establish Resilience Goals and Strategies
**Q.2.5** Maximize Resilience
**Q.2.6** Improve Infrastructure Integration

**Q.0.0** Innovate or Exceed Credit Requirements
RESOURCE ALLOCATION: WATER

RA3.1 Preserve Water Resources

12 POINTS

INTENT
Assess and reduce the negative net impact on fresh water availability, quantity, and quality at a watershed scale to positively impact the region's water resources.

METRIC
The extent to which the project considers and contributes to positively addressing broader watershed issues.

LEVELS OF ACHIEVEMENT

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<th>SUPERIOR</th>
<th>CONSERVING</th>
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(3) Increased Awareness Of Watershed Issues

(5) Good Water Resource Management

(7) Wise Water Resource Management

(9) Total Water Management

(12) Positive Impact

(A) Assess the project’s watershed context and the watershed-scale fresh water issues, including location, type, quantity, rate of recharge, and quality of water resources, as well as source and impacts of water used and the destination and impacts of wastewater.

(B) Estimates of water usage and wastewater generation over the life of the project.

(C) The project has features intended to reduce the identified negative impacts of water usage, and/or improve watershed-scale issues.

(D) The project has a net-zero impact on the quantity and availability of fresh surface water and groundwater supplies without compromising water quality.

(E) The project is part of, or contributes to, a watershed or regional water plan.

(F) The project makes a direct and significant net-positive improvement to the watershed.

Image Source: Institute for Sustainable Infrastructure 2018, p. 112
**CR2.3 Evaluate Risk and Resilience**

**INTENT**
Conduct a comprehensive, multihazard risk and resilience evaluation.

**METRIC**
Scope and comprehensiveness of the multihazard risk and resilience evaluation.

**LEVELS OF ACHIEVEMENT**

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**26 POINTS**

**(11) Project Evaluation**
- (A) The project team draws the assessment boundary for subsequent criteria (B, C, D, and E) around the project and its site.
- (B) Understand the Asset: The project team identifies the objectives and performance goals of the project and related systems. It also identifies the critical assets, systems, and networks that are essential to meeting objectives and performance goals. This should include the associated dependencies and interdependencies within the system.
- (C) Identify Threats/Hazards: The project team identifies threats/hazards (natural hazards and human-induced threats). Project teams may reference existing studies or assessments if relevant to the project and its context. Threats should include both acute shocks and chronic stressors.
- (D) Identify Vulnerability: The project team identifies the vulnerabilities of the critical functions and dependencies of the infrastructure asset and its primary components identified in criterion B to the threats/hazards identified in criterion C.
- (E) Evaluate Risk: The project team evaluates the project risk by determining the likelihood/probability of a threat/hazard occurring and the associated consequences/impacts. Consequences and impacts should be classified as social, environmental, and/or economic/financial.

**(18) System Evaluation**
- (A) The project team draws the assessment boundary for subsequent criteria (B, C, D, and E) around the interdependencies of the project and its associated/connected infrastructure system/network.

**(24) Community Evaluation**
- (A) The project team draws the assessment boundary for subsequent criteria (B, C, D, and E) around the interdependencies of the project, its associated/connected infrastructure system/network, and the broader community.

**(26) Integrated and Inclusive Approach**
- (F) The project team conducts the risk evaluation with the owner and a diverse and integrated team of key stakeholders.

**Image Source:** Institute for Sustainable Infrastructure 2018, p. 172
ENVISION™ BENEFITS

- Enhanced social, economic, & environmental outcomes
- Improved climate resiliency
- Alignment with community goals
- Cost savings through efficiency gains, enhanced resiliency, & improved stakeholder support
HOW IS ENVISION™ USED?

- Verified awards
- Design guidelines
- Community ordinances
- Request for proposals
- Project management tool
- Individual training (ENV SP)
<table>
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<tr>
<th>Project</th>
<th>Location</th>
<th>Rating</th>
<th>Year</th>
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<tbody>
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<td>Middle Blue River Green Infrastructure</td>
<td>Kansas City, MO</td>
<td>Envision Platinum</td>
<td>2016</td>
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<td>Holland Area Water Reclamation Facility</td>
<td>Holland, MI</td>
<td>Envision Gold</td>
<td>2023</td>
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<td>Tucannon River Wind Farm</td>
<td>Dayton, WA</td>
<td>Envision Gold</td>
<td>2015</td>
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<td>Taylor Yard Pedestrian Bikeway Bridge</td>
<td>Los Angeles, CA</td>
<td>Envision Bronze</td>
<td>2022</td>
</tr>
</tbody>
</table>

Image Sources:
1. Institute for Sustainable Infrastructure 2018, p. 145; 2. ISI 2023; 3. ISI 2015; 4. ISI 2022
QUESTIONS?
Sources

• GBIC. 2023 “The Sustainable SITES Initiative.” https://sustainablesites.org/
• GBIC. 2023 “Resources for the TRUE Construction pilot.” https://true.gbci.org/resources-true-construction-pilot
• ISI. 2016. "Portland General Electric’s Tucannon River Wind Farm Earns ISI’s Envision® Sustainable Infrastructure Gold Award." https://sustainableinfrastructure.org/project-awards/tucannon-river-wind-farm/
• World Economic Forum. 2022. “The circular economy: how it can lead us on a path to real change.” https://www.weforum.org/agenda/2022/05/the-circular-economy-how-it-can-be-a-path-to-real-change/