



Introduction

Civil infrastructure provides a foundation for communities—a foundation for public health, safety and prosperity. It shapes our society and our environment, both now and into the future. It provides economic vitality and resiliency from extremes.

Today's demands on infrastructure are unprecedented. According to the United Nations¹, by the year 2050 more than two-thirds of the world's population are expected to live in urban areas, presenting unique challenges for humans and the environment. Significant investment in infrastructure is required to provide resilient and sustainable societies. With infrastructure having an expected life of around 50 –100 years, resilient and sustainable solutions are critical.

Envision is a growing paradigm—a guide for optimizing resiliency and sustainability in the design, construction and delivery of infrastructure. Envision sets the standard for sustainable infrastructure; it provides continuity for stakeholder communications and encourages enhanced project performance.

Why Envision?

- Quantify Sustainable Practices with Standardized, Nationally Recognized Metrics
- Incorporate Sustainability and Resiliency Philosophies into Infrastructure Projects
- Quantify Soft Benefits of Sustainable and Resilient Infrastructure
- Strengthen Interdepartmental and Interagency Cooperation
- Improve Infrastructure Integration

Envision not only encourages doing a "project right", it encourages identifying the "right project"². The Envision process is flexible by design and is applicable to all types and sizes of civil engineering infrastructure projects.

Envision in Action: Water Infrastructure

The Envision framework is suitable for the complete spectrum of water infrastructure projects, from pipelines to headworks. Envision provides water infrastructure projects opportunity for public recognition and transparent evaluation of a project's sustainability and resiliency benefits. Here are four examples of Envision in action:

Terminal Island Water Reclamation Facility, City of Los Angeles

The City of Los Angeles, Bureau of Engineering (BOE), Environmental Engineering Division worked with the Institute for Sustainable Infrastructure (ISI) Envision program and earned a Platinum award for Sustainability. Lorraine Moreno, ENV SP, from the City of Los Angeles BOE, stated that Envision aligns with the Mayor's sustainability plan. BOE is committed to creating a more sustainable city. Envision provides a framework and tools to quantify our widespread efforts and find opportunities to improve our approach to sustainable infrastructure. Envision fit nicely with the Mayor's goals for reduction in long term costs along with reduction in maintenance and energy costs. Since 2012, the Mayor has pursued sustainability. Envision provided guidance to make infrastructure projects more sustainable in a manner like LEED has for vertical projects.



Photo courtesy of City of Los Angeles, BOE

Georgetown Wet Weather Treatment Station, King County Washington

King County's Georgetown Wet Weather Treatment Station is the third Envision project, and the first to earn the Platinum award, for the state of Washington. Working with the Institute for Sustainable Infrastructure (ISI) was great, as stated by Heidi Sowell, Sustainability Program Manager, King County Wastewater Treatment Division. "Envision closely aligns with King County's sustainability goals and policies. It is how we do work" said Heidi Sowell. The Wastewater Treatment Division found Envision to be a sustainability certification that fits well with infrastructure projects. The county utilized its project management tools to provide the documentation necessary for the Platinum Award.



Photo courtesy of King County Wastewater Treatment Division

Naples Bay Restoration and Water Quality at the Cove Envision Project, Florida

The Naples Bay project earned a Silver award for its habitat restoration and water quality improvement elements. “We started using the Envision framework at the outset of the three-year project and the process was immensely successful”, says Larry Alewine, Stantec Project Engineer, and the Envision “facilitator” on the project. “At a construction cost around \$1,000,000, we weren’t sure we could bring in all the elements required to get certification, but still wanted to bring a strong sustainable focus to a significantly impaired project location. By tracking the project using Envision, it kept us moving toward sustainable and resilient outcomes that were well received by local stakeholders, and ultimately earned an Envision Silver award”, said Alewine.



Photo courtesy of Stantec

Integrated Pipeline Project, Texas

Tarrant Regional Water District (TRWD) and the City of Dallas were awarded Platinum for their 150-mile water transmission system. According to Shelly Hattan, TRWD's Resident Engineer, “We looked at a number of systems to document sustainability and Envision was the tool that we found could help us document our efforts in a prescriptive manner – i.e. it was achievable and measurable. Envision allowed us to use a tool to directly measure sustainability to meet state regulations. Elected officials understood the importance of meeting regulations.” TRWD's water resources engineering director Rachel Ickert added, “TRWD has a long history of considering long-term efficiency and the triple bottom line. Envision is a way to recognize that forward-thinking approach to projects and help us raise the bar in areas where there could be “low-hanging fruit” to provide a social or environmental benefit”.



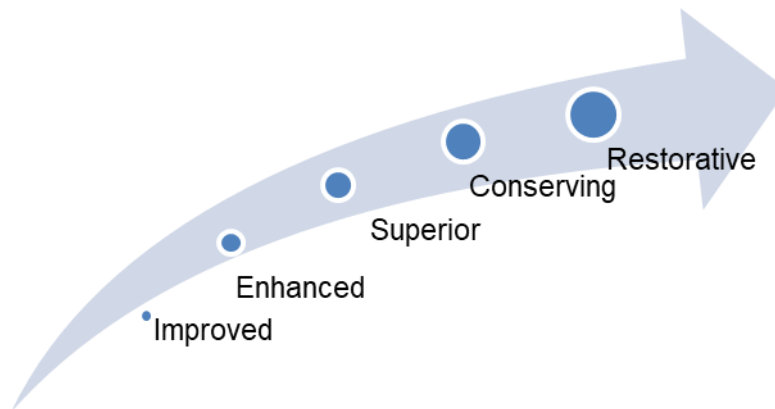
Photo courtesy of Tarrant Regional Water District

Envision Process Overview

The diversity and context of civil engineering projects often give rise to many unique variables that are project specific. The Envision Checklist and Guidance Manual have global application and provide key questions and discussion topics to encourage maximizing the sustainability and resiliency of all civil infrastructure projects. Sustainability and resiliency indicators are presented as project credit opportunities, spread across five categories:



Envision defines increasing levels of achievement (shown below), in order to refine the evaluation process of an infrastructure project and to encourage incremental project improvements. Envision encourages innovation and exceptional performance. Envision also encourages addressing additional aspects of sustainability or resiliency that are not already covered in the Guidance Manual, providing an opportunity for project teams to achieve “bonus points” in these areas.



Envision provides two pathways that a project team may choose from to evaluate their project:

- Self-assessment, or
- Third-party verification

Self-assessment Process

Self-assessment is an approach to understand the level of sustainability and resiliency of a project. For water infrastructure projects the self-assessment step can be used to:

- Compare alternatives
- Identify steps to improve sustainability and resiliency of a project
- Compare the level of sustainability of a water infrastructure project with similar projects at other facilities
- Demonstrate to the stakeholders that a water infrastructure project can resolve their concerns in a sustainable manner
- Determine a potential rating for a project should it proceed with third-party verification

ISI provides the Envision framework which includes a checklist and guidance manual outlining documents that would be required, if the project goes through ISI's third-party verification process. A self-assessment can be done on the ISI website or by using the Envision Checklist—an Excel-based tool with simple yes/no type questions. Both are provided by ISI to start the evaluation process. These tools are available for no cost and provide an efficient way to understand the various levels of achievements. The tools can be accessed/downloaded by creating a free ISI account.

Third-Party Verification Process

Verification is an optional independent review step that is required for a project to receive an Envision award. There are two verification pathways:

- Pathway A: Design + Post-Construction
- Pathway B: Post-Construction

For Pathway A, the project team conducts the primary iterative verification process and earns the Envision award level at the 95% completion stage of the design phase. In addition, a non-iterative post construction review is required to validate and confirm the achievement of the award level or adjust as necessary.

For Pathway B, the project team conducts the iterative verification process at the 95% completion of the construction phase and the Envision award at the corresponding level will be earned. The overall process for both pathways is illustrated below. Detailed information on the pathways is provided in the *ISI Guide to Envision Verification for Applicants*.

Pathway A: Design + Post Construction



Pathway B: Post Construction



Envision Award

Projects that complete the verification process and achieve sufficient points earn an Envision award. Award levels are based on the percentage of applicable points achieved within the Envision framework.

There are four Envision award levels, namely:



Staff Training & Credentialing FAQs

- What is the credentialing process?

To become an Envision Sustainability Professional (ENV SP), an individual must create a free account online at www.sustainableinfrastructure.org, then take ISI's official ENV SP Training and pass an online exam. The official ENV SP training is offered as an online course or an in-person workshop facilitated by an approved ISI trainer. In addition, an ENV SP must remain in good standing through annual credential maintenance.

- Why pursue ENV SP credentialing?

Successfully completing the ENV SP training course and exam allows individuals to maximize the framework's capabilities and demonstrates their competency with Envision.

- How long is the ENV SP credential valid?

Credentials are active for one year and maintained in one-year cycles, starting on the first anniversary of when the credential is earned. Renewing your credential requires completing the required education hours and submitting the renewal fee.

- Where do I begin?

The first step is creating a free account at www.sustainableinfrastructure.org. All account holders have access to the *Envision v3 Guidance Manual*, training materials, and other guidance documents that will help you develop the skills to better apply Envision and grow your sustainability qualifications. Here you will find the necessary guidance to understand the different levels' credentialing and requirements. Through your ISI account you may purchase the online ENV SP training course or register for an in-person workshop.

- Can I get ISI training without credentialing?

Yes! You can obtain ISI training by attending seminars sponsored by professional organizations such as Water Environment Federation, attending workshops offered by approved ISI trainers, reviewing the guidance manual and training materials available at www.sustainableinfrastructure.org or attending other third-party courses.

References & Resources

¹United Nations, 2018

<https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>

²Institute for Sustainable Infrastructure

<https://sustainableinfrastructure.org/envision/>

Institute for Sustainable Infrastructure - Envision YouTube Channel

<https://www.youtube.com/channel/UCRf9vTEPxtYqLsNJPEeWXQA>

Terminal Island Water Reclamation Facility

<https://sustainableinfrastructure.org/project-awards/city-of-los-angeles-terminal-island-water-reclamation-plant-earns-envision-platinum-award/>

Georgetown Wet Weather Treatment Station

<https://sustainableinfrastructure.org/project-awards/georgetown-wet-weather-treatment-station/>

Naples Bay Restoration

<https://sustainableinfrastructure.org/project-awards/naples-bay-restoration-and-water-quality-improvements-at-the-cove/>

Integrated Pipeline Project

<https://sustainableinfrastructure.org/project-awards/integrated-pipeline-project/>

Acknowledgments

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