

Sustainability and the Role of Envision

Anthony Kane

President and CEO

Institute for Sustainable Infrastructure

April 13th, 2021



ENVISION™

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

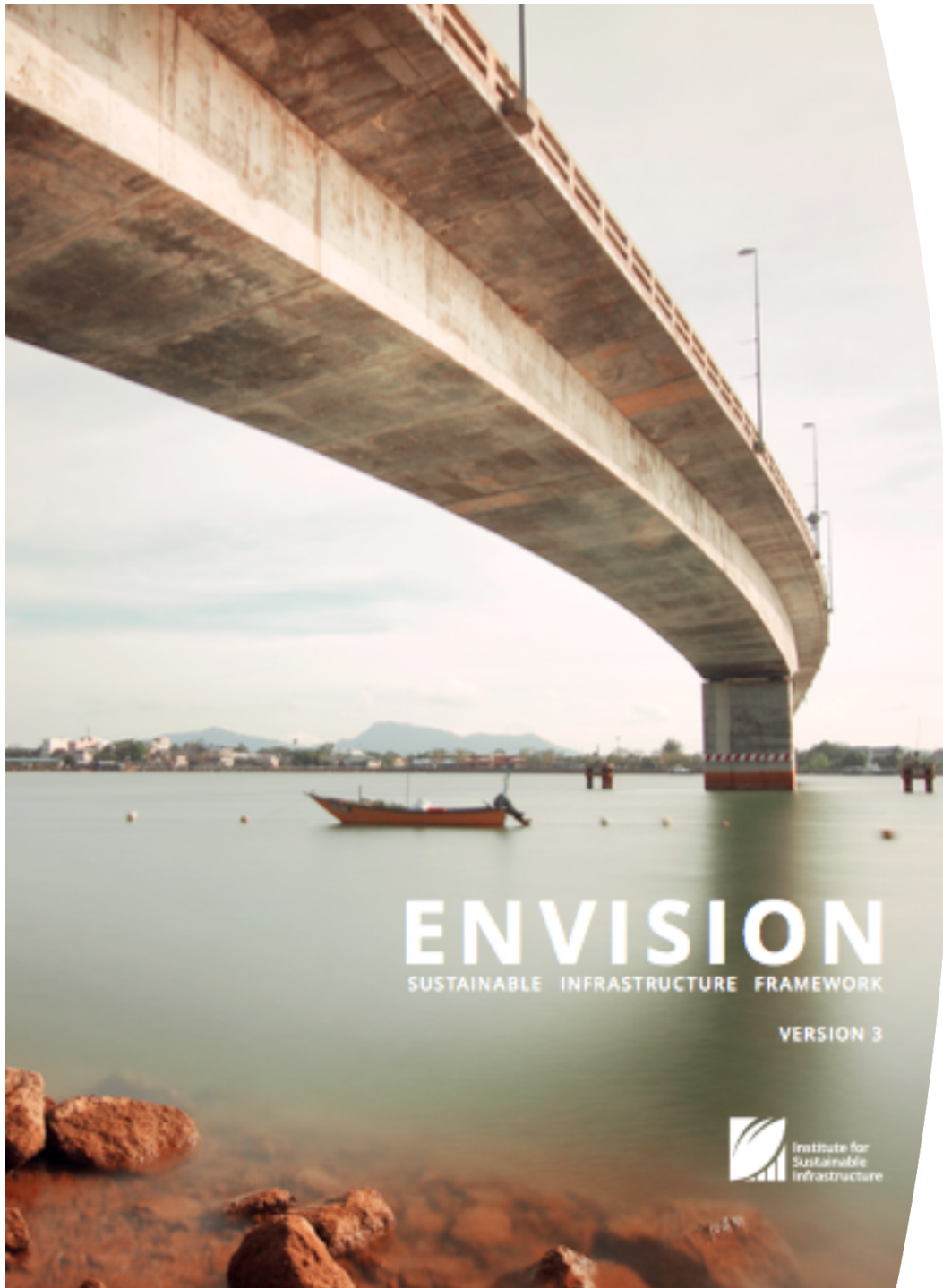
Developer and manager of the Envision framework & rating system for sustainable infrastructure



ENVISION™

Getting it right is not without its challenges

- Climate change
 - Resilience
 - Equity and social justice
 - Environmental protection and biodiversity
 - Public health
 - Economic recovery
-
- We need a consistent framework that evaluates tradeoffs, supports higher quality infrastructure, and delivers accountability to communities.



ENVISION™

It's a framework that enables a thorough examination of the sustainability of infrastructure

Provides a common language among stakeholders

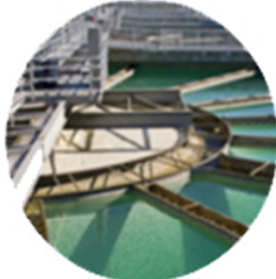
Used by governments, public agencies, utilities, planners, designers, engineers, and others

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

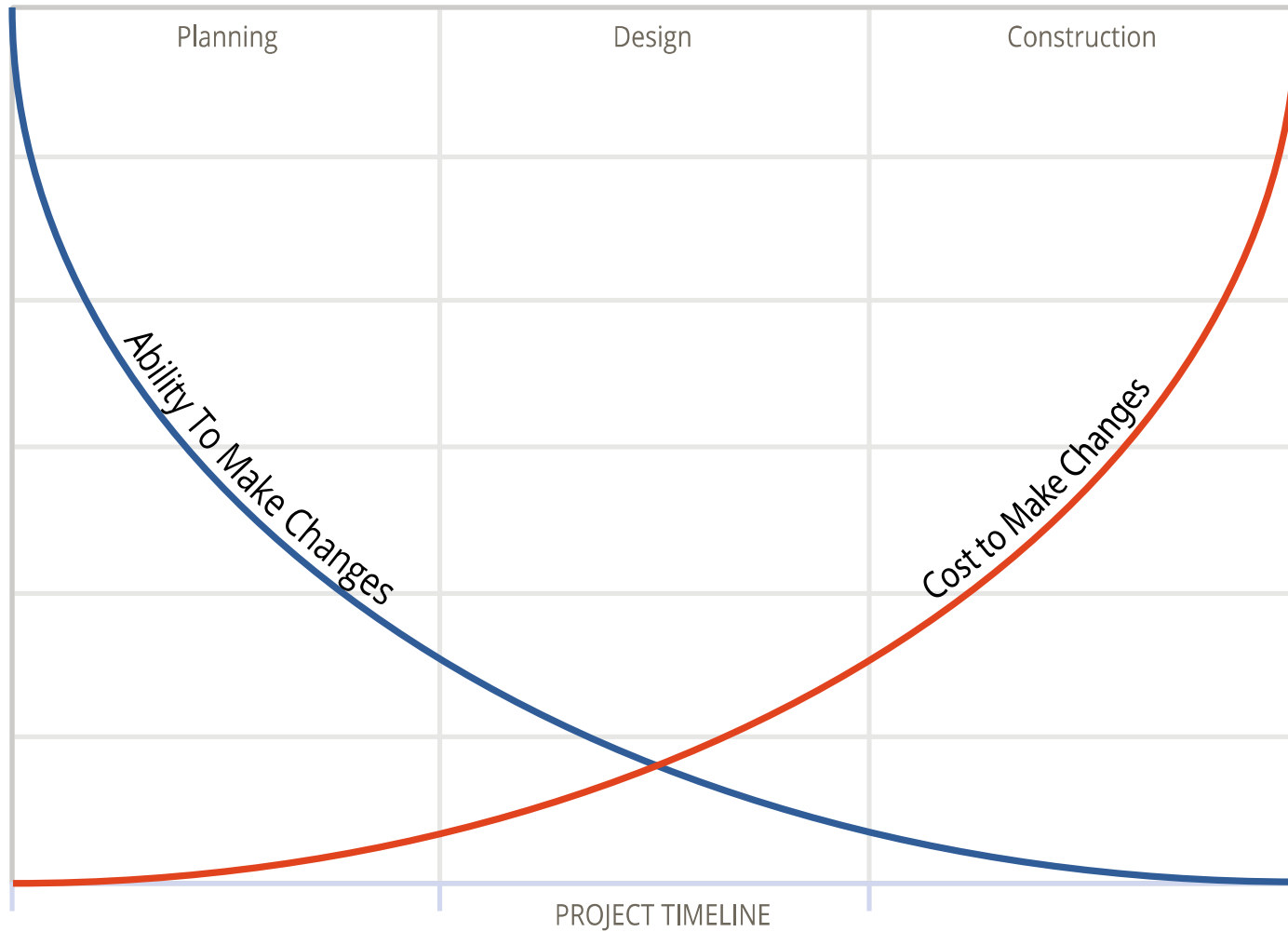
- Public realm
- Parks
- Ecosystem services
- Natural / Green infrastructure



INFORMATION

- Telecomm.
- Internet
- Phones
- Data Centers
- Sensors

Making the most of opportunities



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**
14 Credits

WELLBEING

- QL1.1 Improve Community Quality of Life
- QL1.2 Enhance Public Health & Safety
- QL1.3 Improve Construction Safety
- QL1.4 Minimize Noise & Vibration
- QL1.5 Minimize Light Pollution
- QL1.6 Minimize Construction Impacts

MOBILITY

- QL2.1 Improve Community Mobility & Access
- QL2.2 Encourage Sustainable Transportation
- QL2.3 Improve Access & Wayfinding

COMMUNITY

- QL2.1 Advance Equity & Social Justice
- QL2.2 Preserve Historic & Cultural Resources
- QL2.3 Enhance Views & Local Character
- QL2.4 Enhance Public Space & Amenities

QL0.0 Innovate or Exceed Credit Requirements



Leadership
12 Credits

COLLABORATION

- LD1.1 Provide Effective Leadership & Commitment
- LD1.2 Foster Collaboration & Teamwork
- LD1.3 Provide for Stakeholder Involvement
- LD1.4 Pursue Byproduct Synergies

PLANNING

- LD2.1 Establish a Sustainability Management Plan
- LD2.2 Plan for Sustainable Communities
- LD2.3 Plan for Long-Term Monitoring & Maintenance
- LD2.4 Plan for End-of-Life

ECONOMY

- LD3.1 Stimulate Economic Prosperity & Development
- LD3.2 Develop Local Skills & Capabilities
- LD3.3 Conduct a Life-Cycle Economic Evaluation

LD0.0 Innovate or Exceed Credit Requirements



**Resource
Allocation**
14 Credits

MATERIALS

- RA1.1 Support Sustainable Procurement Practices
- RA1.2 Use Recycled Materials
- RA1.3 Reduce Operational Waste
- RA1.4 Reduce Construction Waste
- RA1.5 Balance Earthwork On Site

ENERGY

- RA2.1 Reduce Operational Energy Consumption
- RA2.2 Reduce Construction Energy Consumption
- RA2.3 Use Renewable Energy
- RA2.4 Commission & Monitor Energy Systems

WATER

- RA3.1 Preserve Water Resources
- RA3.2 Reduce Operational Water Consumption
- RA3.3 Reduce Construction Water Consumption
- RA3.4 Monitor Water Systems

RA0.0 Innovate or Exceed Credit Requirements



**Natural
World**
14 Credits

SITING

- NW1.1 Preserve Sites of High Ecological Value
- NW1.2 Provide Wetland & Surface Water Buffers
- NW1.3 Preserve Prime Farmland
- NW1.4 Preserve Undeveloped Land

CONSERVATION

- NW2.1 Reclaim Brownfields
- NW2.2 Manage Stormwater
- NW2.3 Reduce Pesticide & Fertilizer Impacts
- NW2.4 Protect Surface & Groundwater Quality

ECOLOGY

- NW3.1 Enhance Functional Habitats
- NW3.2 Enhance Wetland & Surface Water Functions
- NW3.3 Maintain Floodplain Functions
- NW3.4 Control Invasive Species
- NW3.5 Protect Soil Health

NW0.0 Innovate or Exceed Credit Requirements



**Climate and
Resilience**
10 Credits

EMISSIONS

- CR1.1 Reduce Net Embodied Carbon
- CR1.2 Reduce Greenhouse Gas Emissions
- CR1.3 Reduce Air Pollutant Emissions

RESILIENCE

- CR2.1 Avoid Unsuitable Development
- CR2.2 Assess Climate Change Vulnerability
- CR2.3 Evaluate Risk & Resilience
- CR2.4 Establish Resilience Goals and Strategies
- CR2.5 Maximize Resilience
- CR2.6 Improve Infrastructure Integration

CR0.0 Innovate or Exceed Credit Requirements



QUALITY OF LIFE: WELLBEING

QL1.1 Improve Community Quality of Life

26

POINTS

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.

LEVELS OF ACHIEVEMENT

IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
A + B	A + B + C + D	A + B + C + D + E	A + B + C + D + E + F	A + B + C + D + E + F + G
(2) Community Considerations	(5) Community Linkages	(10) Broad Community Alignment	(20) Holistic Assessment & Collaboration	(26) Protecting The Future
<p>(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.</p> <p>(B) The project meets or supports community needs and/or goals.</p>				
<p>(C) The project assesses the social impacts it will have on the host and affected communities' quality of life.</p> <p>(D) The affected communities are meaningfully engaged in identifying how the project supports community needs and/or goals.</p>				
<p>(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.</p>				
<p>(F) Community satisfaction is demonstrated by feedback from the stakeholder engagement process verifying actions taken in criteria A, B, C, and D.</p>				
<p>(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.</p>				

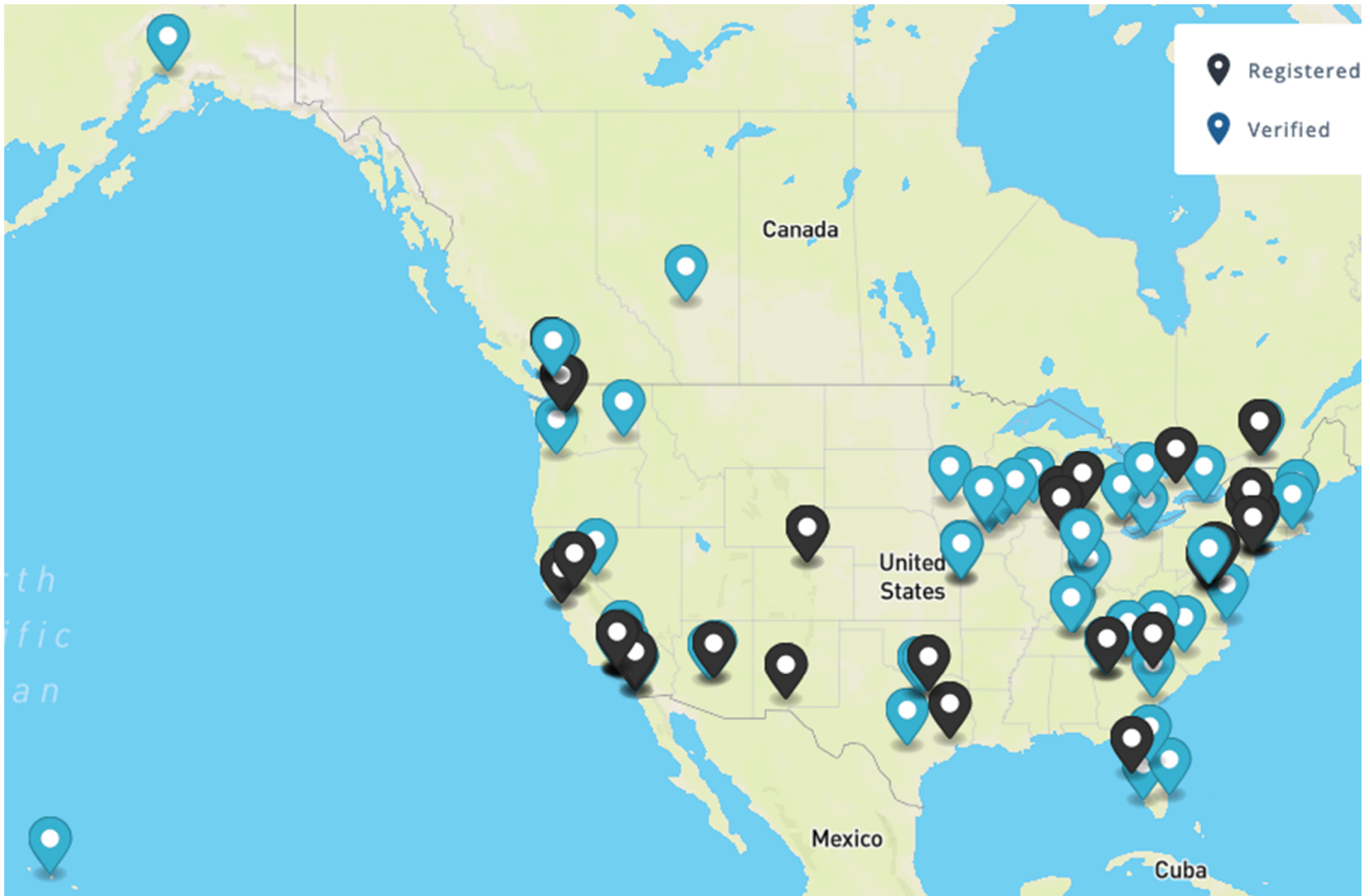
BCIT North Campus Infrastructure Project

Burnaby, BC
Envision Gold

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

A world map showing the global distribution of Envision use. Numerous pins are placed across the map, with a high concentration in North America (USA and Canada) and a few in Europe (Italy). The map is color-coded by continent: North America is light green, Europe is light yellow, and Africa and South America are light green. The oceans are labeled: North Pacific Ocean, North Atlantic Ocean, and South Atlantic Ocean. Country names are labeled in black text.

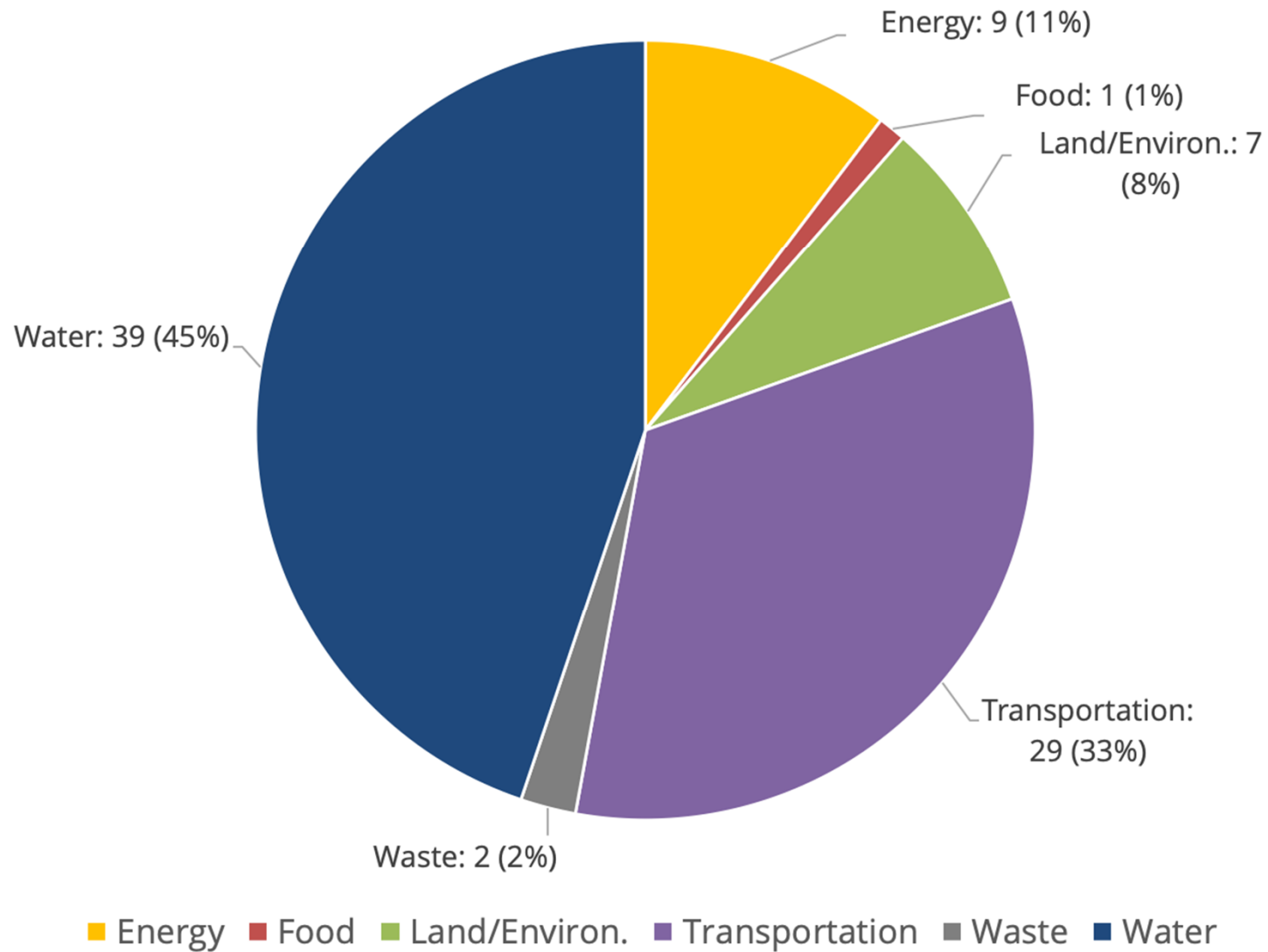
~ \$100 billion in infrastructure development

100+ rated projects since 2013

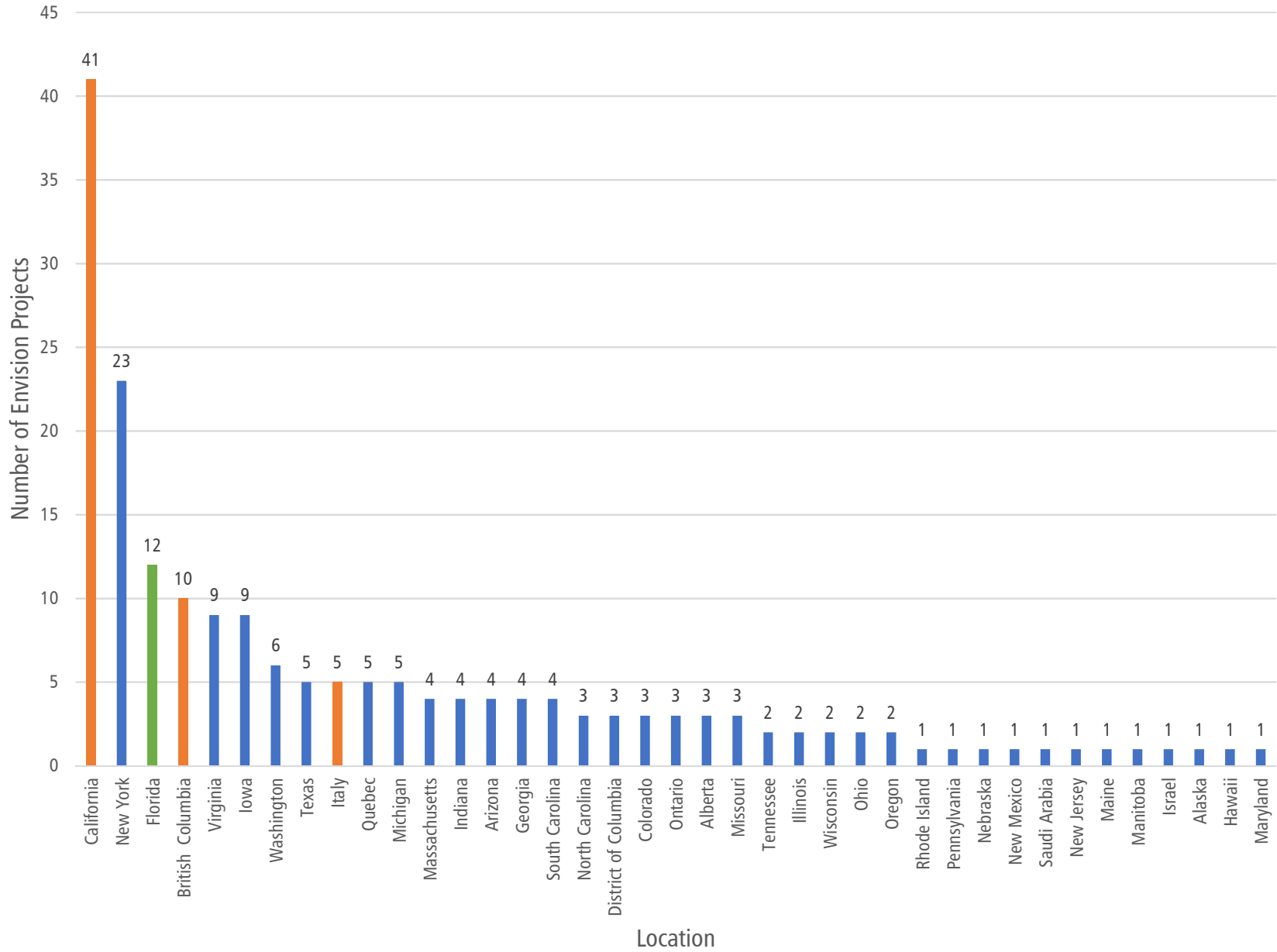
~ 6,000 active credentialed professionals

More than 120 public agencies using Envision

Envision projects by sector

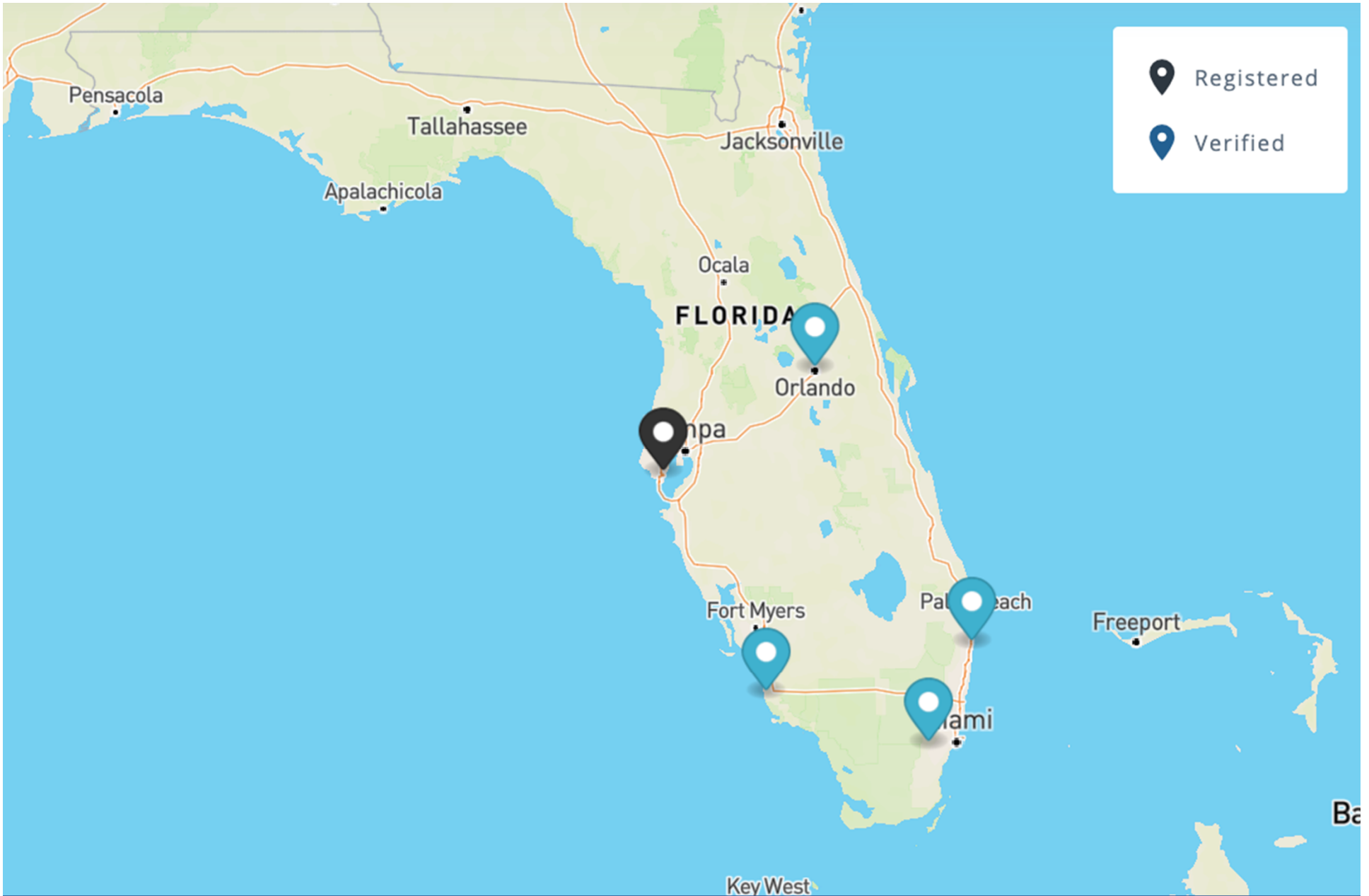


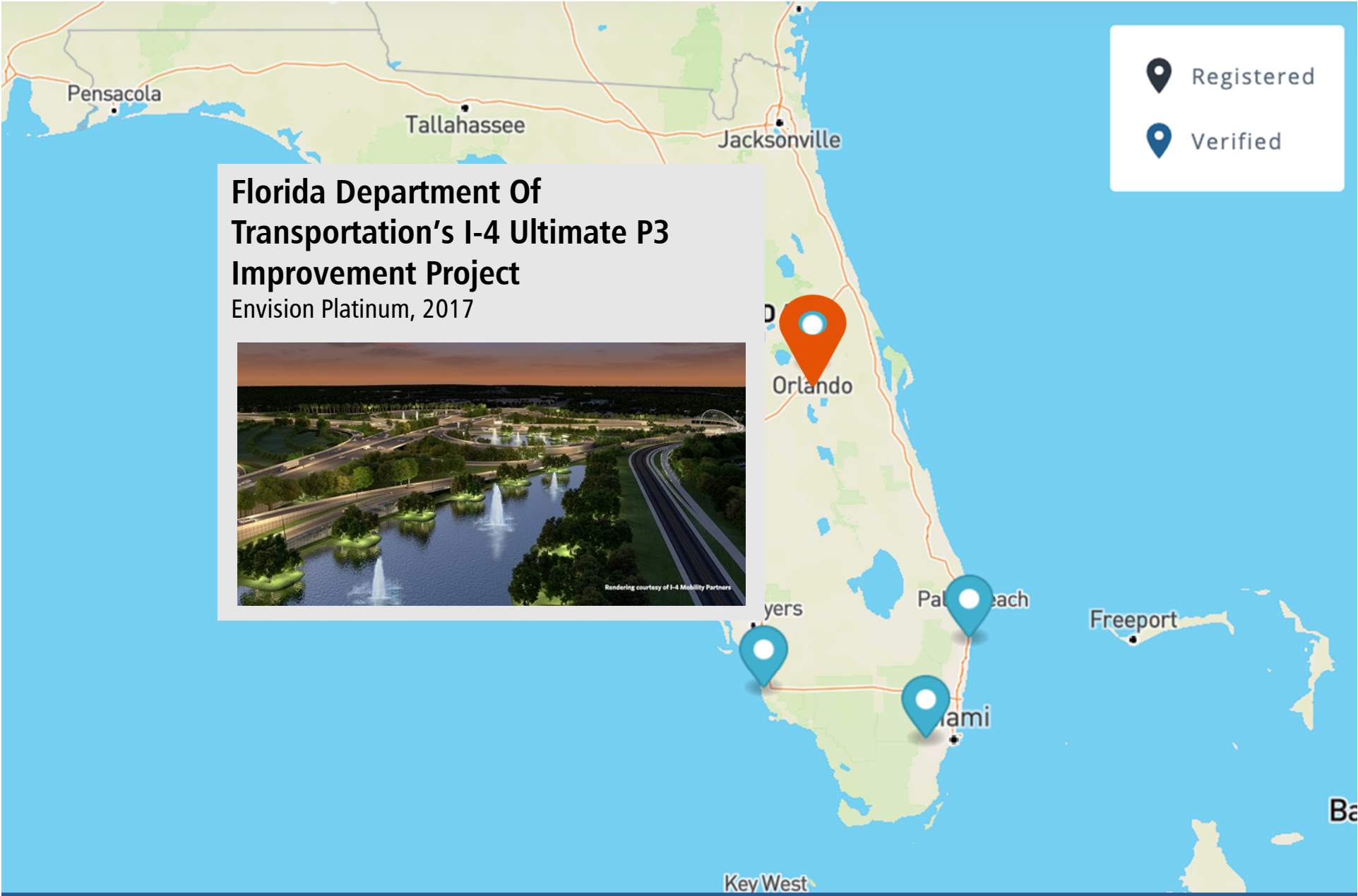
Projects in Verification Program by Location



Envision Supported Agencies in Florida

- City of Coral Gables
- City of Miami Beach
- Miami-Dade County
- City of Largo
- City of St. Petersburg
- Pinellas County Public Works





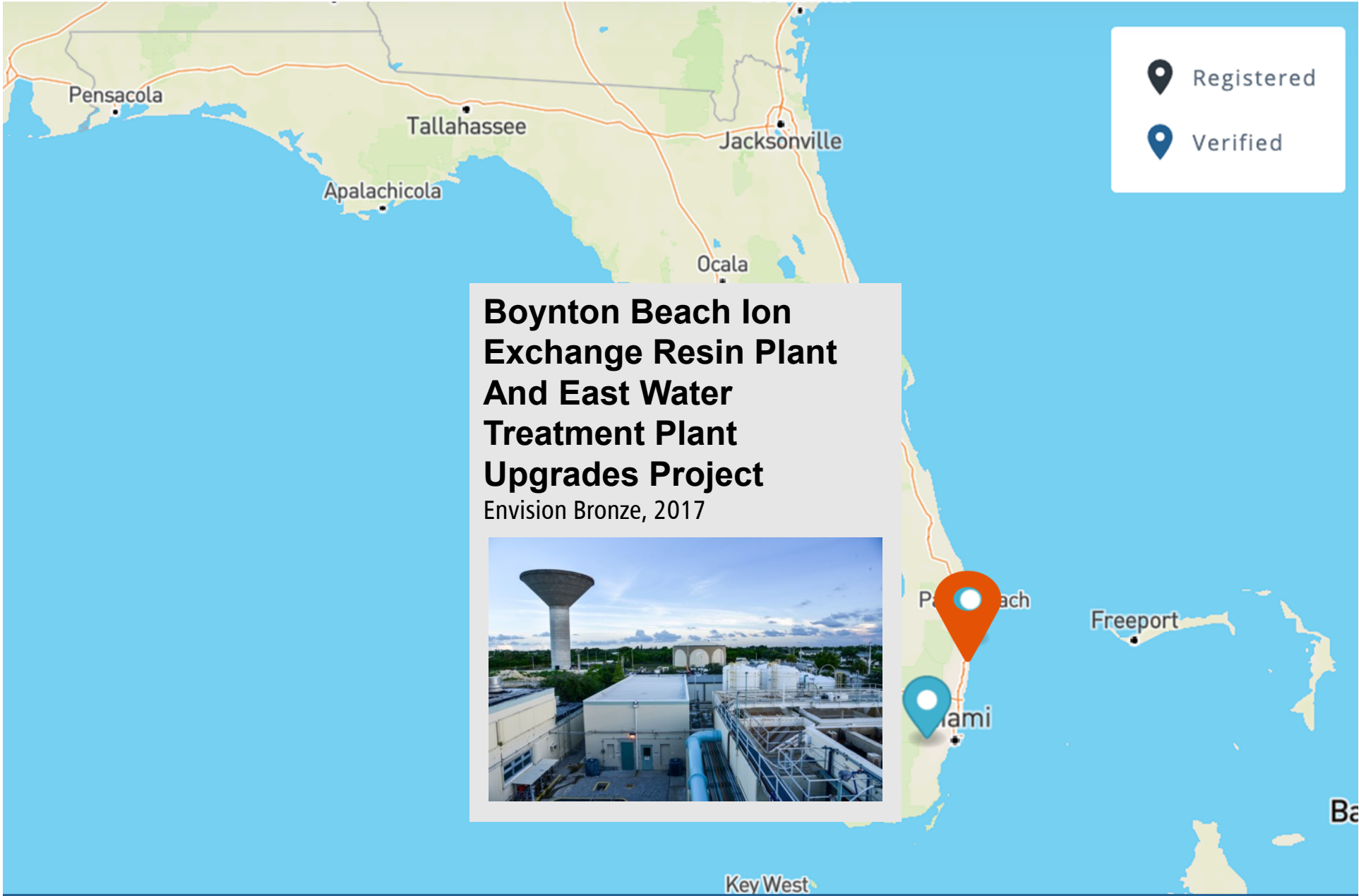
Florida Department Of Transportation's I-4 Ultimate P3 Improvement Project

Envision Platinum, 2017





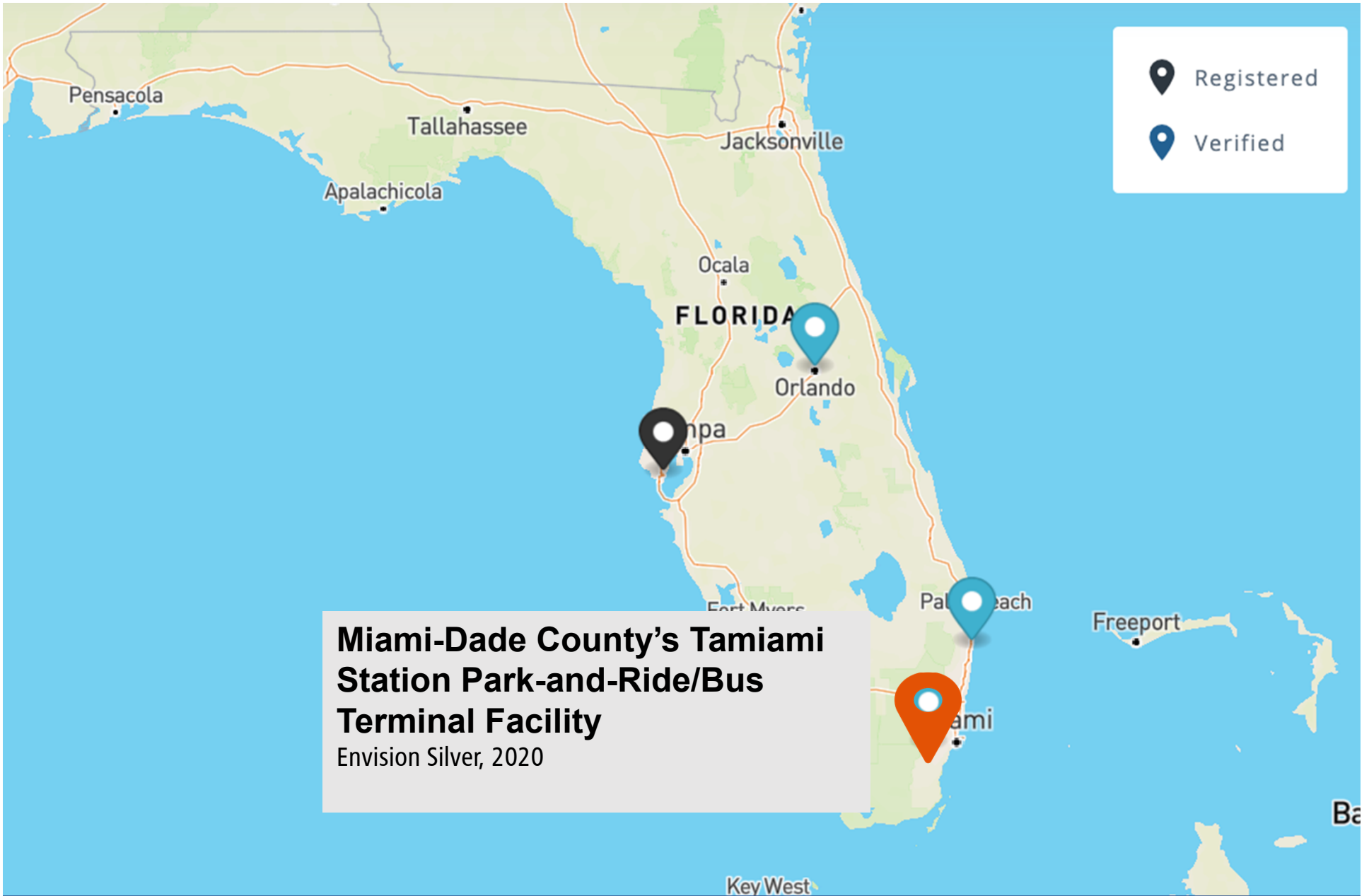
**Naples Bay Restoration And
Water Quality Improvements At
The Cove Project**
Envision Silver, 2019



Boynton Beach Ion Exchange Resin Plant And East Water Treatment Plant Upgrades Project

Envision Bronze, 2017





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 DEP RFP

NYC DEP Envision RFP Requirements

- Design Engineer shall submit a sustainability management plan (SMP)
- Prepare application and documentation to obtain Envision Gold
- Minimize construction impacts consistent with Envision requirements

EXAMPLE

INCORPORATING ENVISION CITY OF ALEXANDRIA, VA

Envision Project Timelines

- Envision Coordination Meeting
- Kickoff Meeting / Envision Scoping
- Responsibility matrix tracking various action items, responsible party, and deliverables or documentation required or provided for each credit
- Revised Envision analysis and meeting for each submission (30%, 60%, 90%, 100%, and Final Bid Documents)
- Third-party verification addressed in separate agreement

Portfolio-based Assessments

- Using Envision to assess large multi-phase projects or groups of interrelated projects
- Evaluating and comparing performance across a portfolio and over time
- Understand gaps in existing sustainability goals, plans, or policies
- Streamline the Envision assessment process

EXAMPLE

NYC DDC PORTFOLIO APPROACH

Identifying Project Groupings



Typology I
Comprehensive Site
Work



Typology II
Engineered Wetlands



Typology III
Subsurface Linear Work



Typology IV
Plazas



Typology V
Pedestrian Bridges



Typology VI
Step Streets



Typology I
Coastal Resiliency



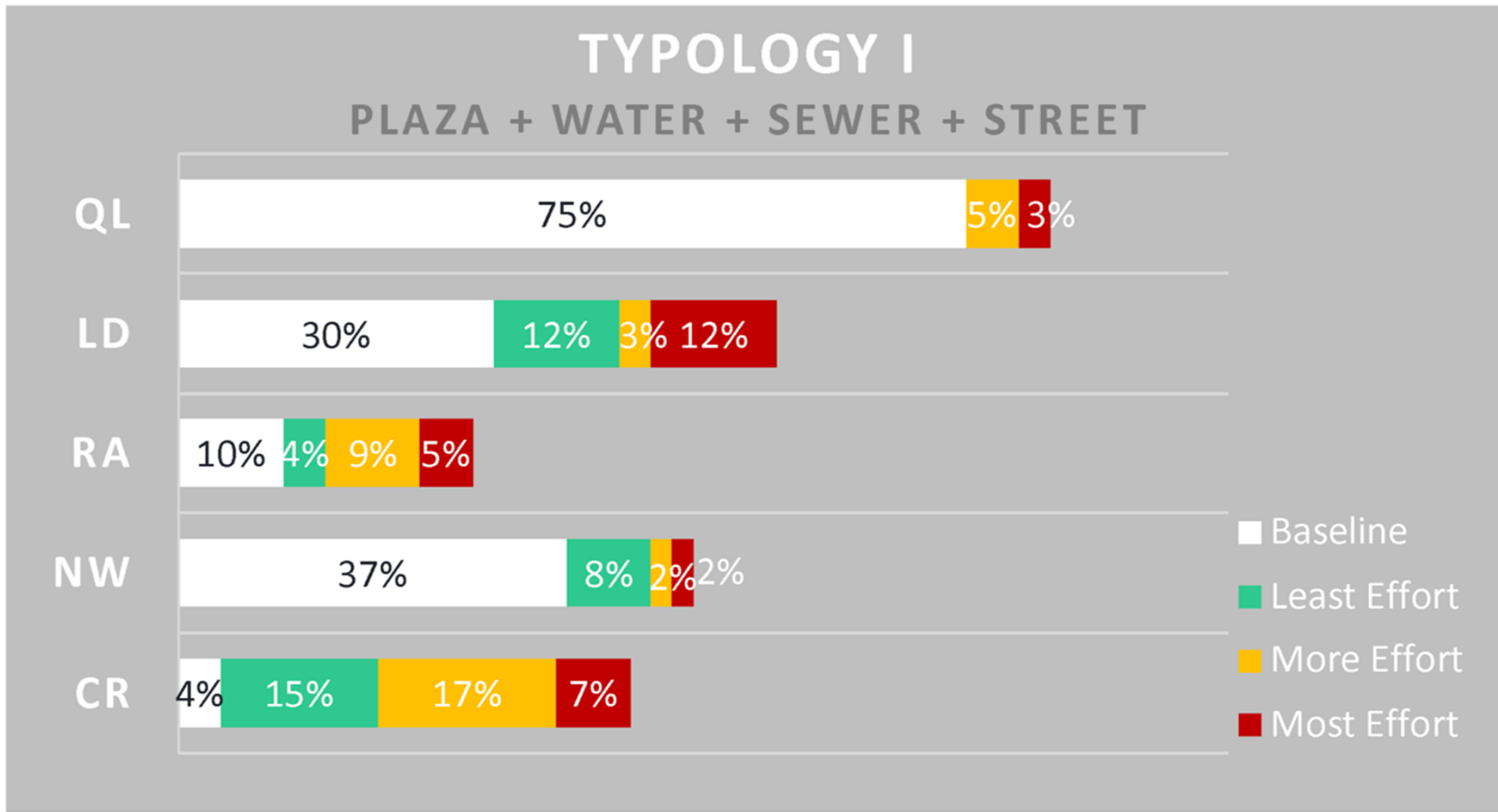
Typology I
Sea Wall

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

Determining a “Baseline” Assessment

- Average for each typology is 30%
- Beyond the baseline, DDC sets higher targets for performance
- DDC has created an Envision Calculator to evaluate the level of effort required to reach higher levels: **less effort, more effort, most effort**

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.”*



John Smith

Edit profile

ENV SP STATUS

NON-ENV SP

Complete the Envision Training course to earn your credential

[View Details](#)

MEMBERSHIP

NON-MEMBER

You are not connected to an organization.

[Terms and Conditions](#)

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 to earn your credential.

Become an ENV SP

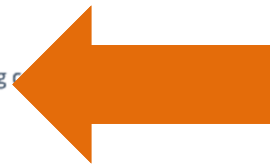
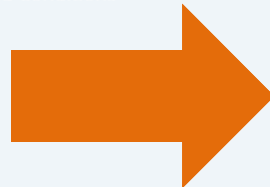
Resources

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



Thank you!

ISI: www.sustainableinfrastructure.org

Anthony Kane, President and CEO
kane@sustainableinfrastructure.org



ISI

INSTITUTE FOR SUSTAINABLE INFRASTRUCTURE

OUR MISSION

ISI envisions a day when all infrastructure projects worldwide are designed and built to be sustainable, resilient, and equitable. To ensure that happens, we provide people with the tools, resources, and roadmaps needed to succeed. Better infrastructure equals a better world. And working together, we can help communities, businesses, and people thrive and prosper while restoring and healing the planet.

WHAT WE DO

ISI develops, manages, and administers Envision®—a holistic framework and rating system that enables a thorough examination of civil infrastructure's sustainability and resiliency. We train and credential public—and private—sector leaders, students, and other stakeholders in the architecture, engineering, and construction (a/e/c) industry on Envision; we offer a third-party verification program that rates projects; and we work with member organizations and partners to accelerate positive change.

ABOUT US

ISI is a nonprofit education and research organization based in Washington, DC. We were established in 2010 by the American Public Works Association (APWA), the American Society of Civil Engineers (ASCE), the American Council of Engineering Companies (ACEC), and the Zofnass Program for Sustainable Infrastructure at the Harvard University Graduate School of Design.

TOGETHER, WE CAN ENVISION A SUSTAINABLE WORLD

These four strategies are essential to how we work:

1. We deliver the **Envision Sustainability Professional (ENV SP) credential** and all continuing education curricula to help professionals become sustainability subject matter experts.
2. We **evaluate, rate, and reward all types of public and private infrastructure projects**. Sustainable projects receive an Envision Verified, Silver, Gold, or Platinum award based on the overall project score.
3. We run a **membership program** for public and private agencies, academic institutions, and individuals. Our members are granted access to resources, receive discounts on credentialing and professional development, and project verification.
4. We **advocate for Envision sustainability** on a local, state/provincial, and federal level.

Our tools, resources, education, and verification programs assist government agencies, their consultants, and their contractors navigate the complexities associated with delivering sustainable, resilient, and equitable infrastructure. We embrace strong partnerships and purposeful collaboration models among our member organizations, communities, governments, and other stakeholders. No single organization can act alone to bring about global change, which is why we value consensus building and meaningful relationships to achieve our goals.

WHAT INFRASTRUCTURE DO WE SUPPORT AND RATE ?

- Energy Generation & Distribution
- Water & Wastewater
- Stormwater Management & Flood Control
- Green Infrastructure & Industrial Facilities
- Airports, Roads, Bridges, & Dams
- Parks & Other Community Amenities
- Transit & Transportation Projects
- Information & Communication Systems

OUR MEMBERS

We count 200-plus cities, towns, counties, and public agencies across the USA, Canada, and globally as members. More than 250 private-sector companies and industry associations are also ISI members.



Envision[®] Project Verification

Collaborate. Document. Validate. Achieve.



SHOWCASE YOUR PROJECT'S VALUE WITH ENVISION VERIFICATION

It is one thing to say that an infrastructure project is sustainable and resilient, fights climate change, addresses environmental justice, creates local jobs, and spurs economic recovery, it's another thing to prove it. Envision verification provides that proof.

Verification is an objective, evidence-based approach that lends credibility to your project, and it showcases that the project is aligned with your community's needs and expectations.

Infrastructure owners, their consultants, and contractors who engage in the verification process feel a sense of accomplishment by demonstrating their work's ingenuity. There are “aha” moments that will change individual and team perspectives and lead to valuable insights for future projects.

Envision verification focuses on collaboration among internal and external project stakeholders to advance industry best practices and promote innovation.

WHY SEEK VERIFICATION?

- Verification demonstrates that your project meets environmental, social, and economic standards.
- Exhibits accountability, improves project management processes, and elevates learning opportunities for stakeholders.
- Satisfies local, state, provincial, and federal regulatory requirements.

VERIFICATION BENEFITS

Instills confidence in ratepayers and taxpayers that their money is being well spent.

Encourages and rewards industry best practices, inclusive engagement, and sustainable performance to bolster community confidence.

Helps teams clearly define and document their sustainable, resilient, and equitable achievements.

Extends learning opportunities and knowledge of sustainable practices and processes.

Promotes collaboration and provides opportunities for better dialogue, innovation, and critical thinking.



COMMUNITY CONTRIBUTIONS



Creates jobs & stimulates the economy.
Is cost-effective & leads to long-term operational efficiencies.



Leads to significant reductions in GHG emissions & achieves carbon-neutral targets.



Reduces water & energy usage.
Encourages sustainable material use.



Promotes social equity and community cohesion.
Improves public health, safety, and access to essential services.



Protects and restores habitats.

VERIFICATION PATHWAYS

There are two verification pathways: **Pathway A** allows you to pursue Envision verification during a project's design phase. **Pathway B** allows you to pursue verification after construction is complete.



ENVISION AWARDS

Award levels are based on the percentage of applicable Envision points attained in verification.

ENVISION

WHAT IS ENVISION?

Envision® is a holistic sustainability framework and rating system that enables a thorough examination of the sustainability and resiliency of all types of civil infrastructure. It is the only comprehensive tool in North America that can assist government agencies and their consultants and contractors in delivering infrastructure that tackles climate change, addresses public health needs, cultivates environmental justice, creates jobs, and spurs economic recovery.

ENVISION CONSISTS OF:

- A guidance manual that includes 64 sustainability and resiliency criteria.
- Project assessment tools.
- Third-party project verification.
- Professional training and credentialing.

Envision has been successfully applied to more than 100 infrastructure projects, collectively worth more than **US\$106 billion** in infrastructure development.

WHO DEVELOPED ENVISION?

Envision was developed by the Institute for Sustainable Infrastructure (ISI) in collaboration with the Zofnass Program for Sustainable Infrastructure at Harvard University's Graduate School of Design. The American Public Works Association (APWA), the American Society of Civil Engineers (ASCE), and the American Council of Engineering Companies (ACEC) founded ISI and remain integral supporters.

BENEFITS OF ENVISION

Envision supports better project planning, design, and delivery by:

- Promoting environmental justice and social equity principles within project processes and decision making.
- Supporting communities to achieve carbon neutrality.
- Facilitating improved stakeholder engagement and interagency collaboration.
- Increasing the resiliency, preparedness, and long-term viability of civil infrastructure.
- Addressing a broad range of social, economic, and environmental indicators.
- Providing climate-ready infrastructure.
- Delivering fiscally responsible and resource-efficient infrastructure.

WHO USES ENVISION?

PUBLIC AGENCIES

Two-hundred-plus cities, towns, counties, public agencies, and academic institutions across the USA, Canada, and globally recognize or use Envision to guide infrastructure development. Los Angeles, New York City, Miami, Dallas, Denver, St. Petersburg, FL; Vancouver, and Montreal are a few of the *Envision Supported Agencies* who are delivering better roads, public transportation projects, airports, renewable energy facilities, water/wastewater projects, and other types of civil infrastructure.

PRIVATE ORGANIZATIONS & ASSOCIATIONS

More than 250 private-sector companies and industry associations embrace Envision solutions and collaborate with ISI and their clients to implement Envision. HDR, Stantec, AECOM, WSP, Tetra Tech, and many others are *Envision Qualified Companies*.



Image: San Diego International Airport
Envision Platinum Award / San Diego, CA