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EARLY ADOPTERS: THEIR JOURNEY TOWARDS DESIGNING SUSTAINABLE INFRASTRUCTURE USING THE ENVISION® RATING SYSTEM

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1 Overview

The Envision® Framework and Rating System for Sustainable Infrastructure was launched in 2012 by the Institute for Sustainable Infrastructure (ISI), and the Harvard Graduate School of Design's Zofnass Program for Sustainable Infrastructure. Since then, the program has grown exponentially in the United States and in Canada with over 5,600 Envision Professionals and 30+ certified projects. The Port of Vancouver, City of Surrey, and rural municipalities in Ontario are three early adopters of Envision in Canada – each at different stages of Envision “maturity”. Their experiences with using Envision in different sectors – transportation, waste management, and wastewater treatment - demonstrates the value of Envision in designing more sustainable infrastructure.

2 Innovation

The Port of Vancouver started its Envision journey in 2014 with the **Low Level Road** project in North Vancouver, British Columbia, which became the first transportation project to receive an Envision Platinum award for sustainable infrastructure. The project was completed to meet the need for expanded rail capacity and more efficient goods movement through the Asia-Pacific Gateway to support a growing and resilient national economy. This project realigned 2.6 kilometers of arterial road to allow for rail expansion and eliminated three at-grade rail crossings, thereby improving not just public safety, but also train efficiency and capacity for longer trains. While meeting these primary objectives, the project further engaged citizen in meaningful dialogue, profiled First Nation art, enhanced public transportation options, recreation opportunities, and restored natural areas.

Since the award, the Port has been active in integrating Envision into their capital projects. Through staff training, developing guidelines for design and construction, and specifying Envision in procurement, the Port has demonstrated leadership in sustainable infrastructure.

In Ontario, the **Grand Bend Area Wastewater Treatment Facility** was the first Envision-certified project in Canada, and first wastewater facility to be certified in North America. Key innovations included the creation of a constructed wetland to support native wildlife species and further buffer treated effluent, coupled with a flexible design that makes the facility responsive to changing sewage flows. The project team focused on efficiency and keeping the project within the boundaries of the original facility's footprint

to protect adjacent prime farmland. This led to the reduction in both construction and operational costs, including a ~\$9 M reduction in upfront costs. The creation of trails and interpretive signage to encourage visits from community members and school groups. This has sparked other rural municipalities to consider environmental and social issues as they address legacy wastewater management issues. Lessons learned from Grand Bend are currently being applied for the redevelopment of a similar wastewater facility in Port Stanley, Ontario.

The City of Surrey and Orgaworld Canada Ltd. used the Envision system to celebrate their visionary leadership in building the **Surrey Organic Biofuel Facility** through a public-private-partnership (P3). The 14,323 square metre facility will process more than 115,000 tonnes of residential and commercial organic waste into renewable natural gas (RNG). Approximately 120,000 GJ of biogas per year will be generated. Once constructed, this will be one of one of the largest waste-to-energy infrastructure facility in Canada, and will help the City of Surrey and the Metro Vancouver area achieve a regional waste diversion target of 80% by 2020. The biofuel facility will process the City's organic waste into a 100% renewable natural gas used by waste fleet vehicles.

3 Lessons Learned

Not only are public agencies expected to demonstrate value for money, they are also increasingly expected to demonstrate their commitment to sustainability in concrete ways. As expectations to deliver at a higher standard are increasing, Envision presents an opportunity for public sector agencies to advance infrastructure performance in the context of community expectations. The early adopters of Envision in Canada demonstrate that:

- Standard environmental due diligence on infrastructure projects are generally insufficient to meet public expectations.
- Sustainability must be an intentional goal, with a dedicated team member (such as an Envision Sustainability Professional) to keep the project team accountable.
- Multi-discipline teams thinking beyond the physical project boundaries can lead to innovative solutions, holistic solutions, and collaborative approaches that helps build community.
- Public agencies often have a “gap” between their sustainability ambitions and their infrastructure design procurement, fuelling the need to re-evaluate the sustainability requirements in procurement and design specifications.
- Owners/designers require transparent processes to make, present and defend choices to project stakeholders and the objective, multi-sector nature of Envision can be helpful in this regard.
- More sustainable solutions do not necessarily cost more (particularly when considered from the design outset), and in fact can even lead to significant cost savings.

In conclusion, the early Canadian adopters have demonstrated that Envision can provide a valuable lens through which public agencies can assess their own performance, improve the performance of their infrastructure, and celebrate their accomplishments.