

## Day One - Track One

Wednesday, March 21<sup>st</sup>, 2018

1:00 p.m. – 1:30 p.m.

## Evaluating the Net Present Value of Low Impact Development Retrofits in Edmonton, AB

**Presenters:** Eric Bill, Impact Infrastructure and Olivia Sparrow, Emmons & Olivier Resources, Inc.

### Biography



Eric Bill is an applied economist and Principal Economist with Impact Infrastructure (makers of Autocase). Eric leads the customization and consulting teams at Autocase and helps clients leverage technology to make more informed design decisions on infrastructure projects. He has extensive experience leveraging economic concepts to incorporate sustainability into decision making - he has been deeply involved in the evolution of the triple bottom line cost benefit analysis (TBL-CBA) framework, creating methodologies to monetize a variety of environmental and societal impacts

to sustainable design. He has advised global corporations, the AEC community, as well as all levels of government across North America. He's a recognized global expert in capital project evaluation.



Olivia Sparrow is a Civil Engineering Master's student at the University of Minnesota and a consultant with Emmons & Olivier Resources, Inc. with clients across Canada and the Mid-West. Olivia's research interests include developing tools for watershed management decision making as well as establishing best management practices and development standards for improved biotic health.

## Abstract

Low Impact Development (LID) is a sustainable approach to land development and stormwater management (SWM) that aims to mimic natural runoff conditions. The City of Edmonton has identified LID as a strategy to achieve their water quality target of no net increase in pollutants discharged to the North Saskatchewan River. Flood reduction is also a top priority for the city. Retrofitting the system is essential in mature neighbourhoods built without SWM controls and storm sewers sized for small events. EOR and Impact Infrastructure teamed to evaluate the sustainable net present value (S-NPV) of LID retrofit opportunities on public land in Edmonton. The cloud-based automated triple bottom line cost benefit analysis software Autocase was used to estimate the incremental lifecycle costs and monetary value of the broader social and environmental impacts of LID retrofits. The team assessed over 33,000 LID retrofit opportunities using batch runs to prioritize the most cost-effective investments and estimate the holistic value of broad LID implementation across the city. Overall, the cumulative S-NPV of the LID retrofits is greater than \$420 million over a 63-year time frame. The greatest monetary benefits are provided by avoided grey infrastructure costs, followed by social benefits such as flood risk mitigation and property value uplift. Environmental benefits, such as air pollution reduction, generate the lowest monetary value.

## Learning Objectives

1. Understand the components of a sustainable-net present value analysis;
2. Learn about the holistic value of LID in comparison to traditional financial cost; and
3. Understand the factors that offer the greatest contributions to the NPV of LID retrofits.