Autocase SITES

Investments in green infrastructure at a Toronto commuter station parking lot protects the ecosystem and the infrastructure itself

PwC and Autocase teamed to develop processes and tools to help Metrolinx make informed decisions about sustainability, climate vulnerability and resilience for its regional public transit system.

Challenge: Autocase and PricewaterhouseCoopers (PwC) are helping Metrolinx broaden the lens of traditional economic analysis to enable a broad range of financial, social, and environmental outcomes within one common, integrated decision-making framework.

Mount Pleasant GO Station Parking Lot from Google

Most organizations struggle with how to capture the total business and societal benefits and lifetime costs of a project. While the value creation and value protection of an infrastructure investment may often seem intuitively apparent, calculating and organizing them is a challenge. Social and environmental impacts that are external to the project (called "externalities") are therefore often not measured or quantified, and thus not appropriately captured and valued. PwC, wanting to demonstrate the role of green infrastructure in public transit, turned to Autocase for Sites in its work with Metrolinx.

Solution: Autocase empowered PwC to estimate the benefits of green infrastructure in reducing climate change's impacts

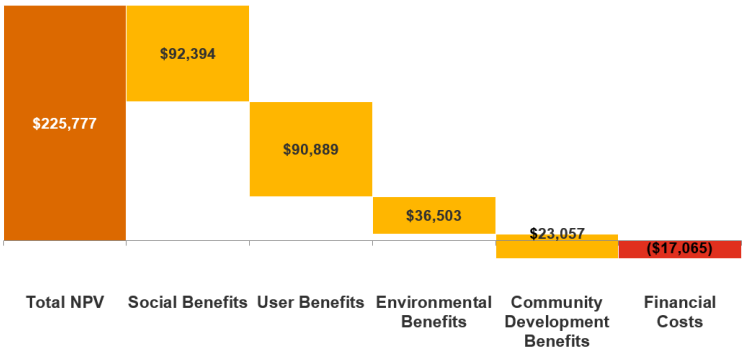
Metrolinx's Corporate Climate Adaptation Plan identifies green infrastructure as an important design practice for climate change adaptation. Green infrastructure can help to manage more intense precipitation and extreme heat and build resilience.

Green infrastructure design features and landscaping yield a wide range of environmental and social/community benefits, including on-site storm water management, runoff water quality improvements, urban heat island effect reduction, air pollutant and carbon emissions mitigation, and recreational amenities. Furthermore, green infrastructure can enhance the resilience of assets and operations to climate change impacts by reducing the effects from more intense rainfall and higher temperatures.

PwC needed a tool to evaluate green infrastructure investments that were more expensive than traditional grey infrastructure at a Toronto region transit station parking lot. Autocase for Sites was used to:

- demonstrate the total economic value of investments
- examine the impact of risk in the estimated results
- incorporate climate change to show how to build climate resilience in asset planning and design

Results: The positive user, environmental, social and community development benefits are more than tenfold the additional financial investment needed to cover the cost of green infrastructure.



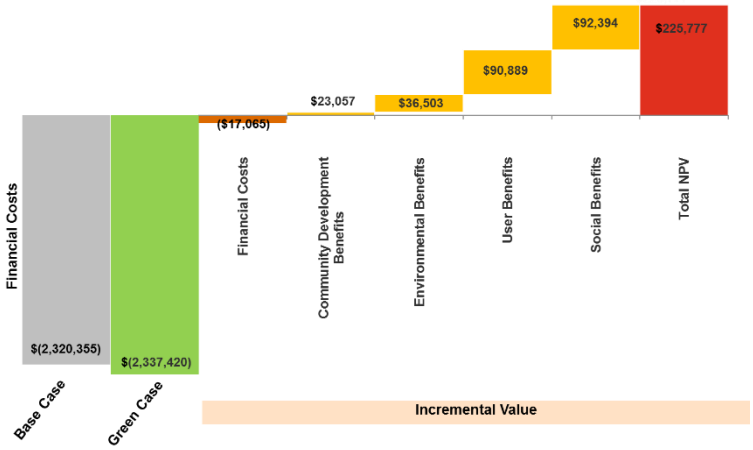
Investing in green infrastructure at the Mount Pleasant GO Station parking lot is estimated to generate a Net Present Value (NPV) of $226,000 over 60 years, as compared to an NPV loss of $2.3 million for a base case option without any green features. The benefit-to-cost ratio is 12.4.

Using a traditional financial analysis gives an NPV of -$2.3 for the grey and green approaches.

With Autocase for Sites, a more robust and holistic understanding of investment costs and benefits is achieved, resulting in an overall marginal NPV of +$225,777.

Autocase for Sites provides triple bottom line cost benefit analysis decision support that compares over 20 design features including bioretention, swales, and permeable pavement, among others.

The software uses best-practice methodologies, incorporates probabilistic risk assessment and lifecycle cost analysis.



The automated software tool evaluates benefits (and can estimate the costs) of green stormwater infrastructure (GSI) and low-impact development (LID) designs. Autocase for Sites taps into regional and city-level sources for weather, economic, demographic, and cost data to generate results that account for local conditions.

With Autocase, PwC and Metrolinx:

- were able to prove the community and environmental benefits outweighed the extra cost of green infrastructure over a traditional grey design
- made the case to use total economic value to build climate resilience in asset planning and design
- enable Metrolinx to achieve additional points under the Institute for Sustainable Infrastructure ENVISION Standard as well as LEED pilot credits for 'triple-bottom line' cost-benefit analysis

Autocase: Making the business case for resilient green infrastructure

Autocase® SITES

Autocase for Sites from Impact Infrastructure, Inc.

Autocase for Sites is a software tool that models the environmental and social dollar values of green infrastructure designs and, together with financial costs, evaluates their net, triple bottom line (TBL) benefit over the life of a project using a rigorous cost-benefit analysis (CBA) framework. With Autocase, the cost and time required to compare design alternatives at any stage of a project is a fraction of today's custom studies. As a result, design firms can easily evaluate and justify different approaches and, in so doing, contribute to the future economic, social, and environmental success of every project.

For more information about how TBL-CBA would assist your resilience project, go to www.autocase.com