



## THE ECOROOF INITIATIVE

FOR CLIMATE CHANGE RESILIENCY



PHOTO: LIVEROOF

The City of Edmonton and the **Miistakis Institute** are investigating the impacts a critical mass of ecoroofs could have on climate resiliency in the Edmonton context and, (if feasible) develop a policy program to incentivize increased implementation of ecoroofs. This document provides an introduction to ecoroof technology.

### WHAT IS AN ECOROOF?

A green roof, also known as a vegetated roof, rooftop garden, living roof, or ecoroof, is an extension of an existing roof which involves high quality waterproofing membrane, root repellent system, drainage system, filter cloth, lightweight growing medium (soil), irrigation system, and plants. Ecoroof implementation involves the creation of “contained” green space on top of a structure. This green space could be below, at, or above grade. **Ecoroofs are typically described in one of two ways:**



PHOTO: ZINCO

**Intensive roof.** Intensive roofs can be thought of as a rooftop garden where anything is possible if you have the weight bearing capacity. Trees, shrubs and water features may be installed and provide access for people.



PHOTO: DUSTY GEDGE

**Extensive roof.** Extensive roofs are lightweight systems and typically include drought tolerant self-seeding sedums, grasses, mosses and meadow flowers requiring little or no irrigation (dependent on the regional climate) and less maintenance after establishment. These roofs are not intended for recreation, or to accommodate the weight of people, larger shrubs or trees (Green Plants for Green Buildings, 2014).



PHOTO: CITY OF EDMONTON

## WHAT DO ECOROOF DO?

### Environment

- Help with storm events by absorbing and storing up to two thirds of a rain event, delaying runoff into the storm drains and filtering out particulate matter, improving the quality of the water that returns to waterways.
- Assist with energy efficiency due to the ecoroof's impacts on heat gain and loss of a building.
- Reduce the temperature outside through the reintroduction of vegetation on some of the hottest surfaces in an urban environment – rooftops.
- Improve air quality by absorbing heat and filtering the air moving across the roof.
- Provide habitat for insects and birds.

### Social

- Improve health through the availability of a natural view which has been found to decrease job stress, ailments, and the number of sick days taken by employees.
- Provide opportunities for urban agriculture, urban greening and new amenity spaces.
- Reduce wild fire potential.

### Economic

- Increase roof longevity (up to 2 times more than traditional roofs) by protecting the roof top from ultra-violet rays, heat stress, and temperature fluctuations.
- Create local jobs in design, construction, maintenance and product supply.

## BARRIERS TO ECOROOF DEVELOPMENT

### Cost

The upfront cost to develop an ecoroof is higher than a traditional gravel roof or a 'cool' roof (reflective roof). That is why numerous cities around the world offer some type of incentive to get the ecoroofs built – because there is recognition ecoroofs provide a public benefit over the long term as well as benefit to the building owners and occupants.

### Expertise

If an ecoroof market does not currently exist or is emerging, there are a limited number of people who have designed, installed, supplied plant material and maintained an ecoroof. This may be a barrier until the industry grows.

(Banting et al., 2005; Canada Mortgage and Housing Corporation, 2006; Green Plants for Green Buildings, 2014; Green Roofs for Healthy Cities- North America Inc., n.d.; O'Connor et al., 2014)

## WANT TO KNOW MORE?

Green Roofs for Healthy Cities  
[www.greenroofs.org](http://www.greenroofs.org)

Green Roof Overview, City of Toronto  
[www.toronto.ca](http://www.toronto.ca)

Green Roofs, City of Edmonton  
[www.edmonton.ca](http://www.edmonton.ca)

## BIBLIOGRAPHY

- Banting, D., Doshi, H., Li, J., Missios, P., Au, A., Currie, B. A., ... October. (2005). Report on the Environmental Benefits and Costs of Green Roof Technology for the City of Toronto. Prepared For City of Toronto and Ontario Centres of Excellence – Earth and Environmental Technologies (OCE-ETech). Toronto, ON.
- Canada Mortgage and Housing Corporation. (2006, August). Green roofs: a resource manual for municipal policy makers. Research Highlight, (Technical Series 06-113), 4.
- Green Plants for Green Buildings. (2014). White Paper Green Roofs (Vol. 9014).
- Green Roofs for Healthy Cities- North America Inc. (n.d.). How Your Community Will Benefit from Adopting Green Roof Policy.
- Lawlor, G., Currie, B. A., Doshi, H., & Wieditz, I. (2006). Green roofs: a resource manual for municipal policy makers. Canada: Canada Mortgage and Housing Corporation.
- O'Connor, T., Culligan, P., Carson, T., Gaffin, S., Gibson, R., Hakimdavar, R., ... McGillis, W. (2014). Evaluation of Green Roof Water Quantity and Quality Performance in an Urban Climate. Washington, D.C., EPA/600/R-14/180. Retrieved from [cfpub.epa.gov](http://cfpub.epa.gov)

### Document prepared by:

Miistakis Insitute  
[www.rockies.ca](http://www.rockies.ca)  
403.440.8444  
May 2018

### PROJECT PARTNERS



Miistakis  
Institute



### PROJECT SUPPORTERS



THE ECOROOF INITIATIVE