

Increasing Flood Resiliency Through Private Property Improvements

Property owners can take various actions to manage rainwater on their properties and increase flood resiliency. The following summarizes a review of municipal programs, measures that property owners can take to increase flood resiliency, and advantages and disadvantages of cost-shared programs for private properties.

Municipal Programs to Increase Flood Resiliency

Programs to Reduce Basement Flood Risk

After flooding occurred in 2005, the City of Saskatoon implemented a grant program to fund 100% of the installation of sumps and backflow devices, up to \$2,500, in designated areas that experienced sewer backup. In 2007, the program was expanded to properties that did not flood but were in high-risk zones, and in 2010, the maximum grant was increased to \$3,000. In 2008, a new program funded 100% of the cost to install winter weather bypass systems to direct sump flow into floor drains for previous Flood Protection Program participants who were experiencing winter weather flow.

Several other Canadian municipalities offer subsidies or grants for sump pits, sump pumps, backwater devices, and disconnecting downspouts and weeping tiles from sanitary sewers. A typical maximum municipal subsidy for these programs is \$3,000, with maximum amounts ranging from \$1,500 (Humboldt, SK) to \$11,000 (London, ON). London's program is higher because a subsidy is provided for a drain connection from the city sewer in the road allowance to the dwelling unit.

Programs to Encourage On-site Runoff Storage for Commercial Properties

Commercial, industrial, and institutional property owners in Saskatoon can reduce their Storm Water Utility Bill by installing private storage ponds, green roofs, permeable pavement, rain gardens, or other "soft" landscaping that reduces runoff. Few companies have made these type of changes, likely because of the relatively high upfront capital cost.

Programs to Encourage On-site Runoff Storage for Residential Properties

Three municipal programs to encourage rainwater management on residential properties were identified. The City of Victoria offers residential "Rainwater Rewards" which are rebates for on-site storage, ranging from \$100 for a rain barrel to \$1,500 for permeable pavement with a rock reservoir, in addition to ongoing credits. The Cities of Kitchener and Waterloo offer up to a 45% credit applied to storm water charges, depending on the amount of water diverted from the storm water system. Although these are best practices for storm water management, they would have little impact in preventing surface flooding during intense rain events similar to those experienced in Saskatoon in 2017.

Programs to Encourage Retrofitting Properties to Reduce Surface Flooding

In 2017, Burlington, Ontario, launched the Home Flood Protection Program in collaboration with the University of Waterloo's Intact Centre on Climate Adaptation. The pilot program provides free online self-help resources and for \$125, residents can get a

home flood protection assessment with tips to reduce sewer backup and overland flood risks, reduce moisture content, reduce damage to valuables, and wisely manage water on site. All residents are eligible and approximately 100 had booked by mid-October. Although no other Canadian municipal subsidy program for property improvements to increase surface flooding resiliency was identified, the United Kingdom implemented “The Property Level Flood Resilience Grant Scheme” which provided a grant of up to £5,000 (~\$9,000 CAD) to homeowners and businesses that were flooded in December 2015.¹

Flood Resiliency and Resistent Measures

The most effective way for property owners to minimize flooding varies and requires an assessment of the unique characteristics of each individual property. The following are examples of measures that homeowners can take to increase flood resiliency:²

1. Install weeping tiles, sump pits, sump pumps, and backwater valves
2. Seal cracks and gaps in walls
3. Install water-resisting external doors and windows
4. Construct flood defense walls and gates
5. Acquire temporary free standing barriers, such as self-inflating flood protection or water absorbing bags
6. Acquire water sensor and alarm
7. Enhance lot grading, backfilling, and swales
8. Raise porches

The cost of options to reduce flooding range from under \$100 for water alarms or a basic rain barrel, to over \$10,000 for lot regrading and other property improvements.

Program Advantages and Disadvantages

A main benefit to subsidizing a program for property owners as an alternative to investing in a large infrastructure program is the significantly lower cost. Infrastructure projects that would protect up to 130 houses in three areas for a “1-in-10 year” storm, are estimated to cost \$19.0 million. A grant of up to \$4,000 for up to 130 homeowners to make improvements would be a maximum of \$0.52 million and about \$0.1 million to communicate and administer for a total of about \$0.62 million. Expanding a program to up to 600 properties in the top 30 assessed risk areas would cost up to \$2.8 million,

¹ The grant was available until March 31, 2017

<http://www.flood-products.co.uk/government-flood-grant-explained/>

<http://www.nationalfloodforum.org.uk/government-grants-for-property-level-flood-resilience/>

² *Handbook for Reducing Basement Flooding* published by Institute for Catastrophic Loss Reduction (2009). Author: Dan Sandink.

<http://www.basementfloodreduction.com/forhomeowners/20tipsforhomeowners.html>

Homeowners Guide to Flood Resilience: A Living Document published through the “Know Your Flood Risk” Campaign in conjunction with RAB Consultants Ltd. and MDA. (2016). Authors: Mary Dhonau et al. http://www.knowyourfloodrisk.co.uk/sites/default/files/FloodGuide_ForHomeowners.pdf

including about \$0.4 million to administer. Not all property owners would be expected to access the program so the cost is likely to be lower.

A decision to fund improvements to private properties must consider various advantages and disadvantages:

Advantages

- Reduces impacts of flooding of eligible properties that benefit from the program.
- Increases quality of life for residents of eligible properties by reducing risk of flooding.
- Lower cost than large capital solution.
- Increases property values for eligible properties that are upgraded.

Disadvantages

- Fairness: Determining criteria for eligibility will be partly subjective. Current modelling is not based on individual situations and includes a three meter buffer zone around each property. A more comprehensive evaluation of properties may be needed to determine eligibility. Properties in other areas also may also be prone to flooding.
- Fairness: Many homeowners at risk of flooding have already been proactive in investing at their own cost to minimize the impacts of flooding, and those costs would be ineligible.
- Another precedent for covering costs of private property improvements: The City may receive additional requests from property owners to cover costs to minimize the impacts of flood damage to personal property.
- Could encourage rent-seeking: Evidence indicates that costs often increase when government funded programs are implemented.
- Administrative costs for the program may be higher than expected, depending on the criteria that are put in place, to determine eligibility and to audit eligible expenses.
- Effective flood prevention solutions may be unaffordable to some property owners, even with cost-sharing.
- Won't eliminate flood risk: Flood damage could still occur in intense storms.
- Transfers more costs of flooding from the Federal and Provincial Governments to the City. The Provincial Disaster Assistance Program currently provides funding of up to \$240,000 per property for damage incurred from surface flooding during intense storms. However, this program is currently under review and could be eliminated because surface flood insurance became available in Saskatchewan in 2016.