

CALGARY TREE DISASTER 2014 RESPONSE AND RECOVERY UPDATE

EXECUTIVE SUMMARY

The 2014 September extreme snow event required a coordinated emergency response to manage public safety risks and widespread damage to trees in all residential communities. Substantial progress has been made in the response phase with parks re-opening and initial first sweep for debris removal complete across all communities. A response phase progress report including a budget update is provided in Attachment 1. The City transitioned from the Emergency Operating Centre after nine days to a Tactical Operations Centre (TOC) which was established to lead the tree disaster response, recovery and restoration phases.

The Calgary Tree Disaster 2014 requires a comprehensive plan to ensure that the City's urban forest can be restored and be made resilient to future storm events. This will require the creation of an asset management system to aid in prioritization for the pruning, removal and re-planting of trees and associated monitoring over time. Public engagement, education and outreach are required to encourage Calgarians to care for and maintain trees on their properties which were also impacted by the storm event. It is critical to monitor impacts to Calgary's tree canopy and to manage the financial impacts from this event. A Calgary Tree Disaster 2014 Framework (Attachment 2) has been developed by Parks to guide the activities being undertaken by the TOC and the City throughout recovery from the September snowstorm.

ADMINISTRATION RECOMMENDATION(S)

That Council:

1. Recommend that Council approve the proposed incremental one-time funding of \$35.5 million for the Calgary Tree Disaster 2014 in Attachment 3 related to the recovery and restoration phases at the November Council budget deliberations of the 2015-2018 Action Plan.
2. Forward Attachment 3 to the November Council budget deliberations of the 2015-2018 Action Plan.

PREVIOUS COUNCIL DIRECTION / POLICY

On 2014 October 6 Council adopted:

1. Receive this verbal update for information;
2. Direct administration to continue with the Response plan, at an estimated incremental cost of up to \$12 million in 2014;
3. Direct Administration to advance discussions with the Province regarding assistance through the Disaster Recovery Program or other eligible funds; and
4. Direct Administration to report back to Council 2014 November 17 with a progress update on response actions, recovery plan and budget recommendations for consideration at 2015-2018 Action Plan.

BACKGROUND

Between 2014 September 8-10, Calgary experienced an extreme weather event that saw 28.2 centimetres of snow fall across the city over a 72-hour period. This event was the largest accumulation of snow prior to the September 22 equinox in Calgary in 130 years. The storm caused widespread damage to trees of all sizes, impacting all residential communities in the city. On 2014 September 9, the Emergency Operations Centre (EOC) was activated to centrally address public safety risks, power outages, property damage, and the resulting damage to the

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urban forest and associated debris. The EOC was de-activated on 2014 September 17 and the Tactical Operations Centre (TOC) was established, with Parks as the lead business unit.

Trees, and the urban forest they contribute to, are a vital city asset. Trees provide a multitude of social, economic, and environmental benefits to cities, communities and individuals. The importance of the urban forest to Calgary dates back over 100 years; the City's first formal boulevard tree planting program began in 1895. It is estimated that half of the City's 500,000 public trees located in boulevards and parks were damaged by the storm and will require care and maintenance. Thousands of private trees were also impacted.

The Calgary Tree Disaster 2014 has been divided into four (4) phases as described by the comprehensive emergency management model. These are: the short term initial response phase, and then the longer term recovery, restoration and resiliency phases.

RESPONSE PHASE UPDATE

Administration is currently working on the response phase. This phase has entailed a street-by-street assessment by Parks staff, City of Calgary Fire Department, and Provincial employees Alberta Environment and Sustainable Resource Development (ESRD) of the impacted communities. Citizen 311 service requests also helped to identify tree hazards and debris. This identification process continues with additional tree damage being revealed post-leaf drop. The end of the response phase will be highly dependent on weather conditions and availability of specialized equipment to reach tree limbs in tree canopies. Attachment 1 is a Progress Report on the Tree Disaster 2014 response phase to the end of 2014 October. Highlights of the response phase include:

- Initial debris sweep completed in all communities by 2014 October 17 (ahead of anticipated schedule);
- Clean-up efforts involved City business units, the Province, City of Edmonton, contractors, and Canada Taskforce 2 and saw up to 600 people working on the response at one time;
- Responded to over 9,500 "tree emergency" calls, a number that is nearly five times the normal yearly total;
- Restored power to 74,000 ENMAX customers;
- 23 million kilograms (23,000 tonnes) of debris sent to city landfills for mulching
- 32 Leaf and Pumpkin sites opened 2 weeks earlier than usual to accommodate community tree debris;
- City waived landfill fees for tree debris;
- Prioritized clean-up and pruning in heavily-used parks and roadways allowed events such as funerals, weddings, Terry Fox runs, and the CIBC Race for the Cure to go ahead as planned; and
- A comprehensive communications plan was built that includes educational vignettes, regular website updates, media scrums, use of social media and a tree emergency feature added to the City's 311 application.

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INVESTIGATION: ALTERNATIVES AND ANALYSIS

With the substantial completion of the response phase anticipated by the end of the year, the TOC is now turning its focus to longer-term recovery, restoration, and resiliency. An investigation of alternatives for these next phases must consider that the urban forest is a diverse, living entity, and that it will take many years to fully comprehend the extent of impacts to Calgary's tree canopy. Tree leaf-out next June will be an important milestone, however if pruning cannot occur in a timely, methodical fashion, damaged trees will be more susceptible to pests and diseases. New branch growth from improperly pruned locations is weaker and therefore more prone to injury in future storm events and will lead to longer term impacts to the urban forest. Administration considered three alternatives for recovery and these are summarized below. The alternatives and associated costs, benefits, and risks are also expanded upon in the Tree Disaster 2014 Recovery Framework (Attachment 2, The Framework), in the Recovery section.

Alternative 1: No additional Resources (limited pruning)

Budget: Redirect \$11.2M Parks budget.

The first alternative considered was to rely solely on the redirection of existing urban forestry budget for recovery. Using current budget allotments to manage the tree disaster recovery would significantly limit and disrupt Urban Forestry services. Services such as tree planting city-wide, all non-emergency tree work, service requests, and maintenance would be impacted. Funding in this alternative would only cover the pruning of one quarter of the damaged public trees over four years, leaving 75 per cent at higher risk for failure, disease and death. Public education and community outreach programs would not be supported, and the risk of City liability increases if a comprehensive recovery strategy is not put in place in a timely manner.

Alternative 2: Recovery (corrective pruning only)

Budget: \$35M total (including \$11.2M redirected Parks budget and \$23.9M new funding).

The second alternative is a recovery model that focuses on the existing public tree canopy using various pruning techniques to improve tree survival rates and limit potential tree hazards and diseases. This endeavour to sustain and recover the existing investment Calgarians has made in the city's urban forest. However, this option does not include tree planting or community outreach and public education programs to benefit property owners and private trees. Both alternatives one and two will set the City back in terms of meeting the Municipal Development Plan (MDP) tree canopy goals and targets and the goals of the Parks Urban Forest Strategic Plan. Delaying tree canopy health management and re-planting schedules will have major environmental, social, and economic impacts, and put at risk the City's urban forest that has been a century in the making.

Alternative 3: Comprehensive recovery and restoration (pruning, planting and community outreach)

Budget: \$47.5M total (including \$11.2M Redirected Parks budget and \$35.5M new funding).

The third, and recommended alternative, considers the dynamic nature of the urban forest, and the need to regularly assess recovery progress, monitor tree health, and re-plant in order to

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ensure full recovery and a resilient urban forest in the future. The TOC and Parks Urban Forestry have created the Calgary Tree Disaster 2014 Recovery Framework (Attachment 2) based on a review of best practices in tree disaster recovery, relevant literature and the 2013 Flood Recovery Framework. The Tree Framework also considers the Parks Urban Forest Strategic Plan (2007), a plan that emphasizes community collaboration while providing strategic direction for the growth, sustainability, preservation, and enhancement of Calgary's urban forest.

Over the next four years, Parks recommends the implementation of this community-based Tree Disaster Recovery Framework that considers four key focus areas: Urban Forest Health and Resiliency, Citizens and their Communities, Parks Services and Processes, and Funding. These focus areas contain objectives and deliverables that will guide long-term recovery. A brief summary of the objectives within the Recovery Framework focus areas is below:

1. Urban Forest Health and Resiliency
 - Assess, protect, and restore the urban forest using community-based plans. Use internationally accepted pruning and planting techniques that will improve resiliency of trees for future weather events and public safety.
2. Citizens and their Communities:
 - Educate citizens on the importance of a sustainable urban forest through effective communication and creation of education programs. Encourage Calgarians in the care, maintenance and planting programs for their neighbourhoods and their private trees.
3. Parks Services and Processes:
 - Position Parks and Urban Forestry as a leader in their field and tree disaster recovery specifically. Build organizational capacity by expanding services, building a tree asset management system, exploring partnerships and investigating new equipment and resources.
4. Funding:
 - Manage and report on financial impacts of the event, complete the application to the Provincial Disaster Recovery Program, explore alternate funding sources and align with the 2015-2018 Action Plan.

Stakeholder Engagement, Research and Communication

Administration reviewed existing disaster recovery frameworks including the Calgary 2013 Flood Recovery Framework, and best practices for tree recovery following major storms in Vancouver and Toronto.

Administration continues to engage and communicate with Calgarians and City employees to inform them of the progress to date and outstanding work. The City has created a detailed communications and engagement plan and continues to share relevant recovery information via traditional and social media. A hub was created on calgary.ca where all tree disaster related information is posted.

Results from the 2015-2018 Action Plan citizen engagement found that 90% of participants agreed a healthy urban forest contributes to a world class city.

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Strategic Alignment

This report and the 2014 Tree Disaster Recovery Framework (Attachment 2) align with Council Priorities and the Parks section of the 2015-2018 Action Plan (as proposed), Municipal

Development Plan (MDP), the Parks Urban Forest Strategic Plan (2007), the 2020 Sustainability Direction, and the Municipal Emergency Plan. The Calgary Tree Disaster 2014 Recovery and Restoration Budget Recommendation (Attachment 3) will be brought forward to Council as part of the budget deliberations for the 2015-2018 Action Plan.

Social, Environmental, Economic (External)

Social

Trees create spaces for people to gather as well as define the character and history of communities. Studies have shown that trees can help us feel peaceful and secure and are vital to community health. Communities with trees can have lower levels of crime, and foster safer, more sociable neighbourhood environments.

Environmental

Trees are major indicators of urban ecological health and are a measure of a city's sustainability. Trees provide many environmental benefits such as removing particulates and pollutants from the air and water, reducing soil erosion and slowing storm water runoff. Trees also provide habitat for birds, butterflies and small animals. Further, appropriately planted and placed trees can reduce overall home energy costs.

Economic

Tree canopies intercept storm water runoff reducing water treatment costs. In residential neighbourhoods, mature, healthy trees add to a property's value. In commercial areas, people tend to shop longer. Internationally, many cities are recognizing that their urban forests will play an important role in community aesthetics and their competitiveness to attract business and industry.

Financial Capacity

Current and Future Operating Budget:

The incremental cost projections for all business units related to the response phase to the end of 2014 are estimated at \$18 million. This is up from the original 12 million estimates due to additional contracted services used in the response phase. The costs for individual business units to the end of 2014 are summarized in Attachment 1. The City continues to advance discussions with the Province for assistance through the Disaster Recovery Program and / or other eligible funds.

The Calgary Tree Disaster 2014 Recovery Framework (Framework) is intended to guide The City towards recovery from the tree disaster event. Administration is requesting a one-time operating budget request to Program 445 of \$35.5 million over 3 years (2015 - \$11.9 million, 2016 - \$11.8 million, 2017 - \$11.8 million), from the Fiscal Stability Reserve (FSR). Administration recommends that this budget request be forwarded to the 2015-2018 Action Plan budget deliberations in November.

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In addition, Calgary Emergency Management Agency (CEMA) is preparing an application to the Provincial Disaster Recovery Program and it is expected that a portion of the emergency response costs will be recoverable through this program however specific recovery amounts are not known at this time. Any shortfalls, once known, are expected to be covered through the Fiscal Stability Reserve (FSR).

Current and Future Capital Budget:

Administration has also considered the impacts of the tree disaster event on the capital budget and moving forward through the recovery phase are recommending that \$700,000 of the 2015 Parks capital budget request be redirected to recovery. This includes the purchasing of four aerial trucks and small hardware.

Risk Assessment

If impacted trees are not properly assessed, pruned and monitored using an asset management system, The City may be liable for damaged or dead trees that cause property damage or personal injury. Failure to consider resiliency in the techniques and programs used to restore and recover the urban forest will increase The City's vulnerability to future storm events and natural disasters. Loss of tree canopy creates a large environmental cost in not filtering the air, water and providing habitat for animals. There are also social and economic impacts if the urban forest is not restored. Finally, there is a risk of loss of public confidence and corporate reputation due to failures to:

1. Assess tree damage and perform necessary tree work and re-planting in a timely or thoughtful manner;
2. Provide consistent information and communicate recovery plan effectively; and
3. Slower or disrupted non-emergency service delivery due to the necessary reallocation of existing staff and resources to priority tree work, including non-emergency tree service requests and community outreach programs.

REASON(S) FOR RECOMMENDATION(S):

Trees are a vital asset to The City. Administration reviewed several models of recovery and determined that the Calgary Tree Disaster 2014 Recovery Framework (Framework) (Attachment 2) and the Calgary Tree Disaster 2014 - Recovery and Restoration: Proposed Funding Recommendation for 2015-2018 Action Plan (Attachment 3) will best guide and support recovery operations for Parks and the Tactical Operations Centre. The Framework and associated budget will ensure a healthy and resilient urban forest and engaged citizenry. Administration will provide updates to Council and the public on a regular basis on the tree disaster recovery process and progress to date.

ATTACHMENT(S)

1. Calgary Tree Disaster 2014 Response Phase Progress Update
2. Tree Recovery Operations - Calgary Tree Disaster 2014 Recovery Framework
3. Calgary Tree Disaster 2014 - Recovery and Restoration: Proposed Funding Recommendations for 2015-2018 Action Plan