Measures to Reduce Service Interruptions Due to Tree Contact with Overhead Lines

Date: April 18, 2017
To: Parks and Environment Committee
From: General Manager, Parks, Forestry and Recreation
Wards: All

SUMMARY

The purpose of this report is to respond to a motion directing Urban Forestry and Toronto Hydro to work together on establishing methods of collaboration to reduce service interruptions in response to the ice storm that took place in December 2013.

As a result of ongoing collaboration, Urban Forestry is proposing a multi-faceted, long-term, approach that will enable trees and overhead electrical service lines to co-exist, thereby providing both Toronto Hydro and Urban Forestry with equal opportunity to comply with their individual, Council-directed, program delivery targets.

RECOMMENDATIONS

The General Manager of Parks, Forestry and Recreation recommends that:

1. City Council direct the General Manager of Parks, Forestry and Recreation, in consultation with Toronto Hydro, to establish a plan to coordinate proactive tree maintenance where opportunities exist, improving operational efficiencies, consistency in work practices and public perception.

2. City Council direct the General Manager of Parks, Forestry and Recreation to establish a working group with Toronto Hydro to continue to refine pruning practices, guidelines, and alternatives that advance the ability of both sections to achieve their respective requirements.

FINANCIAL IMPACT

There are no financial implications resulting from the adoption of this report.

DECISION HISTORY

At its meeting of June 30, 2015, the Executive Committee considered the June 16, 2015 report titled "Further Update on the Implementation of December 2013 Ice Storm Recommendations". This report focused on five broad categories relating to a review of the City's emergency response to the ice storm, including "…improving the resiliency of Toronto Hydro distribution lines."

The report included the following recommendation, which was adopted by City Council at its meeting of July 7, 8 and 9, 2015, directing Toronto Hydro and Urban Forestry to work together on establishing methods of collaboration to reduce electrical service interruptions:

> *City Council direct the General Manager of Parks, Forestry, and Recreation in partnership with Toronto Hydro to complete the exchange of tree inventory data and tree trimming schedules, and develop joint tree trimming and new tree planting guidelines, and to report back through the Parks and Environment Committee by the first quarter of 2016 on the implementation of these measures and any associated impacts in reducing service interruptions due to tree contact with overhead lines.*

City Council Decision Document EX7.5
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.EX7.5

COMMENTS

In December 2013 a devastating ice storm hit Toronto affecting electrical service to more than one million Toronto residents. An independent review of Toronto Hydro's response to the storm, completed by Davies Consulting, reported that approximately 416,000 customers or 57 per cent of all Toronto Hydro customers experienced service interruptions. According to Toronto Hydro, most of the interruptions were caused by trees.

Electrical service interruptions can be caused by trees when either tree limbs simultaneously come into contact with multiple phases of uninsulated electrical lines or when limb or complete tree failure occurs, disabling electrical infrastructure as they fall. Improper pruning or lack of proactive tree maintenance can increase the probability of tree failure thereby increasing the likelihood and frequency of service interruptions, especially during extreme weather events.

The damage incurred during the ice storm highlighted the potential for conflict that exists between providing reliable electrical service and maintaining Toronto's urban forest. As a result of the issues encountered, Toronto Hydro and Urban Forestry were directed by City Council to collaborate in an effort to reduce service interruptions.

Urban Forestry and Toronto Hydro have met on several occasions since September 2015 in order to move forward on Council's direction regarding the following initiatives:

- Sharing of Tree Inventory Data
- Development of Tree Planting and Pruning Guidelines
- Coordination of Tree Maintenance

Sharing of Tree Inventory Data

Urban Forestry has provided Toronto Hydro with data including street tree inventory data extracted from TMMS (Toronto Maintenance Management System), the asset and work management system currently utilized by Urban Forestry; 2016 area street tree maintenance plans; street tree and select park tree data collected during the post ice storm street tree assessment; and tree species attribute data (e.g. maximum crown width and height of individual tree species).

Toronto Hydro has provided Urban Forestry with data associated with their 2015 and 2016 feeder pruning programs and undertook to overlay this information with the street tree inventory data provided by Urban Forestry. From this, Toronto Hydro identified regions of overlap where both groups would be performing tree pruning in 2016 and proposed an area for a coordinated tree maintenance pilot.

Toronto Hydro and Urban Forestry will continue to share tree inventory and other tree maintenance data with an aim to reduce overlaps in service and potentially generate ways of improving service delivery.

Development of Tree Planting and Pruning Guidelines

Toronto Hydro and Urban Forestry have worked collaboratively to develop new tree planting guidelines that provide minimum clearance requirements for planting under or near Toronto Hydro infrastructure including electrical lines, poles, and at-grade electrical boxes.

Off-setting tree planting on City property whenever possible to avoid positioning trees directly under electrical lines is a key component of the Tree Planting Guidelines. Being mindful of overhead electrical infrastructure when choosing planting locations and tree species helps to avoid future conflicts. Where off-setting is not possible, tree species will be selected with lower maximum heights, or branching patterns that allow pruning to clear the electrical lines and still maintain a tree form that is aesthetically pleasing.

Urban Forestry is implementing these tree planting guidelines directing the placement of trees on City property. Urban Forestry is also committed to using this information to educate private land owners on the importance of selecting appropriate locations when planting trees on private property in order to protect Toronto Hydro infrastructure and avoid unnecessary service interruptions due to trees.

In 2017 Urban Forestry will also be formalizing its tree diversity policy and guidelines. Improving biodiversity is one of six strategic goals of the Strategic Forest Management Plan and is recognized as an adaptation action in the Council adopted report "Resilient City - Preparing for Changing Climate" in response to extreme weather.

Updated report:

http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.PE15.2

These tree diversity guidelines set out objectives to improve the resiliency of the urban forest in response to forest health threats, urban stressors and climate change. Increasing species diversity of the urban forest also reduces its overall vulnerability to impacts of extreme weather.

Toronto Hydro and Urban Forestry staff have met on a number of occasions to specifically discuss updating tree pruning and standards for clearance of tree growth near electrical service lines. As a result of these discussions, Urban Forestry and Toronto Hydro staff recommend that a large portion of the existing pruning guidelines be maintained and that a working group be established to explore further opportunity for improving pruning standards near live electrical conductors.

Tree Maintenance Coordination

Following a review of the current annual tree maintenance plans of both Toronto Hydro and Urban Forestry, a plan for coordinating service delivery was established. A pilot project to test the plan was carried out by a mutual vendor, Davey Tree (a private tree care company already under contract to both agencies) performing tree pruning to achieve the line clearing standards of Toronto Hydro, and the area street tree maintenance standards of the City of Toronto.

The pilot project took place in spring 2016 from mid-April to the end of May along Toronto Hydro feeder lines within two City sub-grids (57K-23 and 57K-13, Eglinton Avenue East and Markham Road area, Ward 36).

As part of the pilot, Toronto Hydro paid for the costs associated with (electric distribution) line clearing and the City provided payment for work that did not relate to the distribution lines but that was required to complete full tree pruning at the same time, by the same vendor.

Preliminary analysis of the results of the project revealed a potential savings of up to 15 per cent in pruning costs for both City of Toronto and Toronto Hydro when coordinating proactive tree maintenance. There are also additional potential opportunities for cost reduction if trees outside of Toronto Hydro feeder lines are maintained at the same time, further reducing crew mobilization and planning costs.

Coordinating tree maintenance also has the potential to reduce public concerns and complaints where both Toronto Hydro and Urban Forestry contractors are observed

pruning the same trees within a short time period, especially when performed by the same vendor under contract to both Toronto Hydro and Urban Forestry.

Currently, tree maintenance coordination is only possible where annual tree maintenance plans overlap. Establishing a plan to expand coordinated proactive tree maintenance opportunities will improve operational efficiencies, consistency in work practices and public perception. Cost savings in tree maintenance can be used to increase the number of trees maintained proactively on an annual basis which will in turn, reduce the number of tree-related service interruptions.

Proactive Maintenance

Urban Forestry has been performing proactive tree maintenance City-wide since 2009 maintaining City street trees, newly planted trees and park trees. Proactive maintenance improves individual tree health increasing resiliency to adverse weather, reduces the risk of tree or limb failure, provides opportunities for early intervention in young trees and includes providing clearance from live line conductors. As stated in *Sustaining and Expanding the Urban Forest: Toronto's Strategic Forest Management Plan*, it is the goal of Urban Forestry to achieve a 7-year pruning cycle for street trees city-wide.

Under Urban Forestry's Area Street tree Maintenance and Newly Planted Tree Maintenance programs, over 315,000 City street trees have been proactively pruned since 2009.

Further, Urban Forestry has also developed training material used to communicate the requirements of the City's proactive tree maintenance programs for staff and contractor crews performing this work.

Conclusion

Although it is recognized that trees and tree limbs are a source of power outages, especially during adverse weather, it is important to note that the 2013 ice storm was an extreme weather event that damaged trees across the city indiscriminate of species, age, size, condition or previous maintenance history. With improvements in pruning frequencies, guidelines, and training on proper techniques; sharing of information; and increased tree maintenance coordination, Toronto Hydro and Urban Forestry can work together to maximize the benefits of trees such as their energy saving capabilities achieved through the provision of shade in summer and the blocking of cool winds in winter and the reliable delivery of electrical energy.

CONTACT

Daniel Boven, Acting Manager, Urban Forestry Policy & Planning
Tel: 416-392-6478, Email: daniel.boven@toronto.ca

SIGNATURE

Janie Romoff
General Manager, Parks, Forestry and Recreation

ATTACHMENTS

None