



Special General Committee Agenda

Meeting Number: 14

June 4, 2019, 9:00 AM - 12:00 PM

Pan Am Centre - Multipurpose Room 3&4

Alternate formats for this document are available upon request.

Note: This meeting will not be Audio Streamed.

Pages

1. CALL TO ORDER

2. DISCLOSURE OF PECUNIARY INTEREST

3. EDUCATION & TRAINING SESSION

3.1 WINTER MAINTENANCE WORKSHOP PRESENTATION (5.10)

2

Morgan Jones, Director, Operations and Alice Lam, Senior Manager, Roads, Survey and Utility Division will be in attendance to provide service level review on Winter Maintenance.

4. ADJOURNMENT

Winter Maintenance Workshop



**Special General Committee
June 4, 2019**

**Alice Lam, Sr. Manager, Roads, Survey and Utility
Morgan Jones, Director, Operations**

Agenda

1. Purpose
2. Process
3. Background and History
4. Current Service Level
 - Road Network
 - Windrow Removal Program
 - Pathway / Sidewalk
5. Challenges Impacting Service Level
 - Climate Change
 - Build Form
 - Communication
 - Education
6. Round Table Discussion
 - Rotate Through 3 Tables with 1 Topic Each

Purpose

- During 2019 Capital Budget Committee meetings, Council discussed concerns raised by residents following the 2018/2019 winter season.
- Council directed Operations staff to review current service levels:
 1. Road Service Level
 2. Windrow Removal
 3. Pathway / Sidewalk Clearing

Process

- Seek Public Input
 - Winter maintenance survey is ongoing on Your Voice Markham website since May 17, 2019 <https://yourvoicemarkham.ca/snow_plowing>
- Council Meetings – Winter Maintenance Workshop
 - Workshop #1 – June 4, 2019
 - Service overview
 - Round table discussion
 - Report back from tables
 - Directions to staff for next steps
 - Workshop #2 – June 17, 2019
 - Summary of Workshop #1
 - Feedback from Your Voice Markham
 - Recommendations

Background and History

- The City regularly reviews its winter maintenance program since 1997 to 2019, approximately every 2 years
- The chronology of the review history is summarized in the attached Briefing Notes – Historic Overview of Winter Maintenance

Current Service Level - Legislations

- Code of Practices by Environment Canada (Federal) – Recommend all government agencies to have a Salt Management Plan
 - sets out policy and procedural framework for continuous improvement of the management of salt in winter operations;
 - manages the salt use to reduce the environmental impacts; and
 - aligns to the Federal code without compromising road safety ensuring compliance to Ontario's Minimum Maintenance Standards for winter maintenance, Ontario Reg. 239/02.
- Minimum Maintenance Standards, Ontario Reg. 239/02 (Provincial)
 - sets out minimum winter maintenance service levels for municipalities;
 - provides a standard instrument for municipalities in Ontario to defend themselves against claims related to winter maintenance; and
 - City's service level exceed Ontario legislation.

Current Service Level - Primary Road



High volume road
Salted and/or plowed to achieve a bare surface condition 24/7

Current Service Level - Secondary Road



Roads connect to primary with hills
Salted and/or plowed to achieve a centre bare surface 7am – 6pm

Current Service Level - Local Road / Rear Lane



Low volume roads – considered acceptable in snow packed condition
Plowed when snow reach/exceed 7.5cm or 12cm if snowfall continue.
Take up to 16 hours. Wide corner clean up follow after locals plowed

Current Service Level - Sidewalk



Sidewalk on both Regional and City Roads
Plow and apply material when snow reach/exceed 5cm, within 24 hrs

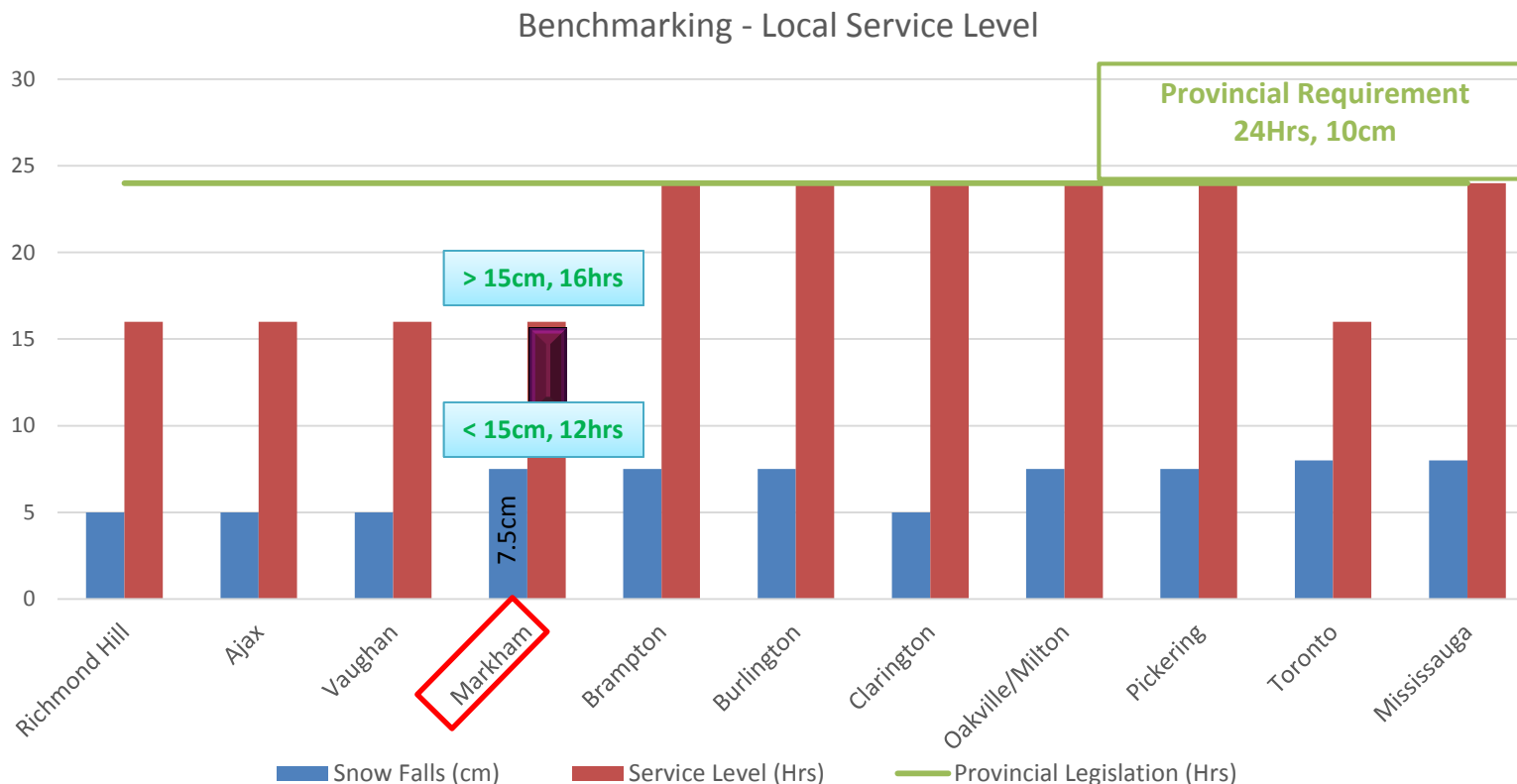
Review - Roadway Statistic by Wards

- The City-wide road network includes 864km (39.3%) of Primary, 164km (7.5%) of Secondary and 1,171km (53.2%) of Local and Rear lane.

WARD	LANE KM	REAR LANE KM	SIDEWALK KM		SENIOR WINDROW
			City	Region	
1	252	0	74	25	982
2	279	14	123	28	589
3	224	9	94	27	609
4	282	2	115	22	980
5	261	77	151	6	135
6	239	27	124	12	284
7	247	1	108	23	432
8	304	2	137	43	672
SUBTOTAL			926	186	
TOTAL	2087	133	1112		4683

Review of Service Level - Local

- Province legislate a Minimum Maintenance Standards



- ❖ The City complete a local road plow within 12 hours for snow falls less than 15cm, 16 hours for snow falls equal or more than 15cm.

Current - Windrow Removal Program

Windrow are unavoidable during plowing, other than rear lanes

- All residents in the household must be over 60 or have a disability
- Windrow removal clears one car width at the base of the driveway, after 7.5cm snowfall
- Clearing within 8 hours of the front facing street has been plowed
- Does not include sidewalk windrow
- City windrow program began in 1996
- Reduced Eligibility from 65 to 60 in 2008
- Currently 4683 approved residences
- In 2018/2019, average 1% (51) windrow was missed per storm out of 4,683 addresses, many of which were related to parked cars and winter condition

Review - Windrow Benchmarking

- 10 Municipalities were surveyed and only 2 provide windrow clearing for all residents. Vaughan provides this service to all and Toronto only in eligible areas (ie. mainly North York, Scarborough and Etobicoke)
- Based on 2016 census, approximately 40% of the City of Toronto's population do not receive a windrow removal
- Richmond Hill recently approved city wide windrow removal on March 25, 2019. Driveways located on regional roads, commercial, industrial, institutional, high-rise, private road and rear lane will not be included. The cost estimates for 55,000 driveways are:
 - In house service for \$4.38M
- Markham currently does not have the yard capacity to store all hired equipment required to provide this service
- Existing contracts expire 2022

Review - City-Wide Windrow Clearing

- Preliminary estimate based on the Vaughan windrow removal model. Approx. 81,000 driveways City-wide for Markham.
- Annual costs to the City is \$4.4M or 3% tax rate increase, if local service level remains 7.5 cm.
- **Not included: land acquisition, infrastructure, contractor capital costs, early contract termination costs**

Customer Expectations and Operational Impacts	Implications
Fast/speed	Equipment moves much slower, requires more equipment
Full driveway width including sidewalk windrow	Longer operation and sidewalk windrow not possible
Full roadway from curb to curb	Snow spill off leads to narrow roadway
Private property (borders, driveways, landscape)	Often damage
Built form impact	Condos and rear lanes won't receive this service
Works yard capacity	New yard is not yet available
Existing contracts expire in 2022	Early contract termination cost
Customer Complaints /Contact Centre	Increase in complaints – timeline, damage, sidewalk

Pathway – Current

- Pathways are different than sidewalks in terms of use and method of construction
- Pathways are intended for recreational usage while sidewalks are part of the transportation network
- Current practice is to plow concrete surface pathways that connect street to street, except where the grade is too severe or not properly illuminated to provide safe pedestrian passage
- Service levels for sidewalks are mandated by O. Reg. 239/02
- No legislated service level for pathways
- City pathways in parks, valley lands and those connecting the road network to unmaintained surfaces or private property (such as a school) are currently posted with “No Winter Maintenance” signs

Pathway - Review

- Staff presented to Council on June 27, 2016 General Committee regarding pathway winter maintenance review
 - A copy of the report can be accessed through [Winter Maintenance Windrow and Pathway Winter Maintenance Review](#)
 - A copy of the presentation can be accessed through [Winter Maintenance Windrow Rebate/Pathway Program Review](#)

Impacts to Service Delivery

- New Built Form



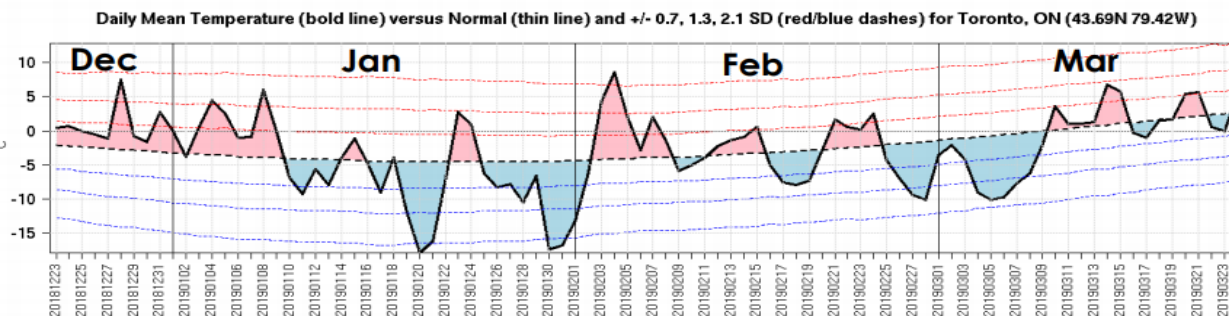
- Parking on Road



Impacts to Service Delivery

- Climate Changes - Fluctuating Weather Patterns
 - Increased frequency of ice and mixed precipitation
 - May recognize increased frequency of equipment breakdown
 - Requires longer clean up time

Winter 2018/2019 - Temperature



- Salt Supply & Capacity / Snow Storage Limitation
 - Salt supply / shortage – One location
 - Deployment
 - One snow storage site
 - Timing on new operations yard

Contact Centre Statistic on Calls

- Overall impact on the Contact Centre on winter maintenance represents between 9 -12% (3 years average) of daily calls 3 days post storm.

Date Range	Winter Maintenance ACR	Total ACR City Wide	Percentage
2018/2019 (November – April)	1,866	17,138	10.8 %
2017/2018 (November – April)	1,716	14,737	11.6 %
2016/2017 (November – April)	1,354	15,791	8.6 %

- Winter Maintenance call is heavily related to each storm event, such as 2018 April ice storm, 2019 January consecutive ice/snow storm.

Communication / Education

- Winter maintenance resident survey currently posted and live on Your Voice Markham website since May 17, 2019.
- Better communication and education with residents on City's program and service levels would help set expectation and understanding.

Next Step

- Staff to report back on June 17, 2019 on:
 - Summary of June 4, 2019 Workshop #1
 - Resident feedback from Your Voice Markham
 - Recommendations

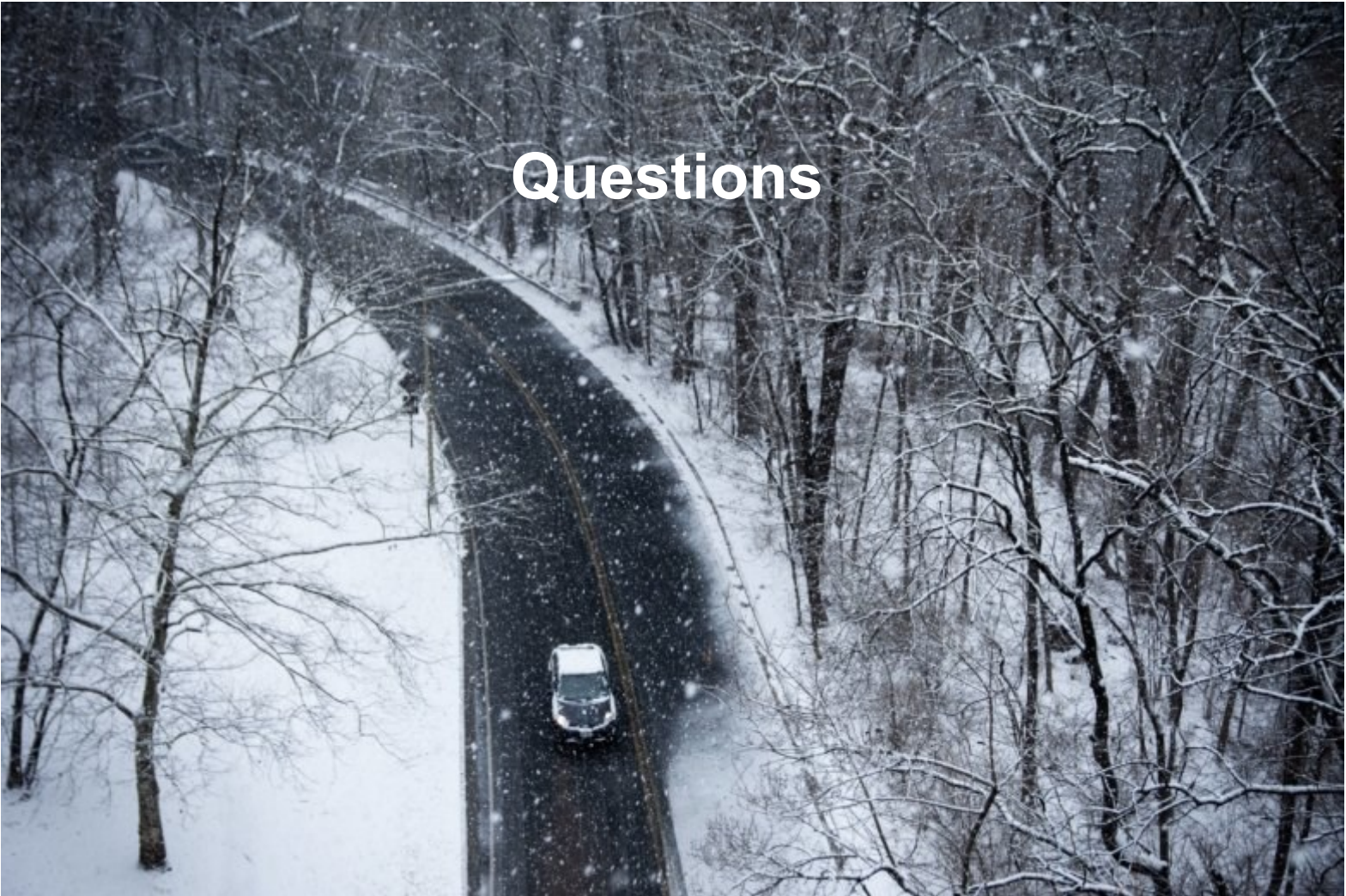
Round Table Discussion

- Members of Council will rotate to 3 tables for Discussion:
 - Table 1: Roads Service Level
 - Table 2: Windrow Removal
 - Table 3: Pathway / Impacts to Service Levels

Questions

- What do you believe is the Problem to solve?
- Based on the presentation and the financial implication, how do you see the City addressing question #1, and managing residents' expectations?
- What do you think the priorities are for this service area and overall for Winter Maintenance?

Questions





Briefing Note

Community and Fire Services Commission

Subject: Cost for Winter Maintenance Enhancement Options

Purpose and Background

The City of Markham is currently conducting winter maintenance review per Council request. Part of the exercise is to conduct a financial analysis on different enhancement options. Staff reviewed the existing program and budget against various alternatives based on common resident concerns. This briefing note summarized the findings in questions and answers format.

Discussion

Local Road Service Level

To improve local road service level, staff review options as outlined in the following table. Preliminary analysis is based on last 3 years historic average.

Options	Annual Cost	Increase Cost	Salt (Tonnage)	Material Costs	Equipment Costs
Current (Plow Local at 7.5 cm)	\$ 2,723,495		2970	\$ 240,910	\$ 2,482,585
Plow Local at 6 cm	\$ 4,357,592	\$ 1,634,097	4752	\$ 385,456	\$ 3,972,136
Plow Local at 5 cm	\$ 5,991,689	\$ 3,268,194	6534	\$ 530,002	\$ 5,461,687
Plow All Streets as Primary *	\$ 11,836,572	\$ 9,113,077			

* Salt consumption will be increased significantly

Windrow Assistance Program Enhancement

Preliminary estimate to improve timing of the current windrow assistance program:

	Current (8 Hours)	Reduce to 6 Hours	Reduce to 4 Hours
Equipment	15	23	30
Material	n/a	n/a	n/a
Staff	n/a	n/a	n/a
Operating Cost	\$ 227,450.70	\$ 341,176.04	\$ 454,901.39
Stand By Cost	\$ 114,174.72	\$ 175,067.90	\$ 228,349.44
Total Cost	\$ 341,625.42	\$ 516,243.95	\$ 683,250.83



Briefing Note

Community and Fire Services Commission

Preliminary estimate to provide windrow removal to approved resident situated on Primary and Secondary roads below 7.5cm criteria.

# Driveways	Rate	Occurrences	Total	Total Cost
1300	9.36	41	\$ 498,888.00	\$ 507,668.43

City Wide Windrow Program

5 cm service level for local plow

Vaughan's Model	Stand By	Operating	Total	Hauling for Locals	Budget
82,000 +/- Driveways	\$1,736,500	\$294,400	\$2,030,900	\$2,500,000	\$4,530,900
Markham	Stand By	Operating	Total	Hauling for Locals	Budget
81,000 +/- Driveways	\$1,736,500	\$294,400	\$2,030,900	\$2,500,000	\$4,530,900

7.5 cm service level for local plow

Vaughan's Model	Stand By	Operating	Total	Hauling for Locals	Budget
82,000 +/- Driveways	\$1,736,500	\$294,400	\$2,030,900	\$2,500,000	\$4,530,900
Markham	Stand By	Operating	Total	Hauling for Locals	Budget
81,000 +/- Driveways	\$1,736,500	\$147,200	\$1,883,700	\$2,500,000	\$4,383,700

Pathway Review

Preliminary cost analysis for both winter and spring maintenance:

Winter Maintenance	Length (km)	Cost Impact
Pathways in Parks/Valley land	151.76	\$ 306,382.19
Pathways to Schools	34.56	\$ 69,771.80
Total	186.32	\$ 376,154.00



Briefing Note

Community and Fire Services Commission

Spring Repair	Cost Impact	Assumption
Repair / Asphalt	\$ 12,390.00	10% of annual pathway resurfacing program
Turf Repair	\$148,869.68	10% of total pathway km of \$7.99/m in house maintenance cost
Limestone Repair	\$ 85,334.56	10% of total pathway km of \$2.29/m2 in house maintenance cost
Program Oversight	\$90,000	
Total	\$336,594.24	

Contact Person:	Alice Lam, Manager, Roads Operations		
Prepared By:	Alice Lam, Manager, Roads Operations	Department:	Operations
Date Finalized:	May 15, 2019		
Approved By:	Morgan Jones, Director, Operations Brenda Librecz, Commissioner – Community & Fire Services Commission		
Distributed To:	CAO Office Mayor and Council		

Template last revised: 2018-Oct-10 (ST)



Briefing Note

Community & Fire Commission

Subject: Historic Overview of Winter Maintenance (1997-2019)

Purpose and Background

The following information is a high-level summary of historical actions and milestones associated with the winter maintenance program from 1997-2019.

Discussion

- **2019**
 - **Winter Operations Service Level Review Workshop – Report to Special General Committee**
 - ongoing
- **2018**
 - **Service Change - Automatic Renewal for Windrow Assistant Program**
 - Resident who is approved in the windrow assistant program will automatically be renewed
 - Contact centre conduct screening and review
- **2016**
 - **Winter Maintenance Windrow Rebate Pilot and Pathway review – Report to General Committee**
 - Explore windrow rebate pilot program
 - Review of pathway winter maintenance
 - Council did not approve changes to existing program
- **2015**
 - **Winter Operations Service Level Review Workshop - Report to General Committee**
 - Review and evaluation all service level inclusive of city wide windrow
 - Winter Web App implemented
- **2013**
 - **Operations Facility Master Plan** provides a status update through an award to a consulting service contract to develop a facility master plan for the City. The status addresses constraints and challenges facing operations. Some of the issues identified;
 - **No increase in facility infrastructure in over 30 years.**
 - Existing building infrastructure outdated and requires constant repair
 - Material handling and storage not capable of meeting demands, eg, salt storage
 - Fleet maintenance shop at capacity
 - **Site security below standard, (Conformance to Bill 168)**
 - Existing Service levels at risk
 - **Winter Operations Service Standards Review-Report to General Committee**
 - **Directed Operations to increase hired tandems, sidewalk machines, loaders for Winter 2013-14 to meet service levels and increase the Operating Budget to reflect increases.**
 - Directed Operations to continue to offer existing 'Windrow Removal Program'
 - Directed Operations to work with York Region and Canada Post to better coordinate and improve related winter maintenance activities.



Briefing Note

Community & Fire Commission

- Work with Information Technology and Corporate Communications and Community Engagement staff to expand the current mobile application and web information
 - Enhanced services by the Contact Centre during severe winter storm events
- **Winter Operations Service Standards Review-Presentation**
 - Purpose and Background of the Review-current service levels
 - Stakeholder concerns of February 2013
 - Addresses Rear Lanes, Sidewalk, Windrow Clearing and Public Education
- **2012**
 - **Court of Appeal for Ontario Decision Affecting Municipal Defence of Winter Minimum Maintenance Standards: Giuliani v. Region of Halton et. Al**
 - Severely undermined defence afforded to municipalities in winter maintenance activities – ‘municipalities that has jurisdiction over a highway or bridge shall keep it in a state of repair that is reasonable in the circumstances’
 - **Markham has Levels of Service (LOS) that exceed Minimum Maintenance Standards**
 - **Markham has 24/7 road patrol during winter months**
 - **Operations Division Key Performance Indicators (KPI), was close to or met 100% since 2005**
 - Good record keeping is vital to our defence.
 - Ontario Good Roads Association –Action Plan
 - **Sidewalk Maintenance Costs on Regional Roads Within the City of Markham**
 - **Municipal Act 2001 downloads** responsibility of construction and ownership to municipalities
 - **Annual cost to City** to maintain these sidewalks, approximately **\$256K**
 - **Sidewalk replacement** cost forecast to be **\$465K** annually
- **2011**
 - **Town-Wide Windrow Clearing Service – Briefing Note**
 - Results of evaluation whether Town should pursue service level changes for windrow clearing
 - Required new tendering/RFP and Options for consideration
 - Based on Vaughan model – operating hours only, standby TBD, cost forecast would be **1.6M/year based on 5 storms**
 - Council did not approve changes to existing program
 - **‘At Your Service’ – Windrow Plowing Services Task Force –Terms of Reference**
 - Established by Council resolution, January 25, 2011
 - Evaluated the potential of establishing a new service level that provides Town wide windrow clearing program for Markham
 - Mandate, Deliverables, Membership and Roles/Responsibilities
 - Council did not approve changes to existing program
- **2010**
 - **Council Workshop – Winter Maintenance Review February 3, 2010**
 - Current Practices, Salt Management Plan Overview, review of concerns, discussion and follow-up action items
 - Inventory, Service Levels and Road Classification, Operational Service Level Improvements, ability to plow locals at 5 cm
 - Financial impacts
 - **\$160/320K** per season local plow



Briefing Note

Community & Fire Commission

-
- **\$365K** addressing secondary sidewalk improved service level
 - **City wide windrow 1.7M to 3.1M**
 - **Reduce age** ceiling on windrow removal to **60** years of age
 - Transit standing area improvements no longer required
 - **2008**
 - **Service Change - Winter Maintenance Service Level Review**
 - Operations be authorized to exercise professional judgement to when local roads should be plowed
 - **Reduction from 65 to 60 years of age for inclusion in 'Windrow Removal Program'**
 - Increase the 2008 budget by \$90K to cover cost to increase frequency of local road plowing and revised criteria for the windrow removal assistance program
 - Creation of working group consisting of members of Council and staff to review current winter maintenance levels of service and report back to Council in spring 2008
 - **2005**
 - **Driveway Windrow Clearing – Report to General Committee**
 - Background of current service delivery model as well as Town acting as facilitator to provide private windrow clearing contractor roster for residents to contact
 - City to notify contractors when snow clearing activation occurs triggering contractor activation to remove windrows. **Less than .05% homeowner participation in the program.**
 - Review of options for windrow removal program with comparisons made to Vaughan model
 - **Cost estimate included for two service delivery models, 1.2 M – 1.7M**
 - **2003**
 - **Report to Community Services and Environment Committee – Windrow Snow Clearing Pilot Project**
 - Project area identified to address clearing of snow windrows throughout the Town to those residents who do not qualify for existing windrow removal program
 - City issues roster of qualified contractors to provide service to residents for windrow and entire driveway
 - **2800 mail outs** issued to residents and only **30 residents** take opportunity to **participate** in the program
 - **1997**
 - **Extract Containing Operations and Maintenance Review in OPA 5 Joint File Report (File 10.3 & 5.0)(PI, NN)**
 - Report addresses overnight parking , service levels, sidewalk installation policy and monitoring of both for a period of one year and consider any modifications to service levels, parking policy and cost impacts
 - **Levels of service preferred to be for both Arterial and Primary road be 5cm or greater**
 - **Establish 'Snow Routes' to prohibit parking to clear accumulated snow**
 - **Lanes would receive snow removal when accumulations reached 15 cm or when severe rutting occurs and may not be completed for up to 3 days.**



Briefing Note

Community & Fire Commission

Contact Person:	Alice Lam, Manager, Roads Operations		
Prepared By:	Alice Lam, Manager, Roads Operations	Department:	Operations
Date Finalized:	May 15, 2019		
Approved By:	Morgan Jones, Director, Operations Department Brenda Librecz, Commissioner, Community & Fire Services		
Distributed To:	CAO Commissioner Community & Fire Services Mayor and Council		

Template last revised: 2018-Oct-10 (ST)



Briefing Note

Community & Fire Services Commission

July 9, 2018

Subject Title: Salt Management Plan - Winter Operations

Purpose

The purpose of this briefing note is to outline the City's salt management practice and commitment in achieving improved environmental protection without compromising road safety and to provide an update following the January meeting in which salt application rate impacts on private side property owners were discussed with the Mayor's office and senior Community and Fire Services staff.

Background

The Salt Management Plan (the Plan)

The City's Salt Management Plan is designed to set out a policy and procedural framework for ensuring that the City of Markham continuously improves the management of road and parking lot salt in winter operations. The Plan demonstrates the City's commitment to reduce the environmental effects of excessive salt use, consistent with the code of practices set out by Environment Canada.

In addition, the Plan establishes appropriate standards and best practices for salt application, salt storage and snow disposal. The City has had the Plan in place since 2005 with yearly updates provided to Environment Canada. All staff is responsible for ensuring that effective salt management practices, guidelines and procedures are followed and that services are provided in accordance with the policies outlined in the Plan. This will ensure effective winter maintenance for the safety of all roadway users in the City of Markham while striving to minimize the amount of salt entering the environment and at the same time meeting Provincial legislation related to road maintenance standards for winter services.

Highlight of City's Salt Management Practice

1. Equipment

- One-tonne sanders equipped with spreader control devices and its application rates is comparable to road sanding units.
- City owned sander/plow combination units equipped with anti-icing* equipment.
- City owned sander/plow combination units equipped with salt pre-wetting** application units.
- City hired combination contract specified all units must have pre-wetting capability.
- Supervisor, Working Supervisor and Patrol vehicles equipped with infrared thermometer to measure road surface temperatures
- City calibrates our road and parking lot de-icing units in house which allows us to adjust the salt application levels on a per occurrence basis based on specific weather events. Operators under direction of their Supervisors, have the flexibility to adjust the settings to accommodate specific conditions. For example, applications rates may be adjusted for black ice and frost and on steep grades conditions.
- All in-house and contracted units are equipped with AVL (automatic vehicle locators) to track the location and speed.

* Anti-icing is a proactive snow and ice control strategy whereby straight brine is sprayed directly on the road in advance of a storm. The term can also refer to early application of chemical in any form early in a storm to prevent the formation of the snow/road bond.



Briefing Note

Community & Fire Services Commission

July 9, 2018

**Pre-wetting is the application of a liquid to a solid material just prior to application to the road surface. Applying a liquid to the solid material helps the solid material “stick” to the road surface and not bounce away onto the shoulder. Liquid applied to a solid chemical also begins the process of brine formation and allows the chemical to act quicker.

2. Facility

- Miller Yard equipped with 60,000 litre brine tank station - Brine (23% NaCl, 77% Water) - \$0.15/L
- City installed two Road Weather Information System (RWIS) stations to provide Markham specific weather forecast.

3. Policy

- Developed a Good Housekeeping Policy minimizing material waste and environment impact in our yards

4. Training

- Developed comprehensive winter maintenance Operator Training Program for all Operations staff.
- Fleet staff are trained to calibrate City’s winter equipment. All in-house and hired staff receive annual training on calibration methods based on manufacturer’s recommendations and actual unit testing.
- Ongoing training for Supervisor and Working Supervisor with new technology and best practice.

5. Ongoing Improvement Projects

- Continue to upgrade City’s in-house and hired fleet to anti-icing and salt pre-wetting capabilities in new units where applicable.
- Continue to identify environmentally sensitive areas and develop procedures to reduce potential impacts of salt.
- Continue to identify snow storage / disposal sites to service new urban areas

Alternative Snow and Ice Control Materials

The usage of salts is essential for the safety and mobility of our transportation facilities. In order to alleviate the potential negative impacts of salt use to the environment, alternatives to chloride salts (organic or semi-organic) have been sought by industry for a decade now.

There are a lack of evaluation on the performance of these organic/semi-organic products in a real-world setting. The other major challenge is that there are no systematic study on any defendable guidelines for the recommended material application rates for transportation agencies to follow. This could lead to over usage on these materials.

Regardless of material cost and reliability, the City of Markham’s public works yard for equipment, material and snow storage is already at capacity. Until the City develops a new works yard to facilitate increased capacity, we are not in position to consider this product.

Update

As requested, City staff met in early June, 2018 to review the possibility of implementing a bylaw to impose application rates on private property owners, specifically large scale malls and commercial property owners. The intent would be to align service levels to existing City municipal lots. Staff do not support this initiative due to the following;



Briefing Note

Community & Fire Services Commission

July 9, 2018

- Imposing application rates on private property owners will expose the City to claims should the City be named in slip and fall incidents.
- Providing a list of qualified vendors will further expose the City should it be named in possible future claims.
- Public optic of advertising a list of vendors may prove to be negative for the City

Staff Recommendations

- The City should undertake more of an education position as regulation of salt use is a Federal role under the direction of Environment Canada. Possible solutions could include;
 - During winter months, add a link to Landscape Ontario's direction surrounding best practises for winter maintenance. This also provides a list of landscape vendors.
 - Provide a link to Environment Canada's Code of Practises surrounding winter application rates and practises.
 - Provide links to the Smart About Salt program and any other associated programs which may be beneficial to private property owners.

Distributed To:	CAO, Commissioner Community & Fire Services
Prepared By:	Alice Lam, Manager, Roads Operations/ Morgan Jones, Director, Operations
Contact Person	Alice Lam – extension 2748
Date Prepared:	January 9, 2018
Approved By:	Brenda Librecz, Commissioner, Community & Fire Services Morgan Jones, Director, Operations Department



Briefing Note

Community and Fire Services Commission

Subject: Vaughan Model - Winter Maintenance Financial Comparison

Purpose and Background

The City of Markham is currently conducting winter maintenance review per Council request. A component of the exercise is to conduct a financial comparison against the City of Vaughan's winter maintenance model. Staff reached out to the City of Vaughan and obtained last three years financial data. This briefing note summarized the findings.

Discussion

The following highlight the differences between the City of Vaughan's and the City of Markham's winter maintenance models.

Programs:

	Vaughan	Markham
Windrow Program	<ul style="list-style-type: none"> City wide removal since 2004 	<ul style="list-style-type: none"> Senior and disability removal (4,776 approved driveways in 2019)
Level of Service	<ul style="list-style-type: none"> Plow at 5 cm for all roads 	<ul style="list-style-type: none"> Bare pavement for Primary and Secondary roads Plow at 7.5 cm for local roads
Sidewalk Program	<ul style="list-style-type: none"> 100% in house 	<ul style="list-style-type: none"> 90% contracted and 10% in house
Salt Consumption	<ul style="list-style-type: none"> Salt to achieve bare surface citywide when snow less than 5cm. Use significantly more salt 	<ul style="list-style-type: none"> Plow to achieve bare surface on Primary/Secondary roads, followed with salt to de-ice

Network Size:

	Vaughan	Markham
Operations Yard		
# Yards (with salt distribution)	3	1
Yard Area (sq. meter)	153,845	41,076
Salt Dome Capacity (tonnage)	28,000	8,000
Network Size		
Primary (Class 2 and 3)	225 km	864 km
Secondary (Class 4)	994 km	164 km
Local (Class 5)	1,000 km	1,171 km
Rear Lane (Class 6)	13 km	133 km
Sidewalk	1,018 km	1,078 km
# of residential driveways	82,000	81,000



Briefing Note

Community and Fire Services Commission

Financial:

Winter Season	Vaughan		
	Budget*	Actual *	Variance
2017/2018	\$10,438,736	\$13,124,937	-\$2,686,201
2016/2017	\$10,131,930	\$13,399,066	-\$3,267,136
2015/2016	\$9,956,931	\$9,412,519	\$544,412

*Vaughan sidewalk program is conducted in house, however budget and actual provided by Vaughan do not include non-personnel cost (i.e. equipment, fuel, insurance, etc). The non-personnel sidewalk cost is estimated to be \$2.5M in addition.

Winter Season	Markham		
	Budget	Actual	Variance
2017/2018	\$9,056,078	\$7,916,938	\$1,139,140
2016/2017	\$9,010,532	\$8,909,770	\$100,762
2015/2016	\$8,757,448	\$6,465,047	\$2,289,401

Comparison

Winter Season	Vaughan Actual	Markham Actual	Actual Variance
2017/2018	\$13,124,937	\$7,916,938	\$5,207,999
2016/2017	\$13,399,066	\$8,909,770	\$4,489,296
2015/2016	\$9,412,519	\$6,468,047	\$2,944,472

Winter Season	Vaughan Salt Consumption	Markham Salt Consumption	Variance
2017/2018	37,028 t	26,213 t	10,815 t
2016/2017	42,580 t	19,533 t	23,047 t
2015/2016	24,274 t	19,276 t	4,998 t



Briefing Note

Community and Fire Services Commission

Findings

- Vaughan's financial budget has not been updated for a number of years to reflect the actual cost of their winter maintenance program. Vaughan advised the 2019/2020 winter budget would reflect historic actual expenditure.
- Vaughan is currently retaining consulting service to conduct winter maintenance level of service review.
- Vaughan's winter financials in both budget and actual does not include the full budget such as in house sidewalk non-personnel costing.
- Vaughan utilize salting operation instead of plowing to avoid windrow clearing.
- The contractor manages Vaughan resident winter maintenance complaints inclusive of the windrow program.

Conclusion

- Vaughan's average expenditure is 54% (\$4.21M) higher than Markham excluding the in house sidewalk non-personnel cost that is approximately \$2.5M.
- Vaughan consumes 60% (12,953 tonnes) more salt on average in comparison to Markham.

Attachments

- Vaughan Maintenance Model Costing Comparison

Contact Person:	Alice Lam, Manager, Roads Operations		
Prepared By:	Alice Lam, Manager, Roads Operations	Department:	Operations
Date Finalized:	March 28, 2019		
Approved By:	Morgan Jones, Director, Operations Brenda Librecz, Commissioner – Community & Fire Services Commission		
Distributed To:	CAO Office		

Template last revised: 2018-Oct-10 (ST)



Briefing Note

Community and Fire Services Commission

Subject: Driveway Windrow Removal Assistance Program

Purpose and Background

A snow windrow is an accumulation of snow at the end of the driveway created when a plow pushes snow to the side of the roadway. While residents are responsible for removing the snow windrow from their driveway, the Markham Driveway Windrow Removal Program is available to all residents of Markham that are over the age of 60 years or have a disability where assistance is required to remove their windrow. The windrow removal service will be completed within eight (8) hours of the local street snowplow is completed.

Discussion

In order to receive assistance in removing a portion of the windrow on your driveway (limited to one car width), each person must meet the following requirements:

- If over the age of 60 years or younger than the age of 12 years, they must have a documented proof of age;
- If between the ages of 12 - 60 years, they must have a doctor's certificate identifying that they are unable to shovel and provide proof of their age through one of the following:
 - Driver's Licence;
 - Birth Certificate;
 - Ontario Health Card;
 - Citizenship Card or Passport.
- The primary resident must provide proof of Markham residency through one of the following documents:
 - Driver's Licence;
 - City of Markham tax bill;
 - Recent public utility bill.
- If proof of Markham residency (such as a Driver's Licence) identifies proof of age, then no other documentation is required.
- If valid documentation cannot be provided, please call the Contact Centre at 905-477-5530 or customerservice@markham.ca.

Key Messages

- The Driveway Windrow Removal Assistance Program is eligible to all residents of Markham over 60 years of age or with disabilities, who requires assistance removing the snow windrow.
- The Windrow Application form is available on line at www.markham.ca. Those residents who have been in the program in previous years do not need to fill out new applications, but are required to contact the Markham Contact Centre if they wish to be provided with assistance.
- Valid documentation identifying, proof of age, residency and disability (if under 60) is required yearly to be eligible for the program.



Briefing Note

Community and Fire Services Commission

Contact Person:	Mayor and Council		
Prepared By:	Alice Lam, Manager, Roads Operations	Department:	Operations
Date Finalized:	October 25, 2018		
Approved By:	Morgan Jones, Director, Operations Brenda Librecz, Commissioner – Community & Fire Services Commission		
Distributed To:	Mayor & Council		

Template last revised: 2018-Oct-10 (ST)



Briefing Note

Community & Fire Services Commission

Subject: Winter Maintenance Service Levels

Purpose and Background

The Operations Department provides efficient, cost effective and consistent winter maintenance services for the safe passage of vehicular and pedestrian traffic on streets and sidewalks under the operational jurisdiction of the City of Markham. Council approved service levels for winter maintenance either meet or exceed provincially regulated Minimum Maintenance Standards (MMS) as required in *ON Reg. 239/02*.

Discussion

Markham utilizes a variety of equipment and the effective use of road salt to meet Council-approved levels of service for all City of Markham owned roads and sidewalks. Level of service is prioritized and dictated by road classification as identified in MMS *ON Reg. 239/02*.

Arterial Roads: are designed to carry large volumes of traffic to Regional arterial roads. They include transit and emergency routes for ambulance, fire, and police.

- Salted and/or plowed to achieve a 'bare surface' condition, 24 hours a day, 7 days a week throughout the winter season;

Primary Roads: are collector roads that distribute traffic to both City and Regional arterial roads. They provide access to schools, churches, community centers and industrial/commercial areas.

- Salted and/or plowed to achieve a 'bare surface' condition, 24 hours a day, 7 days a week throughout the winter season;

Secondary Roads: serve as local collector roads which distribute traffic onto primary roads. They include roads with extreme hills, curves and access points.

- Salted and/or plowed as required to achieve centre bare conditions between the hours of 7:00 a.m. and 6:00 p.m. 7 days a week throughout the winter season;
- Between the hours of 6:00 p.m. and 7:00 a.m. roads will be kept in a condition where traffic can move without undue difficulty.

Local Roads/Lanes: generally carries very low volumes of traffic and are not intended to carry through traffic. Lanes provide access to garages and parking spaces at the rear of homes and business.

- Acceptable in a snow packed condition;
- Plowing will be carried out only when snow accumulations reach or exceed 7.5 cm. If the snowfall is continuing, plowing will commence once snowfall ceases or accumulations exceed 12cm;
- Normal plowing operation will take approximately 16 hours;
- Snow plowing is ongoing until completed.

Cul-De-Sacs

- A follow up cleaning operation takes place using front end loaders or auxiliary equipment which clears the outside boundary of the cul-de-sac, piling the snow towards the centre of the cul-de-sac.
- This service is provided within 24 hours after plowing operations have been completed.
- This snow will remain in the centre of the court until it has exceeded the storage capacity



Briefing Note

Community & Fire Services Commission

Sidewalks:

- Markham maintains all sidewalks within the City and Regional road allowances.
- Sidewalks are plowed and salted/sanded once accumulations reach 5cm or more.
- Priority service is given to locations near schools and bus stops. Primary sidewalks are completed within the first 12 hours after the storm.
- If accumulations are significant then secondary walks are completed the next day.

Bus Stops / Bus Shelters:

- York Region Transit is responsible for all snow removal at bus stops. For Customer Concerns/Inquiries regarding snow removal at bus stops, please call 905-762-2100.

On-street Parking:

- Parking Control By-law 2005-188 prohibits parking of vehicles on streets at any time if it interferes with snow removal operations and are subject to a \$150 fine and/or towing.
- In very limited areas where overnight on-street parking is permitted, snow will be cleared to the curb line of all roads, when possible.
- The snow will be plowed adjacent to parked vehicles and the owners or the parked vehicles will be personally responsible to clear the snow in order to proceed from their respective parking spaces.

Mail Boxes:

- Canada Post is responsible for maintaining all super mail boxes and removing the paper litter debris surrounding it. For Customer Concerns/Inquiries regarding snow removal and paper litter debris at super mail boxes, please call Canada Post at 1-866-607-6301.

Resident Information on Status of Plowing:

- Residents are able to view status of equipment during winter events through the City's web page. All in house and hired equipment have Automatic Vehicle Locators in them. Residents can observe road and sidewalk network completion as the mapping is refreshed every hour during all winter events.

Salt Management:

- The City has a Salt Management Plan in compliance with Federal legislation under Environment Canada (EC). The Plan sets out policy and procedural framework to ensure the City of Markham continuously improves the management of salt in winter operations. The Plan demonstrates the City's commitment to reduce the environmental effects of excessive salt use, consistent with the code of practices set out by EC.
- In addition, the Plan establishes standards and best practices for fleet GPS tracking, salt application, salt storage and snow disposal. The City has had the Plan since 2005 with annual updates submitted to EC per federal legislation. This will ensure effective winter maintenance for the safety of all roadway users while striving to minimize the amount of salt entering the environment.
- The City's in truck computer control device measures salt applications in every vehicle to ensure compliance with standards.

Challenges

- As a result of many years of growth, the need for a new public works facility continues to impact service delivery to the east and north end of the City. 555 Miller Avenue has exceeded its capacity and without a new facility this restricts the Operations Department ability to manage service levels or increase service levels should Council wish to improve them until a new facility is constructed.



Briefing Note

Community & Fire Services Commission

- Resident expectations are increasing with intention to move unimpeded across the City regardless of the type and timing of winter events. Timing of mobilization of activities now require earlier dispatching of equipment to address resident concerns.
- Winter material storage requirements has far surpassed operational needs. As a result, salt is supplied on demand once activities begin. Current salt shortage has reduced service levels in certain areas and should the City's demand out weigh supply, service level non-compliance has exposed the City to risk related to claims.
- The City currently contracts out over 90% of its winter service delivery. Snow events in early November or late April are difficult to manage with limited resources as existing seasonal contract requirements dictate mid-November commencement and end of March termination. A typical weather event over 3 inches of measured depth is completed within 16 hours in alignment to Council approved service levels however shoulder events can be as long as 24-48 hours. The cost to extend stand by services to shoulder seasons can be costly, close to \$1.5 million per shoulder season. Staff will continue to monitor these shoulder seasons.

Budget

Markham's 2018 Winter Maintenance Budget based on current service levels (5 full network plows):

	Stand By	Operating	Total Budget
Equipment	\$ 2,165,388	\$ 3,334,111	\$ 5,499,499
Sidewalks	\$ 629,145	\$ 1,853,514	\$ 2,482,659
Salt & Other*	N/A	N/A	\$ 1,719,703
Total	\$ 2,794,533	\$ 5,187,625	\$ 9,701,861

* other includes sand, calcium, mobile radio air time, snow hauling Main Streets

Key Messages

- Winter maintenance service levels are Council approved and exceed the Minimum Maintenance Standards (MMS) legislated by the Province.
- Service levels are determined primarily by road classification, although other safety factors may be considered on a location-specific basis.
- Parking Control By-law 2005-188 prohibits the parking of vehicles on streets at any time if it interferes with snow removal operations. Parked vehicles which interfere with snow removal are subject to a \$150 fine and/or towing.

Attachments

- Winter Operations Frequently Asked Questions(FAQ)

Contact Person:	Alice Lam, Manager, Roads Operations		
Prepared By:	Alice Lam, Manager, Roads Operations	Department:	Operations
Date Finalized:	November 20, 2018		
Approved By:	Morgan Jones, Director, Operations Brenda Librecz, Commissioner, Community & Fire Services Commission		
Distributed To:	Mayor & Council		



Briefing Note

Community & Fire Services Commission

Template last revised: 2018-Oct-10 (ST)



Briefing Note

Community & Fire Services Commission

Subject: Review of Proposed City Wide Snow Windrow Service

Purpose

This briefing note provides an overview of work undertaken by staff regarding City wide snow windrow clearing program. Impacts considered relate to customer service, operational and the financial changes needed to meet service levels. A windrow is the snow remaining at the end of a driveway after the road snow plowing has been completed.

Background

Winter Operations Workshops have been held in each Council term over the past 3 terms to consider options to improve service levels including consideration of a City-wide snow windrow clearing program. The last workshop was undertaken in 2015.

In a September 20, 2013 report to General Committee, entitled 'Winter Operations Service Standards Review', Council approved improvements to the current program regarding rear lane snow plowing to accommodate growth in any given budget year. A City wide windrow service level was presented but was not approved by Council primarily due to the tax rate impact associated with the implementing windrow removal. The existing 'Windrow' removal program was further supported by Council.

Discussion

Options Considered

Operations staff contacted both the Cities of Toronto and Vaughan to review programs currently in place. Staff chose to further explore the City of Vaughan model for review due to its similarities to Markham, (geographic area, population, housing and infrastructure built form, traffic patterns and climate). Windrow clearing equipment only removes the windrows from single car or half of double car driveways.

City of Vaughan Model

The City of Vaughan's service level requires additional contracted equipment hired exclusively for the purpose of clearing windrows at the ends of driveways. Generally, an additional loader or tractor is assigned to the same route as each of the primary road clearing units. They follow behind and clear the end of each driveway as the road is cleared. This slows down the road plowing requiring additional resources to meet service levels.

Markham's current service delivery model requires 44 local road plows. In order to implement the Vaughan model, this number would increase to 110 hired units.

As the windrow clearing slows down the road plows, the number of plows is required to increase. The proposed program requires two local road plow units which clear the windrows as they plow. Two route machines operate in tandem, the first plowing the centre of the road and the second plowing to the curb and removing the driveway windrow at the same time. Additionally, plow route lengths are reduced from 26 lineal kilometres to 20 to accommodate slower operating speeds in order to meet a 12-16 hour plow window while removing windrows increasing the overall equipment complement. Based on the Vaughan model, the additional cost to undertake City-wide windrow removal would be approximately 4.5M annually.



Briefing Note

Community & Fire Services Commission

Financial Considerations

Markham's 2018 Winter Maintenance Budget based on current service levels (5 full network plows):

	Stand By	Operating	Total Budget
Equipment	\$ 2,165,388	\$ 3,334,111	\$ 5,499,499
Sidewalks	\$ 629,145	\$ 1,853,514	\$ 2,482,659
Salt & Other*	N/A	N/A	\$ 1,719,703
Total	\$ 2,794,533	\$ 5,187,625	\$ 9,701,861

* other includes sand, calcium, mobile radio air time, snow hauling Main Streets

Considerations/Implications:

1) Customer Service Considerations

It is thought that implementing a snow windrow removal program in Markham would be well received by residents. Following implementation in Vaughan, complaints to the city have more than doubled during winter storms. Issues raised by residents include the following:

- Time required to clear windrows (staff advised that original service was within approx. 3 to 4 hours following road plowing. This was modified to 'at same time' service provision which is included in these estimates for service delivery model). Vaughan reports an estimated 200 hours of increased idling time tied to 'at same time' service provision.
- Full width of driveway not completely opened up (after repeated plowing, space is compromised)
- Complaints regarding relatively small amounts of snow from windrow left in the driveway (Vaughan advised that in order to provide timely response to many of the concerns raised, the City's operations staff are forced to dispatch additional in-house equipment to address some of these problems).
- Other issues related to the program include parked cars blocking access and sidewalk windrow removal requests increased.

2) Limited snow storage

The narrow lot frontages on wide corners severely restricts snow storage areas between driveways which would make it impractical to clear the entire single driveway without specialized equipment to possibly dump the snow at open boulevard areas along the street, or alternatively load and haul snow at additional expense. The reasonable solution would be to only clear approximately 75% of the single driveway opening and use the remaining space for storage. Some homeowners may not consider this an equitable solution considering others on the street may receive a different service level (single car lane). In addition, obstructions caused by vehicles parked on the street may severely restrict an equipment operator's ability to clear windrows and/or further reduce snow storage areas.

3) Damage to 'private' property

Many homeowners have invested in landscape features within the boulevard area including patterned concrete, unit pavers, and driveway borders. Even though they are advised not to do so and if the City needs to do repair work on our boulevard, the homeowner would pay to restore. There is potential for damage to these types of landscape features when clearing windrows from the ends of private residential driveways.

4) Equipment Storage

Current contracts for local road plowing don't allow for equipment storage at City facilities due to lack of space provided by the City. Cost to rent property to house existing local road plow units is contained in



Briefing Note

Community & Fire Services Commission

prices bid. In order to accommodate equipment and quickly load salt, a second public works facility in the east end of the City would need to be in place as per the Operations Facility Master Plan.

- 5) **Managing Public Expectations:** A multi-faceted communication strategy would need to be implemented to communicate service levels to the public so that they understand when windrows will be cleared (full width on a single loading driveway or half on a double driveway) and that some residual snow will remain. Some residents expect faster service and don't clearly understand Council approved service levels.
- 6) **Customer Complaints:** Significant increase in customer complaints following implementation of City wide windrow clearing program in Vaughan. The City of Markham receives approximately 100 complaints following a typical storm regarding its current windrow removal assistance program of 4,100 applicants. The number of complaints will significantly increase if the program is available to all residents.
- 7) **Service Not Available to All:** As the City continues to build intensified development, more residents will reside in high-rise and rear lane subdivisions, i.e., Langstaff, Markham Centre, York Downs and the Future Urban Area. As the population increases in these areas, the number of residents who will not benefit from this service will increase.

Timing of Implementation

The City could not proceed with service level changes until a new East Yard is operational with salt and snow storage and vehicle assembly.

Any proposed windrow clearing program would require further staff review of financial implications of a potential model(s). A planning cycle of approximately 18 months is required prior to implementation.

Implementation of a City wide program would require preparation of a tender document and completion of the bid analysis and contract award process in order to provide bidders with a reasonable amount of time to purchase required equipment.

In addition, there are existing contracts for local road plowing that include both equipment standby and windrow clearing services for seniors and disabled persons. Purchasing and Operations staff will have to re-visit the contracts to explore options to negotiate changes in advance of any tender awards for City wide windrow clearing services.

Key Messages

- The 2013 report to General Committee, entitled 'Winter Operations Service Standards Review' did not receive approval primarily due to the tax rate impact associated with the implementing windrow removal.
- The City offers Windrow Removal Assistance Program to disabled and senior residents who meet the program requirement.
- The combined costs associated with the city wide windrow clearing and snow removal requirements total approximately \$4,438,400 per year.
- The City's East Operations facility needs to be operational before any service changes occur. The process to acquire and construct a new east facility will take 3-5 years.
- The number of complaints will significantly increase if the program is available to all residents.



Briefing Note

Community & Fire Services Commission

Attachments

- N/A

Contact Person:	Alice Lam, Manager, Roads Operations		
Prepared By:	Alice Lam, Manager, Roads Operations	Department:	Operations
Date Finalized:	November 20, 2018		
Approved By:	Morgan Jones, Director, Operations Brenda Librecz, Commissioner, Community & Fire Services Commission		
Distributed To:	Mayor & Council		

Template last revised: 2018-Oct-10 (ST)

2017/2018 Winter Maintenance

			Financial Budget				Financial Actual		
	# Equipment	# Staff	# Occurence	Non-Personnel	Personnel	Total	Non-Personnel	Personnel	Total
Primary (Class 2 and 3)	77	75	42	\$5,757,877	\$438,877	\$6,196,754	\$6,654,077	\$564,261	\$7,218,338
Secondary (Class 4)	77	75	42						
Local (Class 5)	77	75	42						
Rear Lane (Class 6)	2	2	42						
Wide Corner, Cul de Sac	12	12	10						
Snow load and haul		#N/A	2	\$201,040	\$0	\$201,040	\$6,168	\$45,408	\$51,576
Snow load and haul for Local		#N/A	#N/A						
Windrow - driveways (within 4 hours, one car width)	46	46	10	\$1,299,329	\$0	\$1,299,329	\$1,501,545	\$2,817	\$1,504,362
Sidewalk (in house)	50	52					\$905,356		\$905,356
Material / Support									
Quantity Used									
Salt			37,028 t	\$2,733,165		\$2,733,165	\$3,441,421		\$3,441,421
Sand			250 t	\$8,448		\$8,448	\$3,884		\$3,884
Total				\$9,999,859	\$438,877	\$10,438,736	\$11,607,095	\$1,517,842	\$13,124,937

Vaughan Total Actual	\$13,124,937
Markham Total Actual	\$7,916,938
Variance	\$5,207,999

2016/2017 Winter Maintenance

				Financial Budget			Financial Actual		
	# Equipment	# Staff	# Occurence	Non-Personnel	Personnel	Total	Non-Personnel	Personnel	Total
Primary (Class 2 and 3)	77	75	45	\$5,681,197	\$393,276	\$6,074,473	\$6,547,148	\$432,511	\$6,979,659
Secondary (Class 4)	77	75	45						
Local (Class 5)	77	75	45						
Rear Lane (Class 6)	2	2	45						
Wide Corner, Cul de Sac	12	12	6						
Snow load and haul		#N/A	7	\$199,464	\$28,228	\$227,692	\$321,049	\$54,901	\$375,949
Snow load and haul for Local		#N/A	#N/A						
Windrow - driveways (within 4 hours, one car width)	46	46	6	\$1,274,325	\$393	\$1,274,718	\$1,151,106	\$11,376	\$1,162,482
Sidewalk (in house)	50	52					\$137,211	\$783,717	\$920,928
Material / Support									
Quantity Used									
Salt			42,580 t	\$2,546,599		\$2,546,599	\$3,957,415		\$3,957,415
Sand			150 t	\$8,448		\$8,448	\$2,633		\$2,633
Total				\$9,710,033	\$421,897	\$10,131,930	\$12,116,562	\$1,282,504	\$13,399,066

Vaughan Total Actual	\$13,399,066
Markham Total Actual	\$8,863,446
Variance	\$4,535,620

2015/2016 Winter Maintenance

			Financial Budget				Financial Actual		
	# Equipment	# Staff	# Occurrence	Non-Personnel	Personnel	Total	Non-Personnel	Personnel	Total
Primary	91	88	30	\$5,632,179	\$278,765	\$5,910,944	\$5,146,024	\$326,459	\$5,472,483
Secondary			30						
Local			30						
Rear Lane			30						
Wide Corner, Cul de Sac			2						
Snow load and haul				\$195,932	\$68,456	\$264,388	\$22,497	\$27,319	\$49,817
Snow load and haul for Local									
Windrow - driveways (within 4 hours, one car width)	39	39	2	\$1,243,275	\$793	\$1,244,068	\$1,052,744	\$3,453	\$1,056,197
Sidewalk (in house)	50	52					\$60,570	\$517,438	\$578,008
Material / Support									
Quantity Used									
Salt			24,274 t	\$2,527,083		\$2,527,083	\$2,256,015		\$2,256,015
Sand				\$10,448		\$10,448	\$0		\$0
			Total	\$9,608,917	\$348,014	\$9,956,931	\$8,537,850	\$874,669	\$9,412,519

Vaughan Total Actual	\$9,412,519
Markham Total Actual	\$6,416,328
Variance	\$2,996,191

2017/2018 Winter Maintenance

			Financial Budget				Financial Actual		
	# Equipment	# Staff	# Occurence	Non-Personnel	Personnel	Total	Non-Personnel	Personnel	Total
Primary (Class 2 and 3)	26	26	41	\$2,010,316			\$1,968,147		\$1,968,147
Secondary (Class 4)	26	26	41						
Local (Class 5)	88	88	7	\$1,732,007			\$2,025,965		\$2,025,965
Rear Lane (Class 6)	44	44	7	\$1,244,677			\$1,252,337		\$1,252,337
Wide Corner, Cul de Sac	44	44	7						
Snow load and haul		#N/A	4	\$123,859	\$0		\$108,984		\$108,984
Snow load and haul for Local		#N/A							
Windrow - driveways (within 8 hours, one car width)	14	14	7				\$355,707		\$355,707
Sidewalk	42	42		\$2,334,654			\$2,420,905		\$2,420,905
Material / Support									
Quantity Used									
Salt			26,213 t	\$1,597,034			\$2,170,465		\$2,170,465
Sand			2,428 t	\$13,531			\$35,333		\$35,333
Total				\$9,056,078			\$7,916,938		\$7,916,938

2016/2017 Winter Maintenance

				Financial Budget			Financial Actual		
	# Equipment	# Staff	# Occurence	Non-Personnel	Personnel	Total	Non-Personnel	Personnel	Total
Primary (Class 2 and 3)	24	24		\$1,998,249			\$1,820,753		\$1,820,753
Secondary (Class 4)	24	24							
Local (Class 5)	44	44		\$1,721,344			\$1,406,864		\$1,406,864
Rear Lane (Class 6)	36	36		\$1,266,523			\$1,396,093		\$1,396,093
Wide Corner, Cul de Sac	36	36							
Snow load and haul									
Snow load and haul for Local									
Windrow - driveways (within 4 hours, one car width)	13	13					\$185,817		\$185,817
Sidewalk (in house)	40	40		\$2,323,204			\$1,840,116		\$1,840,116
Material / Support									
Quantity Used									
Salt			19,533 t	\$1,588,823			\$2,189,138		\$2,189,138
Sand			925 t	\$13,530			\$24,665		\$24,665
Total				\$8,911,673			\$8,863,446		\$8,863,446

2015/2016 Winter Maintenance

				Financial Budget			Financial Actual		
	# Equipment	# Staff	# Occurence	Non-Personnel	Personnel	Total	Non-Personnel	Personnel	Total
Primary	23	23		\$1,970,864			\$1,658,483		\$1,658,483
Secondary	23	23							
Local	44	44		\$1,679,999			\$1,372,002		\$1,372,002
Rear Lane	36	36		\$1,196,732			\$718,994		\$718,994
Wide Corner, Cul de Sac	36	36							
Snow load and haul									
Snow load and haul for Local									
Windrow - driveways (within 4 hours, one car width)	12	12					\$169,199		\$169,199
Sidewalk	40	40		\$ 2,249,155			\$1,610,320		\$1,610,320
Material / Support									
Quantity Used									
Salt			19,276 t	\$1,541,668			\$866,000		\$866,000
Sand			1,400 t	\$20,171			\$21,330		\$21,330
Total				\$1,561,839			\$6,416,328		\$6,416,328

Notes

- ¹ Seasonal budgets are interpolated from successive annual budgets, i.e., 40% from first year and 60% from second year
- ² 2019 budget data not available at time of writing
- ³ Financial data includes standby and operating costs
- ⁴ 2019 expense processing is on-going and may not include March and some February expenses
- ⁵ Equipment for 2016/17 through 2018/19 winters includes 51 contractor and 5 internal roads maintenance vehicles, 16 contractor Customer Service Representatives, 5 loaders and 2 inter
- ⁶ Standby rates are for contractor vehicles
- ⁷ Operating rates are weighted averages of contractor rates
- ⁸ Salt usage is an estimate only based on contract price; prices may vary depending upon time of purchase and contract conditions
- ⁹ 2018/19 usage is approximately 39,000 tonnes as of March 20, 2019; usage includes Roads, Sidewalks and Facilities
- ¹⁰ Work Orders generated as a result of inquiries and complaints are used as a proxy for resident complaints
- ¹¹ Roads and windrow Work Orders are addressed primarily by contractor Customer Service Representatives (CSRs)
- ¹² Please contact if additional information required

Winter Maintenance Windrow Rebate/Pathway Program Review

**General Committee
June 13, 2016**

Morgan Jones, Manager, Roads Operations

Background – Existing Windrow Clearing Program

- City-wide
- Approx 3,500 Households as of May 2016 (2016 budget of \$237,270 included windrow removal service for 3,200 households)
- Increasing approx 200/year
- Proof required >60 years or Doctor certificate unable to clear snow (age 12-59)

Rebate Program – Potential Challenges

- Increased demand for rebates may increase City costs
- Decreased customer satisfaction
 - City plow trucks fill in driveway after hired contractor cleared snow
 - Proof required that licensed contractor was hired
- Residents manage own contractor/service delivery
- Residents may not wish to spend money on previously City provided “Free Service”
- Increased staff time: applications/documentation/rebates

Should Council Wish to Consider Pilot – Consider Following:

- Two wards with voluntary participation.
- In order to qualify for the pilot program, residents must have been a 2016-2017 program registrant and meet the City's current windrow clearing program criteria.
- Qualified pilot program residents will be required to obtain and manage their individual snow clearing requirements through contracted services independent of the City.
- The City will offer a rebate of \$70 per household to those homeowners that have hired a contractor to provide the service.
- Pilot program to be capped at 200 residents in total.
- Pre-qualified homeowners will be required to provide official documentation of final invoice from contractor as proof of services rendered by May 1st of the following year.
- Cost of the pilot is estimated to be \$14,000 (\$70 x 200 participants), which will be reallocated within the proposed windrow budget. Additional resources will be required in Accounts Payable, Contact Centre, and Corporate Communications. These costs will be tracked and monitored as part of the pilot.

Windrow Subsidy Pilot Program Details Cont'd

- Pilot program would commence in the 2017-18 season (Nov 2017 to Mar 2018).
- Evaluation criteria will be developed including a survey on participant feedback to determine the success of the program and provide information for further recommendations.
- Staff will report back to Council after completion of the pilot project to provide our recommendation for Council consideration.

Pilot Project Timeline:

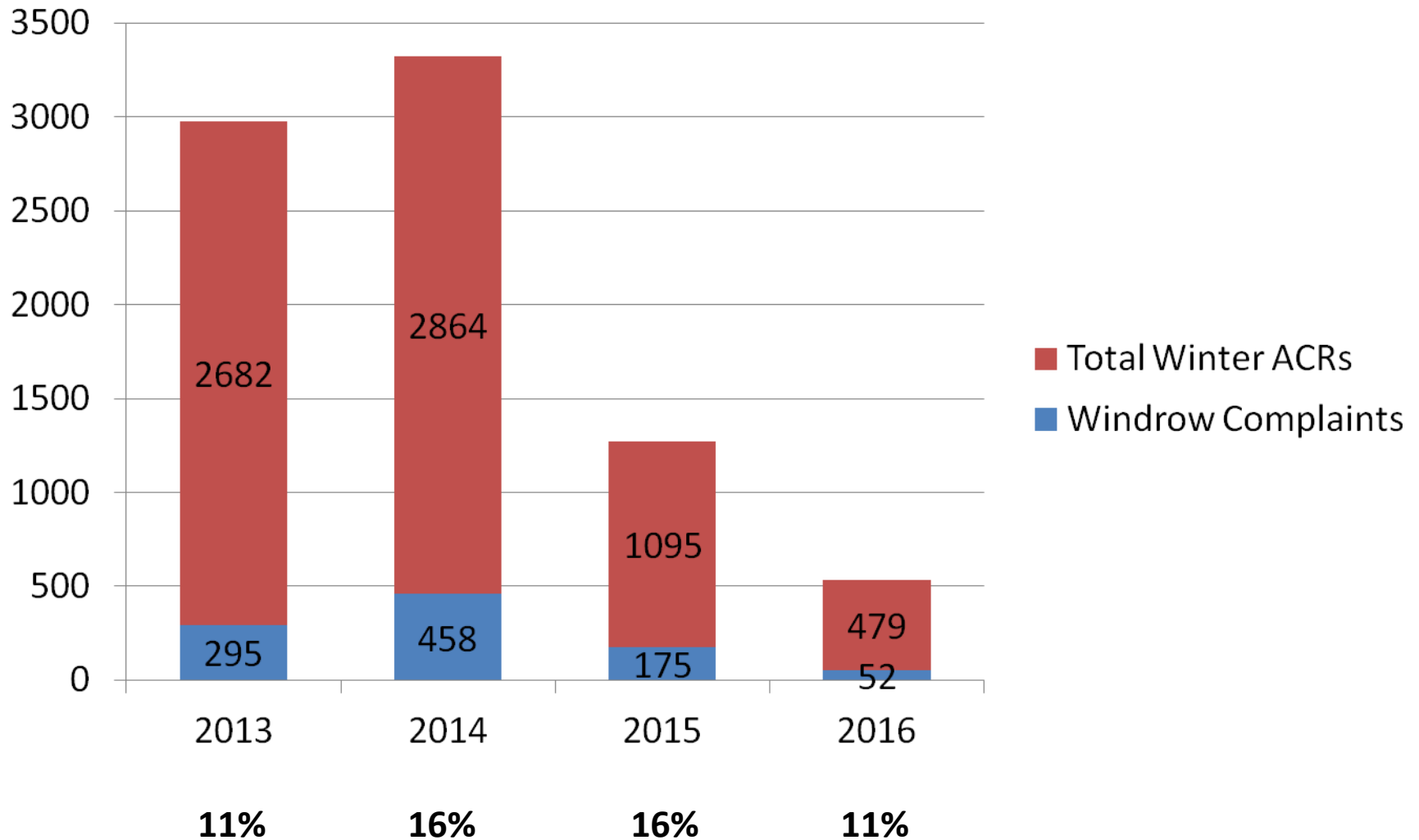
September 2016	2017	Fall 2017	May 1, 2018	Spring 2018	June 2018
Communicate with residents	Communication Plan Q1-Q2 Public open houses	Participants advise Contact Centre of Windrow/Rebate intention. Participants arrange own snow plowing	Participants submit 2017-2018 contractor proof to Contact Centre	Assess Pilot	Report to Council

Windrow Rebate Program – Benchmarking

City of Brampton – Rebate Program

- Grant program to help senior citizens and physically challenged homeowners receive a grant of up to \$200 for non-corner lot properties or up to \$300 for corner lot properties.
- Grant fees recently adjusted through a review of invoicing fees which could be as high as \$700.
- Program is intended to offset both windrow and sidewalk maintenance.
- The number of participants fluctuates between 1800 – 2000 residents.
- The total costs to participants was approximately \$360,000 for the 2015-16 winter season.
- There is no formal screening process, this is an honour system.

Windrow ACR Complaints



2017 Windrow Budget Requirement

- The 2016 budget for Seniors Windrow Removal Program was \$237,270 for 3,200 properties. As of May 2016, the number of properties has increased to 3,500. Based on historical trending, staff estimates there could be additional growth of 200 properties to bring the total to 3,700 qualifying for the senior windrow removal program in 2017. This would result in a budget increase of \$37,000 from \$237,270 to \$274,270.

Current Windrow Budget	12 trucks for 3,200 properties	\$237,270
Growth	Additional 500 properties (\$74 x 500)	\$37,000
2017 Windrow Program	13 trucks for 3,700 properties	\$274,270

Markham Pathway Maintenance Practices

- The City has an inventory of approximately 151 kilometres of pathways. City-wide. The pathway system is located in parks, parkettes, valleylands, and woodlots. Pathways are considerably different than sidewalks in terms of use and method of construction.
- There is no provincially legislated service level for maintaining pathways.
- Current practice is to clear snow from hard surfaced, street to street pathways only.
- Safe pedestrian routes are provided on City sidewalks.
- Other City pathways are currently posted with sign “NO WINTER MAINTENANCE PROVIDED”.

Markham Pathway Maintenance Practices Cont'd

Maintenance is not provided for the following reasons:

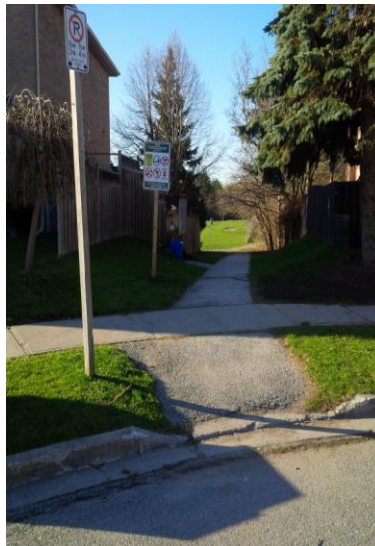
- Pathways can be constructed of asphalt, gravel or simply be a well worn path.
- Pathways are difficult to find under snow cover.
- Limestone pathways provide durable, accessible & environmentally sustainable recreational surfaces.
- Pathway bedding construction is different than sidewalks as increased bedding is required to support the machines required to provide maintenance.
- Damage to pathways would be considerable to any of the surface types during winter operations.
- Positive drainage during freeze/thaw cycles in pathways is inconsistent, exposing the City's risk exposure for claims due to slip and falls.
- Pathways are not typically illuminated ensuring visibility for safe footing.

Pathway Winter Maintenance Financial Costs

- The cost to maintain the pathway system during winter months would be approximately \$692,197 annually, including the cost to maintain and repair the pathway system for summer use.

Type	Cost
Snow Clearing	\$ 400,000
Repair Costs	\$ 12,390
Turf Repair	\$ 120,649
Limestone Repair	\$ 69,158
Program Oversight	\$ 90,000
Total Cost	\$ 692,197

Winter Maintenance & Pathways City-Wide



Recommendations

1. That the City continue its current practice of providing windrow snow clearing to eligible residents.
2. Operations staff recommends the City continues its current practice of not providing snow clearing services for pathways throughout the City during winter months.
3. That the 2017 budget for the windrow clearing program be increased by \$37,000 from \$237,270 to \$274,270 to accommodate growth.

Discussion

Winter Operations Frequently Asked Questions (FAQ)

Who decides when to send out the plows?

Markham's Operations-Roads team makes this decision, based on Council approved service levels. Markham's winter service levels either meet or in many cases exceed the Province of Ontario's legislated service levels for clearing snow from roads and sidewalks.

How much snow has to fall before the City plows all streets?

It has to snow at least 7.5 cm or 3 inches before a full plow is activated.

How many big storms does the City of Markham receive each year?

It varies. Some years, like 2015-2016, we only had two storms that required plowing. Other years, we can see as many as nine storms over 7.5 cm of snowfall.

How long is the City of Markham road network?

Markham's road network (the area we control and plow) is over 2,000 km. That is the equivalent of travelling from Toronto to Montreal 4 times.

How long is the City of Markham sidewalk network?

We have over 1,100 km of sidewalks that we clear.

How long does it take to plow all City streets?

That depends on how much snow falls and how fast. However, based on snow accumulation, it will usually take between 12-16 hours to completely plow all City streets inclusive of lane ways.

How many pieces of equipment does the City use to maintain its streets during a snow event?

The City can mobilize up to 200 pieces of equipment to manage a winter storm event.

How does the City manage so many pieces of equipment?

The City has an Automated Vehicle Locator (AVL) in every piece of equipment. We can use the AVL to monitor compliance and performance. The City also has a number of supervisory field staff on call should a storm hit and require plowing. Residents can now also see what the status of their local plow is by downloading the City of Markham Mobile App, and using our Winter Maintenance App available at markham.ca/winter.

Does the City of Markham ever review their service levels?

Yes, we do. Staff provide updates to Council approximately every two years, or as Council requests. These updates can be general reports to Council or extensive workshops. The last report was provided to Council on June 28, 2016, outlining the 2016/2017 winter services standards. Council approved current service levels as presented.

Does Markham Plow all the roads in the city?

No, the roads in Markham can be owned by a number of governing bodies: the City of Markham, York Region, The Province of Ontario, and the City of Toronto. Markham only manages the services of Markham-owned roads – these are generally local roads and roads that do not cross over city boundaries.

The City of Markham has three types of roads and each has its own service level, approved by Council. **Primary Roads**, which carry the largest volume of cars inclusive of bus routes, are our first priority. These roads (such as John Street, Denison Street, Carlton Road or Wooten Way) are maintained to achieve bare condition (i.e. you can see the pavement, and includes salting), 24/7. They are followed by **Secondary Roads** which are maintained to be bare condition between the hours of 7:00 am and 6:00 pm and monitored beyond those hours. Secondary Roads are roads that feed onto Primary Roads, or are roads that have extreme hills, curves and multiple access points. Lastly, **Local Roads** are your typical road with houses on them (a crescent, trail or court, for example). Council has approved a snow-packed condition service level for Local Roads. However, if they are found to be slippery, staff will mobilize salters to improve their condition.

Why doesn't the City do all windrows like the City of Toronto?

The City of Toronto doesn't do all windrows. They provide this service only in Scarborough, North York and Etobicoke, and only on streets where it is mechanically possible. City of Markham staff undertook a comprehensive review and presented a report to Council in June 2016. A City-wide windrow clearing program would significantly impact the tax base and result in an increase in the residential tax rate. Council supported the staff recommendation to only provide windrow clearing to approved residents - those who are either 60 years of age or older or have disability.

Why don't they remove the entire windrow?

The intent of the program is to make your driveway passable so operators remove one single car width, 8 hours after the road has been plowed. All residents who are approved are responsible for clearing the remainder of their driveway.

I often get a windrow from sidewalk plows, why doesn't the City remove that too?

The windrow removal program only removes the snow from the end of your driveway. The two operations are not connected.

How many windrows does the City clear?

Currently, approximately 4,100 homes are approved for driveway windrow snow removal service each storm.

Why can't I have my rear lane way access included for windrow clearing?

The rear lanes are cleaned by loaders and not plows so little-to-no snow is left behind.

Why do I get more snow on my side of the street?

All operators are instructed to split the snow as evenly as possible on both sides of the road, sharing the snow load. Sometimes parked cars create an uneven split in the snow. Residents are reminded that parked cars restrict snow clearing activities and owners are subject to fine and/or tow. Please do your part, and do not park on the street during storms.

I live on an inside corner. Why do I get so much snow in my driveway?

Unfortunately, all snow is plowed to the right and those that live on an inside corner do receive a larger amounts of snow.

The City plows the snow to the curb and creates a windrow. Why can't I push that snow back out onto the road?

All municipalities are legislated by the Province of Ontario to ensure roads are maintained for safety to all residents and road users. To meet the legislated requirements and maintain Council-approved service levels, a bylaw was enacted to prohibit snow dumping on roads. Residents should not push snow back onto the road – it makes it unsafe for everyone.

I see private contractors plowing driveways and they often push snow across the road, making a mess, and pushing more snow onto my frontage. Is this allowed?

No, this is punishable under the same bylaw above, and subject to a fine. If this is happening, please contact the City and a bylaw officer will be dispatched to the home of the resident creating the mess.

What happens if a sidewalk plow damages my property?

A large portion of your boulevard is City property, roughly where your water supply valve is located in your driveway or front lawn. Residents are advised to remove all driveway borders, sprinklers, gardens or garden features near the road or sidewalks. The City is only responsible to repair sod damage. Sod repairs are completed in the spring once sod is available at sod farms.

Who maintains bus stops?

The proper transit authority does - the TTC, York Region Transit, VIVA and GO are all responsible for their stops including the shelters and the connection from the sidewalk to the shelter.

Who maintains Canada Post boxes?

Canada Post is responsible for all snow clearing in front of their community boxes. Residents should contact Canada Post Customer Service directly at 1-800-265-1177.

Does the City of Markham let the transit authorities and Canada Post know when they're plowing?

Yes. Every major snow storm, the City notifies all agencies when we begin a full network plow. They are notified during snow storms where there is 7.5 cm (or 3 inches) or more of snowfall.



**THE CORPORATION OF THE CITY OF
MARKHAM**

**EXCERPT CONTAINING ITEM #006d OF THE COUNCIL
COMMITTEE (June 28, 16)**

**(2) WINTER MAINTENANCE WINDROW AND PATHWAY WINTER
MAINTENANCE REVIEW (5.10)**

Presentation Report

Moved by Deputy Mayor Jack Heath

Seconded by Councillor Colin Campbell

- 1) That the presentation by Mr. Morgan Jones, Manager, Roads Operations entitled “Winter Maintenance Windrow Rebate/Pathway Program Review”, be received; and,**
- 2) That the report titled “Winter Maintenance Windrow and Pathway Winter Maintenance Report Review” be received; and,**
- 3) That the existing practice for clearing snow from windrows of qualified residents be continued and not proceed with a pilot rebate program at this time; and,**
- 4) That the existing practice for winter snow clearing maintenance of pathways be continued; and,**
- 5) That the 2017 budget for the windrow clearing program be increased by \$37,000 from \$237,270 to \$274,270 to accommodate growth; and further,**
- 6) That staff be authorized and directed to do all things necessary to give effect to this resolution.**

Carried