



Staff Report for Council Meeting

Date of Meeting: June 21, 2023

Report Number: SRCS.23.12

Department: Community Services
Division: Public Works Operation

Subject: **SRCS.23.12 – 2022 to 2023 Season Winter Maintenance Review**

Purpose:

To provide a review of the City's winter maintenance operation and associated communication program for the 2022 to 2023 winter season.

Recommendation:

- a) That Staff Report SRCS.23.12 regarding review of winter maintenance during the 2022 to 2023 winter season be received for information.

Contact Person:

Diogo Oliveira, Acting Director of Public Works Operations

Report Approval:

Submitted by: Tracey Steele, Commissioner of Community Services

Approved by: Darlene Joslin, City Manager

All reports are electronically reviewed and/or approved by the Division Director, Treasurer (as required), City Solicitor (as required), Commissioner, and City Manager. Details of the reports approval are attached.

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Background:

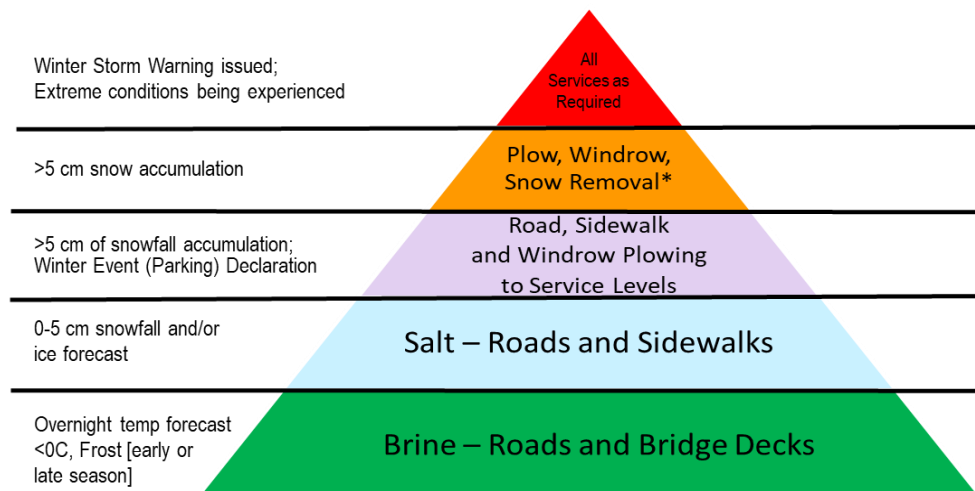
Winter Maintenance is a vital municipal service involving the management of ice and snow across the public realm within the City. In response to a Council Member Motion, the first annual review of winter maintenance was presented to Council in July 2022 via SRCS.22.11. This report (SRCS.23.12) provides a similar review of winter maintenance for the 2022 to 2023 winter season.

Winter maintenance activities for any weather event are determined by specific snow and icefall conditions

The conditions that trigger various types of winter maintenance are illustrated in Figure 1. Weather forecasts of overnight temperatures less than 0 degrees Celsius may result in the implementation of anti-icing or de-icing measures for roads and sidewalks. A snow or icefall forecast for less than 5 centimetres of accumulation leads to the initiation of salting activities on all roads and sidewalks. When greater than 5 centimetres of snow accumulation is forecast, the City prepares for the activation of plows by declaring a “Winter Event” pursuant to the Parking Regulation By-law (Municipal Code Chapter 1116). During a Winter Event vehicles are not permitted to park on the streets. Road and sidewalk plowing activities are initiated when 5 centimetres of snow has accumulated. Windrow clearing is initiated approximately 2 hours after the street plows are deployed.

Figure 1

Trigger Conditions



* Snow removal from wide bends, cul de sacs, dead ends, laneways

Winter maintenance involves in-house and contracted services guided by data and technology

The City’s road network is divided into zones and plow routes. Approximately 30% of the plow routes are maintained in-house with approximately 70% maintained by a contractor.

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All sidewalk, park pathway, recreational trail and mid-block walkway connection plowing is conducted in-house, as is residential driveway windrow clearing.

Staff monitor the road network and weather conditions from October 1 to April 30, in order to make informed and timely decisions respecting winter maintenance. Monitoring involves reviewing weather data and reports as well as inspecting and documenting road conditions.

The following technology, materials and information are used to enhance and inform operational decisions associated with winter maintenance:

- Weather Information – The City receives regular forecasts four times daily from a meteorological weather service and obtains weather information from 2 City-owned weather stations (located at 70 Old Colony Road and High Tech Road).
- GPS system – An Automatic Vehicle Location (AVL) system, which includes dash and plow cameras, and system tracking technology (obstruction recording, plow up/down and salt spinner controls) is installed on the majority of winter control vehicles and equipment. The AVL system presents real time data to our online portal and public-facing Track My Plow app.
- Salt Distribution Management – Optimal application of liquid anti-icing or solid de-icing material (i.e., salt and/or treated salt) is managed via a calibrated computerized unit installed on each road vehicle.

Winter maintenance service levels are defined by Council-approved targets that are higher than provincial requirements in some cases

Council-approved service levels for roads, sidewalks and windrows are summarized in Table 1. The service levels for roads are derived from the Minimum Maintenance Standards for Municipal Highways set out in Ontario Regulation 239/02 (“O. Reg. 239/02”) issued under the Municipal Act, and are higher than required by the provincial legislation in some cases. A comprehensive explanation of the Council-approved levels of service for winter road and sidewalk maintenance was presented to Council in staff report SRCS.14.033.

Target service levels for the Windrow Program were determined through Council approval of the in-house program recommended in staff report SRCS.19.07 on March 25, 2019. There are currently no Council-approved levels of service for park pathways or recreational trails.

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Table 1 – Winter maintenance service level summary by asset type

ROAD Classification	Service Type	Target Level of Service	Service Level Source
Primary and Local Roads	De-icing treatment used for less than 5 cm of snow and ice formation	8 hours to complete	O.Reg. 239/02 SRCS.14.033
Primary Roads	Plowing/de-icing for 5 cm of snow accumulation	12 hours to complete once snow has stopped	O.Reg 239/02 SRCS.14.033
Local Roads	Plowing/de-icing for 5 cm of snow accumulation	16 hours to complete once snow has stopped	O.Reg 239/02 SRCS.14.033
SIDEWALK Classification	Service Type	Target Level of Service	Service Level Sources
Primary and Local Sidewalk	De-icing treatment for less than 5 cm of snow	12 hours to initiate 14 hours to complete after initiation	SRCS.14.033
Primary (including Regional Road Sidewalks)	Plowing/de-icing for 5 cm of snow	9 hours to complete once snow has stopped	SRCS.14.033
Local (including mid-block connections)	Plowing/de-icing for 5 cm of snow	14 hours to complete once snow has stopped	SRCS.14.033
WINDROWS	Service Type	Target Level of Service	Service Level Sources
All	Clear at least one car width of all residential driveways	8-12 hours to complete following the completion of road plowing	SRCS.19.07

During the 2022-2023 season target road, sidewalk and windrow clearing service levels were met or exceeded for all snowfall events

During the 2022 to 2023 winter season there were 8 weather events that triggered a Winter Event Declaration, road plowing and windrow clearing. An additional 49 weather events required anti-icing or de-icing treatment. The March 3rd event triggered a Winter Storm Warning by Environment Canada and was declared a “Significant Weather Event” pursuant to O. Reg. 239/02 due to its magnitude and rate of snowfall (provincially-legislated service levels do not apply to Significant Weather Events).

During the 2022 to 2023 winter season, target service levels were met or exceeded for all snowfall events.

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The 2022 to 2023 winter season was the fourth season of implementation of the windrow program. Since inception of the program, Staff have been implementing continuous improvements aimed at reducing the time required to clear windrows. This past season the deployment time for windrow machines was reduced so that windrow plows initiated routes only 2 hours after road plowing began. Additionally, for the first time since inception of the program, shift start times for operators were staggered to provide for more continuous service provision while adhering to Employment Standards Act requirements for break times and shift lengths. The earlier windrow plow deployment and staggered shift times enabled realization of service levels for windrow plowing well in excess of the approved service level for all events.

Winter maintenance activities for the 2022 to 2023 winter season cost approximately 6 million dollars

Table 2 provides a synopsis of transportation network winter maintenance costs during the 2022 to 2023 winter season.

Table 2 – 2022 to 2023 season winter maintenance costs

Asset Type	City Network Quantity	Regional Network Quantity	2022/2023 Season Total Operation Costs	2022/2023 Season Unit Operating Costs
Roads	1100 lane km	None	\$3 597 000	\$3 270 per lane km
Sidewalks, Park Pathways and Trails	599 km	123 km	\$1 560 000	\$2,200 per km
Windrows and other PWO Service Enhancements	44,000 driveways	17 driveways	\$1 497 000	\$34 per driveway with additional services
Windrow Program – Direct Costs Only	44,000 driveways	17 driveways	\$552 000	\$12.50 per driveway

Winter Maintenance of 1,100 lane kilometres of roads cost a total of approximately \$3.6 million for the 2022 to 2023 winter season or \$3,270 per lane kilometre. The road asset quantity number includes Norman Bethune Avenue, which is maintained in collaboration with the City of Markham in accordance with an annual rotation agreement. It also includes 5.2 kilometres of roads in un-assumed subdivisions that are maintained by the City on a full cost-recovery basis upon request from qualifying developments.

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Winter maintenance of sidewalks, park pathways and trails cost approximately \$1.5 million over the 2022 to 2023 winter season. 723 kilometres of total length in this asset category includes 578 kilometres of local sidewalks (including 6 kilometres in un-assumed subdivisions), 123 kilometres of Regional Road sidewalk, 14 kilometres of park pathways (including mid-block connectors), and 7 kilometres of recreational trail. Maintenance of Regional Road sidewalks is undertaken by the City as set out in the Municipal Act, and involves ongoing coordination with the Region's snow clearing activities on Regional Roads. These assets are reported collectively in one asset category because they are maintained using the same equipment, plow routes and staff resources and it is not possible to separate out costs at the present time. It should be noted that 7 kilometres of trail is approximately 13% of the City's 54 kilometre recreational trail system. Trails that are currently maintained are historically identified school walking routes.

In Table 2, the "Windrows and Other Service Enhancements" row includes all October to April salary and benefits costs for 29 full-time Operator positions hired specifically to facilitate the Windrow Program. Prior to the Windrow Program, these Operators were employed as summer seasonal staff only. During the winter 2022 to 2023 the Windrow Operators also contributed to provision of the following services:

- Anti-icing and de-icing applications to roads for weather events with less than 5 cm of accumulations
- Snow removal/hauling
- General road and park repairs and maintenance
- Trail and walkway inspections and maintenance (including vegetation pruning and minor trail and walkway asset repairs)
- Holiday light installation and maintenance
- Event support (for example, at the Merry Marketplace)
- Asset and inventory data collection

The "Windrow Program – Direct Costs Only" row of Table 2 reflects only costs directly associated with windrow clearing including only hours logged by Operators specifically for windrow-related tasks. Windrows are currently being cleared for seniors who live on Regional Roads and received this service prior to the implementation of the Windrow Program. Property owners have an option to opt-out of the windrow program, but there has been very limited uptake on this opportunity.

Parking Enforcement issued a total of 1305 winter-related parking tickets and 284 warnings over the course of the 2022 to 2023 winter season

During the 2022 to 2023 winter season, Parking Enforcement issued a total of 284 warnings and 1305 penalty notices aimed at assisting in the facilitation of efficient winter maintenance and safer roads and sidewalks, as follows:

- 284 Winter Event Warnings
- 945 Penalty Notices for Park on a Highway During a Winter Event
- 29 Penalty Notices for Park on a Highway so as to Interfere with Winter Operations

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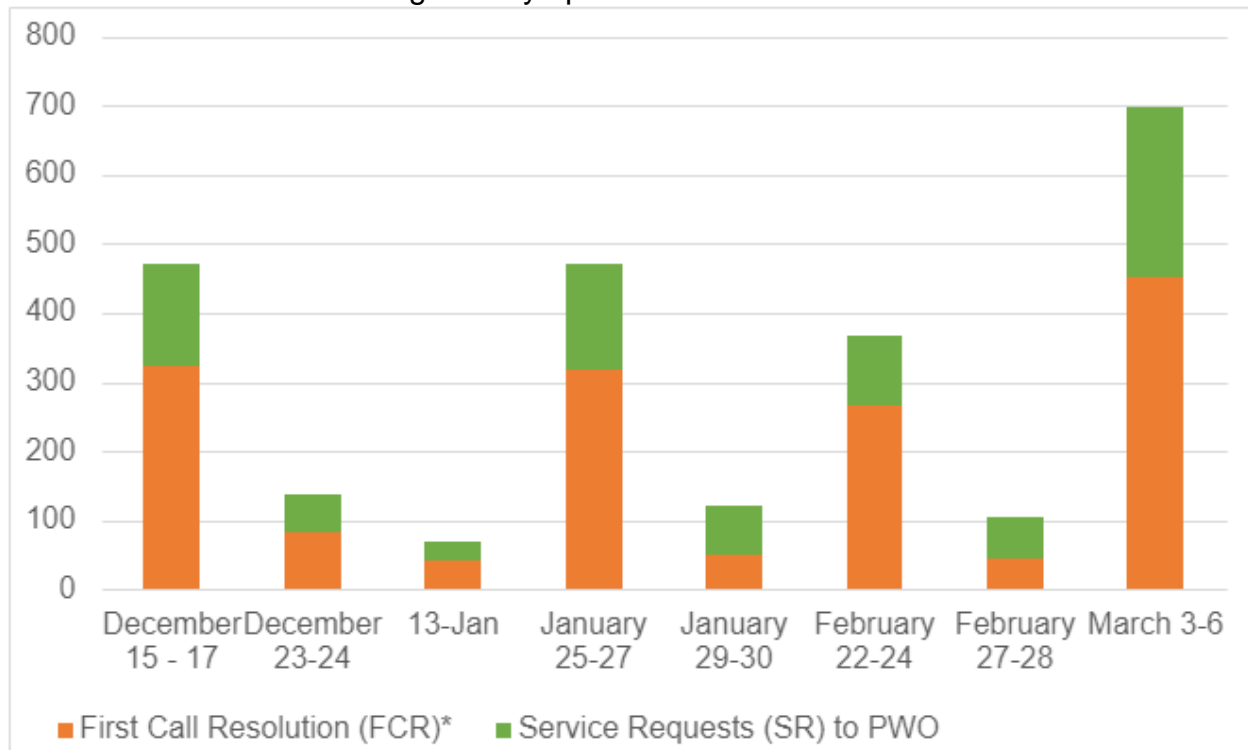
- 331 Penalty Notices for Park Obstructing a Sidewalk

The majority of winter maintenance calls are addressed via first call resolution and calls requiring site visits are addressed only after service levels are achieved

Access Richmond Hill (ARH) works closely with Public Works Operations (PWO) during winter operations to ensure residents, business customers and visitors have up-to-date information on snow clearing activities and service levels. ARH handles all inquiries and complaints related to winter maintenance activities and is able to resolve most calls directly. Calls that require site attendance are submitted to PWO for action once winter maintenance service levels have been achieved for the specific event.

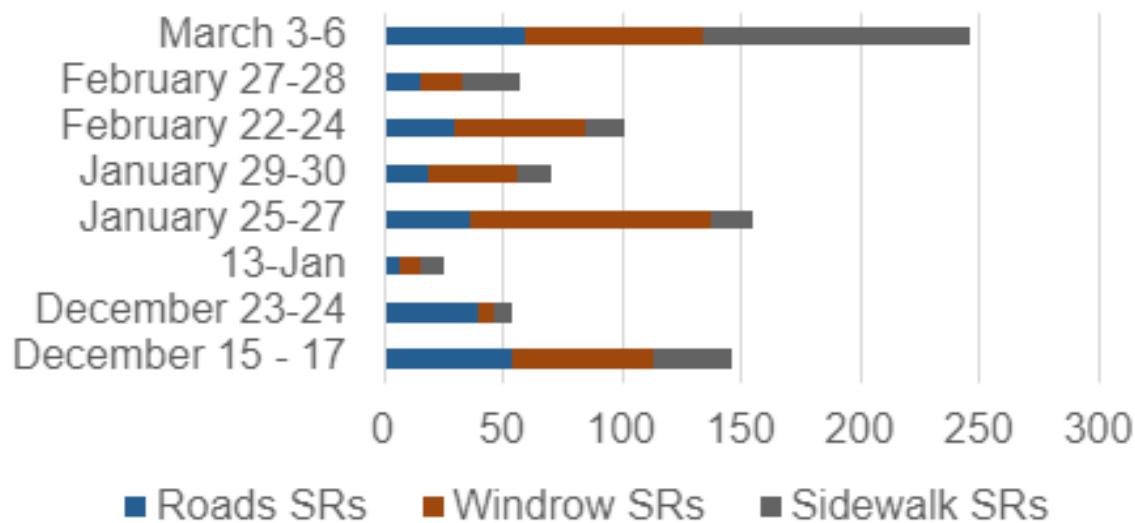
During the 8 weather events that triggered Winter Event Declarations, plowing and windrow clearing, ARH received 2,438 calls from residents of which 65% (1,581) were “first call resolutions” and 857 were forwarded to PWO for on-site follow-up. Winter Event Service request data is summarized by event and asset type in Figures 3 and 4.

Figure 3: Winter Event service requests addressed through “First Call Resolution” by Access RH vs on site investigation by operational staff



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Figure 4: Winter Event service requests forwarded to PWO by event and asset type



A variety of strategic communications and public awareness tactics are targeted to reach the widest possible Richmond Hill audience

The City has an extensive winter maintenance communications program that aims to educate residents about the winter maintenance services provided by the City, increase awareness about the role residents play in supporting these services (for example, no parking on the street, waste set-out placement), and provide updates on winter maintenance activities during winter events.

Seasonal tactics implemented from mid-October through the end of winter for the 2022 to 2023 winter season included:

- Provision of winter maintenance information in the City-wide print newsletter (delivered to more than 66,000 homes and available in five languages).
- A dedicated section on the City's website at RichmondHill.ca/WinterMaintenance which had 39,000 page views this winter and includes:
 - An infographic demonstrating service levels
 - A windrow clearing page (more than 8,200 page views this winter), and
 - 'Track My Plow' app (more than 26,000 visits this winter).
- A "We're Ready for Winter" Public Service Announcement which is posted at RichmondHill.ca/News (more than 1,200 subscribers) and distributed to local and multilingual media and local community groups servicing multilingual populations.
- Animated and live-action videos explaining windrow clearing service (over 11,000 views)
- Inclusion of winter maintenance topics in the monthly myRichmondHill eNewsletter (more than 1,200 subscribers and available in the language of the readers' choice using automated translation).

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- Continual social media posts on winter maintenance topics driving to our broader web content (24,700 followers).
- Print advertising in local and multilingual publications (reaching approximately 97,000 readers in Richmond Hill).
- Digital advertising on six screens throughout Mackenzie Richmond Hill Hospital in January and February (64,800 impressions per month)
- Information on where to place your waste for collection so as not to impede snow clearing operations in the Waste Management Calendar (delivered to more than 56,000 homes) and Recycle Coach app push notifications (17,185 users).
- Geo-targeted and weather-triggered advertisements implemented on the Weather Network app (147,000 impressions were recorded in the 2022 to 2023 season).
- Feature of the Plow Operator position on “My City at Work” webpage and social media highlighting the skill, training and tasks that are part of snow clearing operations (300 website visitors and more than 3,500 impressions).

When a Winter Event Declaration is anticipated, the City will proactively Tweet weather updates and encourage citizens to subscribe to [RichmondHill.ca/Winter Updates](https://richmondhill.ca/WinterUpdates). Additionally, Parking Enforcement Officers will proactively issue Warning Notices (no penalty) to encourage removal of parked vehicles from the road.

When a Winter Event Declaration is issued, the City sends an advisory to select local and multilingual print, digital and radio media, issues an email to on-street parking permit holders, posts a banner on the [RichmondHill.ca](https://richmondhill.ca) homepage, posts the declaration on [RichmondHill.ca/WinterUpdates](https://richmondhill.ca/WinterUpdates) (more than 350 page subscribers), and posts and pins the declaration to the City’s Twitter account.

While winter maintenance operations are ongoing, high level progress updates are posted to [RichmondHill.ca/WinterUpdates](https://richmondhill.ca/WinterUpdates), as well as the City’s Twitter account, to advise of anticipated service levels and delays, road priorities, windrow service start times and how to track plows online. Communications related to service levels note that times are subject to change due to snowfall amounts, length of storm and time of day (for example, rush hour). The City also shares reminders via Twitter on a variety of topics including on-street parking, where to place your waste bins in winter the importance of clearing hydrants, no shoveling snow back onto the road and more.

End of winter event declarations are posted to the City website and Twitter.

Financial/Staffing/Other Implications:

This report has no financial or staffing implications as resources associated with winter maintenance are addressed through the annual budget process.

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Relationship to Council's Strategic Priorities 2020-2022:

This report is directly related to the Council Strategic Priority "Getting around the City" as winter maintenance ensures our transportation network are clear of snow and safe for use during the winter months.

Climate Change Considerations:

Efficient management approaches and technology are used to mitigate the climate change impacts associated with winter maintenance. For example optimization of plow routes provides for reduced vehicle emissions, and computer-aided spread controllers on road plows assisting with the management of anti-icing and de-icing materials.

Conclusion:

Winter maintenance activities for any weather event are determined by specific snow and icefall conditions and involve in-house and contracted services guided by data and technology. Winter maintenance service levels are defined by legislation and Council-approved targets that are higher than provincial requirements in some cases.

During the 2022 to 2023 winter season there were 8 weather events that triggered a Winter Event Declaration and required plowing and 49 additional weather events that required anti-icing or de-icing treatment. Road, sidewalk and windrow clearing service levels were met or exceeded for all snowfall events.

Parking Enforcement issued a total of 1305 winter-related parking tickets and 284 warnings over the course of the 2022 to 2023 winter season. 65% of winter maintenance calls and complaints were addressed via first call resolution and 857 calls requiring site visits were addressed after service levels were achieved. A variety of strategic communications and tactics aimed at public awareness across the widest possible Richmond Hill audience were implemented in support of winter maintenance.

Attachments:

The following attached documents may include scanned images of appendixes, maps and photographs. All attachments have been reviewed and made accessible. If you require an alternative format please call the contact person listed in this document.

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Report Approval Details

Document Title:	SRCS.23.12 - 2022 to 2023 Season Winter Maintenance Review.docx
Attachments:	
Final Approval Date:	Jun 13, 2023

This report and all of its attachments were approved and signed as outlined below:

Diogo Oliveira - Jun 12, 2023 - 9:29 PM

Tracey Steele - Jun 13, 2023 - 8:28 AM

Darlene Joslin - Jun 13, 2023 - 1:15 PM