TORONTO

REPORT FOR ACTION

Annual Winter Maintenance Report

Date: June 18, 2024
To: Infrastructure and Environment Committee
From: General Manager, Transportation Services
Wards: All

SUMMARY

This is the first in a planned annual cycle of reporting on winter operations from the previous season and updating about improvements for the upcoming winter season. This is a new commitment that will provide better transparency on the Transportation Services Division's performance for winter operations and provide insights around operational efforts and efficiencies.

This report provides the first Annual Winter Maintenance update for the 2023-2024 winter season and outlines improvements being planned for the 2024-2025 winter season operations, including pilot testing, training, improved contract administration, and community events.

The final section of this report is an update on advancements to the Major Snow Event Response Plan (MSERP), formerly known as the Extreme Winter Weather Plan. The MSERP addresses weather events which result in significant snow accumulation beyond what Toronto typically experiences. This accumulation creates obstructions in the right of way, primarily due to insufficient space to store the snow at roadsides and in boulevards. Storms of this magnitude have a much greater impact on the transportation infrastructure, and by extension on the public, and such events cannot be fully addressed within the Council-approved levels of service for a normal snowfall. The renaming to "Major Snow Event Response Plan" instead of "Extreme Winter Weather Plan" reflects that this plan does not address the full range of extreme winter weather (e.g. ice storms, flash flooding, etc.) which are more effectively addressed under Toronto Emergency Management's Extreme Winter Weather Coordination Plan.

Developments on the MSERP includes a Vision, Guiding Principles, Prioritization Framework, updated processes to action the Framework, and a Communication Plan. This Plan will be a dynamic document, with review and updates after each new major snow event to iteratively drive continuous improvement. Next action items for staff will be to develop new priority route maps, assign updated snow removal operations for contractors and in-house staff, and create a formal communication plan to proactively inform the general public during a storm regarding timelines and removal operations.

This report seeks approval to make amendments to the City of Toronto Municipal Code Chapter 950, Traffic and Parking, as it relates to “major snow storm conditions”, including when they can be declared.

In addition, the report requests City Council to amend the City of Toronto Municipal Code Chapter 937, Temporary Closing of Highways, as well as City of Toronto Municipal Code Chapter 27, Council Procedures, in order to delegate to the General Manager, Transportation Services, the authority to temporarily close to vehicular traffic any highway or portion of highway to facilitate efficient snow removal operations. Any temporary road closures under this proposed delegated authority will be for up to and including 24 hours for each and any individual temporary closure between November 8 of one year and April 7, inclusive, of the following year.

RECOMMENDATIONS

The General Manager, Transportation Services recommends that City Council:

1. Endorse in principle the development of the Major Snow Event Response Plan as outlined in this report.
2. Confirm the proposed updated levels of service beginning in 2024 – 2025 winter season for the winter maintenance of cycling facilities as outlined in Attachment 2.
3. Allow for advanced notification of a “major snow storm condition” and approve the amendments to City of Toronto Municipal Code Chapter 950, Traffic and Parking, generally as outlined in Attachment 5 to the report (June 18, 2024) from the General Manager, Transportation Services.
4. Amend City of Toronto Municipal Code Chapter 937, Temporary Closing of Highways, to delegate to the General Manager, Transportation Services, the authority to temporarily close to vehicular traffic any highway or portion of highway for up to and including 24 hours for each and any individual temporary closure between November 8 of one year and April 7, inclusive, of the following year, despite Section 937-4 of Chapter 937, as required for the purposes of snow removal operations, and City Council exempt the General Manager, Transportation Services, in carrying out this delegated authority from Section 937-5 of Chapter 937, that being the requirement to notify the local Ward Councillor of the pending closure and the requirement to report on the proposed closure if so requested by the local Ward Councillor.
5. Amend City of Toronto Municipal Code Chapter 27, Council Procedures, to provide that the current delegation to Community Council to temporarily close public lanes or public alleys, local roads, collector roads, and minor arterial roads, does not include closures delegated to the General Manager, Transportation Services, in carrying out the authority in Recommendation 4 above.
6. Authorize the City Solicitor to introduce the necessary bills to give effect to City Council’s decision and City Council authorize the City Solicitor to make any

necessary clarifications, refinements, minor modifications, technical amendments, or by-law amendments as may be identified by the City Solicitor, in consultation with the General Manager, Transportation Services, in order to give effect to Recommendations 3 to 5, inclusive, above.

FINANCIAL IMPACT

Transportation Services confirms that there are no financial implications resulting from the recommendations included in this report.

The Chief Financial Officer and Treasurer has reviewed this report and agrees with the financial impact information.

EQUITY IMPACT STATEMENT

The City of Toronto is a four-season city where access to goods, services, and opportunities may be negatively impacted by significant snow accumulation. Major snow accumulation can disproportionately impact equity deserving communities and their access to goods, services, and opportunities. The Major Snow Event Response Plan described in this report, strives to remove snow in a way that facilitates safe travel for all with priority placed on vulnerable users in our public right-of-way; and to decrease barriers to equity for all residents.

This plan outlines a Vision and Guiding Principles for responding to Major Snow Events, with an approach to create a better balance between safety and equitable access.

DECISION HISTORY

Toronto Accessibility Advisory Committee, at its May 6th 2024 meeting:

1. Received the report (April 22, 2024) from the General Manager, Transportation Services, for information.

https://secure.toronto.ca/council/agenda-item.do?item=2024.DI6.2

Infrastructure and Environment Committee, at the March 27, 2024 meeting:

1. Received the report (March 13, 2024) from the General Manager, Transportation Services, for information.

https://secure.toronto.ca/council/agenda-item.do?item=2024.IE12.7

City Council, at its March 29, 2022, requested the General Manager, Transportation Services to:

1. Consult with internal and external stakeholders and to report back to the Infrastructure and Environment Committee on an Extreme Winter Weather Response Plan in the first quarter of 2023.

2. To implement initiatives and service improvements as soon as feasible and in advance of the next winter season where possible.

3. To meet with Ward Councillors in advance of the next winter season, regarding improvements to snow services, including ward-specific contracts and measures.

https://secure.toronto.ca/council/agenda-item.do?item=2022.IE28.11

The Toronto Accessibility Advisory Committee, at its February 22, 2022 recommends that City Council direct the General Manager, Transportation Services to:

a. Recognize and quickly respond to Urgent Service Requests made by people living with disabilities or seniors, even during "black-out" periods;

b. Create a proactive accessibility service standard by incorporating an intersectional gender equity lens similar to Sweden's "Gender Equal P
lowing Strategy";

c. Prohibit City snowplows from storing snow and ice on sidewalks and bike lanes that create additional accessibility barriers;

d. Develop a public education campaign to inform property owners, business operators, residents, landlords and tenants about the City's winter maintenance strategy and to clarify the division of responsibility for snow and ice clearing and removal; and

e. Report through the 2023 Budget process on the funding required to ensure that the City can meet its revised levels of service including for winter storms with over 35 cm and over 50 cm of snow.

https://secure.toronto.ca/council/agenda-item.do?item=2022.DI19.3

2. City Council forward Council's decision on the report from Transportation Services on January 2022's major snowstorm and winter maintenance operational response to the Toronto Accessibility Advisory Committee for information.

City Council, at its meeting of February 2, 2022, directed the General Manager, Transportation Services to provide a post-operational report on the January 16-17,2022 major snow event to the March 29, 2022 meeting of the Infrastructure and Environment Committee.

http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2022.EX29.15

COMMENTS

City of Toronto Winter Maintenance Services

As a four-season city, winter maintenance for Toronto's public right-of-way is a critical service for residents and businesses, provided by the Transportation Services Division. Careful prioritizing of maintenance operations helps to mitigate the disruptions to daily life caused by winter weather, including maintaining access for emergency services and transit and addressing the needs of all right-of-way users including people who walk/roll, cycle, or drive.

Some winter maintenance activity – specifically anti-icing or applying liquid brine – proactively responds to imminent winter weather that may create icy roads even with no accumulation of snow. When snow falls, typical accumulation in Toronto ranges from 2 cm up to 10 cm in a single event. Weather trends in the past 10 years suggest Toronto can expect between one and three storms per year with over 10cm of snow accumulation. These snow events typically require travel paths to be cleared by applying salt and if necessary, snow is plowed to the edges of the road, bike lanes or sidewalks. Snowstorms greater than 25 cm can be expected about once every two years. The last two winter storms with over 25 cm of snow, took place on January 17th, 2022 where approximately 55cm of snow fell over a 24-hour period and on March 4th, 2023, when approximately 26cm of snow fell over a 24-hour period. Snow removal is required for accumulation of this magnitude, which entails the physical removal of snow into trucks and its movement to one of the City's snow storage sites.

Annual Winter Maintenance Report – Review of 2023-2024 Winter Season

The Transportation Services Division prepares for nearly 6 months of winter operations; internal staff and contract crews are on call with required equipment from October 15th until April 15th annually. The Division pays a daily rate for this equipment and available labour to be on stand-by, regardless of how frequently it must be deployed.

Transportation Services responds to winter events through activations of the operational teams. Typical winter event operations can consist of anti-icing on roads where a liquid brine mixture is spread before anticipated snowfall, salting on arterials/collector or local roads, plowing on arterial/collector or local roads, and clearing of sidewalks and bicycle lanes. These typical winter operations follow Council-approved levels of service. Snow removal is the least frequent type of activation; removal follows the strategy of the Major Snow Event Response Plan outlined in the section below. It is typically applied for major snow accumulation or in limited locations after smaller events when the piles of snow are impeding safe movement of people or vehicles.

For the 2023 to 2024 season, Toronto received a total of 51cm of snowfall which is well below the average total snowfall of approximately 121cm. In response, Transportation Services delivered the following services:

- Pre-emptively anti-iced roadways 18 times due to forecasted road conditions
- Conducted salting operations 25 times on arterial / collector roads
- Conducted salting operations 20 times on local roads
- Conducted plowing 3 times on arterial / collector roads
- Conducted plowing 3 times on local roads
- Conducted sidewalk clearing 12 times

Approximately 3,566,466 litres of salt brine and 41,517 tonnes of salt were used for melting of snow and ice on the public right-of-way.

The 2023-2024 winter season did not have any snow events requiring snow removal operations (see Attachment 1 for details).

The total number of Service Requests (SRs) for the 2023 – 2024 winter season was a total of 2,967 overall (see Attachment 2 for details).

Continuous Improvements Introduced in the 2023-2024 Winter Season

Transportation Services is committed to continuous improvement for winter maintenance operations. Opportunities to enhance staff training in best practices and contract management, testing technologies to improve operations and improving processes and communications were all identified by staff in line with recommendations from the Auditor General's Office.

<u>Contract Management Process: leveraging technology and implementing new standard operating procedures</u>

In the first winter season of the new 2022 – 2029 winter contracts, there were supply-chain issues caused by COVID and the resulting reduction in vehicle production. Vendors had to wait for their new vehicles which prevented the Vendors from installing GPS prior to the contract start date. This resulted in Transportation Services not having GPS installed on 100% of the equipment before the start of the first year of the new contract. Due to the challenges that both the City and Vendor faced, it was decided that Transportation Services would invest in a Winter Light Up (equipment inspection and verification) program for the second year of the contract to ensure the Vendors had all of their equipment equipped with functioning GPS devices as they began receiving their new equipment. This program was outside the scope of the contract but ensured that all vehicles were reporting properly, were assigned to the correct contract area, labelled with an accurate City vehicle ID, and would display correctly on PlowTO. As of December 31, 2023 all 1200+ pieces of contracted winter equipment had working GPS confirmed through the aid of the Winter Light Up program, satisfying the Auditor General's recommendations from the 2020 audit.

Transportation Services has revamped the PlowTO webpage over the last two winter seasons. This updated webpage enables residents to see the location of salt trucks,

sidewalk plows, cycle track clearing equipment and road plows, and when their street was last serviced by the City's winter operation crews. The PlowTO webpage will be enhanced in the future to include showing snow removal operations so residents can see where snow removal has been completed. Another enhancement will be showing windrow removal operations. The Transportation Winter Operations Dashboard was developed to use GPS Technology and efficiently process data; this enables City staff to monitor contractor performance in real time and download automated verification reports. City staff have access to all GPS data but previously had to manually run equipment completion and verification reports to monitor a contractor's performance. The new Dashboard displays data in real time and quickly automates reports for staff monitoring each winter event. It was developed through the City's GPS Vendor, Geotab, in conjunction with Deloitte, and will ultimately be managed in-house.

Contract management process improvements in the 2023-2024 winter season included implementation of the Enterprise Work Management System (EWMS) to standardize all work orders. A new Winter Maintenance Contract Administrative Manual and over 30 new Standard Operating Procedures (SOPs) ensured consistency among staff (and thereby across the city) when managing the 11 winter contracts. Examples of standardization include:

- How information is entered into the contract management portal, EWMS.
- How staff request contractors to deploy equipment and crews to start clearing snow
- How staff confirm and approve the contractors' operational fees using EWMS and GPS technology.

Training was provided to staff on these SOPs during the annual week-long Snow School in October 2023. At Snow School, staff received mandatory training about the new Winter Maintenance Contract Administrative Manual and updated SOPs. Staff at all levels, in collaboration with the winter contractors, also rehearsed the updated Winter Operation Activation Process during two Winter Event Mock Exercises on November 13, 2023 and January 3, 2024, satisfying the recommendations from the Auditor General's report in 2020.

<u>Customer Service</u>

A Customer Service Working Group was established, comprised of staff from Customer Experience (311 Toronto) and Transportation Services. The Working Group met every 3 weeks during the winter season from October 2023 to April 2024 to strategize on how to improve the customer service experience for winter service requests and to discuss any issues that came up throughout the winter season. This Working Group will repeat this meeting schedule in the coming winter season, with goals to:

- Improve upon the messaging that is delivered to the customer when receiving SR updates,
- Set clearer and more accurate expectations regarding timeframes for completing the work related to SRs,
- Review service standards that align to customer expectations and to resourcing in Transportation Services,

- Create a process for identifying emergencies and flagging them to Transportation Services during a SR freeze, and
- Improve upon the usability of the 311 online portal and 311 mobile app for a better user experience.

During the past winter season, improvements included:

- Better end-to-end experience for customers through providing 311 agents access to the contract management portal (EWMS) which includes notes from field investigators that can be communicated to customers on the status of the SR.
- Streamlined the process for Subject Matter Experts to review the 311 Knowledge Base regularly to ensure it always contains the most up-to-date information.

Improvements for the Upcoming 2024-2025 Winter Season

Operational Route Improvements

The addition of new cycling infrastructure every year impacts how snow is cleared from the road. There is a difference between how snow is cleared on separated bike lanes versus on non-separated bike lanes. Therefore, the existing service levels for bike lane clearing were developed using different maximum operating times for plowing and salting of separated cycle tracks versus non-separated bike lanes. To simplify the winter maintenance expectations for people using bike lanes, a consistent level of service is proposed to be approved by Council for salting and plowing both separated and non-separated bike lanes. Dedicated equipment will clear snow off all cycling infrastructure starting when there is at least 2cm of snow on the ground, and all cycling infrastructure clearing will be completed within a maximum of 8 hours. The desired outcome will remain the same for the various cycling infrastructure. The definition of “safe and passable” for bike lanes means that the pavement in bike lanes will have at least 60% of the width free of loose snow, slush and ice. See Attachment 3 for the revised Winter Service Level table.

Enhanced Weather Forecasting Reports

WSP E&I Canada Limited currently provides the City of Toronto with weather forecasting services via Local Area Forecasts (LAF) and Road Weather Information Systems (RWIS). Moving forward there are three additional features that this vendor will provide to enhance our winter event response.

1. Installation of 2 additional RWIS Stations this year, one near Finch and Dufferin and the other in midtown Toronto. These new RWIS stations will increase Transportation Services’ ability to provide geographically customized responses to snow events. This will increase the total number of RWIS stations across the City to 10 stations. Having these 10 RWIS stations will allow us to strategically respond to active weather events.

2. MDSS (Maintenance Decision Support System) forecasts and Winter Pre-Storm briefings. MDSS integrates various modules encompassing weather forecasts, RWIS observations and forecasts, traffic patterns, and the road authority treatment matrix to enable the provision of 24-hour treatment recommendations. This augments road temperature and condition considerations by incorporating data on traffic and available chemicals on the road into recommendations for operational responses. This approach ensures a nuanced understanding of the road environment, providing guidance to inform decision-making in road maintenance and treatment strategies.

3. Pre-Storm Briefings which will allow supervisors to formulate strategic plans well in advance of impending storms. These pre-storm briefings will be scheduled 8 to 24 hours prior to the onset of a storm.

Driveway Windrow Service Review

As part of the improvements to the upcoming 2024-2025 winter season, City staff will be completing a review of the Winter Driveway Windrow Opening service. A Windrow refers to a pile of snow left at the bottom of a driveway after a snowplow has cleared the road of snow accumulation. When windrows exceed 25 cm in height, specially equipped windrow plows are utilized to clear a three-metre-wide opening in each qualifying driveway, which is sufficient for a small vehicle to safely pass.

City staff developed a set of criteria to determine which residential homes qualify for the service based on the functional capabilities of the mechanical windrow clearing equipment, and physical characteristics of the street. The current criteria were initially developed in the late 1990's. The Winter Driveway Windrow Opening is a legacy service available to residential addresses that meet the City's windrow service criteria, as it would not be operationally feasible to clear the windrow otherwise. City Council were clear during the 2024 budget process the value they place on this service.

Although the windrow clearing service is built into the current winter operations contract, the City receives a significant number of 311 Service Requests, complaints and questions, about the service and therefore windrow service eligibility will be reassessed for the 2024-2025 winter season given the changing urban form. Refining the criteria for eligibility for this service would improve scope and efficiency of the program. The updated criteria will also improve communication to the residents on expectations on the Winter Driveway Windrow Opening service.

Moving beyond 2024, Transportation Services staff will undertake a preliminary analysis for the 2025-2026 winter season on the operational and financial feasibility to expand the updated criteria of the windrow service to better support residents who are seniors and people living with disabilities.

Pilot of Automated Salt-spreading Machine

Currently, salt-spreaders are affixed to vehicles and require supervision and intervention by the operator to control the salt spreading rate. The current rate of salting distribution is based only on road classification. Transportation Services is investigating a pilot where a salter will spread salt based on actual road conditions rather than road classification, which will ensure the optimal amount of salt application. An automated salt-spreader machine that is controlled in real time by Artificial Intelligence (AI) will be tested.

The pilot will test new technology where sensors detect the road temperature, friction, and grip level, and automatically adjust the salt spreading rate based on those conditions. It is hoped the pilot will result in minimal supervision and operator intervention during salt application, improved level of service provided, optimal use of salt supplies, and reduced environmental impacts.

Winter Day Community Event

In partnership with other City Divisions and Agencies, Transportation Services is exploring opportunities to host a “Winter Day” community event to spread information about how to prepare for the upcoming winter season and engage in the many recreational activities organized by the City. This could engage the public in learning about the many things that City staff do to keep Toronto’s streets and public spaces and services running smoothly during the winter season and also learning techniques for safe driving on snow and ice. It could be delivered with collaborative efforts between Transportation Services, Parks Forestry & Recreation (PFR), Toronto Police Service, Toronto Parking Authority, and the TTC, with coordination by the Public Consultation Unit and will be promoted by Strategic Public and Employee Communications (SPEC) using variety of communication tactics.

The Winter Day Community Event could take place in advance of the winter season and prepare Toronto residents for the types of services they can expect from the City, and how individuals can be better prepared during a typical winter day and emergency events. Information could be provided about what residents and businesses can do to reduce delays or obstructions in snow clearing and removal, and about how the proposed bylaw and updated Major Snow Event Response Plan allow an earlier response time with improved communication and coordination. The public may also have an opportunity to find out more about staying active and the types of recreational activities available during the winter months.

Winter Day events could take place at select Transportation Services Yards across the city, showcase various types of snow maintenance equipment in the City’s fleet, and provide residents an opportunity to get up close to the equipment.

Major Snow Events and Snow Removal Operations

Generally, snowstorms greater than 25cm can be expected about once every two years. The last two winter storms with over 25cm of snow took place on January 17th, 2022, when approximately 55cm of snow fell over a 24-hour period; on March 4th 2023 approximately 26cm of snow fell over a 24-hour period. Winter snow events like this are considered to be Major Snow Events. Major Snow Events have the potential to require snow removal operations on public roads and sidewalks to enable users to return to normal activities as soon as possible. When Major Snow Events are anticipated, the City can declare a 'significant weather event' under Provincial O.Reg 612/06, which temporarily suspends the Provincial minimum maintenance standards for snow clearing, recognizing that certain response times are not feasible with high volumes of snow accumulation. The City can also declare a 'major snow storm condition' under the Municipal Code Chapter 950 to prohibit parking and standing along by-lawed routes to facilitate efficient snow removal operations. During a significant weather event, Transportation Services conducts Major Snow Removal Operations because on a city-wide basis there is more snow than can be safely stored in curb lanes or boulevards. Major Snow Removal Operations involve the removal of snow off the public right-of-way infrastructure, using trucks to relocate it to one of the City's snow storage sites. Snow Removal Operations were formerly known as "emergency snow removal operations".

Snow Removal Operations are different from Snow Clearing Operations. Snow Clearing Operations involve anti-icing, salting, and/or plowing of the public right-of-way infrastructure, where snow is chemically melted or pushed to the side of the public right-of-way. In major snow events, Snow Removal Operations are conducted following and/or in tandem with Snow Clearing. See Attachment 4 for the typical logistical functions of a Snow Removal Operation.

Current Council-approved service levels do not account for major snow events, therefore the levels do not set a feasible response time for a storm of the magnitude last experienced in January 2022. During that storm, this absence of clear response times expectation created uncertainty amongst residents about when the snow clearing would be completed, leaving many people anxious and frustrated. In practice, the time required to remove snow following a major snow event varies because each snow event is unique with a number of variables that impact how snow removal and maintenance take place and how quickly it can be completed. This report outlines a new approach to responding to Major Snow Events through a Major Snow Event Response Plan ('the Response Plan'). The Response Plan is guided by a Vision and Guiding Principles and includes a Prioritization Framework that better accounts for unique variables used to prioritize routes for snow removal operations. The Response Plan is a Five Phase Action Plan, that sets out a clear and consistent process for Transportation Services staff to use to implement snow removal operations, and to ensure lessons learned from each major snow event drive continuous improvement year over year.

<u>Vision and Guiding Principles</u>

A Vision and Guiding Principles were developed to guide the approach to snow removal operations in the event of a major snow event. They were informed by input from

engagement with partner agencies, internal staff, and public stakeholders representing vulnerable public right-of-way users, with a focus on people living with disabilities, people who cycle, seniors and children.

The approach for the Major Snow Event Response Plan is aligned with the Divisional Vision where staff are committed to provide a safe, efficient, and effective transportation system that serves our residents, businesses, and visitors in an environmentally, socially, and economically sustainable manner.

Although there are some social groups who are more vulnerable than others, during a snow emergency, everyone becomes more vulnerable. Sometimes emergencies can lead to uncertainty about how long the disruptions to transportation will last, how they are being addressed, and when normal activities can resume. This can lead to many human responses including a sense of heightened vulnerability or anxiety.

The Major Snow Event Response Plan's Vision Statement defines goals to be achieved during snow removal operations. The Vision clarifies expectations and outlines the roles and responsibilities for those accountable to help build confidence with the public.

The **Vision** is to respond to major snow events in a way that ensures:

- all residents, businesses and visitors understand what is happening in response to a major snow storm event as it unfolds,
- there are transparent and timely communications about where and when snow will be removed from streets, bike lanes and sidewalks for safe travel, and
- that City staff and contractors direct snow removal in an efficient and equitable manner and where there is greater demand.

Six **Guiding Principles** were identified to guide prioritization of snow removal and the approach to communications with the public.

1. **Safety:** Prioritize snow removal in areas that present the greatest safety risks.

2. **Access:** Minimize the time to remove snow-related barriers to emergency and essential services, including transit routes and stops.

3. **Mobility:** Ensure that snow removal activity serves everyone in a way that recognizes the needs of each mode of travel.

4. **Environment:** Mitigate operational impacts on the environment while facilitating safe travel paths. Preserve snow covering on natural landscaping where possible.

5. **Efficiency:** Optimize operations to minimize the duration of disruption caused by major snow accumulation, leveraging existing resources to their optimum level. Engage the public in removing obstructions (such as parked cars) as required.

6. **Communication:**
    - Communicate clearly with the public on multiple platforms and in multiple languages to advise of progress in removing snow and to manage expectations for timing of snow removal.
    - Communicate the importance for all users of our streets to stay alert.
    - Coordinate action among City staff, service providers and partner agencies.

The Vision and Guiding Principles guide the Prioritization Framework which provides detailed criteria for how to prioritize the order of where snow removal operations take place.

Five Phase Action Plan: Iterative Process

Prior to, during, and after a Major Snow Event, the Five Phase Action Plan will be carried out by Transportation Services Staff. The Major Snow Event Response Plan is designed to be an iterative process where the Framework and Criteria are updated when patterns are observed and opportunities for improvement are identified. The plan takes a proactive approach to public communication and a systematic response to remove snow, to increase public confidence in the system.

Phase One (Base Planning) takes place in advance of each winter season. Staff will create a Base Plan that incorporates reasonably predictable and known factors to be addressed for snow removal operations.

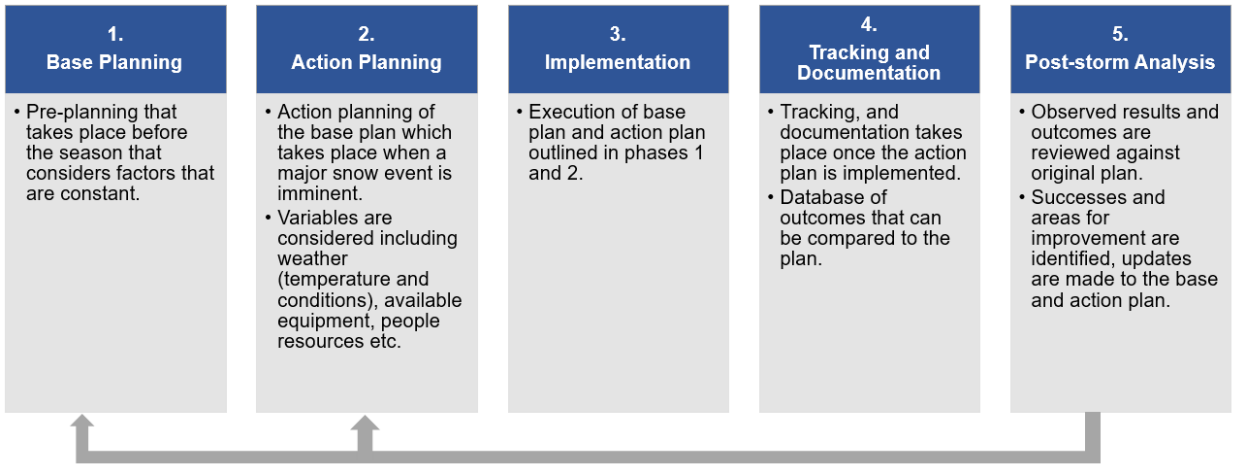
Phase Two (Action Planning), begins when a major snow event is imminent. This is where staff monitor the weather forecast and variables are considered including weather, available equipment, and labour resources. A tailored plan is established to complement the Base Plan.

Phase Three (Implementation) is where the Base and Action Plans are executed by internal and contract staff.

Phase Four (Tracking and Documentation) ensures recording of what takes place in the field during implementation of snow removal operations.

Phase Five (Post-storm analysis) is where internal staff compare the observed actions and outcomes tracked and documented in Phase 4 against the original base and action plans to understand any discrepancies and successes. If patterns are observed, staff can make updates to the Base Plan for future snow removal operations.

Image 1: Five Phase Action Plan



Data-Driven Approach to the Framework and Criteria

Every major snow event in the City of Toronto is unique because it depends on the total snow accumulation, the nature of the snow (e.g. heavy and wet vs light and powdery) and whether or not temperatures following the storm are warm enough to assist with melting the snow. Weather events with substantial snow accumulation, or a series of smaller snow events which together accumulate enough snow, can result in a major snow event that overwhelms the snow storage capacity of Toronto's right-of-way, requiring significant city-wide snow removal operations.

The previous Major Snow Event Response Plan was more than 10 years old. Over the past 10 years, much of the transportation network and infrastructure in the City of Toronto has evolved, such as a significant increase in cycling infrastructure. Toronto's road infrastructure varies across the city, ranging from an urban setting with infrastructure such as bike lanes and dedicated streetcar lanes, to a suburban setting with two to three lanes of vehicle travel in each direction, along with sidewalks and boulevards. The diverse nature of the transportation infrastructure necessitates use of different snow removal equipment and methods, often requiring some customization of the operations as the snow removal crews work around a number of obstructions (i.e parked cars, street furniture, utility infrastructure). Urban settings also have less space for snow storage because there is no boulevard between the road and sidewalk.

Considering these challenges, a data-driven approach will be used to inform the route prioritization of snow removal operations. By leveraging both qualitative and quantitative data, and guiding its analysis with the Vision and Guiding Principles of the "Major Snow Event Response Plan", an appropriately balanced snow removal plan will be developed.

Before the start of the 2024-2025 winter season, the first Base Plan of prioritized snow removal routes will be created and will include the following types of locations:

- On main street sidewalks and around Pedestrian Signals, to provide safe movement and access to services, and to support transit use and equity needs (including for people living with disabilities, and gender equity needs);
- At surface transit stops, including streetcar stops, and bus stops to provide safe access to transit services;
- Hospitals and Emergency Services stations to support continuity of access to emergency services, including sidewalks and boulevards next to parking locations adjacent to hospitals;
- Pedestrian crossing intersections in school zones, school bus loading zones and on-street parking and loading in school zones, including the sidewalk and boulevards adjacent to these spaces to provide safe access to schools;
- In bike lanes to facilitate safe and passable cycling infrastructure, recognizing that bicycle design makes users of bicycles more vulnerable to slippery and uneven surfaces, and
- On roads with limited snow storage capacity, recognizing that certain roads have more snow storage capacity.

The Base Plan will be reviewed annually to incorporate the prior season's experience. Attachment 5 shows heat maps of the key factors that reflect the locations that will be considered in the route prioritization analysis.

When it is known that a major snow event is imminent using the enhanced weather forecast system, the Base Plan will be tailored into an Action Plan using variable factors such as equipment availability, staffing of personnel and weather conditions. The base plan of prioritized routes provides a good basis for snow removal operations, but the action plan allows for the operational team to be nimble in responding to the uniqueness of each major snow event.

The data driven method Transportation Services is undertaking applies a similar approach to Stockholm's gendered snow clearing policy as noted in Attachment 6. Types of priority locations for snow removal in Stockholm are aligned with the above locations identified by Transportation Services for the City of Toronto, where sidewalks, bike paths, transit stops, and school zones would be prioritized.

Coordination Strategy for the Major Snow Event Response Plan

Major snow events require a coordinated response. The City of Toronto's Incident Management System (IMS) is a response system that is used to manage all stages of any incident and provides collaborating organizations with a common framework to communicate, coordinate and collaborate during an incident response. An incident is an occurrence of event that requires an emergency response to protect life, property, and/or the environment. During the action planning and implementation phases of the 5-phase approach, the IMS is used by staff to coordinate the incident response.

In 2023, the Toronto Emergency Management (TEM) office developed an Extreme Winter Weather Coordination Plan which can call upon an inter-divisional/inter-agency Incident Management Team (IMT) to support the response to extreme winter weather. While extreme winter weather can include major snow events, it also includes events or sequences of events with a range of phenomena such as freezing rain or ice precipitation, flash flooding, flash freezes, high winds, extreme cold temperatures, and various combinations of these. Major snow events that require snow removal operations are one of many scenarios in which TEM can call upon the inter-divisional/inter-agency IMT. Transportation staff will participate in the IMT with TEM playing the key role in communication, coordination, and activation of the inter-divisional/inter-agency IMT to coordinate the City's response and business continuity across a range of partners.

Within Transportation Services, a divisional IMT will be formed to focus on snow removal operations coordination among internal staff and contractors. The divisional IMT will meet on a regular basis to update the action plan as the weather unfolds and new information is collected about the snow removal operations. Key partners that impact or provide information about the snow removal operations such as Strategic Public and Employee Communications (SPEC), Customer Experience (311), and TTC would be part of this divisional IMT for a coordination of snow removal operations.

Training Program

Training programs are essential in preparing staff with the necessary skills and knowledge to perform their responsibilities effectively. All operations staff involved in winter maintenance activities attend an annual Snow School, a week-long training program that covers how staff validates contractor's work using GPS, how staff request contractors to deploy equipment and crews to start clearing snow, contract management protocols for approval of the daily contractor equipment standby rates, and how information is entered into the work management system to track all the contractors' work. Beginning with the 2024 Snow School session, the Major Snow Event Response plan will be added to the curriculum to familiarize staff with new protocols and strategies around snow removal operations. Drills and simulations will also be introduced to reinforce learning, build confidence, and identify and practice responding to potential issues before they arise in real scenarios. The combination of training and practicing of plan implementation through drills and simulations promotes teamwork and

communication, which is essential for well-coordinated responses to this type of major incident.

Communication Strategy

A snow event communications strategy will be developed prior to the winter season. One aspect of this strategy is an update to the existing direct mail pieces distributed to residents prior to every winter season to add key information about what residents can expect when snow removal operations are required.

Communication during events is equally important. A communication and media strategy will be included in the Base Plan, with elements that apply to prior to, during and after major snow events. This strategy will be refined in the Action Plan stage and implemented in parallel to snow clearing and removal operations. There will be communication to the public to provide advance notice of snow removal operations and what to expect, including parking prohibitions pursuant to City of Toronto by-law(s). Residents and Councillors will be kept informed about the status of the snow removal operations as it progresses; this will be done through various means including the PlowTO website, social media posts and press conferences/media interviews.

By-Law Changes in support of the Communication Strategy

In support of the communication strategy outlined above, this report seeks City Council's approval to allow for advanced notice to declare a "major snow storm condition". This new process will require amendments to City of Toronto Municipal Code Chapter 950, Traffic and Parking (see Attachment 7). The proposed changes remove the requirement for 5 cm of snow to have fallen before a "major snow storm condition" may be declared, and remove the 72 hour limitation on the length of a declared "major snow storm condition". These changes enable advanced notice to residents about the parking and standing prohibition, to promote earlier removal of cars that would obstruct snow removal operations. The proposed changes also remove the need for the Mayor or the General Manager of Transportation Services to extend the "major snow storm condition" after the initial 72 hours for any further period of time required for clearing or removal, or both, of snow from the highway. Since the speed of completing full snow removal on the right-of-way for a major snowstorm is limited by many factors, such as parked cars that the equipment needs to work around, these amendments will help improve the efficiency of snow clearing and removal operations. Under these changes, the major snow storm condition will be lifted with a declaration from the Mayor or General Manager of Transportation Services, as soon as it is appropriate to do so.

Transportation Services require the ability to temporarily close highways or portions thereof for a period up to and including 24 hours for each and any individual temporary closure between November 8 of one year and April 7, inclusive, of the following year in order to efficiently and effectively conduct snow removal operations. The dates of November 8 to April 7 align with the typical winter operational dates and winter maintenance contracts start and end dates when the contractors' equipment and crew need to be ready to deploy for snow clearing and removal on short notice.

The time-sensitive nature of snow removal operations makes it problematic to require a report to Community Council for the purpose of obtaining permission for a road closure, particularly given the monthly frequency of Community Council and Council reporting cycles.

In order to ensure the responsiveness that snow removal operations might require, it is recommended that the General Manager, Transportation Services, be given the delegated authority for a period up to and including 24 hours for each and any individual temporary closure between November 8 of one year and April 7, inclusive, of the following year to temporarily close to vehicular traffic any highway or portion of a highway, including those highways listed in Section 937-4 of Code Chapter 937, as required for the purposes of snow removal operations. It is also recommended that, in carrying out this delegation, the General Manager, Transportation Services, be exempt from Section 937-5 of Chapter 937. That Section currently gives the Ward Councillor discretion to require the General Manager to report to the Community Council for final decision about a temporary road closure. Under the proposed changes, the Ward Councillor will not have this discretion when the temporary closure is for the purposes of snow removal operations. Nonetheless, Transportation Services will continue to proactively inform the local Ward Councillor prior to temporarily closing a highway or portion of highway under this delegated authority and will make best efforts to inform the public. These recommended changes require amendments to Chapter 937.

City of Toronto Municipal Code Chapter 27, Council Procedures, will also need to be amended to provide that the current delegation to Community Council to temporarily close public lanes or public alleys, local roads, collector roads, and minor arterial roads, exclude closures for the purpose of snow removal, and that authority for closures for this purpose be delegated to the General Manager, Transportation Services, in carrying out the authority recommended as described above.

Engagement Strategy

Public Surveys

In January of 2023, Transportation Services staff conducted a Representative Survey of Torontonians with disabilities regarding navigating the City's sidewalks and streets. Over 1000 Toronto residents living with a disability or a caregiver of someone living with disabilities participated. The survey highlighted six categories:

- streets, intersections, crosswalks or bike lanes
- sidewalks
- storefront entrances
- street furniture and other pedestrian amenities
- construction
- seasonal maintenance

Results from the survey revealed that seasonal maintenance ranked second among the six categories that most negatively impacted the ability of people living with disabilities to move around the city in the 12 months prior to the survey. Among participants who

chose seasonal maintenance as one of their top three areas of concern, the seasonal challenges they encountered most often were icy sidewalks and poorly cleared snow.

In May of 2024, the City's Public Consultation Unit conducted an online survey for Transportation Services to capture opinions on the topic of major storm response. The survey aimed to engage with vulnerable road users in Toronto, including people with disabilities of various kinds which affect their mobility, people who walk frequently, and people who cycle. The details of the survey can be found in Attachment 8. The survey provided a brief explanation of how snow is removed after major snow storms and presented the draft Vision, Principles and priorities proposed for the updated response plan. It asked participants about their level of agreement with the Guiding Principles, prioritized locations for snow removal and other feedback suggestions.

The survey received a total of 239 responses. These responses included twenty-five organizational representatives of the accessibility and cycling communities.

Survey results noted over 85 percent of respondents agreed that the Guiding Principles reflected how they would like to see snow removal activity prioritized. Almost ninety percent agreed the location priorities are reasonable. Support was also very strong among people with disabilities, with 94% to 96% in agreement with the Guiding Principles and location priorities.

Overall, the responses to the survey expressed strong support for the intentions and objectives of the Snow Removal Plan, while also reminding the City of the high expectations for effective and prompt clearing of snow from transit stops, sidewalks and bikeways.

Partner Agencies

Partner agencies such as TTC, School Boards, Emergency Services (i.e. Toronto Police, Toronto Fire, Toronto Paramedics) are critical to the success of the "Major Snow Event Response Plan". Discussions with these key partner agencies have started to seek alignment on the Vision and Guiding Principles of the plan. Though the focus of the engagement was on snow removal operations, we also learned that partner agencies were mostly concerned about typical winter maintenance issues such as windrow clearing. The next step to the engagement strategy is to form a Major Snow Event Working Group with partner agencies for alignment and information exchange on snow removal operations to establish effective coordination of snow removal operations.

Toronto Parking Authority and Transportation Services staff are exploring options to improve advance notifications to the public about restricted parking at paid on-street parking spaces that overlap with snow routes. These notifications could provide an additional channel to inform the public of prohibited parking during a Major Snow Event that requires snow clearing and/or removal and will assist in the coordination of removal operations.

Next Steps

Work is underway to finalize the next iteration of the Major Snow Event Response Plan. The goal is to have the Plan ready for implementation for the 2024-25 winter season. It is the intention of Transportation Services to update this plan regularly to reflect the changing infrastructure and circumstances in the City. Staff will continue to implement the improvements for the 2024 – 2025 winter season. Tracking and documentation will continue throughout the season to provide an update on the Annual Winter Maintenance for the 2024-25 winter season next July.

CONTACT

Vincent Sferrazza
Director, Operations & Maintenance
Transportation Services
Tel: 416-338-0977
E-mail: Vincent.Sferrazza@toronto.ca

SIGNATURE

Barbara Gray
General Manager, Transportation Services

ATTACHMENTS

Attachment 1:
2023-2024 Winter Maintenance Review

Attachment 2:
2023-2024 Winter Service Request (SR) Data

Attachment 3:
Revised Snow Clearing Level of Service Table

Attachment 4:
Diagram of Snow Removal Operation

Attachment 5:
Heat Maps for the Prioritization Framework of the Major Snow Event Response Plan

Attachment 6:
Case Study: Stockholm’s Gender-Based Snow Clearing Analysis

Attachment 7:
Municipal Code Amendments

Attachment 8:
Survey Results Summary: Survey on the Toronto Snow Removal Plan