

Roadways Emergency Response Plan for Extreme or Unusual Snow Events

ISSUE

This report presents the Roadways Emergency Response Plan for Extreme or Unusual Snow Events.

RECOMMENDATION

That the Standing Policy Committee on Transportation recommend to City Council:
That the Roadways Emergency Response Plan as provided within this report be approved in principle.

BACKGROUND

The Roadways, Fleet and Support Department (RFS) does not currently have a formal plan for responding to extreme or unusual winter storms that cause major disruptions to mobility and safety concerns for the residents of Saskatoon.

Following the November 2020 severe snowstorm that resulted in 30 to 40 cm of snow accumulation, a city-wide snow grading and removal were undertaken to restore mobility and safety in the city. The initial steps of the response to this extreme snow event were undertaken following the current snow event management model, applicable to typical winter snowstorms. The approved service level includes snow grading and removal only on the priority street system. However, it became evident in the early stages of the response to the snowstorm event that due to the severity and magnitude of the snowstorm the current snow management model would not restore safety, mobility, and regular winter driving conditions across the city. Snow grading and removal would be required on all city streets, including local streets in residential neighborhoods. An emergency response plan specific to this snowstorm was developed and implemented while the response operations were in progress. The total cost of the response to the November 2020 snowstorm was approximately \$14.0 million.

The overall response to the November snowstorm provided the Administration with a significant amount of new operational and financial information. Field level operational planning and execution experience, and lessons learned were documented to retain institutional knowledge of the response for future reference.

The Standing Policy Committee on Transportation at its meeting held on May 3, 2021, received as information the Development of an Emergency Response Plan for Extreme or Unusual Snow Events report, which in part states that:

“Unless otherwise directed, the Administration will develop a formal Emergency Response Plan, triggers for initiating the Emergency Response Plan, and a recommended reserve funding strategy for

responding to extreme or unusual snow events and present it to City Council prior to the start of the next winter season.”

DISCUSSION/ANALYSIS

The attached plan provides details of a phased approach for responding to future extreme or unusual snow events that have the potential to severely impact safety and mobility across the city. The plan includes criteria for activation of the emergency response.

The recommended criteria for the activation of the plan are:

- major snowfall with snow accumulation greater than 25 cm and/or combination of snow, freezing rain, and wind; and
- reduced mobility to the point that light vehicles cannot travel on city streets; mobility across the city is severely impacted, and the regular winter maintenance level of service applicable to typical winter snow events can not be met.

The above criteria are considered guidelines. With the anticipated climate changes and variability in winter weather, a combination of snow, freezing rain, ice accumulation, severe temperatures, decreased visibility, and high winds could also result in activation of the plan based on the impact to mobility and safety in the city.

If Saskatoon experiences another extreme snow event in the future, the City will observe conditions and utilize all available information to decide if the plan needs to be activated.

As part of the development of the plan, two engagement sessions coordinated by the City’s RFS Department and Emergency Management Organization (EMO) were held in August 2021 to provide external stakeholders with the opportunities to provide input and feedback on the presented phased approach. The following groups accepted invitations to participate at the sessions: Greater Saskatoon Catholic School Division, Saskatchewan Health Authority (Emergency Management Services), University of Saskatchewan, SaskPower, Environment Canada, Greater Saskatoon Chamber of Commerce, North Saskatoon Business Association, and Riversdale, Downtown, and Broadway Business Improvement Districts. Several other groups were invited but were not able to attend.

These sessions discussed a whole community approach to an emergency response. As part of a whole community response to emergency management, all residents should have a 72-hour plan for emergency events. Public Safety Canada advises Canadians that “If an emergency happens in your community, it may take emergency workers some time to reach you. You should be prepared to take care of yourself and your family for a minimum of 72 hours.”¹

¹ <https://www.getprepared.gc.ca/cnt/rsrscs/pblctns/yprprdnssgd/index-en.aspx>

There were no objections noted to the proposed phased approach to restoring public safety and mobility following the activation of the plan. As discussions with external stakeholders continue in the future, operational elements of the plan may be refined to further address and integrate the needs of the whole community into the plan.

The Administration plans to continue working with the critical infrastructure partners and external stakeholders to raise awareness around the need for a whole community approach to managing emergencies. If approved by City Council, the plan will be made available to all external stakeholders so that it can be considered in their emergency planning.

To recommend a funding strategy for future responses to extreme winter events, three reserve options were considered. The following reserves are currently approved under the City of Saskatoon Council Policy C03-003, Reserves for Future Expenditures (Policy): Snow and Ice Management Contingency Reserve, Major Natural Event Reserve, and Fiscal Stabilization Reserve.

Snow and Ice Management Contingency Reserve

The purpose of this contingency reserve is to accumulate funds and offset any over-expenditures in the Snow and Ice Management budget attributable to variations in normal winter weather conditions, thus stabilizing the effect of weather variations on the mill rate and on the City's year-end financial position. In essence, the purpose of this reserve is meant to offset major variations in snowfalls such as a major snowstorm.

The Policy states that an annual provision will be made from the City's Operating Budget in those years when the reserve is not at the maximum. The Policy requires that the balance of the reserve does not exceed the annual operating budget for the Snow and Ice Management service line.

The annual reserve contribution is currently \$488,500. The Policy allows that the Snow and Ice Management service line surpluses be contributed to the reserve if the overall service line spending is less than the budgeted amount. These surplus transfers are typically considered when there are no pressures in other operating programs that need to be offset.

Prior to the November snowstorm, the balance of the Snow and Ice Management Contingency Reserve was \$3.45 million. Following the November snowstorm, the reserve was depleted, and the current reserve balance is \$0.

Major Natural Event Reserve

This reserve is currently inactive. The purpose of this reserve is to assist in offsetting operational and capital expenditures required due to a major natural event. Major natural events include, but are not limited to blizzards, plough winds/tornadoes, heat wave, severe rain, river flood event and extreme cold. The Policy states that provisions to the reserve shall consist of an annual amount authorized by City Council through the Operating Budget. The current provision from the Operating Budget is \$0 and the

current reserve balance is also \$0. The Policy states that the reserve will be capped at \$250,000.

Fiscal Stabilization Reserve

The purpose of the Fiscal Stabilization Reserve is to offset any tax-supported operating deficits incurred in any year.

Estimated Frequency of Extreme Snow Events

1. Environment Canada Historical Winter Weather Data² - Based on 30 years of historical weather data for Saskatoon, the probability of a single snowfall exceeding 25 cm, is currently approximately 1 occurrence every 10 years.
2. Recent Organizational Experience - Based on organizational experience, the previous severe snow event with snowfall of 36 cm occurred in January 2007, 14 years ago. This event had a significant impact on mobility across the city, similar to the November 2020 snowstorm. Based on this experience, it could be assumed that another extreme snow event may occur in approximately 14 years.
3. Anticipated Climate Change Impact - Environment Canada has indicated that climate change modeling shows there will be increased temperatures and increased precipitation over the next several decades in the Saskatoon area.

The City of Saskatoon Climate Change Plan³ indicates that over the next 80 years, global climate models project that Saskatoon can expect warmer overall temperatures, more hot days, increased precipitation, changes in precipitation timing, increasingly variable seasons, and more intense storms.

As the frequency and severity of inclement weather is predicted to increase with climate change, it could be assumed that the frequency of future extreme snow events may be higher (e.g., 1 occurrence every 7 years) than the estimated frequency based on 30 years of historical data for Saskatoon.

All things considered, the above frequencies of extreme snow events can only be considered an estimate.

² [Canadian Climate Normals 1981-2010 Station Data - Climate - Environment and Climate Change Canada \(weather.gc.ca\)](https://climate.weather.gc.ca)

³ [Climate Action Plan | Saskatoon.ca](https://climateaction.saskatoon.ca)

FINANCIAL IMPLICATIONS

The cost of the November 2020 emergency winter storm response was approximately \$14.0 million.

The allocation of dedicated funding for the execution of the plan has been requested through the 2022/2023 Business Plan and Budget Options report (Appendix 1) tabled at the August 23 Governance and Priorities Committee meeting and will be deliberated at the 2022/2023 Business Plan and Budget Review meeting in November 2021.

Based on the cost of \$14.0 million and considered scenarios for the frequency of extreme snow events, three different annual reserve contribution levels are being proposed to accumulate sufficient dedicated funding for the execution of the plan. Administration is recommending using the Snow and Ice Management Contingency Reserve as a funding source for the Roadways Emergency Response Plan to Extreme and Unusual Snow Events.

If \$1.0 million is contributed annually to the Snow and Ice Management Reserve, the required funding would be accumulated over a period of 14 years. This reserve contribution would be sufficient to fully execute the plan once every 14 years.

If \$1.4 million is contributed annually to the Snow and Ice Management Reserve, the required funding would be accumulated over a period of 10 years. This reserve contribution would be sufficient to fully execute the plan once every 10 years.

If \$2.0 million is contributed annually to the Snow and Ice Management Reserve, the required funding would be accumulated over a period of seven years. This reserve contribution would be sufficient to fully execute the plan once every seven years.

If no additional reserve contribution is allocated to the Snow and Ice Management Reserve, the required funding would come from the existing balances of the Snow and Ice Contingency Reserve and Fiscal Stabilization Reserve at the time of an extreme or unusual snow event.

Regardless of the selected reserve contribution level, there is a financial risk that the criteria could be met more frequently than anticipated which would impact the overall City budget. Backfilling the expenditure in this case would be through the use of the general Fiscal Stabilization Reserve which is the purpose of that reserve.

The Administration has also presented several options to the Standing Policy Committee on Transportation, and Governance and Priorities Committee, for an increased level of service for the Snow and Ice Management program. These options include local street snow grading and removal in typical (non-emergency) snow event situations. While residential street grading and removal could be triggered by the Roadways Emergency Response Plan activation, the implementation of any other option for a planned increase in the typical Snow and Ice Management service level is considered separate to the emergency response conditions detailed in this report.

The increased level of service options that include local street snow grading and removal in typical snow event situations, assumed that this work would be completed either every year or approximately twice every five years contingent on the approved option. Having dedicated reserve funding for both 1) an increased level of service that includes a city-wide snow grading and removal, and 2) a response to an extreme snow event that also requires a city-wide clean up that could occur every 7 to 14 years, would provide the highest level of certainty that the required funding would be in place if both options occurred as estimated over a period of approximately 10 years (e.g. residential snow grading and removal three to four times and an extreme snow event once in a period of 10 years). These two options would be triggered by different criteria.

Having dedicated funding for both the approved enhanced level of service and response to an extreme and unusual snow event manages risk if funding is required for both operations within the forecasted frequencies.

Removal of snow from local streets substantially increases the amount of snow hauled to snow management facilities. The Administration is currently completing planning work for new snow management sites to mitigate environmental impacts at the existing non-engineered sites.

OTHER IMPLICATIONS

There are no privacy, legal, social, or environmental implications identified with this report.

NEXT STEPS

The Administration has held initial consultations with internal and external stakeholder groups regarding the phasing and timelines proposed within the plan. If City Council approves the plan, further work is planned with these groups to test the response plan during a tabletop emergency exercise.

Communications will also be prepared to inform the public about the planned approach during the next extreme or unusual snow event and the necessary preparations for residents to have an emergency plan for 72 hours.

APPENDICES

1. City of Saskatoon Roadways Emergency Response Plan

Report Approval

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