

Snow Clearing on Priority 2 Streets

ISSUE

Snow and ice service level timeline for snow clearing is not consistently met for Priority 2 streets. What options are available to meet the snow and ice service level timeline for Priority 2 streets?

BACKGROUND

History

Saskatoon's service level for snow and ice management outlines service level targets for winter road maintenance (Appendix 1). When snowfall exceeds five centimetres, the City declares a snow event and City crews and private contractors clear snow from streets designated as priority streets. Approximately 41% of city streets are designated as priority streets and cleared after every snow event. The remaining 59% are local streets which are not cleared after snow events. They are cleared only in cases of severe rutting or snowpack depth of 15 centimetres (six inches) prior to snowmelt to maintain sufficient mobility. The priority streets are classified into Priority 1, 2 and 3 levels. The service level timelines for the completion of snow clearing on the priority streets are:

- Priority 1 streets (P1s) - within 12 hours;
- Priority 2 streets (P2s) - within 36 hours; and
- Priority 3 streets (P3s) - within 72 hours after the snowfall ends.

The City regularly reviews new streets added to the road network and uses the prioritization criteria to determine if a new street should be a priority street and the classification. The total length of priority streets has grown by 5.2% since 2017, when the current service level was approved.

Between 2019 and 2021, GPS tracking was introduced to the civic fleet and contracted snow clearing equipment. This enhanced the Administration's ability to track and report on the timelines for completion of priority street snow clearing after snow events.

Current Status

Prior to 2021, the City reported on the overall priority network completion timelines for snow event responses. Once GPS was installed on snow clearing equipment, additional data and analytics were available, allowing for more detailed reporting on the completion of snow clearing on P1, P2 and P3 streets to monitor if service levels were being met for each of the three priority street classifications.

Since the introduction of GPS tracking, the Administration has reported on its ability to typically meet the service level timelines for P1 and P3 streets. As Table 1 indicates, the service level timeline for snow clearing on P2 streets has not been consistently met. With the current volume of streets classified as P2s, the current City and contractor

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resources normally deployed after snow events are not sufficient to clear all P2 streets within the service level timeline.

Table 1: Snow Clearing Response Time Scorecard

Year	On-Time Completion Record		
	Priority 1 (within 12 hours after snowfall)	Priority 2 (within 36 hours after snowfall)	Priority 3 (within 72 hours after snowfall)
2021/22	95%	67%	100%
2022/23	97%	81%	100%
2023/24	100%	72%	100%
2024/25	95%	78%	98%
Average	97%	75%	100%

Over the last four winter seasons, an average of 97% of P1 streets were cleared within the P1 service level timeline. Some outlier events lowered the P1 average, primarily extreme snowstorms, or back-to-back major snowfalls. This indicates that the total length of P1 streets cannot be further increased with the current crew and equipment resources without extending the completion timeline beyond a marginal delay or adding additional resources.

Over the last four winter seasons, an average of 75% of P2 streets were cleared within the P2 service level timeline. This indicates that the total length of P2 streets exceeds the current crew and equipment resource capacity to complete clearing within the service level timeline. The remaining 25% of P2 streets were completed within the P3 service level timeline (72 hours).

Currently, P1 and P2 streets make up 80% of the priority network, by length in lane kilometres. One kilometre of street with one driving lane in each direction is considered two lane kilometres. The length of P1 streets is 22% of the entire priority network and the length of P2 streets is 58%. P1 and P2 streets are to be completed in the first 36 hours or 50% of the 72-hour service level timeframe for the completion of all priority streets.

The length of P3 streets is 20% of the priority network. They are to be completed in the remaining 36 hours or 50% of the 72-hour service level timeframe.

As Table 2 and the map in Appendix 2 show, there is disproportionately more P2 streets (58% of the priority network) than P3 streets (20% of the priority network), relative to the allocated snow clearing time of 24 and 36 hours for these streets, respectively.

Table 2: Service Level Timeframes Compared with Network Length Cleared with Graders

Category	Hours to Clear	Percentage of Current Priority Street Network Length	Percentage of 72 hour Service Level Timeframe
Priority 1	12	22%	17%
Priority 2	24	58%	33%
Priority 3	36	20%	50%
	Cumulative Hours to Clear After Snowfall Ends	Cumulative Percentage (Network)	Cumulative Percentage (Time)
Priority 1	12	22%	17%
Priority 2	36 (P1 and P2)	80% (P1 and P2)	50% (P1 and P2)
Priority 3	72 (P1, P2 and P3)	100% (P1, P2 and P3)	100% (P1, P2 and P3)

This analysis shows that 50% of the time (36 hours) is available to clear snow on 80% of the priority street system (P1 and P2) with the remaining 50% of the time (36 hours) available for the remaining 20% of the priority street system (P3).

City of Saskatoon's Current Snow Clearing Approach

After the declaration of a snow event, approximately 30 City and contractor graders and eight snowplow trucks are in operation 24 hours a day, clearing the priority street network and placing snow into piles (windrows) on the median, boulevard or parking lane. Appendix 3 illustrates the timelines and activities during and after a snow event.

The following factors are used to prioritize streets:

- Annual Average Daily Traffic (AADT) – How busy is the road?
- Road Classification – What is the typical road configuration?
- Emergency Response Facilities – Is the adjacent land use a hospital, ambulance depot, fire station, police station, EMO headquarter etc.?
- Transit Route – Does the street support bus rapid transit or regular transit routes?

Currently, due to the significantly higher number of P2 streets compared to P3 streets, and the disconnected nature of P3 streets, some P3 segments are often cleared as part of P2 streets. Rather than strictly following the City's priority street hierarchy, this practice allows for operational continuity and efficiency by reducing equipment mobilization from one P2 street to another while skipping a P3 segment in between.

Approaches in Other Jurisdictions

Appendix 4 provides information on how other Canadian cities have prioritized their road network and their service level timelines for the completion of snow clearing.

Among the major western Canadian prairie municipalities surveyed (Calgary, Regina, Edmonton, Winnipeg), Saskatoon has the highest service level for Priority 1 streets at 12 hours, Priority 2 street service levels range from 36 hours to 5 days, with Saskatoon

at 36 hours, and Priority 3 streets range from 60 hours to up to 14 days, with Saskatoon at 72 hours.

OPTIONS

To address the snow and ice service level timeline for snow clearing not being consistently met for Priority 2 streets, the Administration explored the following two options:

Option 1 - Increase Service Level Timeline for Completion of Snow Clearing on Priority 2 Streets

The current service level for the completion of snow clearing on P2 streets is 36 hours after the snowfall ends. Over the past four years, 75% of P2 streets met the service level timeframe. The average completion timeline for P2 streets was 45 hours.

In Option 1, the service level timeline would be increased from 36 hours to 48 hours to closely align with the completion timeline that is currently being achieved. Service level timelines for P1 and P3 streets would remain the same.

The City of Edmonton has recently implemented a similar change for their P1, Phase 2 streets (arterial roadways, downtown business districts and hills). They increased the service level timeline from four days (not aligned to budget) to five days (aligned to budget).¹

Benefits and Challenges

This option would align the service level timeline for P2 streets with what residents currently experience and allow the City to consistently meet the service level timeline on all P2 streets. The option does not require any additional funding as the current City and contractor resources are sufficient to meet the revised service level timeline.

Option 2 - Increase Crew and Equipment Resources for Snow Event Responses

Without changing the current service level timeline, additional City and contractor resources are required to consistently meet the current service level timeline on all P2 streets. The additional resources include eight graders (four City and four contractor graders) and eight seasonal operators for the day and night shifts, at an estimated operating cost of approximately \$890,000 per winter season, based on six snow events. In addition to this operating funding, the City would require additional capital funding to purchase four graders at an estimated total cost of approximately \$2 million which is currently unfunded.

Benefits and Challenges

This option would allow the City to consistently meet the current service level timeline on all P2 streets, as well as add capacity for future increases to the priority street network. The additional graders and staff would reduce overall completion timeframe for snow event responses, not just for P2 streets.

¹ City of Edmonton. Snow and Ice Control Annual Report. 2023-2024 Winter Season. Page 10.

The main disadvantage of this option is the substantial increase in costs to complete a similar amount of snow clearing in a shorter period of time.

Other Considerations

The new Link/Bus Rapid Transit system is anticipated to go into service in 2028. Due to the expected impact on the existing bus routes, Saskatoon Transit plans to re-design the entire bus route network in conjunction with the launch of the new system. Once the bus route network is re-designed, the Administration plans to complete a comprehensive review of the entire priority street network using the new bus rapid transit and bus route information and bring forward a report to City Council in 2027 for review and inclusion in the 2028/2029 Multi-year Business Plan and Budget. Until then, regular reviews of the priority street network will continue to occur when new streets are added to the street network in newly built neighbourhoods.

RECOMMENDATION

That the Standing Policy Committee on Transportation recommend to City Council:

1. That Option 1: Increase Service Level Timeline for Completion of Snow Clearing on Priority 2 Streets be approved; and,
2. After the Saskatoon Transit Bus Network Design is completed, the Administration undertake a comprehensive review of the Priority Street Network and Service Level for Snow and Ice Management for consideration in the 2028/2029 Multi-Year Business Plan and Budget.

RATIONALE

Option 1 is recommended as there would be no reduction in the actual service level provided, it would not require any additional funding, and it would allow for snow clearing service levels on all P2 streets to be consistently met.

ADDITIONAL IMPLICATIONS/CONSIDERATIONS

If Option 1 is approved, there are no financial implications as the service levels are being revised to align with the budget for the snow and ice management program. If Option 2 is approved, it would require an increase of \$890,000 to the snow and ice management budget and an estimated \$2 million for the purchase of four graders.

NEXT STEPS

If Option 1 is approved, the Service Level for Snow and Ice Management document on the City's website will be updated to reflect the change in the service level timeline for P2 streets and the changes will be reflected in public education and awareness campaigns for the snow and ice management program.

APPENDICES

1. Service Level for Snow and Ice Management, revised December 2023
2. Current Priority Street Network
3. "Be In the Know About Snow" poster
4. Road Prioritization Criteria of Canadian Cities: A Jurisdictional Scan

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