

ANNUAL WINTER MAINTENANCE SUMMARY

2018/2019





Slow down.
Be safe.

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Introduction

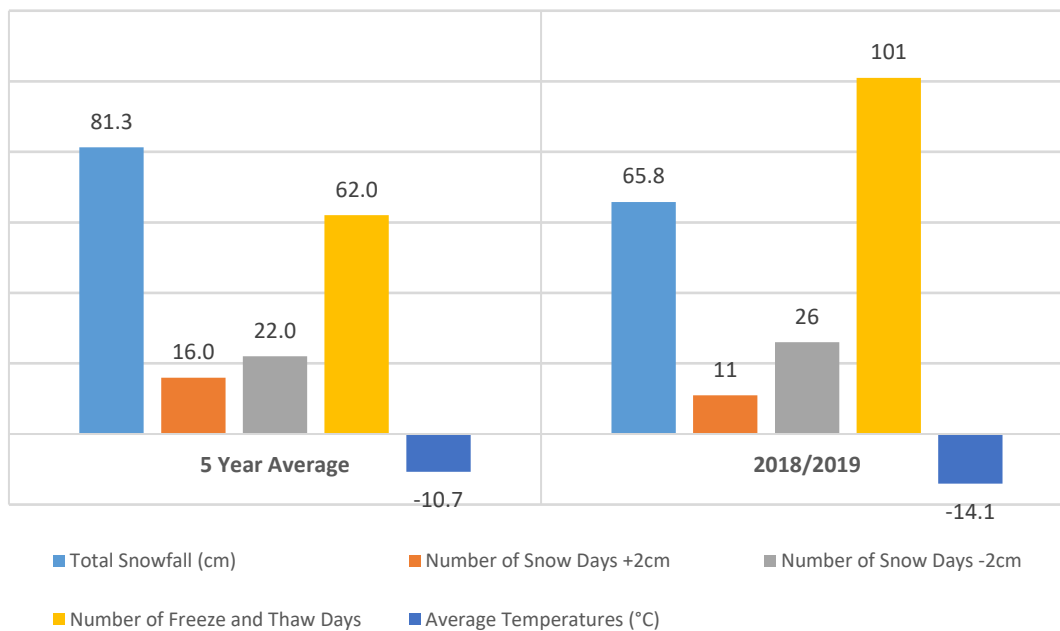
Approved by City Council on December 18, 2006, and implemented in November 2007, the Winter Maintenance Policy (Policy) guides operations that effectively supports the health, safety, attractiveness, and economic viability of the city. Reviewed annually, the Policy was created in an effort to provide an acceptable and consistent level of service when maintaining the road network and to ensure safe winter driving conditions for the citizens of Regina. This includes guidelines and timelines regarding the plowing of streets, sidewalks, and alleys following snow events, and routine maintenance of the road network during the winter months.

2018/2019 Accomplishments

- Applied over 15,400 tonnes of total ice control material to mitigate slippery road conditions
- Applied approx. 1,700 tonnes less salt to city streets, sidewalks, and alleys as compared to previous winter season.
- Supplied over 200 tonnes of sand at our Winter Sandboxes for residents to use on their sidewalks and driveways as a result of the freezing rain event
- Added a new sandbox location in the North West part of the city
- Stored and maintained over 260,000 cubic metres of snow at the Snow Storage Site
- Generated \$360,000 in revenue at the Snow Storage Site
- Responded to 1,688 Service Requests with 94 per cent responses within 48 hours.
- Below average snowfall during the first half of the season allowed collaboration with other branches resulting in a total cost savings and cost avoidance of \$634,446
- Shared key initiatives and learnings with other municipalities at the APWA and CPWA Snow Conferences in 2018

Regina residents experienced below average snowfalls. However, the average temperature during 2018/2019 season dropped considerably making it a much chillier winter. A significant increase in the number of freeze-thaw days, below-average temperatures and gusty winds provided challenges like slippery pavement conditions and blown-in snow covered street sections for the Winter Maintenance staff.

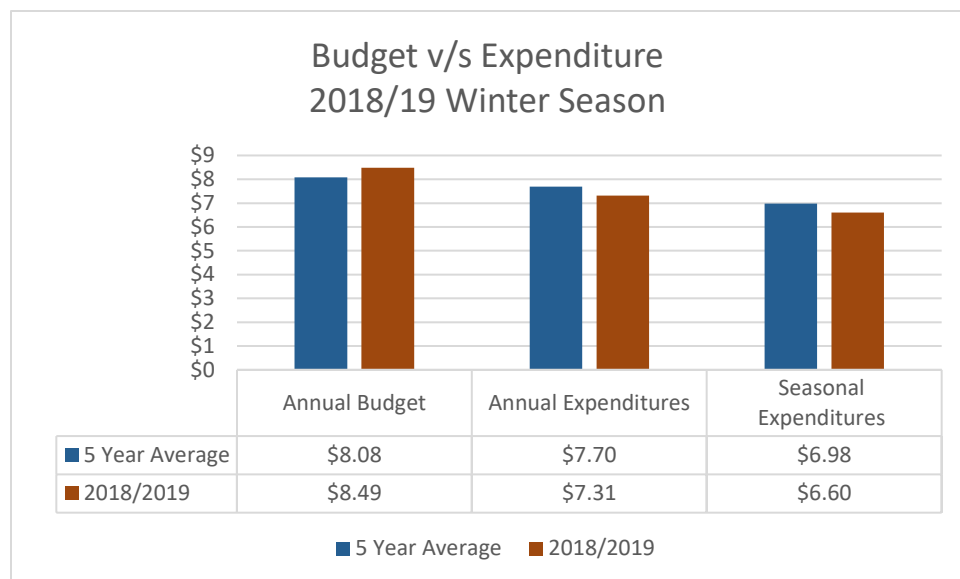
Environment Data
2018-19 Season vs 5-Year Avg



Budget & Expenditures

The Winter Maintenance budget is used for the delivery of services to meet the objectives outlined in the Policy. The 2018 budget was \$8.49 million and total expenditures were \$7.31 million, with a surplus of \$1.18 million. The 2018 annual expenditure as well as 2018/2019 seasonal expenditures were slightly lower than the respective 5-year average values. Winter Maintenance Branch identified major savings as a result of various initiatives, and close monitoring and analysis of winter maintenance activities.

The 2019 budget is \$8.86 million, with current expenditures of \$5.36 million as of August 31, 2019. The total expenditures for 2019 are forecasted to be \$8.39 million, based on average conditions expected for October through December. It is anticipated that there will be a surplus of approximately \$471,000 at the end of 2019. This is based on another below average winter and due to cost avoidance from work performed for and funded from other areas.



**Seasonal expenditures represent traditional winter season expenditures between October and April*

Winter Road Maintenance Reserve:

The Winter Road Maintenance Reserve is an operating reserve used to manage annual fluctuations in the winter road maintenance program expenditures that may arise due to unpredictable winter events. Through a reserve review and subsequent Council approval in May 2018, which included analyzing historical expenditures, it was determined that a minimum limit of \$1 million and maximum limit of \$2 million was found to be reasonable to fund any fluctuations in seasonal expenditures. The amount in Winter Road Maintenance Reserve (WRMR) as of now is \$2.874 million. However, Finance & Audit Committee has approved to transfer \$1 Million from WRMR to Asset Revitalization Reserve (ARR). Hence, the available balance in the WRMR shall be **\$1.87 Million**.

POLICY OBJECTIVES



All roads are made passable for **EMERGENCY RESPONSE VEHICLES**



PRIORITY 1 ROADS: Normal winter driving conditions and reasonable sidewalk access are provided on key routes through systematic plowing and sanding operations



PRIORITY 2 ROADS: Normal winter driving conditions and reasonable sidewalk access are provided along regional commercial developments and secondary routes through systematic plowing and sanding operations



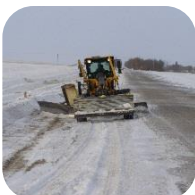
PRIORITY 3 ROADS: Normal winter driving conditions are provided along tertiary routes through systematic plowing and sanding operations



Safety and travel efficiency are provided through the plowing and removal of windrows from in front of **GUARD RAILS** and off of **BRIDGE DECKS**



ALLEYS are passable for the collection of solid waste collection and access by utility companies & the public



Normal winter driving conditions are maintained with **SNOW REMOVAL** operations



RESIDENTIAL and low volume routes are made passable through **PLOWING** operations

Policy Objective Achievements



1,100 km of roads

Winter Maintenance activities require a great deal of coordination as the City crews cover a lot of distance when clearing snow each winter. There are nearly 1,100 km of roads in our community and winter crews are hard at work during all hours to keep our roads safe.

15,400 tonnes of sand and salt



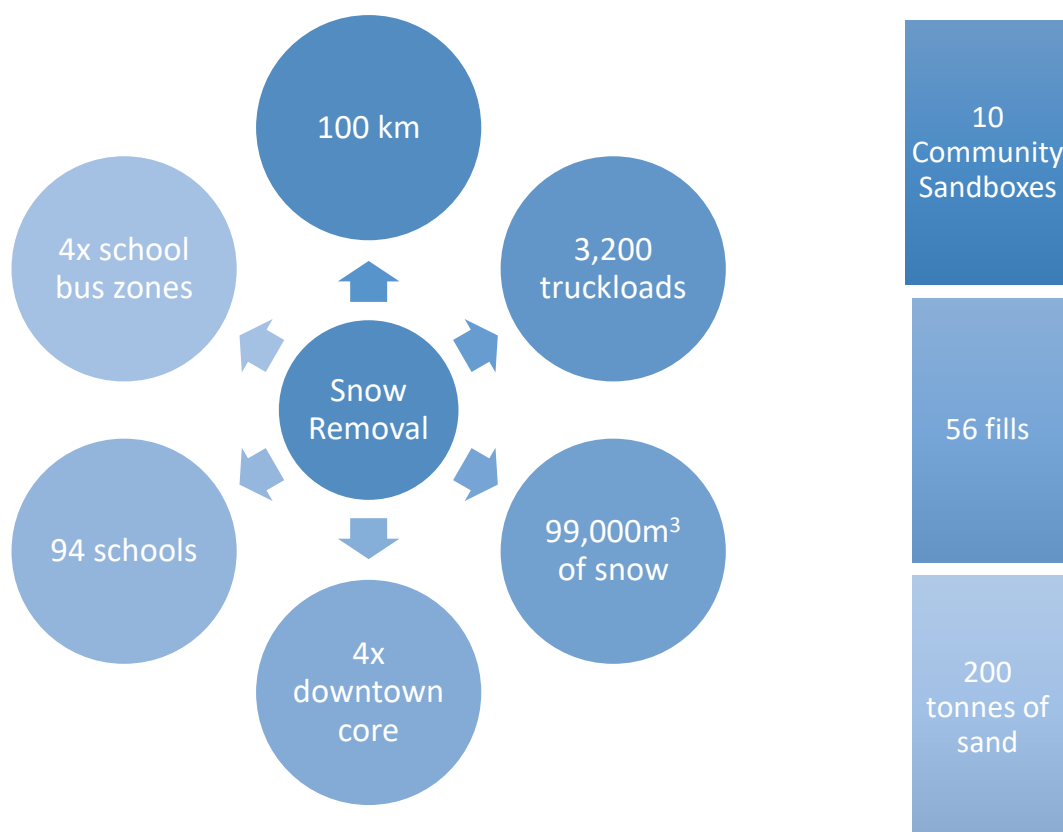
The community experienced four major snow events requiring major plowing operations and winter maintenance activities outlined in the Policy.



260,000 m³ of snow at the Snow Site

2018-2019 Major Snow Events

Date	Accumulation	Forecast	Systematic Plow by Category					
			1	2	3	4	5	Alleys
January 19	5 cm over 24 hours	7 cm	x	x	x	x		
January 27	4.5 cm over 24 hours	8 cm	x	x	x	x		
February 3	7 cm over 24 hours	30 cm	x	x	x	x		
February 13	8 cm over 24 hours	14 cm	x	x	x	x		



Winter Maintenance Modes

When staff move into the winter season in November of every year, they are scheduled to provide around the clock service with 20-hour coverage, seven days a week. This helps minimize overtime while improving response time during storms.

When the snow starts falling, roads are prioritized, and the busiest roads are plowed first. Factors that contribute to the priority include traffic volumes, traffic speeds, and emergency routes. While the snow is falling, winter crews primarily focus attention on Category 1 and 2 streets, and this is called Storm Mode in the Policy. Category 1 roads include our major arterials and high-speed roads such as Lewvan Drive, Ring Road, Albert Street and Broad Street. Category 2 roads include streets like Elphinstone Street, Broadway Avenue and Regina Avenue. We continuously cycle these streets providing ice control and plowing operations for the duration of the snow event. The objective is to keep the major roads passable for the duration of the storm.

After the snow stops falling, we restart plowing operations to ensure the busiest roads are plowed first, working our way through the road network – Systematic Mode.

Storm Mode means priority clearing of Category 1 & 2 roads like:

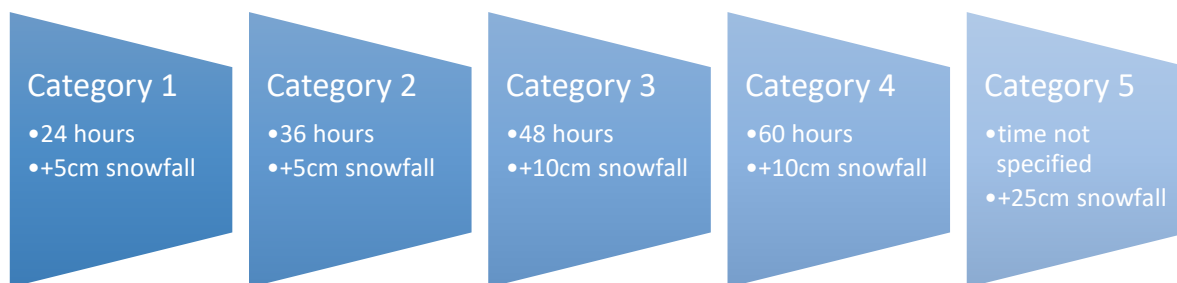
- | | |
|--|--|
|  Lewvan Drive |  Elphinstone Street |
|  Ring Road |  Broadway Avenue |
|  Albert Street |  Regina Avenue |
|  Broad Street | |

Category 1 roads are cleared within 24 hours and Category 2 roads are cleared within 36 hours, provided the community received over five centimetres of snow. These are often completed at the same time as many of these roads intersect so it is operationally efficient to combine them.

As the Category 1 and 2 roads are completed, crews move to Category 3 roads, plowing them within 48 hours if accumulations were ten centimetres or greater. These include low volume major collectors like Dalgliesh Drive, Harvard Way and Woodland Grove Drive. It also includes industrial/commercial roads and Transit routes that are not on Category 1 or 2 roads.

Then we move on to Category 4 roads which include streets around school zones, like Maple Leaf Crescent, Coronation Street, Cowan Crescent and other minor collectors. Category 1 through 4 streets usually experience a Systematic Plow about five times in a season.

Category 5 roads are plowed after 25 centimetres of snow, when weather and time permits. These residential roads have the lowest traffic volumes. While we may not plow them as often, we make sure that they are passable for services such as garbage and recycling collection through other maintenance activities such as the Ice Shaving program.



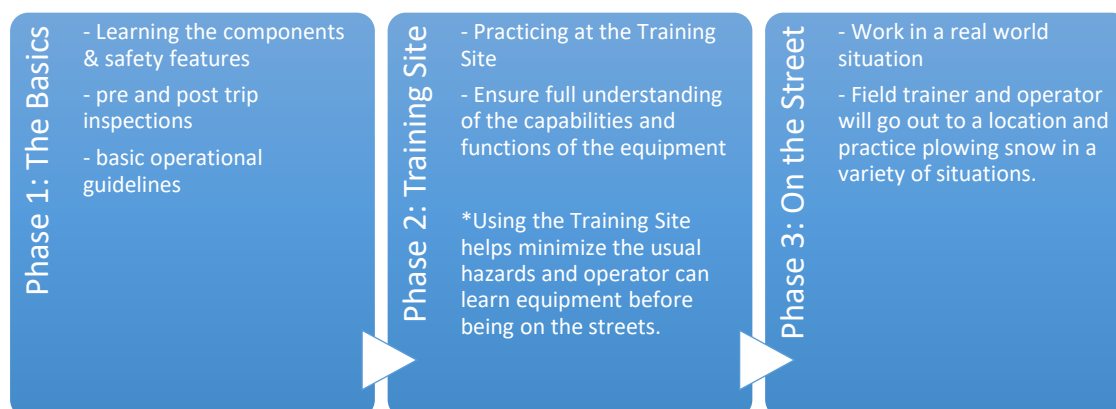
After Systematic Mode is completed, crews go into Routine Maintenance, returning to all roads to ensure that proper plowing operations took place and that the end conditions meet the Policy guidelines or post snow event cleanup including making sure all transit stops have snow ridges cleared to a minimum of 12 meters in length within seven days on Category 1 & 2 roads.

Routine Maintenance activities include:

- ❄ Snow Removal on Category 1 and 2 roads
- ❄ Ice control
- ❄ Checking, plowing, and snow removal at:
 - ❄ Schools - school bus unloading zones are free of snow ridges
 - ❄ Transit Routes and Hotspots - parking lanes clear and safe travel widths
 - ❄ Bridge decks and guard rails - for safe travel over and around
- ❄ Plowing and ice control on sidewalks that are City responsibility
- ❄ Snow Storage Site maintenance and operation (24/7)
- ❄ Filling and maintaining sand boxes for public use

Training Program

Winter operations require the use of heavy equipment like motor graders, front end loaders, tandem axle plow trucks, semi-trucks, loader mounted snow blowers and bulldozers. To ensure the safety of our staff and the public, to comply with Occupational Health and Safety legislation, and to deliver quality programming to our residents, all operators go through extensive training. The equipment training program has three phases, done under the supervision of a Field Trainer. This is done regardless of whether or not there is snow to give operators the experience they need before the snow falls.



Extraordinary Events

Every winter brings its own, unique challenges and the 2018-2019 season was no different.

Significantly low temperatures for weeks accompanied by gusty winds and snow

"This year you guys rock....as good as any big city....keep up the good work...."

Service Request. 2018/2019

The strong wind conditions clubbed with significantly low temperatures continued for longer stretches particularly during the months of January, February and March of 2019. According to Environment and Climate Change Canada Report, the last time Regina residents saw a stretch of similar February temperatures was in 1939. As per the report this kind of cold stretch has not been seen in 80 years. During February, Regina observed daily extreme cold warnings. Temperatures dipped to below minus 30 degree Celsius and 40 degree Celsius, with frigid wind chills. Although the total amount of snow accumulation during the season was below average, the total number of snow days less than two centimetres were more than the five years average.

Equipment operating cycles were closely monitored and modified during such conditions as continuous low temperatures can adversely affect the equipment operation if ran continuously.

Continuous wind gusts ranged from 60km/h to 74km/h on several days during these months accompanied by snow days. A dedicated plow team supported by other crews was continuously deployed to deal with the challenges due to blowing snow conditions on road sections particularly around open areas, new sub-divisions and grid roads. On a couple occasions during February and early March, some street sections had to be temporarily closed for emergency maintenance for a few hours during zero visibility and slippery conditions. This was essential to ensure reasonably safe winter driving conditions were restored.

Crews responded immediately, initially focusing on applying sand and salt to the main roads, arterials and collectors, as they see the most traffic and city sidewalks that we maintain. Once the main roads like Albert Street and Ring Road were in good driving conditions, we moved to the other known trouble spots in the city especially around the on-skirts of the city. A dedicated crew was deployed to handle the blown-in situations on streets around open areas.

"THANK YOU very much for quick efficient work of city workers during our recent snow- storms. It is very much appreciated."

Service Request, 2018/2019

In total, crews applied 15,400 tonnes of sand and salt to city streets, sidewalks, and alleys during the season. Our efforts were recognized by the community as received 53 Service Bouquets thanking the City for their efforts.

We will review ice control activities on roads, sidewalks, and alleys as part of the upcoming Policy Review, engaging stakeholders at all levels to receive feedback and provide options on future levels of service that the community desires. In the interim, we will continue to ensure that our community moves safely throughout the winter months whether Policy guidelines apply or not, adapting to any weather conditions that we might encounter.

Back to Back Storms

The community experienced four major snow events requiring major plowing operations and winter maintenance activities outlined in the Policy. Three of these storms January 27, February 3 and 13 were only a week to ten days away from each other. This kept the crews fairly busy, back to back with systematic and routine maintenance activities including plowing and ice control. Generally, having a few days between the routine maintenance and next storm provide opportunity to crews to undertake important tasks like getting the equipment checked before the next storm, improve condition of snow ridges, perform quality checks and review any operational gaps to enhance operational efficiency. Most of the snow removal activity in the season was carried out throughout February and major portion of March. To help the crews provide timely service while adhering to the policy timelines, additional fleet of contractor graders were utilized along with City owned graders.

"I just want to say what an awesome job the snow removal team has been doing the last couple of days! I drive a bus and want to thank those who are working so hard to make my job easier!"

Service Request – 2018/2019

While the crews were successful in maintaining Winter Maintenance Policy timeframes and levels of service on most road sections during the season, still during the January 27 storm, a small section of the downtown/ transition area could not be completed as per the policy timeframes but was completed in the following shift due to some logistics issues that were addressed eventually. The plow-crews ensured the snow piles were temporarily stacked out of the way of the traffic to minimize discomfort to downtown traffic and businesses, until snow

removal activity was resumed the following shift. Rest of the sections on category 1 to 4 roads were completed within specified timeframes. Crews worked 20 hours per day, seven days a week, utilizing 45 to 70 pieces of equipment over a three-week period, to provide winter maintenance services.

In an effort to continually improve our operations, we are committed to:

- ❄ Investigate opportunities to attract more interest from our contractor supporting partners to increase access to additional resources during large snow events.
- ❄ Manage equipment cycle times in a way to ensure sufficient thawing time is provided to each equipment to avoid major equipment breakdowns, especially when the equipment is operating continuously in extreme low temperatures.
- ❄ Continue working closely with teams from Transit Operations, Solid Waste, Traffic Engineering and Communication

- ❄ Enhanced training to supervisors and staff on winter operation best practices

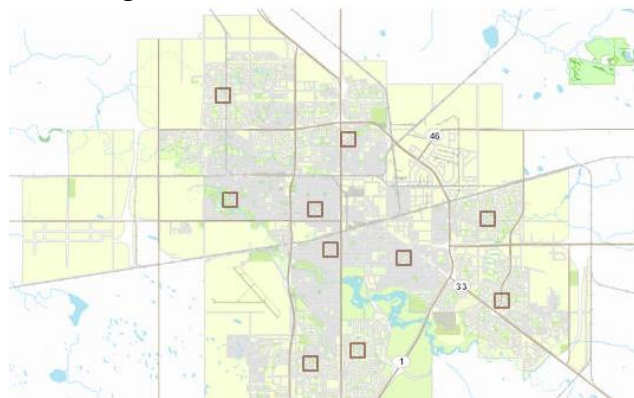
These actions will ensure that resources are available and assigned in the most efficient way to ensure the roads that handle the majority of the traffic in the city will be cleared and drivable in the quickest time possible.

Unique Services

Sandboxes

The City offers free sand at 10 locations throughout the community for residents to use to help keep their sidewalks and driveways safe. You can find the yellow bins at community centers with a map located on the City website. Residents are encouraged to bring their own container and fill it up with sand to use on their sidewalks and driveways.

Though the program typically does not receive much attention, the freezing rain we had in last two seasons brought it to the forefront. During 2017/2018 winters we experienced a sudden sense of urgency amongst residents to get sand from the sandboxes during freezing events. As winter crews tried to balance the priorities of public safety – ice control on our streets - with the demand to keep the sandboxes filled, it became evident that additional strategies were required. Based on the learnings from the past 2017/2018 season, we reviewed the Sandbox Program for 2018/2019 season and decided to add a sandbox in the northwest part of the city to provide a better coverage throughout the city. We also ensured the sandboxes were closely monitored and filled with sand at any time during the season, especially when there was a freezing rain or freeze-thaw forecast.



10
Community
Sandboxes

56 fills

200 tonnes of
sand

Based on the number of sandbox related Service Requests received during the 2018/2019 season and observations made at the sandbox locations, there was less panic amongst the residents to get sand. The behavior was observed even during increased freeze-thaw days and two freezing rain events in January and February. Throughout the season no instances or situations were reported when the sandboxes were without enough sand.

2018/2019 Service Improvements

Based on current process improvements and as a result of the unusual events in 2018/2019 Administration will be undertaking the following improvements to the winter maintenance activities:

- ❄ Expand the use of liquid salt by adopting pre-wetting technology
- ❄ Review the possibilities for improving ice control material storage facility
- ❄ Comparative study and analysis of Snow Fence v/s Snow Ridge programs
- ❄ Increased use of liquid salts to allow sand to better adhere to the road surface and to improve the time required for roads to become bare pavement
- ❄ Improve the snow clearing process of handling intersections and street sections around open areas that are prone to plugging due to blowing snow.
- ❄ continue and expand the Snow Routes Program in order to be able to clear roads quicker and more efficiently
- ❄ Ensure the tendering process for contracted services in the winter allows to have more equipment available in a major event
- ❄ Increased service focus on critical Transit routes as advised by Transit Operations branch

Inconsistent Weather Forecasting Models:

- ❄ The winter maintenance operation is largely dependant on the weather forecasts in order to allocate the resources for various activities. Accurate forecasting also helps while calling out Snow Route declarations and temporary parking bans. Weather forecasting data is followed, obtained from the subscription service as well as other open data.
- ❄ During part of the 2018/2019 winter season various weather forecasting models could not successfully predict the correct snowfall accumulation, which resulted into significant gaps between the actual snowfall recorded and the forecasted snow accumulation.
- ❄ The Seasonal Roadways Operations Branch worked closely with other City departments like Fleet Services, Communications and Parking Services to ensure readiness for the fluctuating forecasts through availability of staff, equipment as well as timely public notifications relating to snow routes when required. Although we will more closely review going forward.

Communication with the Community

The communications approach for the 2018/19 winter season was focused to help residents understand the importance of driving slower in winter conditions in order to be safe. The campaign used simple, clear messaging about the road conditions being experienced in the moment, and featured winter maintenance equipment in use. The campaign was flexible, meaning it started and stopped based upon actual weather and forecasts, rather than a traditional campaign that runs the entire season.



**Slow down.
Be safe.**

Through several paid communication tactics such as radio, television and online advertising, the public was informed of winter operations and activities. On our social media channels, Facebook and Twitter, as well as on Regina.ca, the campaign images were used with supporting content to help residents understand that major roads are priority for the City of Regina and that we strive to keep roads safe and ensure good winter driving conditions.



**Slow down.
Be safe.**

The 2018/19 winter season generated 13,281 page views, including the Winter Sandbox Map, Snow Routes, and the main Snow & Ice Control page. This is a lower number of visitors in the previous year. This reduction was expected as there was no major snow or ice event as occurred in the two previous years. While this is a lower number than the previous year, there was less snowfall and no major snow event. The City received 41 media requests snow and ice control and held five media scrums.



Information about the Winter Sandbox Program was shared as part of the regular winter maintenance communication plan. Early in the season, details were shared through a public service announcement with the media, as well as posted to our social media channels. The Facebook post reached 37,526 people and had 5,525 engagements. Service Regina received two inquiries regarding sandboxes during the 2018-19 winter season.

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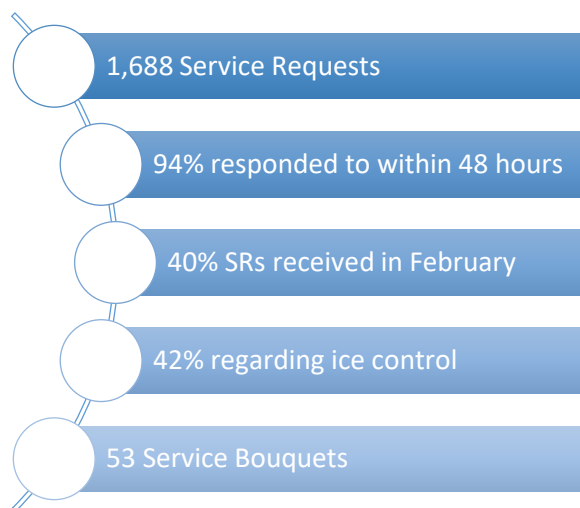


Pin

Service Requests

The Seasonal Roadways Operations Branch received 1,688 Service Requests. This number is a major reduction compared to the peak of 10,315 Service Requests in 2012, 3,109 in 2017/2018 season and almost half of the five-year average. Consistent application of policy guidelines, success in meeting targets, and ongoing communication strategies on our levels of service have contributed to this decline. The majority of the Service Requests require action - an inspection of the location, scheduling of an activity, providing a response, or calling the customer and discussing the issue. 290 customers requested a call back; we achieved 94 per cent contact within the 48 hour corporate timeline.

The two closely placed snowstorms accompanied by extreme cold temperatures and gusty winds in February generated 680 or 40 per cent of all Service Requests and focussed primarily on effectiveness of ice control material during low temperature conditions, street plowing and snow ridges. Most concerns were addressed by explaining the operations and what residents can



expect during storm response. Blocked driveways and snow ridges on sidewalks were also brought to our attention via Service Regina and addressed in a timely manner.

Generally majority of the Service Requests received during the season focused on ice control. This is because of the above average number of freeze and thaw cycles throughout the season. Temperatures reached both above and below zero on 101 days throughout the winter as against 76 freeze thaw cycles during 2017/2018 and 62 last five-year Avg cycles. This creates frost, black ice and slippery conditions.

Success in Collaboration

We investigate and explore innovative solutions on an ongoing basis to reduce the cost of delivering policy objectives, maximize resources, assist other departments when there is capacity and reduce spending on contracted services, when they are not required. There are also many partnerships and collaborative efforts between our many stakeholder groups, both internal and external, that aid in the delivery of our services. We meet annually with various groups to discuss the challenges that winter brings and how the Policy can help, ways to enhance communication to discuss issues, and confirm working relationships that benefit both parties involved:

Internal Stakeholders	External Stakeholders
<ul style="list-style-type: none"> •Bylaw Enforcement •Parking Services •Parks Maintenance •Financial Services •Financial Operations •Fleet Services •Service Regina •Traffic Engineering •Transit Services •Solid Waste •Development Engineering •Facilities Building Services •Communications •Water Operations •Service Regina •Solid Waste Operations •Landfill Services •Roadway Maintenance Operations 	<ul style="list-style-type: none"> •Bike Regina •Regina Public School Division •Regina Catholic School Division •Regina Downtown Business Improvement District •RM of Sherwood •Regina Bypass •Ministry of Highways

Supporting Internal Branches

Staffing numbers are based on the minimum number of employees required to fulfill the guidelines in the Policy throughout an average winter season. Because every winter is different, there are challenges in ensuring operations have consistent and meaningful activities at all times. To balance staffing needs operationally, we have forged several partnerships throughout the corporation showcasing the mutual benefits. Continuing for several seasons, we provided trucking and hauling services for Water & Environment Services, Solid Waste Operations and Roadway Maintenance Operations that would normally be performed by an external contractor. Working with Asphalt Plant alone created a cost avoidance to the winter maintenance budget and an additional costs savings of \$221,983 in performing the work in favour of contracted services.

Crews also addressed potholes and sunken utility cuts that become hazardous throughout the season contributing to a cost avoidance of more than \$412,460 to the Winter Maintenance budget as these activities are funded by Asphalt Services budgets.

Seasonal Roadway Operations

There has been substantial collaboration between the Sweeping & Alley Services teams over the years, historically in clearing snow from back alleys and grid roads, and more recently in spring sweeping activities as weather and conditions permit. When temperatures reach above freezing and snow starts to melt, the 24/7 shift scheduling and Equipment Training program provides an excellent platform for our Boulevard and Arterial Sweeping programs which are typically done at night when traffic is at its lightest. Having winter maintenance staff execute allows efficient delivery of this program.



Parks Maintenance

Snow clearing on sidewalks is similar to the work done by Parks Maintenance on the pathway systems in City parks. Staff meet regularly to discuss synergies, this season crews continued to assist clearing the pathway through Rochdale Park.

Solid Waste Operations

Winter Maintenance and Solid Waste staff discuss the challenges of garbage collection in the winter months on several occasions throughout the year. Every fall we update maps and records with the most current collection schedules to ensure snow clearing activities

do not interfere or are inhibited by carts placed on the street or in the alley. During the snow storms, we worked closely with Solid Waste staff scheduling plowing operations based on collection activities ensuring services were maintained.

Transit and Fleet

Maintaining transit routes and Paratransit Service is a high priority during the winter months, particularly when there is a big storm. We have worked with Transit and Fleet to enhance clearing at transit stops that see a high number of users that are accessibility challenged, called Transit Hotspots. Beginning in 2014, crews ensure transit stops, transit lanes, and curb face at pickup and drop off points are free and clear of snow. The locations are reviewed annually, and the program has grown from enhanced maintenance activities on 6.4 km of the transit route network to 9.4 km. During the 2012-2013 season, Paratransit Services identified that there were several instances where services were reduced because of road conditions. By increasing communications between the two areas, we have overcome this barrier and can report that on an annual basis that Paratransit drivers have experienced limited to no issues over the past five years.

Bylaw Services

Winter staff meet in the off-season to discuss a wide range of issues including illegal dumping of snow, the Clean Property Bylaw investigation process, and commercial sidewalk snow clearing. In previous years, Bylaw Services contracted sidewalk clearing adjacent to commercial properties when the property owner was not clearing snow within 48 hours of a snow event. This past winter, our internal crews worked with Bylaw to take on this work, clearing a couple locations that were not compliant. This not only created a cost-avoidance but also ensured consistent and adequate snow clearing.



Regina School Boards

Winter staff meets annually with representatives from Regina Public School Division and the Regina Catholic School Division, representing the 94 schools in our community. Regular discussions include issues raised from principals and parents, locations where school yards can be used for snow storage, school contact information and the notification process, optimum times to perform maintenance activities around schools to maximize safety and processes to report issues. This partnership has proven to be very successful in reducing the number of issues the schools face, with the most recent example including testimonials from both school boards commending winter staff for the work performed and Policy compliance during the major snow events in January and February.

Emergency Services

One of the mandates of the Policy is to ensure continuity of emergency services such as Fire and Protective Services, Regina Police Services, and Regina EMS during a snow event. From November to April, there are staff and equipment working in all areas of the city so the ability to respond to an emergency can be done quickly. We are also in direct communication with Operational Services Dispatch, which is a 24/7 operation and can respond at a moment's notice to ensure the safe passage of all emergency vehicles throughout the city. During an emergency situation and when a road is blocked or impassable, Fire, Police, and EMS call Operational Services. A Supervisor in our winter maintenance team is immediately notified and crews dispatched to address the concern.

Looking Forward

With a commitment to continuous improvement, we are excited to embark on initiatives that will help improve winter maintenance services for future seasons. The following are enhancements currently being worked on or identified to be brought forward in future winter maintenance recommendations.

Snow Routes Project

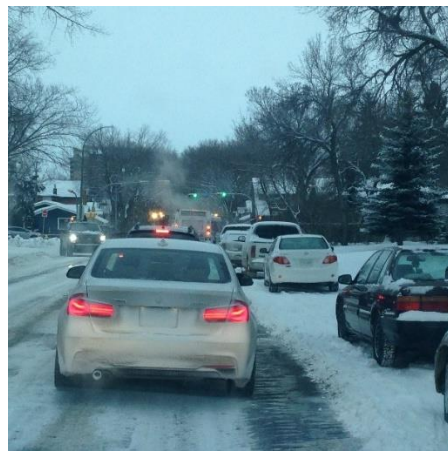
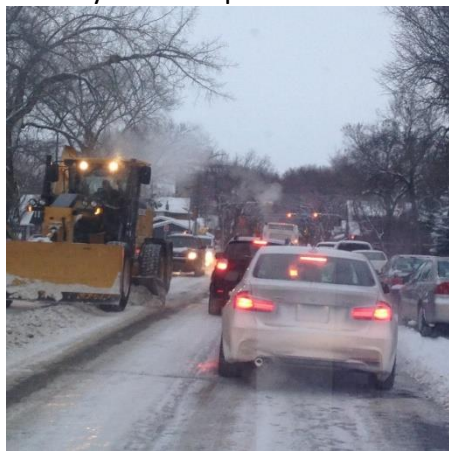
Report *PW17-1* and subsequent approval in *CR17-7* recommended the implementation of a Snow Routes Pilot Project on a 5 km section of roads during 2017-2018 winter season. The Pilot Project analysis demonstrated that crews plowed the snow 20 per cent faster, snow ridges were more consistent, road widths and travel lanes were less impacted and that those who park on the snow route were aware and moved their vehicles when a snow route was declared. The pilot was also welcomed by the community as shown in a survey of 848 residents; more than 70 per cent of respondents support expanding the Snow Route Program.



As per Report *CR18-103*, Council has approved an expansion of the pilot, adding an additional 11 km to the Snow Route Project. The expansion will be part of a staged approach, continuing with criteria that made Phase 1 successful. Phase 2 expansion would be implemented in the 2019-2020 season with capital costs related to signage installation and communication

efforts taking place in the summer of 2019. Snow Routes benchmarking study was successfully completed on the additional 11 km of road sections. The observations will be utilised to plan the snow routes expansion pilot project during 2019/2020 season.

Phase 1 locations have become regular Snow Route plow locations. During 2018/2019, Snow Route declaration notifications were issued for January 20, February 5 and February 14. We received minimal concerns relating to Snow Routes implementation from the residents of these locations. At the time of systematic plow, average number of cars parked per storm at these Snow Route locations were only 14. This is a significantly low number as compared to approx. 140 average number of cars parked at these locations during the benchmark study during 2016/2017 systematic plows.



Parked Cars during Systematic Plow, February 2019

Use of Liquid Salt in Ice Control

Historically, we have used dry sand and salt to mitigate slippery conditions. This method is only effective on calm days with little wind, lower traffic volumes and when the temperature is -10 degrees Celsius or warmer. With daily average lows range from -10 to -20 degrees Celsius throughout the winter months, this makes the current system ineffective for much of the season.

Liquid salt trials were conducted over the last few winter seasons. Statistical analysis has shown that the depth of snowpack on the road surface is reduced by 79 per cent and the pavement surface condition improved by 33 per cent when pre-wetting the dry sand with liquid salt. Good driving conditions are achieved quicker and the amount of sand and salt required is reduced. Magnesium chloride, used during the trials, is far less corrosive than dry salt (sodium chloride) currently used in our Ice Control Program, and thus reducing the negative impact on our infrastructure and to the environment.

Dedicated precision sanding equipment were used to conduct liquid salt trials on some larger street sections in the City during the season. The trial activity included providing hands on training to the equipment operators on the new sanding equipment as well as effective utilization of prewetting technology using liquid salts. The trial results were fairly consistent with the trial outcomes from the previous season when trials were conducted on smaller road sections.

Because the trials were successful, we will be expanding the program to approximately 25-30 per cent of the arterials and collector road network next season, with the intentions of expanding it city wide in a staged manner by 2021/2022 should the positive benefits continue. While this change requires a significant amount of training, long-term benefits will be realized through a phased and methodical approach to implementation. We will continue to educate the public and answer any questions they may have as the program expands.

Winter Maintenance Policy Review

In order to better align winter activities with the Official Community Plan and Transportation Master Plan, a review of the Winter Maintenance Policy is scheduled to begin in 2018. This review will reflect the community needs that have evolved since the Policy was approved in 2007. Through internal and external stakeholder meetings and public engagement sessions, we will gather feedback and community input. This will be used to form the basis of potential options for winter maintenance, with financial and operational analysis providing guidance to any changes that may be proposed.

The results of the review will then be brought to City Council for discussion and approval in late 2020 with budget implications and new Policy implementation for 2021.