



Snow and Ice Control Annual Report (2016–2017)

2017 August

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Executive Summary

The City of Calgary Transportation Department is committed to the provision of a safe, customer-focused, efficient and sustainable transportation system that supports mobility choices. The Roads Business Unit is committed to a well-maintained road system for all travel modes and is responsible for The City's Snow and Ice Control (SNIC) Program Plan. Roads Maintenance delivers The City's SNIC Program Plan based on the Council approved Snow and Ice Control Policy TP004. The goal of the SNIC Policy is to provide reasonable winter driving conditions for vehicles and road users that are properly equipped for winter driving; and are operated in a manner consistent with good winter driving habits.

Highlights of the 2016/2017 SNIC Program include:

- The 2016/2017 SNIC expenditures for 16,241 lane kilometres of roadway in Calgary totalled \$45.8 million over the course of the winter season.
- The amount of snowfall received up to August 2017 is comparable to 2014.
- One Snow Route Parking Ban was activated during the 2016/2017 SNIC season.
- From October 2016 to April 2017, Roads received 14,184 SNIC 311 service requests.
- Roads achieved targets to complete SNIC on Priority 1 routes within 24 hours and for Priority 2 routes within 48 hours time period. During the 2016/2017 season, Roads achieved 100% success on both performance measures.
- The total snow fall for the 2016/2017 SNIC season was 125.6 cm. The average snow fall from 2011-2017 is 126 cm.
- \$1.06 million was added to the SNIC Reserve by Roads and \$5 million was added from the Fiscal Stability Reserve bringing the reserve total to the \$15 million maximum.
- There were fewer collisions on Priority 1 routes than in the past 3 years.
- Roads Maintenance was committed to mobility choices by providing services supporting vehicular traffic, transit services, cycling and pedestrians.

Introduction

The annual Roads SNIC Program Plan (Program Plan) provides detailed plans and strategies to meet the expectations set out in Council's Snow and Ice Control Policy TP004 (SNIC Policy). The SNIC Policy and the Program Plan continue to evolve to adapt and respond to changing weather patterns, funding levels, innovation, best practices and lessons-learned. The SNIC Policy and Program Plan are established to address normal winter weather conditions, with high-level strategies to address "extreme winter conditions" and "snow emergencies." Trained personnel and the required resources are deployed to provide mobility on City infrastructure during the SNIC season.

Background

The aim of the SNIC Policy is "to provide reasonable winter driving conditions for vehicles/cycles that are properly equipped for winter driving; and are operated in a manner consistent with good winter driving habits." Council and Administration are committed to the delivery of excellent SNIC services within a policy framework that is efficient, effective and fiscally responsible. Extreme winter conditions and snow emergencies that occurred in the 2013/2014 winter season are addressed in the Program Plan as they are likely to occur again in the future. Council and Administration are aware that response to extreme winter weather conditions requires a systematic approach with stakeholders and collective commitment to a safe and well-maintained road system for all travel modes.

7 Day Plan

The SNIC response is broken down into a 7 Day Plan. This plan allows The City to quickly address the impact of any snow event to provide mobility for citizens and communicate the expected level of service. The plan is a systematic response that addresses high volume and high-risk transportation assets first and then moves to lower volume and lower risk assets. If another snow event occurs prior to completing the plan, the resources return to high priority locations highlighted in Day One. Figure 1 provides additional details on the 7 Day Plan.

SNIC RESPONSE TIME FRAMES – SNOW EVENT START TO END

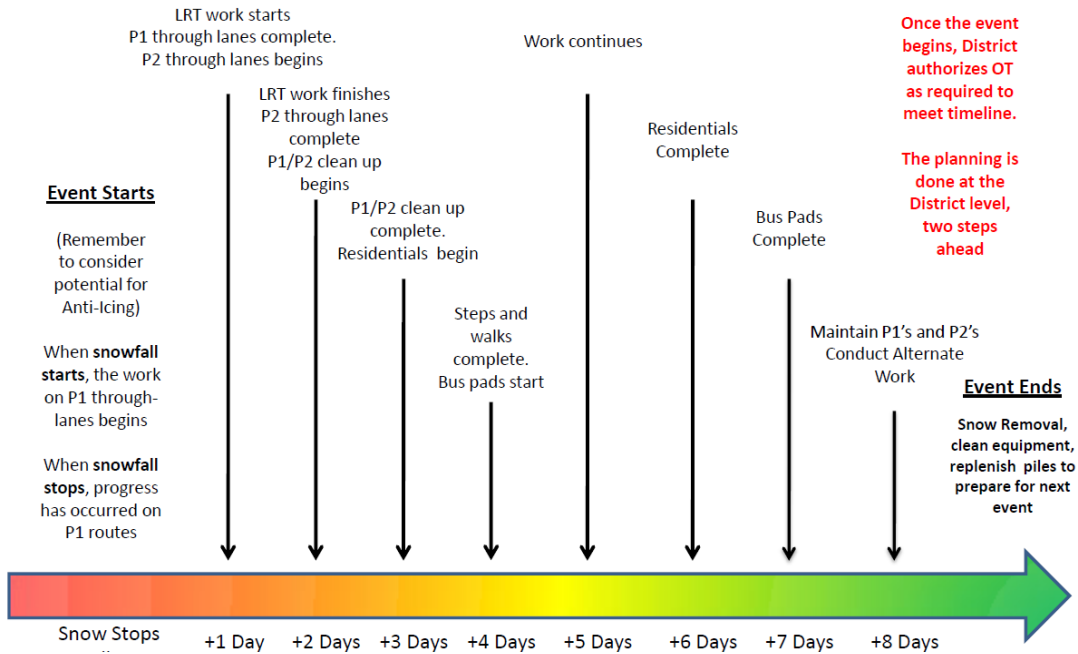


Figure 1. 7 Day Plan

During the 2016/2017 SNIC season, Calgary received 126 cm of snowfall. Maintenance activated the 7 Day Plan 27 times during the 2016/2017 season, and due to overlapping snow events, the plan was restarted seven times. Table 1 shows the snow fall comparison for the past five SNIC seasons.

Table 1. Winter Season Snow Fall Comparison 2012-2017

SNIC Season Snow Fall					
Month	2012/13 (cm)	2013/14 (cm)	2014/15 (cm)	2015/16 (cm)	2016/17 (cm)
September	0	0	28.2	0	0
October	25.5	4.4	1.2	3	13
November	19.4	27.8	43.2	11.6	2.9
December	15.6	52.4	7.6	24.1	26.1
January	24.9	23.3	34.5	15.3	14.5
February	3.4	6.4	13.7	1.8	35.8
March	21.6	36.2	6.2	2.4	16.7
April	11.8	13.6	5.4	0	16.6
May	0	15.6	5.5	0	0
TOTAL	122.2	179.7	145.5	58.2	125.6

311 Service Requests

During the 2016/2017 SNIC season, Roads Maintenance received 14,184 service requests (SRs). The top three most frequently received SR types were Snow Clearing (7,307), Sand and Salt requests (4,145) and Sidewalk Snow Ploughing at (782).

Table 2 shows the historical data from the past five seasons.

Table 2: SRs from 2012-2017

Historical 3-1-1 Data					
	2012/13	2013/14	2014/15	2015/16	2016/17
Total SNIC SRs	8,534	35,871	6,832	5,514	14,184

Roads was able to adhere to the 311 service level completion agreement 96 per cent of the time. In addition, 92 per cent of all SRs were resolved at the first request, without the need to be re-opened. The average response time of a SNIC SR open to close was 4.5 days.

Snow and Ice Control Materials

The Roads Maintenance Division uses four primary types of materials for SNIC operations: road salt (sodium chloride), sanding chips, calcium chloride brine and sodium chloride brine. Sanding chips are six millimetre rock particles which are mixed with up to three per cent salt. As an anti-icing agent, sodium chloride brine and calcium chloride brine perform over different temperature ranges. Liquid brine helps the material stick to the road surface, and is also used as an anti-icing agent applied directly to the road surface. The sodium chloride brine is used during warmer winter temperatures whereas calcium chloride brine is used during colder winter temperatures.

A five-season comparison of SNIC material consumption is shown in Table 3. Road salt usage during the 2016/2017 SNIC season was 43,215 tonnes, which is approximately 26 per cent lower when compared to the prior five season averages. Sanding chip consumption during the 2016/2017 SNIC season was 59,550 tonnes, which is approximately 38 per cent higher compared to the prior five season average. Calcium chloride brine usage was 647,520 litres.

Studies have shown that without pre-wetting, only 46 per cent of the material applied to a roadway will stay in the middle third of the roadway. However, if the material is pre-wet, 78 per cent will stay in the middle third of the roadway. This practice increases the efficiency of sanders, reduces costs and helps minimize impacts to the environment.

Roads Maintenance conducted a trial using sodium chloride brine for anti-icing and determined it was an effective tool for SNIC. Roads Maintenance will continue to use this product when warranted.

Table 3. Five Year Comparison of SNIC Materials Consumption, Snow Days and Total Snow Fall

SNIC Season	Road Salt/NaCl (tonnes)	Sanding Chips (tonnes)	Calcium/Sodium Chloride Brine (litres)	Snow Days	Snowfall (cm)
2012/13	70,658	28,274	967,741	37	122
2013/14	79,252	40,927	1,793,791	60	180
2014/15	53,680	61,449	764,000	50	146
2015/16	45,082	24,891	491,230	26	58
2016/17	43,215	59,550	647,520	48	126
Average	58,377	43,018	932,856	44	126

Snow Storage Sites

The City has three snow storage sites to manage snow removed from roadways. These sites are identified in Table 4 below:

Table 4. Snow Storage Sites

Site	Address	Capacity (cubic metres)
Highfield	1320-50 Ave. S.E.	672,760
Spring Gardens	1025-32 Ave. N.E.	494,100
Pumphouse	2140 Pumphouse Ave. S.W.	55,805

During the 2016/2017 winter season, these snow storage sites were at capacity after a major storm in February. Snow removal activities were conducted on Priority 1 and Priority 2 routes, plus some residential roadways.

A total of \$4.6 million was spent on snow removal during the 2016/2017 SNIC season which was higher than the \$979,117 spent during the 2015/2016 SNIC season.

A 2012 Condition Assessment identified areas for improvement at the Highfield and Spring Gardens snow storage sites, up to and including full reconstruction. The assessments combined with capacity issues had led to a recommendation that the Highfield and Spring Gardens snow storage sites be rehabilitated and two additional locations be developed. The new locations would replace the Pumphouse site and accommodate surplus snow during extreme winter conditions. The estimated cost to reconstruct the two existing sites is \$16 million which includes storm water management upgrades and new pavement. The estimated cost to develop two new sites is \$36 million, and includes land costs, design, provincial approvals and construction.

Roads Maintenance reviewed the effectiveness of the Mechanical Snow Melters and found that the water discharged will not meet environmental guidelines for discharging into the storm water system.

SNIC Policy Metrics

The SNIC program service levels are based on the Council-approved SNIC Policy. The purpose of the policy is to:

- Maintain reasonable conditions on roadways and sidewalks so as to minimize hazards and economic loss to the community.
- Ensure safe access for emergency vehicles providing Fire, Police and Emergency Medical Services.
- Provide guidelines for Management and Operating personnel in the handling of winter maintenance operations.
- Outline citizens' responsibilities regarding sidewalk snow and ice control on private property.

To align with the approved SNIC service levels (Table 5: SNIC service levels) outlined in the SNIC Policy, two Key Performance Indicators (KPIs) were identified (See Table 6: Roads Maintenance KPIs and Performance Achieved).

Table 5. SNIC Service Levels

Roads Designation	Response Time
Priority 1 Routes	Through lane ploughed and sanded completed within 24 hours of the end of snowfall (100% sanded/salted and 90% ploughed)
Priority 2 Routes	Through lane ploughed and sanded completed within 48 hours of the end of snowfall (100% sanded/salted and 90% ploughed)
Priority 3 Routes	Within four days after Priority 2 routes complete (sanded and ploughed when temperature conditions allow)
Priority 4 Routes	Within four days after Priority 2 routes complete (sanded and ploughed when temperature conditions allow)

Table 6. Roads Maintenance KPIs and Performance Achieved

Performance Indicators	2016-17 Achieved
Percent of time Roads completes SNIC on Priority 1 through lanes within 24 hours. (100% sanded/salted and 90% ploughed)	100%
Percent of time that Roads completes SNIC on Priority 2 through lanes within 48 hours. (100% sanded/salted and 90% ploughed)	100%

During the 2016/2017 SNIC season, Roads achieved a 100 per cent success rate on meeting the KPIs indicated in the SNIC Policy.

2016/2017 Snow Route Parking Bans

A Snow Route Parking Ban is considered when snow accumulation of five centimetres or greater is forecast. Snow routes include major roadways and most bus routes. A media advisory is issued when a snow event is expected in the forecast. This advisory is meant to serve as a warning that parking bans may soon be in effect on snow routes. Vehicles should be moved as quickly as possible following the notice.

A parking ban is declared when crews finish ploughing Priority 1 routes, but before they start on Priority 2 routes. Parking bans are in effect for up to 72 hours or until The City declares that they have been lifted. The parking ban is announced on local radio and TV stations and is publicized via email, the internet and social media. Vehicles that remain parked on these roads during the ban are subject to enforcement, up to and including a parking tag and tow. Business Revitalization Zones (BRZs) and the downtown core have overnight bans (9 p.m. to 6 a.m.).

During the 2016/2017 winter season, one Snow Route Parking Ban was activated from February 6, 2017 at 6 p.m. to February 9, 2017 at 6 a.m.

Personnel, Equipment and Infrastructure

The Roads Business Unit commits personnel, material, equipment, infrastructure, capital and operational funds to SNIC operations as follows:

- 430 personnel working rotating shifts, available 24/7 throughout the season.
- Material, including equipment consumables (i.e. plough blades) and snow remediation substances (salt, de-icing liquids and abrasives).

The various machinery and equipment includes:

- 78 tandem trucks equipped to plough and apply materials
- 27 graders
- 9 snow blowers
- 7 smaller single axle trucks equipped to plough and apply materials in residential areas such as cul-de-sacs where tandems are unable to work.
- 10 front end loaders
- A variety of smaller equipment to service bus stops, Light Rail Transit (LRT) stations, pedestrian bridges, and City-owned sidewalks and pathways.

The infrastructure includes nine district depots and three snow storage sites, as well as the right-of-way infrastructure. The 2016/2017 SNIC season budget supported the maintenance operations for the right-of-way infrastructure shown below.

Table 7. Infrastructure Right-of-Way

Description	Lane-km	Linear-km	SNIC Service	Quantity
Expressways	1,549	520	Yes	-
Arterial Roadways	1,991	702	Yes	-
Collector Roadways	3,713	1,312	Yes	-
Residential Streets	8,689	3,240	Yes	-
Gravel Roadways	299	141	Yes	-
TOTAL	16,241	5,915	-	-
Back Lanes - Paved	988	462	As required - WRS*	
Back Lanes - Gravel	2,105	1,238	As required - WRS*	
Marked, On-Street Bike Lanes	-	49	Yes – 49	-
Sidewalks (Roads)	-	5,658	Yes – 302	-
Engineered Walkways	-	-	No	2,078
Vehicle Bridges	-	-	Yes	194
Pedestrian Bridges	-	-	Yes	138
Park Bridges	-	-	Yes	125
LRT Bridges	--	--	Yes - select locations	33
LRT Stations	--	--	Yes - select sidewalks	47
Bus Zones	--	--	Yes	6,144
Stairs/Steps	--	--	Yes	2,930

Data obtained from The City's ArcGIS System.

Budget Review 2016/2017

The graphs in Figure 2 show historical SNIC budgets and actual spend as well as the total amount of snow fall and snow days during a particular season.

During the 2016/2017 SNIC season, 126 cm of snow was reported to have fallen in the city of Calgary over 48 snow days. The amount of snowfall received as of August 2017 is comparable to 2014. The volume of snow removed from the roadways was much higher than anticipated.

Budget expenditures for the 2016/2017 winter season totalled \$45.8 million. Expenditures by category were as follows: Equipment (42 per cent), Labour (44 per cent) and Materials (14 per cent). Equipment and Labour costs are the principal costs and do not change proportionally to amount of snowfall. When crews are not working on SNIC, they will work on environmental control, winter sweeping, depot maintenance and pothole repairs.

The current balance in the SNIC Reserve is at the Council approved maximum of \$15 million. For the fiscal year of 2016, Roads contributed \$1.06 million and another \$5 million was added from the Fiscal Stability Reserve.

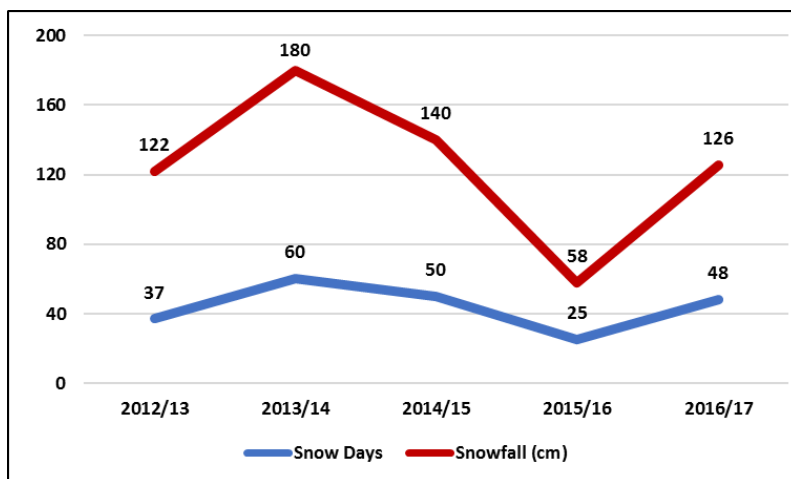
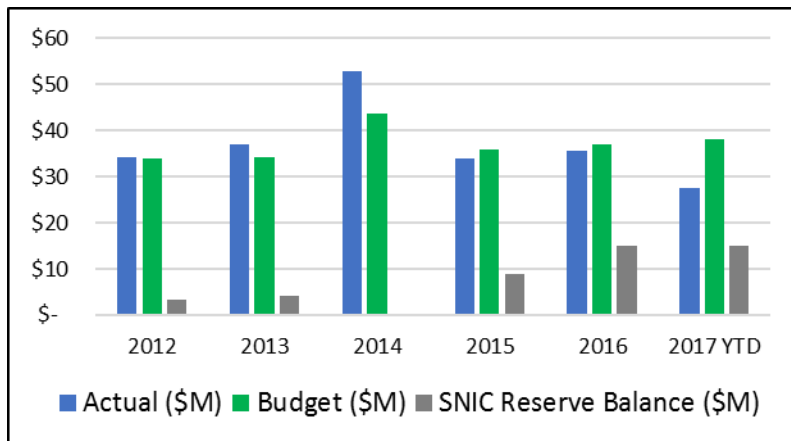


Figure 2. Expenditures and Snow days 2012-2017

SNIC Budget Details

Included below is the annual SNIC budget and actual costs for the winter season of 2016/2017.

Table 8. 2016 SNIC Expenditures and Budget

Activity	For the period of October 2016 to December 31, 2016	
	Budget (\$)	Actual
Snow Removal P1 and P2	220,091	244,910
Snow Removal Residential	1,062,431	18,517
Ploughing P1 and P2	591,107	402,456
Sanding and Salting P1 and P2	12,925,672	8,740,315
Residential Sanding and Ploughing	1,239,947	1,596,147
Transit SNIC LRT Stations*	0	22,212
Transit SNIC Bus Zones*	0	73,363
Snow Dump Site Maintenance	46,000	2,274
Separate Bikeways	129,622	154,824
Snow Fencing	64,500	157,514
Anti Icing	152,000	170,598
Material Handling and Storage	92,021	45,394
Sidewalk SNIC Clearing	973,084	1,041,555
Winter Supplementary Work**	1,614,432	5,009,749
Winter Operation	\$19,110,907	\$17,679,828
SNIC Reserve Fund Transfer 2016		\$1,060,065
2016 TOTAL	\$19,110,907	\$18,739,893

*The Calgary Transit budget and expenditure details are noted in Table 9 below.

**Includes environmental control, sweeping, depot maintenance, pothole repairs.

Table 9. Calgary Transit-2017 SNIC Activity Expenditures versus Recovery & Calgary Transit 2017 YTD expenditures and recoveries

Activity	For the period of October 2016 - December 31, 2016		Year to Date – For the period of January 2017 - April 30, 2017	
	Actual	Recovery	Actual	Recovery
Transit SNIC LRT Stations	343,355	321,143	406,779	162,312
Transit SNIC Bus Zones	575,125	501,762	1,077,217	1,372,024

Table 10. 2017 SNIC Expenditures and Budget

Activity	Year to Date – For the period of January 2017 to April 30 2017		Fiscal Year 2017
	Budget	Actual	Budget
Snow Removal P1 and P2	340,098	3,947,600	566,830
Snow Removal Residential	1,350,069	342,807	2,120,000
Ploughing P1 and P2	887,028	1,416,446	1,478,379
Sanding and Salting P1 and P2	12,400,566	10,503,660	23,150,114
Residential Sanding and Ploughing	2,050,053	3,188,111	3,437,000
Transit SNIC LRT Stations*	0	(294,808)	0
Transit SNIC Bus Zones*	0	244,466	0
Snow Dump Site Maintenance	69,000	171,876	115,000
Separate Bikeways	203,858	163,711	339,763
Snow Fencing	102,955	85,863	171,591
Anti Icing	228,000	201,317	380,000
Material Handling and Storage	122,254	68,874	220,243
Sidewalk SNIC Clearing	1,304,862	1,735,944	2,431,221
Winter Supplementary Work**	2,145,657	5,256,517	3,897,893
Winter Operation	21,154,399	27,032,533	38,308,035
SNIC Reserve Fund Transfer	0	0	0
2017 Total	21,154,399	27,032,533	38,308,035

Table 11. Residential SNIC Clearing and Removal Expense

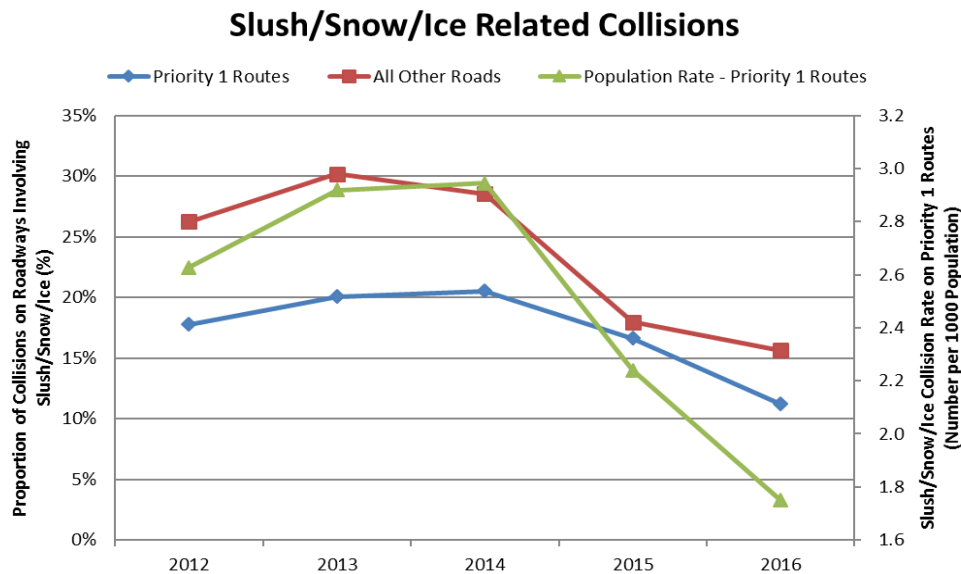
Description	2012-13 Season	2013-14 Season	2014-15 Season	2015-16 Season	2016-17 Season	Five Year Average
SNIC Clearing (Plough/Sand)	4,224,380	6,777,794	4,243,699	3,779,906	4,784,258	4,762,007
Snow Removal	171,862	12,194,096	216,217	382,029	361,323	2,665,105
TOTAL	\$4,396,242	\$18,971,890	\$4,459,916	\$4,161,935	\$5,145,581	\$7,427,113

Savings

Roads has implemented several cost-effective practices and identified efficiencies to decrease the costs of providing SNIC services. Examples from the 2016/2017 winter season included using shared equipment, decreasing the number of vehicles and leasing equipment (\$1M savings), cancellation of bi-annual SNIC surveys (\$25K) purchasing salt during lower demands periods, scheduling changes to minimize overtime costs and utilizing contractors.

Safety

One of the objectives of SNIC activities is to provide for the safe movement of road users. Comparisons of collision data from 2012-2016 (Figure 3) shows that Priority 1 SNIC routes generally have fewer collisions attributed to Slush/Snow/Ice road surface conditions than other routes. Furthermore, the number of Slush/Snow/Ice related collisions on priority routes, on a population basis, has been decreasing since 2014.



* 2010-2014 data extracted from RACE collision reporting system August 13-14, 2015.

** 2015 data extracted from RACE collision reporting system May 27, 2016.

*2016 data extracted from Ecollisions database Aug 23, 2017. Data for all reported years excludes all collisions reported by CPS in parking lots, or on roadways outside of City of Calgary jurisdiction.

Figure 3. Slush/Snow/Ice Related Collisions

Program to Improve Accessibility During SNIC

In the 2015-2018 Action Plan, \$2 million was allocated to improve accessibility for citizens with mobility challenges during the SNIC season. This funding was jointly given to Calgary Transit, CNS and Roads. During the Spring of 2015, the program focused on bus pads and bare pavement bus stops with large windrow accumulation. These locations included bus stops with high numbers of transit ramp deployments (to assist citizens with mobility challenges), including hospitals, senior homes, and other priority locations. Snow clearing begins during the snow event and continues until all the identified locations are clear following the snow event. Calgary Transit and CNS worked together to provide a list of priority locations. Calgary Transit manages the funding for this program and Roads has a contract in place that allows for this work to be completed as on-demand SNIC work.

During the 2016/2017 SNIC season, Roads' contractors provided service to over 350 bus stop locations and 5.15 km of sidewalks.

Below is a sample communication from a contractor indicating that a bus stop was completed (Figure 4).



Figure 4. Contractor Communication

Bike Lanes

The downtown cycle track pilot project was approved in December 2016. The City's cycle track, bike lanes, multi-use pathways, neighbourhood greenways (bicycle boulevards), shared lanes, and signed bicycle routes all contribute to providing mobility choices for Calgarians.

The City has approximately 8 km of cycle track that is cleared within 24 hours after snow stops falling. All 44 km of marked, on-street bike lanes are swept within 48 hours after snow stops falling.

- Cycle Track: 7.1 km (SNIC Clearing within 24hours)
- Bicycle Lane: 33.9 km (SNIC Clearing same priority as the road it is on)
- Shared Lane: 17.8 km (SNIC Clearing same priority as the road it is on)
- Neighbourhood Greenway: 9.8 km (SNIC Clearing same priority as the road it is on)
- Signed On-Street Bikeway: 331km (SNIC Clearing same priority as the road it is on)

Contingency Plan

The SNIC Contingency Plan includes:

- The emergency declaration (who, what, when, where, why and how).
- The engagement of the Emergency Operations Centre (24/7 staffing).
- The layered, targeted and timely engagement of City and contracted resources.
- The return-to-routine operations.
- The after-action review and report.

City resources include all available business unit SNIC assets. Contracted resources refer to individual and/or SNIC assets from Fleet Services' hired truck contract and the annual Roads SNIC contract. The Fleet Services' hired truck contract can react within a short time frame and can offer various SNIC assets at hourly rates. The Roads SNIC contract retains an on-demand component that can react within a short timeframe to augment City resources with trouble spot snow clearance/removal operations. An on-call surge and reserve capability (consisting of an increase of 10 per cent and 20 per cent, respectively) of the Roads SNIC assets could be contracted to react within a prescribed timeframe. This increase would provide further improvements to SNIC service delivery during extreme weather/snow events.

Standby Resources

The City retains contracted standby resources to augment City personnel and equipment for SNIC operations. The Roads Maintenance Division, in conjunction with the Supply Management Division, has a contract to provide the following SNIC services:

- Schedule A - Transit Trouble Spots: 320.48 lane-km.
- Schedule B - District Trouble Spots: 524.52 lane-km.
- District NW Confederation Park Steps: 2,034 Steps and 4.2 km of abutting sidewalk and District SW Richmond Green: 1,254 steps and 1.1 km of abutting sidewalk for a total of 3,288 steps and 5.3 km of abutting sidewalk.
- Schedule G - On Demand Service: limited service to augment City forces.

Schedules A, B and G have been contracted since 2010. Schedule G could be used to create a surge capability to assist with snow events for a limited duration. This surge would act as a targeted force while awaiting the call-out of a larger reserve force. While a simple 10 per cent surge and 20 per cent reserve may address the majority of snow events, the necessary funding for retention fees would require further study. In the past, Edmonton has spent \$3.4 million annually on a retainer program for hired graders. While beneficial during times when snow events warranted the surge in services, it proved costly when the call-out was not required. Edmonton ended this retainer program in 2008/2009.

The Fleet Services Business Unit maintains a rental equipment tender and hired truck contract that is reviewed every two and six years respectively. A limited number of all-inclusive snow

removal teams (i.e. personnel, graders, loaders, bobcats and dump trucks) can be formed to assist with snow removal operations when required.

Common Fleet Operating System (CFOS)

The City has 162 vehicle units equipped with CFOS. Of these 162 units, 55 of the Global Positioning System (GPS) units are mobile (can be moved from truck to truck) in order to accommodate the growing rental fleet, as well as outfit short-term City contractors. Using this GPS data, Roads can automatically update the public facing SNIC map, displaying progress status to the public. On the map, sanding routes change colour automatically to show their maintenance status. The SNIC Road Conditions Map can be found on the Calgary.ca website.

Calgary Road Conditions Map Upgrade

During the 2016/2017 season, Roads updated the online Road Conditions Map in order to show live updates of the SNIC status on roadways. Citizens could view which roads have been maintained and when that work occurred. This map also shows the current location of City snow ploughs through GPS technology.

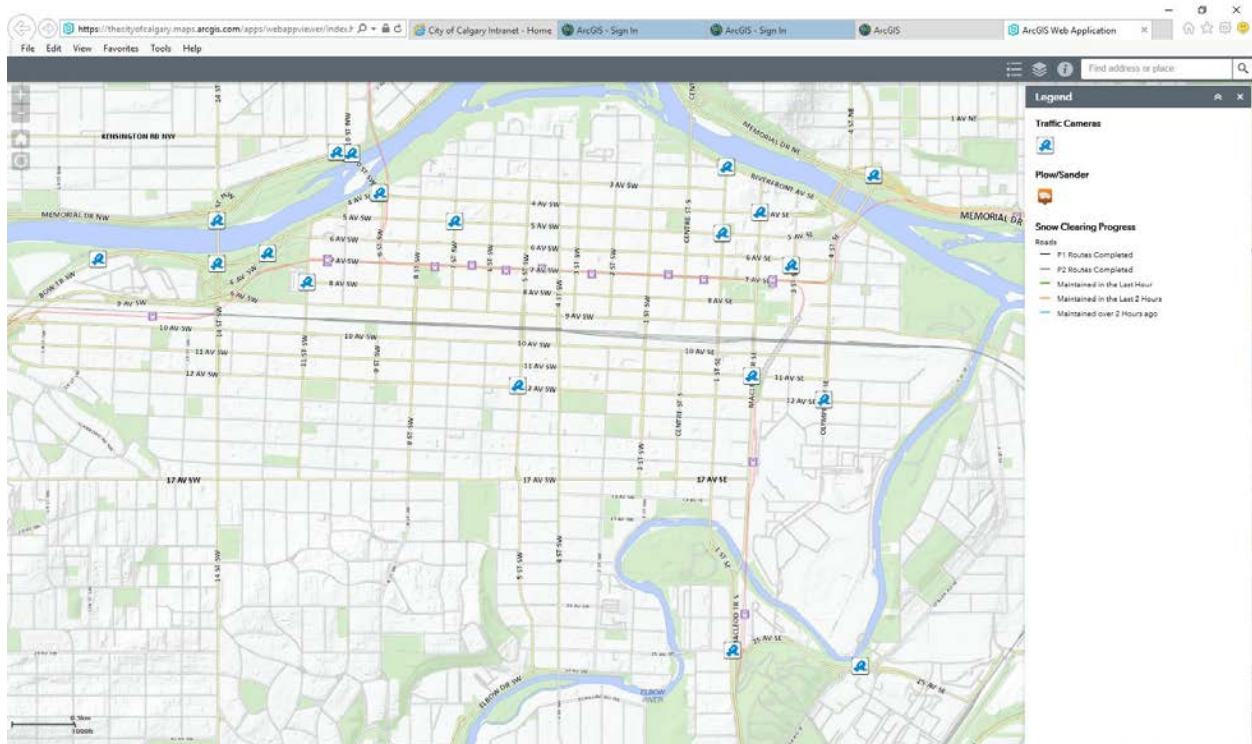


Figure 5. Road Conditions Map on Calgary.ca

Communications Summary and Strategy

Annually, the Roads Communications team creates a comprehensive communication strategy for the SNIC season. The strategy includes proactive communications to both internal and external stakeholders regarding SNIC policies, strategies and procedures.

In a typical season, regular SNIC communications begin with a media kick-off event prior to the first major snowfall. In 2016, the launch occurred in November due to a lack of snow in October. The SNIC season ran until March 2017, with Spring Clean-up beginning the first week of April 2017. SNIC communications focused on proactive messaging and reactive updates through City communications channels (Calgary.ca updates, blogs, news releases, social media posts).

Communications Goals

During the 2016/2017 SNIC season, the primary goals of the Communications team were to:

- Educate Calgarians on how The City clears streets of snow and ice using the 7 Day Plan.
- Provide proactive and timely information to citizens before, during and after snowfall.
- Educate Calgarians on Snow Route Parking Bans, including conditions required for a ban to be called and the benefits of calling one.

This strategy was implemented to manage The City's reputation through consistent, accurate, transparent communication with citizens around its snow clearing efforts.

SNIC Communications Outcomes and Results

The following methods of communication were used during the 2016/2017 SNIC season:

Tactic	Details
On-Call Communications	Available 6 am – 10 pm Mon-Fri, 8 am – 8 pm Sat/Sun
News Release / Media Availability	Major snow events, snow route parking bans as required Seasonal blog updates (Winter driving, 7 Day Snow Plan)
Web updates and resources	Calgary.ca/snow Calgary.ca/roadconditions Calgary.ca/winter
Social Media	Frequent updates on @yyctransport #yycCrewLove Key messages throughout season
Good News Stories/ Pitching	Positive, humanizing, and safety stories pitched to media.
Report to Calgarians TV ads	7-Day Plan Snow Route Parking Ban
Paid Advertising	Paid posts on social media to reach broader audience.

Snow 101 Presentation to Council	Presentation by Maintenance Manager and communications at beginning of season.
Radio Advertising	Rotating seasonal messaging on City radio station.
Variable Message Boards	Used to announce the Snow Route Parking Ban

Key messages

We are working to keep Calgarians on the move.

- Relate answers back to what has been accomplished – how many lane kilometers of roads have been plowed and sanded.

Roads can respond to snow and ice 24-7.

- Crews and equipment are at work 24 hours a day to ensure an immediate response.
- Units are equipped with a real-time GPS system that inform the City/public exactly which roadways have been sanded, salted, or plowed.

The City has a planned, measured response to snow and ice that keeps roads safe.

- We keep Calgarians on the move by providing responsive service that can be immediately adapted to changing road conditions.
- Anti-icing helps prevent snow and ice buildup by applying a calcium chloride solution to designated roads before a snowfall.

Drive with caution and watch for our crews.

- Motorists are urged to slow down and drive defensively during winter driving conditions.
- Keep a safe distance - help our crews do their jobs by staying three car lengths behind sanders and plows.
- No sudden moves (braking, lane changes)
- Have appropriate tires.

Snow Route Parking Bans

A Snow Route Parking Ban is a temporary parking restriction that can be put into effect on roads that are designated as Snow Routes. Parking bans are intended to support plowing operations. Crews can clear snow more effectively and efficiently when they don't have to work around parked cars. Snow routes include major roadways, collector roads and most bus routes and are marked by blue signs with a white snowflake.

Priority System/ 7-Day Snow Event Plan

While crews are out working non-stop during snow storms, the City's 7-Day snow event plan begins once the snow stops falling. Roads sands, salts and plows roads and sidewalks based on a Council-approved priority system. This keeps the greatest number of vehicles moving safely in the shortest period and ensures Roads has the right amount of people and equipment maintaining the road at the right time.

2016-2017 Lessons learned

- Continued education of 7-Day Plan is important early in the season and prior to each major snowfall.
- Heavy promotion and education of snow route parking bans was important to citizen understanding and compliance when the ban was called in February. A new tactical response plan was established at the beginning of the season, and was adjusted after the ban was called. This process plan should be reviewed prior to the launch of the SNIC 2017/2018 season due to the new Communications service delivery model.
- Coordination with Parks, Bylaw, CPS and Transit is necessary and should begin prior to the launch of SNIC.
- Ongoing coordination with Calgary Parking Authority prior to, and during the snow route parking ban was important for cohesive messaging.
- Continue to supply City Councillors and their offices with timely information and key messages.
- Review the timing of when to call snow route parking ban to provide residents as much notice as possible.