



Snow and Ice Control Annual Report (2015–2016)

2016 June

Snow and Ice Control Annual Report (2015-2016)

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. The Roads Maintenance Division delivers The City's SNIC Program Plan based on Council Policy TP004. 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."

Highlights of the 2015/2016 SNIC Program include:

- The 2015/2016 SNIC expenditures for 16,242 lane kilometres of roadway totalled \$30.8 million (\$13.1 million + \$17.7 million). This is less than the \$36.75 million spent during the 2014/2015 SNIC season.
- 2016 SNIC operations is presently running a positive variance due to reduced snowfall in February, March and April of 2016.
- From October 2015 to April 2016 Roads received 5,514 SNIC Service Requests.
- Roads met their target to plough and sand the Priority 1& 2 routes within 24/48 hours during the 2015/2016 season 94% of the time.
- The total snow fall for the 2015/2016 SNIC season was 58.2 cm. The average snow fall from 2011-2016 is 120 cm. This indicates that the 2015/2016 SNIC season experienced a below average snow fall amount.
- The current balance in the SNIC Reserve is \$8.89 Million. Transportation added \$3.89 Million and Fiscal Sustainability Reserve added \$5.0 Million.

Roads Maintenance was committed to mobility choices by supporting the cycling community and removing snow from the cycle tracks. Innovation included both equipment used and materials applied to provide an improved cycling experience in all weather conditions. Maintenance also worked closely with Calgary Transit and Community & Neighbourhood Services (CNS) to improve mobility for citizens with challenges at 350 transit locations and 5.15km of sidewalk

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Introduction

The annual Roads SNIC Program Plan (Program Plan) provides detailed plans and strategies to meet the expectations set out in Council's SNIC Policy TP004 (SNIC Policy). The SNIC Policy and the Program Plan continue to evolve to stay ahead of 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 safe mobility on City infrastructures 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 remain 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 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 stakeholder awareness and collective commitment to a safe and well-maintained road system for all travel modes.

Seven Day Plan

The SNIC response is broken down into a Seven Day Plan. This plan allows us to quickly address the impact of any snow event on the mobility of our citizens and communicate the 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, our response resets back to Day One. Figure 1 provides additional details on the Seven Day Plan.

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SNIC RESPONSE TIME FRAMES – SNOW EVENT START TO END

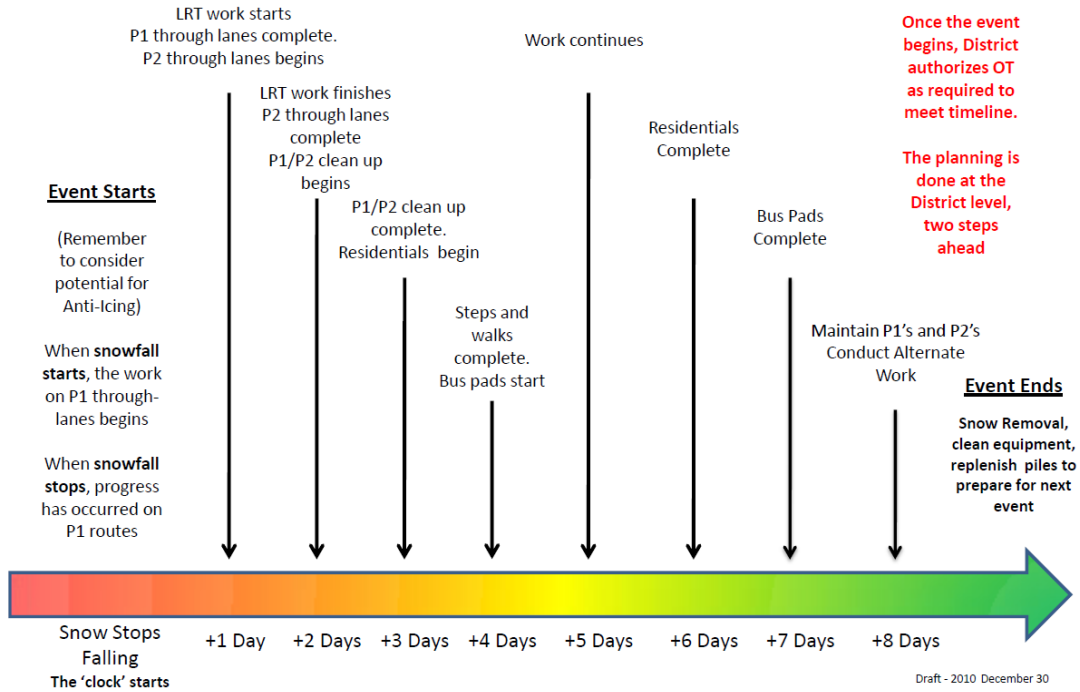


Figure 1: Seven Day Plan

During the 2015/2016 SNIC season it snowed 58 cm. This precipitation occurred over 25 snow days and 22 days of trace snow. Maintenance activated the Seven Day Plan 10 times in 2015/2016, and due to overlapping snow events, it was restarted twice.

3-1-1 SRs

During the 2015/2016 SNIC season, Roads Maintenance received 5,514 SRs. The top three SR types were Sand and Salt requests at 2,634, Snow Clearing requests at 1,846, and Sidewalk Snow Ploughing at 341. Table 1 shows the historical data from the past five seasons.

Historical 3-1-1 Data					
	2011/12	2012/13	2013/14	2014/15	2015/16
Total SNIC SRs	4,086	8,534	35,871	6,832	5,514

Table 1: SRs from 2010-2015

Roads was able to adhere to our 3-1-1 service level completion agreement 79 per cent of the time. In addition, 87 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 eight days.

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Table 2 shows a comparison of snow fall for the last five SNIC seasons.

Month	Season				
	2011/12	2012/13	2013/14	2014/15	2015/16
September	0	0	0	28.2	0
October	1	25.5	4.4	1.2	3
November	14.4	19.4	27.8	43.2	11.60
December	16.4	15.6	52.4*	7.5	24.10
January	6.2	24.9	23.3	34.6	15.30
February	16.8	3.4	6.4	13.7	1.80
March	18	21.6	36.2	6.2	2.40
April	27.1	11.8	13.6	5.4	0
Totals	99.9	122.2	180	140	58.20

Table 2: Season comparison 2011-2016

Snow and ice control materials

Our Maintenance team uses four main SNIC materials in its operations: road salt (sodium chloride), sanding chips, sodium chloride brine and calcium chloride brine. Sanding chips are six millimetre rock particles which are mixed with up to three per cent salt. The liquid brines help the material stick to the road surface, and are also used as an anti-icing agent applied directly to the road surface. The calcium chloride brine is used in pre-wetting whereby the liquid brine is sprayed onto the salt or abrasive materials before it is applied to the roadway. Sodium chloride brine, as an anti-icing agent, helps prevent ice bonding to the road surface, which makes the clean-up after a snow event easier.

A five season comparison of SNIC material consumption is shown in Table 3: Five year comparison of SNIC material consumption, snow days and total snowfall. Road salt usage during the 2015/2016 SNIC season was decreased by 19,769 tonnes or approximately 30 per cent when compared to the five season average. Sanding chip consumption during the 2015/2016 SNIC season was less than the average by approximately 15,000 tonnes or 39 per cent. Calcium chloride brine had the most significant decline in consumption at 648,000 litres or 57 per cent. Our Maintenance team uses calcium chloride brine for its effectiveness in extremely cold temperatures.

Studies have shown that without pre-wetting, only 46 per cent of the material applied to a roadway will actually 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 the sanders, reduces costs and helps minimize our impact on the environment.

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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.

SNIC Season	Road Salt/NaCl (tonnes)	Sanding Chips (tonnes)	Calcium Chloride Brine (litres)	Snow Days	Snowfall (cm)
2011/12	55,815	32,729	1,031,440	45	100
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	46	140
2015/16	45,082	24,891	491,230	25	58.20
Average	64,851	40,845	1,139,243	43	120

Table 3: Five year comparison of SNIC materials consumption, snow days and total snow fall

Snow storage sites

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

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

Table 4: Snow Storage sites

Unlike the 2013/2014 winter season, these three snow storage sites had limited snow placed in both the 2014/2015 and the 2015/2016 season. Snow came mainly from snow removal activities in the downtown core in an effort to improve parking, sidewalk and bicycle lane accessibility. In the 2013/2014 season, these three sites were at capacity by late December which required the establishment of a temporary snow storage site to accommodate residential snow accumulations.

\$979,117 was spent on snow removal during the 2015/2016 SNIC season. This is significantly less than the \$3,292,379 spent during the 2014/2015 SNIC season.

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A 2012 condition assessment identified areas for improvement to the Highfield and Spring Gardens snow storage sites, up to and including full reconstruction. The condition assessment, 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 old 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. These projects are currently unfunded, but Roads Maintenance will evaluate the cost effectiveness of using mechanical snow melter to replace the need for land-based snow storage sites.

Budget review 2015/2016

The graph in Figure 2 shows our SNIC budget and actual costs compared to snow fall and snow days during a particular season. The "Budget" is what was allocated for the season and "Actual" is what was spent during the season. "Snow Fall" represents how many centimetres of snow fell during the winter season. Snow days are the number of days on which more than 0.2 mm of snow fell.

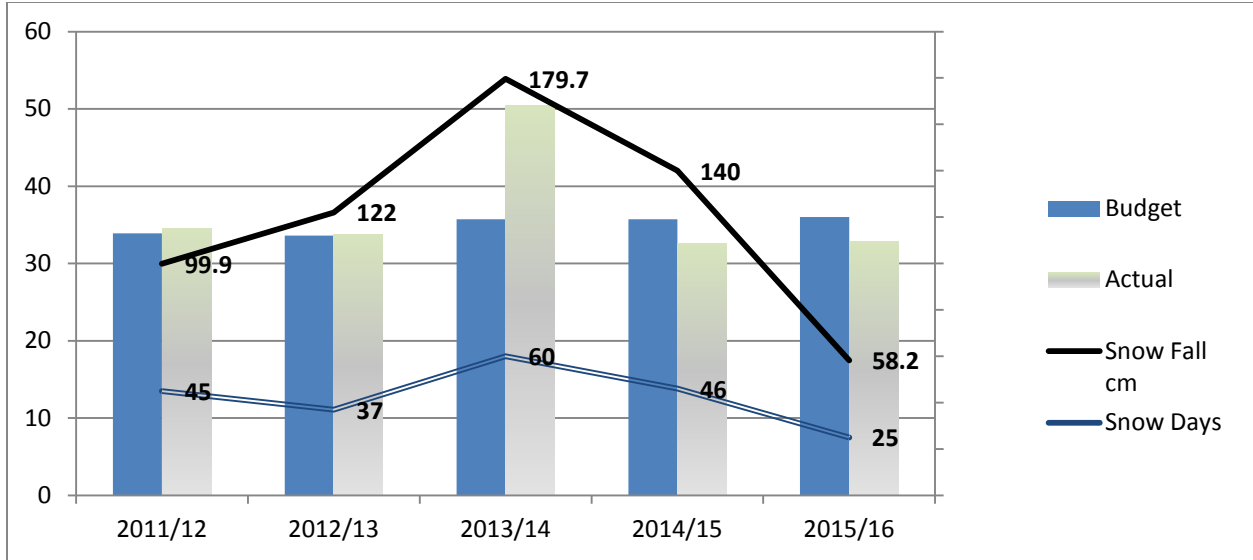
During the 2015/2016 SNIC season, 58.20 cm of snow was reported to have fallen in the city of Calgary over 25 snow days and 22 days of trace snow (below 0.2 mm). The amount of snow which fell in 2015/2016 was 52 per cent below average when compared to the past five years. In addition, this season's temperatures were above average and resulted in a higher rate of melting and reduced snow accumulation.

Budget expenditures for the 2015/2016 winter season totalled \$30.8 million. Expenditures by category were as follows: Equipment (35.5 per cent), Labour (48 per cent) and Materials (16.5 per cent). Equipment and labour costs are the main costs and don't change proportionally to the snow fall. When crews aren't working on SNIC, they'll work on environmental control, winter sweeping, depot maintenance and pothole repairs.

The current balance in the SNIC Reserve is \$8.89 million. At the fiscal end of 2015, Transportation added \$3.89 million and Fiscal Sustainability Reserve added \$5 million.

If the 2015/2016 SNIC season repeats itself, the SNIC Reserve could continue to be augmented by a positive variance from Roads at the fiscal year-end, up to the Council-prescribed maximum of \$15 million.

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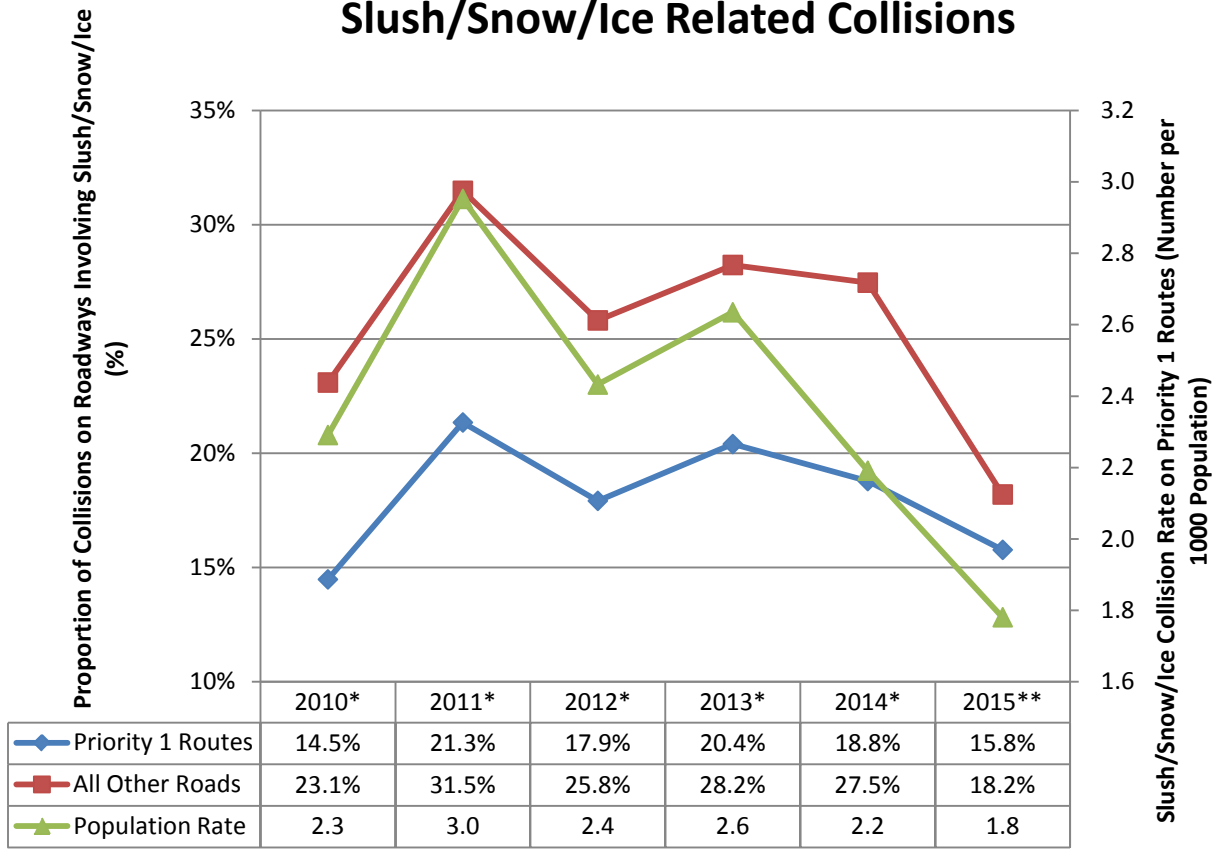
*Figures on the left indicate millions of dollars.

Figure 2: Expenditures and snow days 2011-2016

P1 route collision data

One of the goals of SNIC activities is to provide the opportunity for safe movement of citizens. Comparison of collisions during the last five calendar years of complete collision data (Figure 3) shows that Priority 1 SNIC routes generally have 7.8 per cent 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, per 1,000 person population, has been decreasing since 2011.

Slush/Snow/Ice Related Collisions



* Data extracted from RACE collision reporting system August 13-14, 2015. Data excludes all collisions reported by Calgary Police Service (CPS) in parking lots, or on roadways outside of City of Calgary jurisdiction. All data in RACE supplied by CPS.

** Data extracted from RACE collision reporting system May 27, 2016. Data excludes all collisions reported by CPS in parking lots, or on roadways outside of City of Calgary jurisdiction. All data in RACE supplied by CPS.

Figure 3: Snow related collisions

When considering the average number of Slush/Snow/Ice related collisions on Priority 1 SNIC routes (Figure 4), there is a slight increase from 61 collisions per day in 2011 to 63 collisions per day in 2016. In 2013, the extreme weather events contributed to an average of 84 collisions per day.

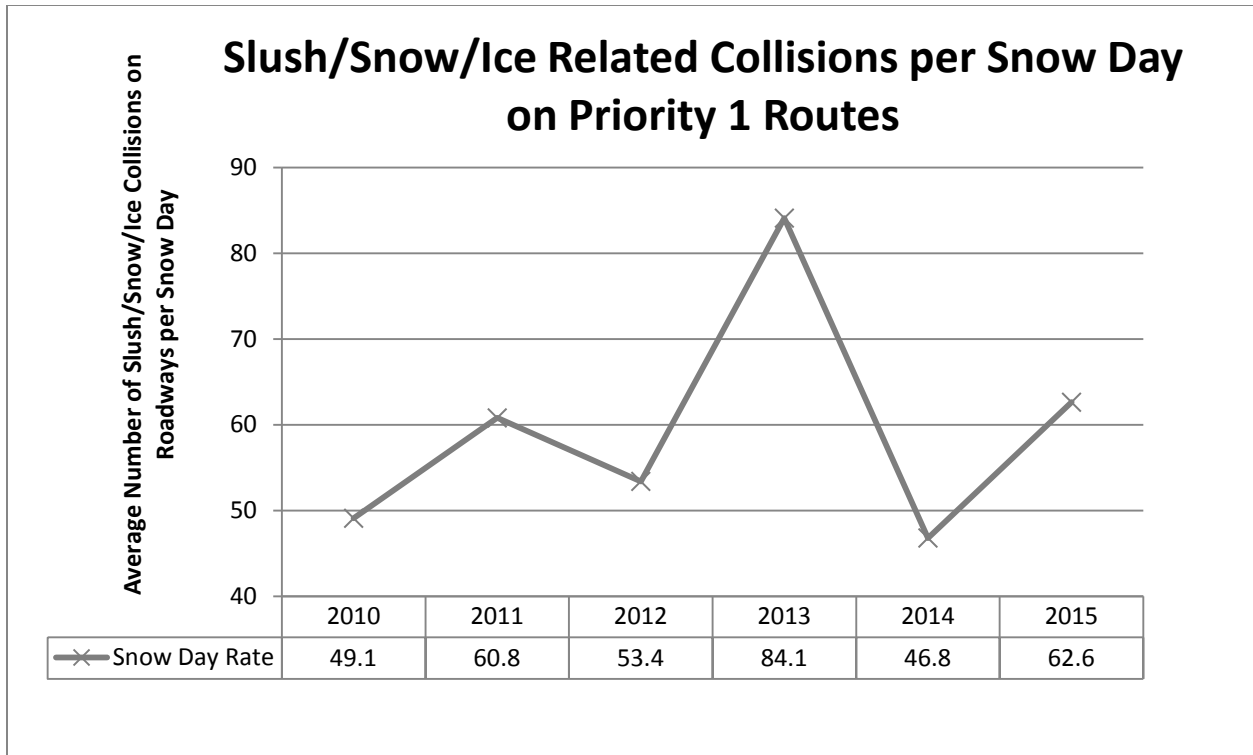


Figure 4: Snow related collisions on Priority 1 routes

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 (Figure 5: SNIC service levels) outlined in the SNIC Policy, three Key Performance Indicators (KPIs) were identified (See Figure 6: Roads Maintenance KPIs and Performance Achieved).

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

Figure 5: SNIC service levels

Performance Indicators	2015-16 Achieved
Percent of time Roads completes SNIC on Priority 1 through lanes within 24 hours. (100% sanded/salted and 90% ploughed)	94%
Percent of time that Roads completes SNIC on Priority 2 through lanes within 48 hours. (100% sanded/salted and 90% ploughed)	94%
Satisfaction with road travel conditions due to Snow and Ice Control.	*84%

*The Snow and Ice Control Program Citizens' Survey conducted by HarGroup Management Consultants Inc. is completed every second year. The 2015 Survey indicated that 84 per cent of respondents were either satisfied or very satisfied with travel conditions due to snow and ice control services when operating or being in a vehicle on Calgary roads.

Figure 6: Roads Maintenance KPIs and Performance Achieved

During the 2015/2016 SNIC season, Roads achieved a 94 per cent success rate on meeting the first two KPIs indicated in the SNIC Policy.

2015/2016 Snow route parking bans

A Snow Route parking ban is considered when a snow accumulation of five centimetres or greater is forecast. Snow routes include major roadways and most bus routes. A major 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. Snow clearing operations are ongoing. 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.).

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With the temperatures and snowfall experienced during the 2015/2016 SNIC season, no snow route parking bans were called.

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:

- 92 tandem trucks equipped to plough and apply materials
- 27 graders
- Nine snow blowers
- Three 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

Roads infrastructure includes nine district depots and three snow storage sites, as well as the right-of-way infrastructure. The 2015/2016 SNIC season budget supported the maintenance operations for the right-of-way infrastructure shown below.

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Description	Lane-km	Linear-km	SNIC Service	Quantity
Expressways	1,547	520	Yes	-
Arterial Roadways	1,952	689	Yes	-
Collector Roadways	3,758	1,321	Yes	-
Residential Streets	8,689	3,239	Yes	-
Gravel Roadways	296	140	Yes	-
TOTAL	16,242	5,909	-	-
Back Lanes Paved	988	462	As required - WRS*	
Back Lanes Gravel	2,050	1,216	As required - WRS*	
Marked, On-Street Bike Lanes	-	44	Yes - 44	-
Sidewalks (Roads)	-	5,584	Yes - 302	-
Engineered Walkways	-	-	No	2,078
Vehicle Bridges	-	-	Yes	206
Pedestrian Bridges	-	-	Yes	159
LRT Bridges	--	--	Yes - select locations	3,232
LRT Stations	--	--	Yes - select sidewalks	4,646
Bus Zones	--	--	Yes	6,1446,138
Stairs/Steps	--	--	Yes	2,472

Data obtained from The City's ArcGIS. *WRS – Waste and Recycling Services business unit

Table 5: Infrastructure Right-of-Way

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SNIC budget details

The annual SNIC budget is the calendar year budget for snow activities. There were no significant snow events in 2015.

Line #	Activity	For the period of October 2015 to December 31 2015	
		Budget	Actual
1	Snow Removal P1 and P2	\$134,466	\$80,251
2	Snow Removal Residential	\$684,931	\$324,442
3	Ploughing P1 and P2	\$510,635	\$322,286
4	Sanding and Salting P1 and P2	\$9,780,484	\$6,310,734
5	Residential Sanding and Ploughing	\$1,185,950	\$1,828,312
6	Snow Dump Site Maintenance	\$46,000	\$625
7	Separate Bikeways	\$130,805	\$167,742
8	Snow Fencing	\$65,608	\$168,647
9	Anti Icing	\$202,000	\$74,417
10	Material Handling and Storage	\$29,730	\$112,409
11	Sidewalk SNIC Clearing	\$858,261	\$902,564
12	Winter Supplementary Work**	\$1,514,899	\$2,801,341
13	Winter Operation	\$15,143,769	\$13,093,769
14	SNIC Reserve Fund Transfer 2015***		\$2,050,000
15	2015 TOTAL		\$15,143,769

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

***This transfer was for SNIC 2015

Table 6: 2015 SNIC expenditures and budget

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Line	Activity	Year to Date – For the period of January 2016 to April 30 2016		Variance	Fiscal Year 2016
		Budget	Actual	Per cent	Budget
1	Snow Removal P1 and P2	\$330,136	\$516,837	-57	\$550,227
2	Snow Removal Residential	\$1,012,569	\$57,587	94	\$2,075,000
3	Ploughing P1 and P2	\$865,961	\$180,012	79	\$1,443,268
4	Sanding and Salting P1 and P2	\$12,120,580	\$4,918,970	59	\$22,336,806
5	Residential Sanding and Ploughing	\$2,050,053	\$1,951,594	5	\$3,290,000
6	Snow Dump Site Maintenance	\$69,000	\$10,242	85	\$115,000
7	Separate Bikeways	\$199,131	\$110,663	44	\$328,753
8	Snow Fencing	\$96,749	\$85,225	12	\$161,249
9	Anti Icing	\$228,000	\$65,462	71	\$380,000
10	Material Handling and Storage	\$121,581	\$89,412	26	\$213,602
11	Sidewalk SNIC Clearing	\$1,341,414	\$787,794	43	\$2,317,871
12	Winter Supplementary Work**	\$2,172,533	\$8,928,725	-311	\$3,786,965
13	Winter Operation				
14	SNIC Reserve Fund Transfer	\$0	\$0		\$0
15	2016 Total	\$20,607,707	\$17,702,524		\$36,998,741

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

Table 7: 2016 YTD expenditures and budget

Line #	Description	2011-12 Season	2012-13 Season	2013-14 Season	2014-15 Season	Five Year Average	2015-16 Season
1	SNIC Clearing (Plough/Sand)	\$3,894,058	\$4,224,380	\$6,777,794	\$4,243,699	\$4,583,967	\$3,779,906
2	Snow Removal	\$265,561	\$171,862	\$12,194,096	\$216,217	\$2,645,953	\$382,029
3	Total	\$4,159,619	\$4,396,242	\$18,971,890	\$4,459,916	\$7,229,920	\$4,161,935

Table 8: Residential SNIC clearing and removal expense

Pothole repairs

From October 2015 to April 2016, Roads received 893 pothole SRs from 3-1-1 and repaired an estimated 900 potholes.

Program to improve mobility-challenged access during SNIC

In the 2015 to 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 mobility-friendly 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 locations where mobility-challenged individuals frequently visit. Snow clearing would begin during the snow event and continue until all the identified locations were clear following the snow event. Calgary Transit and CNS worked together to provide a list of priority locations. Calgary Transit controlled funding for this program. Roads have a contract in place that would allow this work to be completed as on-demand SNIC work.

During the 2015/2016 SNIC season, a Roads contractor provided service to 350 locations and 5.15 km of sidewalk.

Below is a sample communication from the contractor indicating that a bus stop was completed (Figure 7).



Figure 7: Contractor communication

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The operational savings in 2015 from the \$2 million allocated to improve accessibility was \$1.89 million. All the SNIC operational savings were transferred to the SNIC reserve. Due to the below average snowfall experienced during the 2015/2016 season, Roads does not have an accurate estimate for the upcoming 2016/2017 seasonal costs.

Bike lanes

The City's cycle track and cycle track trial, bike lanes, multi-use pathways, neighbourhood greenways (bicycle boulevards), shared lanes, and signed bicycle routes all contribute to mobility choices. 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.

Contingency plan

The SNIC Contingency Plan outline 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 of our business unit's 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. Our Maintenance Division, in conjunction with the Supply Management Division, has a contract to provide the following SNIC services:

- Schedule A - Transit Trouble Spots: 179.3 lane-km
- Schedule B - District Trouble Spots: 516.3 lane-km
- Schedule F - District Northwest Steps: 2,472 steps and 7.1 km of abutting sidewalk
- Schedule G - On Demand Service: limited service to augment City forces

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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. Edmonton has spent \$3.4 million per annum on a retainer program for hired graders. While that was beneficial during times when snow events warranted the surge in services, it proved equally costly when the call-out was not required. Edmonton ended their retainer program in 2008/2009.

Our Maintenance Division also engages the Fleet Services business unit. Fleet Services maintains a rental equipment tender and hired truck contract that is reviewed every two and six years respectively. Also, 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 177 units equipped with the CFOS. Of these 177 units, 55 of the Global Positioning System (GPS) units are mobile (can be moved from truck to truck) in order to accommodate our growing rental fleet, as well as outfit short term City contractors. Using this GPS data, Roads is now able to automatically update the public facing SNIC maps, displaying our progress status to the public. Sanding routes change color automatically to show their maintenance status. The SNIC Road Conditions map can be found at [Calgary.ca](http://calgary.ca).

CFOS has also launched a brand new workspace for internal staff which can be found at this link: <http://picfos01/CFOSClevelvestCore/workspace/app/LogOn>.

Using this internal staff link, Roads can collect detailed unit information including unit number, location, speed, date, time, travelling direction, and when the unit is ploughing the road. The website displays real-time data which is stored in a database for future reference. The data collected has been key in providing unit information for third party claims, 3-1-1 SRs, SNIC situation reports, and snow event after-action reporting.

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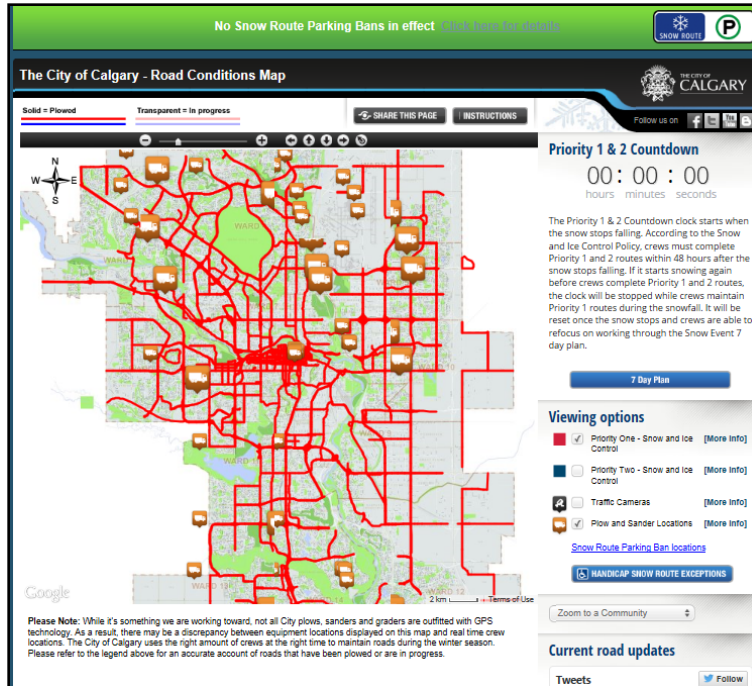


Figure 8: Calgary.ca Road Conditions Map

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 and plans specific to our business unit.

In a typical season, regular SNIC communications begin when the snow falls, or with a kick-off prior to the first major snowfall. In 2015, the launch was estimated to occur around mid-October. The SNIC season was expected to run until April 2016, with the communications plan focusing on updates through City communications channels (Calgary.ca updates, blogs, news releases, social media posts) based on road conditions.

Communications goals

During the 2015/2016 SNIC season, the primary goal of the Communications team was to educate Calgarians on how The City clears streets of snow and ice using the Seven Day Plan. This strategy was implemented to manage The City's reputation through consistent, accurate, transparent communication with citizens around its snow clearing efforts.

SNIC 2015/2016 Communications

During the 2013/2014 SNIC season, Communications faced intense challenges due to extreme snow events.

In response, a corporate Snow Communications group was formed which included communicators from Roads, Customer Services & Communications (CSC), Parks, Animal &

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Bylaw Services, Transit, CNS and the Office of the Councillors as well as representatives from 3-1-1 to coordinate external and internal communications.

Although meetings were suspended for the 2015/2016 season, due to lighter snowfall during the 2014/2015 season and a light seasonal forecast for 2015/2016, a weekly reporting structure was implemented. 3-1-1, Roads, Parks, and Bylaw submitted a written report to CSC every Monday.

CSC developed an escalation plan for severe weather events, based on the strategies and tactics of the 2013/2014 season. This plan was not implemented during the 2015/2016 season.

SNIC communications outcomes and results

These methods of communication were used during the 2015/2016 SNIC season:

Media Release	<ul style="list-style-type: none">• No official media availability due to lack of first "official" snowfall in October• News release and FAQ sent to local media outlets
Social Media	<ul style="list-style-type: none">• No official media availability due to lack of first "official" snowfall in October• News release and FAQ sent to local media outlets
Videos	<ul style="list-style-type: none">• Two Report to Calgarians videos• Behind the scenes videos with fun facts, information about equipment
Website	<ul style="list-style-type: none">• Calgary.ca/snow• The Snow and Ice Control update• Participation in city-wide winter campaign
Media	<ul style="list-style-type: none">• Approximately 75 media inquiries resulting in 100 articles

Key messages

Roads is working to keep Calgarians on the move.

- Relate answers back to what have been accomplished – how many lane-km of roads have been ploughed and sanded.

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Roads can respond to snow and ice 24/7.

- Crews and equipment are at work 24 hours a day to ensure an immediate response.
- Our units are equipped with real-time GPS systems that tells us exactly which roadways have been sanded, salted, or ploughed.

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

- Roads 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 at least three car lengths behind sanders and ploughs.
- No sudden moves (braking, lane changes, et cetera)
- Have appropriate tires for the season.

Priority system/Seven Day Plan

The City's Seven Day Plan begins as soon as the snow stops falling. Roads will sand, salt, and plough the roads and sidewalks based on a Council-approved priority system. This keeps the greatest number of vehicles moving safely in the shortest period of time, and ensures the right amount of people and equipment maintaining the road at the right time.

2015-2016 Lessons learned: Communications

- Regardless of a high or low snowfall year, media outlets are always interested in SNIC operations,
- On-call communicator continues to be one of our biggest assets,
- Greatest growth to the @yyctransport Twitter account occurs during snow events,
- Continued education of Seven Day Plan is important early in the season,
- Due to two years without a Snow Route parking ban, citizens and media are uninformed/uneducated about how they work. If there is a heavy snowfall season next year, the parking ban information will have to be promoted heavily,
- New tactic for 2016/2017: Free ads and updates played on The City radio station,
- Working with CSC to create more relationships with reporters, and come up with innovative ways to provide information to them quickly when snow falls,
- Pre-SNIC strategy meeting with Parks, Bylaw, CPS, and Transit is necessary to coordinate messaging. Monday updates worked well but discussions of strategy and key messages should have started in September.

Roads business unit: Lessons learned

The Roads business unit will continue to focus attention on two key points this coming 2016/2017 SNIC season:

- Roads Maintenance is working with the labour union(s) on establishing new SNIC shift hours.
- Trials of application of sodium chloride brine as an anti-icing agent were successful in addressing road surfaces and will be expanded during the 2016/2017 SNIC season.

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Glossary

BRZ	Business Revitalization Zone
CFOS	Common Fleet Operating System
CNS	Community & Neighbourhood Services
CPS	Calgary Police Service
CSC	Customer Services & Communications
GPS	Global Positioning System
KPI	Key Performance Indicator
LRT	Light Rail Transit
SNIC	Snow and Ice Control
SR	Service Request