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Item 8.3.1

Transportation Standing Committee
July 23, 2014

TO: Chair and Members of Transportation Standing Committee

Original signed

SUBMITTED BY: Kathleen Llewellyn-Thomas, A/Director, Transportation & Public Works

DATE: June 16, 2014

SUBJECT: Winter Operations End of Season Report

INFORMATION REPORT

ORIGIN

Halifax Regional Council, January 14, 2014, Item 11.7.1: Moved by Councillor Mason, seconded by Councillor Watts that Halifax Regional Council direct staff to prepare an end-of-season report for Regional Council on streets, sidewalks, bus stops and bike lanes snow removal in the entire HRM that will include the challenges; options and opportunities for improving service – specifically reporting on operational challenges and cost of enhancing service levels and times; and implications of cancelling the program.

LEGISLATIVE AUTHORITY

N/A

BACKGROUND

In order to provide context to the report covering the Winter Operations this past season, it is useful to highlight how the program has evolved into its current state. The TPW - Municipal Operations (Municipal Operations) snow program has changed significantly over the past ten (10) years and has been developed into a blended combination of in-house resources supported by selective use of hourly based contractors, and longer-term performance based contracts. Hourly based contractors are paid by the hour and work under the direction of Staff. Performance based contractors are paid according to results/outcomes that are prescribed in the contract and inspected by Staff.

The in-house component consists of CUPE Local 108 staff divided into two regions (East and West), operating from three (3) operational depots. These HRM employees report for scheduled

shifts and provide 24-hour operational coverage during snow and ice events. For this group, during periods when they are not engaged in snow clearing operations, they are reassigned to tasks including pothole repairs, roadside shouldering repairs, snow removal and hauling from various locations, park and playground winter maintenance and many other Municipal Operations functions.

As winter events occur, the first level of response begins with the mobilization of all in-house staff and equipment, which currently consists of 54 plowing/salting/sanding units and multiple hand crews. If conditions warrant an increased presence, hourly contractors are called in to supplement in-house route responsibilities. These are trucks and operators retained throughout the season and are only paid hourly rates for the time they are actually engaged in plowing or salting activities. The performance based contracts are let for multi-year periods and help to better predict seasonal costs as the same amount is paid regardless of the number of snow events throughout the season. They monitor road conditions and react to ensure they maintain prescribed service levels.

In short, operations are ramped-up and ramped-down through a combination of all three service providers throughout the entire duration of a winter event.

The winter of 2013/14 was categorized as a heavy winter with above average accumulations, colder than normal temperatures and marked by three blizzards with accumulations over 30cm (December 15, January 22 and March 26).

Appendix 1 provides an annual comparison of the number of events and total accumulations experienced over the past six years that data has been captured.

This report describes in detail our experiences and learnings from the 2013/2014 Winter Season.

DISCUSSION

While this report focuses primarily on the items specifically identified in the motion, it will also provide general information relating to salt management, the assistance program for seniors and persons with disabilities, service request information, a budgetary overview and details about the planning and preparation for next season.

Winter Season Overview 2013-2014:

In total, Municipal Operations mobilized for 50 winter events for 2013/2014. These break down into the following categories:

- a) 11 major events (defined as 15cm+)
- b) 4 average events (defined as 5-15cm)
- c) 17 minor events (defined as 0-5cm)
- d) 16 salting events (defined as black ice, or surface re-freezing)
- e) 2 freezing rain events.

On four occasions (December 15, January 22, February 15 and March 26) heavy icing conditions were the result of events that combined snow, rain, high winds and a flash freeze. These events

are captured in the numbers reported above and required a continuous mobilization of over 72 hours before Municipal Operations could achieve the prescribed service standards.

Winter Maintenance - Streets:

Municipal Operations has developed a street clearing program based on a network of 3,765 lane kilometers of roadway broken down as follows:

- 1) 2,185 lane kms maintained by HRM staff and hourly-based contractors.
- 2) 1,128 lane kms maintained under the original performance based streets contracts. (2011)
- 3) 452 lane kms maintained under new performance based contracts tendered this season (2013)

This season, Staff continued to focus in-house resources and efforts on the central core, while continuing and expanding performance based contracts for the delivery of snow and ice management in more rural areas. These performance based contracts provide the ability to more accurately (and with less fluctuation); predict the costs over multiple winters.

The first set of Performance Based Street Contracts was issued for the 2011-2012 season with an average pricing of \$3,940 per lane kilometre. The areas serviced included Timberlea, Hammonds Plains and Eastern Passage/Cole Harbour. The original contracts are still in effect for one additional season and have become a successful component of our winter maintenance delivery program. The development and implementation of these Contracts allowed Municipal Operations to decommission eighteen pieces of in-house equipment in 2011 and to reduce by seventeen the number of retained hourly trucks required for these areas, avoiding associated costs.

This season the performance based component was increased with two new Contracts created for Upper Sackville/Beaverbank and Windsor Junction/Fall River. The Municipality benefited not only by being able to eliminate an additional 26 pieces of hourly retained equipment, but realized a per kilometre cost reduction, with average pricing now falling to \$3,163 per kilometer (compared to \$3,940 in the previous contracts and \$4,146 for in-house costs). The result of these two sets of Contracts has been an ability to provide a more balanced blend of in-house equipment spread over a smaller, more central geographical area closer to our operating depots.

The main challenges experienced in street plowing this season can be attributed mainly to the severity of the winter. Crews were challenged by an early calendar start and additionally, back-to-back storms for the duration of the season, made physical damages and snow storage an ongoing issue.

Areas for Improvement and Options - Streets:

With an aim towards continuous improvement, Municipal Operations will continue to seek new ideas and is currently reviewing the balance between in-house and performance based contracting - specifically whether the existing combination is efficient and effective. Staff has started a review looking at new regions and the potential to expand the scope of Contracts to include both street and sidewalk plowing - creating a "Prime Contractor" responsible for all aspects of snow clearing (street and sidewalk) within a specified boundary. This system would: incentivize contractors to provide more coordinated plowing efforts between street and sidewalk crews; help build efficiencies in terms of communications and supervision; and, provide a greater degree of budget predictability. This review process will result in a strategic snow management plan to be implemented over the course of a few winters. A multi-year approach allows existing contracts to expire and become incorporated into larger "Prime Contractor" areas.

Winter Maintenance - Sidewalks:

Municipal Operations has participated in the development of the sidewalk clearing program since amalgamation, including the provision of various levels of service which have now been consolidated in order to provide consistent service to all regions.

Municipal Operations maintains an inventory of 953 kilometers of sidewalks/walkways as follows:

- a) 112 kms maintained by HRM staff (Downtown Halifax/Dartmouth)
- b) 640 kms maintained by existing performance based contracts along main arterials and Transit routes.
- c) 201 kms maintained by new performance based contracts for residential sidewalks on the Halifax Peninsula and Mainland South. (new this season)

In general, as already described for the street portion of the program, all sidewalk routes experienced the challenges of a severe winter with difficult conditions. In reference specifically to the newly awarded contracts on Peninsular Halifax and Mainland South, issues around physical damages and non-compliance to standards resulted in dissatisfaction from some residents and concerns from members of Council.

To more clearly quantify these concerns, reported damage to infrastructure and turf through the 311 Call Centre was significantly higher this season and it is assessed that this increase can be attributed to several factors. Chief among these are: low operator route familiarization; types of equipment; residential encroachments onto the HRM right-of-way; multiple periods of freeze/thaw that created soft turf conditions; and, the significantly increased number of long duration events requiring multiple plowing passes as opposed to a minor event requiring only one single pass with the equipment.

Of significant note, challenges similar to those identified above were experienced in 2006 when the main arterial and transit route sidewalk snow clearing first began on the Peninsula. Over each subsequent season, the level of damage (and therefore the number of complaints) decreased

significantly in those areas. Throughout the winter, whenever staff identified poor performance by a contractor, the initial course of action was to direct the contractor to immediately rectify any substandard work in order to achieve safe conditions. As has been the practice in past years, liquidated damages within contract specifications were then applied whenever a contractor failed to make every effort possible within the timeframes noted in the specifications. When a contractor was unable to provide service consistent to the defined standards, we reserved the right to terminate the Contract and thereby award to the next successful tenderer. While extremely rare, termination did in fact occur once this season.

Areas for Improvement and Options - Sidewalks:

Given the ongoing concerns surrounding the new Performance Based Sidewalk Contracts, Municipal Operations held discussions with staff from HRM Legal and Procurement regarding the implications of potentially suspending the service and/or cancelling the Contracts. At this time, it is the collective assessment of staff that sufficient grounds do not exist to support any termination of the recently awarded Contracts. Further, should this be the direction of Council, the Municipality could be in of breach of Contract and susceptible to various legal claims.

Throughout the season, all contractors were canvassed given the difficulties being experienced this winter, and all have indicated a willingness to continue for the full four-year term of the Contracts, recognizing that improvements need to be made. In those meetings, clear direction was provided to ensure that on a go-forward basis they will continue to focus on:

- a) Right-sizing equipment where required to minimize damages.
- b) Identifying areas for hand work.
- c) Enhancing anti-icing strategies to improve the level of service.
- d) Increasing supervision of new staff.
- e) Completion of more thorough pre-winter hazard assessments to identify problem locations.

Bus Stop Clearing:

In total, there are 2,295 bus stops that are serviced by Metro Transit. Each of these bus stops vary in the complexity of infrastructure attached. Some are full concrete pads with shelters, some are small pads attached to sidewalks, some are behind the curb with no pad (just grass or gravel) and some are simply drop off areas on the road shoulder. Bus stop clearing is currently carried out as follows:

- 1) Performance based sidewalk contractors clear 68% of the bus stops.
- 2) The in-house sidewalk program clears 12% of the bus stops.
- 3) Performance based streets contractors clear 4% of the stops (mostly roadside with no infrastructure).
- 4) The in-house streets crews clear the remaining 16% of the bus stops.

This season Municipal Operations staff implemented Council's direction to improve the standard from 72 to 48 hours to clear the Metro Transit bus stops. Crews experienced only limited challenges achieving the increased level of service, with the 311 Call Centre receiving 151 calls over the winter related to transit stops. The one particular challenge for bus stop clearing was

that stops cannot be fully cleared and treated until the adjacent roadway has been fully cleared. Given the limited storage capacity along most routes, Staff had to physically remove snow piles from bus stops during overnight hours when traffic volumes were lower and crews could operate safely. Due to the severity of the season, however, the removal of snow from many stops was repeatedly offset by the subsequent snowfall.

Areas for Improvement and Options - Bus Stops:

Through close liaison with Metro Transit, Municipal Operations will continue to ensure incremental removal is completed at stops with reduced visibility and limited snow storage. In addition, we will look to enhance staffing levels (by use of hourly contracted equipment) to provide more timely removal after periods of heavy accumulation. The same challenge remains, however, that removal must be completed during off-peak hours, often delaying the removal process by up to 12 hours.

Bike Lanes:

Municipal Operations will continue to seek guidance from Council on the desired level of service for bike lanes. Alternate modes of transportation are becoming increasingly important to residents. To accommodate the multimodal urban environment, Staff will continue to look at ways to enhance the delivery of snow clearing operations for all road users. This season, as has been the historical practice, bike lanes were cleared in accordance with the priority of street they share. With higher than average level of snowfall this presented multiple challenges.

Our current level of service does not speak specifically to a standard for bike lanes and as more bike corridors are being planned, it will require a shift in how we plow roads. For the most part, bike lanes in Halifax are simply on-street lanes with no physical separation from the auto lane (paved shoulder, parking lane turned bike lane etc.). Standard plowing practice is to push the snow from left to right, consequently leaving the outer edge of the roadway snow filled until crews can begin widening lanes. During this overlap period, the bike lane is often obscured or narrowed and is subject to constant icing conditions created by melt/thaw and refreeze of snow banks. Furthermore, the use of standard de-icers and plowing techniques removes the majority of snow and slush from the roadway then vehicular traffic eliminates the remaining layer of slush - this will likely not be the case with the lighter vehicle traffic experienced in a bike lane.

Salt Management Plan/ Strategies:

This area can be divided into two main categories: Salt Usage and Inventory Controls. In support of the first category, and in line with Federal/Environmental initiatives, this season saw continued advances with salt management strategies. Through the increased use of Direct Liquid Application (DLA) and Pre-Wetting technology, Municipal Operations teams were able to maintain an acceptable level of service while managing salt usage.

For the 2013-2014 season, total salt usage was 46,759 tonnes - a significant increase from 31,699 tonnes used during the 2012-2013 season, and 25,500 tonnes during the 2011-2012 winter season. Each season offers unique challenges around the type and severity of events and as a

whole, this past season was a very heavy winter with multiple events that required constant reapplication and retreatment of roads for periods of up to 72 hours. Salt usage during these types of events is much higher than average and is therefore reflected in the totals above and further reflected in the year-to-year comparative salt usage as depicted at **Appendix 2**.

Consideration must be given for differences in winter severity however salt management practices and initiatives implemented over the last five years have resulted in reduced salt usage, while maintaining the prescribed level of service and Public safety concerns.

For the second category - inventory management - Municipal Operations and Procurement experienced several significant challenges this past winter. Chief among these were: the loss of weigh scale functionality in multiple depots that resulted in the need to resort to manual weight slips; problems with the weigh scale network connections that in multiple instances given the high salt demand during events meant lost data and billing information; and, poor physical set ups inside the three main salt dome locations (Turner Drive, MacKintosh Street and Bayers Lake) made the shift from unmanned scale operations to manned a difficult and expensive switch.

In the end, staff have undertaken an extensive review of bulk salt deliveries; carried out video verification of trucks (when possible); re-estimated residual salt inventories in the three domes, and manually input 10,394 manual slips (representing 85% of the total 12,273 scale transactions), HRM realized an inventory shortfall of approximately \$540,000. As a result of these circumstances staff has retained the services of a third-party contractor who is in the process of reviewing the physical set up of the scales and the supporting network configuration. The third party contractor will also provide recommendations on the way ahead in order to eliminate any future reoccurrence of this level of unaccounted for inventory.

Overnight Winter Parking Ban:

With the Council approved decision to enforce the Overnight Parking Ban during declared snow events only, Staff has received excellent feedback and positive comments regarding our efforts to minimize public disruption. This past season, the Ban was enforced 15 times, compared to 19 in 2012/13 and 11 in 2011/12. This was assessed to be a significant reduction in disruption given the number and severity of events.

Commencing last season, and improved upon this year, the increased registration by residents into the City Watch program allowed Municipal Operations and Public Relations staff to better communicate through social networking when the Ban was enforced and when it was lifted. Registrations last year numbered 2,800, and more than doubled to over 5,700 this season. The online self-registration process is believed to have been the largest contributor to the increased number of registrants of this program and its continued success.

Assistance Program for Seniors and Persons with Disabilities:

This year, the Halifax YMCA accepted the responsibility for administering this program. Despite receiving approval very late in November, the YMCA was able to deliver the necessary services to 431 clients throughout the winter, a number which exceeded the estimated capacity of 425. Client concerns were addressed promptly through the winter season by the YMCA and the program was assessed as an overall success. All feedback through residents and the program administrators has been excellent.

On a go-forward basis, both Municipal Operations and the Halifax YMCA are interested in a multi-year agreement that would create efficiencies and support improvement in the program, allowing them to expand the number of participants with limited impact on funding requirements. One of the main successes was the distribution of clients across all of the HRM Districts. **Appendix 3** provides a breakdown of the number of clients per electoral district.

The only suggested challenge to the Program on a go-forward basis will be how to actually secure funding for the continuation. This year was the first time Staff went to Council for formal approval of the \$400,000 cost of the Program. Staff will provide a summary report for the program for this year; that report will suggest possible funding solutions for the future.

A report will be presented to Council on August 5th, recommending a multi-year agreement with the YMCA to continue the programme.

Service Request Information:

Over the period of November 1, 2013 to April 4, 2014, 12,460 service requests were created by the 311 Call Centre. Significantly, 3,463 (28%) were calls for service before the applicable Service Standard. These calls were logged and closed at the first point of contact. **Appendix 4** provides a breakdown of the complaint types and the volume of calls.

The breakdown of call types was as follows:

- a) 28% - Closed at the 311 Call Centre (no follow-up required, still within standard)
- b) 29% - Street and sidewalk calls dispatched to Municipal Operations for service.
- c) 22% - Follow-up required by staff (driver complaints, resident inquiries etc...)
- d) 18% - Damage complaints.
- e) 3% - City Watch registration or change of information.
- f) 1% - Bus stop clearing complaint.

Appendix 4 shows the percentage of calls resolved within standard (93%). All service request information is logged and progress is noted as Municipal Operations is able to make contact with the resident and arrange to meet if required. Of particular note is the number of calls related to plowing damage, which increased by over 300% this season. Many factors contributed to this, however, winter severity is the main reason along with the challenges discussed in the sidewalks portion of this report.

Budgeting:

Budgeting for Winter Operations in HRM has been improved through the increased predictability offered as a result of the move towards performance based contracts. **Appendix 5** illustrates the 5-year trend in total Program costs for the HRM. As indicated, the yearly average cost is approximately \$20 million dollars. A severe season however, requires higher salt usage, increases the use of hourly-based equipment and incurs greater staff overtime costs for necessary 24/7 mobilizations - particularly with weekend events or events that happen during Holiday periods.

The largest contributors to increases in this year's expenditures were higher than normal variable costs of salt and sand – (actuals of \$3.6 million compared to budget of \$1.7 million), hourly equipment rental (actuals of \$4.4 million compared to budget of \$2 million) and staff overtime (actuals of \$1.3 million compared to budget of \$0.8 million). These increases drove overall program costs to a total of \$24 million. **Appendix 6** provides a breakdown of the costs associated with the Municipal Operations Winter Operations budget.

Business Planning:

During the off season, Staff will engage in yearly reviews of all routes, processes and inventories in order to make operational changes and route adjustments. Post season evaluations of all performance based contractors will be performed, and the number of hourly-hired trucks reviewed and adjusted - to ensure the correct number is returned for the following season. In addition, this year staff will also focus on examining the current status of all performance based contracts in an effort to realign existing boundaries with an aim of optimizing strengths of larger companies as Lead or Prime Contractors for specific areas which would include all road, sidewalk and bus stop clearing responsibilities to reduce or eliminate the situation where multiple agencies are working in a single location.

Summary & Conclusion:

While the fundamental basis and desired end result of snow clearing has remained unchanged for many years; the adoption of enhanced levels of service, increased communication expectations and the growing requirements of HRM's multimodal transportation network will necessitate an ongoing shift in technology and snow clearing methodology.

Municipal Operations continues to invest in modern technologies and equipment, ongoing training and proactive review of our current program delivery - always focusing on ways to improve and better serve the residents of the Halifax Regional Municipality.

FINANCIAL IMPLICATIONS

The Winter Operations budget has evolved to the point where through the use of the combination of performance based contracts, in-house crew and equipment and reduced number of hourly-based independent contractors, Municipal Operations is able to approach a more predictable and steady cost for the annual snow removal program. Given this, and the increase last year towards the average annual cost of \$19 M, the funding is now adequate to cover “average” winters without additional increases. Less severe winters will realize a savings and more severe, such as the 2013/14 winter will require additional funding to maintain defined service standards.

COMMUNITY ENGAGEMENT

While no community engagement has been sought in the drafting of this summary report, it was continuous throughout the winter season and continues today while progressing through the completion of all winter damage cases.

ATTACHMENTS

- Appendix 1 Number of Winter Events – Historical Data
- Appendix 2 Halifax Regional Municipality Yearly Salt Usage
- Appendix 3 Assistance Program for Seniors and Persons with Disabilities
- Appendix 4 Summary of 311 Call Centre Calls
- Appendix 5 Five-Year Budget Trend Overview
- Appendix 6 Snow Budget Breakdown

A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/cagenda.html> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

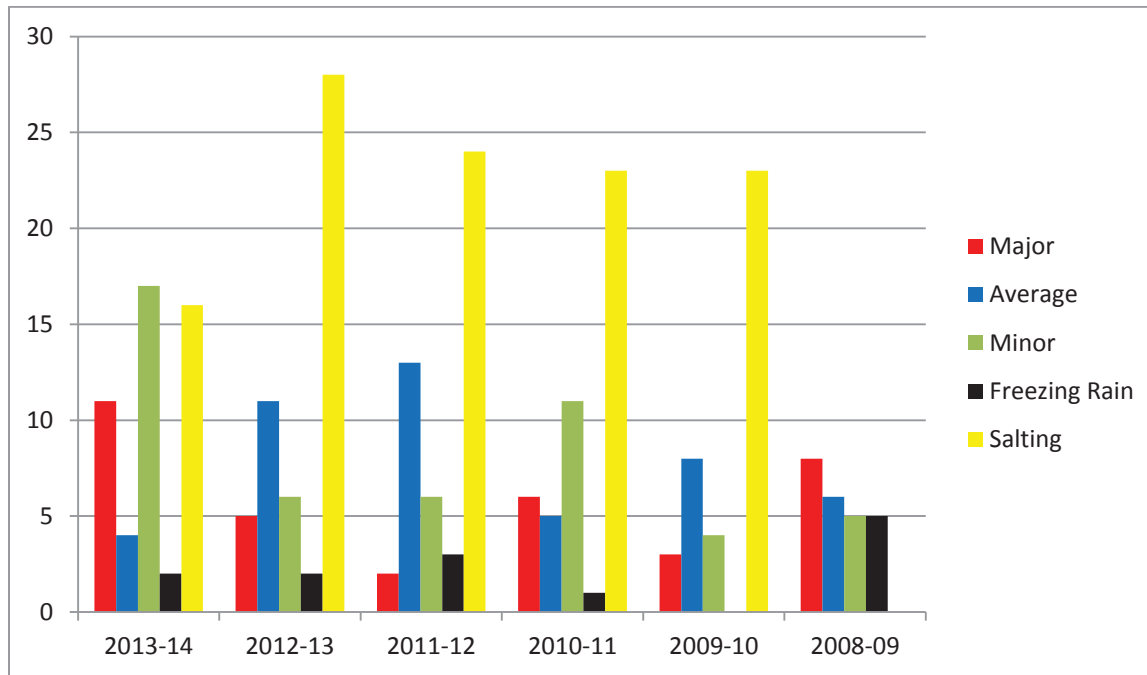
Report Prepared by: Darrin Natolino, Acting Superintendent Winter Operations, 240-8775

Original signed

Report Approved by: _____
Chris Mitchell, Manager Municipal Operations, TPW 490-4673

Appendix 1

Number of Winter Events – Historical Data



Event types

Major-over 15cms snowfall

Average – between 5 and 15cms snowfall

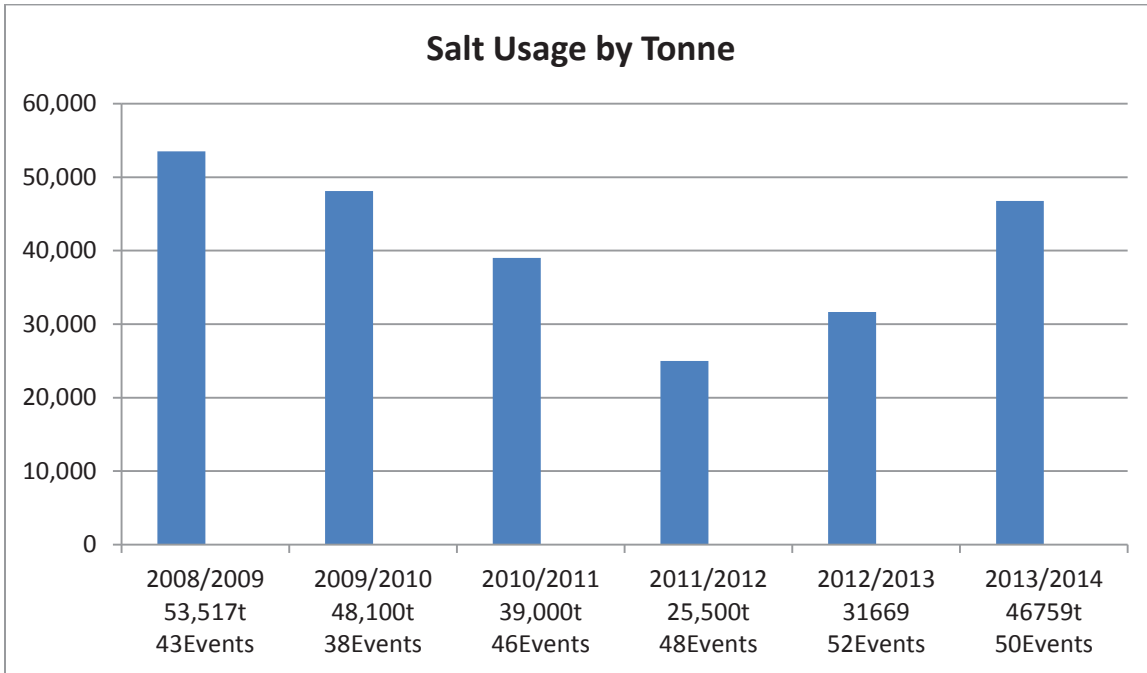
Minor – up to 5cms snowfall

Freezing rain

Salting- blowing snow, spot salting, frost, black ice

Appendix 2

Halifax Regional Municipality
Yearly Salt Usage



The above graph demonstrates that while salt usage is linked to the number of events, far more critical is the type of events that cause usage to increase or decrease over a particular season.

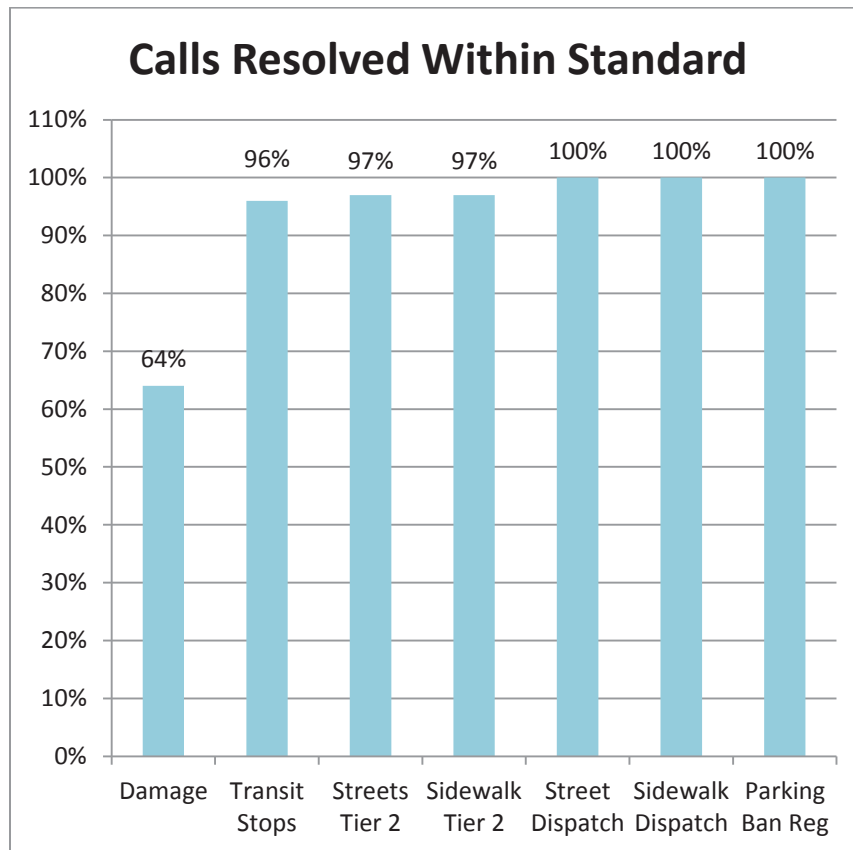
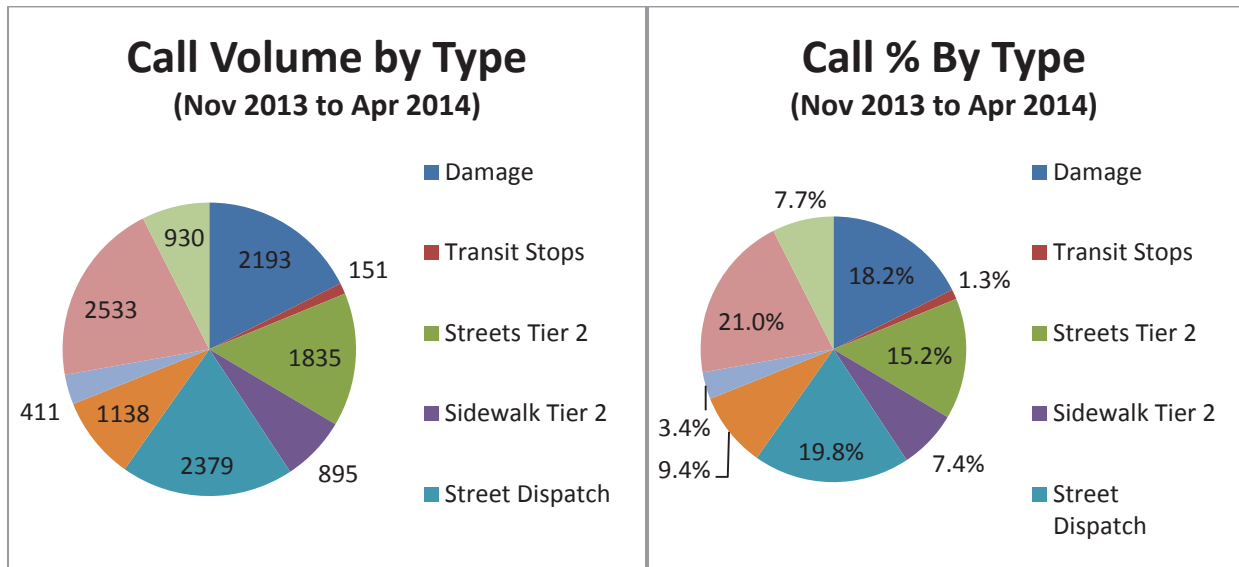
Appendix 3

ASSISTANCE PROGRAM FOR SENIORS AND PERSONS WITH DISABILITIES

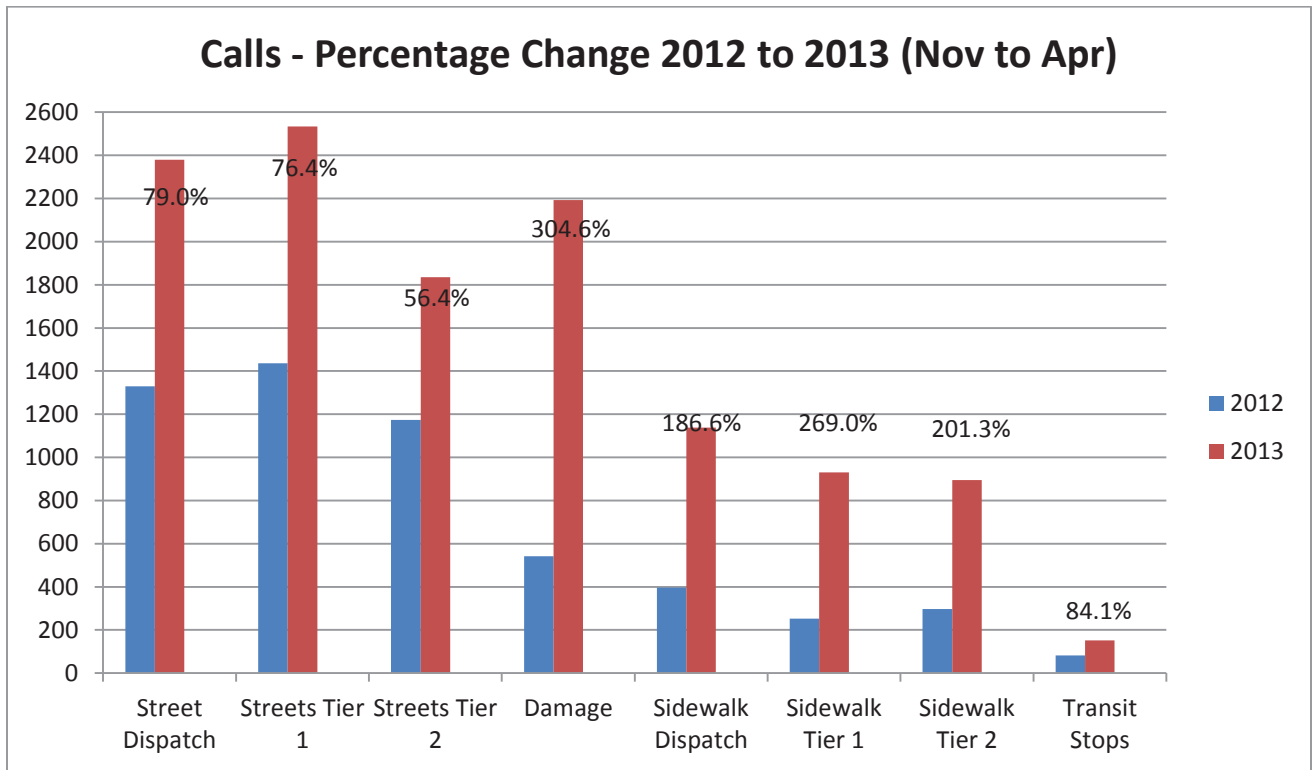
HRM DISTRICT	# of CLIENTS	COUNCILLOR
District 1	12	Barry Dalrymple
District 2	101	David Hendsbee
District 3	21	Bill Karsten
District 4	16	Lorelei Nicoll
District 5	25	Gloria McCluskey
District 6	24	Darren Fisher
District 7	8	Waye Mason
District 8	43	Jennifer Watts
District 9	46	Linda Mosher
District 10	22	Russell Walker
District 11	14	Stephen Adams
District 12	10	Reg Rankin
District 13	24	Matt Whitman
District 14	29	Brad Johns
District 15	22	Steve Craig
District 16	14	Tim Outhit
TOTAL	431	

With a total annual program cost of \$400,000, the average cost per client in each District is \$928/client/year.

Appendix 4

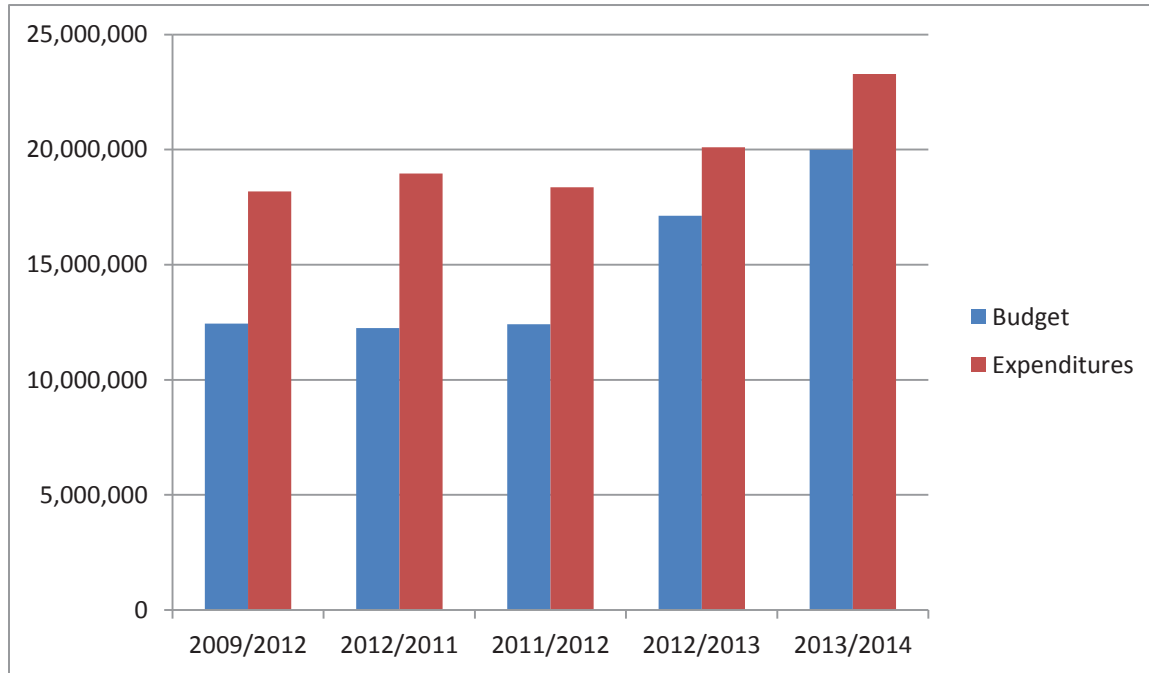


Appendix 4 (continued)



Appendix 5

Budget Overview



Budget Overview

Year	Approved Budget	Actual Expenditures
2009-2010	\$12,445,390	\$18,187,798
2010-2011	\$12,247,187	\$18,963,381
2011-2012	\$12,418,974	\$18,364,604
2012-2013	\$17,123,400	\$20,097,000
2013-2014	\$19,995,000	\$24,206,000

Appendix 6

Item	Planned Expenditures	Actual Expenditures	Variance	Notes
Compensation	\$5,571,000	\$5,529,000	\$42,000	1
PB Street Contracts	\$6,106,000	\$6,116,000	(\$10,000)	
Hourly contractors	\$2,022,000	\$4,385,000	(\$2,363,000)	2
PB Sidewalk contracts	\$3,762,000	\$3,822,000	(\$60,000)	
Repair of Infrastructure as a result of plowing operations	\$34,000	\$101,000	(\$67,000)	
Seniors' Assistance Program	\$400,000	\$400,000	\$0	
Salt and Sand	\$1,749,000	\$3,593,000	(\$1,844,000)	3
Misc. (local travel, training, advertising)	\$351,000	\$260,000	\$91,000	
TOTAL EXPENDITURES	\$19,995,000	\$24,206,000	(\$4,211,000)	

Notes:

1. This figure includes salary as well as OT expenditures. While the OT Actual Expenditures were above the Planned Expenditures, they were offset by FTE being below (realized in Vacancy Management figures).
2. This figure is reflective of the severity of the winter and the number of extended storms that necessitated additional workforce above the in-house abilities for those routes.
3. This figure is reflective of the number of storm events that required salt/sand treatments, or re-treatments and also contains the \$540,000 inventory loss due to the difficulties mentioned in the Salt Management Plan section of the report.