Toronto Winter Maintenance Program Review

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Abstract

The objective of Toronto's Winter Maintenance Program Review (WMPR) was to compare the winter maintenance services delivered by the City of Toronto to those of other North American Peer Cities; to assess the Level of Service (LOS) and activities for the delivery of winter maintenance services in the City; and to identify best practices and opportunities for improvement in winter maintenance service delivery.

In the first phase, a Comparative and Gap Analysis was undertaken with the goal of soliciting knowledge transfer between participating winter maintenance practitioners and documenting relevant information about winter maintenance services delivered by the City of Toronto and Peer Cities. The Comparative and Gap Analysis was meant to identify where the City of Toronto is comparable, instances where the City's service levels exceed the others, and instances where it lags behind. The outcome of the Comparative and Gap Analysis identified best practices from Peer Cities which may provide opportunities for the City to improve the efficiency, economy, and service provision of its own winter maintenance program.

The second phase, Public Consultation, of the study gathered views and opinions, and facilitated discussion about the City's Winter Maintenance services. Opinions were solicited from the City's residents as well the various other stakeholders such as City representatives, internal agencies and special interest groups.

The third phase, Findings and Reporting, evaluated the study findings and prepared recommendations for best practice implementation in the areas of: Communications, Levels of Service, Service Delivery, Bylaw Improvements, Strategic Alignment, Climate Data and Funding.

Toronto Winter Maintenance Program Review

Study Purpose

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Peer Cities was analyzed to prepare an overview of each city's climate and the unique micro-climate zones within Toronto that will assist with understanding winter maintenance challenges. The Comparative and Gap Analysis was meant to identify where the City of Toronto is comparable, instances where the City's service levels exceed the others, instances where it lags behind. The outcome of the Comparative and Gap Analysis was to identify best practices from Peer Cities which may provide opportunities for the City to improve the efficiency, economy, and service provision of the winter maintenance program.

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Peer City Learning Process

The Peer Cities chosen to compare winter maintenance operations with the City of Toronto were selected based on their overall compatibility with one or more of the following characteristics: climate, geography, budget, size of road network, population, urban structure, legislative structure, and economic condition. All jurisdictions selected are unique and none contain the exact same factors which contribute to Toronto's winter maintenance program. Four U.S. locations (Chicago, Milwaukee, Philadelphia and Minneapolis) and seven Canadian locations (Montreal, Ottawa, Windsor, Winnipeg, Calgary, Edmonton and London) were chosen as Peer Cities. Note: Peer City interviews were not conducted in Chicago or Windsor. The data used for those cities is from publicly available sources only.

A Peer Cities Review Assessment Framework and Questionnaire was developed to gather and record winter maintenance activity information collected from the City of Toronto and Peer Cities. The Assessment Framework was used to develop the winter maintenance survey sent to collect information from the Peer Cities. The framework was populated using desktop research of publicly available, City of Toronto and Peer Cities sources, as well as data from completed surveys, interviews, and site visits.

The winter maintenance policy goals each municipality strives to achieve differ considerably. There are, however, a number of common themes in the Peer City winter maintenance policy goals, including:

- Providing a safe and reliable municipal transportation system
- Minimizing economic losses to communities and industry
- Facilitating emergency response operations (Police, Fire, EMS)

- Facilitating transit operations
- Providing winter maintenance at an affordable cost

Councillor Staff Listening Sessions

The Councillor Staff Listening Sessions included a presentation of the scope and purpose of the study followed by an open but structured discussion about common resident complaints, budget, level of service as well as areas of concern and possible improvements with regard to the winter maintenance program. The main discussion points included communications, bylaw enforcement and contractor accountability.

A need to better inform residents regarding the nature of the winter maintenance program and the rationale behind different LOS in different work districts was identified. Additionally, it was recommended to be more proactive with the use of public bulletins for information and snow advisories. Better use of TV, radio, social media and on-road signage was also suggested.

Other general areas of improvement included better enforcement of bylaws with regard to residents pushing snow from their driveway onto the street and parked cars preventing snow clearing. As well, better enforcement of contractor accountability for their services and improved knowledge transfer from one contractor to another.

Internal Stakeholders Listening Session

Snow and ice events impact other City activities such as the provision of police, fire, transit, solid waste, public information and emergency medical services, and consultation with internal agencies is critical to ensure that the needs of these activities are considered when designing and executing winter maintenance operations. A Listening Session for Internal Agencies was held with five agencies attending: Information Services (311), Solid Waste Management, Emergency Medical Services, Fleet Services and the Ministry of Transportation.

The handouts and discussion questionnaires that were distributed at the session were also sent to agencies that were not able to attend (such as Toronto Police and the Toronto Transit Commission) to gather their views.

The suggested areas for improvement focused on communication at the field level of management and better coordination between garbage pickup and snow ploughing operations.

Special Interest / External Stakeholder Consultation

Winter maintenance operations were also discussed with other stakeholders such as seniors, persons with disabilities and active transportation participants. These stakeholders identified a need for more focus on the needs of seniors and persons with disabilities; better enforcement of bylaws with regard to residents pushing snow from their driveway onto the street and bike lanes; parked cars preventing snow clearing and blocking bike lanes; and better snow clearing from sidewalks, bike lanes and transit stops. As well, they identified communications improvements including more proactive information bulletins through the use of TV, radio, social media and on-road signage.

Resident Survey

A telephone survey was conducted within each of the four Toronto work districts (Etobicoke - York, North York, Toronto & East York, and Scarborough) to identify key issues from area residents.

The preliminary findings show there are differences in the perception of winter maintenance service by work district. Both residents of Scarborough and North York rated the City's overall winter maintenance services highly. Roughly 70% and 67% respectively said the City was doing either an excellent or good job. Residents of Etobicoke - York and Toronto & East York rated the City lower; with 55% and 54% respectively saying the City was doing either an excellent or good job. For the entire City, over half of the respondents felt there was no change to the job done by the City providing winter maintenance services compared to three years ago. Overall 27% considered there to be a significant or moderate improvement, while 11% considered there to be a significant or moderate worsening of service.

Nearly 60% of respondents agreed or strongly agreed that the City was doing a good job communicating to the public about its winter maintenance activities. Roughly 34% disagreed or strongly disagreed the City was doing a good job communicating. The highest percentages of residents who disagreed or strongly disagreed were from the Toronto & East York district.

Most of the people surveyed felt the City provided snow clearing activities within a reasonable amount of time. Just over half of all respondents felt the City was spending the right amount on its winter maintenance activities while 12% felt the City was spending too much and 15% felt the City was spending too little.

The survey asked residents to suggest improvements for the City of Toronto winter maintenance services. The top three rated suggestions for the City to improve its winter maintenance service are: **better clearing of pedestrian facilities (sidewalks/crosswalks/ walkways); better clearing of residential roadways (streets/side streets/alleys/laneways); and faster snow clearing including snow piles/banks/slush.**

Q5-11: Satisfaction levels with specific winter maintenance services delivered by the City of Toronto

Winter Maintenance Service	City Total Mean* (Top/ Bottom Box scores**)	Etobicoke York Mean* (Top/ Bottom Box scores**)	North York Mean* (Top/ Bottom Box scores**)	Toronto & East York Mean* (Top/ Bottom Box scores**)	Scarborough Mean* (Top/ Bottom Box scores**)
Q5: Salting and snow clearing of City roads and streets	7.0 (67/6)	6.7 (59/8)	7.3 (75/1)	6.5 (58/11)	7.3 (76/4)
Q6: Salting and snow clearing of City sidewalks and walkways	6.3 (55/10)	6.2 (59/12)	6.8 (63/6)	6.0 (48/14)	6.5 (59/8)
Q7: Salting and snow clearing of bicycle lanes/routes	6.0 (28/7)	5.9 (28/7)	6.1 (23/6)	5.5 (22/12)	6.5 (37/4)
Q8: Salting and snow clearing of transit stop areas	6.9 (55/5)	6.6 (46/7)	7.3 (61/1)	6.8 (57/7)	6.9 (58/5)
Q9: Snow clearing of driveway windrow openings	5.2 (36/25)	4.5 (27/32)	5.8 (42/21)	4.7 (29/26)	5.8 (46/20)
Q10: The removal of snow and its hauling to storage sites	6.4 (46/9)	6.2 (42/10)	6.7 (49/5)	5.9 (47/15)	6.7 (49/5)
Q11: Snow clearing services generally for seniors and people with disabilities	6.0 (30/9)	5.6 (30/13)	6.4 (28/6)	6.0 (31/10)	6.1 (32/8)

Study Findings

The Study Findings are organized under the twelve categories noted below.

Communications Plan

The City should consider developing a more comprehensive public communication plan. For example, during the Councillor Staff listening sessions it was indicated that clearing residential roadways to the “safe and passable” standard results in many residents complaining to their Councillors. As a result, residential roads are cleared to higher standards on the first pass to avoid complaints. A more comprehensive communication plan with the goal of improved awareness of winter maintenance level of service may help to reduce complaints and reduce the cost of clearing to a higher service level.

A strong public communication plan should inform residents what the City is doing to keep Toronto moving through the winter, the level of service to be delivered, and the responsibilities of residents. The goal should be to improve awareness of winter maintenance level of service provided as well as to increase the perceived value of service being delivered.

A public communication plan should include a strategic approach which identifies in detail the key points that will be taken to effectively communicate to the public as well as a detailed budget to execute the communications plan. The plan should also provide messaging content for topics including: general snow and ice maintenance, seasonal parking bans, and major snow events.

Communications methods may include posting of website information, advertising campaigns, fact sheets, Frequently Asked Questions and answer documents provided to Councillors and 311, and distribution of regular disruption notices. A subscription based email system and social media can also be used to advise citizens about current activities, parking ban declarations and residential snow maintenance efforts.

District newsletters may also be useful to provide details of what the district does when snow falls, including information on how the district reacts before and during a snowfall, how long snow removal operations take, and the snow clearing responsibilities of local residents. Radio and television segments may also be used as needed.

Interactive communications tools could also enhance public awareness. Examples of the successful use of “robo” calls, automated text messaging and online mapping tools such as real-time GPS plough tracking, and snow route and parking ban mapping tools exist in other municipalities.

Year-Round Maintenance Contracts

The City should consider changing the structure of their expressway contracts from stand-alone winter maintenance contracts to year-round maintenance contracts. This is recommended to set the appropriate balance of service provided by in-house staff versus contract staff. One way the City may choose to allocate contract staff is by roadway type, such as expressways.

Toronto’s expressways are unique assets that form part of a regional road network with the Provincial 400 series of highways. As a result, a year-round maintenance contract would provide a more holistic approach to managing this unique asset. A major advantage of contracting year-round expressway maintenance is the contractor will get to know the roadways well by providing all maintenance services. Through delivery of services such as street sweeping, signage replacement, guard rail replacement, litter removal, snow clearing and salting, the contractor will get to know the day-to-day operation of the roadways. Year-round service will allow for more consistent use of staff resources and fleet vehicles. As well, a year-round contract will reduce the risk during fringe seasons of having to provide snow clearing earlier or later in the season than expected.

The Ontario Ministry of Transportation (MTO) currently procures long term year-round maintenance contracts for the 400-series highways. Contractors provide cost estimates by month for their services, and they provide both summer and winter maintenance. The contracts are performance based, not prescriptive, with respect to the service levels to be provided.

The initiation of year-round maintenance contracts is a significant departure from the current method of operation and will require the development of a thoughtful implementation strategy to be successful.

Salt Management

Various chemical salts are used in the management of winter roadways by lowering the melting point, liquefying and eliminating snow or ice. Sodium chloride or rock salt is the most common chemical used for de-icing of roadways; however, there are numerous others chemicals or products available. Toronto uses over 120,000 tonnes of salt per year. Concern with potential environmental harm, corrosion and irritation of pet feet were issues identified during the Listening Sessions, Peer City visits and Best Practice reviews.

It is currently accepted that sodium chloride is still the most efficient and cost effective product available for general winter road maintenance. However, enhanced methods of applying salts by the direct application of liquid brines and more precise calibration of rock salt distribution can decrease the amount of salt used and improve de-icing effectiveness. A number of Peer Cities and Toronto are developing greater expertise in the use of liquids and salt spreader technology. These efforts and the continued research into alternate chemical products are to be encouraged.

Live-In Depots

The City should consider a transition from live-in depots to a system of standby staff and pre-positioning of equipment in advance of a snow event. The City of Toronto seasonal depots are operated by contractors and are responsible for winter maintenance on expressways, arterial and collector roadways. The depots provide live-in accommodation for staff from November 1 to April 7, including facilities for eating, sleeping, recreation and administration. These live-in depots stem from practices developed by the former Metro Toronto.

A transition from live-in depots to a system where staff are on-call or on standby, and where vehicles may be pre-positioned prior to storm arrival would allow the City to provide a similar service level without the cost of providing live-in accommodation. None of the Peer Cities that were reviewed operate live-in depots for the provision of their winter maintenance service.

The live-in depots are included in the existing winter maintenance contracts. It is recommended that bid options for alternative service delivery be included in the next round of contracts starting in 2015. Providing a requirement to provide bids on both live-in and standby services would provide an accurate assessment of the actual cost savings.

Driveway Windrow Clearing

The City should evaluate the driveway windrow clearing service level. Toronto provides driveway windrow clearing service where mechanically possible, which most other municipalities do not. Prior to the Toronto amalgamation some districts provided windrow clearing and this service has been harmonized across all outer areas where there is sufficient space to safely and effectively clear windrows. There are roughly 262,000 driveways in Toronto which are cleared on average 4 times a year, resulting in over 1 million driveways cleared per winter season. The City uses 115 pieces of equipment unique to the windrow clearing operation. The total annual cost to provide driveway windrow clearing service is approximately $4.0 million.

Although there is benefit to the residents who receive the windrow clearing service, there are also issues which arise from the provision of windrow clearing. City Councillor staff identified the geographical inconsistency with windrow clearing as an issue which gives residents who do not receive the service a sense of inequity. Staff estimate approximately 19 per cent of neighborhoods, located mostly downtown, do not receive this service.[1] The Solid Waste Management (SWM) has identified windrow clearing as often causing issues of knocking over garbage, recycle and green bins resulting in costly delays for SWM.

The City may wish to consider if the windrow clearing operation improves the functionality of the City and whether windrow clearing provides the best value for money. Other considerations may include the trade-off between windrow clearing and the provision of other services such as clearing active transportation routes and transit, which is becoming more common practice among leading cities. Although there will certainly be some negative feedback from the loss of the driveway windrow clearing service, the City may find it more beneficial to allocate those funds to other snow clearing operations.

[1] Auditor General's Office. Transportation Services – Review of Winter Maintenance Services. April 26, 2011.

Funding Model

The City's Auditor General Office's 2011 Review of Winter Maintenance report shows that the City's yearly spending on the winter maintenance program varies significantly from year to year, depending on winter severity. This funding approach makes it difficult to budget for the provision of winter maintenance services. A potential improvement could be to base winter maintenance budgets on the rolling average or trend in historical expenditures. This practice is followed in Minneapolis and London. This process may provide a budget forecast that reflects actual evolving program needs and allow for better planning of services.

The literature, best practice and peer city reviews conducted as part of this study reveal that a successful practice has been to include a contingency reserve fund in the budgeting process for extreme circumstances such as severe storms. This strategy allows cities to accommodate those infrequent but inevitable major snow events within an approved program budget. Like Toronto, the cities of Milwaukee and London use this strategy with a specific winter maintenance contingency fund, whereas the city of Edmonton has a city-wide Financial Stabilization Reserve which is used for various services that the city provides.

As well, during the Peer City visit in Milwaukee it was noted that the use of service charges based on the front dimensions of property ($0.85 per front foot) were used to ensure the public understood the connection between winter maintenance services provided and revenue collected. To address the issue of equity which arose during the Listening Sessions, Toronto may wish to explore the use of front metre charges for sidewalk clearing or other services that vary across the city.

Levels of Service

The Peer City review revealed that Toronto's level of service standards for winter maintenance are comparable to other municipalities on higher volume roadways such as expressways, arterials and collectors, but that they generally exceed other municipalities' levels of service on the lower volume roadways such as local and residential streets. Moreover, Toronto's service standards exceed the Province's minimum legislated requirements as well as the City of Toronto Act requirements, as stated in the 2011 audit report. Toronto also provides certain services (such as sidewalk and windrow clearing) in some wards which cannot be provided in other wards due to equipment limitations and other logistical reasons. This variation in the level of service creates additional costs and creates a sense of inequity among residents residing in different districts.

The City provides sidewalk clearing for areas where clearing is mechanically possible. In these areas the accumulation threshold when clearing begins depends on the time of the year. In December and March the accumulation level is 8 cm, while in January and

February the accumulation level is 5 cm. The accumulation threshold, however, does not depend on the function or volume of traffic the sidewalk carries. All sidewalks are given the same priority. Some flexibility should be exercised on the accumulation threshold depending on temperature and storm severity. As well, the sidewalk clearing priority should be based on the volume of pedestrians and the role of the sidewalk in the pedestrian network. A high volume sidewalk serving a major transit facility should be cleared before an infrequently used sidewalk.

Although there has not been a detailed analysis of the costs associated with providing higher levels of service, significant savings can certainly be achieved by providing levels of service that are more geographically consistent (by discontinuing certain services) and more comparable to other cities and to the legislated requirements. These savings can in turn be re-allocated to deliver more necessary winter services. In light of the Public Consultation findings, a possible strategy could be to discontinue windrow clearing and to reallocate funds to focus more on snow clearing on sidewalks, bike lanes and transit stops, or on the needs of the elderly and disabled.

Snow Routes

Prior to December 2013 the City of Toronto Municipal Code Chapter 950, Traffic and Parking allowed the Mayor to declare a “snow emergency condition”. When this condition is declared parking and standing of vehicles on designated roads is prohibited. This provision of the Toronto Municipal Code was rarely used. However, in December 2013 this was amended to change wording of “snow emergency condition” to “major snow storm condition” and to also allow the General Manager in addition to the Mayor to make the declaration. The revised practice is now consistent with Best Practice identified in other cities. For example, Calgary uses a Snow Event declaration that provides for a 72 hour parking ban on designated Snow Routes. This practice has improved snow ploughing on these routes by up to 30%. As well, the effectiveness of declaring parking bans on designated routes is directly related to the pre-event public awareness and event communications. This requires a pro-active multimedia communications to ensure clear public awareness and cooperation.

Senior and Disabled Assistance

The City has a sidewalk snow clearing program for seniors and disabled persons residing in areas which do not have a sidewalk clearing program. However, our Public Consultation findings reveal that this program is not fully understood and that it is unclear whether people already on the list in the current year will remain so in the next year. It would be beneficial if the program was more clearly communicated to seniors and disabled persons through methods that are effective for that audience.

An alternative to achieve some savings would be to follow Ottawa’s example which provides a matching service for seniors and people with disabilities looking to hire an

individual or contractor to clear snow from private driveways and walkways at a low cost. Financial assistance is also offered to seniors and disabled persons with low incomes. Consideration should also be given to the Calgary “Snow Angels” social marketing program which encourages neighbours to assist older adults and those with health concerns by helping to clear their sidewalks.

Design for Winter

Toronto is a ‘winter city’ which experiences over 50 days of snowfall between late November and late March. The Winter Maintenance Program is required to manage snow and ice on Toronto’s roads, sidewalks, cycle routes and transit corridors. The resources, time and cost to conduct these winter maintenance functions are directly related to the amount of infrastructure, the level of maintenance service and the design of the facility. Mechanical snow ploughing or snow hauling is significantly less expensive and more effective than moving snow by hand. The design of sidewalks, paths, cycle routes and transit facilities should consider the urban design elements, functionality, safety and maintenance required of a winter climate, including how snow and ice are ploughed or removed from these facilities. Cycle Toronto noted that the new Sherbourne Street cycle track is an example of a good winter design facility. Including the capability for mechanical snow clearing within the overall design standards for active transportation and transit infrastructure would improve the year-round functionality, safety and lower maintenance costs for these facilities.

Align with Transportation Strategic Agenda

The Transportation Services Division is developing a new Strategic Agenda document that identifies enhanced safety, improved mobility for all modes, livable streets, quality infrastructure and operational excellence as areas of focus. The recommended winter maintenance initiatives developed by the WMPR team are directly aligned with the direction proposed within the draft Strategic Agenda.

The recommendations for enhanced sidewalk, cycle route and transit corridor winter maintenance; the advanced application of salt products; more effective maintenance contracts; and facility design criteria for winter maintenance will support achieving the Transportation Services Strategic Agenda.

An additional topic that could be considered within the Strategic Agenda is evaluation of the balance between contract and in-house staff resources. Maximizing the use of

contract staff is an agenda that many cities are pursuing; however, there is often not a complimentary discussion of retaining the appropriate type and number of in-house staff to ensure that the required institutional knowledge to be an “informed owner” is retained; that sufficient staff are available to effectively manage contracts; and there is adequate staff capacity to deal with those unique day-to-day tasks and major emergencies that contractors can not address.

Meteorological and Climate Data

Consistent, reliable, and accessible long term meteorological/climate data within each of the identified micro-climate zones is needed to support planning and operational decisions for winter maintenance operations. As well, access to regional weather forecasts and reporting stations outside of Toronto is essential to providing advance notice of oncoming snow events.

The City of Toronto currently operates five Road Weather Information System (RWIS) stations and the Ontario Ministry of Transportation (MTO) operate three RWIS stations within the city of Toronto.

Previously a **Road Climatology Study (2013)** recommended the addition of four full RWIS stations and the addition of snowfall and freezing precipitation sensors to three existing RWIS stations. Based on a review of the micro-climate zones and the maintenance districts we recommend the addition of an initial three new full RWIS stations located at Highway 401 and Allen Road, Gardiner Expressway west of Kipling, and Eglinton Avenue and Midland Avenue. With the addition of these RWIS sites there would be good coverage over each of the maintenance districts and micro-climate zones.

In addition to the weather reporting functions it is important that staff is in the field in advance of a snow event monitoring known trouble spots and tracking changes in road temperature measurements. The final requirement is an experienced management team that can organize all available information, and make sound decisions on the timing and type of snow and ice management response.

Recommendations

It is recognized that the WMPR recommendations may be achieved over different timeframes as organized below. The Toronto Winter Maintenance Program Review recommends that:

Recommendations to be implemented 2013 / 2014

1. Transportation Services should continue with minimizing the amount of salt used for winter maintenance by optimizing the use of Direct Liquid Applications, i.e. use of salt brines; evaluation of alternative de-icing techniques; and the improved measurement and control of salt distribution on roadways and sidewalks.

2. Transportation Services should continue to enhance their winter maintenance communications program to address pre-season, seasonal and event communications protocols. Specific focus should be made on developing additional communication, information, and education methods with the general public.

3. The City of Toronto should communicate the senior and disabled persons snow clearing program level of service standards to residents. Those residents requiring the service should make an initial application and not be required to re-apply for the list every year. Transportation Services should communicate with residents on the list every two years to confirm the requirement for them to remain on the list.

Recommendations to be implemented 2015 / 2016

4. Transportation Services should consider developing hierarchical level of service criteria for winter maintenance on sidewalks and cycle routes that are based on the volume of pedestrian and cycle traffic and role of the route in the active transportation network.

5. Transportation Services should assess the driveway windrow clearing program and consider directing funds currently used for driveway windrow clearing to enhanced sidewalk clearing.

6. Transportation Services should explore delivering a level of winter maintenance that is aligned with the service thresholds and completion timelines within the City of Toronto Act.

7. The City of Toronto should initiate a Snow Route program with on street parking controls as a mechanism to lower the cost and lessen the time to plough key routes.

8. Transportation Services should develop a strategy to initiate year round maintenance contracts for the Toronto expressways to include both winter and summer maintenance services.

9. Transportation Services should consider the installation of RWIS stations at Highway 401 and Allen Road, Gardiner Expressway west of Kipling Avenue, and Eglinton Avenue and Midland Avenue.

Recommendations to be implemented beyond 2016

10. Transportation Services should include a bid option within the 2015 Service Contracts to phase out the Live-In Winter Maintenance Depots and move towards an On-Call Pre-positioned Equipment operation.

11. The City of Toronto should develop and include “Winter Operations” criteria in the design of new pedestrian, cycle and road infrastructure.

12. The City of Toronto should develop their operating budget for winter maintenance and the severe weather fund based on a rolling average or historical trend from past budgets and weather data.

13. The City of Toronto should include increased winter maintenance funding, commensurable with the size of the infrastructure and the required level of winter maintenance, for all new pedestrian, cycle and road infrastructure to ensure the winter maintenance budget is not eroded over time.

14. The City of Toronto should explore the use of “linear front metre” fees as a way to equitably fund those winter maintenance service elements that are variable or optional across the community, such as, sidewalk snow ploughing, driveway windrow clearing, etc.

15. Transportation Services should assess the ratio of contract to in-house staff within their various operating units to ensure there is the required capacity to maintain the institutional knowledge required to be a competent “informed owner” and to be able to respond to major unplanned events.

Summary

The objectives of Toronto's Winter Maintenance Program Review were fulfilled by:

- Comparing levels-of-service with other large North American municipalities,
- Learning from best practices in a variety of differing contexts,
- Listening to stakeholders's views on what works well and what can be improved, and
- Providing a sound background for reporting to City Committees and Council on recommended services, efficient service delivery and communications for the future.

Decisions regarding services provided and service standards rest with City Council; however, these are based on technical and financial input advanced by staff, and on input from residents and special interest groups. As a result, in Toronto (and in many of the Cities visited during the peer review) some services will always be provided (or not provided) after careful consideration taking into account a balanced political and democratic perspective. This study has helped to identify and quantify the impacts and outcomes of different winter maintenance services and their applicability to Toronto.

In conclusion, some key recommendations that will shape future winter maintenance practices in Toronto are:

- Improved communications (media releases, social media, Councillor information)
- Higher service levels for active transportation modes (pedestrians and cyclists)
- Balance in-house vs. out-sourced services (cost effectiveness vs. knowledgeable and “informed” owner)