
2010 BUDGET BRIEFING NOTE

Winter Maintenance – Road Salt Usage and Expenditures

Issue/Background:

- At the Budget Committee meeting of March 4, 2010, a request was made of Transportation Services to provide further information on the use of road salt in the provision of winter maintenance services. Specifically, Budget Committee wished to know:
 - Salt usage and expenditures for current and previous years
 - Outlook for same in 2011 and 2012
 - Salt Management Plan initiatives and their relevant impacts on usage and cost

Key Points:

- Salt use in winter months is directly related to the frequency and severity of winter storms.
 - *Salt use and snowfall data for the previous 7-year period* is provided. A review of this data indicates that Transportation's annual demand for salt used to de-ice roads and sidewalks ranged from 89,100 to 195,600 tonnes, with the latter amount being used in 2007/08 during Toronto's record snowfall winter. Average annual salt usage is about 125,000 tonnes, down from the previous average of about 140,000 tonnes prior to the Salt Management Plan's introduction in about 2002. Average annual snowfall for downtown Toronto is 133 centimetres. The following table shows salt used and snowfall amounts for previous winter seasons.

Winter Season	Usage (tonnes)	Snowfall (cms)
2003/04	108,100	98
2004/05	147,400	135
2005/06	94,600	61
2006/07	89,100	43
2007/08	195,600	207
2008/09	147,100	126
2009/10	low	low

- **Expenditures on salt vary** depending on number of snowfalls during any given year. In a winter with frequent winter storms, regardless of accumulation, more salt will be used to combat slippery conditions that form on roads and sidewalks so that public safety is maintained to as high a degree as possible. Expenditures are also correlated to the amount of snowfall received. As expenditures are tracked by calendar year, the following table compares funds spent on salt against snowfall received during that calendar year.

Calendar Year	Expenditures (\$ million)	Snowfall (cm)
2003	11.1	130
2004	9.0	117
2005	11.3	144
2006	3.7	24
2007	11.3	108
2008	15.4	205
2009	9.3	69

- The outlook for the coming years is dependent on snowfall and contract unit prices.
 - **Contract prices for the current 3-year period** covering the 2008/09, 2009/10 and 2010/11 winter seasons have been secured. Unit prices for salt delivered to our storage facilities range from \$70, \$75 and \$80 per tonne for each of these years, respectively. Salt prices rose dramatically after the 2007/08 winter season due to sharply higher fuel prices at the time and a salt supply shortage as a result of unusually heavy snowfalls in the American northeast, which caused some jurisdictions to go without salt and created a demand for salt storage. Previous to the current salt supply and delivery contract, Transportation Services had paid between \$60 and \$65 per tonne for road salt during the contract period including 2005/06, 2006/07 and 2007/08 winter seasons. It should be noted that salt supply and delivery prices are obtained through a competitive tender process and in 2008/09 were awarded to two separate suppliers for the City's four districts.
 - **After 2011, new contracts to supply and deliver salt** will again be tendered in the competitive market. As described above, recent years with high fuel prices and very high snowfall amounts have caused salt prices to increase as haulage costs rose and supplies became short; however, in 2009 salt producers increased production at the mines, and increased their storage supplies. This, coupled with a lighter than average winter in 2009/2010, has led to an abundance of salt at most supplier stockpiles. It is not known

how market prices will be influenced by these or other factors in 2011 when Transportation Services will retender its 3-year supply and delivery contract for road salt; however, current conditions would suggest that the unit costs would be similar to those experienced today, if not lower.

- ***Budget amounts for salt in 2011 and 2012*** reflect historic trends in past budgets, and are adjusted to account for expected contract unit prices within the term of the current contract.
- Transportation Service's Salt Management Plan has implemented innovations in salt storage, handling, application and staff training to effectively reduce salt usage by approximately 15-20 percent.
 - ***Introduction of liquids (salt brine)*** for pre-wetting salt as it is applied to roadways, has enabled application rates to be reduced by 15 percent with an improvement in the ability to de-ice pavements. In addition, anti-icing ahead of a storm or frost event, has enabled staff to conserve salt by saving applications of salt when light snow/ice events occur. Staff are also pilot-testing an expanded range of facilities (e.g., local roads, sidewalks and multi-use paths) for the use of anti-icing liquids in an effort to save on the application of salt subsequent to a snowfall or frost event.
 - ***Computerized calibrated controllers*** are used to spread a precise amount of salt from trucks according to ground speed in order to achieve an optimum de-icing impact for road safety. This is an example of how salt is used in the right place, at the right time, in the right amount not only for public safety, but also for responsible environmental and financial stewardship.

Questions & Answers:

- **Why aren't alternatives to road salt used more?**
 - Sand is used in combination with salt on Toronto's sidewalks to promote friction. As sand is an abrasive and not a de-icer, it is used in colder temperatures when the risk of slipping is more acute. Sand may provide temporary traction for pedestrians, but it will eventually wash off, blow off, or be swept off at the end of the winter season. In the event that sand washes off as a result of rain, like any applied material, it inevitably ends up in adjacent streams, rivers and lakes. When used more extensively in the past, it has also had a significant detrimental impact of clogging storm sewers, drains and gutters. Sand is generally not used on roads in Toronto because of its increased cost for cleanup, its negative effect on drainage systems and watercourses and its contribution to airborne dust and pollution.
 - Other de-icing products such as Magnesium Chloride, and organic materials (e.g., sugar beet refining by-products) continue to be pilot-tested and used by Transportation Services in appropriate conditions. For example, when very cold temperatures render salt inefficient or ineffective, these products are used to work at melting snow and ice well below -20 degrees C. They are all many times more expensive than salt, so their use is at

the discretion of staff when conditions warrant. A large scale conversion to one of these alternatives would be financially unsustainable.

- One of the objectives of the SMP is to continually innovate by researching, comparing and pilot testing new alternative products as they are developed and marketed.
- **How does the City of Toronto's costs for salt compare with other municipalities?**
 - Toronto's contract prices for salt are slightly higher than many surrounding jurisdictions, and this can largely be attributed to two factors. Stockpiles are created in Toronto's port lands for the City's use, which costs more for suppliers to rent/lease than other salt storage locations in the region. Toronto's salt contract also has strong penalties for failure to supply or deliver salt to our various storage locations. During the winter of 2007/08, many municipalities were advised by their suppliers that they would not receive their orders for road salt because supply was running short at their stockpiles. Toronto never experienced such a threat to public safety, because of the strong contract language regarding penalties contained in our contracts.

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