RECOMMENDATION

(a) That the proposed Roadside Snow Fence Policy be approved to address issues related to winter road conditions;

(b) That the Use of Snow Fences in Rural Areas be identified as completed and removed from the Public Works Committee Outstanding Business List.

EXECUTIVE SUMMARY

The purpose of the report is to propose a roadside snow fence policy to address the issue related to snow drifting on the City's roadways. The recommended policy was developed through an identification of needs, review of existing practices, and an assessment of alternative management solutions.

On March 17, 2008, the Public Works Committee approved a motion which directed staff to prepare a report to compare the use of snow fencing versus the use of other types of winter control methods being used by the City. The motion was subsequently approved by Council on March 26, 2008 as Item 6.1.

The Operations and Waste Management Division is responsible for winter control operations for public roadways within the City. Many roads in the City's rural areas experience problems with blowing and drifting snow during a typical winter season. Snow covered roads caused by drifting snow results in hazardous driving conditions for
motorists. Over the past three winter seasons, staff reviewed the locations subject to snow drifts and evaluated various alternatives to address snow clearing requirements for rural roads. This report outlines the current winter maintenance services provided by the City including the use of snow fencing in rural areas. The report proposes that the City continue to rely on “road patrol” and “snow ploughing” as a preferred service delivery method over the installation of snow fencing and other physical barrier systems, as a cost effective and efficient means for managing this issue.

Alternatives for Consideration - See Page 4

**FINANCIAL / STAFFING / LEGAL IMPLICATIONS**

Financial: There are no additional financial implications with this report’s recommendations because winter maintenance activities will be completed within the Operations and Waste Management Division’s existing budget through adjustments to program delivery requirements.

Staffing: The recommendations in this report have no implications on staff complement since winter maintenance activities will be completed using the existing staff complement.

Legal: Addressing winter road conditions in rural areas allows the City to mitigate potential risks associated with winter driving conditions.

**HISTORICAL BACKGROUND**

As part of Public Works Report 08-005, Council directed Public Works and Risk Management staff to prepare a report outlining a comparison of using strictly snow fence versus the current system in place. This directive was a result of public concern related to potential hazardous conditions on rural roadways resulting from snow drifts from neighbouring properties. Snow drifts occur predominately along farm-lined roads due to the relatively flat and open topography that have limited wind breaks.

Winter maintenance operations provided in rural areas of the City are based upon the Council approved winter control service levels as part of the City’s Winter Control Program (WCP). These service levels define the response time for various road classifications and were developed in relation to Provincial Minimum Maintenance Standards (MMS). The WCP is comprised of several activities including road patrol, anti-icing, snow ploughing, snow removal, snow haulage, snow storage and melting. These services are activated as required to maintain service standards relative to weather and road conditions to ensure road safety.

The City presently has a limited snow fencing program as part of the WCP. The City utilizes various types of windbreak systems including wood slats or plastic webbed fencing. Snow fencing is used in areas prone to snow drifts which have been reported through winter patrol, ploughing operations, public feedback, and incident reporting.
POLICY IMPLICATIONS

The recommendation essentially reinforces current practices in its efforts to maintain the City’s roadways in a safe condition during the winter season and thus presents no new policy implications.

This initiative aligns with the Public Works Business Plan’s priorities of being the leader in “greening” and stewardship of the City providing safe, strategic and environmentally conscious services that bring our communities to life.

RELEVANT CONSULTATION

Internal Consultation

The Operations and Waste Management Division and Risk Management Section have worked together to review claims related to snow drifts on roadways. Both groups are in favour of supporting reasonable measures which would provide safer winter roadway conditions for the public.

External Consultation

Staff from the Operations and Waste Management Division reviewed snow fence usage and alternative options with representatives from the agricultural community. Concerns were raised with respect to potential damage to agricultural fields from snow fence installation.

ANALYSIS / RATIONALE FOR RECOMMENDATION

Staff reviewed the winter road conditions over the past three winter seasons to identify problematic areas of snow drifting. This length of time was required in order to have sufficient data on winter roadway conditions due to less than seasonal snowfalls during the 2008/2009 and 2009/2010 winter seasons. Staff developed an inventory of approximately 450 sites throughout the City that require specialized attention to address snow drifting. These locations were identified based on several criteria including road classification, road speed limit, traffic counts, and snow drift accumulation.

Snow fencing is a common tool used by municipalities to assist with controlling blowing snow in areas of chronic drifting as a safety precaution and to reduce costs associated with snow ploughing operations. Snow fences involve the installation of buffers such as wood posts or plastic fencing and metal t-bars along roadways to keep as much snow off roadways as possible. Snow fences must be properly designed and must be installed at a correct location relative to the adjacent roadway in order to be effective.

Snow fence installation is labour intensive, since installation typically begins in late autumn and continues for several weeks to cover the required locations. Additional labour may be required throughout the winter season for snow fence maintenance. Snow fences are removed in mid-spring near the end of the City’s winter operations season. The time period for installation and removal may vary depending on the length of the winter season. The use of snow fencing in rural areas has reduced over the
years as a result of the significant labour requirements. Approximately 6,200 metres of snow fence is currently installed and maintained throughout the City during a typical winter season at an average cost of $15.30 per linear metre based on activities provided over the past five winter seasons. This cost may vary in the event that the City opted to provide these services through a contractor, for example the land owner or others. As a comparison, the average cost for snow ploughing operations is less $11 per lane kilometre. If the proposed Snow Fence Policy is approved, the quantity of snow fencing used during future winter seasons may be amended depending on logistical considerations and site requirements.

In order to mitigate potential hazards due to snow drifting, staff have developed a recommended policy to prioritize existing winter maintenance services for rural roads that may be subject to snow drifting which is included in Report PW11050 as Appendix A. This policy includes several components:

- **Winter Road Patrol** - The City will provide enhanced winter storm patrol activities immediately after winter storm events to ensure that the road surfaces are safe for traffic and that snow drifts do not infringe upon the travelled roadway. Through this patrol, the City will be able to dispatch the required equipment resources to ensure that roadway conditions are addressed appropriately. Staffing resources are available to provide improved winter patrol activities as a result of re-prioritizing services through the Operations and Waste Management Division’s reorganization.

- **Snow Ploughing Operations** - Snow ploughing will be activated based on the winter road patrol observations in order to clear any snow drifts from roadways. Snow ploughing operations will be provided in conjunction with the City’s existing winter maintenance service levels.

- **Snow Fencing** - The extensive use of snow fencing will be limited since response to drifting snow on roadways will be handled through winter patrol and snow ploughing operations. The City may continue the use of snow fencing for locations where it proves to be the most reasonable and cost effective alternative based on the surrounding area.

The proposed strategy is designed to meet the needs of the community by mitigating risks and providing services in an efficient, cost effective manner. Staff will continue to monitor the winter maintenance service levels provided in the City’s rural areas and will provide further information to Council in future reports on the City’s Winter Control Program.

**ALTERNATIVES FOR CONSIDERATION**

The roads maintenance industry is investigating more long term and environmentally responsible alternatives for traditional types of snow fencing. Several alternative methods are available to address snow drifting onto roadways. These alternatives have been piloted by various jurisdictions.
Alternative Snow Fence Installation Methods

The City completed a “Safe on HWY 52” pilot project in Ward 14 in the area of Highway 52 south of Highway 5. The City utilized an alternative snow fence installation method at this location since the typical t-bar installation method used for snow fencing was not favourable due to the agricultural field’s tile drainage system. Rather than using t-bars, snow fencing was attached to rolled straw bales anchored to large concrete blocks. This type of design eliminated the need to drive the t-bars into the ground to avoid damage to the existing tile drainage system. This type of design received favourable results and helped to reduce the amount of snow drifting in the area. The City will continue with this snow fence installation at this location as an ongoing test initiative. Staff does not recommend to provide this type of installation since the costs for this type of set up are greater than twice the cost of other alternatives including traditional snow fence installation.

Living Snow Fence

Living snow fences is an option being used by several municipalities in North America. Living snow fences involve planting vegetation such as corn stalks or trees near roadways to prevent snow from blowing onto neighbouring roadways. This requires advance planning to ensure that the plant materials are installed at a suitable distance parallel to the roadway to maximize the amount of snow captured.

As an example Region of Peel operates a pilot program with farmers to plant corn crops as a natural snow fence. This requires farmers to enter into an agreement with the Region to leave a portion of their corn crop along roadways during the winter season. Farmers that participate in the pilot program are remunerated based on the market value of the crop as an incentive for leaving the crops in their fields. This type of system requires buy-in from the agricultural community. One of the main set backs is that most farms do not plant corn year over year due to crop rotation which results in inconsistent participation.

Other municipalities have partnership programs with their community to plant trees or shrubs along roadways which act as a living snow fence. This type of alternative offers several benefits including improving environmental quality, beautifying the landscape, and acts as a long term solution to help reduce costs for winter snow ploughing. In several scenarios, the municipality supplies the trees or shrubs at no cost to the property owner in exchange for the property owner to provide long term maintenance of the living snow fence.

At the present time, staff does not recommend the extended use of living snow fences as a preferred method in the Snow Fence Policy since this alternative requires long term commitment from property owners in order to be successful. There has been limited interest from the public on this alternative.
CORPORATE STRATEGIC PLAN


Financial Sustainability

• Delivery of municipal services and management capital assets/liabilities in a sustainable, innovative and cost effective manner

Environmental Stewardship

• Reduced impact of City activities on the environment

APPENDICES / SCHEDULES

Appendix A - Roadside Snow Fence Policy
1. Purpose

The purpose of this policy is to establish the use of roadside snow fences. The objective is to ensure road locations that are prone to drifting snow are effectively addressed as part of the City’s Winter Control Program.

2. Definitions

“City” means the City of Hamilton.

“City Property” means a road allowance, park, cemetery, open space or any property owned or managed by the City.

“Living Snow Fence” means a line of hedges, shrubs, trees, or other standing vegetative materials for the purposes of blocking snow drifts.

“Snow Fence” means a line of posts, steel t-bars with wooden slats or plastic webbing, or other similar device for the purposes of blocking snow drifts.

“Winter Control Program” means the services provided to ensure the City’s roadways are maintained in a safe condition during the winter season.

3. Background

• The Public Works Department is responsible for roads operations including winter maintenance operations. This policy outlines the activities the City shall use to mitigate drifting snow onto City roadways.

• The City will provide the necessary training and follow up with its winter maintenance personnel to allow them to be fully contributing partners in achieving and effective and safe winter maintenance program.

• The City will operate in accordance with clearly stated and documented winter control level of service policies.

4. Policy

4.1 Snow Fences

• The City will limit the use of snow fences to locations where it offers optimum reduction of drifting snow onto neighbouring roadways at a reasonable cost in comparison to other snow clearing techniques.
• Snow fencing used by the City include standard wood posts and/or plastic webbed fencing.

• Pursuant to the Ontario Municipal Act, 2001, c. 25, s. 60., the City is authorized, at any reasonable time, to enter onto City Property, any land within the municipality or within an adjoining municipality, and lying along any highway under its jurisdiction, including land owned by Her Majesty in right of Ontario, for the purpose of erecting and maintaining a snow fence.

4.2 Winter Patrol

• Winter patrol operations will monitor roadway conditions throughout the winter season.

• The patrol operations will track the locations that may be prone to snow drifts. Information on these locations will be recorded in the standard patrol logs.

• Staff will dispatch winter control equipment to remove snow that may have accumulated on roadways resulting from drifting snow.

4.3 Snow Ploughing

• Snow ploughing will be activated based on the winter road patrol observations in order to clear any snow drifts from roadways.

• The City will optimize the use of winter control equipment by efficient routing in accordance with the City’s winter control level of service.

4.4 Alternative Technologies

• The City will evaluate alternative technologies that may be used to improve efficiencies of the City winter maintenance activities. New best practices will be reviewed and implemented on a case by case basis.