



Working for Municipalities

A Guideline for Developing a Level of Service Policy

Ontario Good Roads Association



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Rationale

Level of Service policy allows a municipality to identify what they will do to attempt to meet public expectations and how they will respond to a winter event taking into account available resources and local historic experience with normal winter events.

A successful winter control program is guided by a council endorsed policy. In the wake of the Ontario Court of Appeal decision in *Giuliani* which largely renders the defence under s.4 and s.5 of Ontario Regulation 239/02 Minimum Maintenance Standards (MMS) inoperative in most practical circumstances, current municipal Level of Service policies (LOS) tied to compliance with the tables in s.4 and s.5 are likely to be inadequate in ensuring a defence to negligence claims. As a result, it is recommended that municipalities in Ontario review their LOS, and revise them to exceed the tables in s.4 and s.5. This document provides suggestions to assist in the development of a level of service policy.

Definitions

Anti-icing. . means the direct liquid application of a solution to the road surface in advance of or during a winter event to prevent snow and ice from bonding to the pavement.

DLA. . means Direct Liquid Application

Electronic Surveillance... means the monitoring and recording of road and weather conditions using RWIS information supplemented with local weather forecasts and/or a value added meteorological service. Electronic surveillance is a tool to supplement field observations to determine if a winter event response is required to a winter event.

LOS. . means a council approved Level of Service policy

Maintenance Class... means a class 1, 2, 3, 4, 5 or 6 road designated as such by posted speed and traffic volume in accordance with O.Reg. 239/02 or O.Reg 612/06 as amended from time to time.

MMS. . means Ontario Regulation 239/02, Minimum Maintenance Standards for Municipal Highways or Ontario Regulation 612/06 Minimum Maintenance Standards for Highways in the City of Toronto

Patroller... means a person who is either a dedicated winter patroller or a person whose duties include winter patrolling.

Road Condition. . means the condition of the pavement surface¹ during and after a winter event:

Bare and Dry – most of the road surface is dry;

Bare and Wet – most of the road surface is moist;

Partially Snow Covered – two wheels of the passenger vehicle are on bare surface and the other wheels are likely to be on loose snow;

Partially Snow Packed – two wheels of the passenger vehicle are on bare surface and the other wheels are likely to be on snow bonded to the road;

Partially Ice Covered – two wheels of the passenger vehicle are on bare surface and the other wheels are likely to be on ice

Snow Covered – all wheels of a passenger vehicle are on loose snow;

Snow Packed – all wheels of a passenger vehicle are on snow bonded to the road;

Ice Covered – all wheels of a passenger vehicle are on ice.

Road Weather Information System (RWIS). . means a weather station located along a highway that provides local pavement and meteorological data.

Susceptible Area. means a road section where a steep hill, sharp curve or other areas prone to drifting snow and/or slippery conditions (i.e. structures). A steep hill is a hill where the percent longitudinal grade is greater than the design criteria. A sharp curve is a curve with a speed advisory ≥ 20 km/h less than posted speed

Value Added Meteorological Service (VAMS). . means a weather service that provides a site specific forecast tailored to an agency's needs that includes but is not limited to: atmospheric temperature, relative humidity and/or dew point, wind speed and direction, and precipitation.

Winter Event. means a weather condition affecting roads such as snowfall, wind-blown snow, sleet, freezing rain, frost or ice, to which a winter event response is required.

Winter Event Response. means a series of winter control activities performed in response to a winter event.

Winter Patrol. . means the field observation of weather and road conditions.

Winter Season. means the season when the municipality normally performs winter highway maintenance as identified in a Winter Operations Plan

Minimum Maintenance Standards versus Level of Service

Ontario Regulation 239/02 as amended from time to time, provides municipalities with a defence against claims. In order to use the defence provided in section 44(3)(c) of the Municipal Act 2001

¹ As level of service policy is a public document, definitions used are the general public definitions included in the TAC publication "Winter Road Terminology User Guide – January 2011". Technical definitions are also included in the TAC publication. Municipalities may want to consider using the technical definitions in a winter operations plan.

a municipality via their record keeping must prove that at the time an action arose the alleged default was covered by the standard and that the service provided by the municipality met or exceeded the standard. A municipality does not need to adopt MMS as policy to use the defence; it is record keeping that is important for a municipal defence and proves whether or not the standard was met.

The MMS are a statutory defence whereas a LOS policy is a goal/target. In theory, neither the MMS nor LOS policies are legally enforceable “standards”, but if a municipality is sued, failure to comply with the same will be considered by the Courts in determining the question of negligence.

A Level of Service policy (LOS) sets an obligation for the municipality to make reasonable efforts to achieve same, and the municipality must put itself in a position, by proper record keeping, to demonstrate that fact. If a municipality, for financial or other reasons, is incapable of compliance with the MMS and sets itself a level of service that falls short of the MMS, the protection of the MMS will be lost and the municipality will be required, if it is to have any hope of avoiding liability, to demonstrate that its level of service was reasonable in the circumstances. It is recommended that legal counsel be involved in the development of any LOS that does not meet the standards set out in the MMS.

The preference would be for a municipality to develop their own LOS. The LOS document may embody all or a portion of MMS.

Winter Operations Plan versus LOS or MMS

Ideally, a municipality should have both. LOS and MMS describe a result. A winter operations plan operationalizes the policy and sets out detailed procedures on how the result outlined in policy will be achieved. A winter operations plan would include information on: human and equipment resources; material application rates; call out and deployment procedures; plow and salt routes (if different); equipment maintenance procedures; road closure procedures; and so on. The winter operations plan should also define the winter season. Dates could be written using specific date references; November 15th of each year through to and including April 15th of the next year following or the date could be more generic; the 3rd Monday of November of each year through to and including the 2nd Friday of April of the next year following.

A comprehensive winter operations plan may include the LOS document for reference purposes. The balance of this document is written assuming a municipality would have both an LOS policy and a winter operations plan.

Developing LOS Policy

Step 1 – Know your Road System

An inventory of current practices, procedures and resources must be established in order to form the foundation upon which an LOS policy can be built. Resources available to winter operations will include: staffing, buildings, equipment and money (budget). These resources are then used

on the road system to provide service. Tables similar to those included in this section may assist in the gathering of data.

Current Road System Table

Maintenance Class	Lane km
Class 1	
Class 2	
Class 3	
Class 4	
Class 5	
Class 6	

Bridge Table

Bridge Number	Location	Total Span Length	Roadway Width

Equipment Table

Unit	Equipment Type	Plowing Equipment		Spreading Equipment			Other (AVL, municipal vs contract equipment, etc.)
		Plow (type)	Wing (Yes/no)	Anti-icing Equipment (capacity, application rate & spread width)	Pre-wetting Equipment (yes/no)	Spreader Controls (type)	

NOTE: include both contract and in-house equipment in the list of available equipment

Buildings Table

Location	Equipment Storage			Material Storage		
	Description	Equipment Washing	Site Drainage	Sand (M ³)	Salt (M ³)	Liquids (L)
Patrol Yard 1						
Patrol Yard 2						

Snow Storage Site Table

	Location	Surface		Drainage/Run Off		Surrounding Land Use			
		Paved	Unpaved	Controlled	Uncontrolled	West	East	North	South
	Site 1								
	Site 2								

Knowledge will also be required on winter related issues such as:

- are there procedures to respond to winter events in the downtown core of the municipality or commercial areas that vary for other areas within the municipality;
- are there routes that receive additional service in school areas, hospitals or are there emergency/ priority routes;
- are there susceptible areas in the road system;
- are there salt vulnerable areas;
- what is the average snow accumulation and expected storm severity for a winter season;
- are there micro-climates that need to be addressed; is there a collective agreement and does it contain any clause that may affect deployment of resources or hours of service;
- what legislation applies to the operation;
- are the guidelines as outlined in the Code of Practice for the Environmental Management of Road Salts followed; and
- what are the public expectations for winter services.

Once you have gathered the data, know your winter control budget limits and past operating procedures (whether written down or not) you can begin to examine the available options.

Step 2 – Option Analysis

When a choice is made, another choice is forfeited. In option analysis, one has to define what the acceptable options are and what the limits of acceptance are. The analysis involves testing the anticipated consequences of shifting funding from one program, service or alternative to another and making a judgment as to which resource allocation option is the most favourable.

Management's responsibility in option analysis is to determine the limits of what is acceptable in terms of capabilities of available resources and legislated requirements (e.g. hours of service). For winter control, the choices are increasing or decreasing the quality of the service provided (bare & wet pavement, partially snow covered, partially snow packed, etc.) or changing the cycle time to provide the service (4 hours after the storm ends, 8 hours after the storm ends, etc.). Staff would examine the resources required (manpower, equipment, materials (sand, salt, DLA) to deliver the level of service within the suggested cycle time and indicate how much it will cost to provide the service. Council may request further reviews of other alternatives or other options requiring staff to respond with how changes in either will impact resources and budget.

While considering the options, potential goals and objectives for each of the alternatives reviewed can be discussed. Once all the alternatives have been considered and the preferred alternative selected, the policies goals and objectives can be finalized.

Step 3 – Goals and Objectives

Level of Service policy describes the result a municipality is trying to achieve in their winter highway maintenance program. Policy may contain one or more goals and objectives. Goals are

statements that define the intent of the policy. However, the more goals and objectives included in policy, the more complicated the policy document may become. An example of a goal is:

“the municipality name” public works staff will strive, as is reasonably practicable, to provide safe and passable winter road conditions for vehicular and pedestrian traffic as set out in this level of service policy and within the resources established by the Council of “the municipality name” .

Objectives are specific aspects of the goals to be attained. For example:

“the municipality name” will adhere to the procedures contained within the Winter Operations Plan and the standards set out in MMS.

Goals and objectives can be established in policy without any public input. However, if the municipality is committed to meeting customer expectations, public input can be acquired via surveys, questionnaires, stakeholder and or focus group meetings.

Step 4 – Policy Content

How a municipality achieves the policy’s goals and objectives can be written out in text, in a table format for easy reference or a combination of both. Here is an example table format:

Winter Event Response Table - Snow Accumulation

Maintenance Class	When is a call-out initiated	Allowable time to deploy resources	Treatment used	Road Condition maintained during a storm (see Condition table)	Cycle Time	Road Condition after the event ends	Timeframe to achieve road condition after the storm ends			
							<5cm	5 to <15 cm	15 to 25 cm	>25cm
							Total Accumulation for an Event			
Class 1										
Class 2										
Class 3										
Class 4										
Class 5										
Class 6										

Winter Event Response Table – Frost, Icy conditions

Maintenance Class	When is a call-out initiated	Allowable time to deploy resources	Treatment used	Road condition after the event ends	Timeframe to achieve road condition
Class 1					
Class 2					
Class 3					
Class 4					
Class 5					

Class 6					
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Condition Table – During a Storm

<p>Condition 1: Bare& wet pavement is the general condition. There may be occasional areas having snow, slush and ice accumulations resulting from new fallen or wind-blown snow on the pavement surface. Maximum cycle time to re-treat is as per the value shown in the time column for the class of road in the Snow Accumulation table of MMS</p>
<p>Condition 2: Accumulations of loose snow or slush may be on the pavement surface. Snow accumulation that exceeds the depth shown in the Snow Accumulation table of MMS for the appropriate class of road shall be cleared to a depth equal to or less than the depth shown in said table within the time shown for the class of road.</p>
<p>Condition 3: Accumulations of loose snow or slush may be on a snow packed pavement or unpaved surface. Snow accumulation that exceeds the depth shown in the Snow Accumulation table of MMS for the appropriate class of road shall be cleared to a depth equal to or less than the depth shown in said table within the time shown for the class of road.</p>

NOTE: Insert the condition value shown in the table above into the “Road Condition Maintained during the Storm” column of the Snow Accumulation table. A municipality in preparing their LOS may need to adjust the text shown in this table.

Snow Removal

Maintenance Class	Net accumulation for start of removal operation	Type of Operation	*Purpose of Removal Operation	Timeframe to complete removal operation
Class 1				
Class 2				
Class 3				
Class 4				
Class 5				
Class 6				

NOTE: This table would only be required for those municipalities who haul and store snow at a snow disposal site.

*For example – to improve sight lines at intersections

The LOS document should contain a clause outlining when (e.g. storm intensity >x) and by whom a snow emergency would be declared and thereby require staff to work beyond the times outlined in Ontario Regulation 555/06 Hours of Service. The winter operations plan would contain a corresponding section outlining how notice of the snow emergency would be broadcast.

Step 4 – Record Keeping

Full and accurate completion of the documents listed below, according to the applicable procedures, ensures that the municipality is protected from liability by providing solid documentation that procedures have been followed. What data is collected, the format of the data collected (especially date and time) and who is responsible to collect the information would be set out in the winter operations plan. The LOS policy should contain a clause giving responsibility to a specific individual(s) to retain all winter operation records both digital² and paper versions and the length of time those records would be stored.

² Staff must confirm that the content of digital records match with paper based records.

Possible winter operations documents:

Equipment Operators:

- CVOR Time Card
- Materials used (sand, salt, liquids)
- Route Plowed and strategy used (plow only, sand/salt only, anti-ice, combination plowing/sanding/salting)

Patrollers

- Winter Patrol Record – Route of Representative Roads
- Winter Operations – Service Update Report
- Call Out Diary
- Weather and/or RWIS Information Received
- Equipment Mobilization Records
- Ambient and pavement temperatures
- Pavement Condition

Operations Supervisors

- Operations Diary
- Incident/Collision Reports
- Total materials used
- Equipment Calibration Records

NOTE: the winter operations plan should contain instructions as to how: date, time and shift duration will be recorded on all documents; how mobilization of equipment will be reported; and how all instructions will be documented.

Step 5 – Monitoring and Reporting

Lessons can be learned from both the successes and failures of any winter maintenance operation. Improvements in policy, operations, and even in equipment, can be identified and implemented through a post-season assessment of the practices, procedures and treatments used. It is important that all levels of the organization be involved in these evaluations from senior managers, to front line supervisors, to equipment operators. As part of the post-season assessment, staff will need to compare this year's results using a series of performance measures. Measures should be developed at the senior management/council (strategic) level, at the supervisor (program) level and front line staff (service) level, an example is shown below. Annually measures would be compared to the previous year's results or to some other benchmark set by the municipality. The LOS policy document should include the frequency and format of reporting as well as a list of the performance measures to be used. Example performance measures are shown below.

Example Performance Measures

Goal	<i>“the municipality name”</i> public works staff will strive, as is reasonably practicable, to provide safe winter road conditions for vehicular and pedestrian traffic as set out in this level of service policy and within the resources established by the Council of <i>“the municipality name”</i> .			
Objective	<i>“the municipality name”</i> will adhere to the procedures contained within the Winter Operations Plan			
Measured by	Financial	Customer	Quality	Management
At the Strategic Level and reported to senior staff and council	<p><i>% change ± in the annual winter operations cost per lane km</i></p> <p><i>Winter Operating \$ per lane km</i></p>	<p><i>% change ± in the number of respondents to the annual questionnaire who rate winter services as good to very good</i></p>	<p><i>% change ± in collisions that reported road condition as a factor</i></p>	<p><i>% change ± in the number of winter event responses delivered within the timeframe set out in LOS policy</i></p>
At the Program Level and reported to supervisors	<p><i>Winter Activity \$ per unit of work</i></p>	<p><i>% change ± in the # of days per year roads closed due to winter weather</i></p>	<p><i>% change ± in the annual tonnes of abrasive and or de-icing material applied per cm of annual snow accumulation per lane km</i></p>	<p><i>% change ± the total annual winter control hours per cm of annual snow accumulation per lane km</i></p>
At the Service Level used by front line staff and supervisors	<p><i>Manhours/unit of work for winter activities</i></p>	<p><i>% change ± in the # of winter event responses where call out to deployment lag time exceeded the LOS policy</i></p>	<p><i>% change ± in the time equipment out of service for repairs</i></p>	<p><i>% change ± in the total number of winter event responses</i></p>

NOTE: The performance measures used must have some meaning for the organization and should be used to initiate change within the municipality.

Limitations

Level of Service Policy will need to be developed and reviewed at the end of a winter season in order for the policy to be in place well in advance of the upcoming season. If current resources cannot achieve the road conditions set out in a new or revised policy, the policy should not be implemented until those resources (manpower, equipment and budget) are acquired.

Winter Operations Reference Documents

1. A Guideline for Patrolling Representative Roads in Winter – OGRA 2012
2. A Guideline for Preparing for and Decommissioning Winter Operations – OGRA 2012
3. A Guideline for Training Patrol Staff – OGRA 2012
4. A Guideline for Weather Monitoring – OGRA 2012
5. Winter Operations Plan Template – OGRA 2012

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