Staff Report

Report To: Service Review Implementation Ad Hoc Committee

Report From: Lara Widdifield, Director of Public Works and Engineering

Meeting Date: December 11, 2024

Report Code: OP-24-046

Subject: Project 5b1 – Winter Maintenance Review

Recommendations:

THAT in consideration of Staff Report OP-24-046 respecting Project 5b1 – Winter Maintenance Review, the Service Review Implementation Ad Hoc Committee recommends that City Council:

1. Approve the winter-maintained width of a multi-use path to one pass of a sidewalk plow (approximately 1.45m); and
2. Direct staff to proceed with further phases of the Winter Maintenance Review project, including the following initiatives:
    a. Defer changes to the Winter Maintenance Level of Service Policy for Roads until new traffic count data can be collected to confirm appropriate road maintenance classifications;
    b. Review the sidewalk winter maintenance level of service to balance meeting the Vision 2050 targets for non-vehicular mobility with cost-effectiveness;
    c. Once the desired level of Sidewalk Maintenance is established, assess the sidewalk plowing program in detail to determine if changes to the fleet units, routes, and satellite refill locations could improve efficiency and response times;
    d. Develop Council-endorsed Corporate Priorities related to winter maintenance and expand the Winter Maintenance Level of Service Policy to include all other City properties (e.g., parking lots, parks);

e. Investigate whether a business case exists to increase the plow fleet by one unit;

f. Explore the potential application of alternative materials to the current abrasive and salt products used;

g. Continue to compile annual Environment Canada snowfall data to amass a long-term record of snow event patterns;

h. Invest staff resources to program the AVL management software with the City's snow removal routes to enable better tracking of route completion statistics; and

i. Investigate and embrace opportunities to enhance service delivery using advanced technology, such as remote condition monitoring, public-facing software like "Where's my Plow," and Artificial Intelligence for route optimization.

Highlights:

- This Winter Maintenance Review summarizes the work undertaken to date to analyze, streamline and improve winter control operations in the City of Owen Sound.
- While there is still work to do and conditions around winter maintenance are constantly changing, this report provides an update of the analysis completed. It lays a framework to further calibrate winter control activities by confirming Council's service level expectations and investigating future efficiency opportunities.
- The traffic volumes used to establish the current road maintenance classifications are almost 10 years old and must be resampled before making assumptions on the minimum level of service required, particularly for Arterial and Collector roads.
- Staff recommend that the Winter Maintenance Level of Service Policy be amended to simply reflect the recommendations of O.Reg. 239/02 Minimum Maintenance Standards (MMS), using current traffic counts and the posted speed rather than a higher speed limit bracket as specified in the current version of the Policy.
- Sidewalk snow removal struggles to keep up with back-to-back winter weather events and heavy snowfall. Progress slows considerably when using the blowers, hindered further by waiting for sand/salt refills or running back to the depot to top up. Staff recommend further analysis in the future to assess the benefit of investing in additional fleet and establishing satellite refill stations.

- New technologies such as further advancement of Automatic Vehicle Location devices (AVL), remote weather and road condition monitoring and Artificial Intelligence will enable more efficient design of plow routes, less reliance on live patrols (or the ability to deploy snow response to specific locations), reduce administrative burden, and potentially allow residents to view on a web portal when their road is estimated to be plowed (or when it was last plowed). However, adopting some of these technologies would depend on the appetite for change and budgetary approvals.

Strategic Plan Alignment:

This report supports the delivery of Core Service.

Climate and Environmental Implications:

This supports the objectives of the City's Corporate Climate Change Adaptation Plan by strengthening the resiliency of City infrastructure or services.

Climate change models predict more intense, less frequent precipitation patterns and warmer shoulder seasons (fall and spring). This will lead to more extreme snow events and potential spring flooding due to runoff. Swinging daytime highs and nighttime lows exacerbate icing conditions as snow melts during the day and freezes at night, creating slippery sidewalks and roads. It behooves the City to be prepared with operational plans for these weather patterns, as the trends are already apparent compared to 50 or even 30 years ago.

Previous Report/Authority:

1. On July 17, 2023, the Special Meeting of the Council adopted the results of the Service Review Study, along with the Strategic Leadership Team's responses and recommendations. *Action item 47. Reference 5b1. "Undertake a review of winter maintenance including sidewalks to determine an appropriate level of service vs. cost which includes the actions recommended by MNP"* was identified as part of the Service Review.

   Service Review CM-23-012

   S-230717-006
   "*THAT in consideration of Staff Report CM-23-012 respecting Service Review Implementation and Next Steps, City Council approves the*

Service Review Priority Opportunity Action Plan, as attached to the report, subject to the changes made by Council throughout the July 17, 2023 Special Council meeting."

2. Winter Maintenance - Level of Service Policy adopted in October 2012 and amended in November 2013.
3. Report OP-23-026 from Manager of Public Works Re: Winter Control Season Report 2023
4. Report OP-23-038 from Director of Public Works and Engineering Re: Winter Maintenance of Non-Linear Assets

   Report OP-23-052 from Director of Public Works and Engineering Re: Winter Storm Emergency Response Plan Amendments, December 14, 2023.
5. Report OP-23-053 from Director of Public Works and Engineering Re: Winter Operations Plan & Level of Service, December 14, 2023.

Background:

When Council adopted Staff's recommendations relating to the Service Review Study at the July 17, 2023, Special Meeting of Council, it endorsed Staff's proposed approach to streamlining and efficiencies for the established programming and services provided by the City of Owen Sound. Council approved 49 initiatives under six broad themes. One of these recommendations was to study and find efficiencies in the Winter Maintenance program, designated as project 5b1.

To wit, MNP's recommendations noted that:

- *"Current data collection methods employed by the City do not allow for inefficiency identification within winter control activities*
- *Winter control activities are a substantial cost for the City, and there could be cost savings identified by analyzing work efficiency through the observation and timing of tasks*
- *The City's 2022 operating costs for winter control activities is approximately $1,700,000, of which nearly 50% is attributed to salaries and 47.5% is attributed to materials and supplies (i.e., equipment) Note: a small portion of the winter control activities budget can be attributed to contract services*
- *Considering the substantial cost of this service, conducting a time and motion analysis of the delivery of this service could assist the City with enhancing its data of winter control activities which would allow*

for the identification of performance improvement opportunities to maximize efficiencies and cost savings"

- The activities MNP outlined to resolve these issues were:
  i. *"Document routes and routines for snow removal during varying levels of snowfall over a winter season*
  ii. *Triage routes by a ranking of "most important to finish first" to "least important to finish first"*
  iii. *Assign "disruption costs" to different routes: what is the relative disruption to the City's transportation for every hour that a section of the City's streets is not cleared? Does this change depending on levels of snowfall or when the snow falls (i.e., Weekends vs weekdays, mornings vs evenings, holidays vs regular calendar days)?*
  iv. *Conduct an optimization exercise to determine a route schedule that realizes an acceptable sum of disruption costs while minimizing time in motion for City equipment operators"*

Staff challenged MNP's recommendation on several fronts. The snow removal cost comparators were municipalities that do not experience the equivalent annual snowfall (330cm) as Owen Sound and, thus, potentially are not a valid comparison. Similarly, topography is not represented in the parameter of lane kilometres of paved roads, and Owen Sound's 15 hills are a significant complicating factor. Lastly, there is no standardized way that the FIR accounts for expenses; therefore, what one municipality includes in its wages or materials lines and under which cost centre is not necessarily what another includes. MNP acknowledged that the FIR data is not an apples-to-apples comparison but was used as a general benchmarking tool to indicate areas of potential opportunity.

Despite these noted inequalities, management supported the recommendation due to the proportion the Winter Maintenance budget consumes of the annual tax-supported budget (<$2 million).

Moreover, the Citizen Satisfaction Survey results indicated that winter sidewalk maintenance service levels were among the lowest-rated services. This has been echoed several times, including at the Operations Committee meetings, the Community Open House, and Vision 2050 public sessions. It may be an issue of the public not understanding the City's competing priorities, but regardless, there is dissatisfaction in the community.

Staff launched initiatives to improve this service in early 2023 and have since produced several reports for the Operations Committee on various aspects of Winter Control (Refer to the "Previous Report/Authority" section).

It was quickly realized that many of the statistics recommended to be tracked were unavailable, which has historically made it difficult to aggregate the information to make informed business analyses and decisions. Items that had not been tracked include response/clearing times (it is often left as "meet MMS"), hours spent plowing, spot removal, equipment repair times, etc., which prevents analysis of such considerations as the snowfall correlated with the amount of time spent removing it, total hours on the road, equipment uptime vs. downtime, etc.

Various Public Works Managers have implemented variations in the snow removal program in the past, but long-tenured staff recall they did not yield appreciable benefits. Staff committed to finding a solution that does not reduce the current level of service. However, it was acknowledged that a service reduction may be the preferred solution, informed by a legal opinion if necessary.

The project team assigned to Project 5b1 was:

- Lara Widdifield (Project Lead)
- Jeff Follis, Public Works Superintendent
- Paul Bailey, Patrol Coordinator
- Pamela Coulter, Director of Community Services
- Phil Eagleson, Fire Chief (Project Sponsor)

Analysis:

The Corporate Fleet involved in Winter Maintenance activities includes:

- Four (4) tandem axle plows
- Four (4) Maclean sidewalk plows
- Two (2) Front-end loaders
- Two (2) road graders
- Two (2) one-ton trucks
- One Kubota 1100 side-by-side Utility Vehicle for bus stops & hydrants
- Two ½-ton trucks with plow and harness (assigned to Parks for Parks and Greenwood Cemetery)
- One ½-ton truck with plow, harness and sander (assigned to PW for parking lots)

- Various other light trucks (to support sidewalk plows, shovelers, and other activities)

The City has 282 lane-kilometres of road and 105 kilometres of sidewalk.

Level of Service - Roads

As noted in the Winter Maintenance Level of Service Policy report assessment, the policy artificially elevates the road classification and, therefore, the required service level specified under the Minimum Maintenance Standards for Owen Sound's arterial and collector roads. This is due to the policy using a higher speed limit bracket than the actual posted speed. While it would seem a reasonable first step to reduce the road classifications to the correct speed, as the traffic volumes used are from 2016, it is recommended that the level of service remain unchanged until new traffic counts are undertaken throughout the City, at which time the road classifications should be recalibrated, and the plow deployment thresholds be reset.

The policy states: *"In an attempt to provide a higher level of service for the same AADT* [Annual Average Daily Traffic]*, a Class 2 and 3 Roadway in this policy utilized the 71-80 km/hr column of the highway classification table in O.Reg. 239/02 instead of the 41-50 km/hr column. Class 4, 5 and 6 Roadways in this policy utilized the appropriate 1-40 and 41-50 km/hr column of the highway classification table in O.Reg. 239/02."*

This point is significant because the speed column used in establishing the maintenance classification is increased by three (3) increments for most arterial and collector roads. This profoundly impacts allowable reaction time post-event, required patrol frequency, and allowable depth accumulation. For example, the MMS would allow a response activation of 8cm and completion within 12 hours of the end of the event for a class 3 road, but for a class 2 road, those triggers drop to 5cm and complete within 6 hours. It should be noted, however, that despite the policy specifying different depths of accumulation for various road classes, deployment of plows disregards these criteria as it would result in more unproductive time in motion and complaints as plows travelled from place to place to target the higher class roads first. Now, Staff begin the plow routes at the lowest accumulation trigger (i.e. 5cm on Highway 6) and proceed from there. Even while maintaining this methodology, efficiencies could still be had if it were possible to reduce the response trigger on the highest classification roads.

While an immediate solution could be to reset the level of service to reflect the actual posted speeds, Staff caution taking this approach considering the age of

the traffic volume data used to establish the City's Road Maintenance Classification. Due to population shifts arising from the pandemic and the provincial push for residential development, among other influences, the traffic volumes used in the most recent maintenance classifications are likely no longer relevant. New traffic counts have been planned as part of the 2026-2027 Transportation Master Plan update, at which time the counts would be 10 years old, but this is too long of a gap to prove conformance to the MMS. (Similarly, traffic engineering best practices call for new counts after 5 years have elapsed). It has been noted that the escalation of the classifications may have been a method to compensate for the time lag between counts. To provide for interim verification and investigative traffic counts and meet the MMS, Staff have scheduled a capital budget item in 2025 to purchase traffic counting equipment.

To conclude this item, Staff recommend that prior to any changes to the Winter Maintenance Level of Service Policy, new traffic data must be collected to verify that the Maintenance Classifications are correct. At that time, the level of service should be set at the speed and volume thresholds stated in the MMS and not intentionally above. The traffic counts should be undertaken, ideally, at least twice but up to three times in the same locations over one year to capture seasonal variation.

The City's topography and geographic characteristics pose additional complexity in delivering a successful and efficient Winter Control program. Being essentially "U-shaped" around the harbour, there is no quick way to pass from the east to the west side at the north boundary, so routes must consider the funnelling effect of the downtown. Similarly, although the City does not span a large coverage area, all equipment is stored at the Public Works Yard in the northeast quadrant. Most existing development is to the west and southwest of this location. Future development lands are primarily south of the Works Yard. The plow routes have been mapped out based on decades of experience, but revising the number of fleet could create efficiencies by breaking up the routes into more discrete or specific areas or road classes, for example, or, at minimum, add a backup unit as plow trucks are high-wear equipment and breakdowns are common.

An additional unit would also ensure that the plow routes remain short enough to be completed in one shift and with one truckload of material. This is important to maximize productive time; to illustrate, if a plow operator is at the farthest part of their route and must refill, travel back to the Public Works

Yard would be approximately 5km (15 minutes), then for argument's sake, 30 minutes filling, then return travel, resulting in a loss of one hour of productivity. This will be especially important as the City grows. Currently, most routes can be completed with one load, except for the East Above route, which is very long and includes clearing several hills.

Other potential avenues of investigation include:

- Consider investing in one additional piece of fleet that can be used as support on the primary routes. The secondary benefit would be to have a backup piece of equipment in case of a breakdown, reducing delays caused by a truck being out of service.
- Pursue other grit or deicing alternatives. Currently, the City uses a 2:1 ratio of sand to salt as a form of cost control, but this sacrifices some deicing ability and increases the sediment to be removed from the storm system and roads in the spring. Alternatives would often have a higher cost but may have a better cost-benefit analysis if they provide superior performance. Non-empirical advantages include reduced environmental impact and reduced burden on the City's salt management responsibilities.

<u>Level of Service – Sidewalks and multi-use paths</u>

Currently, the City maintains most sidewalks throughout the city and operates four sidewalk plow routes to undertake this. This appears to have occurred over time, in response to demands from the public and as new sidewalks have been added to the City's network. Due to the prioritization of sidewalks and the nature of snow events, it can take several days to complete a response cycle, especially if the snow depth exceeds the capabilities of the blade and the blowers must be used (typically approximately 24 inches but less on monolithic/curb-face sidewalks covered in road plow cast-off). The sidewalk plows can only travel 4km/h when the blowers are used. With over 105 km of sidewalk, it can take an entire workweek to complete one cycle. Mix in back-to-back snowfalls and significant weather events, and there can be stretches of weeks where they never finish.

The City has recently installed a multi-use path on Alpha Street. Although the asphalt path is 3 metres wide, the intention is that the winter-maintained area will be limited to a typical pass of the sidewalk plow. The justification for this is that it is unlikely that the path will see as much use, i.e. two bicycles passing, in the winter as in the non-winter seasons. It is also critical to note that sidewalks and paths are maintained in a "snow-packed" condition; they

are not maintained to a bare pavement/concrete state. This is in part to accommodate variations in the sidewalk surface, such as joints, settlements/heaves, etc., that may be small enough to pass minimum maintenance standards and AODA criteria but could be enough of a ledge that, if set too low, the blade could catch it, causing injury or damage. This is also similar to a homeowner's snowblower; clearing a driveway down to bare pavement likely requires subsequent manual shovelling to scrape it clean. It is also possible snow could be left on the sidewalk in an ongoing or back-to-back snowfall if the road plow subsequently passes by after the sidewalk plow has been there. It could be some time before a sidewalk plow revisits the area. 100% treated salt is applied to hills, known slip hazard areas and intersections (i.e. sidewalk ramps) only.

Staff suggest that a reduction in the level of service is possible by some combination of the following changes:

- Determining key active transportation/commuter routes and maintaining these only. These would primarily be within the road right-of-way, but not necessarily if there are vital links through other City land that could play a part in city-wide travel.
- Maintaining only one side of each road, with or without primary and critical roads (i.e. downtown, adjacent to schools and hospitals) at a higher service level.
- Establish a schedule and plow only when a route's turn comes up (this would be a deviation from the MMS but could be investigated)

It should be noted that feedback collected from the Customer Feedback survey and the Vision 2050 strategic visioning session attendees voiced a desire for increased walkability and active transportation opportunities, including winter maintenance of these facilities.

If Council elects to preserve the current level of sidewalk winter maintenance throughout the expected long-term development growth, an additional unit and seasonal operator will likely be required within the 10-year horizon to keep up with the volume of work, depending on the rate at which the planned residential developments proceed.

The process of reloading the sidewalk plows with sand/salt is slow and often results in complaints from the public, who see idle equipment waiting for refills. However, this has also evolved as an attempt to gain as much productivity as possible from the existing resources. The unit that fills the

plows is a one-ton with two seasonal staff who also hand shovel and apply salt throughout the City.

The routes are long because there are only four units and 105km to clear. The standard sand spreaders have a small capacity, which results in either plow operator downtime while waiting for a refill or time and fuel waste by travelling back to the depot to refill. Tow-behind spreaders are available; however, they are not suitable where there would be tight maneuvering as they significantly add to the length of the unit.

There are several potential opportunities to explore for this service:

- Adding high-capacity tow-behind sand spreaders
- Adding a plow unit to reduce the length of sidewalks per plow
- Reduce the service level to eliminate some of the distance to cover (this will help until development buildout necessitates another unit)
- Satellite refill locations This would require land and some Capital output for a containment structure and possibly equipment for loading/unloading.

Staff recommend that the routes, numbers, and types of equipment required in the future be assessed in detail.

For liability purposes, non-winter-maintained sidewalks should be signed to alert the public that they are seasonally unmaintained. Recent risk mitigation opinion favours this approach rather than implementing a bylaw requiring the adjacent resident to maintain the sidewalk (common in many jurisdictions; most stipulate a time limit after the end of the event, such as 24 or 48 hours). This is generally due to the burden on resources required to enforce such a bylaw properly, and if not enforced, the City may not be insulated in the event of a slip-and-fall incident or other claim. Further, regular patrols are required for a sidewalk to be deemed "in a good state of repair" (the test for adequate maintenance). If the municipality is not providing the maintenance, patrolling and taking note of the condition becomes less of a top-of-mind activity. Bylaw officers could provide this; however, covering the city adequately would require multiple staff to enforce.

<u>Level of Service – Non-linear and other</u>

The City is responsible for numerous non-linear assets such as parking lots, bus stops, fire hydrants, trails, and access roads. In the past, due to the number of these assets and the coverage area required after a winter weather

event, winter control (snow and ice clearing) for many of these has been contracted with private enterprises.

In 2022, (for the 2023 Operating Budget Cycle), Council directed Staff to bring in-house the winter control of bus stops and shelters due to rising costs and budgetary constraints. In September 2023, Council approved report (OP-23-026) and made several modifications to winter control, including the in-sourcing of parking lot winter maintenance to adjust to this loss; the reallocation of funds resulting from bringing the work in-house also had the benefit of funding additional equipment and a seasonal operator position while yielding cost savings and better control over quality of service.

The move incorporated:

- Winter maintenance of 12 parking lots, including the water and wastewater treatment plants, Animal Shelter, Genoe Landfill, miscellaneous pumping stations and the Reservoir.
- In-sourcing of bus stop snow removal.
- Formalizing hydrant snow removal.
- An agreement was made with the Parks & Open Space Division to have them assist with six (6) bus stops adjacent to Harrison Park, Greenwood Cemetery and the Julie McArthur Regional Recreation Centre.

Staff recommend that this asset type requires additional coordination and Council endorsement of the provided service levels. For example, does Council recognize trails as needing the same level of service as sidewalks? Or parking lots of various types of buildings? In a state of emergency, as described in the December 2023 Winter Storm Emergency Response Plan Amendment, Public Works has a clear plan: focus on primary roads and essential infrastructure, such as the water and wastewater treatment plants, warming/cooling/emergency shelters, the Emergency Operations Centre, etc. to ensure the City continues to run. Parks & Open Space can be called upon to assist with prioritizing winter control by contributing workers and equipment.

But what about on a day-to-day basis? Staff are well aware of the public's expectations concerning service level; for example, residents who like to walk in Greenwood Cemetery or on a trail through a park expect it to be plowed daily by a particular time because Staff have established that precedent. Or the Police Station requires a higher level of service (5cm of snow depth) than any other City parking lot (8cm). But what is Council's priority list and service

level expectation? Does Council agree with the public's expectations if it makes it more challenging to balance the budget?

Parks and Open Space Staff are currently working on a similar winter maintenance level of service standard, which Staff recommend should be integrated into a Council-endorsed Corporate Service Level Policy.

Weather

The Owen Sound Severe Winter Storm Response Plan guides the response to severe winter weather conditions, including snowstorms, blizzards, high winds, ice storms, and extreme cold temperatures that may adversely affect the City of Owen Sound. The plan identifies the lead agencies and details their responsibilities during a severe winter event.

As the City's winter control operations are structured around the typical weather patterns experienced in Owen Sound in a given year, the City meets the designated response timelines set out in the Minimum Maintenance Standards for most winter events. When that is not possible, the MMS allows the City to declare a "Significant Weather Event," which suspends the required timelines to recognize resource limitations and impaired response deployment during particularly severe storms.

It is important to note that a "Significant Weather Event" is not synonymous or mutually exclusive with a State of Emergency. In many, if not the majority, of Significant Weather Event declarations, the City's Public Works operations are expected to eventually resume normal service levels once the storm has eased.

Storms are categorized in one of three categories based on severity. In the case of a Category 1 event, the lowest severity storm, a Significant Weather Event is not necessarily expected. If one is declared, it is most likely to reduce risk and liability by warning the public that the resources available to address sidewalks would not be sufficient to meet the required MMS timeframe. In the case of a Category 2 or 3 event, a Significant Weather Event is expected to be declared. Consequently, it should be assumed that sidewalks cannot be addressed within standard timelines and may be impassable.

In 2023, as part of the background work on this study, Staff analyzed the historic snowfall events from 2019 through the first half of 2023 to determine the average frequency of snow events of various depths of accumulation and

the appropriate definitions of the Winter Storm Event categories. Based on the descriptions of the storm categories in the Severe Winter Storm Response Plan, it was evident that the definitions of each storm type did not truly represent the depth of accumulation typically experienced during Owen Sound's winters in recent years. Additional flexibility had to be built into the descriptions as, operationally, there is a vast difference in the Public Works Department's ability to cope with a snow event depending on the intensity of the particular event. For example, a 30-centimetre snowfall where the snow falls within 12 hours is much more challenging to keep up with than the same depth of snow falling over 36 hours. Similarly, the additional impact of high wind increases the event's severity. It causes deep drifts and low visibility conditions where motorists, and even the plow operators, cannot see the edges of the road or other obstacles ahead of them. Freezing rain and intense cold also amplify the risk to human safety.

It is recommended that the snowfall data be updated annually to compile a long-term record of snow event patterns. This should be incorporated into Staff work plans.

Workforce and Shift Schedule

The City has 17 full-time Heavy Equipment Operators and recruits an additional nine (9) full-time, seasonal staff for the winter season (November to April inclusive).

Staff rotate on three shifts per 24 hours, seven days a week.

- "Day" - 8 AM to 4 PM
- "Afternoon" - 4 PM to 12 PM
- "Midnight" - 12 PM to 8 AM

Shift coverage is typically nine (9) employees on the Day shift; however, on Monday and Friday, the Day Shift is reduced to six (6). The Afternoon and Midnight shifts have four (4) staff present per shift. As a result, maintaining 24/7 equipment utilization during a significant winter weather event relies heavily on overtime within the constraints of the hours of work legislation. Each of the three shifts has a lead hand, and that individual receives calls from the after-hours answering service. Even with three shifts, staff are often called in for overtime during winter control. For instance, if a storm is ongoing, Day shift staff will receive a call at about 2:45 AM to arrive at 4 AM. Public Works runs an on-call rotation amongst all Heavy Equipment Operators, but call-ins are by seniority for each shift.

Staff suggest that once the road maintenance classifications are confirmed if the need still exists for three shifts due to the service level required on the primary roads, there may not be much ability to adjust the shift schedule. However, climate change trends predict less frequent and more intense weather events. The best option may be to transition to a single shift with overtime and on-call during a severe weather event. There are a few factors to consider in this case:

- The accumulation of overtime and seat time would need to be tracked carefully to ensure compliance with Commercial Vehicle Operator License requirements and labour laws, and staff complement may need to be adjusted if necessary.
- This approach would require union notification and could result in objections requiring negotiations.
- This may result in a reduction in the level of service where, once one or two shifts have completed their hours for the day, there is no further service for several hours/until the following day.
- Less frequent and more intense snow events would logically result in the declaration of more Significant Weather Events, which relieves the municipality of MMS timeline obligations until the service levels have returned to normal. While it is frowned upon to declare a Significant Weather Event frivolously, it could be an appropriate tool for managing event response without a 24/7 workforce.

The City's existing Automatic Vehicle Location system can theoretically be used to track response times, but it requires investment in staff resources to set up the system properly. My GeoTab, the web-based software associated with the AVL system, can be programmed with the plow routes so that the system can produce a report on completion times. This could be correlated to weather data. While it still may not yield a conclusive response time result throughout an ongoing storm event, it should be possible to determine when the plows stop deploying after a standalone snow event. This is a crucial recommended next step in this project and has been provided as a recommendation seeking Council support for utilizing resources.

My GeoTab has other ways to track response time, such as selecting the plow units and searching the activity following a snow event; however, this method is clunky and time-consuming.

Outside-of-the-box Opportunities

Technology is advancing quickly. New technologies, such as the expansion and further sophistication of Automatic Vehicle Location devices (AVL), remote weather and road condition monitoring, and Artificial Intelligence, will enable limitless opportunities to refine and improve the Winter Maintenance program.

- AI could assist with more efficient design of plow routes
- Remote weather or road condition sensors could reduce the reliance on live patrols, increase the coverage of a combined live-virtual approach, or even enable the City to deploy snow response to specific locations
- More advanced AVL, GPS, and work order software would reduce the administrative burden when tracking response times, time in motion, cost per event, etc.
- A "Where's my Plow" application or web portal, possibly integrated with our Virtual City Hall, could allow residents to view when their road is estimated to be plowed or when it was last plowed.

Several of these technologies have associated capital and subscription or software costs and will, therefore, require appropriate approvals before implementation. Staff will develop the business case and manage the change within the work units.

Anticipated Benefits

Although this report proposes several different recommendations, the following sections outline the main impacts on the three key parameters that could reasonably be expected to arise from the overall objective of this service review project.

Efficiency Savings

Embrace emerging technologies such as AI to map out plow routes to ensure maximum efficiency with minimum non-productive time. Remote condition monitoring can improve the specificity of road condition information (enabling targeted response rather than city-wide deployment) or supplement in-person patrol coverage (the Patrol Coordinator completes most of the road patrol during the Afternoon shift, so remote sensors could assist with checking conditions at other times of the day). This will not only increase efficiency but should also result in budgetary savings on fuel.

Confirming Council's desired level of service will ensure that staff and equipment are focused on the right priorities at the right time.

Reassessing the sidewalk plow fleet and routes and considering implementing satellite refill stations could result in less downtime waiting for material. This could relieve some burden on the support truck that usually delivers sand/salt, allowing the equipment and staff to be reassigned to other tasks.

Dollar Savings

This process aims to ensure that the Winter Maintenance approach is "right-sized" to the City's needs. While development growth will naturally add additional linear assets to maintain, some of this impact can be curbed (pun intended) by reducing the level of service already provided; that is, simply spreading the peanut butter a bit thinner on the toast. This could be achieved by:

- Ensuring the roads are maintained at the minimum maintenance standard for their posted speed and traffic volume. Note that if using the least conservative values, it is recommended to capture traffic volumes across several seasons to account for tourism traffic during the summer months without artificially elevating the maintenance classification in the winter when there may be less traffic.

Considering a reduction in the sidewalks seasonally maintained by the City in the winter. A good starting point would be to capture key active transportation/commuter routes (routes to schools, commercial districts, and primary roads) and provide coverage on one side of the rest of the network. Non-winter-maintained sidewalks must be signed as closed due to no seasonal maintenance.

These initiatives will primarily result in financial savings from less fuel consumption or a slowed increase in fuel consumption from year to year as new assets are assumed.

The need to purchase additional fleet units or grow the staff complement in the future to keep pace with long-term growth would have budgetary impacts. Future investment proposals would undergo rigorous analysis to ensure a sound cost-benefit relationship.

Employee Impact

The primary impact on employees is change management. This is a significant issue from multiple perspectives, including contractual obligations, employee unfamiliarity, comfort level, new technology, and the uptake of new policies and procedures. Any change that could be perceived

as a loss or concession to current working conditions (i.e. eligibility for overtime, workload, shifts, seasonal vs permanent tenure) is expected to be vehemently opposed by the Union and, therefore, must be explicitly justified as to how the changes better meet the City's operational needs.

Management staff in this and other departments are currently undertaking corporate LEAN training, which includes change management. This will be heavily relied on when new methodologies are required.

Once the unease of change management is resolved, the intent is for these changes to improve efficiency on a corporate level and reduce pressure on the equipment operators and administrative staff. Well-planned routes, clear expectations and work plans, and adequate staffing and equipment should contribute to worker satisfaction.

From an administrative perspective, improving the systems for tracking response times and route completion will assist in documenting the MMS conformance and responding to damage claims. If residents can look up online or on an application when their road was last plowed or when to roughly expect it to pass, it may reduce the number of complaint contacts (through all forms of communication).

Going Forward

- Commission or undertake in-house new traffic count data of primary roads to confirm appropriate road maintenance classifications.
- Review the sidewalk winter maintenance level of service to balance meeting the Vision 2050 targets for non-vehicular transportation with cost-effectiveness.
- Continue to compile annual Environment Canada snowfall data to amass a long-term record of snow event patterns.
- Establish a Council-approved hierarchy of winter maintenance response priority and service level across all departments and asset types
- Program plow routes into the AVL management software to enable tracking of winter control response activities versus weather data
- Continue to assess optimization opportunities, such as, but not limited to, materials, routes, fleet, hours of work/shifts, staffing, training, service level, etc.
- Obtain legal opinion on any proposed changes (for liability/risk reduction)

- Investigate potential advanced technology such as remote condition monitoring, "Where's my Plow" public-facing software and Artificial Intelligence for route optimization.

Financial Implications:

There is no budget for this project. Most stated recommendations and next steps outlined have an internal resourcing impact only, whereas others would not have financial or operational implications unless policy changes are implemented. Policy amendments involve a dedicated approval process with a detailed discussion of financial impacts. Recommendations that allude to capital or other budgetary impact shall proceed through the appropriate approval process before the expenditure of any funds.

The Public Works Winter Maintenance-related budget was $1,999,590 in 2024 and reduced by approximately 9.3% to $1,864,321 in 2025.

The costs for Parks snow removal activities within Parks are currently not tracked in detail. Current existing records show an estimated operating cost of approximately $65,000 (Labour, equipment and materials) relating to winter work performed at the Julie McArthur RRC (walkways around building only), six bus shelters, winter-maintained trails, Greenwood Cemetery, Inglis Falls (Water Division access route), Harrison Park, Kelso Beach and other parks.

Modifications are being made in the tracking and reporting system in Parks to allow more detailed data collection on the time and expenses associated with winter operations.

MNP earmarked $45,000 in their recommendations for a consultant to undertake the analysis that Staff have completed in-house at no additional cost.

Communication Strategy:

Communication will be essential in developing this review further, both inside the organization and with the public.

Before established service levels are modified, public education and, potentially, stakeholder consultation should be undertaken. Consultation is optional on some matters, as concerns such as establishing corporate priorities or allocating internal resources are the realm of Council and/or Staff. When the objective is simply to inform, public communications generally include

explaining the rationale or decision-making process, the competing priorities being balanced for the greater good, or how the City conducts its business.

On other matters, Council may wish to gather input from the public to understand their desires, needs, and expectations regarding a particular service before ruling on new policy. Input could take many forms, such as surveys, event pop-up booths, or formal in-person engagement sessions.

As noted earlier, internal communications would primarily consist of change management, new instructional/guidance documents, or policies and procedures to ensure a common understanding among all work units and levels of the organization.

Consultation:

Service Review project 5b1 team members:

- Jeff Follis, Public Works Superintendent
- Paul Bailey, Patrol Coordinator
- Pam Coulter, Director of Community Services
- Eckhard Pastrik, Manager of Parks & Open Space
- Phil Eagleson, Fire Chief (Project Sponsor)

Attachments:

1. Policy 057: Winter Maintenance – Level of Service
2. Sidewalk and Road Plow Route Maps
3. Know Our Plan For Snow
4. O.Reg. 239/02 Minimum Maintenance Standards

Recommended by:
Lara Widdifield, Director of Public Works and Engineering

Submission approved by:
Tim Simmonds, City Manager

For more information on this report, please contact Lara Widdifield, Director of Public Works and Engineering, at lwiddifield@owensound.ca and 519-376-4440 ext. 1201.