Staff Report

Report To: Operations Committee

Report From: Bryce McDonald, Manager of Water and Wastewater

Meeting Date: April 23, 2026

Report Code: OP-26-019

Subject: Frozen Water – Levels of Service

Recommendations:

THAT in consideration of Staff Report OP-26-019 respecting Frozen Water – Levels of Service, that the Operations Committee recommends that City Council direct staff to create and update any related procedures to include the recommended defined service levels for frozen water as outlined in the report.

Highlights:

- The last time the City experienced widespread and severe frozen water services was in 2014 and 2015; historical trends indicate this weather pattern generally occurs every 10-20 years.
- Although much was learned during these emergency events and service levels were adjusted at the time, few formal procedures were developed/updated.
- Staff annually track data that helps determine the likelihood of frozen pipes, including "negative degree days", frost depths and distribution water temperatures.
- Freeze prevention initiatives such as the "Running water program" do not guarantee efficacy, increase administrative burden, and impact plant capacity and operations.
- In mid-February 2026, tracked trends indicated a potential for frozen pipes which triggered a review of approved procedures. Gaps and outdated procedures were identified as a result.

Vision 2050 - Strategic Plan Alignment:

Strategic Plan Priority: The recommendation contributes to core service delivery or a corporate initiative that enables service delivery for one or more strategic priorities.

Background:

Water utilities in Ontario have contended with frozen water pipes for generations, extreme cold weather and substandard installation depths are the most common contributing factors. Secondary causation is due to the combination of ambient temperature and depth of snow cover. Both the thickness of soil over the pipe and the depth of snow cover offer the same protection from frost as snow acts as an insulating blanket and snow removal is avoided over known shallowly-buried watermains.

In this climate, significant frozen pipe events seem to arise from a "one-two punch" of sustained cold temperatures and low snowfall amounts. This weather phenomenon occurs often enough to require planning and monitoring, but not frequently enough to trigger real service level reviews. In both 2014 and 2015 the City of Owen Sound, like many other municipalities, experienced emergency level frozen pipe conditions which forced staff to work around the clock and adapt response procedures on the fly. In both years, conditions went from a handful of frozen services to hundreds in a matter of days. Staff tried their best to follow existing procedures and service level expectations, but the volume of customers without water quickly became too much to handle. Staff would often spend all day trying to thaw one service, often unsuccessfully, while dozens of new reports came in. If staff were unable to thaw a frozen service or volumes didn't allow time to attempt to thaw, then a temporary hose bib to hose bib connection was often installed. Many times, new hose bib installations or plumbing alterations were required and done by the City (or at the City's expense) only to have these temporary connections freeze at night, leaving staff scrambling to replace them day after day. As more customers were directed to run water to prevent freezing, and the number of water main breaks increased, staff struggled to maintain reservoir capacity. Valuable lessons were learned about work prioritization and what was inefficient and ineffective in these extreme conditions.

Staff also had to find alternative ways to provide residents with access to potable water for essential need. Challenges included providing the

vulnerable population reasonable access to shower/bathing facilities, and even clothing laundering options, especially for those with physical limitations or limited access to transportation. All these challenges will likely exist next time, but having an approved documented level of service will save significant resources, confusion and frustration.

Analysis and Options:

Setting approved service levels is strongly recommended to manage expectations in the next emergency frozen water situation as focus and scrutiny are proven to escalate quickly. Some key operational tools, tasks and services to consider include the following items.

1 - Cumulative Negative Degree Day Monitoring

This tool is commonly used to track the likelihood of frozen pipes through a running tally of negative degree day temperatures. This tracker is relatively simple to maintain and has proven to be beneficial. This is recommended to continue.

2 - Frost Depth Monitoring

This is generally done by observing and recording frost depths during times of excavation, typically watermain breaks. It provides a good indication of frost penetration relative to typical water service depth. This is recommended to continue.

3 - Source water and distribution system temperature monitoring

Source water temperature is generally monitored at the treatment plant to enable process adjustments. Distribution system temperatures are also required for certain sample analyses. This monitoring requires little additional effort and is required to continue.

4 - Running Water Notifications

Water running notifications are sent out in cohorts of customers based on historical likelihood of freezing. The cumulative negative degree day tracker is used to trigger the tiered notifications. This system has proven to be quite reliable and saves a relatively significant volume of non-revenue water. Customers notified to run water will be billed their historical monthly volumetric average plus the fixed rate. Any customer who chooses to run water without being instructed by the City is responsible for all water used. This is recommended to continue.

5 - No Water Response – Suspected Frozen Internally

These are generally the first customers to freeze, before any of the City's key indicators indicate potential frozen pipes. This is due to the wide range of uncontrollable factors on the private side of the service, such as shallow/non-standard private service, or when the waterline passes through a portion of the home that is uninsulated (crawl spaces are the most common inadequately heated areas). Staff will generally respond, even after hours, and inspect the meter. If there is water supply at the meter, it is a private issue. If the meter itself indicates it has been subject to freezing, the property owner is responsible for the costs associated with repairing/replacing the meter. As needed, the water user is directed to contact a plumber to assist with thawing and for advice on preventing refreezing. These calls are manageable in moderate volumes, but as situations escalate, staff would need to de-prioritize private property issues in favour of responding to matters that affect the population at large. This is recommended to continue, but with limitations.

6 - After-hours No Water (High volume, Suspected frozen)

As call volumes and the likelihood of frozen services increase, staff stop responding to after-hours "no water" calls. The after-hours call service would be told to hold further calls (i.e., not to bother calling through to the on-call operator) and simply log them to forward to office staff at the next business day. The call service can handle many calls an hour, which quickly becomes overwhelming for on-call staff to track and respond to, if corrective action that can even be taken at that time. Directing the after-hours dispatch service to log these calls for response the next business day ensures staff are free to respond to emergencies and can rest for their regular shifts. This has proven to be a successful tool to manage and prioritize workload, so this procedure is used at other times of higher call volumes, such as low pressure in an area of a known main break. It is recommended this procedure continue to be employed to manage after-hours call out volumes.

7 - Thawing Services

Thawing water services via water jet or electrical (heat) means has been a common practice for years. It has its applications but is extremely resource intensive and risky. Staff do not use this specialized equipment often enough to be proficient and plumbing limitations such as pipe material, bends, valves, unions and elbows often halt attempts. There is also significant risk of damage or injury if equipment is used improperly. Furthermore, this work

often requires staff to disturb or alter private plumbing, leading to potential claims or liability issues. Due to the low success rates, resource requirements and liabilities, it is recommended the practice of attempting to thaw water services lines be discontinued.

8 - Temporary Line Installation

Temporary line installations are often utilized to supply a resident with water while their underground service is frozen. A hose bib-to-hose bib connection is made to back-feed the property's interior plumbing network with a donor source. This can be effective and deliver a near normal water supply, but the following important caveats must be noted:

- The water supplied through the hose should be deemed non-potable. The resident must only use it for cleaning and sanitary purposes only, not consumption.
- Temporary service lines are only effective if the supplied customer leaves a tap running to make sure the hose doesn't freeze.
- Temporary lines have a minimum temperature limitation of about negative 10 degrees Celsius. At temperatures below -10^{o}C, even running water will not likely prevent freezing.

It is recommended that staff continue to provide this service, but only if the following conditions are satisfied:

- Proper plumbing connections (hose bibs) exist.
- Nighttime low temperatures are not consistently below -10^{o}C.
- Water is deemed non-potable.
- Resident is responsible to secure donor property approval.
- Frozen temporary lines will not be replaced.

Lastly, it should be noted that when a property is supplied through a hose bib, the supply is bypassing (not flowing through) the water meter. Conversely, the donor property's meter would be registering the water consumption of both premises. As such, both the donor property and the recipient property would be billed based on average consumption, described in more detail in the coming sections.

9 - Customer-to-Customer Agreements

Any agreements between donor and recipient property owners are strictly between those two parties; the City does not facilitate those conversations and an occupant at each property must be home at the time of temporary line installation.

10 - Temporary Line Water Billing

When a temporary line is installed by the City, both the donor property and receiving property will be billed historical consumption averages plus the fixed rate for the duration of time they are connected. Water meter readings will be taken for unaccounted water calculations. Any customer that connects a temporary line without City approval will be billed for all water used.

11 - Private Property Plumbing Alterations

This was mentioned above in the temporary line installation section. Properties will only be eligible for a temporary line if there are suitable plumbing fixtures to connect to. The City is not responsible for any aspect of private property plumbing installation or alterations.

12 - Supply of Potable Water

If a customer is rendered without potable water, the City will ensure that suitable locations are made available to fill up customer-supplied container(s). The City generally will not supply or deliver pre-bottled water but may consider it under extenuating circumstances or in partnership with other organizations, or as directed by Senior Management and/or the Municipal Emergency Control Group.

13 - Shower Facilities

In times of extended service disruptions, the City may consider facilitating arrangements at local facilities to ensure access for personal hygiene reasons. This is primarily arranged at City owned/affiliated facilities during regular business hours. Residents will still be encouraged to find their own arrangements as this service may have limitations or be paused with short notice. It is recommended that the City does not commit to providing these services except in the case of a Declared Emergency or other extreme scenario.

14 - Laundry Facilities

Like showering facilities, residents left without water may request access to laundering facilities. Being that these are generally pay-per-use laundromat type facilities, coordination can be challenging. Generally, no receipts are generated for reimbursement and vouchers are unavailable. It is recommended that the City avoid committing to this level of service due to the logistical and administrative burden.

Resource Alignment:

Financial Resources

Financial resources required to deal with frozen water emergencies can be difficult to predict. Many factors need to be taken into consideration and the severity and number of residences affected is often determined by weather patterns. However, defining the standard of service prior to an emergency will provide a better framework to track these costs.

Human Resources

Establishing levels of service will help define staff expectations and develop efficient processes to manage human resources. Frozen water emergencies can escalate quickly; resourcing and training additional support can be challenging. It is generally best if existing staff are proactively managed, effectively trained, and protected from being overextended.

The described service levels include a number of direct and indirect impacts to Water Billing and Collections staff that should be clearly recognized. Many of these practices are already in place today, not just future considerations. Several parts of the program require staff to manually adjust accounts, including billing customers based on historical averages for the running water program, adjusting both donor and receiving properties for temporary service lines, and applying charges for unauthorized connections or meter damage. These are not standard billing activities. They require staff to step outside normal processes, review each case, and make manual changes, which is time consuming and increases the risk of error. This also requires close coordination with operational staff to ensure the right accounts are adjusted at the right time.

In addition to these direct responsibilities, there is a clear impact on workload through increased customer contact. Customers affected by frozen services or adjusted billing are more likely to call, question their bill, or dispute charges, especially when billing is based on estimates or shared arrangements. This results in added pressure on front-line staff and requires clear communication, consistent application of policy, and defined escalation paths to manage concerns and maintain public trust.

Time and Scheduling

Once service levels are adopted, Staff can begin to revise existing operating and response procedures to align with the refreshed expectations. Staff will be trained in the new procedures and expectations, but like most emergency

procedures they will only really get tested during the next extreme frozen service event. Since most current water distribution staff didn't experience the last emergency event, the development of these new procedures will be a beneficial part of their training.

Technology and Infrastructure

No new technologies have been found to assist with frozen water, but the recent water meter replacement project will provide remote read capabilities and real-time flow data to support the program.

Climate and Environmental Impacts:

As extreme weather events become more frequent, the likelihood of frozen water events may increase.

The recommendation supports the City's Corporate Climate Change Adaptation Plan.

Communication and Engagement:

This report has been posted to the City's website with the agenda in advance of the meeting. A media release will be issued, and updates to the City's webpages will be completed.

Report Developed in Consultation With:

This report was developed in consultation with water operational staff including the Superintendent of Water Distribution and the Water Distribution Coordinator who were intimately involved in the last significant frozen water event.

Attachments:

None

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

Submission approved by:
Tim Simmonds, City Manager

For more information on this report, please contact Bryce McDonald, Manager of Water and Wastewater at bmcdonald@owensound.ca or 519-376-4274 Ext 3224.