



City of Richmond

Report to Committee

To: General Purposes Committee **Date:** December 22, 2022
From: Suzanne Bycraft **File:** 10-6360-13/2022-Vol
 Director, Public Works Operations 01
Re: **2022 Snowfall Event and Response – Summary and Outcomes**

Staff Recommendation

1. That the staff report titled “2022 Snowfall Event and Response – Summary and Outcomes”, dated December 22, 2022, from the Director, Public Works Operations, be received for information.
2. That a letter be sent to the Ministry of Transportation and Infrastructure to request a review of their response protocols for anti-icing, pre-treatment and de-icing of roads that are located in Richmond, but under their jurisdiction.

Suzanne Bycraft
 Director, Public Works Operations
 (604-233-3338)

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Communications	<input checked="" type="checkbox"/>	(Acting)
Parks Services	<input checked="" type="checkbox"/>	
Facility Services & Project Development	<input checked="" type="checkbox"/>	
Community Bylaws	<input checked="" type="checkbox"/>	
Emergency Programs	<input checked="" type="checkbox"/>	
Economic Development	<input checked="" type="checkbox"/>	
Finance Department	<input checked="" type="checkbox"/>	
Community Social Development	<input checked="" type="checkbox"/>	
Recreation Services	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

At the December 21, 2022 Public Works and Transportation Committee meeting, there was general discussion regarding response priorities and protocols during significant snow and ice weather events.

This report provides additional information in this regard, highlighting the overall context of the City's response broadly as well as discussion on impacts of jurisdictional matters for roads in Richmond for which the Ministry of Transportation and Infrastructure (MOTI) is responsible.

This report supports Council's Strategic Plan 2018-2022 Strategy #1 A Safe and Resilient City:

Enhance and protect the safety and well-being of Richmond.

1.2 Future-proof and maintain city infrastructure to keep the community safe.

Analysis

Context and Purpose

The City undertakes a number of actions to prepare and respond to ice and snow events to help keep major arterial routes safe and passable for commuters to support daily community activities and to maintain access to critical services. Weather is evolving with climate change, causing increasing bouts of extreme cold and heavy snowfall received over short time periods.

While each situation is unique with actions adjusted accordingly, the City's response can be impacted by factors outside of our direct control. When the response for treatment of highways and infrastructure not managed by the City are insufficient, traffic can become backlogged onto City roads, restricting their serviceability by City crews.

As more people move further out of the urban core, impassable road conditions can negatively impact the ability for staff to travel to work. While this impact is mitigated for staff that have the ability to work remotely, the City's snow and ice response is highly dependent on operational staff being able to safely travel to the Works Yard and operational sites.

Response Priorities

The City's response is guided by Council Policy 7013, which establishes the priority routes for treating roads. Arterial and section line roads are first priority, collector roads are second priority and interior collector roads are third priority. City staff also clear bus stops and wheelchair letdowns as staff resources allow, and City facility parking lots and walkways are serviced as resources permit.

The typical treatment process includes the application of brine several days ahead of the snowfall to help prevent snow and ice from bonding on the roadway when the snow begins to fall. The City's fleet of large trucks with plows are required to service the arterial roads, where the smaller

truck fleet is used for areas such as parking lots and smaller areas such as the entrances to interior subdivision collector roads. Road treatment is followed by continual plowing and re-application of salt or brine as the snowfall continues and the applied brine/salt is able to ultimately break the ice bond to allow the snow to be plowed off the travelled roadways. This is temperature dependent. In very cold temperatures, it takes multiple passes and continued treatment of brine to break that ice bond to achieve fully cleared roads. The City's use of brine is also an effective treatment option in reducing overall salt use. In the past three years, the use of brine has helped to reduce the City's overall salt use by 5,000 tonnes.

The collective efforts of staff throughout the organization are leveraged to support the response, maintain services, and assist the public as noted in the following sections.

Snow Response Operations

The 2022 season commenced with the first major snow event occurring on November 29, 2022. All first and second priority routes had been pre-treated with brine. As snow began falling, the City's full fleet of snow response vehicles were in operation applying brine and were outfitted for snowplowing. Crews operated 24 hours per day on 12 hour rotational shifts.

Significant traffic issues occurred during this first event due to conditions on roads not managed by the City, notably, the Alex Fraser Bridge and the George Massey tunnel, both of which are managed and maintained by MOTI. These traffic conditions impacted the ability of the City's snow response fleet to reach roads in various parts of Richmond. Staff were able to adjust response routes to avoid high congestion areas and then return to these areas once traffic conditions subsided. The traffic issues were compounded on several main arterials in and out of Richmond.

Richmond RCMP contacted City crews for assistance in clearing and treating the Steveston Highway overpass and to further assist all immobilized traffic by clearing and treating the Highway 99 onramp. Both the overpass and the onramp are under MOTI jurisdiction, but MOTI was unable to respond. As a result of the severe impacts and traffic delays caused by this event, staff suggest that it would be appropriate to request that MOTI review their response protocols for anti-icing, pre-treatment and de-icing of roads that are located in Richmond, but under their jurisdiction.

The City's response continued on an as-required basis since the November 29, 2022 event with pre-treatment or brining continuing at various times based on conditions per normal operating practice. Commencing Sunday, December 18, 2022, the City's full response fleet began operating 24 hours per day to treat roads. Multiple staff teams were established to clear bus stops, sidewalk letdowns, parking lots as well as walkways, ramps and entrances at City facilities. During the December 18th week event, there were some traffic backlogs at the George Massey Tunnel and Alex Fraser Bridge caused by the counter flow lanes not being activated.

The City's December 18th response level continued until weather conditions eased. The operational response then transitioned to drainage activities to clear catch basins, and to clear pump station and canal screens to avoid and/or mitigate the impacts of localized flooding caused by the snow melt. This was further complicated by freezing rain and heavy rain conditions.

A significant risk to the City's response capacity is the availability of salt supplies. When events of this magnitude occur, there is considerable demand across the region. Due to the limits of salt storage capacity at the Works Yard, reliance on daily provisioning from the supplier can create risks when demand exceeds supply across the region. When this occurs, salt use is rationed and higher proportions of sand are added to help supplies last longer.

Response Costs and Economic Considerations

The snow and ice budget is based on a four year rolling average. The 2022 total budget allocation, inclusive of major road network funding, is \$1,384,200. Expenditures in 2022 are projected at \$2,202,790, based on the severity of the most recent events. Costs per event are dependent on the level of response required based on the weather conditions.

To address the \$818,590 deficit, \$291,000 will be allocated from the snow and ice provision account, which is established for this purpose. The remaining amount will be accommodated within Engineering and Public Works operating budgets.

A budget allocation of \$1,413,100, including the major road network funding, is earmarked in the 2023 operating budget, based on the four year rolling average noted.

Beyond the City's response being geared principally around safety and transportation needs, there are significant economic impact considerations. Adequate snow response is essential to supporting a strong and resilient local economy, particularly for a logistics hub such as Richmond where nearly 70% of economic activity is generated from the movement of goods and people (2014 Resilient Economy Strategy). The road network is a vital link in an inter-connected and multi-modal transportation system. Any disruptions to this road network, such as from a major snow event, can impact economic activity through business closures, reduced retail spending, limited worker productivity or lost income, supply chain disruptions, damage to property, insured losses, and other related aspects.

City Facilities and Warming Centres

Facilities: The majority of City facilities remained open throughout the snow events.

Programs and services at Community Services facilities across the City were generally maintained with some program cancellations and early closures due to staff shortages. Staff prioritized holiday camp programs throughout the snow events as these often serve as day care for working parents. Patrons greatly appreciate the opportunity to continue their activities despite the inclement weather.

City staff have completed a City-wide facility risk assessment to identify vulnerabilities in response to the snow event where the potential exists for very heavy loads on roofs and structures. This can be exacerbated when freezing and heavy rain combines with the accumulated snow loads on these structures. Staff monitor these issues throughout significant events to address any identified risks to ensure the safety of staff and the public.

Warming Centres: The City activated two cold weather warming centres at the South Arm Pool and Brighthouse Pavilion from December 19-25 and worked with community partners, The Salvation Army and Turning Point Recovery Society, to ensure those at risk of or those experiencing homelessness were aware and supported. During the cold weather event, both facilities averaged 11 individuals per night. In addition, The Salvation Army, which operates the Emergency Shelter, advised staff that they would not turn anyone in need of shelter away and sleeping mats would be made available if the 45 beds were full. To ensure there was awareness in the community about the shelter options available, both organizations regularly communicated information out to those organizations who work with vulnerable populations.

Volunteer Assistance Program

The Snow Angels Program was introduced in 2010 and connects volunteers with elderly citizens and residents with mobility/health challenges during a snowfall event to assist with shovelling snow from sidewalks and/or walkways. The program was activated for this snowfall event and as of December 22, the City had 40 volunteers spending approximately 300 hours servicing 73 Richmond residents. The Snow Angels program is typically continued for the remainder of the event duration.

Residential Garbage and Recycling Collection

As residential interior roads are not a response priority, their condition makes it difficult for garbage and recycling collection vehicles to navigate through snowfall accumulations. Service can be significantly slowed as access to carts and the build up of snow often blocks access to recycling receptacles. During the November snowfall event, the City's contracted service provider for garbage and recycling collection was able to provide all services on residents' normal collection day, without the need to defer to subsequent days or postpone components of services. In contrast, other cities suspended Green Cart and Blue Box services.

The December snowfall did impact services as cold conditions and higher accumulations of snow made service difficult and in some cases, unsafe for collectors. The general protocol for garbage and recycling services prioritizes garbage collection followed by collection of blue box materials. Where necessary, Green Cart collection is postponed to the following week since there are lower volumes of materials and collection is complicated by the fact that the contents in Green Carts freeze, therefore materials do not fall out of the cart when tipped. In situations where traffic advisories are issued, collection must be suspended for safety reasons.

In situations where services cannot be completed the same week, residents are advised that additional amounts will be collected the following week to compensate for the service impacts. Staff note that numerous other cities suspended all of their collection services on Tuesday, December 20, and Green Cart collection for the duration of that week.

Residential Sidewalk Clearing

Owners and occupiers of properties are required to remove snow and ice from sidewalks adjacent to their property under the requirements of Traffic Bylaw 5870. As of December 20, 2022, the City had received 48 calls for service with 33 tickets issued. The City's Community Bylaws

section enforces Section 6 of the City's Traffic Bylaw No. 5870 and addresses complaints relating to snow.

Public Communications

A comprehensive communication strategy has been established to provide up-to-date information and key messaging to the public. The City's various departments, in coordination with Corporate Communications, facilitates snow response updates to the City's website which include, but are not limited to:

- Creation of a dedicated Information Bulletin with updates and information on impacts to facilities, services and programs:
<https://www.richmond.ca/newsevents/city/snowfall29nov2022.htm>
<https://www.richmond.ca/newsevents/city/snowfall20dec2022.htm>;
- Continue to maintain and update www.richmond.ca/weather, which includes information on the City's snow response, a map of snow clearance routes, the Resident's Guide to Winter Weather and more;
- Promote information on the website's homepage at www.richmond.ca;
- Post regular updates and respond to questions through the City's social media channels; and,
- Post information on intersection traffic cameras, which residents can view before leaving their homes to help with route planning.

Financial Impact

None.

Conclusion

This report identifies the measures the City takes throughout the organization to respond to significant weather events to support the community. Snow clearing activities are prioritized in accordance with available resources, with all being fully allocated to effect the best possible response and in accordance with Council policy. Access to bus stops is also prioritized to promote public transit. As noted in this report, treatment of some roads is the responsibility of MOTI which, if not effectively conducted, can negatively impact the City's ability to treat its roads where traffic backups occur. Staff suggest advocating to MOTI for improved protocols in this regard.

In addition to the primary response activities outlined in this report for snow response, there are a number of other activities undertaken broadly across the organization to address community needs, including but not limited to protecting City building infrastructure, bylaw enforcement, supporting residents requiring help for sidewalk clearing through Snow Angel volunteers, and robust communications to keep residents informed.

Key emergency service agencies are maintained to respond to service calls and warming centres are established to help vulnerable residents in extreme cold. These collective efforts across the organization contribute to a coordinated and well managed response.

December 22, 2022

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A handwritten signature in black ink, appearing to read 'L. Ford', written in a cursive style.

Larry Ford
Manager, Roads and Construction Services
(604-244-1209)

LF:vm