



**REGIONAL
DISTRICT
OF NANAIMO**

STAFF REPORT TO SOLID WASTE SELECT COMMITTEE

May 11, 2022

Curbside Collection Adverse Weather Operations and Communications Review

RECOMMENDATION

That the Curbside Collection Adverse Weather Operations and Communications Review report dated May 11, 2022, be received by the Solid Waste Management Select Committee for information.

BACKGROUND

The Regional District of Nanaimo (RDN) provides Automated Curbside Collection Service to more than 29,500 homes weekly. Food waste is collected every week, while garbage and recycling are collected on an alternating biweekly basis. Curbside collection service is provided to all single-family homes across all municipalities and electoral areas within the RDN, except for the City of Nanaimo which provides its own automated curbside collection program.

Table 1: RDN Curbside Collection Routes

Route	Communities Served
RA	<ul style="list-style-type: none"> • District of Lantzville • Snaw-naw-as First Nation • Nanoose Bay: central, south, east (<i>RDN Electoral Area E</i>) • East Wellington, Pleasant Valley, Extension, Nanaimo Lakes (<i>RDN Electoral Area C</i>)
RB	<ul style="list-style-type: none"> • Cedar, South Wellington, Cassidy, Yellowpoint (<i>RDN Electoral Area A</i>) • Gabriola Island (<i>RDN Electoral Area B</i>)
RC	<ul style="list-style-type: none"> • French Creek (<i>RDN Electoral Area G</i>) • City of Parksville: west • Whiskey Creek, Hilliers, Coombs (<i>RDN Electoral Area F</i>)
RD	<ul style="list-style-type: none"> • Town of Qualicum Beach • Errington (<i>RDN Electoral Area F</i>)
RE	<ul style="list-style-type: none"> • City of Parksville: east, Craig Bay • San Pareil (<i>RDN Electoral Area G</i>) • Nanoose Bay: Rocking Horse, Madrona (<i>RDN Electoral Area E</i>) • Qualicum Bay, Deep Bay, Spider Lake, Little Qualicum Estates (<i>RDN Electoral Area G & H</i>)

After a competitive process, including public consultation, the RDN and Waste Connections of Canada (WCC) entered a 10-year (2019 to 2029) contract to provide the Curbside Collection service. WCC deploys a fleet of 9 trucks to collect materials from 5 distinct routes, comprised of approximately 45 sub-routes. WCC employs trained and certified collection staff who must independently decide if weather and road conditions are safe enough to start and continue operations. Public consultation heavily guided the competitive process and saw residents strongly prefer lower costing to increased service delivery assurances (Attachment 1).

The 10-year contract includes plans to upgrade vehicle tracking and auditing software, assisted by radio-frequency identification (RFID), Automatic Vehicle Location (AVL), and Global Positioning System (GPS) technology. Not yet fully deployed, this software will allow both the contractor and RDN staff to track collection vehicles on a house-by-house basis. Further, by integrating existing and planned technological infrastructure, the RDN will be able to message route disruptions on a more distinct street-by-street basis instead of messaging entire routes. Once fully deployed or tested, these systems will aid RDN staff in messaging residents in the future.

The RDN, geographically spread out, with unique and diverse topographical terrains, can at times be impacted by adverse weather including high winds, rainfalls, and snowfall events. Road conditions can greatly vary, with municipalities responsible for their own snow clearing and ice prevention, and electoral areas and highways falling under the purview of the provincial Ministry of Transportation and Infrastructure (MoTI) and its contractor. Each snow clearing operation sets a schedule of priority levels, usually deferring residential streets as the last priority and only after active snowfall has ended.

The Adverse Weather Operational Policy (Attachment 2) was introduced with the manual collection system in 2017 to streamline the operations and communications response during times of interrupted service. The policy had not yet been updated to reflect the automated service. The primary service restoration response utilized in the manual service was to allow additional material to be set beside the waste bins. Corresponding with the public consultation findings (Attachment 1), the new contract with WCC did not provide for additional resources to collect waste not contained within the automated carts.

High snowfall events, followed by persistent freeze-thaw cycles in the Winter of 2021/2022, resulted in the majority of the region's roads being covered in layers of ice; therefore, Curbside Collection was either cancelled, suspended, or delayed for 19 days. It is likely that with increased climate change that severe weather, such as that seen in the Winter of 2021/2022, will continue to negatively impact the RDN Automated Curbside Collection service in the future. Reviewing the Winter 2021/2022 weather events helps to analyze operational efficiencies and deficiencies to identify solutions for when future adverse weather events occur.

Winter 2021/2022 Adverse Weather Event

Accumulating snowfalls disrupted the regular curbside collection from December 24 to December 31. After the five initially cancelled collection days, impacting the entire service (29,500 households), the contractor worked to restore service from Sunday, January 2, when and where safe to do so.

The disruption required ten days to restore service for the five cancelled routes, including seven scheduled collection days plus an additional three weekends and statutory holiday days. After five days of missed regular scheduled collection days, on January 5th the region experienced the highest daily snowfall record within the service period at 49.2 cm, followed by five further freeze-thaw cycles.

Table 2: Weather Data (Dec. 23, 2021, to Jan. 12, 2022)

Date	Min. Temp (C)	Max. Temp (C)	Freeze-Thaw Cycle	Snowfall (cm)
Thu, Dec. 23	-2.5	3.5	Yes	7.0
Fri, Dec. 24	-0.5	1.5	Yes	8.2
Sat, Dec. 25	-2	0.5	Yes	10.0
Sun, Dec. 26	-7	-6		9.0
Mon, Dec.27	-8	-6.5		4.4
Tue, Dec. 28	-8	-3		0
Wed, Dec. 29	-7	-2		6.2
Thu, Dec. 30	-5	0.5	Yes	1.2
Fri, Dec. 31	-7.5	-1		0.8
Sat, Jan. 1	-10.5	5	Yes	13.4
Sun, Jan. 2	0.5	5		0
Mon, Jan. 3	-2	4	Yes	0.2
Tue, Jan. 4	-2	3.5	Yes	0.2
Wed, Jan. 5	-2.5	0.5	Yes	49.2
Thu, Jan. 6	-1.5	3.5	Yes	0
Fri, Jan. 7	-0.5	3.5	Yes	0
Sat, Jan. 8	-4.5	4	Yes	0
Sun, Jan. 9	-2.5	7.5	Yes	0
Mon, Jan. 10	-4	6.5	Yes	0
Tue, Jan. 11	1	7		0
Wed, Jan. 12	2	9		0

Source: Government of Canada – Historic Weather Data from “Nanaimo A” Weather Station (1955-2022)

By measure of total cumulative snowfall, followed by freeze-thaw cycles, the weather event over the Winter 2021/2022 season was the most severe event experienced since the RDN curbside collection service was introduced region-wide in 1989. As illustrated in Table 3, since 1954 the RDN has only experienced seven winters that surpassed 100 total centimetres of snow falling within a 15-day period.

The only other comparable extreme weather event within the service’s history was in the winter of 2008-2009, with 115.4 cm compared to this year’s 109.8 cm. However, the 2008-2009 winter event had much fewer freeze-thaw cycles (5) with a maximum of two consecutive freeze-thaw cycles, compared to the recent event with ten total and eight consecutive freeze-thaw cycles.

Table 3: Historic Total Snowfall and Freeze-Thaw Cycles

Winter Season	Total Snowfall Within a 15 Day Period (cm)	Number Of Freeze-Thaw Cycles Following 100+ cm Total Snowfall Event
1964-1965	113.4	14
1965-1966	184.8	11
1974-1975	126.9	10
2021-2022	109.8	10
1968-1969	106.9	9
1970-1971	112.6	7
2008-2009	115.4	5

Winter 2021/2022 Operational Response

The decision to operate during winter weather conditions is made by the collection contractor and ultimately lies with each individual driver. Each driver, intimately knowledgeable about each route’s terrain, must determine if collection can occur safely on streets with accumulated snow and/or ice. Road conditions can significantly vary, with routes falling across multiple jurisdictions for snow clearing and the bulk of collections located on lower snow clearing priority streets. Ultimately, the safety of the public and workers is the primary concern of collection operators, and the Winter 2021/2022 road conditions did not support regular collection operations.

By Friday, December 31, two service restoration plans had been implemented in alignment with the Adverse Weather Policy but were consequently cancelled as unsafe road conditions continued to negatively impact service delivery. RDN Staff and WCC found an opportunity within the contract to restore service on two non-collection days: Sunday, January 2 and Monday, January 3, the observed statutory holiday for New Year’s Day. These additions gave a total of seven days, January 2 to January 8, to restore collection service for all five interrupted routes and to resume the regular collection schedule in the timeliest manner on Monday, January 10. With the RA Route having service cancelled before the Christmas holidays, it was decided to restore collection in the order routes were missed, collecting garbage and recycling in the omission of the lower-volume food waste stream.

Over the week of January 2 to January 8, further snowfall and icy road conditions limited collection to four partial days. Adhering to the third service restoration plan, a total of ten collection days were required to restore service for the five missed routes. To alleviate the stress on residents with accumulating holiday waste, free drop-off was introduced at the Regional Landfill, Church Road Transfer Station, and a temporary drop-off site on Gabriola Island. A subcontractor was retained to host the temporary drop-off site and assist with curbside collection on Gabriola Island, and supplement collection in RDN Electoral Area B. Furthermore, a special food waste collection day was added for Route A on Saturday, January 15.

The disruption caused by the Winter 2021/2022 weather event, and respective communications, were negatively impacted by an attempt to restore service in a manner as timely as possible. This is demonstrated in Attachment 3, which compares scenarios for the Winter 2021/2022 event as it occurred and if the revised Adverse Weather Operational Policy was followed. The result would be a negligibly longer service restoration period, but significantly improved communications plan resulting in easily understood service provision and reduced overhead.

Winter 2021/2022 Communication Response

Adverse weather has long impacted the RDN Curbside Collection program, albeit to a lesser degree. In 2016, RDN staff and the RDN Curbside Collection Contractor developed an Adverse Weather Policy with specific messaging. Following this policy has been effective in helping to manage all inclement weather events until the Winter of 2021/2022.

Staff utilized three primary communication channels to provide residents with detailed information specific to each route. Comprehensive, service-wide information was posted as daily service alerts on the RDN website and a pre-recorded greeting on the curbside collection phoneline, and route-specific information was made available through direct phone calls and emails, and by entering the service address into the RDN Curbside reminder and service alert system. The RDN Curbside system sends immediate and timed messages through emails, phone calls and notifications on the RDN Curbside smartphone app.

Additionally, during the event staff regularly utilized secondary communication channels to distribute service-wide information and direct residents toward the primary communications channels. The secondary communications channels include the RDN Facebook and Twitter pages, the RDN curbside collection webpages, and auto-replies on the curbside collection email address. External communications channels included updates with the RDN's member municipalities, inquiries responded to by the collection contractor, and service information shared by media outlets and social media.

The three service restoration plans, and the extended disruption period, resulted in the need for complex messaging to be updated for all routes on a daily basis. With the AVL and RFID software not yet fully deployed, significant staff hours and overtime were required to confirm the status of completion for every community within the five routes and coordinate the respective communications daily updates. Following the order of cancellations, the service restoration schedule needed to be amended each day the collection window was shortened due to snow and/or ice. This resulted in significant resident confusion and an extremely high volume of phone calls and emails to the RDN and WCC, as well as referrals from RDN's member municipalities. At its peak, RDN administrative staff responded to hundreds of calls per day, and additional staff were brought in to assist.

Prepare for Future Adverse Weather Events

Moving forward, it should be expected climate change will create more severe and unpredictable weather events. Accordingly, the service should strictly adhere to the Adverse Weather Policy for the highest resilience in future weather events and pave the way for easy-to-follow, consistent communications. Attachment 3 demonstrates how following the policy would improve the operations and communications response in the 2021/2022 event.

Operations

The Adverse Weather Policy will be amended to reflect details of the automated cart service, and expand the service restoration plan to the following:

- a) Attempt to restore collection the next two days, or the following weekend.
- b) If still not serviced within the next two days or weekend, collection will follow the next scheduled collection day.
 - o Based on severity (seasonal waste volumes), duration (total missed collections), and the area(s) impacted, the option to collect the waste streams as originally scheduled or omit Food Waste to collect Garbage and Recycling will be reviewed.
- c) If still not serviced on the next scheduled collection day, continue to follow the collection schedule, and allow for waived tipping fees of resident curbside materials at both the Regional Landfill and the Church Road Transfer Station.

Communications

In preparation for the upcoming winter, staff will work to ensure residents are made aware of the RDN's policy on adverse weather events and know how to access information during service interruptions. With a direct mailing to all occupants receiving service, adverse weather information will be included in the 2023 Curbside Calendar mailout. In addition, staff will utilize a broad diversity of other communications channels to promote signing up for email, phone call or smartphone app notifications on the RDN Curbside system. Approximately 45 percent of the 29,500 serviced households are already registered on the RDN Curbside system, providing a significantly higher reach than the platform's target of 30 percent.

Staff will continue to utilize the existing communication platforms during adverse weather events. Corresponding with the updated Adverse Weather Operational Policy, staff will update communications templates to reduce

overtime and ensure information is made consistent across all the RDN, contractor and municipality information channels. The resulting messaging will be simple to communicate across all routes and communities and would reduce the need for updates to a maximum of twice per week per route. To alleviate the burden on administrative staff during extremely high call volumes, staff will be exploring opportunities to utilize automated phone systems to communicate integral cancellation information through a recorded greeting.

Solid Waste staff have been working with the collection contractor to improve the reporting functionality of the onboard computer systems. Once these systems are fully operationalized, they will provide the outputs needed to communicate cancellations and restoration of service to a house-by-house and/or street-by-street level through the RDN Curbside system. It is important to recognize that in the short-term messaging will continue to be based on macro route disruptions (ex. RA, RB, RC, etc.), with the intent of achieving discrete house-by-house and/or street-by-street messaging in the future.

Long Term Operations and Communications Plan

Adverse weather, regardless of climate change, is likely to continue impacting Curbside Operations in the future. Regardless of the duration of service disruption staff will adhere to the Adverse Weather Policy. Only after a route has missed collection for two collection cycles (two weeks), will alternate disposal options be presented. These alternatives will result in Curbside Customers receiving waived tipping fees at either the Church Road Transfer Station or the Regional Landfill.

As the RFID, AVL & GPS system outputs further develop, RDN staff will integrate them into existing and new messaging systems to ensure residents are able to access information quickly and accurately, with the intent of delivering messages on a street-by-street basis.

WCC will ensure their collection operators remain at their Parksville facility for the entirety of their shift. This way when freeze-thaw cycles occur, collection staff can enter previously inaccessible areas in adherence to the Adverse Weather Policy. The ferry schedule to Gabriola Island has recently doubled in frequency and will improve the capacity for later starts in freeze-thaw cycle conditions.

There is an opportunity to optimize routes to increase the operational capacity during adverse weather events. Optimized routes could potentially align with snow clearing priority routes set by MoTI and the municipalities. In the meantime, staff have identified opportunities to work with the GIS Department to create targeted address lists which include the current routing boundaries and the snow clearing priority levels for roads.

When the current contract is nearing completion, staff will undertake further community outreach to determine if residents support increased service costs for increased service delivery. Although several options to ensure service delivery exist, such as plowing roadways ahead of collection vehicles (Attachment 4), the costs to augment the RDN Curbside Collection Program to provide this level of service have not been supported by residents in the past (Attachment 1).

FINANCIAL IMPLICATIONS

The actions listed above, which will improve the operations and communications response to adverse weather events, have no direct financial implications. However, if an enhanced level of service is selected, financial implications are expected which will require further, detailed analysis. Attachment 4 provides a conceptual level of cost information for comparison purposes. If the Board were to decide on increasing the level of service, parts of the existing curbside contract would need to be renegotiated.

STRATEGIC PLAN ALIGNMENT

People and Partnerships - Improve the governance and awareness of RDN activities for citizens throughout the Region.

REVIEWED BY:

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ATTACHMENTS

1. Adverse Weather-Related Feedback in the 2018 Resident Curbside Consultation
2. Adverse Weather Operational Policy
3. Operations and Communications Response Scenarios for the 2021/2022 Weather Event
4. High-Cost Measures to Increase Level of Service in Adverse Weather