INFORMATION ITEM
MEMORANDUM

To: Mayor and Members of Council

From: Nuria Rivera-Vandermyde, City Manager
Natalie Stiffler, Director of Transportation & Mobility
Scott Schlecht, Transportation Maintenance Manager
Daniel Sheeter, Principal Transportation Planner
Karen Stiner, Senior Budget Analyst
Lucy O'Sullivan, Transportation Planner
Ben Manibog, Senior Project Manager

Date: June 20, 2024

Subject: Information Item: Snow and Ice Response Review Project Update

---

EXECUTIVE SUMMARY

This report provides the City Council with an update on the Transportation & Mobility Snow and Ice Response Review project and preliminary budget estimates.

The project's purpose is to review the City of Boulder's Snow and Ice Response program's service, understand the community's preferences and needs, assess industry service levels, and consider program changes to better meet goals and expectations.

On December 21, 2023, staff brought an information item to council detailing draft program recommendations for the project based on analysis and community input. The item also outlined plans for additional community engagement in January and February 2024.

The core of the project recommendations is to establish a storm size response framework that clearly defines which transportation facilities will be cleared and the level of service the community can expect based on the severity of the storm.

The storm size response framework recommends expanding the snow and ice response network to include clearing snow from additional bus stops and streets to improve multimodal travel and accessibility. It also suggests supplemental sidewalk clearing by contractors to assist residents who are physically unable to clear sidewalks themselves, providing them with assistance to remain compliant with city code requirements.

To reach the recommended level of service and response timeframes, five medium-sized snow plows, eight T&M full-time employees (FTEs), and support from Utilities Maintenance FTEs would be required. Immediate implementation would require a start-up cost in Year 1 estimated at $2.69M. The addition of eight FTEs would help address the challenges experienced in past years with recruiting temporary snowplow drivers. Relying solely on seasonal staffing for this essential public safety service has proven to be unreliable. Due to a lack of qualified snowplow drivers across all departments during storm events, T&M staff are often required to work overtime and are unable to take time off during the winter season. Increased staffing would help address this issue, improve employee morale, and make driver positions more attractive to potential candidates.

Recognizing the citywide and departmental constrained budget condition, staff will utilize the recommended storm size response framework to prioritize snow and ice response within the existing budget. If the budget condition improves, the report provides financial information for individual project elements. Through 2024, staff will continue to advance non-budget portions of the project including final refinements to program criteria and racial equity analysis including infrastructure comparisons around racial equity and the use of crash data.

Following direction and confirmation from the 2025 budget process, staff will develop materials to communicate the program's new changes for the upcoming 2024/2025 winter season to the community.

FISCAL IMPACT

The Snow and Ice Response program is managed by the Transportation & Mobility Department (T&M) with an adopted 2024 budget of $1.67M. The annual budget is developed each year for predicted average weather patterns and events.

One or more significant snowfall events, or extenuating circumstances, can increase costs more than those allocations. If additional funding is required, reserves may be allocated through the city's supplemental appropriations process. In addition, for the T&M department budget, the Boulder Police Department accounts for costs involving sidewalk snow removal enforcement.

Due to the constrained departmental budget condition, no base cost increases or enhancements will be proposed for 2025 or future years at this time. Staff will utilize the recommended storm size response framework (see **Attachment A**) to prioritize snow and ice response within the existing budget. Staff identified additional program recommendations that require an estimated $2.69M in Year 1 and an additional $1.39M in subsequent years. These recommendations are broken down for discussion purposes in the Analysis section and are summarized in **Table 4**.

COMMUNITY SUSTAINABILITY ASSESSMENTS AND IMPACTS

- Economic: Safe and efficient travel via local streets, sidewalks, multi-use paths and the transit network affects the overall economic health of Boulder. The Snow and Ice Response Program seeks to limit impacts to the economy due to snowstorm events; however, significant events may result in a reduction of economic activity.

- Environmental: Snow and ice response operations and sidewalk snow removal efforts support multimodal transportation, which benefits air quality. The Snow and Ice Response Program utilizes pre-treatment, anti-icing and de-icing materials that provide a reduced environmental impact when compared to other products. The street sweeping program seeks to remove and safely dispose of residual de-icing material from all snow routes within 72 hours following a storm event when weather allows.

- Social: Snow and ice response operations and sidewalk snow removal efforts support mobility for a diversity of travelers and provide accessibility to employment centers, schools, recreational opportunities and shopping centers.

- Racial Equity: Snow and ice response operations provides access to a plowed street within 2-3 blocks of every residential building throughout the city. Additionally, in neighborhoods where the majority of residents park on-street, we have received mixed feedback about whether they want their streets plowed. We will continue to assess how best to handle operations on streets where on-street parking is highly utilized, acknowledging the need to balance safety and access.

BACKGROUND

The project's purpose is to review the Snow and Ice Response program's service, understand community preferences and needs, assess industry service levels, and consider changes to the program to better meet goals and expectations.

Boulder's Snow and Ice Response program is a significant investment of city resources. It supports the city's Sustainability, Equity, and Resilience Framework's (SER) and the Transportation Master Plan's visions of a safe, accessible, and sustainable multimodal transportation system connecting people with each other and where they want to go.

The program's existing level of service is not clearly defined, resulting in inefficiencies and increased costs to deliver snow services. The community has a range of expectations for snow response level of service and an unclear understanding of what services are provided and why.

The Snow and Ice Response Review project began in Fall 2022 and will conclude in 2024. Staff will prioritize a subset of recommended changes in this report for integration with the existing program for the 2024/2025 snow season. Due to the constrained departmental budget condition, no base cost increases or enhancements will be proposed for 2025. The current schedule is as follows:

- Fall 2022: Define the issue and provide contextual background.
- Winter 2022/2023: Seek community feedback on existing program operations.
- Spring-Summer 2023: Evaluate feedback and identify options.
- Winter 2023/2024: Seek community feedback on options for program changes.
- **Spring-Summer 2024: Select overall recommended program changes and rationale; prioritize a subset of recommendations for implementation.**
- Summer-Fall 2024: Reflect recommended modifications in 2025 departmental budget request.
- Fall 2024: Communicate program changes to community.
- Winter 2024/2025: First round of program implementation.

The Snow and Ice Response program focuses on facilities maintained by the Transportation & Mobility Department. Systemwide, the department collaborates with agency partners also responsible for clearing streets and paths under their purview, including the Utilities and Parks and Recreation departments, The University of Colorado – Boulder, Boulder County, the Colorado Department of Transportation (CDOT), Regional Transportation District (RTD), homeowners associations, and other private entities.

On December 21, 2023, staff brought an information item to the council detailing draft program recommendations for the project based on analysis and community input. The item also outlined plans for additional community engagement in January and February 2024. The core of the recommendations is to establish a storm size response framework that clearly defines which transportation facilities will be cleared and the level of service the community can expect based on the severity of the storm.

In Winter 2024, the city shared and sought feedback on draft recommended changes to the Snow and Ice Response Program based on community input received in the first round of engagement (Winter 2022/2023) and an analysis of existing program and departmental data. The draft recommended changes were presented in a virtual on-demand open house and questionnaire (both offered in English and Spanish). The questionnaire received 198 responses, split between 99% English responses and 1% Spanish responses. City staff also met with key stakeholders to collect feedback, including Community Connectors-in-Residence, the Center for People with Disabilities, National Federation for the Blind, Community Cycles, Boulder Transportation Connections and Boulder Chamber.

In the questionnaire and stakeholder meetings, staff sought feedback on the revised program purpose and goals and the draft recommended storm size response framework. Respondents supported (44%) or strongly supported (27%) the revised program purpose and goals and felt that the storm size response framework "mostly increased" (33%) or "definitely increased" (29%) their understanding of the city's snow and ice response. Respondents presented mixed opinions about how the proposed recommendations improve multimodal travel and accessibility for all compared to the existing program – 14% responded that the recommendations "definitely

improve" multimodal travel and accessibility, 34% "mostly improve", 32% "a little improved", and 19% "not at all improved".

Several additional themes emerged from the community and stakeholders:

- Multimodal travel and accessibility for all should be improved. Augmenting sidewalk clearing and scaling up shoveled areas can help achieve accessibility for all.
- The storm size response framework needs clarification before being finalized. The framework should be communicated to the public through a variety of methods to increase understanding.
- The Shovel-a-Stop program should be elevated to increase volunteers and the number of transit stops shoveled.

ANALYSIS

Budget Neutral Condition

Due to the constrained departmental budget condition, no base cost increases or enhancements will be proposed for 2025 or future years at this time. Staff will utilize the recommended storm size response framework to prioritize snow and ice response within the existing budget. Other recommended elements that do not require new or adjusted funding levels will also be implemented, including the updated program purpose and goals, level of service criteria aligned with current resources, updated standard operating procedures, and the commitment to expanded data and communications.

Storm Size Response Framework

Staff developed a prioritized framework for service that is supported by data. This approach allows the city, together with partners, to continue to provide snow and ice response to the community, while also allowing flexibility to scale the program up or down based on available staff, funding and changing infrastructure throughout Boulder.

The current program primarily uses street classification to prioritize snow clearing across the city. Major streets are prioritized into primary and secondary routes and cleared on a recurring basis depending on conditions such as traffic, time of day the storm begins and snowfall rate. Conditional routes are cleared after major storms and/or prolonged periods of forecasted below-freezing temperatures.

The recommended storm size response framework uses forecasted storm size to guide resource deployment on streets, multi-use paths and shoveled areas. The framework divides snow and ice response into small (trace – 3 inches), medium (3 – 8 inches), and large (8+ inches) snow events. When snowfall exceeds the forecast, the department will strive to meet the higher level of service commitment as resources allow. Additionally, the city's snow team may pre-treat streets and paths, provided that:

- The precipitation will start with snow (not rain or sleet).
- There is enough time to apply between snow events.

To better plan for more active snow seasons and associated budget estimates, staff broke out the previous historic snow data to show how much each year can vary in **Table 1**.

Table 1: Historic snow events by size from 2010 – 2021

Snow event size	Yearly average	Yearly minimum	Yearly maximum
Small (Trace – 3 inches)	24	16 (2011)	32 (2010)
Medium (3 – 8 inches)	9	5 (multiple)	14 (2019)
Large (8 or more inches)	3	1 (multiple)	6 (2020)
Annual total snow events	36	25 (2012)	46 (2013)

Source: NOAA

The storm size response framework outlines three street categories for prioritization, which adds 4.7 lane miles to the plow network. **Table 2** highlights these additional lane miles.

Table 2: Recommended changes to plowed streets

	Existing		**Recommended**		**Change**
Street lane miles	Primary	188.4 mi	First	196.7 mi	8.3 mi increase
	Secondary	213.6 mi	Second	204.2 mi	9.4 mi decrease
	Conditional	26.8 mi	Third	32.5 mi	5.7 mi increase
	Total	**428.8 mi**	**Total**	**433.5 mi**	**4.7 mi increase**

This restructuring of the program allows staff to focus on priorities we heard from the community: major streets, key pedestrian crossings, multi-use paths and critical bike routes. Focusing on the amount of snowfall makes communicating the city's snow response more understandable to the public compared to the existing system.

It is important to note that due to limited staff and equipment, the storm size framework timeframes (see **Attachment A)** may not be met under the budget neutral condition. The additional program recommendations detailed below would be able to fully operationalize the storm size response framework using an enhanced budget.

Enhanced Budget Condition

Additional program recommendations would expand the snow-ice clearing network to include more shoveled transit stops and streets. To reach the recommended level of service and response timeframes outlined in the storm size framework, five medium-sized snow plows and eight full-time employees (FTEs) would be required. In total, the start-up cost in Year 1 is estimated at $2.69M. After Year 1, an additional $1.39M each year would be required to maintain the new, expanded program (see **Table 4**). The additional program recommendations are detailed below.

Shoveled Areas

In the community and stakeholder engagement, staff heard that focusing clearing services on the most used transit stops does not meet the needs of the disability community. Basing snow

clearing on high-use stops may not cover where they live or need to go, forcing them to wait until snow and ice has melted to be able to access the bus for travel.

In the recommendations, staff proposed an additional 36 transit stops for contractor clearing for a total of 77 stops. The city also runs a Shovel-a-Stop program where volunteers clear transit stops in their neighborhoods, covering another 38 stops, for an overall total of 115 city transit stops serviced. Clearing these additional transit stops is estimated to cost $45,000 a year. **Table 3** outlines these recommended increases.

Table 3: Recommended increases to plowed transit stops

	Existing	**Recommended**	**Change**
Transit stops	**Total: 79** 41 contractor 38 adopted	**Total: 115** 77 contractor 38 adopted	36 additional transit stops

With the recommended additions and including transit stops cleared by RTD, CU-Boulder, and other agencies, all stops with ridership of more than 35 riders a day will be cleared of snow. As an optional increase, it would cost approximately $380,000 per year to clear the remaining 343 transit stops in the city.

Sidewalks and Multi-Use Paths

The recommendations include a new program for residential exemptions to supplement code-required clearing of snow from sidewalks by adjacent property owners. Residents that are unable to clear their own sidewalks due to physical limitations and that are not paired with a volunteer from the Snow Busters Program may qualify for an exemption.

Community members that qualify for an exemption will be added to contracted shoveling locations for the duration of the winter season. Adding this program improves the continuity of our sidewalk network and reduces travel difficulties for limited mobility users. This program is used by peer cities and was a common theme in community feedback. The program recommendations assume 250 locations using the residential exemption which accounts for a budget increase of $300,000 a year.

The overall recommendations also account for an increase in requests related to disability access. A contingency of $25,000 annually was added to cover additional clearing at vital transit stops that do not meet the ridership cutoff (35 riders a day).

All multi-use paths maintained by Transportation & Mobility will continue to be cleared and no changes in service are recommended.

Equipment and Labor

The recommended level of service increase to meet the new criteria requires an additional five medium-sized snow plows. If no staff are hired and no plows are purchased, the transportation network will still be cleared. However, the response time needed to clear snow would increase past the recommended timeframes, especially for large-sized snow events (more than 8 inches).

Each plow costs $315,000 with a yearly operations and maintenance upkeep of $15,000. The plows have a usable life of seven years. To replace each plow after its usable life, the replacement funding is broken up into yearly installments of $47,000. This totals to an upfront Year 1 investment of $1,650,000 and an ongoing increase of $320,000 a year, assuming immediate program implementation.

Each plow needs two FTEs to cover its operation, meaning ten FTE's responsibilities overall for the new additions. Remaining driver roles within existing utilities maintenance staffing can cover two of the positions leaving eight FTEs to hire. The average annual cost per position is an estimated $83,750 for a total ongoing increase of $670,000 a year.

The addition of eight FTEs would help address the challenges experienced in past years with recruiting temporary snowplow drivers. Relying solely on seasonal staffing for this essential public safety service has proven to be unreliable. Due to a lack of qualified snowplow drivers across all departments during storm events, T&M staff are often required to work overtime and are unable to take time off during the winter season. Increased staffing would help address this issue, improve employee morale, and make driver positions more attractive to potential candidates.

Flexibility and Future Planning

Table 4 describes estimated costs for the program's additional set of recommendations assuming an immediate (2024/2025 winter season) implementation timeline.

Table 4: Program estimated costs with immediate implementation

Program recommendations	Year 1 upfront costs	Year 2 and onward annual costs
New snow plows (5)	$1,650,000	$320,000
Hired FTEs (8)	$670,000	$691,000
New shoveled areas-transit stops (36)	$45,000	$47,000
ADA transit stop requests (5)	$25,000	$26,000
Residential exemptions (250)	$300,000	$310,000
Recommendations total	**$2,690,000**	**$1,394,000**
Optional increases		
Clear all transit stops (343)	$380,000	$392,000
Recommendations and optional total	**$3,070,000**	**$1,786,000**

NEXT STEPS

Due to the constrained departmental budget condition, no base cost increases or enhancements will be proposed for 2025 or future years at this time. Staff will utilize the recommended storm size response framework to prioritize clearing snow and ice within the existing budget. Other recommended elements that do not require new or adjusted funding levels will also be implemented, including the updated program purpose and goals, level of service criteria aligned with current resources, updated standard operating procedures, and the commitment to expanded data and communications.

Through 2024, staff will continue to advance these non-budget-related portions of the project including final refinements to program criteria and racial equity analysis including infrastructure comparisons around racial equity and the use of crash data. The first step of our operations review will begin this year starting with updating the plow driver's manual and standard operating procedures to incorporate recommended response timeframes and how to clear snow from newer infrastructure like protected intersections and protected bike lanes. After confirmation of the program criteria, staff will also conduct a route planning review to add streets to existing routes or flag for future implementation as resources allow.

Following direction and confirmation from the budget process, staff will develop informational materials to communicate the program's new changes for the upcoming 2024/2025 winter season to the community.

ATTACHMENTS

Attachment A: DRAFT Recommended storm size response framework graphic dated June 2024

	Snow Total								
	0 to 3 inches (up to the height of a credit card)			3 to 8 inches (the height of a credit card to about the height of a water bottle)			8+inches (about the height of a water bottle and higher)		
	Before Storm	During Storm	After Storm	Before Storm	During Storm	After Storm	Before Storm	During Storm	After Storm
1st Priority Streets			Clear by **12** hours after snow stops			Clear by **12** hours after snow stops			Clear by **24** hours after snow stops
2nd Priority Streets						Clear by **24** hours after snow stops			Clear by **36** hours after snow stops
3rd Priority Streets									Clear by **48** hours after snow stops
Off-Street Paths			Clear by **12** hours after snow stops			Clear by **24** hours after snow stops			Clear by **48** hours after snow stops
Shoveled Areas*			Clear by **12** hours after snow stops			Clear by **24** hours after snow stops			Clear by **24** hours after snow stops

*Sidewalks adjacent to both residential and commercial properties are to be cleared of snow and ice no later than 24 hours after snowfall stops, per Boulder Revised Code, Section 8-2-13.