



INFORMATION PACKET MEMORANDUM

To: Mayor and Members of Council

From: Jane S. Brautigam, City Manager
Maureen Rait, Executive Director of Public Works
Michael Gardner-Sweeney, Director of Public Works for Transportation
Greg Testa, Police Chief
Curt Johnson, Deputy Police Chief - Operations
Carey Weinheimer, Deputy Police Chief - Support and Staff Services
Tom Trujillo, Commander - Boulder Police Department
Jennifer Riley, Code Enforcement Supervisor
Kip Carroll, Transportation Maintenance Manager

Date: September 20, 2016

Subject: Information Item: Snow and Ice Control Program and Sidewalk Snow Removal Enforcement

EXECUTIVE SUMMARY

The city's official "snow season" begins on Labor Day 2016 and ends on Memorial Day 2017. With the onset of winter, city staff seeks to help ensure the City Council and members of the public are aware of the city's snow removal procedures.

This memorandum provides City Council with information about the city's Snow and Ice Control Program, sidewalk snow removal enforcement, and ongoing efforts to improve the city's overall snow removal operations and make them more efficient through:

- Proactive reviews of city operations and comparisons to other Colorado cities
- Analysis of data collected after each storm
- Use of analysis and lessons learned to inform continuous improvement of operations

Snow and Ice Control Program Goals

The city's Snow and Ice Control Program has the following goals that support the Transportation Master Plan:

1. Keep primary and secondary streets, on-street bike lanes and the off-street path system open.

2. Respond with enhanced service levels when significant snowfall impedes public mobility on residential streets, sidewalks and bus shelters.
3. Use materials and equipment efficiently and effectively to help reduce the dangers of traveling in inclement weather.
4. Support enforcement of sidewalk snow removal regulations ([Section 8-2-13, B.R.C. 1981](#)), which require all private property owners and residents to clear ice and snow hazards from public sidewalks or walkways abutting their property no later than 24 hours after a snowfall stops.
5. Communicate any delayed opening or early release decisions in advance of city functions before impending severe weather impacts the ability of residents or employees to safely arrive at their destination within the city.
6. Analyze forecasting and other real-time informational tools, assess local roads, and investigate the response of other agencies, including CDOT, Boulder County, CU, BVSD, and other nearby cities.

A Commitment to Keeping Travel Routes Safe and Clear

The program goals also respond to the community's expectation that roads will remain clear and safe for travel during inclement weather. Therefore, staff expects that city services will be temporarily suspended only during extreme weather-related events.

FISCAL IMPACT

The Transportation Division's budget accounts for snow and ice control operations for normal weather patterns and events. The adopted 2016 budget for snow and ice control is \$1,151,671.

Snow control on city streets is affected by the amount of snow, length of the storm, time of day, temperatures and traffic conditions, all of which affect cost. Like other Front Range communities, the City of Boulder does not plow all residential streets, because most snow typically melts within a day or two and because this additional level of service would significantly increase costs, impacting other high-priority community services. However, during significant events, with snowfall exceeding 8 inches, the city will strategically service neighborhood streets to address known problem areas (as reported by the public and maintenance staff), which can increase cost.

COMMUNITY SUSTAINABILITY ASSESSMENTS AND IMPACTS

- **Economic:** The safety and mobility of residents, workers and consumers is essential to the overall economic health of Boulder. The ability to safely travel streets, sidewalks and/or bus stops affects the city's overall economic health.
- **Environmental:** Snow and ice control operations and sidewalk snow removal efforts support multiple travel choices that benefit the environment. The city's street sweeping program and

selection of environmentally sensitive products help achieve air quality and water quality goals for the city and region.

- **Social:** Mobility is a key component to independence, particularly for people with disabilities, seniors, and schoolchildren who are adversely impacted if streets are unsafe or impassable or if sidewalks, bus stops, and multi-use paths are not adequately cleared of snow. The involvement of these populations in community activities, including employment, is essential.

BACKGROUND

The following details describe the key components of the Snow and Ice Control Program and sidewalk snow removal enforcement:

Preparation and Training

The city meets snow and ice control program goals by making full crews of well-trained professionals available, keeping well-maintained equipment ready when needed, and providing a safe environment for employees. Each year, crews receive education and training on the use of snow removal materials and equipment, and all plow operators are recertified on the equipment used to perform snow control operations. Equipment is thoroughly inspected and calibrated in August, as well as periodically throughout the season.

Weather-related Decisions About City Facilities and Programs

A standard operating procedure guides communication and assists the City Manager's Office with decision making regarding the status of city facilities and programming when an incoming severe weather event is forecasted. First, Transportation Maintenance assesses local streets, investigates the response of other agencies (e.g., the University of Colorado-Boulder, Boulder Valley School District, CDOT, Boulder County other nearby cities), and provides the Public Works Executive Director with this information and a recommendation regarding a potential delayed opening, early release of city functions, or public meeting postponement. The City Manager, in consultation with the Public Works Executive Director, makes the final decision to alter city functions or facility hours.

Snow Shift Staffing Schedules

During a snow event, Public Works maintenance staff work on two crews that serve rotating 12-hour shifts, beginning and ending at 3 a.m. This schedule continues throughout a snowstorm until the primary and secondary routes are cleared for safe travel. During the snow season, each crew rotates into the opposite shift on a bi-monthly basis.

A transportation maintenance employee is on standby 24 hours a day, seven days a week to track weather conditions and respond to notification of snow events. The Transportation Maintenance Supervisor and Manager also assess street surface conditions and gather other critical information to inform decisions about the appropriate response to various types of snow or ice events.

Street Plowing Operations

During snowstorms, 17 plow trucks operate on Boulder streets. Eight plow trucks operate on four primary routes (two per route), which are prioritized to serve major streets that provide regional travel connections. Seven plow trucks operate on secondary routes (one truck per route), which include streets that provide access to schools, hospitals, the Regional Transportation District (RTD) bus routes, and connections to primary streets. Two plow trucks operate on streets identified as part of the residential street plowing program and also respond to resident requests. A [map of the primary and secondary routes](#) is available on the city's snow website.

The city reviewed its residential street plowing program during the 2013-14 snow season, incorporating select streets that have been prioritized based on an analysis of street slopes. When eight or more inches of snow accumulates and temperatures remain below freezing for 72 consecutive hours, two trucks will plow selected residential streets in the 10 predetermined areas with steep slopes.

Boulder residents can also request snow plowing on a specific street by calling 303-413-7109 or making a [Snow Plow Request](#) using the Inquire Boulder website or mobile app. The city will respond to plowing requests in the order received, with priority given to requests related to ADA accommodations.

Deicing Materials

In order to minimize the environmental impacts of snow and ice control, the city uses alternative deicing and traction materials. City water quality staff has reviewed and analyzed the materials and found no significant impact to Boulder's water sources or distribution system. Water quality is a key goal for the city and its snow removal program. Therefore, street sweepers sweep the entire snow route network within 72 hours in order to clean up any remaining deicing particulates to help minimize impacts to storm water. No sand is used unless alternative deicing materials are not available from the supplier when public safety is an issue.

The liquid deicer is a magnesium chloride solution, a plant nutrient and soil stabilizer that is less corrosive than other deicing products. In 2008, the city switched to a more effective and environmentally friendly formulation of magnesium chloride called "Meltdown Apex." Meltdown Apex, which costs slightly more than traditional magnesium chloride, is more readily available from the supplier and continues to be effective at lower temperatures. Staff continues to analyze new and less-corrosive liquid deicers.

The granular material called "Ice-Slicer," used as a crystallized deicer, is composed of complex chlorides that dissolve over time and do not require street sweeping. However, in keeping with the city's commitment to air quality goals, monitored by the Regional Air Quality Council, staff attempts to sweep all snow routes within four days of a storm event, or as routes are cleared with bare pavement, whichever comes first.

Depending on weather conditions, streets are sometimes pretreated with liquid deicer before a storm to help reduce the buildup of snow and ice. The material or combination of materials used depends on existing and predicted weather conditions (i.e., the amount of precipitation and humidity) and pavement temperatures. Standard operating procedures also provide for the

proactive application of deicing materials on streets that have certain characteristics (such as steep slopes and significant shading) that contribute to more challenging conditions and typically generate a high number of resident requests for attention. Utilizing data collected from past service requests, this “spot plowing and treating” approach will occur at locations with significant elevation gain/loss and/or solar shading.

Multimodal System Improvements and Reconfigured Streets

The city has implemented multimodal system improvement projects, such as the Living Lab projects, that affect snow removal operations and have been incorporated into the route system. Staff will continue to ensure that the reconfigured streets and bicycle lanes are kept clear of snow and ice.

Transit Shelters

Transit shelter maintenance continues to be a challenge for the city and RTD. With nearly 1,000 transit stops located within Boulder, the city and RTD prioritize regular maintenance of high-use transit stops based on available human and financial resources. Snow removal is performed at remaining RTD transit stops on a limited basis by city staff or contractors, on a prioritized basis.

Sidewalk Snow Removal Enforcement

Section 8-2-3, B.R.C., 1981 requires that sidewalks adjacent to both residential and commercial properties be cleared of snow and ice no later than 24 hours after snowfall stops. Property owners, tenants and property managers can each be held responsible for failure to remove snow. Violation of the ordinance can result in a municipal court summons and fine (\$100 for first offense) or abatement, in which the city hires a contractor to clear the sidewalk at the property owner’s expense. Enforcement of the sidewalk snow removal ordinance is handled by the Code Enforcement Unit in the Boulder Police Department.

The National Weather Service website, <http://w1.weather.gov/data/obhistory/KBDU.html>, is the official resource for local weather conditions. The information is updated every 20 minutes. To learn when the 24-hour time period begins, community members can go to the website and look for the “Weather” column and corresponding time. The descriptions in the weather column will include “Overcast,” “Fair,” “Mostly Cloudy,” “Light Snow,” “Snow,” etc.

Code Enforcement may begin enforcing the snow removal ordinance 24 hours after the last mention of snow listed on this website. Residents may also check [Inquire Boulder](#) or call the code enforcement line at 303-441-1875 to learn the official time that snowfall stopped. During consecutive storms, the original stop of snowfall will be enforced if no apparent effort is made to keep the sidewalks cleared for safe passage.

When a Code Enforcement Officer identifies a violation of the sidewalk snow removal ordinance, the officer attempts to make contact at that location to have the snow removed. If no contact can be made, a 24-hour notice of violation is posted on the front door of the property. Only one notice will be issued to a property per snow season. A notice will also be mailed to the owner of record per the Boulder County Assessor’s office. After the expiration of the notice, an officer will re-inspect the property to confirm compliance. Should a property remain in violation and for repeat offences, the address will be added to a list that is forwarded daily to a contractor

for abatement of the hazardous condition. The property owner is then billed for all snow removal charges and assessed an administrative fee.

Officers use a daily enforcement GPS map that shows the snow enforcement history for every property in the city. This allows officers to quickly determine if a property should receive a notice or be abated for repeat offenses during the current snow season.

As they conduct parking patrols, parking service officers will be post courtesy notices to snow violations within their 10 assigned Neighborhood Parking Permit zones. These notices will increase the ability of the city to contact properties that have not shoveled and encourage voluntary compliance for the remainder of the snow season. Properties that fail to shovel will be reported to the Code Enforcement Unit for further enforcement.

The Code Enforcement Unit partners with the University of Colorado-Boulder Off-Campus Housing and Neighborhood Relations department, as well as other community and neighborhood groups, for an educational campaign that focuses on the importance to “Make it Clear,” with a focus on:

- Increasing community awareness of each person’s role in ensuring that sidewalks are cleared and safely passable after snow events
- The requirements of the sidewalk snow and ice removal ordinance
- The liability should a violation remain on private property

Education materials, in the form of detailed pamphlets, are delivered door-to-door in areas that have a high volume of new residents each season and a history of repeat violations. Information is also made available on the city website and through outreach to local media sources. “Make it Clear” will also direct people to resources for snow removal assistance and to volunteer opportunities to assist others in the community.

Additional code enforcement information can be found on www.inquireboulder.com under “Code Enforcement Unit,” which includes a link to the National Weather Service report for Boulder.

Evaluation and Operational Efficiencies

The Public Works Department continues to investigate ways to optimize the efficiency of snow and ice removal operations. By applying the latest advancements in technology and operational strategies to snow removal activities, the Public Works Department intends to:

- Enhance service delivery
- Strategically allocate and maximize existing resources
- Reduce costs and/or increase the scope of service
- Meet the community’s needs and expectations for snow removal services

In 2015-16, the department conducted an evaluation of critical activities related to winter maintenance and operations, utilizing a comprehensive third-party review of the Snow and Ice Control Program. The intent of this project was to advance the city's mission of meeting the Boulder community's need for cost-effective and efficient delivery of public services.

The third-party review of the Snow and Ice Control Program produced improvements that continue to be applied during each snow season:

- Immediate adjustments to staffing assignments and snow shift scheduling has resulted in a more proactive response to winter weather events and has allowed for more predictable schedules and an improved work/life balance for plow operators.
- Continued training of staff and calibration of equipment supports efficient use of materials.
- Enhanced reporting uses current information to guide performance for snow removal operations. Metrics include input, output and outcome measures for process control and level of service continuity across the city.
- Optimization of routes using GIS and applied routing technology.
- Incorporating recent technical innovations into the city's vehicle fleet reduces the number of fixed assets by using combination bodies instead of both trucks and spreaders. This change creates a safer work environment, reduces the need for additional equipment and maintenance, lowers capital costs and requires less effort to change from snow removal to traditional work.

NEXT STEPS

City staff will continue to evaluate the effectiveness of the Snow and Ice Control Program throughout the 2016-17 snow season. In addition to the Code Enforcement outreach efforts outlined above, staff will also communicate program information to the public through:

- News releases
- A utility bill insert
- Updates to the city's snow website (bouldercolorado.gov/public-works/snow), which includes details about the snow and ice control program and provides answers to commonly asked questions about snow operations

For more information about the snow and ice control program, please contact Kip Carroll at carrollk3@bouldercolorado.gov or 303-413-7116.

For more information about code enforcement efforts, please contact Jennifer Riley at rileyj@bouldercolorado.gov or 303-441-4285.