## Expanded Environment and Climate Review

For winter cities like Edmonton, comprehensive snow and ice control programs are essential to maintain safe, equitable and environmentally sustainable public mobility. The proposed Snow and Ice Control Policy has direct environment and climate interactions by influencing community GHG emissions, environmental monitoring and compliance and climate-resilient infrastructure design in the following ways:

| **Reducing GHG Emissions** | |
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| Related Action | Environment and Climate Interaction |
| Enhancing snow removal service in primary commuter bike lanes, bus stops, pedestrian crosswalks, and active pathways following snowfall events as per Attachment 9 and Attachment 10. | Transportation accounted for 34 per cent of community greenhouse gas emissions in Edmonton in 2024[1]. Prioritizing snow and ice control across public and active transportation networks, guided by the priority system in the current Snow and Ice Control Procedure, is foundational to achieving the City corporate climate resilience target, which aims to have 50 per cent of all trips made by public and/or active transportation by 2040. |
| Exploring the use of Snow melting technology to reduce reliance on snow storage facilities as per Attachment 10. | Though snow melter technology is presented as an option to reduce snow storage, it would introduce a new resource-intensive processing phase when compared to traditional snow storage facilities. Thermal snow processing requires substantial diesel energy inputs to melt snow artificially, therefore snow melters do not provide GHG reductions, even when factoring in reduced transportation distances. |
| **Environmental Monitoring and Compliance** | |

[1] City of Edmonton. (2025). *Fall 2025 Carbon Budget Update* (Report FCS03160). Retrieved from https://pub edmonton.escribemeetings.com/filestream.ashx?DocumentId=278885

| Related Action | Environment and Climate Interaction |
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| Upgrading calcium chloride systems to facilitate application on major roadways, as outlined in Attachment 11. | Calcium chloride and magnesium chloride de-icing agents are effective alternatives to sodium chloride. The exothermic dissolution reduces the need for additional salt applications, and they do not displace soil minerals as readily, reducing potentially negative impacts to the soil and soil organisms[2]. However, research also indicates that no road salt is considered safe for the environment, particularly in aquatic environments. While road salts are permitted for use as a de-icing agent to enhance public safety, they are regulated toxic substances under the *Canadian Environmental Protection Act* if released into the environment at sufficient concentrations.<br><br>**Opportunity:** To balance winter road and pathway maintenance for public safety and the protection of the environment, the federal Code of Practice for the Environmental Management of Road Salts outlines best practices for municipalities to follow. This best practice enables continued snow and ice control activities while minimizing environmental harm. The Snow and Ice team is actively working with a consulting firm to update and standardize the guideline documentation including the Salt Management Plan and Snow Storage Strategy. |
| Scaling up snow removal and street sweeping activities as per the Well Maintained City Package detailed in Attachment 9. | The City currently manages legacy site contamination from the annual storage of snow and winter sand stockpiles to protect public health and the environment. Enhanced service |

[2] Szklarek, S., Górecka, A., & Wojtal-Frankiewicz, A. (2022). The effects of road salt on freshwater ecosystems and solutions for mitigating chloride pollution - A review. *Science of The Total Environment*, *805*, Article 150289. https://doi.org/10.1016/j.scitotenv.2021.150289

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| | delivery of snow removal and street sweeping is likely to increase volumes of stored snow and/or pickled sand, requiring adequate containment, environmental monitoring, and disposal protocols to meet environmental compliance requirements and industry best practices.<br><br>**Opportunity:** Investing in targeted upgrades to three existing snow storage sites will help maintain enhanced service levels while reducing environmental risk by ensuring these facilities are equipped with impermeable, covered structures for snow and winter sand storage. Integrating melt water containment systems ensures that runoff is captured and treated rather than allowing contaminants to enter nearby soil, groundwater, or watercourses. Prioritizing these infrastructure design enhancements will enable the City to maintain robust winter safety operations while fulfilling its commitment to environmental stewardship and long term climate resilience. |
| The creation of temporary residential snow storage sites as part of the Exceptional Snow Event Package in Attachment 10. | The temporary stockpiling of snow in residential areas to facilitate efficient snow plowing during significant snowfall events is proposed, where the snow piles would be removed once plowing activities are completed. When managing temporary snow storage sites in residential areas, key considerations to minimize environmental risk include maintaining an appropriate distance away from waterbodies and prioritizing the removal of the temporary piles prior to a thaw event to avoid potential melt water contamination. |
| **Climate Adaptation** | |
| Related Action | Environment and Climate Interaction |

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| Ongoing climate-adapted infrastructure design and winter maintenance program research in partnership with the University of Alberta to inform key decision making as detailed in Attachment 8. | Climate change projections indicate an increased frequency of mixed precipitation, slush, and ice formation from freeze thaw cycles and generally warmer, wetter annual conditions.<br><br>**Opportunity:** To further account for climate variability and shifting weather patterns, the ongoing research described in theme 3 of Attachment 8 will explore ways in which Administration could implement climate-adapted infrastructure to account for warmer annual temperatures and increasing freeze-thaw events over the long-term. Administration may consider integrating alternatives such as permeable aggregate surfaces for sidewalks and pathways to help facilitate natural, lower-impact drainage and melting of snow and ice, compared to traditional pavements that are more prone to icing and cracking over time[3]. This could also reduce the need for winter maintenance where installed, as a lower frequency of icing may also reduce the requirement for sand and/or salt applications. |

**Snow and Ice Control Policy Linkages to The City Plan**:

- Intention 1.4.2. Ensure Edmonton's air, land and water are safe and clean
- Intention 2.4.2. Ensure public buildings and infrastructure are sustainable and resilient
- Intention 4.4.1. Support a low-carbon mobility system
- Intention 5.4.1. Ensure the safety and security of Edmonton's water supply, food systems, infrastructure and natural systems to support long-term resilience to flooding, droughts and extreme weather events.

[3] EPCOR. (Retrieved June 22, 2026). Permeable pavement. https://www.epcor.com/ca/en/ab/edmonton/conservation/incentives/rainwise-stormwater-rebate-program/permeable-pavement.html