

Status of Emergency Preparedness Focus on Risk - Heat-Related Risks

RECOMMENDATION:

That the Emergency Management Committee recommend that Council receive this report for the Corporate Record.

RECOMMENDATION OF THE EMERGENCY MANAGEMENT COMMITTEE, 2023 MAY 4:

That Council receive this report for the Corporate Record.

HIGHLIGHTS

- This report focuses on Calgary's heat-related disaster risks, and includes impacts to Calgarians, the importance of addressing climate change, and the well-prepared plans in place to prevent, prepare for, and support Calgarians during heat-related events. The City of Calgary's Disaster Risk Assessment has determined that there are five main heat-related risks to Calgarians: hydrological drought, water contamination from forest fires, extreme heat, wildland/urban interface fires, and poor air quality.
- Heat-related risks have been identified as priority risks, and climate change will continue to exacerbate the frequency and severity of heat-related risks, emphasizing the need to focus on prevention and mitigation of risks, as a priority in Council's Strategic Direction of Climate Resilience.
- **What does this mean to Calgarians?** If citizens and businesses are aware of the top disaster risks for Calgary and understand how they can prepare, they will be able to take actions that protect themselves, their families, their businesses, and communities.
- **Why does it matter?** Heat-related events could result in risk to health and life safety of Calgarians, with increased risk for vulnerable populations. High risk events such as drought and water contamination could have economic and environmental impacts for Calgary.
- Background and Previous Council Direction is included as Attachment 1.

DISCUSSION

Identifying Risks for Calgarians

The City of Calgary completes a Disaster Risk Assessment to understand local risks and develop strategies to reduce and manage the impact of future events. Risk is determined by the severity and frequency of an event, the number of people and assets exposed to the hazard, and socioeconomic, physical, and environmental factors. The assessment is updated annually, and a detailed *Disaster Risk Report* is released every four years in alignment with the municipal service planning and budget cycle. The results of the 2023 annual update of the Disaster Risk Assessment will be released later this year.

Heat-Related Risks for Calgarians

The Disaster Risk Assessment has identified and rated five heat-related risks that have the potential to impact Calgarians:

- (1) Hydrological drought (high risk and increasing): A prolonged condition that results in the reduction of water in the watershed below levels required to sustain needs.

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- (2) Water contamination from forest fires (high risk and increasing): Refers to catastrophic, widespread wildfires in Calgary's watershed. This has moved from medium to high risk in 2023 because the assessed impact on people has increased.
- (3) Extreme heat (medium risk and increasing): Involves high temperatures or a combination of high temperatures and high humidity creating a high Humidex.
- (4) Wildland/urban interface fires (medium risk and increasing): Refers to fires within wildland areas that interface with industrial, agricultural, or residential development.
- (5) Poor air quality (medium risk and increasing): Generally, the result of wildfire smoke in the summer and involves high levels of air pollution due to smoke.

Impacts of Heat-Related Events

Heat-related events with the highest risk rating for Calgary (hydrological drought and water contamination from forest fires) could have major economic and environmental impacts on the city. A severe drought event in the Calgary region could have an impact in the hundreds of millions of dollars to local gross domestic product, cause significant damage to ecosystems, and increase the risk of wildfires. Similarly, water contamination from forest fires could stress plant infrastructure which could require new treatment technology as well as damage aquatic and riparian ecosystems.

Other heat-related events such as periods of extreme heat and poor air quality, although medium risk and lower economic impact, could disproportionately impact vulnerable populations and those with chronic health conditions. Income, education, job and food security, housing, access to services, age, race, gender, disability, and other social determinants of health all factor into the impact that a heat-related event can have on an individual or community. Extreme heat events can particularly impact older adults or those with limited mobility living in isolation.

In June 2021, Calgary endured a historic heatwave with five consecutive days above 30 degrees Celsius and two days reaching 36.3 degrees Celsius (the second highest recorded temperature for Calgary). Alberta recorded the highest energy use on record, an increase in calls to 9-1-1, and an estimated 66 deaths attributed to extreme heat. During July and August 2021, extreme wildfires in Western Canada led to widespread air quality warnings in Calgary.

Climate Change and Heat-Related Risks

As identified in the *Disaster Risk Report*, climate change is expected to increase the frequency, duration, and severity of many hazards. Environment and Climate Change Canada warns that Canada's climate has already warmed and will continue to warm, with the average warming rate in Canada about double the magnitude of the global rate. This will intensify heat-related events, with more frequent and intense heatwaves, contributing to increased drought and wildfire risk.

Long-term Calgary-specific climate projections indicate that regional warming is expected to continue at an accelerated rate, resulting in shifting seasons and changes in precipitation, which can exacerbate drought, wildfire risk, and water quality concerns. The City of Calgary's *Climate Strategy* and *Climate Implementation Plan* provide guiding principles and plans to both monitor and mitigate local heat-related risks. To build communities that are more resilient to extreme weather events, the Climate & Environment business unit collaborates with the Emergency

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Management & Community Safety business unit and others to integrate climate adaptation into existing emergency management strategies and risk reduction objectives.

Preparing The City of Calgary for Heat-Related Events

The City's *Municipal Emergency Plan* provides an overarching plan to guide response and recovery to any type of emergency, including heat-related events. Attachment 2 summarizes the *Municipal Emergency Plan* and its annexes.

The City implements a range of plans, policies, and training to prepare for and mitigate risk:

- Regular spring and fall simulated scenario exercises validate emergency plans, procedures, policies, and public communication strategies. In April 2023, an extreme heat and drought event exercise will be conducted to test processes and plans.
- The City's *Extreme Heat Plan* establishes actions including identification of public cooling locations and water fountains, water distribution strategies, communication and information sharing among agency members, and the activation of Emergency Social Services to provide overnight cooling centres in exigent circumstances.
- The City's *Source Water Protection Plan* and *Drought Resilience Plan* (in development) include strategies for water management and protection of natural assets to support watershed resilience.

Preparing Calgarians and the Community for Heat-Related Events

The City provides a range of infrastructure, programs, and education to help mitigate the risk of heat-related risk events in communities and ensure Calgarians are prepared:

- Environment and Climate Change Canada has early warning systems in place to notify the public, emergency response personnel, community groups, and health providers in advance of heat events and air quality warnings.
- The City's *Climate Ready Home Guide* and *YardSmart* Program provide information to Calgarians to cool-off in their homes, protect their property from severe weather events and design water efficient yards.
- The Outdoor Water Conservation campaign in July and August provides Calgarians with tools and tactics to use water efficiently outdoors.

The City also has education programs and services in place designed to prepare and offer support to Calgarians in the event of heat-related risk events:

- An extreme heat map is provided on Calgary.ca to inform Calgarians of public cooling locations and water fountains. Community Strategies works in partnership with agencies to ensure Calgarians experiencing homelessness are provided this information.
- In the event of a drought, The City of Calgary has a bylaw with four-stages of outdoor water restrictions to prioritize water use.
- The Calgary Disaster Risk Explorer online resource offers the opportunity to learn about local heat-related risks, potential and historical impacts, and mitigation activities.

Supporting Calgarians During and Following Heat-Related Events

Incident response can be complex as it requires coordination and the ability to rapidly scale up depending on the extent of the heat-related impacts. The City has several measures in place to support community response to heat-related events:

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- Calgary 9-1-1 has mitigation strategies in place to manage call surges and ensure call prioritization is focused on citizen health and safety.
- Calgary 9-1-1 has established processes for connecting callers with appropriate resources to address a range of safety issues, including assistance for those sleeping outside during extreme heat events and connecting callers with the 2-1-1 Distress Centre for crisis options.
- Through the Critical Service Provider group, Community Strategies liaises with the Government of Alberta and non-profit organizations to assess and support populations facing vulnerability during a heat-related event.

EXTERNAL ENGAGEMENT AND COMMUNICATION

- | | |
|--|---|
| <input type="checkbox"/> Public engagement was undertaken | <input checked="" type="checkbox"/> Dialogue with interested parties was undertaken |
| <input type="checkbox"/> Public/interested parties were informed | <input type="checkbox"/> Public communication or engagement was not required |

The City engages nearly 60 Calgary Emergency Management Agency member organizations in education, training, simulated exercises, emergency response planning, and communications. The Agency consists of City of Calgary business units, government agencies, critical infrastructure operators, utilities, schools, industry groups, and community service providers.

IMPLICATIONS

Social

Heat-related events have the potential to disproportionately impact Calgarians with limited access to resources. The City's emergency planning aligns with the *Social Wellbeing Policy* of prevention by ensuring the social impacts of disasters are mitigated before disasters occur.

Environmental

Extreme heat and hydrological drought have the potential to damage ecosystems by stressing vegetation, wetlands, wildlife, urban forests, and aquatic ecosystems. Water contamination from wildfires can impact both aquatic and riparian ecosystems. The incorporation of climate risk management into the City's emergency planning aligns with the *Climate Strategy*.

Economic

Both drought and water contamination could negatively impact the economy, impeding delivery of services and stressing water treatment plant infrastructure. Calgary Emergency Management Agency members' work addresses the *Economic Resilience Strategy*, as mitigation efforts will result in future savings.

Service and Financial Implications

No anticipated financial impact

Planning, training, and public education activities for heat-related events reside in the current business plan and budget for The City of Calgary. Disaster response planning and preparation exist in the 2023-2026 Service Plans and Budgets.

RISK

Heat-related events present a risk to all Calgarians, especially those with chronic health conditions and limited resources, and could have an impact on Calgary's economy, ecosystem, and critical infrastructure. To ensure a sustainable and resilient city, the annually updated Disaster Risk Assessment informs business, policy, and capital planning for The City of Calgary.

**Community Services Report to
Emergency Management Committee
2023 May 04**

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EM2023-0299
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ATTACHMENTS

- 1. Background and Previous Council Direction
- 2. Municipal Emergency Plan Annex Summary
- 3. Presentation

Department Circulation

General Manager/Director	Department	Approve/Consult/Inform
Stuart Dalgleish	Planning and Development Services	Inform