

Status of Emergency Preparedness Focus on Risk: Severe Summer Weather

RECOMMENDATION:

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

HIGHLIGHTS

- As identified in The City of Calgary's Disaster Risk Assessment, severe summer weather such as tornadoes, hail, wind, heavy rain, and thunderstorms are among the top 14 potential disaster risks that could impact Calgary, and the risk is increasing as a result of a changing climate. Calgary Emergency Management Agency (CEMA) is committed to providing in-depth assessment and information on Calgary's risk environment and the work being done to address Calgary's high-risk hazards.
- **What does this mean to Calgarians?** Severe summer weather season from May to August is here and if Calgarians are aware of the risks and understand how they can prepare, they will be better able to take actions that protect themselves, their families, and communities to become more resilient.
- **Why does it matter?** Severe summer weather could have serious and negative impacts including critical injuries or loss of life, social impacts, as well as substantial damage to property and critical infrastructure, the environment, and the economy.
- Calgary is located within an area of high risk for tornadic activity and high to medium risk for severe weather in terms of both frequency and severity. Calgary is susceptible to heavy rains, both long-term and short-lived thunderstorms and risks include flooding, hail, wind, and tornadoes. Extreme hail every one to two years occurs within 50km of Calgary and, since 1991, there have been five extremely damaging and costly hail events. Additionally, Alberta averages 12-15 confirmed tornadoes per year.
- Impacts from several destructive and devastating severe summer weather events in or near Calgary include flooding that required evacuations, power outages, damage to homes and tree canopy, blowing debris, injuries, and loss of life.
- CEMA implements strategies focused on reducing risk and increasing resilience to help ensure that The City is prepared for the risks of severe summer weather. These strategies are informed by a Canadian Disaster Risk Reduction Framework and further aligned to a Calgary context by basing all work on a foundational local Disaster Risk Assessment which is conducted every four years and reviewed annually. These measures help ensure Calgarians can stay safe during severe summer weather risks noted above.
- Strategic Alignment to Council's Citizen Priorities: A city of safe and inspiring neighbourhoods.
- A background on risk engagement with the Emergency Management Committee can be found in Attachment 1.

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DISCUSSION

Every four years CEMA coordinates city-wide disaster risk assessments to understand Calgary's disaster risk environment, share risk information with Calgarians, and prioritize activities and allocation of resources. In 2018, CEMA conducted a **Disaster Risk Assessment** that assessed a total of 65 individual hazards and threats that pose a risk to Calgary. This foundational document is reviewed annually and is summarized in Attachment 2.

The Disaster Risk Assessment indicates eight of the 14 high risks are weather-related and recent data from the Insurance Bureau of Canada shows:

- Albertans have been hit hard by severe weather events: six of the 10 costliest insured natural catastrophes in Canada have occurred in Alberta.
- In the last five years, Alberta has accounted for about \$6.2 billion in insured losses, which is about 60 per cent of all natural catastrophic insured losses in Canada.
- Between 1983 and 2008, property and casualty insurers paid out an average of about \$425 million a year (in today's dollars) on weather-related losses across Canada. Between 2009 and 2020, insurers paid out an average of \$1.9 billion annually.
- The Calgary 2020 June hailstorm and the 2013 flood event were the costliest hailstorm and flood event in Canada's history with the hailstorm reporting insurable losses at \$1.3 billion and the flood at \$1.6 billion.

Attachment 3 provides a timeline of recent severe summer weather events in or around Calgary and their resulting impacts.

Preparing The City for Severe Summer Weather

The **Municipal Emergency Plan** provides an overarching plan to guide response to any type of emergency and CEMA has developed individual incident-specific plans like the **Spring and Summer Severe Storm Incident Response Plan** and **Tornado Incident Response Plan** to address aspects of each hazard that require special considerations and responses.

The City of Calgary implements a combination of both structural (hard infrastructure and physical construction) and non-structural (plans, policies, training, etc.) mitigation in order to reduce the risk of severe summer storms that include:

- A tornado-focused exercise completed in 2020 and in 2021 April, an exercise on a flood scenario was used to drive exercise processes and prepare the agency for the spring flood season;
- Maintaining direct access to meteorologists at Environment & Climate Change Canada as an Agency member;
- Use of a wind sensor network to monitor gusts across the city which trigger protocols for construction sites;
- Agreements in place to utilize tallest buildings in downtown Calgary when visual storm awareness is needed;
- Adoption of building codes that meet national and provincial standards for wind;
- Ongoing investment in enhancement stormwater management infrastructure through the Community Drainage Improvement program and Local Drainage Improvement programs;
- Review and application of Stormwater Management Design Guidelines to drainage systems for new communities including research and assessment of potential changes with a shifting climate; and,

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- CEMA and Facilities Management will be rolling out a Best Available Refuge Area program that will identify the best places to seek refuge in a City building during a tornado or high wind event. This program will also be leveraged as a resource for external organizations to utilize in their emergency planning programs.

Preparing Calgarians for Severe Summer Weather

CEMA has education programs and services in place that are designed to prepare and offer support to Calgarians in the event of severe summer weather.

- Public awareness **emergency preparedness campaigns** are ongoing throughout the year with Agency members and partners, including participation in national Emergency Preparedness Week. In 2021 May, CEMA focused on spring and summer hazard topics.
- Community outreach through the **Ready Calgary** Emergency Preparedness Program focuses on increasing the capacity of citizens, communities, businesses, and youth to prepare for emergencies caused by severe summer weather by raising awareness, increasing knowledge, and developing skills.
- The **Calgary Disaster Risk Explorer** online resource offers the opportunity to learn about the impacts of Calgary's greatest risks including severe summer weather and promote behaviour changes to develop a more resilient community.
- The **Emergency Social Services** is an internal City-wide program that provides for the immediate physical and emotional needs of evacuated citizens during an emergency, and the **Critical Service Provider Network** connects with community organizations and partners to leverage social and other specialized supports for victims of disasters.
- Environment and Climate Change Canada provides **Weather Alerts and Warnings** to keep Calgarians aware of imminent severe weather in the form of public weather Watches, Warnings, and other alerts through their website and app, and in severe cases through the Alberta Emergency Alert (AEA) system. For Critical AEA alerts, such as a Tornado Warning, the alert can be pushed to all local radio and TV stations, as well as to all mobile phones. Environment and Climate Change Canada provides advance forecasting and weather information to CEMA to help prepare for potentially hazardous events.

STAKEHOLDER ENGAGEMENT AND COMMUNICATION

- ☐ Public Engagement was undertaken
- ☐ Public Communication or Engagement was not required
- ☐ Public/Stakeholders were informed
- ☒ Stakeholder dialogue/relations were undertaken

CEMA regularly engages its Agency members in education, training, and exercise programming and relies on members to inform the development of a range of response plans and share information outward with Calgarians through their unique communication channels.

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IMPLICATIONS

Social

CEMA's work aligns with the Social Wellbeing Policy of prevention *(d) The City will aim to stop problems before they start, using a prevention approach* by ensuring the social impacts of disasters are being mitigated before disasters occur.

Environmental

CEMA's work aligns with the Climate Resilience Strategy, section 6.2 Climate Adaptation Action Plan, under *Governance: Pro-active Leadership* - preparing for our climate-altered future through collaborative decision making focussed on severe weather response and recovery management. Reducing disaster risk for hazards is a critical component of adaptation planning which focusses on assessing risk, reducing vulnerability, increasing capacity, mitigating potential damage, and enhancing resilience to achieve long-term sustainability goals.

Economic

CEMA's work addresses *Result 6* within the Economic Resilience Strategy. *Create a more Resilient Economy*, as mitigation efforts will result in significant savings for future shocks and stresses.

Service and Financial Implications

Existing operating funding – base

Planning and responding to tornadoes and severe spring and summer storms resides in the current CEMA business plan and therefore does not require additional funding.

RISK

Severe summer weather poses significant risks for The City and could contribute to four of 17 corporate risks: business continuity, environmental, health and safety, and infrastructure management risk. Literature indicates that mitigating disaster risk and having strategies in place to decrease the impact is more economically, socially, and environmentally sound than managing disaster consequence, indicating that this type of disaster risk requires specialized attention and management. This report outlines and highlights the planning and preparation completed as well as the mitigation strategies should the risk become reality.

ATTACHMENTS

1. Emergency Management Committee Risk Engagement Background
2. CEMA Disaster Risk Assessment Summary
3. Historical Timeline of Severe Summer Weather

Department Circulation

General Manager/Director	Department	Approve/Consult/Inform
Michael Thompson, General Manager	Utilities and Environmental Protection	Inform