

CLIMATE AND RESILIENCY MITIGATION - PRIORITY PROJECTS

RECOMMENDATION

That the November 23, 2022, Urban Planning and Economy report UPE01343, be received for information.

Requested Council Action	Information Only		
ConnectEdmonton's Guiding Principle	ConnectEdmonton Strategic Goals		
CONNECTED This unifies our work to achieve our strategic goals.	Climate Resilience		
City Plan Values	THRIVE		
City Plan Big City Move	Greener as we Grow	Relationship to Council's Strategic Priorities	Climate Adaptation and Energy Transition
Corporate Business Plan	Transforming for the Future		
Council Policy, Program or Project Relationships	<ul style="list-style-type: none"> • The City Plan • Climate Resilient Edmonton: Adaptation Strategy and Action Plan • C627 Climate Resilience Policy • Edmonton's Community Energy Transition Strategy • EPCOR's Stormwater Integrated Resources Plan (SIRP) • 2022 Climate Change and Energy Perception Report • Landslide and Erosion Management Program 		
Related Council Discussions	<ul style="list-style-type: none"> • UPE01103, Natural and Agricultural Land Protections (E. Rutherford), Executive Committee, June 1, 2022 • UPE00797, Watershed Management Update - North Saskatchewan River Regional Plan Status Update, Utility Committee, November 4, 2022 • UPE01257, Zoning Bylaw Renewal Report #5 - Draft Zoning Bylaw, Urban Planning Committee, November 22, 2022 • FCS01094, Land Development Policy C511- Recommended Updates, Executive Committee, November 23, 2022 • UPE01328, City Plan - New Urban Tree, Urban Planning Committee, Q1 2023 • FCS01478, 2023-2026 Carbon Budget, City Council, November 14, 2022 		

CLIMATE AND RESILIENCY MITIGATION - PRIORITY PROJECTS

Previous Council/Committee Action

At the June 15, 2022, Executive Committee meeting, the following motion passed:

That Administration provide a report to Committee on the current work and potential work required to address climate mitigation and resiliency and any priority projects for the 2023 to 2026 budget from a risk mitigation perspective.

Executive Summary

- There are two approaches for taking action on climate change. Climate change mitigation refers to reducing greenhouse gas emissions. Edmonton's approach to this is in the Community Energy Transition Strategy, which is not the focus of this report. Climate change adaptation refers to preparing and responding to climate change risks and impacts. Edmonton's approach to this is Climate Resilient Edmonton: Adaptation Strategy and Action Plan. Climate adaptation is the focus of this report.
- Edmonton's climate has already changed, and will change even more significantly in the coming decades. Action is needed to adapt and prepare for the growing risks a changing climate will have on Edmonton.
- A research study specific to Edmonton found that unmitigated climate change impacts could cause direct annual costs of approximately \$1.0 billion by the 2050s, and \$4.1 billion by the 2080s, as well as cause an additional 22,000 physical or mental health episodes for Edmontonians a year.
- Climate Resilient Edmonton: Adaptation Strategy and Action Plan (the Strategy) is Edmonton's first adaptation strategy and sets the direction on actions that are needed to prepare infrastructure and communities for climate change impacts.
- Implementation of the Strategy is underway, but Edmonton's climate resilience efforts will be a journey over many decades. Further direction and funding will determine which actions are taken and the pace of implementation.
- Priority projects have been identified that ensure assets and services with long lifespans are planned and built to handle future climate risks and that address priority risks.

REPORT

Background

The climate is changing globally and locally. Climate change affects weather, environment, economy and health. Unless significant local and global efforts to reduce greenhouse gas (GHG) emissions occur, climate change will have serious and continued impacts on Edmonton.

Edmonton is warming at one of the fastest rates in the world. Scientists predict that Edmonton will see higher temperatures, more drought and flooding events, more extreme weather events and a potential transformation of the ecosystem (Attachment 1). These changes will impact infrastructure, socioeconomic activity, public health and safety and the natural environment. In response to this, the previous City Council declared a Climate Emergency in 2019.

CLIMATE AND RESILIENCY MITIGATION - PRIORITY PROJECTS

The risks and costs of climate change increase with every degree of additional warming. A study specific to Edmonton was conducted to understand the potential economic consequences of climate change. The study found that climate change could cause direct annual costs (such as damaged infrastructure) of approximately \$1.0 billion by the 2050s, and \$4.1 billion by the 2080s. The study also found climate change could cause broader economic impacts (i.e. annual gross domestic product losses) of approximately \$2.1 billion annually by the 2050s, and \$6.0 billion annually by the 2080s. This research also identified that climate change could also cause an additional 22,000 direct physical and mental health episodes in Edmonton annually by the 2050s. While municipalities may not have to incur 100 per cent of these costs, changes made to the Alberta Disaster Recovery Program mean that municipalities and private property owners will have to absorb 10 per cent of their natural disaster related costs.

The City of Edmonton is committed to bold, urgent action on climate change. There are two approaches that cities around the world are taking to address this:

- The first is reducing GHG emissions that cause climate change. The City's approach to reducing GHG emissions is Edmonton's Community Energy Transition Strategy. An update on Edmonton's Community Energy Transition Strategy and corrective actions was brought forward to City Council in June 2022 (Community Energy Transition Strategy - Annual Update, UPE00604, June 15, 2022 Executive Committee).
- The second approach, which is the focus of this report, is to prepare and adapt communities and local infrastructure to the risks and consequences that are caused by a changing climate. Adapting means taking action to minimize the risks and consequences from a changing climate, which in turn will help make Edmonton more resilient to the new climate reality.
- This report focuses on climate adaptation, and does not address greenhouse gas emissions.

Climate Adaptation Progress Made and Underway

Edmonton's approach to adapting to a changing climate is the Climate Resilient Edmonton: Adaptation Strategy and Action Plan. The strategy identifies the largest climate change risks and impacts facing Edmonton, and outlines how to adapt and change to be more resilient to these climate changes. The adoption of Climate Resilient Edmonton: Adaptation Strategy and Action Plan by City Council (UFCSD00129, December 7, 2020) was an important step in building a climate adapted City. This adoption meets the requirements of the *City of Edmonton Charter, 2018 Regulation* and must be reviewed every five years. This is Edmonton's first ever climate adaptation strategy, and it sets the direction on actions that are needed to prepare infrastructure and community for climate change impacts.

Implementation of the Climate Resilient Edmonton: Adaptation Strategy and Action Plan has been underway since the Strategy and Plan were developed in 2018, and adopted by Council in 2020. Work has progressed and is underway in several areas (Attachment 2) including:

- Beginning to integrate climate science and evidence into City policy and decision making processes;
- Beginning to integrate climate resilience into planning and development processes;

CLIMATE AND RESILIENCY MITIGATION - PRIORITY PROJECTS

- Preparing infrastructure;
- Supporting residents, businesses and communities to advance climate resilience action; and
- EPCOR’s work on flood resilience, through implementation of the Stormwater Integrated Resources Plan (SIRP).

Climate Adaptation Priorities

The City of Edmonton is committed to adapt, prepare for and respond to a changing climate. Edmonton’s journey to becoming more climate resilient has begun and will be an ongoing and a generation long effort. Some actions, if taken today will yield immediate and visible results, while others will enable transformational change that will not be realized until decades into the future. The Adaptation Strategy and Action Plan (the Strategy) was developed to address climate adaptation priorities identified through a stakeholder-led community-scale vulnerability and risk assessment. The Strategy has five Pathways, 11 Goals and 18 Strategic Actions. Though there are actions in each of the eleven goals, the priority projects are aligned with actions that fall under Goals 2, 3, 6, 7 and 10 which are highlighted in the table below. The level of investment needed to fully adapt to climate change is significant, and priority projects have funding requirements ranging from less than, to greater than, \$20 million each. Additionally, funding requirements may be needed once (short to medium term) for project delivery, or may be required as ongoing investments over multiple decades (ongoing long term).

Strategy Goals	2023-2026 Priority Projects
Goal #2 Edmonton is planned, designed, developed and built to be climate resilient today and for future Edmontonians	<ul style="list-style-type: none"> • City of Edmonton climate resilient infrastructure and facilities renewal and upgrade program <ul style="list-style-type: none"> ○ This includes ongoing projects such as the Landslide and Erosion Management Program ○ Ongoing long-term Funding Requirements (>\$20 million) • Climate change planning and development framework <ul style="list-style-type: none"> ○ Short term funding requirements (<\$20 million)
Goal #3: Edmonton’s communities, businesses and institutions are aware, connected, and prepared for climate change	<ul style="list-style-type: none"> • Community climate social resilience program <ul style="list-style-type: none"> ○ Short term funding requirements (<\$20 million) • Climate change Resilience Hubs action plan and program <ul style="list-style-type: none"> ○ Short to medium term funding requirements (>\$20 million)
Goal #6: Edmonton’s water supply is secure and safe for current and future Edmontonians	<ul style="list-style-type: none"> • Climate change water security assessment <ul style="list-style-type: none"> ○ Short term funding requirements (<\$20 million)

CLIMATE AND RESILIENCY MITIGATION - PRIORITY PROJECTS

<p>Goal #7: Edmonton is a flood resilient community</p>	<ul style="list-style-type: none"> ● River and ravine flood protection program <ul style="list-style-type: none"> ○ Short term funding requirements (>\$20 million)
<p>Goal #10: Edmonton’s natural ecosystems continue to provide essential ecosystem goods and services such as clean air, clean water, and biodiversity</p>	<ul style="list-style-type: none"> ● Ecosystem conservation, protection and restoration program <ul style="list-style-type: none"> ○ Ongoing long term funding requirements (>\$20 million)

Similar to the Energy Transition Strategy, Edmonton will need to advocate for new collaborative approaches such as the creation of a national climate strategy for Big Cities and a new Big City Chief Administrative Officer (CAO) Climate Action table that includes a focus on both energy transition and adaptation.

The Adaptation Strategy sets Edmonton on a path to create a more resilient city and the priority actions summarized above and further detailed in Attachment 3 will help move Edmonton along that path. Preparing Edmontonians for these changing climate risks will help to build a resilient City that will be more attractive to businesses and the next million people who will call Edmonton home.

Budget/Financial Implications

A 2020 report from the Insurance Bureau of Canada and Federation of Canadian Municipalities has estimated that building resilience and adapting cities to unavoidable climate change requires an annual investment of 0.26 per cent of Gross Domestic Product (GDP). This analysis would suggest a City of Edmonton investment of approximately \$185 million per year for the next 10 years could be needed for adaptation projects to prepare the community and corporation for a changing climate. Furthermore, a report released by the Canadian Climate Institute on September 28, 2022, estimates that every dollar spent on adaptation measures will save between \$13 and \$15, including both direct and indirect economy-wide benefits.

A detailed cost assessment has not been conducted at this point, however Administration has estimated the strategy implementation will require an additional \$60 million annually for 2023-2026 (representing a 3.5 per cent tax increase, based on the 2022 budget), including both capital and operating costs. Note this does not include the funding EPCOR requires for flood mitigation efforts.

In order to determine funding, which will ultimately dictate further direction for implementation of the Climate Resilient Edmonton: Adaptation Strategy and Action Plan, Administration will bring forward funding requests for Council consideration as part of the 2023-2026 operating and capital budget deliberations. However, with nearly all unconstrained funding anticipated to meet renewal needs over the 2023-2026 capital budget, there will be limited funds for growth investment in new assets. As discussed in the Financial and Corporate Services report FCS01393,

CLIMATE AND RESILIENCY MITIGATION - PRIORITY PROJECTS

Proposed 2023-2026 Capital Budget (October 31, 2022, City Council), it is likely the only new growth projects to proceed will be those that are mandated by legislation, have high safety impacts, or are high priority and eligible to receive funding from partners and other orders of government. The City released its Carbon Budget in early November 2022. While the Carbon Budget provides useful information on the greenhouse gas implications of projects, it does not help to advise on climate adaptation needs.

COMMUNITY INSIGHT

Edmontonians continue to ask for climate action. The 2022 Climate Change and Energy Perception Report found that 75 per cent of the 1,000 respondents agree climate change is a concern, and 75 per cent of respondents are saying that “we need to act now.” These survey results indicate that Edmontonians want the City to take action on climate change.

Successful implementation and mobilizing community action will require continued partnership with residents and industry. This work is dynamic in nature, requiring ongoing engagement during implementation. Further opportunities for collaboration will be identified and provided to Edmontonians during implementation. It will also be critical that Administration continues to listen and learn from partners.

GBA+

Administration is committed to incorporating GBA+ into the current work and potential work required to address climate adaptation and resilience. A GBA+ process is intended to be used to support implementation of Climate Resilient Edmonton: Adaptation Strategy and Action Plan. The findings from the GBA+ process for different actions will vary, however general research was completed about climate change and marginalized groups that will likely be applicable to most, if not all, of the actions outlined in the strategy. Finding statements from this research include:

- Low and fixed income people and families are disproportionately impacted by climate change because they lack the financial capacity to implement mitigation and adaptation measures in their homes and communities.
- Marginalized people and groups will experience the impacts of climate change more than non-marginalized people and groups.
- If the team working on implementing the actions outlined in the strategies is not diverse, it is more likely that perspectives may be missed. This may negatively impact people whose perspectives have unintentionally not been considered.

In addition, the University of Alberta completed research on climate change, older adults and immigrants to explore community vulnerability and resilience in Edmonton. Finding statements from this research include:

- Older adults are at risk from weather and air pollution events.
- Social deprivation (limited interaction with society) and material deprivation (limited ability to afford goods and services) affect sensitivity to weather events and air pollution.

CLIMATE AND RESILIENCY MITIGATION - PRIORITY PROJECTS

The equity measures planned to address the above findings are listed below:

- GBA+, social vulnerability and equity processes will be completed and integrated into the implementation of the strategy.
- Administration will ensure that:
 - implementation of the various actions outlined in the strategy is inclusive of marginalized groups;
 - the teams (internal and external) working on implementing the various actions are diverse so more perspectives are included in the implementation; and
 - the teams working on implementing the various actions are aware of the City's GBA+ commitments.

ATTACHMENTS

1. Changing Climate Impacts
2. Climate Adaptation Progress Made and Underway
3. Climate Adaptation Priorities