

CLIMATE STRATEGIES UPDATE 2023

Recommendation

That the November 1, 2023, Urban Planning and Economy report UPE01816, be received for information.

Requested 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	LIVE.		
City Plan Big City Move(s)	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"> Edmonton Community Energy Transition Strategy Council Policy C627 - Climate Resilience 		
Related Council Discussions	<ul style="list-style-type: none"> June 15, 2022, Urban Planning and Economy report UPE00604, Community Energy Transition Strategy - Annual Update 		

Executive Summary

- Edmonton's Energy Transition Strategy and Climate Adaptation Strategy chart the path forward for Edmonton to both reduce greenhouse gas emissions and adapt to climate change risks and impacts.
- While Edmonton has taken significant steps on the climate change journey, this challenge is not one that can be solved quickly or with a single solution. This is a long-term challenge, requiring transformational change on a system wide scale.

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- Edmonton's greenhouse gas emissions were higher in 2022 than in 2021 primarily due to the effect of the COVID-19 pandemic in 2021; however emissions have decreased since the 2005 baseline.
- Several climate-related actions were funded in the 2023-2026 budget cycle, and initiatives are underway to activate a climate emergency response. To advance this work and provide information to decision makers, an improved climate strategies reporting cycle will be implemented, the two climate strategies will be updated, and actions will continue to be implemented, scaled up, or initiated depending on availability of additional funding.

REPORT

ConnectEdmonton sets the direction for Edmonton's future and outlines where the City needs to change today to realize the vision for Edmonton in 2050. ConnectEdmonton's goal of Climate Resilience includes a city transitioning to a low-carbon future. The City Plan's vision for Edmonton's future outlines Big City Moves that point the way to deliberately change the city to welcome one million more on the journey towards a population of two million. This planning and vision for a future Edmonton also means taking climate action, now and for future Edmontonians.

Direction from City Council has reiterated the importance of consistent focus on these necessary changes. At the April 19, 2021, City Council meeting, Council directed Administration to include the following in the reporting on the implementation of the revised Energy Transition Strategy:

- identify annual emissions reductions needed to achieve the targets outlined in the strategy (a 35 per cent reduction in community emissions by 2025 and 50 per cent reduction in community emission by 2030 from 2005 levels),
- identify "negative emissions" needed to stay within the community carbon budget; identify progress towards achieving those targets and the carbon budget, and
- identify any corresponding corrective actions that should return through the appropriate budget discussions at Council (Urban Form and Corporate Strategic Development report UFCSD00209, Updated Energy Transition Strategy and Action Plan).

While Edmonton has taken these significant steps on the climate change journey, this challenge is not one that can be solved quickly or with a single solution. This is a long-term challenge, requiring transformational change on a system wide scale. This report provides a progress update on the implementation of the climate strategies, noting that the scale of change required to address the climate emergency cannot always be meaningfully measured and assessed on a year to year basis, as several years of data may be required to establish meaningful trends.

Economic Impacts

Climate change is causing economic impacts, and will continue to do so for every additional degree of warming. A study specific to Edmonton found that climate change could cause direct annual costs of approximately \$1 billion by the 2050s, and up to \$4 billion by the 2080s¹. This same study identified that annual gross domestic product (GDP) losses due to climate-related impacts on Edmonton could be \$2 billion annually by the 2050s and \$6.0 billion annually by the 2080s. This economic analysis illustrates that climate change will have real economic

¹ Boyd, R. 2022. Costs of inaction: Economic impacts of climate change on Edmonton.

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consequences for Edmonton, and there is a cost that will be incurred on future Edmontonians if climate action is not taken.

Since a Climate Emergency was declared by City Council in 2019, the City of Edmonton is accelerating climate action. The Climate Resilient Edmonton: Adaptation Strategy and Action Plan was adopted in 2020, which outlines the primary climate risks facing Edmonton and what actions need to be taken to prepare for these risks. The Community Energy Transition Strategy established in 2021 aligns Edmonton's climate mitigation efforts to do Edmonton's part to limit average global warming to 1.5 degrees Celsius. This includes high-level targets of being a net zero community by 2050, and a net zero corporation by 2040. The 2023-2026 Capital Budget and Operating Budget were both finalized with several changes made by Council that resulted in City Council funding significant climate change initiatives, demonstrating Edmonton's commitment to take action on climate change.

Recent Climate Science/Policy

Climate change environmental impacts are already being felt around the world. In 2023, the Intergovernmental Panel on Climate Change (IPCC) synthesis report for the sixth assessment cycle (AR6) stated, with high scientific confidence, that global greenhouse gas emissions have continued to increase and that human-caused climate change is already affecting many weather and climate extremes in every region across the globe leading to widespread adverse impacts². A recent example was in July 2023, when global air and ocean temperatures reached new record highs³. The IPCC AR6 report has a greater focus on the need for adaptation, as the likelihood of exceeding 1.5 degree Celsius of warming is increasing and adaptation options that are feasible and effective today will become constrained and less effective with increased warming. The IPCC AR6 report indicates that deep, rapid and sustained reductions in greenhouse gas emissions would lead to a significant slowdown in global warming within approximately two decades, highlighting the need to take accelerated climate action and continue taking action over multiple decades.

City of Edmonton Climate Strategies Implementation Current State and Corrective Actions

There are multiple levers of change that can be used for climate action, including: i) partnerships and advocacy; ii) incentives, pricing and subsidies; iii) infrastructure investment; iv) policy and regulation; and v) activation. Each lever of change has different funding, effort and impact levels. All levers of change need to be explored when activating the climate emergency response.

The City of Edmonton's two climate strategies, the Energy Transition Strategy and the Climate Adaptation Strategy, chart the path forward for Edmonton to both reduce greenhouse gas emissions, and adapt to climate change risks and impacts. The City of Edmonton has taken significant steps over the past year to advance these strategies. Council approved an additional \$376million of capital and operating spending related to the Energy Transition Strategy and \$5.5

² IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. A Report of the Intergovernmental Panel on Climate Change. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, 36 pages.

³ <https://climate.copernicus.eu/july-2023-global-air-and-ocean-temperatures-reach-new-record-highs>

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million related to Climate Adaptation over the 2023-2026 budget cycle. This will fund the following:

- City of Edmonton facility upgrades to become climate resilient and save on energy costs;
- Initial transition of City of Edmonton fleet and equipment to be emissions neutral;
- Initial implementation of the District Energy Strategy;
- Increased transit service to grow transit ridership;
- Accelerated Active Transportation implementation; and
- Funding to support operational changes, policies, programs and procedures to partially implement the Energy Transition Strategy (including dedicated funds for community action) and to partially implement the Adaptation Strategy.

While this represents a significant investment that will help drive emissions reductions, these reductions will take decades to reach full emission reduction potential. These investments were made at the end of 2022 to fund actions starting in 2023, and therefore the applicable emission reductions will not be reflected yet. Despite these significant actions and work underway (Attachment 1 and Attachment 2), there are still implementation gaps (such as river flooding defense efforts) as well as actions that require scaling up (such as renewable energy generation).

Implementation of the two climate strategies continues to be ongoing and climate focussed programming for the community continues to have high uptake levels (e.g. the re-launch of the solar rebate program was fully subscribed in under two months). Administration has taken important steps forward to address the climate emergency, including the creation of a Chief Climate Officer role and establishing the Executive Leadership Team's Climate Task Force (Attachment 4) to provide corporate-wide governance recommendations for climate strategy implementation.

Council will have opportunities to discuss implementation gaps and funding opportunities through the following:

- Operating Budget Amendment 12 (OP12) Discussions - City Council directed Administration to reallocate or transition \$240 million over the four year budget cycle to focus on core services and Council priorities, with climate resilience being one of the priorities.
- Dedicated Climate Fund Report - Administration prepared a report in response to a motion to provide options for a multi-year Dedicated Climate Fund (FCS01782). This report is also available for discussion at the November 1, 2023, Executive Committee meeting.
- Continued Advocacy and Partnership Efforts - Administration and Council can continue their advocacy and partnership efforts with other orders of government such as advocating for a \$3.2-billion Climate Action Fund delivered by the federal government directly to municipalities.

Climate and Emissions Trends

The IPCC's AR6 report highlights that to date, emission reductions plans from around the world (formally called Nationally Determined Contributions) make it likely that warming will exceed 1.5 degrees Celsius between 2030 and 2052. Edmonton's 2022 greenhouse gas emission results show that Edmonton is contributing to this warming.

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It is challenging to evaluate a discernible greenhouse gas emissions trend on an annual basis, as some actions take several years for greenhouse gas emission reductions to be realized. The 2022 annual reduction target, in order to achieve a 35 per cent reduction from 2005 levels by 2025, was 14.2 million tonnes of carbon dioxide equivalent (CO₂e). However, Edmonton's community emissions in 2022 did not achieve that reduction target, and instead were approximately 16 million tonnes of CO₂e, (14.8 tonnes per person). This is an 11.5 per cent reduction in emissions from Edmonton's 2005 baseline year, however, a 14 per cent reduction in emissions was needed to reach the annual target.

Edmonton's greenhouse gas emissions decreased in 2020 and 2021, likely due to pandemic related reasons such as reduced energy use in buildings and in the transportation sector. Some analysts had forecasted⁴ pandemic related greenhouse gas reductions would be short lived and return to pre-pandemic levels or may even increase during pandemic recovery. This was observed in Edmonton in 2022. If Edmonton's 2022 emission trajectory continues, Edmonton's greenhouse gas reduction targets will not be achieved. Attachment 3 presents further information on Edmonton's greenhouse gas emissions.

In addition to greenhouse gas emissions, Edmonton also experiences the impacts of a changing climate that are caused by these emissions. According to the Insurance Bureau of Canada, severe weather in 2022 caused \$3.1 billion in insured damage across Canada, making it the third worst year for insured damages in Canadian history. Summer storms caused the most damage in Alberta, including damage from hail, tornados, and flooding. In 2022, Edmonton had 15 days of extreme heat warnings, compared to 1 day on average in 1961-1991 and had 5 days with Special Air Quality statements related to wildfire smoke. Climate modeling for the Edmonton region suggests that these types of events will become more frequent as Edmonton experiences climate change impacts. Administration is exploring different data analytics to help decision makers factor climate change risks, and the ability to cope with those risks, into decisions.

Climate Strategies Reporting Cycle

To understand how to most effectively address greenhouse gas emissions reductions and adapt to these changing climate impacts, decision makers need the best available science, evidence and information. Climate change presents a long term, multi-disciplinary challenge, and requires multiple sources of different types of information and data to understand the impact of City of Edmonton's decisions.

In January 2023, Council directed Administration to assess options to improve environmental information and reporting. This offered an opportunity to assess the reporting mechanisms of Edmonton's climate strategies. Annual reporting on the implementation of Edmonton's climate strategies continues to be important for transparency, information sharing and to meet requirements set up under the City of Edmonton Charter Regulation. However, the current method for reporting does not allow for deeper investigation into climate issues, nor does it enable deeper analysis into trends and progress being made.

⁴ International Energy Agency (2021), Global Energy Review 2021, IEA, Paris.

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Administration reviewed current and best practices for climate change reporting, and will transition to a reporting cycle approach similar to the Intergovernmental Panel on Climate Change (IPCC), including preparing special reports for Council in order to provide further detailed information on key climate change related issues. This process builds in time to not only collect and calculate data and information, but to perform analytics to bring value to the data. While the City of Edmonton's reporting will not be as complex as the IPCC reporting, the IPCC process does build in multiple years for global scientists to undertake data collection, verification and analytics.

Administration is currently developing a four year reporting cycle that will include:

- Greenhouse gas emissions and forecasting
- Climate change modeling and associated changing climate risks and impacts
- Implementation progress
- "Special reports" that could focus on issues such as new and emerging academic literature or technologies; provincial, national or global policy; socioeconomic or public health impacts of climate change; or topics Council would like additional information on to support the update of the climate strategies.

Climate Strategies Updates

As per the City of Edmonton Charter Regulation, both the climate mitigation plan (i.e. the Energy Transition Strategy approved in April 2021) and the climate adaptation plan (i.e. Climate Resilient Edmonton: Adaptation Strategy and Action Plan approved in December 2020) must be updated every five years. The proposed updated plans must be advertised, and public engagement must occur, before Council can determine whether the updated plans are accepted. Administration will begin this work in 2024, allowing for this work to be presented to Council by the end of 2025. These strategy updates will assess regenerative approaches to climate change action, as well as activation of a climate emergency response plan. The changes to the climate strategies reporting schedules will help provide Council with different and relevant climate information leading up to the completion of these updated strategies.

Edmonton's vision is achievable, but it will require significant public and private investment:

- **Energy Transition** implementation was initially estimated at needing approximately \$41.7 billion in public and private investment over the next 27 years (2024-2050). Work is ongoing to refine this estimate. FCS01782 Dedicated Climate Fund report provides additional details.
- **Adaptation** implementation has been estimated at approximately \$60 million annually between 2023-2026. A 2020 report from the Insurance Bureau of Canada and Federation of Canadian Municipalities⁵ has estimated that building resilience and adapting cities to unavoidable climate change requires an annual investment of 0.26 per cent of GDP. This analysis suggests 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 the corporation for a changing climate. Furthermore, a report released by the Canadian

⁵ Insurance Bureau of Canada and Federation of Canadian Municipalities. February 2020. Investing in Canada's Future: The Cost of Climate Adaptation at the Local Level.

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Climate Institute in 2022⁶ estimated that every dollar spent on adaptation measures could save between \$13 and \$15, including both direct and indirect economy-wide benefits.

Legal Implications

The *Municipal Government Act* as amended by the City of Edmonton Charter 2018 Regulation required the City to establish and make publicly available a climate change Mitigation Plan under section 615.4(1) and a climate change Adaptation Plan under section 615.5(2). The Energy Transition Plan was passed by Council in 2021 as the City's Mitigation Plan, and the Climate Resilient Edmonton: Adaptation Strategy and Action Plan was passed in 2020 as the City's Adaptation Plan. Section 615.4(2) requires regular public reporting on the climate mitigation initiatives undertaken by the City, and the Mitigation Plan commits to an Annual Implementation Progress Report to Council, resulting in this report.

Community Insight

Edmontonians continue to ask for climate action. The 2022 Climate Change and Energy Perception Report⁷ found that 75 per cent of respondents are concerned about climate change and think that we need to act now to address climate change. Furthermore, 47 per cent of respondents want the City to increase its efforts to address climate change, while 23 per cent want the City to maintain the efforts already being taken.

While there are many competing funding priorities in Edmonton, including some requiring difficult tradeoffs that will create challenges for decision makers, successful implementation of the climate strategies will require continued partnerships with residents, industry and other key implementation partners. This work is dynamic in nature, requiring ongoing engagement during implementation, and as actions are implemented further opportunities for collaboration will be identified and provided to Edmontonians so that Administration can learn from partners.

GBA+

A GBA+ assessment was done for this update report, incorporating analysis from the previous annual report, the Annual Climate Perceptions survey, and ongoing meetings with the Energy Transition and Climate Resilience Committee.

Finding statements from the GBA+ assessment of the City's climate actions and strategies include:

- Low-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.
- Women, Indigenous, black and other marginalized people and groups will experience the impacts of climate change more than non-marginalized people and groups as they may already be subject to socio-economic inequalities, and climate change can cause an increase in exposure and susceptibility to the adverse effects of climate change as well as decrease the ability to cope and recover from damages suffered.

⁶Damage Control: Reducing the Costs of Climate Impacts in Canada. Canadian Climate Institute. September 2022.

⁷ <https://changeformclimate.ca/story/survey2022>

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- If the team working on implementing the actions outlined in the strategy is not diverse, it is more likely that perspectives may be missed. This may negatively impact people whose perspectives have unintentionally not been considered.

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

- The Energy Transition Strategy includes an action to apply a GBA+ approach when developing energy transition policies and programs, and as such, a GBA+ process will be integrated into the implementation of the actions outlined in the strategy. This will include considering when costs may be a barrier to participation and when more support is needed
- Ensure that when implementing the various actions outlined in the strategy the City is implementing them to be inclusive of women and other marginalized groups.
- Ensure that the teams working on implementing the various actions (internal and external teams) are diverse so more perspectives are included in the implementation.

In the previous year, equity has been considered in energy transition and climate adaptation actions as follows:

- Funding for the Alberta EcoTrust Energy Poverty Retrofit Program
- Including GBA+ work in related council reports

Environment and Climate Review

This report was selected as part of the phased implementation of a process change to provide environmental reviews of the City of Edmonton's plans and projects. Environment and climate implications and opportunities are identified throughout this report. Further environment and climate review was not conducted.

Attachments

1. Climate Actions
2. Climate Resilience Policy C627 Annual Report
3. Greenhouse Gas Emissions Update
4. Climate Task Force