Environment and Climate Review

The changing climate continues to pose risks to public infrastructure and to human and environmental health and safety. The following specific actions described in the Downtown Action Plan (DAP) direct the investments within the downtown districts; determine location of infrastructure and transportation options; consider design and enhancements of the public realms, open spaces and parks; expand reliance on district energy; and aim to increase supply of diversified mixed-use housing options; demonstrate how the DAP aligns with the City Plan's Greener as We Grow directive and supports the City's climate resilience goals with additional environmental and climate considerations (where applicable):

Reducing Greenhouse Gas (GHG) Emissions	
Related Action	Environment and Climate Interactions
Action 2 - Investing in upgraded Infrastructure - which includes sidewalks and streets renewal, together with the expansion of Downtown District Energy Utility; and Action 8 - Expand Downtown districts.	Reducing auto-dependency would support the City's target of 50 per cent of all trips being made by transit and active transportation by 2040, as identified in the Community Energy Transition Strategy[1]. Action 2 will support renewal of critical Downtown streets; Action 8 will have action items to encompass creation of a pedestrian network to enable walkable, shared and care-free streets. Thoughtful considerations in these actions will enhance both active transportation and public transit options, which will all help reduce GHG emissions. District energy development has the potential to decarbonize heat and cooling systems for all buildings connected to the district energy node and support energy efficiency of Edmonton's built environment envisioned by the City Plan's directive 2.4.1.

[1] City of Edmonton. (April 29, 2021). Edmonton's Community Energy Transition Strategy And Action Plan. City of Edmonton.

	Consideration: Administration should continue to consider how to reach targeted 61,000 tonnes of GHG emissions reduction as planned through the Downtown District Energy Initiative.[2]
Increased natural infrastructure	
Action 4 - Create safer public and private space; and Action 5 - Enhance cleaning, maintenance and beautification of public spaces.	The built environment and building volumes in Cities contribute to urban heat island (UHI) that can result in premature death, heat stress/stroke and thermal discomfort to residents and visitors alike.[3,4] UHI effect is expected to increase in Edmonton due to high and prolonged frequency of heat waves as predicted by climate modelling.[5] Action 4 focuses on vibrancy, growth and a welcoming Downtown, and Action 5 also gives attention to the need of having a welcoming Downtown with emphasis on beautification of public spaces, which will include consideration of tree locations. Consideration: As part of the natural infrastructure, trees can benefit Downtown residents and visitors by providing shade, while other vegetative covers can help cool off surface temperatures during hot days. Administration can further consider how to increase natural infrastructure and cooling stations/infrastructure in areas where

[2] City of Edmonton. (2023, June 23). Downtown District Energy Initiative (IIS01386). [Council Report]. City of Edmonton.
[3] Prairie Climate Centre. (2019). Heat Waves and Health: A Special Report on Climate Change in Canada. University of Winnipeg, Winnipeg, Manitoba.
[4]Isa et al. (2020). Land Cover Impacts Towards Thermal Variation in the Kuala Lumpur City. Journal of Urban and Regional Analysis, vol. XII, 1, 2020, p. 91 - 111 https://doi.org/10.37043/JURA.2020.12.1.6
[5] City of Edmonton. (2018). Climate Resilient Edmonton Adaptation Strategy and Action Plan.

	vibrancy growth is expected the most, such as in entertainment districts and closed streets.
Sustainable growth through increased density and infills development	
Action 3 - Enabling increased and diversified housing supply & Action 7 - Increased public amenities, programming and activities.	The City Plan envisions residential growth that continues to occur in redevelopment areas through gentle densification and infill developments, which support climate resilience. Action 3 supports creation of denser housing options by diversifying housing supply; utilizing the Infill Infrastructure Fund; prioritizing student housing and attainable housing types; and prioritizing residential conversion of City-owned buildings to align with the City Plan's vision. Action 7 supports increased amenities, activities and programs closer to where people live. More investment in mixed-use public development, with convenient access to work and amenities in the Downtown area will support sustainable growth and minimize the City's ecological footprint as developments move away from single-purpose and harder to reach locations. These two actions could result in further GHG emissions reductions as a result of shorter commute times for residents and visitors.
Action 8 - Expand Downtown districts.	Climate models for Edmonton predict that as the climate continues to change, Edmontonians need to prepare for drier summers, wetter winters and more heavy rainfall events.[5] Public infrastructure designed and built today should anticipate risks from such climatic events. Action 8 prescribes the need to enhance the streetscapes and the public realm in various Downtown districts.

	Consideration: The City of Edmonton already requires low impact development (LID) considerations on some of its projects and on infill projects. Administration could consider how to incorporate LID measures and design options such as permeable pavements in Downtown districts to facilitate the management of storm water, flush floods, erosion and sedimentation, and pollution as climate continues to change and affect the frequency of heavy precipitation.

Linkages to The City Plan:

1.4.1 Support Edmontonians' transition to a low-carbon future in their daily lives.

2.1.2 Support the physical and mental health of Edmontonians by integrating housing, services, amenities and natural systems with active transportation networks.

2.1.2.4 Incorporate nature and natural systems into the built environment.

4.4.1 Support a low-carbon mobility system.

4.4.1.1 Encourage a shift to transit and active transportation options.