THIS MEETING WILL BE WEBCAST ON THE CITY'S PUBLIC YOUTUBE SITE (CITYWATERLOO) AND MAY BE TELECAST ON PUBLIC TELEVISION

THE CITY OF Waterloo

COUNCIL MEETING AGENDA

Monday, January 29, 2024
2:00 PM

Mayor McCabe in the Chair

1. DISCLOSURE OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

2. CLOSED MEETING

Recommendation:

That Council hold a closed meeting for the purposes of considering the following subject matter:

a) a proposed or pending acquisition or disposition of land by the municipality or local board (site selection recommendations); and

b) a matter in respect of which a council, board, committee or other body may hold a closed meeting under another Act [e.g. the Municipal Freedom of Information and Protection of Privacy Act] (site selection recommendations).

COUNCIL MEETING WILL RECESS AND RECONVENE AT 2:30 PM

3. TERRITORIAL ACKNOWLEDGEMENT

4. MOMENT OF REFLECTION

5. DISCLOSURE OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

6. PRESENTATIONS

a) Office of the CAO Business Plan
Tim Anderson, Chief Administrative Officer;
Sandy Little, Director, Strategic Initiatives; and
Justin McFadden, Executive Director, Economic Development.

b) Waterloo Public Library Business Plan
Kelly Kipfer, Waterloo Public Library Board

c) Corporate Services Business Plan
Filipa Reynolds, Commissioner, Corporate Services;
Cari Van Niekerk, Director, Corporate Communications;
Brad Witzel, Director, Financial Planning & Asset Management;
Paul Hettinga, Senior Director, Revenue & Accounting / City Treasurer / Chief Financial Officer;
Tracie Bell, Director, Fleet & Procurement Services;
Kathy Weidhaas, Director, Human Resources;
Max Min, Director, Information Management & Technology Services;
Christina Marina, Director, Legal Services / City Solicitor; and
Julie Finley-Swaren, Director, Legislative Services / City Clerk.

d) K-W Oktoberfest Update
Tracy Van Kalsbeek, Executive Director, K-W Oktoberfest Inc.

e) THEMUSEUM
David Marskell, CEO, THEMUSEUM

f) Canadian Clay and Glass Gallery
Denis Longchamps, Canadian Clay and Glass Gallery

7. STAFF REPORTS

a) Title: Communication Engagement on 2024-2026 Staff Tabled Budget
Report No.: CORP2024-005
Prepared By: Cari Van Niekerk

Delegations:

1. Bob Mavin, Resident of Waterloo

2. Lauren Weinberg, Resident of Waterloo

REPORT TO FOLLOW

b) **Title:** **2050 Net-Zero Impact Report** **Page 7**
Report No.: CAO2024-002
Prepared By: Sandy Little, Kevin Van Ooteghem, Brad Witzel

Recommendation:

1. That Council approves staff report CAO2024-002.

2. That Council confirms the City of Waterloo corporate greenhouse gas (GHG) emissions reduction target of 50% by 2030 (2010 baseline) in alignment with TransformWR's community-wide GHG emissions reduction target.

3. That Council direct staff to continue formal advocacy related to environmental sustainability and climate change initiatives recognizing that more funding support from all levels of government is needed to enable the City to reach its corporate GHG emissions reduction targets of 50% by 2030 (2010 baseline) and net-zero by 2050.

c) **Title:** **Final 2024-2029 Corporate Climate Action Plan (CorCAP)** **Page 28**
Report No.: CAO2024-001
Prepared By: Ena Ristic

Presentation: Ena Ristic

Correspondence: CTTEE2024-001 - Sustainability Advisory Committee Support for City of Waterloo Corporate Climate Action Plan **Page 80**

Recommendation:

1. That Council approves staff report CAO2024-001.

2. That Council approves the 2024-2029 Corporate Climate Action Plan (CorCAP) as attached in Appendix A.

d) **Title:** **Land Acquisition of 123 Moore Avenue South**
Report No.: CORP2024-004
Prepared By: Christina Marina

REPORT TO FOLLOW

COUNCIL MEETING WILL RECESS AND RECONVENE AT 6:30 PM

8. DISCLOSURE OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

9. PUBLIC MEETINGS

Formal Public Meeting

a) Title: Official Plan Amendment No. 46 and Zoning By-law Amendment Z-22-17 for 309 & 311 Hawthorn Street

Report No.: IPPW2024-006
Prepared By: Aminu Bello
Ward No.: Ward 6: Central-Columbia

Presentation: Aminu Bello

Delegations:

1. Marshall Smith, Associate, KLM Planning Partners Inc.

REPORT TO FOLLOW

10. CONSIDERATION OF NOTICE OF MOTION GIVEN AT PREVIOUS MEETING

Social and Economic Prosperity Review Motion – Councillor Freeman

Motion:

WHEREAS Current provincial-municipal fiscal arrangement are undermining Ontario's economic prosperity and quality of life; and,

WHEREAS nearly a third of municipal spending in Ontario is for services in areas of provincial responsibility and expenditures are outpacing provincial contributions by nearly $4 billion a year;

WHEREAS municipal revenues, such as property taxes, do not grow with economy or inflation; and,

WHEREAS unprecedented population growth and the clear need for more affordable, attainable and sustainable housing will require significant investments in municipal infrastructure; and

WHEREAS municipalities are being asked to take on complex health and social challenges such as homelessness, the mental health and addictions crisis and support for asylum seekers and newcomers; and,

WHEREAS inflation, rising interest rates, and provincial policy decisions are sharply constraining municipal fiscal capacity; and

WHEREAS property taxpayers, including those on fixed incomes, seniors, small businesses and more cannot afford to subsidize income re-distribution programs; and

WHEREAS the province can, and should, invest more in the prosperity of communities across Ontario; and

WHEREAS municipalities and the provincial government have a strong history of collaboration.

NOW THEREFORE BE IT RESOLVED that:

1) The Province of Ontario commit to undertaking with the Association of Municipalities of Ontario a comprehensive social and economic prosperity review to promote the stability and sustainability of municipal finances across Ontario;
2) a copy of this resolution be sent to the Premier of Ontario, local area MPPs and the Association of Municipalities of Ontario for further consideration.

11. NOTICE OF MOTION

None

12. COMMUNICATIONS AND CORRESPONDENCE

None

13. UNFINISHED BUSINESS

None

14. QUESTIONS

15. NEW BUSINESS

16. ENACTMENT OF BY-LAWS

Recommendation:

That the By-laws listed below be read a first, second and third time and finally passed, numbered sequentially commencing with By-law Number 2024-005 and that the Mayor and Clerk be authorized to sign them accordingly.

a) By-law to confirm all actions and proceedings of Council, January 29, 2024

17. ADJOURNMENT

STAFF REPORT
Strategic Initiatives

Title:	2050 Net-Zero Impact Report
Report Number:	CAO2024-002
Author:	Sandy Little Kevin Van Ooteghem Brad Witzel
Council Date:	January 29, 2024
File:	N/A
Attachments:	Appendix A: City of Waterloo Timeline of Environmental Actions
Ward No.:	City Wide

Recommendations:

1. That Council approves staff report CAO2024-002.

2. That Council confirms the City of Waterloo corporate greenhouse gas (GHG) emissions reduction target of 50% by 2030 (2010 baseline) in alignment with TransformWR's community-wide GHG emissions reduction target.

3. That Council direct staff to continue formal advocacy related to environmental sustainability and climate change initiatives recognizing that more funding support from all levels of government is needed to enable the City to reach its corporate GHG emissions reduction targets of 50% by 2030 (2010 baseline) and net-zero by 2050.

A. Executive Summary

In 2019 Council declared a climate emergency recognizing that bold change would be needed to address the climate change emergency facing our community and the planet. As part of that declaration, Council also adopted a corporate greenhouse gas (GHG) emissions reduction target of 80% by 2050 (2010 baseline). In 2021, a corporate GHG emissions reduction target for facilities of 50% by 2030 was also established. With these corporate targets set, staff across the City began identifying actions to help the corporation reach its climate change goals.

Municipalities across the country and the world are setting their own ambitious targets and are looking for ways to take transformational actions to create the lasting and

impactful change needed to reduce and eliminate our GHG emissions. It has become evident that we must set even more ambitious targets if we are to minimize the disruption to the planet's climate. At the October 16, 2023 Council meeting, staff presented CAO2023-020 Corporate Climate Action Plan Development Update. The report presented an overview of the process to develop the City's first corporate climate action plan (CorCAP) to help the corporation take actions on reducing its GHG emissions. As part of that report, Council requested that the City amend its corporate GHG emissions reduction target from 80% by 2050 (2010 baseline) to net-zero by 2050 in order to harmonize with the Government of Canada's national climate target established in 2021. Furthermore, Council directed staff to report back on the planning and budgetary implications of a revised corporate GHG emissions reduction target prior to final adoption of the 2024-2026 budget.

Staff recognizes that a net-zero target will impact all divisions across the municipality in different ways. The City is working towards the 2030 and 2050 targets with a number of actions underway but there are additional steps that we can take to help us reach our climate change goals.

B. Financial Implications

City-owned buildings make-up approximately 70% of total corporate GHG emissions. These emissions represent the largest opportunity for GHG emissions reduction within City operations and will be critical to reaching the 2030 and 2050 reduction targets. The total asset replacement value of City-owned facilities equals $542 million. As reported in the 2023 Asset Management Report Cards (CORP2023-040), facilities receives annual average funding of $5.2 million compared to the annual funding needed to meet the asset management (AM) target scenario of $16.7 million. The target performance scenario is designed to maintain a target proportion of assets in excellent, good, fair, poor or very poor performance and for facilities, the difference between the budget and target scenarios results in an average annual funding gap of $11.5 million. This gap includes updates made in 2022 by Facility Design and Management Services (FDMS) and Asset Management staff to account for the increased cost associated with a "like for modern equivalent replacement costing strategy" for applicable mechanical assets (e.g. heating and cooling assets) as identified in CORP2022-005 Building LOS and Modern Equivalent Adjustments. Under this methodology, the Waterloo Decision Support System (DSS) is updated as information becomes available to reflect a modern equivalent approach. Examples include:

- Replacing natural gas boilers with electric boilers;
- Replacing high pressure sodium (HPS) decorative street light bulbs with Light Emitting Diode (LED) bulbs;
- Replacing conventional lighting (e.g. fluorescent) with LED bulbs; and
- Road reconstruction projects that add active transportation infrastructure (e.g. replacing a concrete sidewalk with a multi-use trail).

This type of change helps identify the funding needed to replace existing assets to meet current design needs, aligns with Council direction, supports climate change related

capital project implementation, and helps reach strategic plan goals. However, the modern equivalent replacement costing strategy alone will not fully capture the full cost of reaching these climate action goals.

Previously under report COM2022-103 – Green Building Policy Update for City-Owned Buildings, it was estimated that facilities would require funding between $36 million and $46 million (or between $1.3 million and $1.6 million per year for the next 29 years) to reach GHG targets. Staff will need to engage the expertise of a consultant to revise the calculation based on current costs. It is important to note that any cost represents a moment in time; it is calculated on circumstances at the time of determination and may be higher or lower based on other factors such as availability of technology or infrastructure which is difficult to predict with any level of certainty.

Following facilities, the next largest source of corporate GHG emissions is fleet and equipment at 22%, solid waste at 6%, and collectively streetlights, travel, and wastewater facilities at 2%. The total asset replacement value of City-owned fleet and shop equipment equals $28 million. As reported in the 2023 Asset Management Report Cards (CORP2023-040), fleet receives annual average funding of $2.8 million compared to the annual funding needed to meet the AM target scenario of $3.0 million. This results in an annual funding gap of $200,000 for fleet and equipment. However, as the City continues to “green” its fleet where appropriate this gap is anticipated to rise as replacing our aging fleet with electric vehicle alternatives has required a cost premium of 20-40%. The modern equivalent for fleet has not been incorporated within the Waterloo DSS as the cost premium cannot be accommodated within the Fleet Reserve and as with buildings, these cost increases represent a moment in time. It is anticipated that costs will decrease over time due to technological advancements, heightened production levels, and government incentives. Of note is that this funding gap excludes funding for new infrastructure needed to support electric vehicles (e.g. charging stations, new transformers). New infrastructure will require funding from the Capital Reserve Fund or the Climate Action Reserve Fund (CARF).

As part of the 2024-2026 staff tabled budget released on December 11, 2023, numerous items have been included that will support the continued climate action the City has made in recent years including but not limited to:

- Increased allocation of the 1% infrastructure investment funding (I7) to facilities to support facility transformational projects
- $10.25 million Facility Transformational project (ref 225) funded by debenture
    - Funds to be used in support of the City’s Green and Inclusive Community Buildings (GICB) – Phase II grant (or alternative grant if our GICB application is not successful)
    - The City’s GICB Phase II grant applications is seeking $25 million in grant funds for large-scale building retrofits to reduce GHG emissions and increase accessibility at Manulife Sportsplex and Healthy Living Centre (RIM Park Sportsplex), Albert McCormick Community Centre (AMCC), and Moses Springer Community Centre (MSCC)

- Climate Change/Sustainability Contributions (B11)
  - ClimateActionWR ($65,000)
  - Waterloo Region Community Energy (WRCE) ($16,000)
  - SustainableWR ($7,000)
  - REEP ($40,000)
  - Funds for key initiatives, such as advocacy on the climate change front with upper levels of government, implementation efforts, and engagement ($30,000)
- Redirecting $100,000 in 2024, $50,000 in 2025, and an additional $50,000 in 2026 of the annual Capital Reserve Fund (CRF) funding to increase ongoing annual funding for the Climate Action Reserve Fund
- Allocating 25% of final reported property tax operating surplus annually, if any, to the Climate Action Reserve Fund as per policy FC-003
- Allocating 25% of actual investment income surplus annually, if any, to the Climate Action Reserve Fund as per policy FC-006
- Redirecting $500,000 in one-time funding from the RIM Park Investment Reserve surplus to the Climate Action Reserve Fund

Both the Ontario and Federal governments have established grant programs over the past several years to help fund the rehabilitation/replacement of municipal infrastructure and address climate change. Despite these programs, in order for municipalities like Waterloo to achieve their powerful climate action goals **more funding from higher orders of government will be required.**

C. Technology Implications

None.

D. Link to Strategic Plan

(Strategic Priorities: Reconciliation, Equity, Accessibility, Diversity and Inclusion; Environmental Sustainability and Climate Action; Complete Community; Infrastructure and Transportation Systems; Innovation and Future-Ready)

(Guiding Principles: Equity and Inclusion; Sustainability; Integrity; Workplace Wellbeing; Community-centred; Operational Excellence)

This report supports the strategic priority of Environmental Sustainability and Climate Action and positions the City as a leader in environmental sustainability practices and climate action by making transformational changes related to City operations. Transformational changes are needed to meet the 2050 net-zero target.

Furthermore, this report also fulfills two objectives of the strategic priority of Environmental Sustainability and Climate Action. By adopting a 2050 net-zero target and the meaningful actions to move the City towards those goals it shows the City as a climate action leader as noted in Objective 1 Climate Leadership. In addition, identifying the impact of a 2050 net-zero target highlights the importance of all staff working

together towards this common goal requiring us to adopt an environmental sustainability mindset, a cornerstone of Objective 3.

E. Previous Reports on this Topic

- CAO2024-001 – Final 2024-2029 Corporate Climate Action Plan (CorCAP), January 29, 2024
- CORP2023-040 – Asset Management Report Cards and Update, November 20, 2023
- CAO2023-026 – Corporate Climate Action Plan Development Update, October 16, 2023
- COM2023-004 – Green and Inclusive Community Buildings Grant Second Intake, February 27, 2023
- CORP2022-049 – Reserves and Reserve Funds Annual Update, December 12, 2022
- CORP2022-005 – Building LOS and Modern Equivalent Adjustments, February 28, 2022
- CORP2022-003 – Investment Policy Update, February 28, 2022
- COM2022-103 – Green Building Policy Update for City-Owned Buildings, April 25, 2022
- CAO2021-011 – TransformWR, May 31, 2021
- CAO2020-013 – The City of Waterloo Climate Action Plan (CorCAP), October 5, 2020
- COM2021-027 – Corporate Greenhouse Gas and Energy Roadmap – Phase 1, September 27, 2021

2050 Net-Zero Impact Report
CAO2024-002

1.0 Background

In 2019 Council declared a climate emergency recognizing that bold change would be needed to address the climate change emergency facing our community and the planet. As part of that declaration, Council also adopted a corporate greenhouse gas (GHG) emissions reduction target of 80% by 2050 (2010 baseline). In 2021, a corporate GHG emissions reduction target for facilities of 50% by 2030 was also established. With these corporate targets set, staff across the City began identifying actions to help the corporation reach its climate change goals. Plans and strategies became instrumental as they provided detailed actions needed to address the climate change emergency. Plans including the Corporate Climate Action Plan (CorCAP), the Energy Conservation Demand Management (ECDM) Plan and the Green Building Policy include actions we can take as an organization to mitigate the effects of climate change.

Municipalities across the country and the world are setting their own ambitious targets and are looking for ways to take transformational actions to create the lasting and impactful change needed to reduce and eliminate our GHG emissions. It has become evident that we must set even more ambitious targets if we are to minimize the disruption to the planet's climate.

In June 2023, Council approved a new strategic plan for the City and the community. One of the strategic priorities is Environmental Sustainability and Climate Action. This strategic priority speaks to the City becoming a leader in environmental sustainability practices and climate action by making transformational changes related to City operations and services.

At the October 16, 2023 Council meeting, staff presented CAO2023-020 Corporate Climate Action Plan Development Update. The report presented an overview of the process to develop the City's first climate action plan to help the corporation take actions on reducing its GHG emissions. As part of that report, Council requested that the City amend its corporate GHG emissions reduction target from 80% by 2050 (2010 baseline) to net-zero by 2050 in order to harmonize with the Government of Canada's national climate target established in 2021. Furthermore, Council directed staff to report back on the planning and budgetary implications of a revised corporate GHG emissions reduction target prior to final adoption of the 2024-2026 budget. This report is in response to that request.

2.0 Net-Zero Target

According to the Government of Canada, net-zero is defined as: “Achieving net-zero emissions means our economy either emits no greenhouse gas emissions or offsets its emissions.”[1]

In terms of the City of Waterloo, net-zero means that we aim for zero GHG emissions by 2050 however, in those cases where we are not fully able to emit zero emissions, we will need to identify ways to offset our emissions. Emissions for this purpose are limited to scope 1 (direct from source) and scope 2 (indirect from source) emissions from City-owned buildings and facilities, fleet and equipment and staff activities with some consideration of scope 3 (indirect from supply chain) emissions including business travel and waste. Only these emissions are being directly considered due to our ability to control these emissions as well as the availability of data. This approach is consistent with the approach in the CorCAP.

Ideally, we would completely reduce our emissions to zero however, there are reasons why this may not be possible including our reliance on the provincial energy grid and existing and upcoming technology. When it is not possible to reduce emissions to zero, some organizations are considering carbon offsets to reach net-zero. There are two broad types of carbon offsets. The first is when an organization undertakes an activity itself that will reduce GHG emissions in the atmosphere. For example, generating electricity to offset emissions produced or planting trees on its own land or restoring a natural habitat. The second is when an organization purchases credits from a third party which has undertaken those activities on its behalf, sometimes on the other side of the world. At this time there are significant equity and accuracy concerns with carbon offsets and credits, but it is something the City will continue to monitor.

By adopting a net-zero target for the corporation, we are providing an example of leadership to our own community regarding the bold action needed to address climate change. In 2021, the City of Waterloo corporate emissions were 5,391 tonnes of CO_2e per year. It is important to recognize that the City’s emissions are only a small part of the overall community emissions and account for less than 1% of the community’s total emissions. If we are to make meaningful impact, work must happen for both the municipality and the community. The City is part of ClimateActionWR which is working to implement the community mitigation strategy, TransformWR.

It is important to clarify that net-zero is not simply just 20% more than what we were already planning for in 2050. The 80% by 2050 target was based on 2010 baseline emissions. Net-zero does not include a baseline and is therefore, more ambitious than simply an additional 20%. The last 20% will be more difficult and require significantly more resources to achieve as illustrated in Figure 1. As a result, we need to recognize that there are impacts with adopting a net-zero target for 2050 and those impacts will be felt across the organization. It is also not possible to determine all of those impacts at this time however, with the information we have available today it is possible to identify

[1] NRCAN. (2023). Net-zero emissions by 2050. Retrieved from: Net-zero emissions by 2050 - Canada.ca

initial steps we can take based on things that are within the City's control.

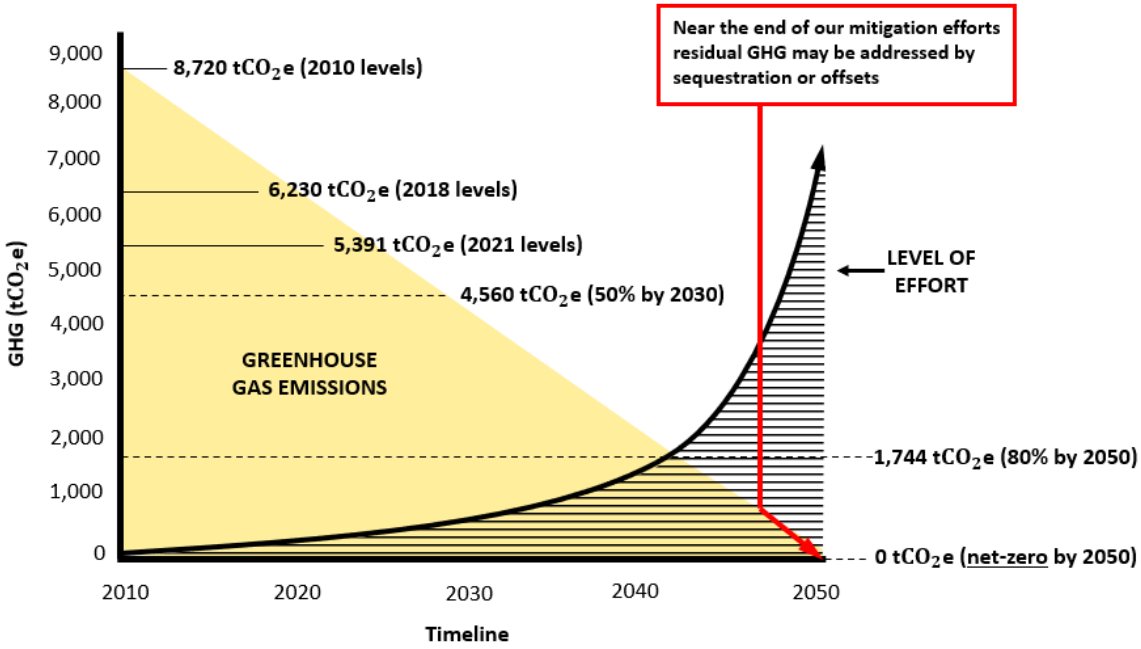

Figure 1: Conceptual illustration of the City's potential corporate GHG emissions reduction pathway in relation to the level of effort required.

3.0 Current Actions

Fortunately, the actions we are already taking as an organization are building a strong foundation for the interim target of 50% by 2030 and now net-zero by 2050.

3.1 Financial Planning

Over the last several years, momentum has been building with respect to developing plans, strategies, and related actions to meet ambitious GHG emissions reduction targets by 2030 and 2050. Early on, staff recognized that the actions the City needed to take to address climate change would require big solutions that require significant financial investment and commitment. In 2021 Council approved the initial establishment of a Green Initiatives program number within the Capital Reserve Fund (CRF) to provide the funding flexibility to support green initiative innovation in the short term. This would allow us to fund actions while we identified longer term financial plans to support longer term and more complex actions.

In 2022, the Green Initiatives program number within the CRF was consolidated into the Climate Action Reserve Fund (CARF) with Council's approval of CORP2022-049, the Reserves and Reserve Funds Annual Update report, on December 12, 2022. Also by way of that report, Council approved the governing policy for CARF and established a permanent source of annual funding, through the redirection of $918,000 in ongoing annual funding from the budgeted annual CRF contribution to CARF. The Council approved expenditures policy for CARF states that: "The Climate Action Reserve Fund

provides funding for capital projects, initiatives, and studies that support the City's work toward both the mitigation of and adaptation to climate change." Examples could include, but would not be limited to:

- Implementation of the Corporate Climate Action Plan (CorCAP) and actions in TransformWR, the community climate action plan;
- Climate change adaptation projects;
- Corporate energy management, monitoring, and strategy implementation, as outlined in the Energy Conservation Demand Management (ECDM) Plan;
- Implementation of internal electric vehicle charging infrastructure in accordance with the upcoming EV infrastructure strategy; and
- Matching funding to attract climate action stimulus/grant opportunities through other levels of government.

Given that facilities and fleet are the primary contributors to corporate GHG emissions exceeding more than 90% of the total corporate emissions, it is most impactful to direct financial resources to initiatives related to facilities and fleet. In addition to CARF, the 2024-2026 staff tabled budget looks to build on the investments the City has already made and contribute to an even stronger foundation for the City to take on actions to address climate change. Some of the highlights of the budget that directly relate to climate change investments include:

- Increased allocation of the 1% infrastructure investment funding (I7) to facilities to support facility transformational projects
- $10.25 million Facility Transformational project (ref 225) funded by debenture
    - Funds to be used in support of the City's Green and Inclusive Community Buildings (GICB) – Phase II grant (or alternative grant if our GICB application is not successful)
    - The City's GICB Phase II grant applications is seeking $25 million in grant funds for large-scale building retrofits to reduce GHG emissions and increase accessibility at Manulife Sportsplex and Healthy Living Centre (RIM Park Sportsplex), Albert McCormick Community Centre (AMCC) and Moses Springer Community Centre (MSCC)
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- Allocating 25% of actual investment income surplus annually, if any, to the Climate Action Reserve Fund as per policy FC-006
- Redirecting $500,000 in one-time funding from the RIM Park Investment Reserve surplus to the Climate Action Reserve Fund

Furthermore, funding for sustainability and climate change includes more than just CARF funding. For instance, many rehabilitation/replacement projects funded by CIRRF contain elements of “like-for-modern-equivalent” which often times provide climate action benefits along with the opportunity to replace an aging asset.

The City will also look for opportunities to continue to leverage the Environmental, Social, and Governance (ESG) Investment Framework. This framework, approved via Council report CORP2022-003 – Investment Policy Update on February 28th, 2022, permits staff to invest up to $10 million in ESG investments. ESG investments will be highlighted for Council awareness as part of the annual investment report.

3.2 Grants

It is clear that we cannot reach a net-zero target alone. We will be reliant on other levels of government to help support the City’s journey to net-zero. We will need to position the City to take advantage of available grants and funding recognizing that these opportunities often require an investment from the City as well.

A recent grant opportunity through Infrastructure Canada was the Green and Inclusive Community Buildings (GICB) second intake. Through COM2023-004 staff received approval from Council to submit three project applications to this grant application stream for the following buildings:

- RIM Park Low Carbon and Accessibility Retrofit (project valued at $25,000,000);
- Albert McCormick Community Centre Electrification and Accessibility Retrofit (project valued at $2,999,999); and
- Moses Springer Community Centre Low Carbon and Accessibility Retrofit (project valued at $6,900,000.

The value of the three grant applications exceeds $34 million. This is evidence of the cost of the work that is required to buildings and facilities to meet a net-zero target. These costs cannot be covered by the general tax levy and as such, we must rely on other levels of government to assist. Additional funding supports are essential to make the transformational changes that are needed to meet the 2030 and 2050 GHG emissions reduction targets.

3.3 Buildings and Facilities

Buildings and facilities represent approximately 70% of scope 1 and scope 2 GHG emissions and the largest opportunity for direct City controlled GHG emissions reduction opportunities. Two recent staff reports (COM2021-027 – Corporate Energy and Greenhouse Gas Road Map Phase 1 and COM2022-013 – Green Building Policy

2022) specifically addressed corporate GHG emissions reduction targets by assessing feasible pathways to achieve emissions reductions for five different building types and providing updates to the Green Building Policy to align with those general identified measures. In addition, the updates to the Green Building Policy also provided energy and carbon performance targets for new buildings and major retrofits.

The study done as part of the energy and GHG road map identified system changes required for significantly reducing GHG emissions to the levels desired which included:

- Electrification, through conversion of natural gas fuelled air and water heating systems to an electrically powered system;
- Improvement of building enclosure performance by increasing insulative values and reducing infiltration;
- Equipment and lighting controls optimization; and
- Renewable electricity generation through solar Photovoltaic (PV) arrays.

COM2021-027 also estimated (in 2021) an additional cost of approximately $45M to make these GHG emissions reduction modifications (or GHG retrofits), assuming existing equipment and systems were replaced at end of life and the low carbon systems were installed as replacements. Based on cost increases over the previous two years, it is assumed the GHG retrofit costs will increase to approximately $55M (as of January 2024).

The assessments provided in COM2021-027 targeted an 80% reduction in GHG emissions reductions by 2050 however, through electrification and renewable electricity generation facilities it was estimated that we would achieve beyond an 80% reduction (however, they were not modelled to achieve net-zero emissions).

The measures and resulting Green Building Policy align with the Zero Carbon Building Standard published by Canadian Green Building Council (CaGBC), as well as a net-zero retrofit study published by CaGBC on several building archetypes in different geographical locations across Canada. Following the identified path is the same direction required for net-zero emissions with the additional consideration of balancing cost effectiveness of the extent of certain measures.

Complete (100%) electrification can be accomplished, in some buildings (e.g. Rim Park), with existing electrical infrastructure. In buildings requiring additional electrical infrastructure (e.g. Waterloo City Centre), these upgrades can be planned and implemented prior to 2050 with appropriate funding. The intent is then to offset 100% of facility electricity use with City-owned solar PV generation.

However, there will be scenarios where facility electricity consumption exceeds solar PV electricity generation capacity. To offset excess electricity use, a cost-effective approach would be used. Extensive building enclosure improvements, major system changes or electrical service upgrades may be too costly or unrealistic (i.e. increasing exterior wall and roof insulation can be physically limited by building construction). In

these scenarios, City staff will evaluate other avenues such as the existing market conditions and options of Renewable Energy Credits (RECs), off-site renewable electricity generation or other carbon offsetting/reduction methods. Life cycle cost analysis may recommend purchase of RECs as a more cost-effective option than final building improvements to reach on-site net-zero carbon emissions.

There is also market uncertainty around the carbon content of Ontario's electrical grid beyond 2040, the market of RECs, and the industry regulation around Distributed Energy Resources (DERs). DERs are distributed or remote electricity generation stations, such as stand-alone solar PV arrays. Currently, the City cannot install a local scale solar PV array at a remote location, export generated electricity to the grid, and be credited for exported electricity or the green credits. Nor can the City be credited for solar electricity generated at a facility site, beyond what the facility draws from the grid (known as a net-metering agreement). These DER regulations and net-metering rules may also change in the future, allowing the City to install additional solar PV (at RIM Park for example) and receive compensation for generated electricity while retaining the REC associated with the renewable solar electricity. This type of arrangement would provide the City with a return on investment for the solar PV array while providing the required RECs to offset facility emissions, whereas purchasing RECs represents an annual expense with no return on investment.

Based on current facility and market conditions, the existing Green Building Policy (COM2022-013) supports the immediate steps for net-zero carbon buildings and will be revised to incorporate the new targets.

3.4 Environmental Sustainability Team (EST)

The Environmental Sustainability Team (EST) is an internal cross divisional committee. It is comprised of staff from across the organization with representatives from the Office of the CAO, Integrated Planning and Public Works (IPPW), Strategic Initiatives, Planning, Fleet and Procurement, Asset Management, Finance, Facility Design and Management Services (FDMS), and the Executive Director of Operational Modernization. The team was established in February 2021 to streamline sustainability and climate change initiatives across the City. As part of their mandate, the EST also helps to guide the creation and implementation of appropriate plans and strategies including the creation of the Corporate Climate Action Plan (CorCAP), implementation of TransformWR, and the implementation of the Corporate Climate Change Adaptation Plan.

Over the last few years, this team has played an important role in helping to guide sustainability and climate change work at the City while also raising awareness and the profile of the work in this space.

4.0 Risk Factors to Mitigate

There are a number of things that we do not have control over as a City that will impact our ability to reach a net-zero target. For instance, reaching a net-zero target is largely dependent on the decarbonisation of the provincial energy grid and access to clean energy.

Moreover, we know that our community is forecasted to grow significantly in the next several years. According to the approved population forecast in Regional Official Plan Amendment 6, population for the City of Waterloo is anticipated to grow by more than 57,700 from 2021 to 2051 which does not include post-secondary students. As a result of the population growth, City operations and services will need to expand and change to respond to this growth in the community. This is why it is critical that as we evaluate City-owned buildings and facilities we ensure we are utilizing what we have as efficiently as possible. When changes are required to respond to the growth, we will need to identify opportunities to reduce our GHG emissions to respond to the future growth of our community.

In addition, changes in terms of legislation will also occur along our path to net-zero. We will need to pivot as those changes occur and identify opportunities with each change that will help the City in its work to meet its targets. This will require close collaboration amongst staff to ensure response to these changes is swift and streamlined.

Furthermore, the City does not have control over emerging technology nor are we in a position to predict what changes will occur in the future. We want to remain flexible to take advantage of new technologies that will help us reach our targets however, we do not control the speed and cost at which technology is made available. For example, the City is working on electrifying our fleet. Light duty fleet options are more readily available however, operationally feasible options for the City’s medium and heavy-duty fleet currently are limited. Ongoing monitoring of advancements in these areas will enable the City to transition vehicles and equipment as technology becomes available and when existing fleet has reached the end of its useful life. In the meantime, the City continues to use telematics information to monitor performance of its fleet and identify opportunities to lower GHG emissions.

Given that we cannot control the availability of technology, staff is working to identify gaps to better position the City to take advantage of options when they become available in the future. For instance, staff is working on a corporate electric vehicle (EV) infrastructure strategy. We have managed to make progress on the electrification of some of our fleet however, charging infrastructure has not kept pace with demand. Therefore, staff will be leading the development of a strategy that considers our medium and long term needs so we can be proactive when it comes to the full electrification of the fleet once options to full transition are made available. The strategy will also look at our current charging stations and look to incorporate existing stations located at City facilities as part of a holistic approach to this work.

One of the strategic priorities in the 2023-2026 Strategic Plan is Innovation and Future-Ready. Innovation is about doing things differently and our journey to net-zero is paved with innovation and our ability to do things differently and it requires us to continuously explore and adapt to new tools and technology as they become available.

5.0 Future Actions

Section 3.0 of this report identified actions that are already underway as we work to meet our first target of 50% GHG emissions reduction by 2030 based on a 2010 baseline. Those same actions will help as we work to reach the net-zero target although we must direct more focus to those actions to accelerate the work that needs to happen. Section 4.0 identified risk factors that we must look to mitigate that will inevitably surface along our journey to net-zero. However, it is vital that we identify new actions and evaluate the resources needed to take those actions given that the net-zero target is more aggressive and more ambitious than the previous target of 80% by 2050 with a 2010 baseline. In addition to the actions identified below, we must commit to consistently monitor the national and global contexts so we can identify new and emerging actions to consistently remain innovative as we look to address climate change as an organization.

5.1 Future Budget Considerations

The City recognizes that additional resources will be needed for the City to reach its 2050 net-zero target. However, it is not yet possible to predict with clear accuracy the financial resources needed to reach that target given the various risk factors and uncertainties. As staff proceeds with implementation of the CorCAP in addition to other related plans and strategies and as technology related to this work continues to advance, we will be better positioned to specifically identify the financial impact.

At this time, staff have identified some concrete steps that we must take as we implement actions needed to reduce the City’s GHG emissions:

- Future increased infrastructure capital investment will be required to achieve ambitious targets.
- Consideration and prioritization of increased sustainability and climate change funding will need to be included in future budget processes with recommendations brought forward by the Budget Committee for Council’s consideration and approval including but not limited to the potential leveraging of debt to advance projects such as the transformational changes needed at City buildings and facilities.
- Ongoing advocacy to the provincial and federal governments for the urgent need for more climate action grant funding.

5.2 Corporate Climate Action Plan (CorCAP)

The CorCAP is a plan to reduce GHG emissions generated by the City of Waterloo. The plan includes scope 1 and scope 2 emissions with the inclusion of some of the City’s

scope 3 emissions. We know that the majority of currently measured corporate GHG emissions come from City buildings and facilities (70%); fleet and equipment (22%); solid waste (6%); and collectively streetlights, travel, and wastewater facilities (2%). The CorCAP is a five-year plan that includes a number of actions to help the City reach its 2030 target and position the City to move towards net-zero by 2050. The actions range in complexity and impact but all the actions are necessary to help us reach the targets. Once the CorCAP is approved, it will be critical to accelerate implementation across the corporation.

Some of the CorCAP actions are already underway which illustrates staff's willingness to engage in actions related to sustainability and addressing climate change in advance of the approval of the CorCAP. Some of the actions already underway include:

- Building specific:
  - Continue to convert natural gas fuelled heating systems to electrical powered heating systems
  - Continue to implement the City of Waterloo's Green Building Policy
  - Continue to replace equipment with GHG/energy efficient improved performance equipment
  - Continue to implement energy efficient systems when major building systems reach their end of life or require a major overhaul
- Continue to build on the progress of the creation of the Climate Action Reserve Fund
- Actively seek external funding for sustainability and climate change work
- Fleet specific:
  - Right-size fleet
  - Improve fleet equipment tracking

A cornerstone of the City's first CorCAP is the education and awareness of staff that occurred throughout the development of the plan. This marked a shift in the work and culture that is happening at the City related to sustainability and climate change. Staff is now more invested than ever to work together to make the progress that is needed to advance the City towards its GHG emissions reduction targets.

An important part of CorCAP is the ongoing monitoring of actions across the City on an annual basis. This will be vital as part of the overall work so we can track the progress of actions and be prepared to modify them to ensure maximum impact. It is also important that we review the efficacy of CorCAP after five years to provide the opportunity to focus on actions that could not be completed and remove possible barriers while also identifying new actions to help the City achieve its GHG emissions reduction targets.

5.3 Plan and Policy Updates

With the established net-zero target for 2050, it will be vital that all plans, strategies, and policies that the City develops integrate the new net-zero target. As plans are developed or revisited, it is the opportune time to consider incorporating the revised 2050 target

and consider the implications of that target in all of the work the City delivers. For instance, the ECDM Plan is scheduled to be updated as per provincial requirement in 2024 and will now consider the new net-zero target by 2050. In addition to having the new target reflected in the City's plans and strategies, it will also encourage staff to play a more active role in this work. It will raise awareness of the importance of the work involved to meet targets and strengthen the team culture at the City related to sustainability and climate change work.

Given the recent approval of a corporate net-zero target by 2050, it is also important that Council solidify the corporate GHG emissions reduction target of 50% by 2030 (2010 baseline). Although facilities are the primary source of corporate GHG emissions, it is important that the 2030 target applies to the entire corporation. With the creation of the Strategic Initiatives division, staff are now well positioned to view this work in a holistic way and can identify gaps to ensure strong coordination and mobilization across the City related to climate change work.

5.4 Government Advocacy

Government relations and advocacy has become even more important in recent years as a direct result of the big challenges we are facing. Government advocacy plays a key role in raising awareness and communicating the municipality's needs to other levels of government. It allows the City to advocate for changes to legislation and help align our advocacy efforts with the strategic plan. Municipalities are experiencing the impacts of climate change first-hand as it is the level of government closest to the community. As a result, there is a very strong role for government advocacy to play in this work especially as we get closer to our first target in 2030. We recognize that we cannot solve climate change on our own.

In addition to advocating to other levels of government for financial support, advocacy also plays a key role when it comes to taking advantage of available grant opportunities. These grants are critical especially as it relates to the transformational projects that need to take place to making meaningful impacts on reducing the City's GHG emissions. As the City applies for grants, it is critical that we remain connected to our strategic partners and elected officials to best position the City as part of the grant processes.

Strategic work in terms of government advocacy will best position us so there is general awareness of our areas of focus especially related to sustainability and climate change work. We can continue to build strong relationships as we will need help in the form of financial support and policy changes at all levels of government to do the work that needs to be done.

5.5 Team Approach

Responding to the 50% by 2030 and net-zero target by 2050 will take a collaborative effort across the City. The work that needs to be done will involve the work and commitment of all divisions and the four City departments. With the approval of the

CorCAP, we now have a comprehensive set of actions that we can take to reach our GHG emissions reduction targets. Once we start to make significant progress on the actions contained in the CorCAP and other supporting plans and strategies, we will better understand the resources needed to make meaningful progress on those actions. It is difficult to predict with certainty the overall impact on staffing across the City until we start to make meaningful progress on the actions which is the next phase of work that is unfolding across the City.

The 2023-2026 Strategic Plan is the first strategic plan where sustainability and climate action is integrated throughout and builds on all of the work done as part of previous strategic plans. It is no longer sufficient to apply a climate lens to the work that we do as there is no permanency associated with that approach. It is imperative that we all work to integrate climate change considerations as part of all City operations and services. The 2024-2026 budget and the next round of business plans are implementing the direction of the strategic plan and enabling the City of Waterloo to be a leader in this work.

The role of EST will continue to evolve as part of this work. Now that we have the necessary framework with the required plans and strategies related to sustainability and climate change in place, the role of EST is evolving to provide guidance on the ambitious actions we must take. Their expertise will be used to identify challenges to carrying out actions and identify innovative solutions to mitigate those barriers. Given the composition of the EST, the team is well positioned to play an active role in the work to achieve the City's ambitious targets.

In addition to collaboration across the City, it is also imperative that we work with our local partners who are also involved with addressing climate change in their own work. We will continue to work with the post-secondary institutions, area municipalities, Enova Power, Grand River Energy, Enbridge, and others on the work we are doing to meet our corporate targets. We cannot make the progress we need to make on our own.

The net-zero target does not require the City to take a new approach. The work that we have been leading for a number of years is paving the way for the City to reach the 2030 and 2050 targets. We will focus on strengthening connections between divisions and strategic partners and continue to build on the momentum that has already started in the climate change work.

6.0 Corporate Climate Change Adaptation

In 2019, Council approved the Corporate Climate Change Adaptation Plan which included 37 actions for the City to implement to adapt to the rapidly emerging impacts of climate change. Unlike mitigation which looks to reduce the amount of GHG emissions, climate change adaptation looks to identify ways to respond to the effects of climate change and increase the City's resiliency to new conditions. A lot of the City's focus to date has been related to climate change mitigation due to the urgency of it however, staff in Strategic Initiatives is planning to focus on climate change adaptation in 2024 by revisiting the Corporate Climate Change Adaptation Plan. This year marks five years

since the plan was approved and it is an ideal opportunity to revisit the actions and determine the status of each while also identifying potential new actions. In addition, staff will also be looking to determine a process to allocate the approved funding to the actions that have not yet been implemented.

It is important to note that although the corporate GHG emissions reduction targets are critical to make progress to mitigate climate change, we must recognize that the impacts of climate change are here to stay. In the best case scenario in which we meet targets globally, we will still need to act to identify ways to respond to the changing impacts of climate change and identify ways that we can be more resilient as our community continues to grow.

7.0 Next Steps

Section 5.0 above identifies a number of future actions we will need to take however, staff recognizes that there are some steps the City needs to take immediately to continue the momentum of the work that is already happening and the urgency required to respond to climate change.

1. **Measurement and Monitoring** – Measurement and monitoring will play a critical role in helping the City to achieve the 2050 net-zero target. We will need to actively monitor the City's work and determine the overall impact of our actions designed to make progress towards our targets. The City will need to ensure that the work that is happening and that needs to happen is aligned and integrated with future budget processes as well as business planning. This will ensure we can course correct as needed and work to address barriers to actions that may not be progressing as expected. We also need to continuously monitor all the work that is happening in this space in the local and global contexts so we can incorporate new tactics and technologies to ensure we are making the progress needed to reach the 2050 target. This work is crucial to also identify the resources we need as we move forward. As the urgency and intensity of this work increases, more financial and staff resourcing will be required.

   The annual sustainability and climate change report from Strategic Initiatives will play a pivotal role as part of measurement and monitoring and will provide a high-level overview of all of the work happening across the City. It is an opportunity for staff to provide a transparent report to Council and is also an opportunity for the City to be held accountable on its overall progress to reach the 2050 target.

2. **Plans and Strategies** – Now that the target for 2050 has been revised, all future plans and strategies need to reflect this new target and consideration must be given to how this new target will impact the work. The next iteration of the CorCAP is expected to occur prior to 2030 but will largely be focused on the 2050 net-zero target. This is important as it will ensure that all divisions across the City are working towards this common goal and places ownership on all staff to implement the actions to reach the 2050 target.

3. **Potential Reduction Pathways and Offsets** – The pathways to net-zero cannot remain static. As barriers are removed, new legislation introduced, and new technologies are made available, pathways to net-zero are fluid. It is imperative that staff across the City continue to evolve and have sufficient resources so they can be able to identify new pathways to ensure we meet our net-zero target. In addition, resources will be required to explore offsets as it is not anticipated that we will be in a position to have no emissions and so we will need to identify the most suitable ways to offset the emissions we do have as a City.

The City recognizes that a net-zero target will impact all divisions across the City. Some of those impacts can be anticipated and therefore, we can plan accordingly while others are still unknown at this time. There are several factors that we cannot control or predict as a municipality. However, despite these uncertainties the City of Waterloo is taking bold action to continue to build on the momentum we have been gaining in recent years. It is clear we cannot do this alone, and we will continue to work as a larger community to share our insights, build on each other's strengths, and make progress in the common goal of a sustainable future.

Appendix A: City of Waterloo Timeline of Environmental Actions

Below is a brief overview of the history of the City's environmental sustainability and climate change work since 1989, when the City implemented its Environment First Policy.

- 1989
  - Development of the Environment First Policy
- 1999
  - The City joins the FCM partners for Climate Protection Program
  - Council agrees to work towards a corporate GHG emissions reduction target of 20% and a community reduction target of 6% by 2009
  - Completion of the City's Clean Air Plan
- 2002
  - Council accepts the Environmental Strategic Plan
- 2010
  - The Environmental Strategic Plan becomes the Environmental Strategy
- 2011
  - The City begins tracking its GHG emissions as per O. Reg. 507/18
  - Council approves the decision to join ClimateActionWR (previously Waterloo Region Climate Collaborative)
  - Stormwater Management utility rates are introduced
- 2013
  - Council approves the City's first Energy Conservation Demand Management (ECDM) Plan
- 2014
  - The City becomes a pledging partner in the Impact Network (previously the Regional Sustainability Initiative)
- 2015
  - Creation of the City's Sustainability Office
- 2016
  - Formation of the Sustainability Advisory Committee (SAC)
- 2018
  - Corporate emissions fall by 23% from the 2011 benchmark
  - Council endorses the Community Energy Investment Strategy
  - Council endorses a community GHG emissions reduction target of 80% by 2050
  - Council endorses the Green Building Policy for City-Owned Buildings
- 2019
  - "Enable bold local actions to address the climate change crisis" is named as an objective in the 2019-2022 Strategic Plan
  - Council declares a climate emergency and adopts corporate GHG emissions reduction target of at least 80% by 2050

- 2020
  - Council approves the Terms of Reference for the Corporate Climate Action Plan
- 2021
  - Council endorses TransformWR and community GHG emissions reduction targets of 50% by 2030 and 80% by 2050
  - Council approves the Corporate GHG and Energy Roadmap Phase 1
- 2022
  - The City hires a Senior Sustainability Officer to focus on environmental and climate change actions and the role is relocated to the Office of the CAO
- 2022
  - Creation of the Climate Action Reserve Fund (CARF)
- 2023
  - The City publishes the first Sustainability and Climate Change Update Report, outlining the progress on environmental sustainability and climate change initiatives
  - Council sets a more powerful corporate GHG reduction target of net-zero by 2050

STAFF REPORT
Strategic Initiatives

Title:	Final 2024-2029 Corporate Climate Action Plan (CorCAP)
Report Number:	CAO2024-001
Author:	Ena Ristic
Council Date:	January 29, 2024
File:	N/A
Attachments:	Appendix A: 2024-2029 Corporate Climate Action Plan
Ward No.:	City Wide

Recommendations:

1. That Council approves staff report CAO2024-001.
2. That Council approves the 2024-2029 Corporate Climate Action Plan (CorCAP) as attached in Appendix A.

A. Executive Summary

The Corporate Climate Action Plan (CorCAP) is a plan to reduce the greenhouse gas (GHG) emissions created by the City of Waterloo. This includes all scope 1 (direct from source) and scope 2 (indirect from source) emissions from City-owned buildings and facilities, fleet and equipment, and staff activities. Scope 3 (indirect from supply chain emissions) will be considered directly for solid waste production and business travel. Scope 3 emissions from staff commuting, embodied carbon for corporate assets, land-use change planning and approvals, supply chain materials, and upstream transportation will be considered through additional data collection, research, or priming actions for future work. The majority of currently measured corporate GHG emissions stem from City buildings and facilities (70%). Fleet and equipment emit 22%, solid waste emits 6%, and collectively streetlights, travel, and wastewater buildings emit 2%.

The terms of reference for the CorCAP were approved in October 2020 (CAO2020-013). The development and direction of the plan were approved by Council on October 16th, 2023 (CAO2023-026). During that Council meeting, Council also brought forward a powerful new goal of net-zero by 2050, replacing the previous GHG emissions reduction target for 2050 which was an 80% reduction (compared to 2010 levels). This change will not impact the 2024-2029 CorCAP, but staff will take care to alter all future work related to the CorCAP to adhere to the new target.

The CorCAP builds on the established sustainability and climate change work completed by the City to date (as highlighted in the Sustainability and Climate Change Baseline Report (CAO2023-013)), as well as best practices from similar municipalities across Ontario and Canada. The plan also integrates with the existing City and regional climate plans including the Corporate Climate Change Adaptation Plan, TransformWR, the Community Climate Adaptation Plan for Waterloo Region, and the Community Energy Investment Strategy.

Significant engagement was conducted with City staff from every division, the Sustainability Advisory Committee (SAC), and community partners including Climate Action Waterloo Region (ClimateActionWR) and Waterloo Region Community Energy (WRCE). Their input was invaluable in ensuring that the plan would be grounded in the unique capabilities and circumstances of the City, respect staff's resources and existing responsibilities, and be transformational to the way climate change mitigation and adaptation is incorporated at every level.

The plan features 61 actions divided into short (1-2 years), medium (3-4 years), and long-term (5+ years) timelines. Each action contains a description, recommended division involvement, and a qualitative estimation of potential GHG reduction impacts. The actions are varied and holistic in scope and include measurable impact projects, immeasurable impact projects, supporting projects, and community-impacting municipal actions.

Implementation of this plan will begin immediately following approval by Council. An annual update of the progress of the CorCAP will be provided as part of the annual sustainability and climate change update reports, beginning in 2025. This plan is intended to cover a span of 5 years, ending in 2029. Several actions in this plan will continue to evolve and grow past the intended end date of 2029 and will work towards the final goal of net-zero by 2050.

The completion of the CorCAP cements the final planning piece of the City's approach to community and corporate climate change mitigation and adaptation. The City is now ideally positioned to take meaningful action and focus its efforts on implementation. Municipal government sets the tone and intention of a community, and it is the responsibility of the City to be a leader in this space and to guide Waterloo to a sustainable future. However, this cannot be done alone. The journey will require significant contributions from all levels of government and continued, sustained effort and advocacy by everyone.

B. Financial Implications

In December 2022, Council established the Climate Action Reserve Fund (CARF) to provide funding for capital projects, initiatives, and studies that support the City's work toward both the mitigation of and adaptation to climate change. However, funding for sustainability and climate change includes more than just CARF funding. For example, many rehabilitation/replacement projects funded by the Capital Infrastructure Reinvestment Reserve Fund (CIRRF) contain elements of "like-for-modern-equivalent"

which provide climate benefits along with replacing an aging asset. Our enterprises (e.g., City Utilities - Stormwater) also deliver numerous programs and capital projects that support sustainability through measures like flood control and environmental compliance.

While significant progress has been made though the creation of CARF and the above highlighted other contributing funding sources, future increased additional capital investment will be required. Consideration and prioritization of increased sustainability and climate change funding will need to be included in future budget processes with recommendations brought forward for Council's consideration and approval, including potential utilization of debt to advance projects. In addition, ongoing advocacy to senior levels of government along with the leveraging of grant opportunities will continue to be an area of priority.

C. Technology Implications

None.

D. Link to Strategic Plan

(Strategic Priorities: Reconciliation, Equity, Accessibility, Diversity, and Inclusion; Environmental Sustainability and Climate Action; Complete Community; Infrastructure and Transportation Systems; Innovation and Future-Ready)

(Guiding Principles: Equity and Inclusion; Sustainability; Integrity; Workplace Wellbeing; Community-centred; Operational Excellence)

This report links to the strategic priority of Environmental Sustainability and Climate Action. More specifically, it directly relates to Objective 1 Climate Leadership. The creation and implementation of the CorCAP requires the collaboration of organization and community champions to align activities to achieve climate mitigation. The CorCAP is also a tool to allow the City to meet its corporate GHG emissions reduction goals. In addition, the CorCAP also fulfills Objective 3 Environmental Sustainability Mindset by embedding environmental sustainability into internal operational decision-making and enables staff to evaluate operational decisions with consideration for the City's GHG mitigation goals. The development of the CorCAP has also allowed for the education and awareness raising regarding climate change mitigation with the City and the community to advance the City's climate action goals.

E. Previous Reports on this Topic

- CAO2023-026 Corporate Climate Action Plan Development Update, October 16, 2023
- CAO2020-013 The City of Waterloo Climate Action Plan (CorCAP), October 5, 2020

Final 2024-2029 Corporate Climate Action Plan (CorCAP)
CAO2024-001

1.0 Background

The terms of reference for this Corporate Climate Action Plan (CorCAP) were approved by Council in October 2020 (CAO2020-013). The primary purpose of the CorCAP is to plan a detailed and integrated approach to reducing the City of Waterloo's corporate greenhouse gas (GHG) emissions, in line with the reduction target of 50% by 2030 as compared to a 2010 baseline. This plan will be one of several mechanisms, actions, and plans that the City of Waterloo has or is currently implementing to reduce its impact on the environment and protect the community and residents against the effects of climate change. An update of the development of the plan was presented to Council on October 16, 2023 (CAO2023-026).

2.0 Modifications to the Original Terms of Reference

Some adjustments were made to the original terms of reference (TOR) for the CorCAP to better reflect the current circumstances and resources of the City. These adjustments largely reflect the positive progress the City has made in its climate change efforts. They were made to most efficiently utilize the work that has already been done while reducing potential redundancy and adjusting to the current context of the City and the work in this field. Five changes have been implemented:

1) The content scope of the plan has been expanded to include measurable impact projects, immeasurable impact projects, supporting projects, and community-impacting municipal actions.
2) A Carbon budgeting framework is under investigation by staff including closely monitoring the outcomes of early adopters.
3) The CorCAP Committee has been replaced by the Environmental Sustainability Team (EST).
4) The focus on investigating GHG reporting frameworks has been eliminated, as the City has since brought that expertise in-house.
5) The completion date of the plan has shifted from summer 2022 to January 2024.

3.0 Technical Scope of the Plan

A GHG scope encompasses all the emissions that will be included or excluded from an analysis or plan and is defined by national and international standards. All scope 1 and

scope 2 emissions (as defined by the GHG protocol[1]) are being considered within the CorCAP. Scope 3 emissions will be considered on a sliding scale, as described below:

- Solid waste production and business travel emissions will be directly considered.
- Staff commuting, embodied carbon for corporate assets, and land use change emissions will undergo data collection and policy review.
- Supply chain materials and upstream transportation emissions will have actions that prime for future management.

Scope 3 emissions were separated into these categories of action because of assumed data or scope of influence constraints within the next five years.

4.0 Plan Creation

4.1 Review of Best Practices and Current Baseline

The basis of this plan was built upon the work previously highlighted in the 2023 Sustainability and Climate Change Update Report (CAO2023-013). This report detailed the current baseline of sustainability and climate change work, including mitigation, of the City. This background was paired with a review of best practices in corporate climate action plans from municipalities with similar contexts within Canada, focusing primarily on Ontario. This included municipalities that were of a comparable size and those that worked within a two-tier municipal government system. Much of this work formed the basis for the engagement of the plan and provided practical action examples around which to tailor discussions.

4.2 Engagement

Engagement with various internal and external partners was a cornerstone of the creation of this plan. During this process City staff, the SAC, Council, and community climate partners (ClimateActionWR and WRCE) were engaged through facilitated meetings, Council presentations, and review requests. In addition, the plan was presented to the Environmental Sustainability Team (EST), Operational Leadership Team (OLT), and Extended Corporate Management Team (ECMT) for their input and review. These contributions were paramount to creating a plan that was grounded, implementable, and transformational.

Themes highlighted during this engagement included:

- There is a willingness among staff, community partners, and Council to act on climate issues and interest in the topic.
- Staff recognized the barriers of having a ‘silo effect’ within the organization, and that this would need to be overcome for efficient climate action.
- There are several ongoing or planned initiatives in this space that would benefit from increased staff and public awareness and engagement.
- Additional education, learning, and training (internally and externally) is critical to transformational change.

[1] The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard. Revised Edition. 2004. World Resources Institute and World Business Council for Sustainable Development.

- Climate work needs to be integrated throughout the processes and procedures in the municipality to remove barriers for staff and encourage action.
- Staff have limited resources within their normal operations to incorporate significant actions.
- The technical GHG emissions scope of the City's climate change mitigation work requires further definition and discussion, especially as it pertains to scope 3 emissions.
- Climate change planning (adaptation and mitigation) should be done on a longer-term strategic timeline. Initiatives that may not be feasible currently ("blue sky" projects) could be made possible through proper planning in the future.
- Council and staff need to be made more aware of how individual projects will affect GHG emissions.

All reviews and discussions during this process were considered and integrated into the plan as appropriate.

5.0 Council Commitment to Net-Zero

Council approved a more aggressive corporate GHG emissions reduction target for 2050 on October 16, 2023. The previous target of an 80% reduction in corporate GHG emissions (as compared to 2010 levels) was replaced with a new net-zero by 2050 target. This revised target does not affect the 2024-2029 CorCAP, but staff will take care to alter all future work to adhere to the new target.

6.0 Final 2024-2029 Corporate Climate Action Plan Overview

The final CorCAP includes 61 actions divided into short (1-2 years), medium (2-4 years), and long-term (5 year +) timelines. Within these timelines, the actions are sorted into a qualitative assessment of impact ranging from 'high' to 'moderate' to 'low'. Some of the actions which are more community facing, or which recommend increasing the scope of this plan and therefore cannot be tied back to the original targets, are marked with an 'N/A'. The plan includes recommendations for reporting and monitoring, plan and project management, action staffing, and next steps. There is heavy emphasis on implementing a more holistic approach to GHG mitigation that ensures that technical solutions are complemented by staff education, culture shifts, data collection, and accompanying process and procedure changes. This plan works to mitigate the risk of uncertain future legislative and technological change, but also recognizes that the solution cannot only be a municipal one. Consistent and collaborative advocacy to upper levels of government is an essential component of ensuring the City has the funding needed to fully realize its climate change mitigation goals.

7.0 Next Steps

Following approval of this plan, staff will begin implementation of the actions. Updates of the progress of the plan will be provided on an annual basis by staff as part of the sustainability and climate change update report to Council. The update will include a brief descriptor of the status of each action marked with a 'Completed', 'In-progress', or

‘Not completed’. Actions with notable progress or updates will include a brief descriptor and/or reference to the relevant Council report. This plan will cover a span of 5 years.

This plan is one of several mechanisms and initiatives designed to help the City of Waterloo reach its 2030 and 2050 goals. Several actions in this plan will continue to evolve and grow past the intended end date of 2029 and will work towards the final goal of net-zero by 2050. As the sunset date of the plan approaches, staff will begin to re-evaluate this plan in the context of the changed landscape of legislation, available technologies, staff culture and expertise, and available funding. Staff will then propose the next best actions in terms of strategy. This may be to provide updates to this plan, create a new five-year plan, create a 20-year plan, or a combination.

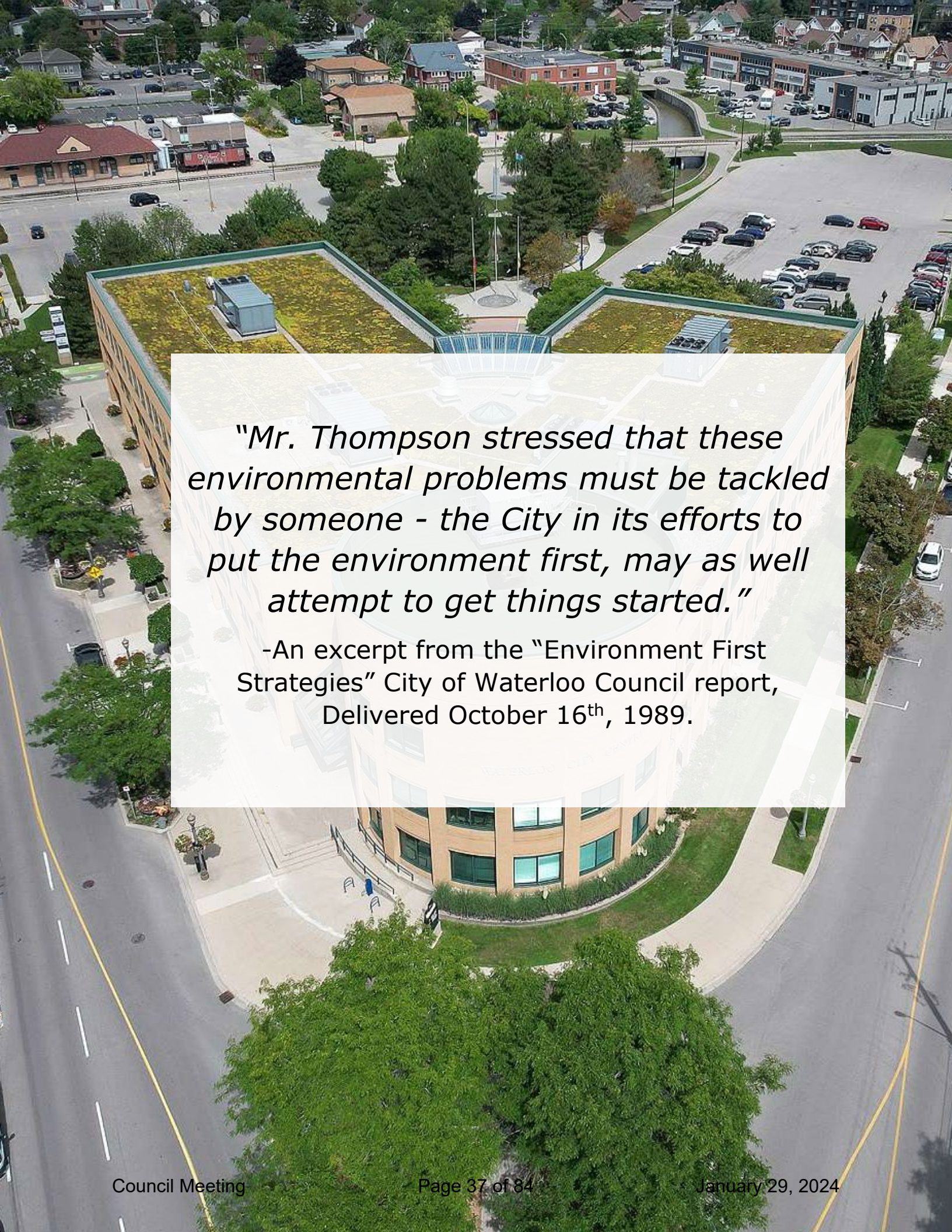
In the meanwhile, new ideas in sustainability will continue to be fostered at the City as staff look to integrate climate change considerations into everything they do in a way that is grounded, implementable, and transformational.

Appendix A: 2024-2029 Corporate Climate Action Plan

City of Waterloo

Corporate Climate Action Plan

2024-2029



"Mr. Thompson stressed that these environmental problems must be tackled by someone - the City in its efforts to put the environment first, may as well attempt to get things started."

-An excerpt from the "Environment First Strategies" City of Waterloo Council report, Delivered October 16th, 1989.

The City of Waterloo is committed to climate action and to making transformational changes to create a sustainable and healthy city.

We are already experiencing a changing climate in Waterloo: more frequent and extreme weather events (severe rain, ice, and windstorms) and heat waves with record-setting temperatures. The devestating forest fires that threatened other communities across Canada this year impacted the air-quality in our city. These changes are affecting our community, our infrastructure, our economy and our natural environment.

Climate change is here, and it affects us all. We are past the point of sounding the alarm bell. Real, urgent action is needed to make meaningful change.

Waterloo's Corporate Climate Action Plan outlines the many ways we have been and will continue to reduce our corporate greenhouse gas emissions. This work integrates sustainability and climate change into everything we do.

The Corporate Climate Action Plan is just one of the ways we are making Waterloo a healthier, greener, more sustainable city. Waterloo has already taken a meaningful action to address the climate crisis by:

- Declaring a climate emergency
- Adopting ambitious greenhouse gas emissions reduction targets of 50% by 2030 and net-zero by 2050
- Prioritizing Environmental Sustainability and Climate Action in our strategic plan
- The creation and adoption of the City of Waterloo Green Building Policy
- Ongoing electrification of facilities and fleet
- Creating a Sustainability Advisory Committee to advise council on the implementation and promotion of the city's sustainability program

The Corporate Climate Action Plan will help the City meet the environmental sustainability objectives in our Strategic Plan. We want to be a leader in environmental sustainability practices and climate action, making transformational changes related to City operations and services. Through this plan, we are embedding environmental sustainability into our decision-making process, ensuring we consider greenhouse gas mitigation and adaptation goals as we evaluate our operations.

By acting today to reduce our emissions and adopt sustainable practices, we can mitigate the impacts of City operations on climate change and work towards preserving a stable environment.

We are planning for the long term, prioritizing sustainability now to create a future-ready Waterloo for tomorrow.

Sincerely,

Mayor Dorothy McCabe

PLAN ACKNOWLEDGEMENTS

This plan would not have been possible without the participation, enthusiasm, and passion of City of Waterloo residents, community partners, and staff. We would like to thank the following groups for their time and input.

AUTHORS

- **Ena Ristic, Senior Sustainability officer**
- **Sandy Little, Director of Strategic Initiatives**

COMMITTEES OF COUNCIL

- **Sustainability Advisory Committee (SAC)**

CORPORATE AND COMMUNITY PARTNERS

- **ClimateActionWR (Climate Action Waterloo Region)**
- **Uptown Waterloo Business Improvement Area (Uptown Waterloo BIA)**
- **Waterloo Region Community Energy (WRCE)**

CITY OF WATERLOO STAFF

- **Building Standards**
- **Community Outreach and Programming Services**
- **Corporate Communications**
- **City Utilities**
- **Economic Development**
- **Engineering Services**
- **Environment Sustainability Team (EST)**
- **Facility Design and Management Services**
- **Finance (including Asset Management)**
- **Fire Rescue Services**
- **Fleet and Procurement**
- **Human Resources**
- **Information Management and Technology Services**
- **Legal Services**
- **Legislative Services**
- **Municipal Enforcement Services**
- **Parks, Forestry, and Cemetery Services**
- **Planning**
- **Reconciliation, Equity, Accessibility, Diversity, and Inclusion**
- **Recreation Services**
- **Transportation Services**
- **Waterloo Public Library**

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EXECUTIVE SUMMARY

CORPORATE CLIMATE ACTION PLAN BACKGROUND

A Corporate Climate Action Plan ("CorCAP") is a plan to reduce **corporate greenhouse gas (GHG)** emissions and integrate sustainability and climate change into all applicable City processes and procedures. The plan is a mechanism to reduce the City of Waterloo's corporate greenhouse gas emissions by 50% by 2030 and **net-zero** by 2050 relative to 2010 levels. This plan complements existing City and Regional adaptation and mitigation climate change plans (Corporate Climate Adaptation Plan, TransformWR, Community Climate Adaptation Plan for Waterloo Region, Community Energy Investment Strategy) to ensure a fulsome approach to climate action.

SCOPE OF THE PLAN

The plan will include considerations of all scope 1 (direct from source) and scope 2 (indirect from source) emissions from City-owned buildings and facilities, fleet and equipment, and staff activities. Scope 3 (indirect from supply chain) emissions will be considered in various capacities. Solid waste production and business travel will be directly considered. Commuting, **embodied carbon** for corporate assets, and land use change and approvals will require more research or data-collection. Supply chain materials and upstream transportation are areas where the City may be unable to take immediate action; however, the plan will work to ensure that the City is prepared to act in the future when conditions such as available technologies, economic landscapes, and legislative requirements have matured. The plan considers actions that impact measurable corporate assets, immeasurable corporate assets, supporting projects, and community-impacting municipal actions.

CORPORATE INVENTORY

The City currently emits approximately 5,391 tonnes of CO_2e per year (using 2021 figures). The majority of currently measured corporate greenhouse gas emissions (70%) stem from the City's buildings and facilities. Fleet and equipment emit 22%, solid waste emits 6%, and collectively streetlights, travel, and wastewater facilities emit 2%.

ACTIONS

The plan features 61 actions divided into short, medium, and long-term timelines. The actions are varied in scope, level of effort, and influence. Each action contains a description, recommended division involvement, and qualitative estimations of potential greenhouse gas reduction impacts. The actions were determined through research of best practices, significant staff engagement, engagement with community partners, and feedback from the Sustainability Advisory Committee. The focus on the creation of the actions was that they be grounded in the realities of the City, implementable within staff's work, and transformational in scope.

We are fortunate to have close ties with our community partners (CAWR, WRCE), energy partners (Enbridge, Enova Power, GRE), and post-secondaries, and know it is important to acknowledge that even within a corporate context, continued collaboration with these community organizations will be needed to move us all forward collectively towards our sustainability goals.

PLAN MANAGEMENT AND MONITORING

The overall direction and implementation of the plan will be managed by the **Strategic Initiatives Division (SI)** and overseen by the **Environmental Sustainability Team (EST)**. The Strategic Initiatives

Division and the Environmental Sustainability Team will work with divisions across the City to facilitate the selection of project leads and the implementation of the actions in the plan. An update on the progress of the plan will be provided every year as part of the annual Sustainability and Climate Change Update Report to Council.

FINANCIAL

This plan will be funded, in part, by the Corporate Climate Action Plan Implementation project (ref #143), with action items also funded by capital and operating initiatives across many divisions and included in the 2024-2026 capital and operating budgets. Increased capital investment, along with leveraging debt and grant opportunities, will be required to achieve GHG reduction targets.

NEXT STEPS

This plan will initially span a five-year period and be reviewed and updated in 2029. This plan will be part of an ongoing series of actions, strategies, and plans throughout the City implemented to reach the goal of net-zero by 2050.

TERRITORIAL ACKNOWLEDGEMENT

In the spirit of truth-seeking, respect, and Reconciliation, the City recognizes that members of staff and the community are settlers who benefit from the lands cared for by the Indigenous Peoples from the very beginning. Waterloo is situated on the land traditionally cared for by the Haudenosaunee, Anishnaabe and Neutral Peoples. We acknowledge the enduring presence and deep traditional knowledge and philosophies of the Indigenous People with whom we share this land today. Acknowledgment of the traditional lands of Indigenous Peoples is only a starting point in the City's journey toward Reconciliation.

One of the core goals in creating this plan was to ensure it would help further a sustainable future for the City. When thinking of how to define the somewhat-abstract notion of "sustainability", we often like to borrow from the definition of the Seventh Generation Principle from the Great Law of the Haudenosaunee Confederacy: **In every deliberation, we must consider the impact of our decisions on the next seven generations**.

Seven generations ago the City of Waterloo was still the Village of Waterloo located on Block 2 of the Haldimand Tract. The counted population was less that 1,600 mostly German residents living in a concentrated core area.

Six generations ago Waterloo Park was created and opened for the first time because of a growing number of residents transitioning from rural to urban living.

Five generations ago people from the Town of Waterloo would fight and serve in the First World War.

Four generations ago Canada gained full political independence from Britain because of the Statute of Westminster.

Three generations ago Indigenous Peoples of Canada gained the right to vote federally without losing their "Indian Status".

Two generations ago construction began on Waterloo City Centre, where the government of the City is centered today.

One generation ago the first legally recognized same-sex marriages were performed in Ontario.

Today, the City of Waterloo is virtually unrecognizable from the small Germanic farming town built around a Mennonite Grist Mill. It is called home by over 151,440 thousand people including 31,340 students from across the globe (based on 2016 and 2021 census data). It plays host to one of the largest tech sectors in Canada, three world-class post-secondary institutions, and a booming insurance sector.

Despite all this progress, it is important to recognize that the echoes of decisions made all those generations ago still impact our City today. The layout of our City, the events, our ability to enjoy Waterloo Park and other greenspaces, our ability to call this land home, the landscape we have lost and gained, and much more were all founded by those who could not have imagined what their choices would mean for the future.

We have no idea what the future will look like in seven generations, and we have no idea what impacts our decisions today may have, so it is important that we try our best to make good ones.

INTRODUCTION

WHAT IS A CORPORATE CLIMATE ACTION PLAN?

This City of Waterloo Corporate Climate Action Plan ("CorCAP") is a plan to reduce corporate greenhouse gas emissions AND integrate sustainability and climate change into all applicable City processes and procedures. The plan is holistic and focuses on four different areas of action:

1) **Measurable Impact Projects.** These are activities that have environmental effects that can be clearly measured, tracked, and reported. Examples include on-site energy generation, fleet transition to electric vehicles, district energy heating systems, and conducting waste audits.

2) **Immeasurable Impact Projects.** These are activities that have environmental impacts that cannot be clearly measured, tracked, or reported. Examples include education (internal and external), advocacy, and deploying a "Climate Lens".

3) **Supporting Projects.** These are activities which have no environmental effects, but rather support the development or implementation of measurable or immeasurable impact projects. Examples include funding, partnerships, and reporting.

4) **Community-Impacting Municipal Actions.** These are activities which impact tools that the municipality uses to encourage community actions. Examples include policies, by-laws, and community grants.

WHERE DOES THIS PLAN FIT?

This Corporate Climate Action Plan is designed to integrate with and complement the City's existing climate action plans. This includes the regional community climate **mitigation** plan TransformWR, the Corporate Climate Change Adaptation Plan, the corporate Energy Conservation Demand Management Plan, the Community Energy Investment Strategy, and the 2023-2026 Strategic Plan. The plan has also taken into consideration existing and future business and comprehensive planning throughout the corporation.

While this is a corporate plan, it is important to recognize that a municipality's unique role as a governing organization means that actions which are undertaken internally will inherently impact the community. Staff knowledge, policies, culture, direction, goals, and attitudes influence the ways the City is governed and the services we provide to the community. This plan acknowledges that many of its corporate facing actions will also have positive benefits for the community, in-line with our community goals.

WHAT ARE THE GOALS?

This plan is a mechanism to help the corporation achieve the goal of 50% greenhouse gas emissions reductions by 2030 as compared to 2010 levels, and net-zero by 2050. The goal is to position the City to be a leader in transformational climate action and to create a cultural, regulatory, and intellectual environment where greenhouse gas emissions considerations become part of the norm in all that we do.

WHAT IS THE TECHNICAL SCOPE OF THIS PLAN?

The technical scope of this plan describes which scope of greenhouse gas emissions will be included or excluded from consideration. A greenhouse gas emissions scope encompasses all the greenhouse gas emissions (GHG) that will be included or excluded from an analysis or plan and are defined by national and international standards. It is important to define this as the scope of a municipality can be far-reaching and go beyond its ability to influence change. To ensure consistency in measurement of emissions, and avoid double counting, the GHG protocol is the most common framework used around the world to scope and measure emissions, which are classified in the following ways:

Scope 1 emissions are direct GHG emissions from sources that are owned or operated by the corporation. Examples include combustion processes from boilers in buildings and facilities, vehicles, and furnaces.

Scope 2 emissions are indirect GHG emissions from the generation of purchased electricity consumed by the corporation. An example would include power utilized by City facilities, for instance, interior lighting for an office space, from an offsite production facility.

Scope 3 emissions result from the activities of the corporation and its staff, but which are not from sources directly owned or operated by the company. Examples include purchased goods and services, business travel, and employee commuting.

All scope 1 and 2 emissions (as defined by the GHG Protocol) are being considered within this CorCAP. scope 3 emissions will be considered on a sliding scale. The aim is to respect the current resource capabilities of the City as well as the cultural, technical, and operational landscape in which it operates, while also striving to prepare staff and our partners for a more ambitious future. The below graphic highlights which scope 3 emissions will be directly considered in this plan, which ones require more research and data collection, and which actions cannot be currently completed, but can be prepared for in the future. Scope 3 emissions were sorted based on the current or anticipated availability of data or sphere of influence within the City within the next five years, as well as the economic, technological, and social landscape in which the City operates.

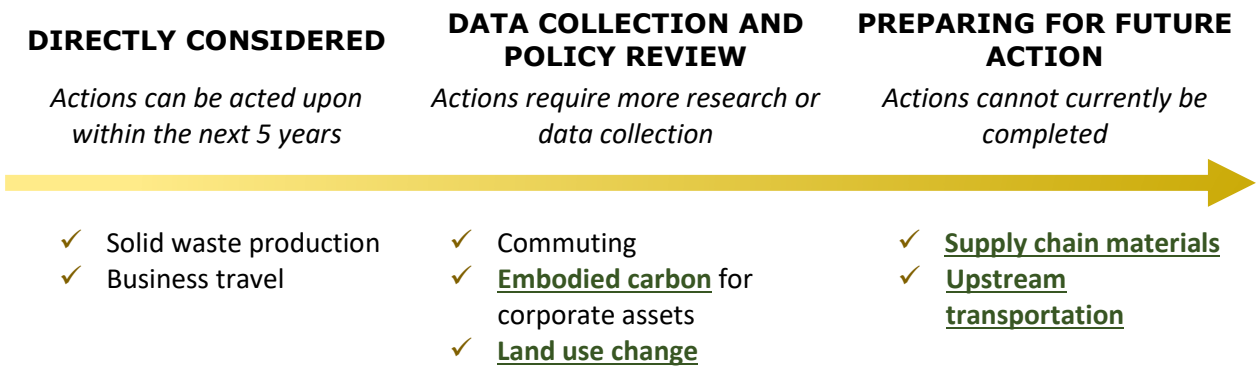

Figure 1 Break down of the considerations of scope 3 greenhouse gas emission in the Corporate Climate Action Plan

The unique role of municipalities as an interface with the community means that often actions which are corporate-focused may have intended or unintended impacts to the larger community. Several actions in this plan will also have positive impacts to the community of Waterloo.

WHY DO MUNICIPALITIES MATTER?

Municipalities are a critical component of reaching the planet's greenhouse gas mitigation targets, although they cannot do this alone.

- Municipalities have direct or indirect control of 44-50% of greenhouse gas emissions in Canada.
- Municipalities are responsible for their own direct and indirect corporate emissions.
- Municipalities own approximately 60% of public infrastructure in Canada.
- Municipalities (local municipalities and education) only receive approximately 10% of total taxes paid to all levels of government. Within Waterloo, the City receives 3%, the Region of Waterloo receives 6%, and education receives 1%.
- Municipalities have a role to protect their citizen's health, social, and economic well-being.
- Municipalities know their local context the best and are closest to the voices of residents.

The City of Waterloo is a key player in the fight against climate change and must take action accordingly in response to the items within our direct control or influence.

WHAT ARE THE RISKS OF INACTION?

The broader impacts and risks of inaction on climate change have been known for decades. This includes increasing temperatures, more severe storm events, more extreme changes in precipitation (flooding or drought) and decreased predictability of weather systems. These impacts can further cascade to affect local and global food systems, infrastructure, social systems, economic systems, and health systems. The most vulnerable are also the most likely to be negatively impacted and have the least number of resources to increase their own resilience.

One of the largest difficulties, however, of tying the consequences of climate action, or inaction, to those risks is that emissions are a global problem, while action is often done on a local scale. One municipality may take aggressive action to lower its emissions but still be significantly impacted by climate change, while another may take on a business-as-usual approach and face very few consequences.

It is therefore important to highlight the risks of inaction for a municipality that are grounded in factors other than the direct impacts of climate change:

1) Financial
    - There is a risk of losing access to early adopter grants and funding from various levels of government.
    - Locking-in carbon-dependent infrastructure and technology may result in additional higher costs in the future.
    - Losing on opportunities for economic development and talent attraction
    - Sudden increases in costs if carbon prices increase.

2) Social

- Delaying the combined efforts of partner municipalities through lack of action.
- Lowering the quality of life for residents.
- Furthering the severity of climate-related impacts on those less advantaged.

3) Reputational

- Eroding trust within the community and losing social capital.
- Failing to meet strategic priorities.
- Failing to create an environmentally progressive community.

GHG EMISSIONS INVENTORY

WHAT IS A GREENHOUSE GAS?

Greenhouse gases are gases in the earth's atmosphere that trap heat. These gases are an essential part of maintaining the earth's temperature, without them, the average temperature would be -18 degrees Celsius. When GHGs exceed certain levels, the atmosphere retains more heat. This imbalance can cause climate change by destabilizing weather systems and causing increasing temperatures, changing precipitation patterns, more intense storm events, and more unpredictable weather. The six most common GHGs are **carbon dioxide (CO2)**, **methane (CH4)**, **nitrous oxide (NOx)**, **hydrochlorofluorocarbons (HCFCs)**, **hydrofluorocarbons (HFCs)**, and ozone in the lower atmosphere.

WHAT IS A GREENHOUSE GAS EMISSIONS INVENTORY?

A **greenhouse gas inventory** is the analysis and accounting of all greenhouse gas emissions emitted within a certain scope. These analyses use several different information sources including fuel usage, electricity use data, waste weight, and mileage, and nationally determined emissions factors.

WHAT IS THE DIFFERENCE BETWEEN A CORPORATE AND COMMUNITY INVENTORY?

A **corporate** GHG inventory accounts for all emissions created by the corporation of the City of Waterloo. This includes all City-owned buildings, fleet, staff activity (such as driving and flying), and equipment. The corporation of the City of Waterloo conducts a corporate GHG inventory every year.

A **community** GHG inventory accounts for all emissions created by the larger community of Waterloo. This includes all transportation, homes, businesses, waste, and agriculture within the City of Waterloo. The City is part of a larger collaborative with all the area municipalities known as ClimateActionWR. One of the initiatives that ClimateActionWR leads is the measurement of community emissions every five years and reports on it as a region. Community emissions make up most of the emissions within the geographic boundary of the City of Waterloo.

CORPORATE GREENHOUSE GAS EMISSIONS INVENTORY

The City of Waterloo's Corporate GHG emissions total 5,391 tonnes of carbon dioxide equivalent as of the year 2021. The largest source of these emissions are buildings and facilities, which make up approximately 70% of total corporate emissions. Fleet and equipment, such as City fleet and parks maintenance equipment, comprise approximately 22%, followed by solid waste at 6%, and then streetlights, travel, and wastewater buildings which together comprise roughly 2% of emissions.[1].

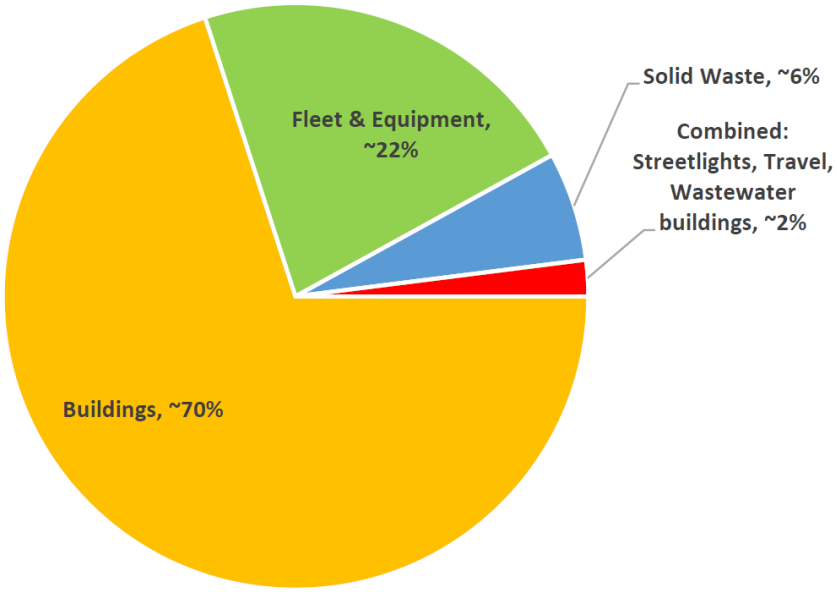

Figure 2 City of Waterloo Corporate Greenhouse Gas Emissions (2019)

COMMUNITY GREENHOUSE GAS EMISSIONS INVENTORY

All eight municipalities within the Region of Waterloo calculate their community emissions together as part of the regional mitigation initiative TransformWR. The community of the region of Waterloo emitted 3.8 million tonnes of CO_2e in 2020[2]. Approximately half of emissions from the community are a result of transportation, followed by 45% from our homes and workplaces. The remainder is from agricultural activities in the region and waste.

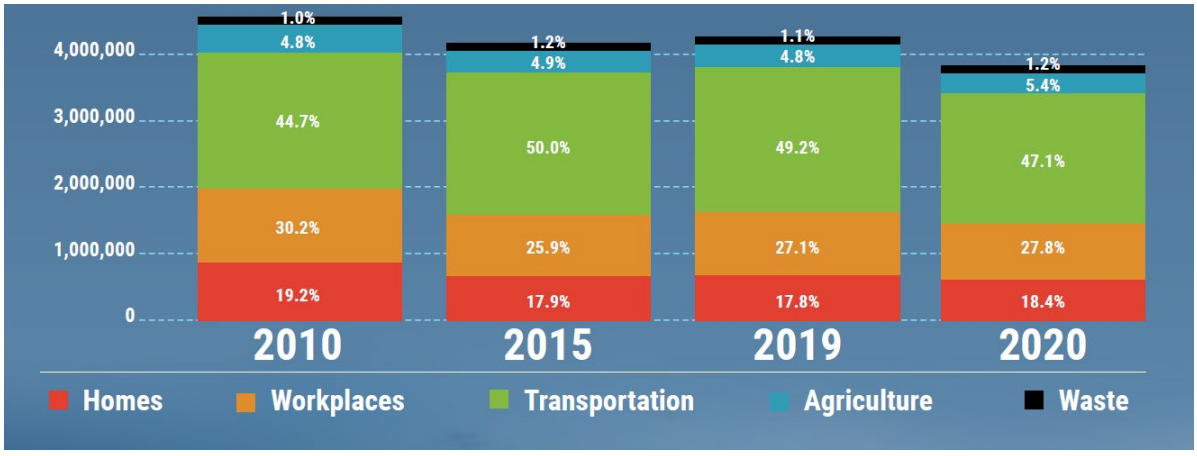

Figure 3 Region of Waterloo Community Greenhouse Gas Emissions 2010-2020 (Our Progress, Our Path: 2023)

[1] Staff Report. *COM2021-027 Corporate Greenhouse Gas and Energy Roadmap-Phase1*. (2021).
[2] ClimateActionWR. *Our Progress, Our Path 2020*. (2023).

PLAN MANAGEMENT

The management and monitoring of this plan will be the responsibility of the Strategic Initiatives Division, under the guidance of the Environmental Sustainability Team (EST) and Council where appropriate. Individual actions will be the responsibility of all departments and divisions across the organization. The nature of this plan necessitates a flexible and organization-wide system of management to integrate the emission reduction actions in both a top-down and bottom-up approach. This approach allows for flexibility, better allocation of resources, and better integration of staff knowledge throughout the entire organization.

The Strategic Initiatives Division is a division of the City of Waterloo within the Office of the CAO. This division houses the coordination of the Sustainability and Climate Change portfolio for the Corporation and Community of the City of Waterloo. They will be responsible for:

- The overall high-level management of the plan
- Monitoring high-level plan progress
- Supporting divisions when needed
- Reporting the progress of the plan to Council
- Bringing forward actions to EST for direction and approval

The Environmental Sustainability Team is a team consisting of leadership and staff representatives from various divisions across the City. The purpose of this team is to streamline City personnel across divisions with environmental sustainability responsibilities into a team that provides a centralized focus on helping to implement sustainability and climate change plans. They will be responsible for:

- Approving the direction of the plan
- Recommending staff resources
- Guiding the direction of the plan

Staff are the individuals within the organization who will be responsible for managing individual actions, or elements of individual actions. They are responsible for:

- Completing individual actions.
- Reporting back the progress to the Strategic Initiatives Division.
- Requesting funding as part of the City's budget process and authoring staff reports as required.

ACTIONS

The development of this plan placed high importance on the actions *being realistic, practical*, and *grounded* in the knowledge and daily realities of staff at the City of Waterloo. It considered how to best acknowledge and leverage current and future resources to help meet our mitigation goals as a City. The development of this plan also considered factors outside of the corporation that may influence actions, such as the availability and cost of current technologies, the development of future technologies, and provincial and federal direction and support.

Many of these actions were designed to integrate with existing work that is being done or planned within the City, while others are completely new ideas designed to push the organization to be more sustainable. Several of the actions are interconnected and can be done simultaneously with other planned work.

Each action below is accompanied by a brief description. A full list of the actions including suggested prioritization and team members can be found in Appendix A. The actions are divided into short-term (2 years), medium-term (3-4 years), and long-term (>5 years). The timeline of each action reflects the estimated completion date, not the estimated start date. Actions were characterized into certain time periods due to estimates of length of the project, staff availability and resources, budget allocation timelines, priority, and interaction with other plans. Each action has also been assigned a "relative impact" value of *low*, *moderate*, or *high* to indicate the qualitative estimation of how much that action may reduce the City's greenhouse gas emissions. Some actions which are likely to have higher impacts on community emissions rather than corporate emissions will be marked with an *N/A* (not applicable).

Ultimately, it must be acknowledged that each individual action in this plan is not enough to meet the City's targets. The strength of these actions is through collaboration, along with existing work, and the constant push for a changing, more sustainable world from staff, Council, residents, communities, and all levels of government. These actions are just a portion of the work that must be done to mitigate greenhouse gas emissions, but they will help foster the momentum and conditions to push this work forward into the future.

BUILDINGS AND FACILITIES

Buildings and facilities account for approximately 70% of the City's currently measured GHG emissions. The City owns and operates 58 electrically or natural gas served buildings throughout the City. These include libraries, offices, fire stations, and recreation facilities. The City of Waterloo has several ambitious and ongoing projects to reduce the greenhouse gas emissions from its buildings and facilities. This work is being led by the Facility Design and Management Services Division (FDMS). The mechanisms already in place to reduce greenhouse gas emissions from City buildings include:

1) **Energy Conservation Demand Management Plan** is developed by the City every five years as part of Ontario regulation 25/23. This plan includes a summary of the City's annual energy consumption and greenhouse gas emissions for its operations, and a description of previous, current, and proposed measures for conservation and otherwise reducing the amount of energy consumed by the City's operations.
2) **Broader Public Sector Annual Energy Reporting** under Ontario Regulation 25/23 requires the City to submit annually all energy use for City owned and operated buildings.
3) **Annual reporting** of corporate greenhouse gas emissions through the City's partnership with the Impact Network through Sustainable Waterloo Region.
4) **The City of Waterloo Green Building Policy (A-033)** which commits to reducing corporate building GHG emissions by 50% by 2030 and 80% by 2050 relative to 2010 levels[3]. This includes requiring that new construction or expansion is built as zero carbon, that a zero-carbon approach be used for major retrofit projects of existing buildings, and that GHG, energy, and financial metrics are included. Studies have been completed at the City which inform the Green Building Policy. This includes the Corporate Greenhouse Gas and Energy Roadmap-Phase 1 (CORP2022-013) which was a study created to map out pathways to achieve the 50% by 2030 and 80% by 2050 goal for corporate GHG reductions. At the time of the report, based on information from 2021, it calculated that the cost of reduction would be between $36.5M and $47.7M by 2050 or between $1.3M and $1.6M per year for 29 years. As part of the study the City worked with GHG and energy consultants to conduct feasibility assessments on five City buildings to show a sequence of GHG measures that reduce each building's GHG emissions by at least 80%. These five buildings were the Albert McCormick Community Centre, Fire Station 2, Waterloo City Centre, RIM Park, and the Waterloo Public Library (Main Branch). These buildings were selected because of their contribution to the City's building GHG emissions and their example classification that can be extrapolated out to 15 City buildings which make up 90% of the GHGs. The study found that each building could achieve a GHG emissions reduction of at least 80% relative to the current baseline through a series of building upgrades, systems upgrades, and renewable energy generation.

Implementing Green Building Policy measures will align with capital renewal requirements and projects. Low/no cost measures, or standalone GHG reduction measures not requiring a capital renewal project, will be implemented as identified as funding allows. The following five actions are proposed to reduce the greenhouse gas emissions from the City's buildings and facilities.

[3] Note: the 2022 version of the Green Building Policy was released prior to the amendment of the City's 2050 goal of Net Zero. This has been accounted for in an action below.

BUILDINGS AND FACILITIES ACTIONS

1) **Continue to convert natural gas fuelled heating systems to electrically powered heating systems.** The electrification of natural gas heating systems is dependent on existing upgrade and renovation projects and the availability of established or new technology. This action generally provides an attractive return on GHG reductions per dollar investment ($ spent per tonne of GHG emissions saved), is considered a high-impact measure, and high priority.

   Relative impact: high

2) **Continue to implement the City of Waterloo's Green Building Policy.** This includes:

   a. requiring that new construction or expansion be built as zero carbon ready buildings (including having feasibility studies conducted prior to design and construction).
   b. Requiring a zero-carbon approach for major retrofit projects of existing buildings.
   c. Establishing GHG, energy, and financial metrics.

   Relative impact: high

3) **Ensure that all new iterations of the City of Waterloo's Green Building Policy and any future corporate plans or greenhouse gas modeling align with the corporate 2050 net-zero target.** On October 16th, 2023, Council established a more ambitious corporate greenhouse gas mitigation target of net-zero by 2050. All work done after this date will reflect and incorporate the new targets.

   Relative impact: high

4) **Continue to replace equipment at failure with GHG/energy efficient improved performance equipment.** These projects typically occur on an as-needed basis and include examples such as installing higher efficiency pumps, motors, or fans when existing equipment fails.

   Relative impact: high

5) **Continue to implement energy efficient systems when major building systems (e.g., roofing, cladding, windows, mechanical, electric controls) reach their end of life or require a major overhaul**. This includes conducting reviews for the following systems and equipment:

   a. Building envelope improvements including increased insulation and reduction of infiltration at the roof, exterior walls, doors, and glazing.

   b. Electrical and control systems improvements by replacing non-LED lighting with LED and optimizing controls to minimize GHG/energy consumption through appropriate scheduling set points and equipment programming.

   c. Mechanical system improvements though optimization and electrification.

   d. Feasibility of renewable energy installations including renewable energy and ground source heat pumps.

   Relative impact: high

OTHER ACTIONS

Fleet and equipment, solid waste, streetlights, travel, wastewater, and business travel comprise the other 30% of corporate greenhouse gas emissions for the City of Waterloo. The proposed actions to mitigate these emissions as well as create the culture and expertise needed within the City to reach its long-term goals are proposed below. These include measurable impact project actions, immeasurable impact project actions, supporting project actions, and community-impacting actions.

SHORT-TERM ACTIONS (2 YEARS)

6) **Implement a large-scale public awareness and education strategy focused on the sustainability and climate change work done by the City.** It has become increasingly evident through recent engagement opportunities led by the City that the wider community is not always aware of the work the City is leading related to sustainability and climate change. In addition to providing residents with information on the City's great work in this area, education should be used to help reduce public confusion and resistance around certain environmental initiatives. Examples include:

   a. The progress made on grass cutting (i.e., reduction in mowing in the last several decades). This is in-line with the City's Parkland Strategy.

   b. Reasons the City may be cutting the grass less.

   c. The importance of meadows.

   This could include collaborating with organizations such as the school boards to teach the next generation of residents the impact of everyone's actions on the planet, and how the municipality is dedicated to creating a sustainable and resilient community.

   Relative impact: high

7) **Formalize the internal decision-making process regarding available funding for corporate sustainability and climate change initiatives.** Th City's response to sustainability and climate change is led by the Strategic Initiatives Division however, the projects and impacts are spread out throughout the City. A process should be implemented to decide how funds are allocated and awareness of the funds to help facilitate projects throughout the City. The internal decision-making process would include reviews and recommendations from EST. It is recommended that this action be considered in tandem with asset management planning and reporting.

   Relative impact: high

8) **Advocate to the provincial and federal government for funding and legislative changes.** This includes changes to the National Building Code of Canada, the Ontario Building Code, and reporting requirements, as well as the need for significant increases in grant funding support for mitigation projects.

   Relative impact: high

9) **Create and distribute an internal educational list of potential mitigation actions that could benefit from sustainable funding streams or subject matter expertise**. This is to help educate staff on the potential their projects may have to consider climate change in their design and to access to funding streams that may not have been considered. The aim is to encourage projects to integrate climate change considerations early in their process.

   Relative impact: high

10) **Continue to build on the progress of the creation of the Climate Action Reserve Fund (CARF).** Seek ways to increase funding for the CARF through future budget processes and to leverage federal and provincial opportunities.

    Relative impact: high

11) **Actively seek external funding for sustainability and climate change work.** Significant external funding will be required for the City to achieve all its mitigation goals. The existing internal grant identification process should be leveraged to identify all new potential funding streams, identify the process under which they should be applied, and identify the opportunities and limitations of applying in tandem with other internal divisions and external groups as warranted.

    Relative impact: high

12) **Outline and report which scope 3 emissions will or will not be considered by the City of Waterloo.** Scope 3 emissions often make up the largest source of a municipality's emissions. However, there is often significant difficulty associated with data acquisition as well as questions of where an organization's scope of influence ends. In addition, there is the possibility of 'double counting' emissions with another organization providing services. To this end, is it important that the City define exactly which Scope 3 emissions are considered within its realm of accountability, and which cannot feasibly be considered.

    Relative impact: high

13) **Continue to leverage debenture financing in support of increased climate action investment.** The City's Debt Policy was updated on June 19, 2023, as approved by Council report CORP2023-018. As per the updated policy "Debt should be used primarily for strategic priorities including but not limited to, infrastructure renewal projects, climate action projects and or any other strategic initiative subject to the approval of Council". By focusing debt on strategic priorities, it will allow the City to advance important and urgent projects along the capital-planning horizon that will help achieve over-arching community goals, such as achieving our GHG reduction targets.

    Relative impact: high

14) **Create a GHG mitigation goal and roadmap for small equipment used for City operations and maintenance.** Create an inventory of the current small equipment used during City operations and maintenance. This includes the use of the equipment and the designation of their power sources (i.e. electric or gas powered). Designate which pieces of equipment could be feasibly converted to electric based on their use and available technology. Create a proposed roadmap for the conversion of those pieces of equipment, including timeline, goal, and required budget. The roadmap should include considerations of externalities such as power supply, supply shortage, division responsibilities, and needs of staff.

    Relative impact: moderate

15) **Determine an internal decision-making structure for greenhouse gas reduction projects.** This includes when and how the Strategic Initiatives Division should be included in project considerations, when EST should be included, and when other staff should be engaged. The criteria for these considerations should be determined at the onset of the action.

    Relative impact: moderate

16) **Increase employee knowledge on all the different ways they can safely commute to various City buildings.** This includes cycling, walking, and public transit. This may be included as part of orientation or continuous training. Explore partnering with the existing TravelWise program to achieve this action.

    Relative impact: moderate

17) **Explore the potential of cross-departmental sharing of zero-emissions vehicles.** The intent of this action is to avoid unnecessary purchasing of new vehicles, and to increase the

efficacy and use of existing vehicles. This may involve staff engagement and a smaller pilot program.

Relative impact: moderate

18) **Right-size fleet.** Continue to implement processes, procedures, and cultural changes that ensure that the fleet being used is the most efficient and appropriate for each individual responsibility.

Relative impact: moderate

19) **Improve fleet and equipment tracking.** Continue to optimize fleet assets, reduce fuel consumption, and increase fleet efficiencies through the use of telematics tracking equipment.

Relative impact: moderate

20) **Explore opportunities to reduce vehicle use during regular City operations.** Explore options to reduce or limit the number of times a staff member (or various staff members) must go to the same site. Sometimes, more than one trip can be prevented with advanced planning. The City may be able to cross-train staff to reduce the frequency for multiple visits. Introduce a no-idling policy (where applicable and safe) to staff using City vehicles. GPS should be considered as an avenue of tracking and optimizing routes and vehicle use.

Relative impact: low-moderate

21) **Explore further opportunities to transition annual floral displays to perennials.** The flowers grown in the summer around the City are beautiful and increase the enjoyment of the City. However, these flowers are often annuals which require significant time and energy to grow, and which become waste at the end of the season. The City's horticultural team has already begun implementing more sustainable gardens throughout the City. It is encouraged that this action be continued and expanded. During this action, also consider the role of perennials for all the City's use cases, including hanging baskets, planters, and in-ground gardens.

Relative impact: low-moderate

22) **For annual reporting purposes (e.g. the Sustainability and Climate Change Update Reports) ensure the distinction and inclusion of both greenhouse gas and energy reductions/increases for the City.** While greenhouse gas emissions are related to energy consumption, they are not the same thing. Presenting them as the same thing can omit important details about the City's progress towards decarbonisation and does not present a fulsome picture of mitigation efforts. Each year the City should present both the greenhouse gas emissions emitted and the energy used. This has been suggested to both properly show the City's progress independent of the province's energy grid, and to create a more consistent database for this information in the form of the update reports. It is suggested that this work be done in collaboration with other existing reporting processes, such as the annual Asset Management Report Cards.

Relative impact: low

23) **Determine the feasibility of doing an assessment on GHG retrofits of wastewater pump stations.** GHG emissions from wastewater pump stations are often overlooked when examining corporate GHG emissions. Conduct a brief return on investment exercise on the emissions of a more efficient pump or determine the costs associated with future upgrades as the current wastewater pumps reach end of life.

Relative impact: low

24) **Provide employee training for energy efficiency.** As part of employee onboarding and continuous training, create a module on how employees can reduce energy demands at home and in their workplace.

Relative impact: low

25) **Provide employee training for efficient driving.** As part of employee onboarding and continuous training, create a module on how employees can drive efficiently at the workplace and at home to reduce fuel use.

Relative impact: low

26) **Integrate Sustainability and climate change wording into job postings.** Advertise the City as a sustainable place to work. Highlight specific sustainable programs such as the TravelWise membership.

Relative impact: low

27) **Create 'green event' guides for all City hosted, endorsed, and sponsored events. This includes:**

a. Externally organized events. These are events self-organized by the public such as those hosted by neighbourhoods' groups or when residents book spaces on City properties (e.g. Waterloo Park).
b. City of Waterloo organized internal events. These are events organized by City staff for City staff such as holiday events, BBQs, the staff symposium, etc.
c. City of Waterloo organized external events. These are events planned by the City for the public, such as Lumen or community engagement sessions.
d. Affiliate events. These are large events not organized by the City, but hosted within the community that may require prior City involvement such as Buskers or Oktoberfest.

These guides should include consideration of food waste, transportation, garbage creation, and messaging.

Relative impact: low

28) **Embed sustainability and climate change as part of departmental and divisional staff meetings.** Ensure that sustainability and climate change are components of City staff meetings, akin to safety moments. Emphasize this importance near notable dates, such as Earth Day.

Relative impact: low

29) **Continue to review the potential of limiting grass mowing in areas that could be replaced with perennial gardens, meadows, or naturalized.** Continue to review the areas where the City cuts grass and determine if there are any areas that are being programmed right now that may benefit from a different form of management. This is to reduce the amount of mowing (and by extension emissions from mowing) needed.

Relative impact: low

30) **Create division-use accounts for the ION, GRT, Neuron, and any other widely available modes of active or public transportation.** To encourage staff to use cars less during work hours, provide each division with accounts/access cards to readily available public transit. Create a system of management and accountability for this program. Investigate the ways this can be linked with the existing TravelWise program.

Relative impact: low

31) **Define City policy on consideration of sequestration sources in possible carbon accounting and possible future carbon budgeting activities.** The City of Waterloo has a large source of carbon sequestration potential in the form of our publicly and privately owned trees, water bodies, and other plant life. The addition or removal of these sources may impact the carbon emissions of the City. It is recommended that the City develop a policy or methodology on if and how these carbon sinks should be considered towards our climate change goals. This decision may impact future tree preservation or development decisions.

    Relative impact: N/A

32) **Implement sustainability and climate change considerations into all applicable How-to guides available on the City of Waterloo's neighbourhood's webpage.** The City of Waterloo already has excellent resources dedicated to sharing best practices with communities. To mainstream climate change into all City operations, a project should be undertaken to first determine which guides may require modification, then to provide a system, timeline, and content for modifying them.

    Relative impact: N/A

33) **Explore further opportunities to promote programs to reduce the amount of congestion at school drop-offs.** Parents driving their children to and from schools create significant congestion and result in increased idle times. Work with staff, educational institutions, and community groups to encourage parents to take advantage of public or active transportation, or to drop their children off further from the school.

    Relative impact: N/A

34) **Partner with Enova Power and Waterloo Region Community Energy (WRCE) to increase the general literacy of the City's energy system and transition plans among staff**. A knowledge disconnect has been reported between our community energy goals and staff work. To close this gap, it is recommended that the City works closely with its energy partners to create an event such as a lunch and learn or an instructional packet, which would be beneficial to the long-term energy goals of the City.

    Relative impact: N/A

35) **Incorporate sustainability and climate change into neighbourhood newsletters and events.** Community newsletters are an established conduit for delivering timely climate change information to residents. It is recommended that staff integrate appropriately suggested actions and information into existing newsletters under a 'green' section and/or time it with sustainability and climate change events hosted by the City.

    Relative impact: N/A

36) **Communicate the location of all dog waste bins.** This is to encourage dog owners to take extra time to properly dispose of their dog's waste in a way that will contribute to the City's poop power program. This could be posted on existing wastebins, online, or in other formats.

    Relative impact: N/A

37) **Encourage neighbourhood green representatives.** Work with neighbourhoods and existing community program partners to establish a green representative. Create and provide additional resources, such as a working group, guide, or training for those representatives.

    Relative impact: N/A

38) **Create education for residents on the ways that they can green their homes under established by-laws and existing programs.** For example, this could include explaining a resident's ability to grow native plants on their property or how to green their lawn. Having all the information in one, easy-to find and use place may encourage residents to act. There are several existing City or partner resources that could be leveraged for this action, such as the "Naturally Your Waterloo" guide, REEP Green Solutions Resources, the storm water management fee reduction rebate, and materials from the City's energy partners.

    Relative impact: N/A

39) **Conduct a review of all City by-laws and propose amendments that would allow residents to increase their own sequestration potential or decrease their emissions.** This work should include a review of other by-laws in similar municipalities which have been modified to increase sustainability. The aim is to identify which by-laws may be avoidably hindering progress in sustainability and climate change.

    Relative impact: N/A

40) **Continue to support private tree planting campaign efforts.** Continue to provide monetary and staff resource supports to the City's community partners (such as REEP) in planting trees on private properties.

    Relative impact: N/A

41) **Continue to conduct an urban tree canopy study.** The results can be used to target potential sequestration opportunities or to highlight locations which could benefit from natural cooling infrastructure.

    Relative Impact: N/A

42) **Install a poop power bin in uptown Waterloo.** Uptown is an area frequented by several dog owners and their pets. Adding a bin there would ensure visibility and high traffic, leading to greater waste diversion.

    Relative impact: N/A

MEDIUM-TERM ACTIONS (3-4 YEARS)

43) **Create a corporate electric vehicle charging strategy.** As the City continues to transition to an electric vehicle fleet, a strategy should be created to consider the medium and long-term funding needs related to the supporting infrastructure including location, cost, need, maintenance, technical requirements, and back-end support. This strategy should be created with significant cross-divisional input.

    Relative impact: high

44) **Develop economic development resource guides for various sectors related to sustainability and climate change.** Economic Development has a unique connection to industry within the City of Waterloo. Resource guides could help connect businesses to programs and partners such as Sustainable Waterloo Region, local green businesses, available federal, provincial, and municipal programs, etc. The guides could also provide an opportunity to educate and broadcast information related to the City's climate change goals, promote local technologies or companies leading the way in the sustainability and climate change space, and bring awareness to the economic costs of climate change.

    Relative impact: high

45) **Create training and information materials for incoming members of Council and leadership**. Create a packet of accessible materials encompassing the current state of climate change work within the City that can be updated for new Council terms and when new members of leadership join the City.

    Relative impact: moderate

46) **Provide consultants and contractors with the City's carbon reporting expectations for projects.** This would include things such as the emissions factors to use, reporting requirements, proUY&8jected energy, and comparison, etc.

    Relative impact: moderate

47) **Create an internal accountability system for staff.** This may include individual or division targets, performance evaluation metrics, etc.

    Relative impact: moderate

48) **Use existing opportunities to connect with staff on sustainability and climate change issues using tailored materials and messaging.** There are several outlets to connect with staff on issues of sustainability and climate change that have not yet been explored. These include staff meetings, work lunches, webinars, and online resources. Use these opportunities to send out targeted messaging to inform staff or enact action.

    Relative impact: low-moderate

49) **Investigate a mileage reimbursement initiative for non-vehicular transit alternatives as personal sustainable travel during work activities.** Drivers receive monetary reimbursement for kilometres driven during job duties. This is intended to compensate for gas usage and wear and tear on vehicles. However, there is no existing program for other modes of transit such as bicycles that may also experience wear and tear during work activities and require regular maintenance. Investigate the creation of a program which compensates active transit users for their low-carbon transportation options.

    Relative impact: low

50) **Propose a green grant for mitigation-related community projects.** Work with communities to create a neighbourhoods grant specifically targeted at projects that can reduce emissions on a local scale. Examples could include creating materials or campaigns surrounding no-mow landscaping, putting up community solar projects, or finding creative ways to reduce car commuting.

    Relative impact: N/A

LONG-TERM ACTIONS (>5 YEARS)

51) **Develop a green purchasing strategy.** Purchasing low-carbon goods or services requires extensive top-down and bottom-up collaboration and expertise. Develop a strategy that includes working with each division to develop educational tools, accountability systems, tailored goals, and policies to reduce the actual or embedded emissions within the goods and services purchased. This should be a comprehensive strategy that spans from large construction projects down to office supplies. The largest focus should be on projects or procurement with the largest materiality.

    Relative impact: high

52) **Integrate climate change and energy into all major community and corporate plans.** Identify which plans would benefit from a climate lens. Create a process which ensures that these factors are considered in the decision and review process. It is recommended during this process to host internal workshops with select divisions to consider how to incorporate climate change considerations into the technical aspects of their plans. Divisions are best prepared to modify their own work and may benefit from dedicated time and goal to discuss integrating climate change with each other in a facilitated setting.

    Relative impact: high

53) **Create a high-level pathway to net-zero by 2050 for all corporate emissions not considered in the Corporate Greenhouse Gas and Energy Roadmap-Phase 1 (CORP2022-013).** This should include considerations of projects which may not be feasible within the five-year timespan of this plan for resource, technological, legislative, or other reasons, but that could significantly contribute to the City's net-zero target by 2050 goal. The aim of this is to incorporate promising initiatives into future work when the conditions are more favourable, or to work towards larger initiatives over a longer period.

    Relative impact: high

54) **Create a process to monitor embodied carbon from construction projects.** Develop a simple process which uses already included or easy-to-include information from construction projects (e.g. weight of cement) to begin to consider embodied carbon considerations of construction projects. This action will prepare the City and contractors for more detailed monitoring in the future.

    Relative impact: high

55) **Create an internal process to embed emissions considerations into selected City projects.** This information should be in a format where it can be readily presented to Council as part of regular project proceedings.

Relative impact: high

56) **Ensure that any City facilities that have food services or can be reasonably expected to host large events where food will be served have adequate compost facilities.** Work with members of the Staff Association and City labour groups to develop guidelines. Explore the possibility of purchasing and providing on-site micro-composting opportunities for City staff to use.

Relative impact: low-moderate

57) **Create a City policy on the holistic evaluation of the environmental impacts of equipment switching.** In the City's pursuit of reduced GHG emissions, it is important to consider the other potential environmental impacts of switching to new fuel sources. This includes the carbon intensity of switching to electrification, the embodied carbon in new equipment, and the mining and disposal of the materials in electric vehicles and small machinery. It is recommended that a policy be implemented to encourage the holistic evaluation of new equipment choices including the available technology, the timeline of acquisition, and the relative environmental trade-offs.

Relative impact: low

58) **Ensure consistency in garbage disposal across City facilities.** Garbage disposal receptacles should be consistent in shape and messaging across City facilities to encourage a unified message and education surrounding waste. Research and implement techniques to encourage users to properly dispose of and reduce their waste, such as placement, sizing, and signage.

Relative impact: low

59) **Continue to monitor and evaluate the progress of carbon budgeting as a GHG reduction mechanism in other municipalities.** Engage with other municipalities, consultants, and researchers on the practical requirements, outcomes, and lessons learned of creating and implementing a carbon budget.

Relative impact: low

60) **Continue the implementation of the Environmental, Social, and Governance Investment Framework.** This framework, approved in Council report CORP2022-003-Investment Policy Update on February 28th, 2022, permits staff to invest up to $10 million in ESG investments. ESG investments will be highlighted for Council awareness as part of the annual investment report.

Relative impact: NA

61) **Review alternative building materials for construction projects.** Many traditional construction materials, such as concrete and asphalt, are very high in embodied carbon. Continuously review how lower-carbon alternatives can be substituted while ensuring the safety, longevity, and services of the infrastructure are maintained.

Relative impact: NA

NEXT STEPS

An update of the actions will be provided every year beginning in 2025 and ending in 2028. This update will be provided as part of the annual Sustainability and Climate Change Update Report presented to Council by the Strategic Initiatives Division. The update will include a brief descriptor of the status of each action marked with a 'Completed', 'In-Progress', or 'Not completed'. Actions with notable progress or updates will include a brief descriptor and/or reference to the relevant Council report. The CorCAP update will be its own independent section in the larger report. The updates will also include significant work that has impacted building emissions, such as the upcoming 2025 completion of the next iteration of the ECDM Plan.

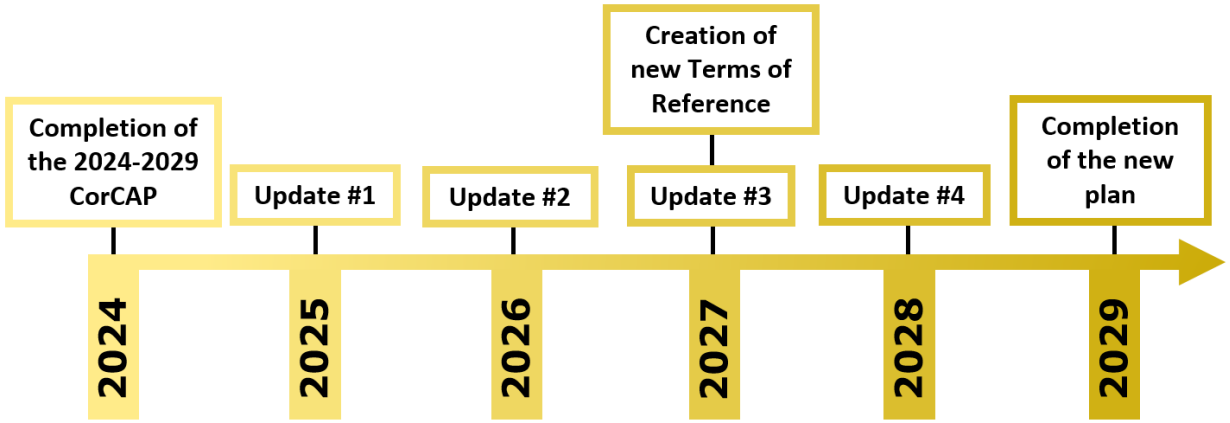

Figure 4 Outline of the next steps of the Corporate Climate Action Plan from 2024-2029

This plan is intended to cover a span of 5 years, ending in 2029. Mid way through the plan, staff will provide a recommended Terms of Reference to Council for the creation of a new or updated plan. This recommendation will include considerations of aligning upcoming plans and activities with the three and one year budget cycles.

Upon approval of this plan by Council, the Strategic Initiatives Division and Environmental Sustainability Team will immediately begin work on implementing the actions.

BEYOND THIS PLAN

This plan is one of several mechanisms and initiatives designed to help the City of Waterloo reach its 2030 and 2050 goals. Several actions in this plan will continue to evolve and grow past the intended end date of 2029 and will work towards the final goal of net-zero by 2050. Starting in 2027, the City will begin to re-evaluate this plan in the context of the changed landscape of legislation, available technologies, staff culture and expertise, and available funding. Staff will then propose the next best actions in terms of strategy. This may be to provide updates to this plan, create a new five-year plan, create a 20-year plan, or any combination of things.

In the meanwhile, new ideas in sustainability will continue to be fostered at the City as staff look to integrate climate change considerations into everything they do in a way that is grounded, implementable, and transformational.

APPENDIX A: ACTION IMPLEMENTATION

The following table represents the suggested list of divisions within the City of Waterloo who will be consulted during the initial phases of a specific action. Consultation in a project does not necessarily constitute leadership or significant involvement but is rather an opportunity to discuss a particular division's involvement at any given time. The reason for this approach is twofold: 1) During engagement staff noted that often divisions were not consulted during projects that they felt would benefit from their input, and 2) This approach allows more flexibility in assigning staff and leadership to a project that can consider existing workload, existing or planned projects with significant synergies, growing staff expertise, and changes in division composition. The lead for each action will be assigned by leadership during the initiation of the project in consultation with EST and Strategic Initiatives.

BUILDINGS AND FACILITIES ACTIONS

Table 1 Action implementation staffing for City buildings and facilities.

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
1) **Continue to convert natural gas fuelled heating systems to electronically powered heating systems.**	High									●					●											

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
2) **Continue to implement the City of Waterloo's Green Building Policy.**	High									●					●											
3) **Ensure that all new iterations of the City of Waterloo's Green Building Policy and any future corporate plans or greenhouse gas modeling align with the corporate 2050 net-zero target.**	High									●																
4) **Continue to replace equipment at failure with GHG/energy efficient improved performance equipment.**	High									●					●											
5) **Continue to implement energy efficient systems when major building systems (e.g., roofing, cladding, windows, mechanical, electric controls) reach their end of life or require a major overhaul**.	High									●					●											

SHORT-TERM ACTIONS (1-2 YEARS)

Table 2 Action implementation staffing for short-term actions.

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
6) **Implement a large-scale public awareness and education strategy focused on the sustainability and climate change work done by the City.**	High		●	●	●		●	●	●	●	●	●		●	●	●						●	●		●	●
7) **Formalize the internal decision-making process regarding available funding for corporate sustainability and climate change initiatives.**	High		●												●											
8) **Advocate to the provincial and federal government for funding and legislative changes.**	High		●																	●						

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
9) **Create and distribute an internal educational list of potential mitigation actions that could benefit from sustainable funding streams or subject matter expertise**.	High		●																							
10) **Continue to build on the progress of the creation of the Climate Action Reserve Fund.**	High														●											
11) **Actively seek external funding for sustainability and climate change work.**	High		●							●					●											
12) **Outline and report which scope 3 emissions will or will not be considered by the City of Waterloo.**	High		●	●				●	●							●						●	●		●	●
13) **Continue to leverage debenture financing in support of increased climate action investment.**	High														●											

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
14) **Create a GHG mitigation goal and roadmap for small equipment used for City operations and maintenance.**	Moderate		●				●	●	●						●	●									●	●
15) **Determine an internal decision-making structure for projects.**	Moderate		●	●	●		●	●	●	●	●	●		●	●	●	●	●	●			●	●	●	●	●
16) **Increase employee knowledge on all the different ways they can safely commute to various City Buildings.**	Moderate		●											●				●								
17) **Examine the potential of cross-departmental sharing of zero-emissions vehicles.**	Moderate		●					●	●			●				●		●				●	●	●	●	●
18) **Right-size fleet.**	Moderate														●	●										
19) **Improve fleet and equipment tracking.**	Moderate															●										
20) **Explore opportunities to reduce vehicle use during regular City operations.**	Low-moderate															●							●	●	●	●

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
21) **Explore further opportunities to transition annual floral displays to perennials**	Low-moderate								●			●														
22) **For annual reporting purposes (e.g., the Sustainability and Climate Change Update Reports) ensure the distinction and inclusion of both greenhouse gas and energy reductions/increases for the City.**	Low		●							●																
23) **Determine the feasibility of doing an assessment on GHG retrofits of wastewater pump stations.**	Low		●							●					●											●
24) **Provide employee training for energy efficiency.**	Low		●											●			●									
25) **Provide employee training for efficient driving.**	Low		●													●	●									
26) **Integrate Sustainability and climate change wording into job postings.**	Low		●														●									

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
27) **Create 'green event' guides for all City hosted, endorsed, and sponsored events.**	Low		●	●	●		●	●	●	●	●			●		●	●					●	●		●	●
28) **Embed sustainability and climate change as part of departmental and divisional staff meetings.**	Low		●	●	●		●	●	●	●	●	●		●	●	●	●	●	●	●		●	●	●	●	●
29) **Continue to review the potential of limiting grass mowing in areas that could be replaced with perennial gardens, meadows, or naturalized.**	Low		●						●	●																
30) **Create division-use accounts for the ION, GRT, Neuron, and any other widely available modes of active or public transportation.**	Low		●												●		●									
31) **Define City policy on consideration of sequestration sources in possible carbon accounting and possible future carbon budgeting activities.**	N/A		●						●						●							●	●			

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
32) **Implement sustainability and climate change considerations into all applicable How-to guides available on the City of Waterloo's neighbourhood's webpage.**	N/A		●				●							●												
33) **Explore further opportunities to promote programs to reduce the amount of congestion at school drop-offs.**	N/A		●		●		●																		●	
34) **Partner with Enova Power and Waterloo Region Community Energy (WRCE) to increase the general literacy of the City's energy system and transition plans among staff.**	N/A		●																							
35) **Incorporate sustainability and climate change into neighbourhood newsletters and events.**	N/A		●		●		●																			
36) **Communicate the location of all dog waste bins.**	N/A								●					●												

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
37) **Encourage neighbourhood green representatives.**	N/A		●				●																			
38) **Create education for residents on the ways that they can green their homes under established by-laws and existing programs.**	N/A		●									●		●									●			
39) **Conduct a review of all City by-laws and propose amendments that would allow residents to increase their own sequestration potential or decrease their emissions.**	N/A		●									●								●						
40) **Continue to support private tree planting campaign efforts.**	N/A		●						●																	
41) **Continue to conduct an urban tree canopy study.**	N/A								●																	
42) **Install a poop power bin in uptown Waterloo.**	N/A								●						●											

MEDIUM-TERM ACTIONS (3-4 YEARS)

Table 3 Action implementation staffing for medium-term actions.

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
43) **Create a corporate electric vehicle charging strategy.**	High		●	●	●			●	●	●	●	●		●	●	●	●	●					●		●	●
44) **Develop economic development resource guides for various sectors related to sustainability and climate change.**	High		●	●																						
45) **Create training and information materials for incoming members of Council and leadership**.	Moderate		●																							
46) **Provide consultants and contractors with the City's carbon reporting expectations for projects.**	Moderate		●							●						●										
47) **Create an internal accountability system for staff.**	Moderate		●	●	●		●	●	●	●	●	●		●	●	●	●	●	●	●		●	●	●	●	●

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
48) **Use existing opportunities to connect with staff on sustainability and climate change issues using tailored materials and messaging.**	Low-moderate		●											●												
49) **Investigate a mileage reimbursement initiative for non-vehicular transit alternatives as personal sustainable travel during work activities.**	Low														●		●									
50) **Propose a green grant for mitigation-related community projects.**	N/A		●				●								●											

LONG-TERM ACTIONS (5+ YEARS)

Table 4 Action implementation staffing for long-term actions.

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
51) **Develop a green purchasing strategy.**	High		●	●	●		●	●	●	●	●	●		●	●	●	●	●	●	●		●	●	●	●	●
52) **Integrate climate change and energy into all major community and corporate plans.**	High		●	●●●	●		●	●	●	●	●	●		●	●	●	●	●	●	●		●	●	●	●	●
53) **Create a high-level pathway to net-zero by 2050 for all corporate emissions not considered in the Corporate Greenhouse Gas and Energy Roadmap-Phase 1 (CORP2022-013).**	High		●																							
54) **Create a process to monitor embodied carbon from construction projects.**	High		●	●					●	●						●						●	●	●	●	●
55) **Create an internal process to embed emissions considerations into large projects.**	High		●	●	●				●	●					●	●						●	●		●	●

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
56) **Ensure that any City facilities that have food services or can be reasonably expected to host large events where food will be served have adequate compost facilities.**	Low-moderate			●				●			●						●									
57) **Create a City policy on the holistic evaluation of the environmental impacts of equipment switching.**	Low		●						●	●	●				●	●										
58) **Ensure consistency in garbage disposal across City facilities.**	Low									●																
59) **Continue to monitor and evaluate the progress of carbon budgeting as a GHG reduction mechanism in other municipalities.**	Low		●																							
60) **Continue the implementation of the Environmental, Social, and Governance Investment Framework.**	N/A														●											

	Estimation of corporate greenhouse gas reduction impact	Office of the CAO	CAO/Strategic Initiatives	Economic Development	READI	Community Services	Community Outreach and Programming	Recreation Services	Parks, Forestry, and Cemetery Services	FDMS	Fire Rescue Services	Municipal Enforcement Services	Corporate Services	Corporate Communications	Finance	Fleet and Procurement	Human Resources	Information Management	Legal Services	Legislative Services	Integrated Planning and Public Works	Planning	Engineering Services	Building Standards	Transportation Services	City Utilities
61) **Review alternative building materials for construction projects.**	N/A																						●	●		

APPENDIX B: GLOSSARY

Adaptation: Changes in existing processes, practices, and structures to moderate potential damages from the actual or expected impacts of climate change, or to benefit from opportunities associated with climate change. An example is increased shade cover over a sidewalk to reduce the impacts of increased heat.

Carbon Dioxide (CO_2): A greenhouse gas molecule that contains two oxygen atoms and one carbon atom. It is produced from burning fossil fuels as well as the respiratory and decomposition process of most animals. Other sources include forest fires, volcanic eruptions, and the production of cement. Carbon dioxide is often considered the primary greenhouse gas that is emitted through human activities.

Community emissions: All greenhouse gas emissions produced by the activities of the community of the City of Waterloo. This includes most transportation, homes, businesses, waste, and agriculture within the city.

Corporate emissions: All greenhouse gas emissions produced by the assets and activities of the governing body of the City of Waterloo. This includes all City-owned buildings, fleet, staff activity (such as driving and flying), and equipment.

Environmental Sustainability Team (EST): An internal team comprised of cross-divisional leadership and staff created to streamline sustainability initiatives across the City.

Embodied Carbon: The greenhouse gas emissions arising from the manufacturing, transportation, installation, maintenance, transportation, installation, maintenance, and disposal of building materials. Embodied carbon constitutes a significant percentage of global emissions.

Greenhouse Gas: Gases which trap heat in the atmosphere.

Greenhouse Gas Inventory: A calculated list of emissions sources quantified using standardized methods such as emissions factors and energy use.

Hydrochlorofluorocarbons (HCFCs): Compounds containing carbon, hydrogen, chlorine, and fluorine molecules. Uses include refrigeration, air conditioning, foam blowing, solvents, aerosols, and fire suppression.

Hydrofluorocarbons (HFCs): Man-made organic compounds that contain fluorine and hydrogen atoms. Uses include refrigeration, air-conditioning, insulating foams and aerosol propellants. HFCs are currently banned in Canada due to their global warming potential.

Land use change: A process by which human activities transform the natural landscape. Land use-planning is a process integrated to regulate this process in a municipality.

Methane (CH_4): A colourless, odorless flammable gas. It is produced during the production and transport of coal, natural gas, and oil, from livestock and agricultural practices, and from the decay of organic waste in municipal solid waste landfills. Methane is a key component of natural gas used to

generate electricity for domestic heating and cooking. It has 20-80 times more potential to trapped heat in the atmosphere than carbon dioxide.

Mitigation: Reducing the amount of greenhouse gases in the atmosphere. This can be either through reducing the amount of gasses emitted, or increase the amount sequestered.

Net-Zero: When the amount of greenhouse gases going into the atmosphere are balanced by the amount of greenhouse gases being removed from the atmosphere.

Nitrous Oxide (N_2O): Also known as "laughing gas", it is a colourless gas with a sweetish odor. It is emitted during agricultural, land use, and industrial activities, combustion of fossil fuels and solid waste, and during the treatment of wastewater. Nitrous oxide is the third most impactful greenhouse gas.

Sustainability Advisory Committee (SAC): A public advisory committee of Council composed of residents who work, live, or study within the City of Waterloo. The committee provides advice to Council on matters pertaining to sustainability.

Scope 1 Emissions: Direct greenhouse gas emissions from sources that are owned or controlled by the corporation. Examples include combustion processes from boilers in buildings and facilities, vehicles, and furnaces.

Scope 2 Emissions: Indirect emissions from the generation of purchased electricity consumed by the corporation. An example would include power utilized by the City, for instance interior lighting for an office space, from an offsite production facility.

Scope 3 Emissions: Indirect emissions which are consequences of the activity of the corporation, but which are not from sources directly owned or controlled by the City. Examples include purchased goods and services, business travel, and employee commuting.

Strategic Initiatives Division: A division of the City of Waterloo within the Department of the Office of the CAO. This division houses the coordination of the Sustainability and Climate Change portfolio for the corporation and community of the City of Waterloo.

Supply chain materials: All the raw materials and parts that are made into a product and distributed up the chain for manufacture and sale. For example, before a chair can be made wood and the metal for screws must be harvested and mined.

Upstream transportation: All the transportation activities (and associated emissions) that provide a company with the goods or services that it has paid for. For example, when pens are shipped to the City that transportation creates emissions.

COMMITTEE OF COUNCIL REPORT

Sustainability Advisory Committee
SAC Support for City of Waterloo Corporate Climate Action Plan
Report #: CTTEE2024-001

Recommendations:

1. That Council accepts Report CTTEE2024-001; and
2. That the City of Waterloo approves the Corporate Climate Action Plan, immediately identifies resources to support the actions within the plan, and accelerates actions toward its successful achievement across all elements of City activity.

Executive Summary:

The Sustainability Advisory Committee was formed in 2016 to provide advice to Council on matters that promote corporate and community sustainability.

In 2019, the City of Waterloo declared a climate emergency and committed to the development of an action plan to reduce corporate greenhouse gas emissions and policies, and unanimously approved the adoption of the community climate action plan, TransformWR and its attendant targets.

Members of the City of Waterloo Council are well aware of the urgency of mitigating greenhouse gas emissions and climate action is an important part of the new Strategic Plan.

Action to reduce emissions is necessary across all sectors of society to prevent further harm. Cities such as Waterloo play a critical role in both the transition to a lower-carbon economy through a range of policies, plans and direct actions.

The Corporate Climate Action Plan (CorCAP) is an important contribution to the City's role.

Prepared By: Sustainability Advisory Committee Date: 10 January 2024

Committee Chair Signature: M. Thijssen (Mat Thijssen)

COMMITTEE OF COUNCIL REPORT

Financial Implications:
None

Technological Implications:
None

Link to the Strategic Plan:
This report and the mandate of SAC are connected directly or indirectly to all pillars of the current Strategic Plan.

Prepared By: Sustainability Advisory Committee Date: 10 January 2024

Committee Chair Signature: M. Thijssen (Mat Thijssen)

CTTEE2024-001 SAC SUPPORT FOR CITY OF WATERLOO CORPORATE CLIMATE ACTION PLAN

Overview and Urgency

Members of City of Waterloo Council are well aware of the urgency of mitigating greenhouse gas emissions. Climate action is an important part of the new Strategic Plan, and has been reinforced over the past decade through multiple unanimous decisions of Council to set bold directions and take meaningful action.

2023 has accelerated this urgency. June, July, August, September, October, and November have each shattered monthly records to rank as the warmest of each month in 174 years of temperature data, with July being the hottest month ever recorded, according to the National Oceanic and Atmospheric Administration of the United States. The World Meteorological Organization notes that it is virtually certain that 2023 will be the warmest year ever recorded, at 1.4˚C above the 1850-1900 average. While factors such as El-Nino have partially influenced these extremes in 2023, the broader trend is clear: all of the top 10 warmest years have occurred since 2010.

Accompanying these temperature increases are a host of consequences for nature and human society, often disproportionately impacting those who least contributed to the increase in greenhouse gasses that cause climate change. Sometimes these impacts are represented in extremes, as witnessed in 2023 with wildfire smoke blanketing much of North America and creating billions of dollars in increased healthcare costs according to the Canadian Climate Institute. Other times these are chronic changes, such as drought leading to increased food and commodity prices, rising insurance costs (or un-insurability in parts of the world), and supply chain disruption. The resulting impacts include food insecurity, displacement, and increased health risks to those most vulnerable.

Action to reduce emissions is necessary across all sectors of society to prevent further harm. Cities such as Waterloo play a critical role both in the transition to a lower-carbon economy, through the range of policies, plans, and direct action that they are uniquely capable of undertaking. This is especially true since Waterloo and most parts of Canada have also disproportionately contributed to causing climate change.

The Corporate Climate Action Plan (CorCAP) is an important contribution to the City's role. While corporate emissions are a small fraction of community emissions, they set leadership for the rest of society, catalyze excitement for progress, and future-proof municipal assets for long-term changes that will eventually come through policy and economic forces.

SAC recognizes the complexity of developing a CorCAP, and wishes to thank the many members of City staff and Council who have supported this effort. The following are

feedback from SAC for Council and Staff's consideration, with the overriding recommendation being to approve the CorCAP and fully support its implementation.

Areas of Support

The following are areas of the CorCAP that SAC wishes to highlight, as we think they will help the City achieve the intended outcomes and spirit of its wider climate action commitments:

1. **SAC appreciates the breadth of action:** The CorCAP, while focused on corporate emissions in the scope of its impact measurement, nevertheless integrates other actions that the City can take in its corporate activities that would influence community emissions. This is an important acknowledgement, as it leverages municipal influence to its fullest extent and raises the profile and importance of climate action for members of the wider community.

2. **SAC applauds the CorCAP for thinking systematically:** The CorCAP includes a mix of actions that have measurable emissions impacts, that create indirect impacts, that build supportive culture or capacity, and that affect community emissions. This holistic approach is encouraging to see, as it will help to overcome barriers that could arise from a sole focus on technical projects.

3. **SAC is glad to see an implementation framework:** As shown in Appendix A, the implementation of actions within the CorCAP cut across all divisions within the City. The explicit identification of action-specific roles and responsibilities will help build accountability for plan implementation.

4. **SAC is encouraged by the commitment to transparency**: The CorCAP creates a mechanism for continuous improvement by having annual reporting processes. This will be critical for both internal and external accountability, to ensure that the identified actions are moving through concept to implementation. SAC looks forward to receiving and reviewing these

Areas for Continued Improvement

As the City of Waterloo now pivots to implementation, SAC would share the following feedback to help guide action in the coming years:

1. **SAC implores the City to identify resources for implementation:** Achievement of the CorCAP will hinge on allocation of resources, both human and financial. While many actions are not individually resource-intensive, the level of effort across all actions is substantial. SAC would encourage immediate efforts to prepare cost estimates for all listed actions and identify appropriate funding streams. Particularly for the actions related to building and fleet decarbonization, which together account for almost all corporate emissions, these will require sufficient, flexible, and clear resources to have any chance of coordinating success. SAC is aware of the parallel updates to the City's Green Building policy that are a part of the identified actions of the CorCAP. SAC strongly encourages that the updates to the revised Green

Building policy must align with the CorCAP and the net zero target, and that updates to buildings should be scaled to achieve these targets as well as part of ongoing renewal and management.

2. **SAC urges the City to accelerate the pace of action:** In simple terms, the City of Waterloo is moving too slow relative to its stated targets. It took four years from the declaration of a climate emergency to develop the CorCAP, which, while understandably challenging during a global pandemic and staffing transitions, is nonetheless discouraging. Many emissions reductions achieved in the recent past will be offset by rising grid emission factors in the next couple years, creating a rapidly narrowing window of opportunity for reaching the 50% by 2030 stated target. Particularly with capital planning efforts that require long lead-times and multi-year implementation, it is essential to catalyze fast and early action to have any chance of reaching City goals. The City will need to be nimble and innovative in how it accelerates and streamlines project approval for actions under the CorCAP.

3. **SAC encourages quantification in reporting of implementation:** Aside from the indicated base year emissions, most of the actions and initiatives included in the CorCAP are qualitative in nature. These will need to rapidly be costed and assessed for materiality of their impacts, even with order-of-magnitude assessments. In its reporting on progress, SAC hopes to see quantitative measures of emissions reductions, in addition to qualitative statements of action completion.

4. **SAC supports expansion of scope**: Finally, SAC would strongly support municipal efforts to broaden the range of emissions sources considered as part of its corporate inventory. While SAC recognizes the practical limitations of measurement for many indirect sources of emissions, we are concerned that failure to integrate these will leave large unabated sources of emissions that will undermine both corporate and community progress. While the CorCAP notes a commitment to strengthen measurement as data availability improves, SAC would encourage more intentionality in this. In particular, we would encourage prioritizing a materiality estimate on emissions from land-use change and from supply chains for large infrastructure projects such as roads, sewers, sidewalks, etc. Given the emissions intensity of cement, steel, and other building materials, and the significant positive or negative emissions associated with carbon fluxes from various ecosystems and landscapes, SAC believes it likely that these sources could potentially be much larger than Scope 1 and 2 emissions which are currently a focus, and there may be meaningful action that can be taken.

Again, the above are not to detract from SAC's support. The CorCAP is well thought-through and we believe the above recommendations will help in its effective implementation.

SAC looks forward to seeing Council approve the Corporate Climate Action Plan and supporting many of the identified actions over the coming years.

Prepared By: Sustainability Advisory Committee Date: 10 January 2024

Committee Chair Signature: M. Thijssen (Mat Thijssen)