



SUBJECT: Update to the Corporate Energy and Emissions Management Plan 2024-2029

TO: Committee of the Whole

FROM: Environment and Energy

Report Number: EICS-08-24

Wards Affected: All

Date to Committee: July 8, 2024

Date to Council: July 16, 2024

Recommendation:

Approve Appendix A to environment and energy report EICS-08-24 – the Corporate Energy and Emissions Management Plan 2024-2029 for submission to the Ontario Ministry of Energy and to be posted on the city’s website as required by Ontario Regulation 25/23 made under the Electricity Act, 1998; and

Direct the Commissioner, Public Works to report annually on the progress of implementing the plan in Appendix A of environment and energy report EICS-08-24 including energy consumption and the carbon footprint for city operations.

PURPOSE:

The purpose of this report is to provide for approval a new Corporate Energy and Emissions Management Plan as per provincial legislation. It relates to the following section under the Strategic Plan:

A Healthy and Greener City

- Environmental and Energy Leadership – the city’s operations are net carbon neutral (by 2040)

Vision to Focus Alignment:

- Support sustainable infrastructure and a resilient environment.
- Deliver customer centric services with a focus on efficiency and technology transformation.

Executive Summary:

This report updates the Corporate Energy and Emissions Management Plan and continues with the pathway to achieve the City's goal of being net carbon neutral by 2040. Key actions from the updated plan are:

- Continuing with creating low carbon pathways for major City facilities through deep energy retrofit studies.
- Implementing projects identified in low carbon pathways at City facilities.
- Ensure that renovations and retrofits in City facilities align with the Corporate Energy and Sustainable Buildings Policy.
- Implement the actions identified in the Green Fleet Strategy
- Support the installation of renewables on City assets.

By continuing to perform these and other actions listed in the updated plan, the City will continue toward net-carbon neutrality in its operation.

Background and Discussion:

The City of Burlington has significant energy and environmental impacts associated with its own operations. In 2009, Council approved a corporate energy policy (CSI-3/09) which provides guidance and direction to staff on the development and implementation of a comprehensive corporate energy management program. This policy was updated in 2024, transitioning to the Corporate Energy and Sustainable Buildings Policy ([EICS-07-24](#)) to align with the City's carbon reduction goals as well as the climate emergency declaration.

Ontario Regulation 25/23 requires municipalities to have an Energy Conservation and Demand Management Plan and publicly report on annual energy consumption.

The 2019 Corporate Energy and Emissions Management Plan meets the objectives identified in the regulation and defines the City's carbon reduction target of 2040. The City reports on energy consumption on the City's website as mandated.

In early 2023 the Ministry of Energy implemented new requirements to streamline reporting and tracking of energy consumption and greenhouse gas emissions by introducing reporting through the Energy Star Portfolio Manager Portal.

Energy conservation typically means reducing the total amount of energy consumed (kWh of electricity and m³ of natural gas). Demand management refers to either using efficient technologies or changing usage to reduce peak load. These are designed to help manage Ontario's total use and peak demand for electricity.

The City's energy and emissions staff assist other City staff in identifying, implementing, and reporting on opportunities that reduce the City's direct carbon footprint, reduce current and future operating costs, and generate revenue where possible. Many projects have been completed since the adoption of the first Corporate Energy and Emissions Management Plan (2019-2024) with varying degrees of impact; some of the most important and beneficial projects include:

Performance Modelling of Facilities – Natural Resources Canada's RETScreen Green Energy Software was adopted by City staff to allow easy reporting to operational teams and provide tracking against projects and operational changes. The City now has more than 60 performance models for City and local board facilities which are updated on a regular basis.

Deep Energy Retrofit Studies – The City completed its first round of Deep Energy Retrofit Studies at City facilities in 2023. Buildings included were Appleby Ice Centre, Brant Hills Community Centre, Fire Station 2, Fire Station 7, and the Burlington Seniors Centre. By completing these studies, low carbon pathways are being identified for major City facilities with a realistic cost and project scope which can be incorporated into the ten-year capital plan.

Major Facility Projects – City View Park Pavilion was constructed and is the City's first net carbon neutral facility.

Skyway Arena is under construction and is expected to be completed later in 2024. The facility will be the first low carbon arena in the City's portfolio and will maximize waste heat recovery and utilize a ground source heat pump loop.

Conversion of the former Robert Bateman High School is currently underway, and a low carbon pathway has been identified by the design team to transform the 1960's era facility into a low carbon building. The first phase of construction will increase envelope tightness and insulation and convert the existing HVAC systems, so they are suitable for ultra low temperature heating. This heating will be provided by a ground source heat pump loop in a future phase. The facility will also receive upgraded roof insulation and a solar PV array in a future phase when the existing roof has reached the end of its useful life.

Heating, Ventilation and Air Conditioning (HVAC) Upgrades – Various facilities have received HVAC upgrades providing increased energy efficiency as well as improved indoor air quality. Hybrid air source heat pump systems have been installed at the Burlington Transit downtown terminal and the Beachway Pumphouse which is currently being used by Burlington Green as their Eco Hub. Both systems provide large reductions in site carbon emissions.

Policy Updates – Earlier in 2024, The Corporate Energy and Sustainable Buildings Policy was approved by Council, which mandates all new City facilities and major

renovations adhere to the Canada Green Building Council's Zero Carbon Building Standard for Design.

Solar PV Systems – The City has installed two net metered solar arrays on City facilities. The first on City View Park Pavilion and more recently energized in June 2024 is a new system on Fire Station 5 in Kilbride. These systems help to offset electricity used by both facilities.

Update to the Green Fleet Strategy – The original 2008 Green Fleet Strategy was updated in 2023 and lays out a three-phase approach to reducing our corporate fleet's carbon emissions. Fleet vehicles will be gradually converted from fossil fuels to hybrid or electric vehicles subject to performance and market availability.

Upcoming projects and initiatives

Deep energy retrofit studies - Staff are embarking upon a second round of studies including Sims Square, Tansley Woods Community Centre, Nelson Recreation Centre, and The Burlington Animal Shelter. These studies will provide specific projects as part of a larger pathway to reduce operational carbon at these facilities.

Burlington Transit addition – Design of the addition to the Burlington Transit facility to house their electric buses and charging equipment will follow the updated Corporate Energy & Sustainable Buildings policy, which will adhere to the Canada Green Building Council Zero Carbon Building Standard.

Design of deep energy retrofits – Detailed design is underway for retrofits at Appleby Ice Centre (A Side) and Brant Hills Community Centre. These designs and subsequent construction will have major impacts on operational carbon in our existing facility portfolio and will also include the next net metered solar array on Brant Hills Community Centre.

IESO Strategic Energy Management (SEM) Program – The City's participation in an SEM Cohort for 24 months will help establish (strengthen) our capacity for energy management, including building skills among staff, and regular energy team meetings. Performance will be monitored using our energy performance models, allowing our team to maintain course toward our long-term goals and incremental targets.

Strategy/process/risk

This update of the Corporate Energy and Emissions Management Plan was developed in-house by City staff. The general premise of this plan remains the same as the original Corporate Energy and Emissions Management Plan, with the preferred state remaining constant. For the preparation of this plan staff created a forecasting model with inputs from various recently completed projects including the solar capital plan study and deep

energy retrofit studies. More accurate assumptions for costs of retrofits, renewables and carbon reduction from energy retrofit projects were included in the model and aligned with facility renewal and revitalization dates. Updated emissions forecasts from The Atmospheric Fund were used for future carbon emissions estimates.

From these inputs staff were able create more realistic targets for the five-year period included in this plan.

Targets from the Corporate Energy and Emissions Management Plan (2024-2029)					
	2018 Baseline	% Reduction	2029 Target	% Reduction	2040 Target
Grid Electricity (kWh / ft²)	18.76	7%	17.48	6%	17.73
Natural Gas (m³ / ft²)	1.85	55%	0.82	100%	0.00
Solar Generation (MWh)	0		6,959		12,154
Facility GHG Emissions (kg CO₂eq / ft²)	4.10	31%	2.83	89%	0.44
Fleet GHG Emissions (t CO₂eq)	1,963	5%	1,872	90%	201

The original Corporate Energy and Emissions Management Plan had absolute targets which, while in keeping with the overall absolute target of being net carbon neutral by 2040, would not properly account for progress made with an increasing facility portfolio. The targets above and included in this update to the Corporate Energy and Emissions Management Plan are based on area and account for increased overall facility area. Targets for fleet in the above chart were extracted from the updated Green Fleet Strategy.

Options Considered

This update to the Corporate Energy and Emissions Management Plan provides a pathway to reduce the City’s operational emissions over the next five-year period and work toward the overall goal of being net carbon neutral in the City’s operation. The measures identified in the plan and its processes must be implemented to meet this target. The City could choose business as usual and the do-nothing options but then would fail to show community leadership in acting on climate change.

Financial Matters:

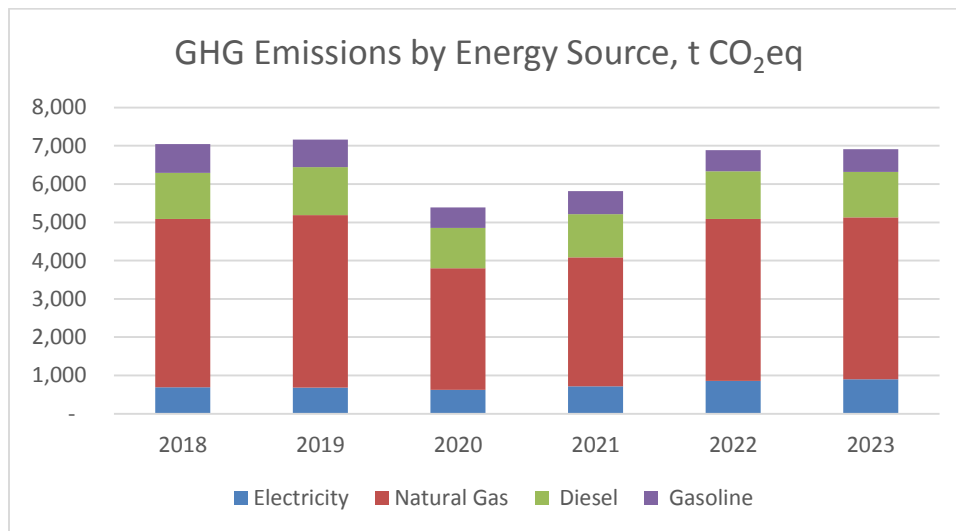
Although this report does not seek direct approval for funds, consideration in the budget process should be given for increased investment to achieve the City’s carbon neutrality through deep energy retrofits, building to net carbon zero standards, support the installation of renewable energy systems and green vehicle procurement. Although additional funding will likely be required for projects, the investment should show lower operating costs over the lifecycle of the facility or vehicle and lower our carbon footprint.

Total Financial Impact

Not Applicable.

Climate Implications:

Since the approval of the first Corporate Energy and Emissions Management Plan the City has taken great strides and shown progress toward being net carbon neutral in its operation. While we saw great drops in emissions during the COVID-19 pandemic, these were not sustainable reductions given our current building systems and services. Operational staff made every effort to keep corporate emissions below pre-pandemic levels in 2022 and 2023 despite increasing service levels and outdoor air levels provided to indoor public spaces. We can expect these levels to drop significantly over the next five years with the actions identified in the updated Corporate Energy and Emissions Management Plan pending funding approvals through the capital budget process.



Engagement Matters:

Corporate energy and emissions staff have continued to engage with our operational staff teams through several training sessions and refreshers with various automation systems, sub metering systems and equipment specific training to help them understand their facilities' energy use and resulting emissions from their facilities. The corporate energy and emissions team is also actively involved with the Climate Action

Plan and provides input on the stakeholder committee as well as any other input needed for studies and program rollout. Members of the corporate energy and emissions team are also active members in the Municipal Energy Managers Community of Practice which allows energy and environmental staff from various Ontario municipalities to share experiences and project information

Conclusion:

This update to the Corporate Energy and Emissions Management Plan incorporates requirements of Ontario Regulation 25/23 as well as lessons learned, and knowledge gained by City staff over the last five years. The targets identified in this plan are a key step toward achieving carbon neutrality in the City's operation by 2040. By continuing to execute deep energy retrofit studies and pathways on our existing City assets, adhering to the recently approved Corporate Energy and Sustainable Buildings Policy and following the three phases identified in the updated Green Fleet Strategy, the City of Burlington will continue to be a leader in municipal energy and carbon reduction.

Respectfully submitted,

Tom Pedlar

Supervisor, Energy & Emissions

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Appendices:

- A. Corporate Energy and Emissions Management Plan 2024-2029

Report Approval:

All reports are reviewed and/or approved by Department Director, the Chief Financial Officer, and the Executive Director of Legal Services & Corporation Counsel.