



SUBJECT: Update to the Corporate Energy and Emissions Management Plan

TO: Committee of the Whole

FROM: Capital Works

Report Number: CW-08-19

Wards Affected: All

File Numbers: 210-01

Date to Committee: July 8, 2019

Date to Council: July 15, 2019

Recommendation:

Approve Appendix A in capital works department report CW-08-19 – The Corporate Energy and Emissions Management Plan for submission to the Ontario Ministry of Energy, Northern Development and Mines and to be posted on the city’s website as required by Ontario Regulation 507/18; and

Direct the Executive Director of Capital Works to report annually on the progress of implementing the plan in Appendix A of Report CW-08-19 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)
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Background and Discussion:

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.

In 2009, the Green Energy Act and Green Economy Act (GEGEA) directed the broader public sector (municipalities, universities, schools, and hospitals) to develop and report their energy conservation and demand management plans. Specifically, Ontario Regulation 397/11 – Energy Conservation and Demand Management Plans enacted in August 2011, mandated:

- Completion, publication and submission to the Minister of Energy of Burlington's corporate energy consumption and greenhouse gas emission template for one year of operation (Jan 2011 to Dec 2011) by July 1, 2013 and annually thereafter (completed Mar 2013 CSI-06-13);
- Development and publication of a detailed energy conservation and demand management plan with targets approved by senior management by July 1, 2014 (completed Apr 2013 CSI-09-13); and
- By July 1, 2019 and every five years thereafter publish an update to the original plan that reviews measures implemented, their actual results and forecasted impacts of planned measures, and any changes made to achieve our targets.

In 2018, the Ontario government repealed the Green Energy Act and Green Economy Act and, in the process, moved Ontario Regulation 507/18 – Energy Conservation and Demand Management Plans to the Electricity Act. The wording of the regulation is the same as the above-mentioned Regulation 397/11 with updated dates for the next five-year period to 2024.

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 of Burlington has a significant energy and environmental impact associated with its own operation. This was identified in the City's Strategic Plan with a goal of having the City's operations become net carbon neutral by 2040 which was adopted in 2016. The updated Corporate Energy and Emissions Management Plan (Appendix A) meets the objectives identified in Ontario Regulation 507/18 as well as aligns and defines the City's carbon reduction target of 2040.

The City's Environment and Energy Services 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 Management Plan with varying degrees of impact; some of the most important and beneficial projects include:

Implementation of an Energy Management System – Ameresco AssetPlanner was adopted as the City's Energy Management system and was rolled out in 2016; it is used to track all utility invoices by account and provide various reports to staff.

Lighting Upgrades – LED lighting upgrades have been completed at various facilities including City Hall, Mainway Recreation Centre, Appleby Ice Centre, Burlington Transit Headquarters to name a few; retrofits have included both interior and exterior as well as fixture integrated controls at various sites. The City's "Cobra Head" style street lights have also been upgraded to LED fixtures and provided the single highest energy reduction of any project. Decorative streetlights are soon to follow with upgrades in 2020.

Building Automation – Building Automation systems have been installed or upgraded at many city facilities and allow city staff to remotely adjust schedules and setpoints to minimize energy use when areas and facilities are not in use. They also now extend into remote control of refrigeration plants at several of the City's arenas. Systems are continually updated through capital renewal and recommissioning efforts.

Heating, Ventilation and Air Conditioning (HVAC) Upgrades – Various facilities have received HVAC upgrades providing increased energy efficiency as well as improved indoor air quality.

Electrical Sub Metering Systems – Implementation of electrical sub metering systems at six facilities was completed and is planned to be rolled out to more buildings and to include natural gas and water metering. These systems give staff up to the minute data at a systems level and are instrumental to the updated Corporate Energy and Emissions Management plan moving forward.

FIT Solar PV Systems – The City has rented roof space at three facilities for the purposes of electricity generation that is exported directly to the grid under the Feed-in Tariff (FIT) Program including Mountainside Recreation Centre, Burlington Transit Headquarters and Roads Parks and Forestry Headquarters. While these solar PV systems do not provide GHG reduction benefits directly to the city, they do provide a steady income to the city that can be used to offset costs for energy conservation efforts.

Strategy/process

IndEco and The Paragon Group were retained to assist staff in the preparation of the Updated Corporate Energy and Emissions Plan as well as the associated energy modeling and data review. The planning process was based on four major steps;

- **Define the preferred state** – The preferred state is a description of where the City of Burlington wants to be with energy use and fuel usage.
- **Identify the present state** – The present state gives us an indication of how far away the City’s present state of energy management is from where the City wants to be in its preferred state.
- **Identify priorities for actions** – Identifying a priority of actions was a two-step process. Actions were identified by the project team and through a strategic planning workshop. Actions were then rated against several criteria.
- **Document the results** – Action lists and priorities were refined using costs and assumptions.
- Inputs into the planning process include;
 - o Analysis of data and results of past projects,
 - o Review of existing policies and plans,
 - o Interviews with city staff at all levels,
 - o A strategic planning workshop with staff from Capital Works, RPF, Finance, Parks and Recreation, Transit and Fire,
 - o Research and interviews with technology providers
 - o Review of industry best practices both in private and public sectors.

Quick Wins

A thorough list of actions can be found in the plan in Table 11, although there are several actions that can be identified as “quick wins” that can have a major impact to energy and emissions management at the City including;

- Establishing a thorough training program that covers all staff - Training is expected to be established in different streams, more intense for those who are directly related to the operation of facilities and those who can greatly influence staff.
 - Adoption of a shadow price for carbon – this will allow us to put a value to carbon reduction for the business case of various projects and decisions.
 - Setting individual targets for departments and facilities – this will give staff more meaningful goals and foster a culture of conservation.
 - Adopt new corporate construction standards for new facilities, major renovations as well as capital renewal projects with respect to energy and emissions.
 - Design of City View Park Pavilion as well as Skyway Arena are currently underway and can be examples of the city taking action against climate change with low carbon designs.
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Financial Matters:

The cost to complete the Corporate Energy and Emissions Management Plan was \$60,850.

Although this report does not seek direct approval for funds, committee should be aware that:

- Increased investment is required to achieve the City's carbon neutrality through deep energy retrofits, building to net carbon zero standards, 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.
- Additional resources are needed to assist in collecting, analyzing and forecasting corporate energy consumption and the carbon footprint. The resources could also assist in the analysis of fleet data as part of the city's transportation energy and carbon footprint. There is also a need for support in the analysis of community energy data to assess community wide consumption and carbon footprint related to the Climate Action Plan.

Requests for additional funding would be subject to future budget deliberations.

Connections:

Approval of this plan has several connections to plans and policies.

Staff propose to combine the Corporate Sustainable Building Policy and Corporate Energy Policy into one policy to address new builds, major renovations and capital renewal with respect to energy and carbon reduction. This update is expected in Q4 of 2019.

The Green Fleet Strategy will also play a major role in the reduction of the city's operational emission reduction and is expected to be revised in 2020.

Asset Management Plans and Facility Master Plans will drive the timing and investment required for the deep energy retrofits required by the Corporate Energy and Emissions Plan when facilities as well as major building systems have reached their end of life.

Connections with many day-to-day decisions and business cases will be impacted by this plan and the importance of the climate lens identified in the City's Climate Emergency Declaration on April 23, 2019.

Public Engagement Matters:

The City continues to participate in energy conservation events such as Earth Hour on an annual basis. The Take Action Burlington blog is also used to engage staff and the public in energy conservation initiatives. City staff are planning initiatives to make the public more aware of our corporate energy use through publishing of information on the city's website pertaining to energy consumption and the display of energy use at new facilities.

Conclusion:

While the Corporate Energy and Emissions Plan provides the framework to achieve our target of having city operations be net carbon neutral by 2040 it also needs to be very much a living document and updated on a regular basis. Technology already exists to achieve the goal of carbon neutrality but continues to improve at a rapid pace. This new plan is much more comprehensive and goes above and beyond what is required by provincial legislation. It illustrates that Burlington is very much committed to its Strategic Plan goals and Climate Emergency Declaration.

Respectfully submitted,

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Appendices:

- A. Corporate Energy and Emissions Management Plan 2019-2024

Report Approval:

All reports are reviewed and/or approved by Department Director, Director of Finance and Director of Legal. Final approval is by the City Manager.