

Committee of the Whole Report

DATE: Tuesday, June 04, 2019

WARD(S): ALL

TITLE: CORPORATE ENERGY MANAGEMENT PLAN 2019-2024

FROM:

Jason Schmidt-Shoukri, Deputy City Manager, Planning and Growth Management
Mary Reali, Deputy City Manager, Community Services

ACTION: DECISION

Purpose

To seek approval of the City of Vaughan's Corporate Energy Management Plan 2019-2024, in order to comply with the requirements of Ontario Regulation 507/18, thereby demonstrating leadership in energy conservation.

Report Highlights

- The Corporate Energy Management Plan 2019-2024 complies with the requirements of Ontario Regulation 507/18 for municipalities to revise and make available to the public an Energy Conservation and Demand Management Plan every five years.
- The Plan:
 - is supported by energy audits of 30 City facilities;
 - includes a progress update, revised energy conservation goals, and proposed implementation strategies; and
 - includes revised greenhouse gas reduction targets for select corporate assets.

Recommendations

1. That the revised Corporate Energy Management Plan 2019-2024 (Attachment 1) be approved;
2. That the Corporate Energy Management Plan 2019-2024 be submitted to the Province of Ontario in order to comply with the requirements of Ontario Regulation 507/18; and

3. That the Corporate Energy Management Plan 2019-2024 be appropriately amended in June 2019 to integrate the findings of facility energy audits to summarize cost estimates and Returns on Investment (ROI) calculations for energy conservation measures.

Background

Since 2009, broader public sector (BPS) organizations in Ontario, including municipalities, have been required to publish and implement five-year energy conservation and demand management plans (i.e., corporate energy management plans) under what is now Ontario Regulation 507/18 (previously Ontario Regulation 397/11).

In July 2014, the City of Vaughan submitted and made public its first Corporate Energy Management Plan (EMP). This initial plan provided a comprehensive overview of City operations relevant to energy management. It also identified retrofits and conservation measures that could be implemented to reduce corporate energy consumption. The 2014 EMP also described a target to reduce energy consumption by 10% on a per person served basis, in equivalent kilowatt hours per square foot (ekWh/ft²), and to reduce corporate greenhouse gas (GHG) emissions by 10% per person below the 2011 baseline year by 2020.

There is a regulatory requirement to report on energy consumption of publicly owned buildings

The City is required to submit the updated 2019 EMP to the Province by July 1, 2019 in accordance with Ontario Regulation 507/18. This EMP update provides the following:

- An updated energy consumption target
- An updated GHG emissions reduction target
- An implementation plan to reach the new targets
- Financial implications (i.e. costs and savings associated with implementation measures), detailed in the facility energy audits

Energy reporting and conservation planning is beneficial to the City because it serves to demonstrate leadership and better manage energy and costs. This provides service excellence for citizens and sets targets to reduce GHG emissions, thereby contributing to a low-carbon economy.

Previous Reports/Authority

Previous reports related to the Corporate Energy Management Plan can be found at the following links:

[Energy Conservation Demand Management Plan, 2014-2019](#)

[Update on the City of Vaughan Corporate Energy Management Strategy](#)

Analysis and Options

The 2014 EMP served as a starting point in the development of this Plan update. In addition, the 2019 EMP is the result of the following research and consultation efforts:

- A jurisdictional scan to determine municipal best practices on key components, energy baselines and target development, and actions
- Research on international standards, and Federal and Provincial policy and targets
- Utility data collection and analysis
- Internal departmental consultations
- External consultations with community partners

Corporate facilities, fleet, and outdoor lighting (streetlights and parks) are City assets within the scope of the 2019 EMP update. Revised energy consumption and GHG emission reduction targets for facilities are also proposed in the EMP update, according to facility type (i.e., administration buildings, community centres, libraries, fire stations, etc.). The City also tracks energy consumption of water/wastewater pumping stations and GHG emissions from corporate waste and reports the results to Partners for Climate Protection.

2017 represents the most recent, complete data set for corporate energy consumption

Data from 2013 was used as a baseline to measure progress, with 2017 data serving as the comparison year. A complete data set was not available for 2018; as such, 2017 represents the most recent up-to-date data set. From 2013-2017, based on data provided by the responsible City departments and for the select assets (buildings, fleet, and outdoor lighting), the City reduced its energy consumption by approximately 10% and reduced GHG emissions by about 20%. A breakdown by asset type is provided below:

Change (%) in Corporate Energy & GHG Emissions from 2013-2017				
	Buildings	Fleet	Lighting	Overall
Change in Energy Consumption (ekWh)	-10.2%	+0.7%	+10.4%	-10%
Change in GHG Emissions (tCO₂e)	-21.2%	0%	-44.8%	-20%

Electricity use in City buildings has been reduced by approximately 2.7 million kilowatt hours (kWh), or 9%, and natural gas use has been reduced by about 11% from 2013-2017. The electricity savings are estimated to have saved over \$310,000 in annual utility costs.

Natural gas savings must become a larger part of the City's energy strategy to demonstrate leadership in greenhouse gas reductions

Energy conservation efforts must continue in order to reach the revised energy and GHG emission reduction targets. City facilities account for approximately 71% of the City's

corporate GHG emissions and represents the greatest opportunity for carbon reductions and cost savings.

Long-term energy and GHG emission reduction targets were set based on the Canada Green Building Council (CaGBC) Zero-Carbon Building Standard. The target reductions seek to eliminate GHG emissions associated with the operations of new buildings by 2030 and eliminate GHG emissions from all buildings by 2050. For the purposes of this report, the long-term GHG reduction target is interpreted as follows:

- Eliminate GHG emissions associated with the operations of buildings by 2050 for all City facilities.

Specific actions to achieve the long-term target are not described in detail in the 2019 EMP, as technology and costs will change over this time horizon. Energy audits for City facilities, to be completed in June 2019, identify specific energy conservation measures for each facility to contribute to the achievement of the targets. The 2019 EMP does, however, recommend various GHG emission reduction actions and strategies the City should explore. These include, for example: high-performance building envelopes, fuel switching from natural gas to electricity use for space heating and water heating, on-site renewable energy generation (e.g., solar photovoltaic and solar thermal), thermal energy networks, geothermal heating and cooling, and forms of energy storage and microgrids.

Short-term targets for existing facilities, as identified below, set a pathway to achieve the long-term 2050 target and track progress:

	2024 Target	2030 Target
Electricity	Reduce electricity consumption by 9% below 2017 levels	Reduce electricity consumption by 14% below 2017 levels
Natural Gas	Reduce natural gas consumption by 10% below 2017 levels	Reduce natural gas consumption by 37% below 2017 levels
GHG Emissions	Reduce GHG emissions by 10% below 2017 levels	Reduce GHG emissions by 42% below 2017 levels

These targets were set in collaboration with staff from Facility Services, Recreation Services, and Infrastructure Planning and Corporate Asset Management. The opportunity to exceed this savings potential will need to be explored through the findings of the facility energy audits.

The 2019 EMP includes a total of 14 high-level recommendations for implementation in both the short and long terms, to contribute towards the targets

The 2019 EMP does not identify specific targets for outdoor lighting or fleet vehicles. However, the confirmation of electricity savings from the LED Streetlight Retrofit project will be incorporated into the 2019 EMP implementation, as it is expected to result in a 25% to 35% energy savings.

Fuel savings and GHG reductions from the implementation of a Green Fleet Strategy will be determined as part of the implementation of Green Directions Vaughan and incorporated into the 2019 EMP.

Several new City facilities are planned to be constructed before 2030. One of the EMP's recommendations is to develop and approve revised corporate standards for energy performance of new facilities.

Financial Impact

Utility costs in 2017 were approximately \$4,675,744 for electricity and \$1,090,070 for natural gas. These costs only consider the City's major facilities (i.e., administration buildings, community centres, fire stations and libraries) and there are some gaps in utility billing data for some community centres (most notably, Rosemount Community Centre). When also considering streetlight energy use and fleet fuel consumption, energy management offers the potential for significant cost savings to the City.

There is no immediate cost associated with the update of the 2019 EMP itself. The facility energy audits will provide cost estimates for specific energy conservation measures, including on-site energy generation and energy storage options, and calculations of return on investment to inform the budget process to implement the 2019 EMP to meet short-term targets.

Since 2012, the City has received approximately \$138,000 in incentive payments from the Save on Energy program for implementing energy efficiency retrofits. These funds are held in a Corporate Energy Fund account, managed by Facility Services, and are intended to fund new energy efficiency related projects and initiatives. By continuing to implement energy retrofits such as those recommended by the 2019 EMP, and registering them with Save on Energy, the City may continue to be eligible to receive incentive payments.

Broader Regional Impacts/Considerations

The City's efforts are consistent with approaches being undertaken in other municipalities. The York Region Corporate Energy Conservation and Demand Management Plan Update 2016 projects a 17% reduction in GHG emissions per capita by 2031 from the 2014 baseline year.

Conclusion

The City is required, by Ontario Regulation 507/18, to update and make available to the public a five-year Corporate Energy Management Plan. In addition to fulfilling a legislative requirement, this initiative demonstrates the City's leadership in energy conservation, climate change mitigation, and fiscal responsibility.

For more information, please contact: Rija Rasul, Energy and Climate Change Analyst, ext. 8426

Attachment

1. City of Vaughan Corporate Energy Management Plan 2019-2024

Prepared by

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