



Staff Report for Committee of the Whole Meeting

Date of Meeting: May 21, 2019

Report Number: SREIS.19.006

Department: Environment and Infrastructure Services

Division: Corporate Asset Management and Environment Services

Subject: SREIS.19.006 2019-2023 Corporate Energy Plan

Purpose:

To provide a summary of results from the City's 2014 Corporate Energy Plan, and, further to the requirements of Ontario Reg. 507/18 under *the Electricity Act*, to provide an overview of the new 2019-2023 Corporate Energy Plan.

Recommendation(s):

- a) That Council receive SREIS.19.006 for information.

Contact Person:

Terry Ricketts, Director, Corporate Asset Management & Environment Services,
Extension 6504

Vlad Gaiu, Manager, Energy and Waste, Extension 2524

Report Approval:

Submitted by: Italo Brutto, Commissioner of Environment and Infrastructure Services

Approved by: Neil Garbe, City Manager

All reports are electronically reviewed and/or approved by the Division Director, Treasurer (as required), City Solicitor (as required), Commissioner, and City Manager. Details of the reports approval are attached.

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Background:

The City of Richmond Hill operates and maintains 61 facilities and over 16,000 luminaires located on streets, parks and parking lots. The portfolio consumes approximately \$6.6M annually in electricity and natural gas. Energy consumption will continue to rise as the City continues to grow, and additional infrastructure is added. Richmond Hill remains committed to managing and reducing energy consumption, costs and greenhouse gas emissions from its buildings and energy consuming infrastructure.

Ontario Reg. 507/18 under the *Electricity Act* requires municipalities to report energy consumption and greenhouse gas (GHG) emissions annually to the Ministry of Energy. It further requires municipalities to develop and publish energy conservation and demand management plans (Corporate Energy Plans), and to update these plans every five years.

Richmond Hill developed its first Corporate Energy Plan (2014-2018) in July 2014 and, since that time, it has been reporting energy consumption and GHG emissions from facilities on an annual basis. The primary objective of the City's Corporate Energy Plan is to manage and reduce municipal energy consumption, related costs and GHG emissions, through the implementation of energy conservation initiatives and renewable energy systems.

The purpose of this Staff Report is to provide a summary of the implementation results from the City's 2014 Corporate Energy Plan and to provide an overview of the new 2019-2023 Corporate Energy Plan (Appendix 1 - 2019-2023 Corporate Energy Plan Summary).

2014-2018 Corporate Energy Plan

The 2014 Corporate Energy Plan established the foundation for energy management in City facilities. A working group with representatives from various City departments was formed to assist in developing the plan. Staff conducted energy audits for top energy consuming facilities and identified a number of energy conservation opportunities (energy projects). Staff also identified a number of opportunities to improve energy efficiency through planned lifecycle replacement of equipment. Projects with the best return on investment were selected and formed the basis of the 2014-2018 implementation plan.

Results from the 2014 Corporate Energy Plan

The implementation of energy projects identified in the 2014 Corporate Energy Plan resulted in approximately 4,300,000 ekWh/year in energy savings, equivalent to roughly \$660,000/year in cost avoidance and a reduction in GHG emissions of 370 tonnes/year. More than half of the energy savings came from lifecycle replacement projects where end-of-life equipment was replaced with new, more energy efficient options. Examples include the replacement of boilers, chillers and compressors. The remainder of the

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savings came from the implementation of proactive energy projects such as indoor lighting replacements with LED lights. Provincial incentive funding programs made available through the local energy distribution companies (Alectra and Enbridge) assisted in offsetting \$330,000 of the capital costs.

Several operational measures were also implemented in an effort to reduce energy consumption and to improve access to energy information. Facility operators and managers were provided with training on energy efficiency, and monthly energy reports are being provided to facility staff to help identify any abnormalities in consumption.

Energy Consumption Trends (2014 – 2018)

Total energy consumption decreased by 5% from 2014 to 2018 despite the addition of two new facilities, the Richmond Green Sports Dome (2016) and the David Dunlap Observatory (2017). This reduction is the result of energy projects implemented during that period and the slightly milder winter weather in 2018 as compared to 2014 (energy consumption is strongly correlated with winter weather). Energy use intensity, which measures the energy consumption per square foot of building space, decreased by 14% between 2014 and 2018. Tracking the energy use intensity, or energy consumption per square foot, allows the City to compare energy efficiency of the overall building inventory consistently from year to year, despite the addition of new buildings.

Despite the overall reduction in energy consumption, total energy cost for City facilities increased from 2014 to 2018 by 10% (from \$4.1M in 2014 to 4.5M in 2018) mainly due to a significant increase in electricity rates between 2014 and 2016. As electricity rates stabilized in recent years, so did the City's total energy costs.

2019-2023 Corporate Energy Plan

The 2019-2023 Corporate Energy Plan was developed in adherence to the Ministry of Energy's CDM Plan Preparation Guide, and further to the requirements of O.Reg 507/18 under the *Electricity Act*. The plan will guide the City's energy management efforts over the next 5 years and it will continue to take a proactive approach to reducing energy consumption. A comprehensive planning process was undertaken to develop the 2019-2023 Corporate Energy Plan, which included an in-depth analysis of energy consumption and trend analysis to identify energy saving opportunities. In addition, detailed energy audits were completed in 2017 for the top 13 energy-consuming facilities, which identified a number of proactive energy conservation projects. Although not originally a requirement of the regulation, the scope of the City's 2019 Corporate Energy Plan has been expanded to include the energy consumption of luminaires located on streets, parks and parking lots. The City's cross-departmental Corporate Energy Conservation Team was involved in the development of the plan and in selecting and prioritizing the energy conservation measures.

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The implementation plan identifies projects that, once implemented, are expected to result in \$725,000/year in cost avoidance through a combination of capital and operational measures

Examples of recommended capital projects include installing variable frequency drives on pool filter pumps, indoor LED lighting retrofits, facility recommissioning¹, occupancy sensors and demand control ventilation. Operational measures include providing regular energy efficiency training and energy consumption reports to facility staff, and optimizing facility operating schedules and building heating, cooling and ventilation set points. Organizational opportunities include developing energy efficiency design guidelines for new City facilities and major retrofit projects, continuing to identify innovative energy opportunities through pilot projects, and exploring renewable energy opportunities such as rooftop solar energy installations.

Implementation Plan for the 2019-2023 Corporate Energy Plan

The 2019-2023 Corporate Energy Plan contains an Implementation Plan that details the projects that will be implemented over the next five years and the expected energy savings, cost avoidance and estimated capital cost for each energy conservation opportunity. If all of the proposed energy projects are implemented, it is estimated that energy consumption will be reduced by 8,400,000 ekWh/year, which is 15.7% of the total energy consumption in 2017. As referenced above, this equates to a cost avoidance of \$725,000/year and a reduction in GHG emissions of 860 tonnes/year.

Financial/Staffing/Other Implications:

There are no immediate financial implications as a result of this report. Implementation of the 2019-2023 Corporate Energy Plan will continue to require staff time from all corporate departments.

In 2018, Council approved a \$2.0 million capital budget to implement the capital energy projects recommended by 2017 detailed energy audits. Part of this funding will come from Provincial incentive programs offered by Alectra and Enbridge and the remaining funding will come from the Federal Gas Tax fund. Any new energy projects identified for implementation will be incorporated into regular budget cycles and funded, where possible, through incentives and from the Federal Gas Tax.

Relationship to the Strategic Plan:

The City's commitment to energy conservation and demand management aligns with the Strategic Plan goal of "Wise Management of Resources", which supports planning

¹ Recommissioning is a re-optimization process for existing buildings to ensure that building equipment and systems are operating optimally to meet current occupant needs and to save energy.

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and promoting energy efficient buildings, renewable energy, water conservation and low emission vehicles.

Conclusion:

The City of Richmond Hill operates and maintains 61 facilities and over 16,000 luminaries located on streets, parks and parking lots. The City's portfolio consumes approximately \$6.6M annually. As Richmond Hill's population continues to grow, so do City services, infrastructure and energy demand. Richmond Hill remains committed to managing and reducing energy consumption, costs and greenhouse gas emissions from its buildings and operations.

The City has prepared a 2019-2023 Corporate Energy Plan (Appendix 1 - 2019-2023 Corporate Energy Plan Summary) as required by Ontario Regulation 507/18, under the *Electricity Act*. The primary objective of the Corporate Energy Plan is to manage municipal energy consumption, cost and greenhouse gas emissions. The City will achieve this objective through a series of energy-reducing capital projects, together with improved operational practices and organizational measures.

The plan recommends a number of energy conservation projects for implementation over the next five years, which are estimated to reduce total energy consumption by 15.7% which equates in a cost avoidance of \$725,000/year and a reduction in GHG emissions of 860 tonnes/year.

As per the requirements of the *Electricity Act*, the 2019-2023 Corporate Energy Plan Summary will be posted on the City's website. Staff will be submitting the 2017 corporate energy consumption and GHG emissions report to the Ministry of Energy by July 1st 2019. The full version of the Corporate Energy Plan will be made available upon request.

Attachments:

The following attached documents may include scanned images of appendixes, maps and photographs. If you require an alternative format please call contact person listed in this document.

- Appendix 1 - 2019-2023 Corporate Energy Plan Summary

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Report Approval Details

Document Title:	SREIS.19.006 Corporate Energy Plan.docx
Attachments:	- 2019-2023 Corporate Energy Plan Summary Report.docx
Final Approval Date:	May 6, 2019

This report and all of its attachments were approved and signed as outlined below:

Vlad Gaiu - Apr 30, 2019 - 5:24 PM

Terry Ricketts - Apr 30, 2019 - 8:13 PM

Italo Brutto - May 2, 2019 - 1:13 PM

David Dexter - May 2, 2019 - 1:30 PM

Neil Garbe - May 6, 2019 - 10:24 AM