



TO:	GENERAL COMMITTEE
SUBJECT:	ENERGY MANAGEMENT PLAN
WARD:	ALL
PREPARED BY AND KEY CONTACT:	A. MCMULLIN, MANAGER OF ENERGY, EXT #5097
SUBMITTED BY:	R. PEWS, DIRECTOR OF CORPORATE FACILITIES
GENERAL MANAGER APPROVAL:	D. MCALPINE, GENERAL MANAGER OF COMMUNITY AND CORPORATE SERVICES
CHIEF ADMINISTRATIVE OFFICER APPROVAL:	M. PROWSE, CHIEF ADMINISTRATIVE OFFICER

RECOMMENDED MOTION

1. That the Energy Management Plan/Conservation and Demand Management Plan 2020 - 2024 dated June 1, 2019 attached as Appendix "A" to Staff Report FCT005-19, be endorsed in principle with implementation subject to upcoming business plan approvals.

PURPOSE & BACKGROUND

2. The purpose of this Staff Report is to provide General Committee with an overview of the recommendations and observations contained in the updated Energy Management Plan 2020 – 2024 for corporate operations.
3. Ontario Regulation 507/18 requires municipalities to report annually on their energy usage and greenhouse gas emissions. The regulation also requires municipalities to update their energy conservation and demand management (CDM) plan every five years. The completion of the plan fulfils the regulatory requirement.
4. The Energy Management Branch is mandated to optimize the energy performance of all City owned and operated infrastructure with a goal to reduce and utility consumption and minimize the corresponding costs.
5. The updated Energy Management Plan establishes energy reduction targets and implementation actions that will improve conservation best practices within the City. This planning approach focuses on corporate processes and behaviours that embed energy efficiency within the culture of the City. Continuous improvement and optimization activities serve as the key aspects of the plan.

ANALYSIS

Previous Energy Management Plan Impacts: 2014-2018

6. The original plan, crafted in 2012, presented a framework to establish an energy management program within the City and targeted an energy reduction of 40,000 gigajoules (GJ), while outlining priority objectives to achieve this reduction.

7. During the implementation period of the initial plan, from 2014 to 2018, all of the priority objectives were achieved and energy consumption (excluding growth impact) was reduced by 31,538 GJ or 79% of the target. These savings produced a cost avoidance of \$6,647,184, exceeding the original plan estimates and generated a return on investment of 12% through these conservation efforts.
8. Over this period the Energy Management Branch secured over \$1.6 million in incentive revenue, invested \$5.6 million in energy efficiency capital works. As a result, despite rate increases and growth, the city's utility costs for the 2018 fiscal year were \$783,091 less than paid in 2014.

New Energy Management Plan: 2020 - 2024

9. Staff have developed a new plan that utilizes the Natural Resource of Canada (NRCAN) guidance model to evaluate and optimize the current energy management program by targeting eight key elements of best practices for top performing energy programs. In accordance with the memorandum dated June 17, 2019, the draft plan was posted on the Energy Efficiency page on the City's website to allow for community feedback prior to finalization of the report to General Committee and Council regarding the plan. A copy of the finalized Conservation and Demand Management Plan 2020 - 2024 is attached as Appendix "A". Natural Resources Canada provides an objective scorecard to conduct this evaluation. This exercise provides insight into the opportunities for improvement and serves as a mechanism for staff to identify targets for improvements. Eight key best practice elements are included in the scorecard:
 - Commitment / Planning / Organization / Projects / Financing / Monitoring, Tracking & Reporting / Training
10. Staff are aiming to achieve the best practice in all eight elements within the plan. To accomplish this goal, specific actions within each best practice elements have been identified for implementation. Completion of the actions will ensure the City achieves the energy reduction targets set forth in the plan.
11. On October 28, 2019, City Council approved motion 19-G-291 declaring a climate emergency and committing to eliminating corporate carbon emissions by 2050. Although the 2020 – 2024 Energy Management Plan was developed prior to Council's climate emergency declaration, the plan serves as an initial step towards achieving carbon neutrality. The Plan's focus on best practices and establishing performance-based reduction targets provide flexibility to incorporate carbon reduction goals and strategies moving forward.

Target Setting

12. The updated plan targets a corporate-wide energy consumption reduction of 18% that will generate an annual cost avoidance of \$924,407 over and above savings realized to date. This target encompass facilities and operations that account for 85% of the corporate energy consumption and utility costs.
13. This target has been developed using a performance based, data driven methodology. Using this approach the goal is to achieve top energy efficiency performance for the City's building portfolio, compared to similar municipal operations.
14. There are three specific targets that capture the energy impact for operations at all facilities, water and wastewater infrastructure. These are intensity-based targets, which allow for benchmarking against other facilities and are an effective means of measuring performance for process based operations such as water and wastewater. These targets are summarized in Table 1:

Table 1: Summary of Energy Conservation Targets

Target Operation	Actual Energy Intensity (ekWh/ft2) or (ekWh/ML)	Target Energy Intensity (ekWh/ft2) or (ekWh/ML)	Energy Savings Potential		
			(ekWh/ft2) or (ekWh/ML)	%	\$
Facility Operations	33.2	25.2	8.0	24%	\$700,273
Water Operations	1212	1097	116	10%	\$143,367
Wastewater Operations	441	399	42	10%	\$80,767

Total: \$924,407

15. The facility operations target was developed using the principle of performance-based conservation that relies on benchmarked data to quantitatively evaluate the performance of individual buildings and consequently the corporate portfolio overall.
16. The City's building portfolio, excluding water and wastewater facilities, were examined and analyzed. Every building is categorized into a particular operational type, (i.e. administrative, library, fire hall, community centre). The facility performance is measured in equivalent kilowatt hours per square feet (ekWh / ft2) and benchmarked against other similar building types. This exercise ranks the relative efficiency of a particular building amongst its peer group.
17. A top-quartile energy performance standard (i.e. target) was adopted for each of the facility types. The difference between the actual energy use intensity and the target represents potential annual savings. The target aims to achieve a performance within the top quartile (or 75th percentile) of building performance.
18. For water and wastewater operations, staff have adopted a continuous efficiency improvement methodology. To measure the energy conservation performance of the drinking water supply and wastewater processing system, a target that considers total energy utilized (equivalent kilowatt hours – ekWh) compared to the total volume of drinking water supplied or wastewater process (megalitre – ML) is ideal.

Energy Management Plan Implementation: Resourcing & Financing

19. During the initial 2014 – 2018 plan implementation, investment in Energy Management activities produced a return on investment of 12% for the City. It is anticipated that further investment in energy efficiency will continue to generate positive economic benefit.
20. The plan identifies thirty-one actions for implementation that range from policy development, staff communication and engagement activities, technical analysis, project identification and implementation, data management optimization and so forth. Many of these actions are planned for completion utilizing existing staff resources.
21. Larger scale energy conservation initiatives that are recommended will be requested and supported through the annual capital budgeting process. If other opportunities arise that require additional resourcing or funding needs, Staff will present these specific requests to General Committee and Council or as part of the regular business plan approvals.

-
22. The Energy Management Branch will continue to actively pursue grant and incentive funding to support the conservation initiatives and actions outlined in the plan.

ENVIRONMENTAL AND CLIMATE CHANGE IMPACT MATTERS

23. Improving the energy efficiency and conservation performance of the corporation reduces greenhouse gas emissions and the consumption of energy and water resources.

ALTERNATIVES

24. The following alternatives are available for consideration by General Committee:

Alternative #1

General Committee could choose to receive this staff report and take no further action.

This alternative is not recommended as the Energy Management Plan lays out a framework to reduce energy, optimize operations and control utility costs.

FINANCIAL

25. There are no direct financial implications for the Corporation resulting from the proposed recommendation. However, the endorsement of the principles of the Energy Management Plan will drive future investment towards energy efficiency and conservation initiatives.

LINKAGE TO 2018-2022 STRATEGIC PLAN

26. The recommendation(s) included in this Staff Report are related to the following goals identified in the 2018-2022 Strategic Plan:

☒ Fostering a Safe & Healthy City

Prudent planning for the Corporate Energy Management programs will help to build a greener Barrie and reduce the City's climate change impact.



APPENDIX "A"

CONSERVATION AND DEMAND MANAGEMENT PLAN 2020-2024