
TO: GENERAL COMMITTEE

SUBJECT: ENERGY MANAGEMENT PLAN RECOMMENDATIONS

PREPARED BY AND
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RECOMMENDED MOTION

1. That the Energy Management Plan dated March 23, 2012 as detailed in Staff Report ENG040-12 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 Energy Management Plan prepared for Barrie.
3. In 2008 through an arrangement between the Engineering and LTF departments the Energy and Environmental Officer was assigned to work with the Facilities Branch of LTF on a two day per week basis to help co-ordinate energy conservation initiatives and applicable incentive applications for projects in City facilities.
4. Staff in the LTF and Engineering departments determined that it would be useful to develop a plan that would aid in the sequencing of projects and increase the likelihood of approval for capital requests for energy conservation initiatives.
5. Terms of Reference to engage a Consultant to prepare the Energy Management Plan were developed and budgeted in 2009. The plan was to be completed in two (2) phases.

Phase 1:

- Undertake energy audits of major buildings in the Facilities branch portfolio and ground water system facilities under the Water Operations branch related to ground water supply.
- The development of projects to reduce energy use.
- The creation of a projects implementation schedule developed based on internal rate of return.

Phase 2:

- The development of an Energy Management Plan Based on:
 - A description of the preferred state of Energy Management that addresses regulatory elements and current best practices.
 - A description of the present state of Energy Management by benchmarking existing facilities based on energy use information, interviewing front line and senior staff, and research on present policies in place identifying gaps.
 - The creation of a road map from the present state to preferred state by using energy audits on reductions possible, projects proposed and measures to address gaps identified.
 - The quantification of all costs, benefits and resources required to move from present state to preferred state.

(Copies of the Energy Management Plan report are available in the Councillor's Lounge).

6. In 2009, the Province of Ontario passed legislation known as the Green Energy and Green Economy Act. Contained within this legislation was a requirement that municipalities be required to report on energy use and develop plans to reduce energy use.
7. On January 1, 2012, the Ontario Government's Energy Conservation and Demand Management Plans regulation 397/11 came into effect. This regulation established the criteria under which public agencies are required to report annually on energy use and green house gas emissions and established a start date of July 1, 2013.
8. Starting July 1, 2014, public agencies will have to develop and implement five year energy conservation and demand management plans.
9. The City of Barrie presently has 66 separate sites including municipal facilities, wastewater treatment facilities, a large surface water treatment plant, and a groundwater system where energy usage data (electricity and natural gas) and green house gas emissions data must be collected and compiled, and the projects required to reduce energy usage over time must be created, executed and reported on.
10. Staff have been collecting energy consumption data since 2006 for all facilities and includes water supply, wastewater treatment and street lighting. The process is very labour intensive and involves up to three departments. This task can be made easier through the implementation of energy management software which has the capabilities of recording energy consumption data directly from the utilities. The information required for the July 1, 2013 reporting deadline is already being collected and will be available for reporting to the Province. The Energy Management Plan being received with this report will form the basis of the City of Barrie's five year conservation and demand management plan for the July 1, 2014 reporting deadline.
11. The Province of Ontario announced in 2009 that electrical energy costs were expected to increase by 45% over the next five years (2010-2014). Through August 2012 electrical energy costs have increased 23.3% from 2009 as based on data available through the Independent Electrical System Operator. Electricity accounts for about 80% of the total energy costs in the City of Barrie and thus will have a large impact on budgets.

12. Through the gathering of data for the Energy Management Plan it was determined that 2011 expenditures for electricity, natural gas and water use in water supply, wastewater treatment, street lighting, traffic signals and facilities was approximately \$8.0 million dollars. As part of an aggressive facility building program a number of facilities were completed in 2011 (and thus will be operational for a full year in 2012). Expenditures for electricity, natural gas and water use in water supply, wastewater treatment, street lighting, traffic signals and facilities are expected to rise to approximately \$10.5 million in 2012.
13. Council has passed five strategic priorities for 2010-2014 including protecting the environment and strengthen Barrie's financial condition. Reduced energy use not only reduces the city's environmental footprint but it creates a cost avoidance for energy that otherwise would have been used.

ANALYSIS

14. The Energy Management Plan makes a number of recommendations to help the city meet the requirements of the Green Energy Act and to help control energy costs going forward.
15. The Energy Management Plan identifies \$4,475,000 in capital costs for retrofits. The plan recommends implementing the capital projects over five years and estimates that after accounting for incentives, cumulative savings will exceed cumulative costs in the sixth year (see Appendix "A"). These capital projects are largely currently identified in the city's long range capital plan. Staff have been implementing projects through a specific energy conservation budget as well as through facility renewal projects. Through 2012, several projects identified in the Energy Management Plan with a value of \$669,191 have been implemented and the cost avoidance as estimated in the plan is \$119,390/year.
16. Staff have received incentive approval from the utilities (Enbridge gas and PowerStream) and the Province for twelve of the fifteen energy efficiency projects implemented totalling approximately \$125,000 in incentives
17. Staff believe the first priority is to get in place software systems that will allow front line staff to move towards performance based conservation. By providing staff with the data and tools to understand their energy use in real time the City can begin to operate its facilities more efficiently.
18. The 2013 Business Plan is considering \$25,000 to implement an Energy Management System and submetering program within facilities to allow staff to implement an energy monitoring and verification program. The funding for the Energy Management System is not an increase to the operating budget for 2013 but is part of the annual energy management base budget of \$55,000. This project has been reviewed by ICT through a portfolio process and ICT has indicated they have the resources available to manage and implement this project in 2013.
19. This software will also have the capabilities of alarming staff to energy consumption which deviates from baselines, to benchmark comparable facilities, and allow staff to verify savings from capital projects. Staff can then quantify energy savings and energy cost avoidance for Council and senior staff to justify capital requests.
20. It is estimated that the implementation of this software could result in 2-5% savings in energy use. It has also been shown that capital projects implemented to improve equipment efficiency tend to not retain energy savings if performance based conservation has not been implemented first.

21. Implementation of the Energy Conservation projects identified in the plan will be co-ordinated with facility renewal projects. Projects planned over the next five years for facility renewal which have components included in the Energy Management Plan implementation schedule will be completed as part of the facility renewal project. Projects within the implementation schedule that are not included in facility renewal over the next five years will be brought forward as energy conservation projects starting in the 2014 budget year. Projects will be completed as funding is available and prioritized through the capital planning process.
22. Energy audits will be conducted again in 2015 and any new projects identified in these audits will be integrated into the list. Council approved a request from PowerStream Inc. to sign a participant agreement for a Roving Energy Manager for the next two (2) years. This position is assisting the City in establishing monitoring and verification protocols for energy data and will assist staff to develop an appropriate energy awareness program.

ENVIRONMENTAL MATTERS

23. The following environmental matter has been considered in the development of the recommendation:
 - a) By reducing energy use, the City is contributing to reduced greenhouse gas emissions.

ALTERNATIVES

24. The following Alternative is available to General Committee:

Alternative #1

General Committee could choose to not endorse some, or all, of the recommendations contained within the Energy Management Plan.

This Alternative is not recommended as the recommendations within the Energy Management Plan, once implemented, will reduce the City's energy consumption in a cost effective manner, and reduce green house gas emissions.

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 capital project budgets for the applicable works.

LINKAGE TO 2010 – 2014 COUNCIL STRATEGIC PLAN

26. The recommendation(s) included in this Staff Report support the following goals identified in the 2010-2014 City Council Strategic Plan:
 - ☒ Manage Growth and Protect the Environment
 - ☒ Strengthen Barrie's Financial Condition
27. By managing and reducing energy consumption within city owned facilities, the City will reduce both green house gas emissions and energy costs. As energy prices are expected to rise over time this will help the city future proof our facilities.

APPENDIX "A"

Capital costs vs. Savings

Capital costs vs. savings

Over 6 years, bill savings exceed retrofit capital required

\$ thousands	2013	2014	2015*	2016	2017	2018	Total
Capital costs	\$923	\$778	\$726	\$702	\$676	\$670	\$4.5 M
Incentives	\$276	\$129	\$65	\$51	\$24	\$27	\$0.6 M
Capital required	\$647	\$649	\$661	\$651	\$652	\$643	\$3.9 M
IRR	80%	49%	28%	20%	12%	8%	54%
Bill savings	\$0	\$494	\$752	\$923	\$1,088	\$1,184	\$4.4 M

*The City can update the plan in 2015 to identify new cost-effective opportunities