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ENERGY PROGRAM REPORT 2004 AND 2005 WORKPLAN

The Finance and Administration Committee recommends the adoption of the recommendation contained in the following report, November 17, 2004, from the Commissioner of Corporate Services:

1. RECOMMENDATION

It is recommended that:

1. The Region accept this report for information purposes on the York Region Energy Management program.

2. PURPOSE

The purpose of this report is to review the services delivered and financial performance of the Energy Management Program in 2004, as well as provide insight into energy initiatives slated for 2005.

3. BACKGROUND

The Energy Management mandate is to manage the Region's energy portfolio in an economical and sustainable manner while promoting the wise use of energy and supporting initiatives that enhance the environment.

3.1 Energy Management Drivers

Energy Management is an important function of municipal government for the following reasons:

3.1.1 Large Consumer

The Region's efforts to reduce consumption lead to direct utility expenditure savings. York Region is a large user of energy and has significant energy costs associated with its facilities and operations. On a corporate scale, the Region consumes more than 90,000 MWh of electricity and 3,000,000 m³ of natural gas resulting in an annual energy bill exceeding \$14 Million.

3.1.2 Increasing Energy Prices

The importance of energy conservation is underscored in light of increasing utility costs. Electricity prices are set to increase in 2005 with supply reductions in the Province being replaced with higher-priced new generation. Natural gas and oil prices are also rising as a result of a weakened US dollar, increased global demand, reduced supply and security concerns, with the latter resulting in premium's being assigned to energy prices.

3.1.3 Environmental Benefits

By reducing its utility consumption the Region can enhance the environment and demonstrate a leadership in the field. Further local benefits are derived through decreasing pressure on local electricity distribution and transmission networks.

3.2 Environmental Scan

Energy Management is becoming an increasingly important issue and a number of other municipalities have launched a corporate energy program, including the Regions of Peel, Waterloo and the City of Toronto. At a local level the Town of Markham has established an Energy Conservation Office.

4. ANALYSIS AND OPTIONS

The Region's Energy Management Program provides services in four broad areas as follows:

- Corporate Energy – Management of corporate utilities
- Existing Buildings – Energy retrofits
- New Buildings – Energy-efficient design
- Environment – Broad environmental initiatives

4.1 Major 2004 Accomplishments

The following section describes the major accomplishments of the Energy Management Program in 2004.

4.1.1 Natural Gas Procurement

Most of the Region's natural gas volume is under contract with a bulk purchasing program created by the Association of Municipalities Ontario (GASAMO) and the Ontario Association of Non-profit Homes and Services for Seniors (OAHNASS). A relatively small portion of volume was placed under numerous contracts with the Ontario Energy Savings Corp. (OESC) prior to Energy Management.

Through an RFP process in 2004 the GASAMO program was confirmed to be the most competitive. In 2004, 680,000 m³ of natural gas was transferred from Enbridge "standard supply" to GASAMO in order to benefit from preferred gas rates.

4.1.2 Electricity Procurement

The Property Services Branch is represented on the Association of Municipalities Ontario (AMO) Energy Implementation Committee and is working closely with the Province on the following two important issues:

- 1. Rate class and price protection**

A key factor affecting electricity costs is whether municipalities will continue to benefit from the 'designated consumer' status in 2005 and

receive fixed, subsidized electricity prices, or be exposed to hourly marginal clearing prices 'market prices'.

2. Legal capacity to enter electricity procurement contracts

Although the Municipal Act, 2001 gives municipalities natural person powers, it is not clear on whether municipalities can hedge with regard to electricity prices. Hence each municipality must retain outside legal counsel in order to obtain an opinion on their 'legal capacity' to enter electricity contracts. However, municipalities will have the opportunity to use financial tools to manage their electricity costs in 2005 if the Minister of Municipal Affairs and Housing looks at clarifying that municipalities have the right to hedge with regard to electricity pricing through the upcoming Municipal Act review (and other pieces of legislation) that impinge on municipal authority.

4.1.3 Energy & Environmental Management System

The Energy and Environmental Management System (EEMS) is a versatile, web based software designed in-house to capture energy consumption and expenses of buildings, street lights, transportation and other facilities. EEMS has the capability to track electricity, natural gas, water and wastewater, and other fuel usage. In addition, it measures the performance of energy retrofit measures, verifies bills and calculates emissions. The Region generates revenue from the sale of the EEMS system via a \$20,000 license.

In 2004, two municipalities have purchased an EEMS license from the Region (Region of Waterloo and the Town of Markham). Interest has been expressed by numerous other municipalities¹ and future EEMS licenses are expected to be sold in outward years. In addition, AMO has expressed initial interest in looking at EEMS as a model to serve all municipalities in Ontario.

4.1.4 Utility Billing Efficiencies

The Region has identified and implemented solutions to resolve billing errors, late payments and streamline the utility bill process. This has led to significant savings as outlined in Section 5.1 and 5.2.

4.1.5 Existing Buildings

In 2004, the Region completed Building Energy Feasibility Studies (BEFS) on more than 1.1 Million sq. ft. throughout the Region's building portfolio². BEFS is a corporate-wide initiative which targets aggressive energy and water savings in Regional facilities. The studies identify building improvements that, once completed, will result in the following:

- Reduced energy and water costs
- Greenhouse gas emission reduction

¹ Niagara, Thunder Bay, Hamilton, Toronto, Mississauga, Richmond Hill, King, Norfolk County Clarington, Oakville, and London

² Excluding Water & Wastewater facilities (planned in 2005)

- Long term improvements in indoor environment
- Improved control of space conditions and ability to respond to demand reduction requests
- Better tenant understanding of energy and environment

A water conservation project is already set to begin at the York Region Administrative Centre late in 2004.

4.1.6 New Buildings

Recognizing the unprecedented growth in the Region, staff are taking steps to design sustainable buildings that reduce our environmental footprint as well as utility costs.

- New high performance building design (at least 25% more efficient than code)
- Meet federal grant eligibility (\$60K-\$80K grant / building)

In 2004, three Regional buildings were designed to energy-efficient standards at minimal to no construction cost premium as follows: Bales Drive, T&W Operations Centre; Blue Willow Housing; and Maple Pumping Station.

4.1.6.1 Case Studies

The following are two case study designs:

1. Blue Willow (Housing)

This is a 4 story housing facility (54 units, total 62 814 ft²) in Vaughan. It is designed to be 60% more efficient than building code with a payback of less than two years and qualifies for a federal grant of up to \$60K. The design requires a \$100K incremental investment in energy-efficiency and results in an annual utility savings of \$50K.

2. Bales Drive, T&W Operations Centre

This building uses 15% less energy on an annual basis compared to the energy code, with annual energy cost savings of approximately \$25,000. While this is a marked improvement over conventional design, it still fell short of a grant (must be >25% more efficient than code) due to the absence of a dedicated internal resource overseeing the energy-efficient design process.

4.1.7 Environment

As part of the Energy Management Program the Region is benchmarking it's environmental performance and identifying actions which it can take to enhance the environment.

4.1.7.1 Wind Energy Pre-feasibility Study

The Region is in the forefront of investigating wind power within its jurisdiction. A wind energy pre-feasibility study pilot is wrapping up in the Town of Whitchurch-Stouffville and another study is set to begin in the Town of Georgina. The Region is also in contact

with the Federal and Provincial Governments to leverage their wind mapping results and identify promising sites for wind power in York Region.

4.1.7.2 Corporate Clean Air Task Force (CCATF) Member

Supports the identification, evaluation and implementation of clean air measures.

4.1.7.3 Greenhouse Gas Inventory

The Region retained ICLEI consultant services to prepare a York Region Greenhouse Gas Inventory. A final draft has been submitted and will be used to support the CCATF mandate.

4.1.7.4 Mandatory Emissions Reporting

Staff submits mandatory MOE environmental reports on behalf of the Region.

4.1.8 Advisory Services

Regional staff provide advisory services to internal clients in two main areas: administration (utility budget oversight and forecasting, tracking of energy savings and emissions credits, electronic billing, grant applications); and technology and services (emergency power specifications, energy-efficient products and building design). As an example, staff assisted CS&H in their energy management efforts from RFP evaluation for energy management services and audit findings, to selection of pilot projects and advice on grants and financial opportunities.

4.2 2005 Workplan

Major initiatives planned for 2005 are listed below:

4.2.1 Energy Performance Improvements in Existing Buildings

Implementation of the BEFS Energy Performance Program is planned in phases starting with the York Region Administrative Centre in 2005. The BEFS for the Administrative Centre identified performance measures which will reduce utility consumption by 20%, resulting in significant savings (See Section 5.1). Example measures include advanced lighting, heating and cooling systems, as well as renewable technologies including solar water heating.

Regional staff also plan to implement a corporate energy awareness program for staff in 2005, as well as install interval meters at selected Regional sites. The latter will equip the Region with detailed utility data in order to shift load to non-peak times of the day in response to time-of-use rates.

4.2.2 Energy Performance Improvements in Water and Wastewater (W&WW) Processes

This initiative would see the Energy Management program expand its focus from reducing energy in buildings to include operations and process-related energy (large pumps etc. used to pump water) in Transportation and Works. The electricity budget for W&WW alone is roughly \$6,000,000 (70% of the Region's electricity budget) and warrants a dedicated investigation into energy-efficiency.

This project includes comprehensive energy feasibility studies in W&WW and the implementation of performance improvements (e.g. variable speed drives, high efficiency pumps, aerator controls etc.). In addition, this initiative would help ensure the FCM grant monies are fully utilized before expiration.

4.2.3 Strategic Procurement

In 2005, Regional staff plan to conduct electrical load profiling and develop a strategic electricity procurement plan. Furthermore, the Region will investigate new opportunities for natural gas price reduction through the GASAMO program. Further cost benefit may result via a competitive tender for natural gas supply in 2006 and wholesale contracts, the latter would eliminate retailer risk premiums and management fees.

4.2.4 Other Initiatives

Staff also plans to design all new Regional buildings to meet federal grant eligibility (at least 25% more efficient than code) at no capital cost premium. Other energy initiatives slated for 2005 include the development of standardized energy efficiency guidelines for new building design, equipment and retrofits.

The Region also plans to explore the benefits of advanced energy technologies (e.g. solar, energy from waste etc.) in order to support emissions reductions.

4.3 Outward Years

In the outward years, 2006 and 2007, the Region will continue to advance its energy initiatives previously noted, namely the implementation of building and W&WW energy feasibility results leading to significant utility savings. The Region will also continue to explore potential revenue and/or cost leverage sources including, but not limited to, the following: demand response capacity additions; combined heat and power; energy from waste; and advanced renewable power schemes (e.g. wind and solar).

Other planned initiatives include an outreach component to the Energy Management program to foster a conservation culture and penetration of sustainable building design in the Region's jurisdiction. Finally, in order to cost-leverage larger pools of money in support of innovative energy initiatives the Region will pursue partnerships with municipal and non-municipal agencies.

4.4 Relationship to Vision 2026

The Energy Management Program supports an Enhanced Environment under Goal 2 in Vision 2026 and specifically addresses the following:

- Anticipating and responding to climate change;
- Using energy and water more efficiently in operations of the Regional government; and
- Investigating and promoting alternative energy sources.

5. FINANCIAL IMPLICATIONS

5.1 2004 Savings

In 2004 the Energy Management Program achieved \$251,000 in net savings. Table 1 presents actual costs and savings in 2004, not including utility savings related to energy retrofits.

Table 1
Energy Management Program Savings (2004)

	Cost	Savings⁽¹⁾
Natural gas procurement		\$112,000
Building Energy Feasibility Studies ⁽²⁾	\$100,000	\$100,000
Energy-efficient New Building Design ⁽³⁾		\$84,000
EEMS Licenses		\$40,000
Bill Verification		\$15,000
Total	\$100,000	\$351,000
Net Savings		\$251,000

⁽¹⁾ Projected year-end

⁽²⁾ Federation of Canadian Municipalities (FCM) Green Municipal Enabling Fund (GMEF) and Natural Resources Canada (NRCan) Office of Energy Efficiency (OEE) Grants

⁽³⁾ NRCan Commercial Building Incentive Program (CBIP) and Enbridge Design Advisory Program (DAP) Grants

5.2 2005 Workplan

The implementation of the Energy Performance Program at the Administrative Centre is estimated to result in annual utility savings of \$170K. With project management conducted by staff, rather than external consultants, the Region will also save an estimated \$96,000.

The projected 2005 savings for the Energy Management Program, not including utility savings related to energy retrofits, are \$487,000 (Table 2).

Table 2
Energy Management Program Savings (2005)

	Cost	Savings⁽¹⁾
Natural Gas Procurement		\$177,000
Water and Wastewater Energy Feasibility Studies ⁽²⁾	\$200,000	\$200,000
Building Energy Feasibility Studies ⁽³⁾	\$100,000	\$100,000
Energy-efficient New Building Design ⁽⁴⁾		\$168,000
Design Utility Savings		\$30,000
EEMS Licenses		\$40,000
Bill Verification, Late Payment Avoidance		\$72,000
Total	\$300,000	\$787,000
Net Savings		\$487,000

⁽¹⁾ Projected^{(2),(3)} FCM GMEF and NRCan OEE Grants⁽⁴⁾ NRCan CBIP and Enbridge DAP Grants

5.3 Outward Years

The implementation of the Energy Performance Program at the remainder of sites in the York Region building portfolio (excluding W&WW) is estimated to result in annual utility savings of \$210K. With project management conducted by staff rather than external consultants, the Region will save an additional \$120K.

Energy performance measures identified as part of the W&WW energy feasibility studies (to be conducted in 2005) are expected to result in significant utility savings. For example, a 5% reduction of W&WW electricity consumption would save the Region approximately \$300,000 per annum.

Projected net savings for 2006 and 2007 are \$397,000 and \$457,000, respectively. Table 3 presents estimated costs and savings for future potential energy initiatives, not including savings related to energy retrofits. These are presented for planning and discussion purposes only.

Table 3
Energy Management Program Savings (2006,2007)

	2006 Cost	2006 Savings ⁽¹⁾	2007 Cost	2007 Savings ⁽¹⁾
Natural Gas Procurement		\$50,000-\$100,000		\$50,000-\$100,000
Electricity Procurement and Demand Response	Unknown	Unknown	Unknown	Unknown
Energy Feasibility Studies ⁽²⁾	\$300,000	\$300,000		
Energy-efficient New Building Design ⁽³⁾		\$120,000		\$120,000
Design Utility Savings		\$90,000		\$150,000
EEMS Licenses		\$40,000		\$40,000
Bill Verification, Late Payment Avoidance		\$72,000		\$72,000
Total	\$300,000	\$745,000	\$0	\$457,000
Net Savings		\$397,000	\$0	\$457,000

⁽¹⁾ Projected⁽²⁾ FCM GMEF and NRCan OEE Grants⁽³⁾ NRCan CBIP and Enbridge DAP Grants

5.4 Grants

The Region is the successful recipient of Federation of Canadian Municipalities (FCM) Green Municipal Enabling Funds (GMEF) of up to \$350,000, and has access to another \$350,000 from Natural Resources Canada in order to leverage 100% of the cost of

building energy feasibility studies (BEFS). The GMEF funds will expire in December 2006.

The Region is also pursuing other financial incentives to support energy initiatives.

5.5 Leadership

The Region is recognized as a municipal leader in the field of Energy Management and has presented at major conferences to profile York Region's program. It is also demonstrating leadership in the field of green power by investigating the feasibility of wind power in its jurisdiction.

5.6 Opportunities

The Federal and Provincial Governments have created new opportunities for investment in energy initiatives. Some of the major opportunities the Region is aggressively pursuing are listed below.

- 1. Ministry of Energy (MOE) RFPs**
The Province has issued RFPs to incent both new generation and energy conservation. The most recent MOE RFP offers to reduce the payback of energy performance measures to three years. Similar RFPs are expected to follow. Opportunity also exists for significant potential revenue by utilizing existing power generating assets.
- 2. Electric Utility Demand Side Management Programs**
The Province has earmarked \$225 million for electricity utilities to invest in demand side management programs. These programs are expected to promote energy conservation through financial incentives as well as education and awareness. The Region recently met with Newmarket Hydro to discuss how this initiative could support Regional energy projects.
- 3. Conservation Bureau**
The Electricity Restructuring Act, 2004 would see establishment of a Conservation Bureau which would act as a host for energy incentive programs throughout the Province.
- 4. Dynamic Electricity Market**
The Ontario electricity market is quickly moving towards on-peak/off-peak pricing, which offers unique cost-saving opportunities for the Region via demand response.

6. LOCAL MUNICIPAL IMPACT

York Region will exercise due diligence on behalf of the taxpayers by reducing its utility expenditures. Environmental benefits will be derived from reductions in electricity, gas

and water usage, and concomitant reductions in adverse emissions (including greenhouse gases).

7. CONCLUSION

The Energy Management Program in 2004 achieved \$251,000 in net savings and it is projected for 2005 to achieve a net savings of \$487,000. The Energy Management Program fulfils the Region's need for reliable and cost effective energy supply and management while positioning the Region of York as a leader in energy efficiency and environmental performance.

The Senior Management Group has reviewed this report.