



## City of Richmond

## Report to Committee

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**To:** Public Works & Transportation Committee      **Date:** September 8, 2008  
**From:** Robert Gonzalez, P.Eng.  
General Manager, Engineering and Public Works      **File:** 06-2045-01/2008-Vol 01  
**Re:** Energy Management Program Update

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### Staff Recommendation

That the "Energy Management Program Update" report from the General Manager, Engineering and Public Works be received for information.

Robert Gonzalez, P.Eng.  
General Manager, Engineering and Public Works  
(4150)

FOR ORIGINATING DEPARTMENT USE ONLY		
CONCURRENCE OF GENERAL MANAGER		
REVIEWED BY TAG	YES <input checked="" type="checkbox"/> GA	NO <input type="checkbox"/>
REVIEWED BY CAO	YES <input checked="" type="checkbox"/> GM	NO <input type="checkbox"/>

## Staff Report

### Origin

The purpose of this report is to update Council on the progress of the City's Energy Management Program and the strategies in place for further advancing the program.

### Background

The City's success in the first phase of its Energy Management Program dates back to the early 1990's when the City was recognized by the Province in three consecutive years (1991 through 1993) with the Municipal Energy Efficiency Award.

With the realization of energy savings the City was able to avoid some of the energy cost increases through the first phase of the Energy Management Program. The City entered the Energy Management Program's second phase by raising the bar and achieving Power Smart recognition from BC Hydro by demonstrating an on-going commitment to energy awareness and energy management initiatives. Richmond remains the only Power Smart certified municipality.

In 2007 the City received the Energy Aware Award from the Federation of Canadian Municipalities and in 2008, the City of Richmond once again was recognized by BC Hydro at their annual Power Smart Awards banquet for innovation in sustainable building design. The Oval facility was nominated for an award for the environmental responsibility through rooftop rainwater collection and an innovative refrigeration system that captures and reuses excess heat energy.

The City has enjoyed tremendous success and recognition through the many corporate energy management initiatives successfully completed. Since 2003 the City's energy management initiatives have resulted in a utility cost avoidance of over \$800,000 annually.

### Analysis

Within the last two years, the City of Richmond Energy Management Program has been recognized by various partners and consultants as one of the most progressive and effective models among the BC municipalities. In the last year, staff have been consulted by a number of major BC municipalities about adopting our successful practices.

Recently introduced Provincial legislations and regulations would require a diverse community-wide approach to address the challenging Green House Gas (GHG) emission reduction targets. While the City has met its energy reduction targets and commitments to date, the new GHG emissions targets will require a continuous identification of innovative approaches to further advance the Energy Management program. Any possible impact of the new legislation on the City's operations, such as Bill 27-2008<sup>1</sup> and Bill 10-2008<sup>2</sup> is currently being reviewed and monitored by staff.

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<sup>1</sup> Bill 27- 2008 Local government (Green Communities) Statutes Amendment Act that will require establishment of objectives to promote energy, and water conservation and to promote the reduction of GHG emissions. More information available at [http://www.leg.bc.ca/38th4th/1st\\_read/gov27-1.htm](http://www.leg.bc.ca/38th4th/1st_read/gov27-1.htm)

<sup>2</sup> Housing Statutes Amendment Act, 2008 that will require conservation of energy and water and reduction of GHG emissions from buildings More information available at: [http://www.leg.bc.ca/38th4th/1st\\_read/gov10-1.htm](http://www.leg.bc.ca/38th4th/1st_read/gov10-1.htm)

The Energy Management Program has continued to be successful in obtaining support from Provincial and Federal governments and local utility companies. The City has successfully received grants of over \$500,000 from BC Hydro, Federal and Provincial governments since January 2007.

Since 2005, BC Hydro also provided the City with two energy assessment studies conducted by a recognized energy consultant<sup>3</sup>. One-2-Five® Energy Assessment studies were facilitated to review the City's overall business practices with respect to energy management. The studies identified a 20% improvement in overall City business practices related to energy management within the last 3 years, which indicate notable progress in comparison to the government sector in the US and Canada.

The Energy Management Program aims to identify opportunities for advancing sustainable energy management and addresses long-term energy security challenges through development of an overarching energy management plan. The conventional practices are complemented with a variety of programs that will broaden the scope of activities from a project-based to an all-inclusive program.

The development and hiring of the City's Energy Manager through energy savings, has enabled the program to further progress in a relatively short period of time.

Notable achievements include:

- Reduced Corporate GHG emissions by approximately 3,000 tons per year from initiatives implemented since 2003. This is equivalent to taking 562 cars off the road each year.
- In 2007 – 2008 we realized over \$210,000 in energy cost avoidance based upon current energy costs. Our most notable initiatives were energy improvements at Watermania, the Richmond Ice Centre and the Library Cultural Centre. These savings are first being used to pay back the borrowed funds from the City's Enterprise fund and then will be used to off set increasing costs.
  - Watermania 50% (expected \$140,000 per year)
  - Minoru Pools 50% (expected \$50,000 per year)
  - Richmond Ice Centre 10% (expected \$20,000 per year)

It should be noted that these projects will result in a project payback of less than 5 years. Council authority to proceed with these projects was for a payback estimated to be 7 years.
- Reduced Corporate utility costs in excess of \$800,000 per year through:
  - Implementing energy-reducing projects
  - Further cost avoidance of over \$240,000 since 2003 through gas purchase contracts
  - Energy conservation/staff awareness program – Funded 50% by BC Hydro
- Created both internal and external partnerships around sustainable energy initiatives with:
  - NRCan: Mechanical system upgrade at a number of facilities

<sup>3</sup> EnVinta is the US based energy consultant. More information available at <http://www.envinta.com>

- CaGBC<sup>4</sup>: LEED- Complete<sup>5</sup> - Canada-wide pilot project including extensive review of City facility performance based upon LEED Existing Building standards
  - BC Hydro: Power Smart program
  - Community Outreach program – in initial stages of development – 100% funding of a Community Energy Manager to be evaluated after a year.
  - Terasen Gas partnership opportunities
- Recognition of the City's ongoing commitment to effective energy management by BC Hydro and Terasen Gas.
  - Well-organized facilities' operation and maintenance
    - Regular facility energy audits
    - City's overall energy management assessment
    - Monitoring, forecasting and reporting energy use
    - Preventative maintenance using life cycle costing
  - Continue to be self-funded by outsourcing incentives, borrowing from the City's enterprise fund and using utility savings to fund new initiatives.
  - Continuous review of renewable energy projects.
  - Study Energy Management Policy or Bylaw including:
    - Energy sharing between different and compatible land use types
    - Evaluation of City Centre Area Plan energy objectives and targets for private development
    - Compliance with federal, provincial and regional targets and standards

### Energy Costs and Technology

The Energy Management Program strives to be self-reliant. As a result, staff regularly review corporate facilities energy consumptions and monitor the utility costs. While relative energy usage at City facilities has been reduced, overall energy costs are on the rise due to City growth. Both the Natural Gas Index and Terasen prices have increased by 50% since mid 2007<sup>6</sup>.

The Provincial carbon tax will also increase the City's cost of natural gas by 7% starting July 2008 and continuing by an increase of 2.5% annually until 2012. It is anticipated that the Community faces similar increases. Corporate and community conservation awareness programs are intended to assist users to take benefit of energy saving opportunities. While the utility cost has been on the rise, more energy-saving programs and projects have been implemented to offset the increase.

The fast pace evolution of the related technologies has created more energy saving opportunities in a shorter frequency. Some projects, implemented within the past 5 to 10 years, are due for major retrofit with extensive saving opportunities based on the available technologies today. It is anticipated that this trend will continue for the upcoming years.

<sup>4</sup> CaGBC: Canada Green Building Council

<sup>5</sup> LEED-Complete is a pilot project in progress by CaGBC that intends to create management tools through LEED-EB (Canadian version) related to energy and environmental aspects of existing buildings.

<sup>6</sup> Gas Indexes show an increase from approximate \$8 to \$13 per GJ from 2007 to June 2008 and Terasen price shows an increase from approximately \$6.7 to \$10 per GJ from 2007 to June 2008 (including a 20% jump in June 2008 alone).

**Financial Impact**

There is no financial impact as a result of this report.

**Next Step**

While the City is well poised with respect to energy management and has undertaken numerous initiatives in demonstrating leadership in energy conservation, there remain a host of opportunities. In improving and broadening the scope of sustainable energy management, future efforts will be based on three measures:

- Prevent – represents continued efforts on reducing energy consumption through capital retrofit projects.
- Prepare – includes initiatives that reduce energy consumption across the City.
- Empower – to encourage community based initiatives to broaden energy management ownership throughout the City.

This approach will enable staff to develop initiatives with short payback that further reduce GHG emissions as well as operating costs.

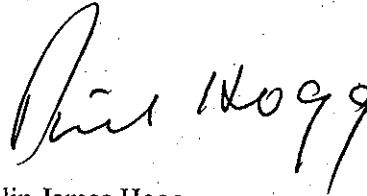
**Conclusion**

The successful energy management initiatives prior to 2007 and associated cost savings have provided the City a sound and proven Energy Management Program. The next phase of the Energy Management Program will be one that is inclusive of community wide energy awareness in order to proactively respond to Provincial legislation in a way that is meaningful to Richmond.



for

Mark Roozbahani, P.Eng. MBA  
Energy Manager  
(1239)



Philip James Hogg  
Manager, Facilities Operations and  
Maintenance  
(1243)