



CITY OF VANCOUVER

Administrative Report

Report Date: June 14, 2005
Author: Enzo Guerriero
Anthony Hadfield
Phone: 7185810
RTS No.: RTS 5323
CC File No.: 4160
Meeting Date: June 28, 2005

TO: Vancouver City Council
FROM: Britannia Community Services Centre
SUBJECT: Energy Savings Project

RECOMMENDATIONS

- A. That the City enter into an agreement with the Vancouver School Board, drawn to the satisfaction of the Director of Legal Services, to document an arrangement to undertake certain energy conservation measures at the Britannia Community Services Centre on a cost-sharing basis, all as set out in this report, on the basis that no legal right be created hereby and none shall arise until the agreement is executed by the Director of Legal Services on behalf of the City.
- B. That the City's maximum contribution to the cost of the energy conservation measures discussed in Recommendation A be \$297,000, the source of the funds being a loan from the Property Endowment Fund on terms acceptable to the Director of Finance.

GENERAL MANAGER'S COMMENTS

The Executive Director of Britannia Community Services Centre recommends approval of the Recommendation.

COUNCIL POLICY

On June 6th, 1995, Council approved the City Plan which emphasizes the need for increased co-ordination and efficiency in the delivery of City services.

On April 23rd, 2002, Council adopted Principles for Sustainability which emphasizes reducing the use of resources.

On December 2nd, 2003, Council approved the Corporate Climate Change Action Plan for the City of Vancouver. This included the approval of a target to reduce 1990 Greenhouse Gas Emission (GHG) levels by 20% by 2010

PURPOSE

To fund the costs of energy conservation measures and related facility improvements at the Britannia Community Services Centre. This is to be done in conjunction with the Vancouver School Board, the partner organization on the Britannia site. These equipment upgrades will lead to large energy savings and therefore reduce costs to the centre's annual operating budget, as well as reducing greenhouse gas emissions.

BACKGROUND

The Vancouver School Board entered into a partnership agreement with BC Hydro as part of its 'Power Smart Partner's Program'. This program provided funds for the School Board to hire an energy consultant to conduct a low level energy audit at its larger school sites. This also enabled the Board to update its energy management software program and data.

A preliminary audit was conducted at Britannia Community Services Centre, and results indicated that there was potential for significant energy savings, but more detailed information was required to improve the confidence level in the proposed measures. In 2003 the Vancouver School Board commissioned a more comprehensive energy audit of the entire Britannia site. This included the Secondary and Elementary schools as well as the Community Centre. The report was commissioned in conjunction with the Britannia Community Centre. The final energy report (published in March 2004) identified a number of unique opportunities with significant cost saving potential for the annual operational budget. The total cost of the work has been reduced by rebates which have been obtained by the School Board from BC Hydro and once agreed NRCan. The report also outlined major benefits for the impact on the environment.

The School Board is contracted by the Community Centre, as part of the centre's Master Agreement (1982) to undertake all maintenance of the facility and pay all related utility costs.

The Energy Study was commissioned by the Vancouver School Board and the Britannia Community Centre. The report was prepared by Len Horvath M.Sc, Lorne Grylls, C.Tech, Quantum Lighting Inc, Tony Jones ASCT, Anthony Jones and Associates Inc, Jim Groenwood P.Eng and Coral Engineering Ltd.

DISCUSSION

The energy savings report looked at efficiency improvements in lighting, heating, cooling and ventilation systems. Much of the systems at the centre and in particular the lighting have not been upgraded from when the centre opened in the mid 1970s. Technology has obviously improved greatly since this equipment was installed. Newer equipment offers the opportunity to reduce energy costs at the centre and help cut down on greenhouse gas emissions. The report concluded that if all the recommended measures in it were implemented there would be a projected energy consumption reduction of 779,995 kwh & 6,733 GJ per annum which is in equivalent reduction of greenhouse gas emissions of 791.2 tonne per annum for the whole site. The energy savings would be shared equally by the Vancouver School Board, and the Britannia Community Centre. The benefits of this energy saving would also mean the reduction of 396 tonne GHG (Greenhouse Gas Emission) for the civic facility. These savings will exceed the target to reduce 1990 Greenhouse Gas Emission level by 20% by 2010 for this building.

The recommended energy conservation measures and proposed facility improvements highlighted in the energy study are identified in Appendix A.

As agreed in the Master Agreement (1982) between the City of Vancouver and the Vancouver School Board, the School Board is responsible for all maintenance work undertaken at the Britannia site, including the Community Centre. The work outlined in the Energy Savings report would therefore be completed by the Vancouver School Board.

FINANCIAL IMPLICATIONS

The total cost of the upgrade work which is proposed for the Britannia site is \$663,000. This covers the cost of equipment, labour, engineering drawings project management and provision for contingency fund. This cost will be split equally between the School Board and the Community Centre. This split is based on the work completed and the level of usage of each area of the site, by each of the partners. A complete cost breakdown is given in Appendix A.

The above costs will be reduced by rebate programs obtained for the project by the Vancouver School Board. An agreement has already been signed with BC Hydro for a rebate once the project is completed. There is also the expectation that a rebate towards the project will be obtained from Natural Resources Canada (NRCan), this is expected to be approved shortly. The rebate from BC Hydro is \$128,400, with \$70,000 expected from NRCan. These rebates are based on projected energy consumption reduction of 779,995 kwh & 6,733 GJ of Natural Gas per annum. The rebates would be split evenly between the School Board and Community Centre. Therefore the cost of the proposed work to Britannia Community Services Centre is expected to be \$232,000 after the rebates are given. Added to this is an additional \$30,000 specific to the lighting upgrade related to the Community Centre's Information Centre.

Until the rebate from NRCan is confirmed the total cost to the Community Centre for the proposed project is \$297,000. This would be funded by a loan from the Property Endowment

Fund (PEF). With the expected energy savings generated by the proposed work, it is expected that the loan from the PEF would be repaid in four and a half years (\$66,500 a year in savings). If as expected the NRCan rebate is confirmed the total cost to the Community Centre would be \$262,000 with a payback period of four years.

All initial costs related to the project above the \$297,000 committed by the Community Centre, will be covered by the Vancouver School Board until the rebates are received from BC Hydro and NR Can.

In the unlikely event that the rebates received from BC Hydro and NR Can are lower than the \$198,000 agreed upon, the amounts received would be credited to the total project costs. The total cost of the project to the Community Centre would not be increased from the proposed \$297,000. This would mean that the energy savings achieved would be proportionately applied to the Community Centre based on the \$297,000 contributed to the total project cost. Therefore the savings would initially be lower than the \$66,500 projected. This would mean a longer payback period to the Property Endowment Fund. The length of pay back would depend upon the amount of rebates received.

LEGAL IMPLICATIONS

The Vancouver School Board has entered into a Power Smart Incentive Funding Agreement with BC Hydro. This is the agreement which provides the rebate of \$128,400 which will be applied against the costs of the project

The School Board are also intending to enter into a similar agreement with NRCan in order obtain a rebate for the energy conservation work identified in the report.

The School Board have entered into these agreement related to the whole Britannia site on the basis that they are the agent solely responsible for the maintenance of the Britannia site, including both of the schools and Community Centre.

PERSONNEL IMPLICATIONS

There are no personnel implications to this report.

ENVIRONMENTAL IMPLICATIONS

If the recommendations of the energy study are implemented, not only will the proposed energy conservation measures and facility improvements save Britannia Community Services Centre a considerable amount of money but it will also cut greenhouse emissions at the centre by 743,314 of CO₂e.

Introducing energy conservation measure and improvements to the facilities will create greater energy efficiency at the Centre. It is this lowering of energy usage which has guaranteed the rebate from BC Hydro and is expected to guarantee them from NRCan.

SOCIAL IMPLICATIONS

There are no social implications this report.

IMPLEMENTATION PLAN

The terms of the rebate agreement with BC Hydro require that all work done as part of the project is completed within one year of signing. This means that all work would need to be completed by March 31st 2006.

The Vancouver School Board has already scheduled the work to be done for this project at the secondary school. This work will largely be completed over the summer months. The intention would be for the School Board to schedule the work on the Community Centre after this initial work has been completed.

CONCLUSION

The proposed work identified in the energy study offers the Britannia Community Services Centre a great opportunity to upgrade its ageing infrastructure, reduce energy costs at the site and cut greenhouse gas emissions thus creating a benefit to the environment.

Considered over the long term the recommendations in the energy study will effectively cost nothing as the initial costs of the project are expected to be repaid over a four to five year period by savings to the centre's annual energy budget.

* * * * *

**APPENDIX A: BRITANNIA COMMUNITY SERVICES CENTRE
TOTAL COSTS OF THE ENERGY SAVINGS PROJECT**

Measure	Building	Energy Conservation Measure	Estimated Savings				Estimated Cost \$	Payback Years
			KW/yr	KW/month	GJ/yr	\$/yr		
ECM-E1	Secondary	Upgrade lighting system - Secondary School	226,589	88.1		22,031	236,252	10.70
ECM-E2	Others	Upgrade lighting system - Community Centre Facilities	484,749	89.3		37,050	159,346	4.30
		Net Lighting Financials	711,338	187.4		59,061	395,596	6.70
ECM-M1	Arena	Refrigerant plant modifications	68,168	0	246	5,143	42,500	8.26
ECM-M2	Arena	AHU-1 & 2 control modifications	5,473	0	267	3,115	3,000	0.96
ECM-M3	Gym "C"	Demand ventilation control modifications	4,928	0	561	6,309	8,000	1.27
ECM-M4	Pool	Implement exhaust air reclaim strategy on AHU-2	-9,912	0	1,580	16,694	85,000	5.09
ECM-M5	Pool	DDC control for dehumidification system	0	0	1,280	13,772	12,000	0.87
ECM-M6	Gym "D"	Demand ventilation control modifications	3,175	0	746	8,984	8,000	0.89
ECM-M7	Info Centre	Load Sequenced Economizer	0	0	216	2,361	5,000	2.12
ECM-M8	Child MInd	Load Sequenced Economizer	0	0	29	317	1,500	4.73
ECM-M9	Library	Demand ventilation control modifications	0	0	829	9,081	5,000	0.55
ECM-M10	Secondary	Demand ventilation control modifications for Gym	0	0	894	9,862	5,000	0.52
ECM-M11	Secondary	Demand ventilation control modifications for Cafeteria	0	0	59	645	4,000	6.20
ECM-M12	Secondary	DDC control to replace the boiler room control panel	0	0	0	0	4,000	n/a
		Net Mech. Financials	68,657	0	6,733	73,592	183,000	2.41
		Net Financials:	779,995	187.4	6,733	132,673	578,598	4.36
Additional Costs and Rebates:								
		Engineering Drawings					15,000	
		Project Management					11,580	
		Project Contingency					57,895	
		Total					663,073	
		Less BC Hydro Rebate					(128,400)	
		Net Total Cost					534,673	
		Cost Sharing after Rebates (50% of total costs)					267,337	
		Britannia Community Services Centre					30,000	
		Information Centre Lighting Upgrade						
		Total Project Cost					297,337	4.47
		Less expected NRCan Rebate (Britannias share)					(335,000)	
		Expected Final Cost to Britannia					\$262,337	3.94