



## ADMINISTRATIVE REPORT

Report Date: February 4, 2010  
Contact: Garrick Bradshaw  
Contact No.: 604-873-7616  
RTS No.: 08571  
VanRIMS No.: 08-2000-20  
Meeting Date: March 2, 2010

TO: Vancouver City Council

FROM: Director of Facilities Design and Management (Business Planning & Services) and the General Manager of Engineering Services

SUBJECT: Green House Gas Reductions Phase 3: Energy Performance Contract additional funding for revised energy saving measures

### ***RECOMMENDATION***

THAT Council approve the reallocation of \$105,000 from the 2003-2005 Engineering Manitoba Yards Capital Budget to the Phase3-Energy Performance Contract as outlined in this report.

### ***GENERAL MANAGER'S COMMENTS***

The General Manager of Business Planning and Services and the General Manager of Engineering Services RECOMMEND approval of the foregoing.

### ***COUNCIL POLICY***

On April 23, 2002, Council adopted the Definition and Principles of Sustainability to guide, prioritize and improve the sustainability of City actions and operations.

On March 25, 2003, Council approved an emission reduction target of 20 percent from 1990 levels for the City of Vancouver. On this same date, Council created the Cool Vancouver Task Force and requested that it report back with a report on the components of a Greenhouse Gas Reduction (GHG) Action Plan for both the corporation and the community.

In September 2007, Council adopted a carbon neutral target for City operations by 2012 under the British Columbia Climate Action Charter.

On July 22nd, 2008, Council approved Phase 3 of the Energy Performance Contract to Ameresco Canada Inc. for Engineering Works Yards, Vancouver Museum & Archives and Library Square. The total value of the contract is \$5.02 million with the expectation of reduction of 698 tonnes carbon dioxide (equivalents). This contract was executed on September 18, 2008.

## ***PURPOSE***

The purpose of this report is to request the reallocation of funding from Engineering Services Capital accounts to a revised energy reduction project to be undertaken for the Equipment Services Building at the Manitoba Works Yard as part of the Phase 3 - Energy Performance Contract for the GHG reduction currently underway.

## ***BACKGROUND***

The City of Vancouver was one of the original signatories to the National Partners for Climate Protection initiative. In December 2003, the City approved a Corporate Climate Change Action Plan outlining the steps and committing the resources to realize a 20% reduction in GHG emissions below 1990 levels by 2010 from its own operations. This included energy use in its own civic facilities, buildings, and fleets. One means of carrying this out has been the use of energy performance contracts. The energy performance contract provides for an assessment of facilities and identifies energy use reduction projects which can be funded through the energy savings. The City has approved three of these contracts since 2004. Ameresco Canada Inc. is currently working on the third phase of the GHG reduction program for the City of Vancouver.

Included in this third phase are facilities at the Engineering Services Manitoba Works Yard. The Manitoba Works Yard was built in the 1960's. Very few capital improvements have been made to Manitoba Work Yard through these years. The new upgrades will transform the Manitoba Works Yard into a more energy efficient complex and improve the working conditions.

## ***DISCUSSION***

During the detailed design investigation for the Phase 3 Energy Performance Contract, two of the proposed energy saving measures from the original Manitoba Yards proposal were deemed not to be feasible:

1. Administration Building: Replace current boiler with a high-efficiency condensing boiler.

During detailed project review Engineering reconsidered the Administration Building Boiler project. They deemed it inappropriate as the potential redevelopment of the adjacent Vancouver South Transfer Station may require demolition of this building. This redevelopment could possibly occur well before the 17.6 year payback period of the proposed improvements.

2. Equipment Services Garage Building: Infiltration abatement, including sealing the building envelope, adding controls to the overhead doors, adding destratification fans and recommissioning the existing make-up air units

This project was intended to provide improved energy efficiency by reducing air leakage. Detailed review identified that combustion exhaust air from the indoor radiant heaters is not being exhausted properly and this needed to be dealt with before building sealing could be considered. The make up air unit recommissioning associated with this work was also determined not to be worth pursuing.

Ameresco considered alternatives and determined that the best approach would be to deal with the exhaust gases in the Equipment Services Building with an energy conserving process. Currently the combustion gasses from the radiant heating system are not properly exhausted.

Fresh air is let in by keeping the overhead garage doors open, resulting in significant heat loss. The new proposal is for a heat-pipe system. This advanced technology allows proper ventilation while recovering the heat from the contaminated exhaust air streams. Heat pipes are self-contained evaporator/condensers that allow the transfer of heat from a contaminated air stream to a clean air stream, unlike mixing boxes or heat exchangers that can get clogged or allow cross-contamination. The proposed building leakage abatement can then be performed without compromising indoor air quality.

The following table summarizes the funding and GHG impacts for the original projects and those for the single project now recommended.

Original Proposal			
Cost	\$507,300		
Annual Savings	\$ 19,969	83 tonnes GHG	1,680 GJ

Revised Proposal			
Cost	\$653,400		
Annual Savings	\$ 19,652	93 tonnes GHG	1,886 GJ

Although energy savings and GHG reductions are similar, additional funding of \$146,100 is required for the advanced heat recovery proposal. The overall Phase 3 Energy Performance Contract has \$41,000 of funding available. Engineering Yards Capital will provide the balance of \$105,100 required as this work is a requirement beyond the scope of the energy performance project and is required to be completed. Proceeding with the project also allows the Manitoba Works Yard to realize the GHG reduction targets previously set in the Phase 3 Energy performance contract approved by Council.

### ***FINANCIAL IMPLICATIONS***

The total additional cost for the revised proposal for the Equipment Services Building is \$146,100. Funding of \$41,000 from the existing Phase 3 project will be allocated to this work. Engineering will provide funding in the amount of \$105,100 from the 2003-2005 Manitoba Yards Capital Budget. This funding was intended for significant Manitoba Yard improvements which have been delayed while issues concerning the regional Solid Waste Plan are resolved. These issues impact the redevelopment of the Vancouver South Transfer Station which adjoins the Manitoba Yard and impacts Yard planning and development decisions. The improvements in energy performance at the Manitoba Works Yard are a priority warranting this expenditure.

### ***ENVIRONMENTAL IMPLICATIONS***

The approval of the proposed energy saving measures will allow the level of anticipated annual improvements to the environment as a result of the Phase 3 Energy Performance Contract to be maintained. The anticipated annual improvements from the full scope of Phase 3 are:

- GHG reduction of 698 tonnes
- Electrical energy savings of 1,269,212 kWh
- Natural Gas savings of 13,174 GJ
- Water savings of 5,761 m<sup>3</sup>

## *CONCLUSION*

It is beneficial to ensure that the older facilities at the Manitoba Works Yard take full advantage of the energy savings and GHG reduction measures provided by the Energy Performance initiative currently underway. Detailed design has resulted in a recommendation for revised energy saving measures at extra cost in place of preliminary proposals which were not viable. The revised project will improve internal air quality for the Equipment Services building as well as its overall energy performance. This expenditure will allow the Manitoba Works Yard to realize the facility improvement targets previously set in the Phase 3 Energy performance contract approved by Council.

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