



**To:** Public Works and Transportation Committee      **Date:** August 16, 2005  
**From:** Robert Gonzalez, P.Eng.  
 Director, Engineering      **File:** 06-2052-20-WAT/Vol 01  
**Re:** HVAC Energy Savings at Watermania

**Staff Recommendation**

1. That the 2004 capital project relating to the installation of solar energy panels at Watermania (project ID # 40057) be cancelled and City project funding totalling \$83,000 be reallocated to a new HVAC energy saving project at Watermania.
2. That staff pursue the opportunity to supplement the City contribution through a revised submission to the Canada/British Columbia Infrastructure Program to reallocate existing grant funding totalling \$67,000 towards this project.

Robert Gonzalez, P.Eng.  
 Director, Engineering  
 (4150)

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<b>ROUTED TO:</b>		<b>CONCURRENCE</b>		<b>CONCURRENCE OF GENERAL MANAGER</b>	
Budgets .....		Y	<input checked="" type="checkbox"/>	N	<input type="checkbox"/>
Recreation & Cultural Services .....		Y	<input checked="" type="checkbox"/>	N	<input type="checkbox"/>
<b>REVIEWED BY TAG</b>		YES	NO	<b>REVIEWED BY CAO</b>	
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	YES	NO
		<i>DW</i>		<input type="checkbox"/>	<input type="checkbox"/>

## Staff Report

### Origin

For the 2004 capital program a solar energy project totalling \$150,000 was presented and approved for Watermania. The foregoing capital project is now not recommended due to a planned change in the approach to energy management at the Riverport complex. The purpose of this report is to request the reallocation of the capital funds to address a problem in the hot water supply at Watermania.

### Background

During 2003, the City participated through GVRD in a feasibility study to assess the viability of using solar energy to supplement pool and domestic hot water heating in municipal swimming pools. As a result of the study findings, the solar energy project for Watermania was submitted and approved in the 2004 capital budget.

This project was also supported by federal and provincial grant initiatives of \$67,000 through CBCIP and a further \$12,500 sustainability grant awarded by GVRD for Watermania.

In January 2005, the Watermania building owner, Riverport Developments Ltd., advised staff of their intent to pursue a central heating and cooling geothermal system. Therefore, the proposed works would no longer result in the same savings or efficiencies.

### Analysis

During the solar energy feasibility study for Watermania a number of operational problems were confirmed by Parks and Recreation staff concerning the inability for the heating system to maintain adequate domestic hot water and environment temperatures during heavy bathing periods. The planned solar heat recovery system would have resolved this problem.

Upon detailed examination of the HVAC systems, it was determined that the shortage of heat and hot water was created by the existing heat reclaim system being designed such that only the boiler or the heat recovery system can provide hot water at any one time.

The proposed solution now is to modify the existing heat reclaim system and install additional heating coils connected to the boilers. This revised arrangement will allow the heat recovery system to overcome the "cold" shower problem as well as save substantial energy and avoid further deterioration of an overtaxed heating plant.

The estimated capital cost to undertake these modifications based upon current 2005 market conditions is \$78,650.00 ( $\pm 10\%$ ). Based on preliminary calculations prepared by Keen Engineering annual saving of \$12,500 would be achieved providing a simple 6-year payback as opposed to the 15-year payback for solar energy.

## Options

The following options have been considered:

1. Continue to pursue the solar energy project (not recommended)

The possibility of a central heat/cool system servicing the Riverport site would negate any long-term solar energy savings. Similarly, without Riverport's approval to install the solar arrays onto the south roof this option is not practical.

2. Abandon the solar energy project (not recommended)

The project at Watermania could be abandoned in full and the project funding returned to capital reserves for future distribution.

3. Reallocate project funding and upgrade the mechanical HVAC system (recommended)

Reallocating existing project funding of \$83,000 will allow this energy saving project to proceed during 2005 and commence payback during 2006. In the event that the request to transfer the CBCIP grant funding into this project is successful then surplus funds on conclusion of the project would be returned to the Capital Reserve.

## Financial Impact

There is no financial impact.

## Conclusion

Upgrading the heating system at Watermania will provide improved energy saving of approximately \$12,500 per year with a 6-year payback. The upgrade will further improve customer service by eliminating periods when cold showers are frequent and reduce the need for premature replacement of the boiler plant. Staff supports the reallocating of the solar energy funds of \$83,000 to accomplish this project.



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DN:cmm