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**REPORT TO SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY 16 SEPTEMBER 2010**

SUBJECT **SAANICH PENINSULA WASTEWATER TREATMENT PLANT THERMAL ENERGY RECOVERY PROJECT – WASTE-HEAT UTILIZATION AT PANORAMA NEW POOL**

ISSUE

To determine an acceptable cost recovery arrangement and rate for the wastewater thermal energy provided to the Panorama Recreation Centre (PanRec) for heating the new swimming pool.

BACKGROUND

The Saanich Peninsula Wastewater Treatment Plant (SPWWTP) thermal energy recovery system is currently under construction and is scheduled to be completed by the end of 2010. Due to budget constraints, the scope of the project was reduced by deferring the construction of the infrastructure extensions to serve the school, Centre of Plant Health and the SPWWTP administrative building. This phase of the project is therefore focused on the supplying heat to PanRec with the remaining components to be completed when funds become available in the future.

At the 10 December 2009 Saanich Peninsula Wastewater Commission (SPWWC) meeting, the commission approved the following:

- The project budget increase in the amount of \$291,463 be funded from the unspent capital funds remaining in Bylaws No. 2376 and No. 2167 (\$189,089) and the SPWWS Sewer Debt Reserve Fund (\$102,379), which has \$756,123 remaining as of October 30, 2009.
- The mini-plant to serve the SPWWTP be constructed in compliance with the original scope of project specified in the grant agreement, from the revenues generated from the sale of heat energy after the payback of the reserve fund for the additional project costs identified in Item 1 above.

Through discussions with Ian Hennigar, Senior Manager, PanRec, it was agreed that a business case analysis be conducted to determine an acceptable cost recovery rate for the wastewater thermal energy provided to the Panorama Recreation Centre for heating the new pool. The business case analysis summary is as follows:

Business Case Analysis

The following four rate setting scenarios were investigated in detail and benefits compared.

1. At cost: rate to be charged to cover system operating and maintenance (O&M) cost.
2. Market rate: rate based on rates charged by similar utilities.
3. Natural gas rate: rate to be charged at the same rate as natural gas plus carbon tax.
4. Net natural gas rate: rate to be set at the same rate as natural gas without carbon tax.

The four rate scenarios are presented in Attachment A.

Under normal circumstances, it would be preferable to recover costs at a higher rate in order to reimburse the SPWWS Sewer Debt Reserve Fund as soon as possible. Despite the fact that utilizing waste-heat energy has many environmental benefits, the rate at which the costs are recovered has to be competitive with other energy providers.

Rate scenario #4 (\$12.31/GJ) is 5.75% less than the market rate of natural gas (including carbon tax) and is considered a reasonable cost recovery for the SPWWTP system. The estimated time for payback of the \$291,463 to the SPWWS Sewer Debt Reserve Fund would be approximately 6.5 years.

ALTERNATIVES

That the Saanich Peninsula Wastewater Commission:

1. approve the recommended rate scenario #4 in Attachment A; or
2. approve one of the other rate scenarios in Attachment A; or
3. approve another preferable rate scenario.

IMPLICATIONS

Economic Implications

Costs incurred by the SPWWTP to provide wastewater thermal energy to PanRec will be recovered through a monthly transfer using an allocation account between the two CRD operational functions. The monthly allocation will be based on a budget prepared by the SPWWTP staff for the upcoming budget year. At the end of each year, CRD Finance Department will reconcile the actual cost to the budget and make any yearend adjustments needed.

The total budget transfer for 2011 is estimated to be \$96,120, based on an estimated usage of 8,000 GJ of energy for the year at an estimated recovery rate of \$12.015/GJ.

CONCLUSION

The cost recovery arrangement and rate for providing the wastewater thermal energy to PanRec are presented in this report and have been developed by staff representing both CRD operational functions.

The cost recovery rate for the wastewater thermal energy in 2011 is recommended to be \$12.015/GJ, based on the natural gas rate without carbon tax. Based on this rate the estimated payment time for the loan from the SPWWS Sewer Debt Reserve Fund is approximately 6.5 years.

RECOMMENDATIONS

That the Saanich Peninsula Wastewater Commission approves that:

1. the waste-heat energy cost recovery be based on the market rate for natural gas without the carbon tax; and
2. the costs will be recovered monthly from the PanRec annual operating budget; and
3. the waste-heat energy cost recovery arrangement be presented to the Peninsula Recreation Commission for approval and inclusion in the 2011 PanRec annual operating budget.

Ted Robbins
Senior Manager, Water Management

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Senior Manager, Environmental Engineering

Attachment: 1
AL:hr

Scenarios	Description	Proposed Waste-heat Rates (\$/GJ)	PANREC			SPWWTP				CRD
			Annual Cost Using Waste-heat (\$)	Annual Cost Using Natural Gas (\$)	Annual Savings Using Waste-heat (\$)	Waste-heat System O&M Costs (\$)	Annual Cost Recovery (\$)	Debt Reserve Fund Payback (Years)	Original Scope Completion with no add. Grants ⁴ (Years)	Annual GHG Reduction Savings ^{5,6} (\$)
1	O&M Cost Recovery Rate ¹	6.52	50,000	100,170	50,170	50,000	0	N/A	N/A	14,094
2	Commercial Utilities Rate ²	23.61	181,088	100,170	-80,918	50,000	131,088	2.22	7.05	14,094
3	NG Rate (incl. carbon tax) ³	13.06	100,170	100,170	0	50,000	50,170	5.81	18.42	14,094
4	NG Rate (no carbon tax)	12.31	94,425	100,170	5,745	50,000	44,425	6.56	20.80	14,094

Notes:

- O&M Cost Recovery Rate (\$6.52/GJ) = estimated annual operating cost (\$50,000)/annual consumption in 2009 (7,670 GJ).
- This is the average commercial rate charged by the Neighbourhood Energy Utility of South False Creek, Vancouver, Central Heat Division Ltd., Vancouver, Lonsdale Energy Corporation, North Vancouver and Dockside Green Community Energy Systems, Victoria.
- NG Rate (incl. carbon tax)(\$13.06/GJ) = natural gas rate (\$12.311/GJ) + carbon tax (\$0.7449/GJ).
- To complete the original scope would require \$710,622 based on 2009 dollar. It is suggested that a 30% increase be allowed to cover inflation and contingency, bringing the costs to \$924,000.
- CRD overall corporate strategy for managing GHG offsets (savings) generated by CRD departments is being developed.
- Based on 560.5 tonnes CO₂ reduction as a result from natural gas replacement at \$25/tonne CO₂e, the GHG reduction savings would be \$14,094.

Additional Notes:

- Annual cost figures are based on 2009 annual energy consumption of 7,670 GJ.
- Dollar figures do not include PST and GST.