

From: DAVID M MACPHAIL [REDACTED]

Sent: Sunday, January 5, 2020 5:08 PM

To: Jack Crompton; Arthur De Jong; Duane Jackson; Cathy Jewett; Jen Ford; John Grills; Ralph Forsyth

Cc: Nikki Cooper

Subject: Addendum to The Real Cost of Whistler's Green 2010 Olympics DES Heating Systems - revised version

REVISED VERSION that corrects cost per SF and total capital costs

FOR COUNCIL PACKAGE

Dear Mayor & Council,

In a 2012 white paper, The Regulation of District Energy Systems: by The Pacific Institute for Climate Solutions, University of Victoria that reviewed both private and public district energy systems including Whistlers' DES system, RMOW staff estimated that the cost of energy for heat pump systems (hydro plus DES fees) would be about 84% of the energy costs for electric baseboard hot water heating (hydro only); What was not mentioned is the associated capital costs of installing heat pump systems compared to the capital costs of installing electric baseboard hot water heating systems.

The cost of parts and labour to install electric baseboard hot water heating would be approximately \$5,000 compared to the cost of parts and labour estimated at \$35,000 to install a heat pump system; \$30,000 more for the heat pump system.

The capital cost of the 100 SF mechanical room for the heat pump system in my townhouse at \$300 per SF is approximately \$30,000. Water heaters for electric baseboard hot water heating systems can usually be installed in 4 SF of closet space. At \$30,000 per SF the capital cost would be approximately \$1,200 for electric baseboard hot water heating; \$28,800 more for the heat pump system.

In terms of operating costs, hydro averaged \$126/month in my last annual billing cycle of which 50% was for space and water heating; \$63.00. DES fees added \$48/month for an average monthly energy cost of about \$110. Based on RMOW staff estimates installing electric baseboard water heating would result in an increase in energy costs of approximately \$21/month (\$131/month) compared to \$110/month for hydro plus DES fees for the heat pump system; \$21.00 less for the heat pump system.

The cost of maintenance deemed 'critical' for the heat pump system averages \$50/month compared to \$0 for electric baseboard hot water heating; \$50/month more for the heat pump system.

The ten year replacement cost for the 2 water heaters for the heat pump system is estimated at \$7,500 compared to an estimated ten year replacement cost of \$1,500 for the water heater for the electric baseboard hot water heating system; \$62.50/month compared to \$12.50/month; \$50/month more for the heat pump system.

The above operating costs do not include the cost of repairs and replacement of system components such as the heat pump. The cost of repairs and replacement of components for the electric baseboard hot water heating system is minimal.

When capital and operating costs are analyzed electric baseboard hot water heating is \$58,800 less to install and \$79/month less to operate than the heat pump system.

In terms of Green, the DE white paper concluded ‘..... to justify the development of DE systems solely on the basis of narrowly focused “lower carbon emissions” is insufficient, particularly in BC with its low carbon electricity’.

Whistlers zeal to be Green at any cost appears to have pre-empted a process of due diligence that would have included, at the very least, a financial cost/benefit analysis.

The District Energy white paper states that systems regulated by political bodies do not offer the same level of customer protection, particularly when the regulator is also the system owner and has mandated a monopoly, or where the political body may not be adequately fulfilling its fiduciary responsibilities. (Unlike a water or sewer customer where almost all users are voting taxpayers, the small customer base of a municipal system wields minimal influence.)

Ultimately, Whistlers’ zeal to be Green has manifested in affordable housing with a heating system that is unaffordable to operate and maintain thus placing an onerous financial burden on the very Whistler residents WHA housing is supposed to help.

Cost/Benefit Analysis DES vs Electric baseboard/hot water heating

	1. DES space/hot water heating	2. Electric baseboard space/ hot water heating	
Estimated Capital Costs			
Installation (parts and labour)	\$35,000	\$5,000	\$30,000 less for option 2
Floor area @ \$300 per SF	\$30,000	\$1,200	\$28,800 less for option 2
Option 2 net capitol cost saving			\$58,800.00
Estimated Operating Costs			
Estimated monthly cost of energy for space and hot water heating	\$113 (Hydro \$65 + DES \$48)	\$135 (Hydro \$135)	\$21 more for option 2
Monthly cost of critical maintenance	\$50	\$0	\$50 less for option 2
Estimated monthly cost of ten year water heater replacement	\$63 (\$7,500)	\$13.00 (\$1,500)	\$50 less for option 2)
Option 2 net monthly saving			\$79.00

Respectfully submitted,
David MacPhail

