

TO: Business Board

SPONSOR: Catherine Riggall, Vice-President – Business Affairs

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DATE: January 31, 2011

AGENDA ITEM: 13

**ITEM IDENTIFICATION:**

**Connection to Enwave Deep Lake Water Cooling System**

**JURISDICTIONAL INFORMATION:**

Pursuant to Section 5.2(b) of its Terms of Reference, the Business Board approves expenditures for, and the execution of, approved Capital Projects.

**PREVIOUS ACTION TAKEN:**

A program of utilities infrastructure renewal projects for the St. George Campus was approved by Governing Council on December 10, 2009. One of those projects was the addition of a new chiller and cooling tower to the South East chilled water plant, housed in the Medical Sciences Building, that supplies chilled water for air conditioning to fifteen buildings in the southeast quadrant of the campus.

**HIGHLIGHTS:**

An opportunity has arisen whereby the University would be able to avoid purchasing and installing the new cooling tower, and in fact, “mothball” the other pre-existing cooling towers used by the South East chiller plant. This opportunity exists because the local district energy company, Enwave, is eager to increase utilization of its Deep Lake Water Cooling (DLWC) system by contracting with building owners such as the University to use the water on its return journey back to their plant as a heat sink for heat rejected from chillers. This opportunity will not only simplify our plants operation and reduce capital costs for cooling towers now and in the future but also reduce annual operational costs at the Medical Sciences plant of approximately \$430,000 per year. Equally important, the DLWC system is a “green” technology that will reduce the University’s carbon footprint by 254 tonnes of equivalent CO2 per year.

The implementation of this plan requires the following:

- An underground room at the southeast corner of Medical Sciences will be built to house the heat exchangers and pumps. This room will be under the lawn and should not be visible after construction. There is no planned development of this site with which this installation would interfere. All costs associated with the construction of this room and the installation of the equipment will be born by Enwave.
- Enwave will bring buried pipes across Queens Park to this room where it will flow through a heat exchanger providing our system with cooling for our condenser water, which is presently being achieved by roof top cooling towers, and then the water will continue south, crossing College Street to connect with the rest of DLWC system.

**FINANCIAL AND/OR PLANNING IMPLICATIONS:**

All capital costs incurred by Enwave to provide the piping, underground room, heat exchangers and other equipment will be amortized over 20 years and included in the rate charged to the University for the condenser water. Therefore, no up-front capital investment by the University is required. It is estimated that the costs associated with this new partnership with Enwave will be roughly cost neutral with net savings to the University of \$1.38 million over the 20 year agreement in comparison to the alternative of running the plant as we are today with cooling towers.

**RISK IMPLICATIONS:**

We would retain the existing cooling towers in a “mothballed” condition so that should there be a failure of the Enwave system, they could again be used for the South East cooling plant.

**RECOMMENDATION:**

It is recommended:

Subject to Governing Council approval,

- THAT the Vice-President, Business Affairs be authorized to change the implementation of the program of St. George Utilities Infrastructure Renewal, as approved by the Business Board on November 9, 2009, to substitute a connection to the Enwave Deep Lake Water Cooling system for the installation of a cooling tower, installing an underground equipment room near the southeast corner of the Medical Sciences Building.