Winter Season Campus Chilling Initiative

During the heating season on the Main Campus the need for chilled water from the district energy loop is reduced significantly. Traditionally as the cooling load drops below 100 tons, the main chillers in the Central Utilities Building (CUB) are shut down and the H-Block Chiller, located in Mackenzie Chown, is run for the heating season to maintain the cooling loop.

Over the past few months an energy conservation project began to investigate the ability of having the #1 process chiller located in the CAIRNS building, which operates 24/7/365, provide chilling to the Main Campus loop through a heat exchanger system. By allowing the CAIRNS #1 process chiller to be the primary winter chiller for the campus, it increases its load from less than 10% to approximately 25%, which places the chiller in a much more efficient operating range. This then allows the aging H-block chilling system to be shut down and used as a backup.

This project, in support of the University`s Energy Conservation and Demand Management Plan, has been implemented and has been working very effectively. The CAIRNS chiller is running more efficiently and the less energy efficient H-block chiller is on standby.

Overall this initiative has resulted in significant energy savings, as outlined below:

Add:

-**CAIRNS #1 Chiller** (15% increase in load = 300tons x 15% x 0.5kW/ton x 24hrs = 540 kWh/day)
-**CAIRNS Pumps P-18 & 19** (full load @ 111.86kW x 24hr = 2685 kWh/day)

Subtract:

-**H-Block Chiller** (approximately 100kW x 90% x 24hrs = 2160 kWh per day)
-**CUB Pumps P-44 & 45** (186.425kW x 80% x 24hr = 3579 kWh/day)

Total:

Power savings for this running condition = 2514 kWh/day

With the Campus Cogeneration Electricity Rate of $0.11/kWh, this initiative has resulted in an operating budget savings of $277/day or approximately $52,350/year (based on avg. weather conditions)

The Greenhouse Gas (GHG) savings are 392 metric tons of carbon dioxide, equivalent to: