Innovative Greenhouse Heating

Innovative upgrades to Vancouver's Sunset Nursery will see waste heat from the adjacent Sunset Rink transferred directly to the nursery's greenhouses. It is expected to serve as a model to follow for municipalities across North America.

The nursery, located on East 51st Avenue near Main, is one of 36 city facilities that received $16 million in energy conservation upgrades and is expected to experience one of the most significant greenhouse gas (GHG) reductions as a result of the change.

The multi-facility project started in January 2006 and completed in April 2011.

"Reducing our city's greenhouse gas emissions by upgrading facilities like the Sunset Nursery is an important step to us becoming the world's greenest city by 2020," says Mayor Gregor Robertson.

The Sunset Nursery project saves energy by capturing waste heat from the rink, where the refrigeration plant used to release the heat removed from the ice into the atmosphere. New heat pumps in 12 nursery greenhouses now transfer this previously lost heat from the rink to heat the greenhouses.

This measure, along with the replacement of two boilers with high efficiency condensing units, will reduce nursery emissions by 52 per cent, or 268 tonnes a year; the equivalent of removing 51 cars from city streets. The upgrades were all achieved without any cost to taxpayers.

The upgrades were funded with capital that was borrowed from internal funds to be paid back with interest over a 20-year period using guaranteed utility savings.

According to the city, greenhouse gas emissions were 18 per cent lower in 2010 than they were in 1990 despite a 44 per cent increase in total area for city facilities. Further reductions are expected throughout 2011.

Ameresco, an energy management company, was hired to recommend energy-savings, design and measure the GHG reduction initiatives, as well as provide performance guarantees. The company will monitor the actual results of the project and remit any shortfall to the city if actual savings are less than the guarantee.

"Our local team has enjoyed working with the city's staff through all phases of this project and the growth of our Vancouver office since the project began is just one example of Vancouver's expanding green economy," says Mario Lusi, president of Ameresco Canada.

Existing buildings, and their potential for energy efficiency upgrades, represent the greatest opportunity to reduce building emissions.

Under B.C.'s Climate Action Charter starting in 2012, B.C. municipalities will have to become carbon neutral or purchase carbon offsets to meet the carbon neutral requirement. Offsetting GHG from building emissions represents the majority of this cost.

In Vancouver, GHG have been reduced to 1990 levels and the city is on track to meeting the Kyoto target of six per cent below 1990 levels by 2012. Vancouver has the lowest per capita GHG emissions of any major city in North America at 4.6 tonnes per person. **CB**