Community Energy Leadership Program (CELP)
Stories of Success

City of Kelowna:
RUTLAND ARENA HEAT RECOVERY PROJECT

Total Project Cost: $164,908.15	**Energy savings**: 2,660 GJ/year
Total CELP funding support: $45,000	**GHG reductions:** 131 tonnes/year of CO_{2e}

Summary of Project: *In partnership with FortisBC and the Provincial Government, the City of Kelowna successfully implemented a heat recovery project at the Rutland Twin Arenas and is expected to reduce its carbon footprint by131 tonnes of C02e (carbon dioxide equivalent) per year.*

Partners: Financial Contribution FortisBC and CELP
Contractors :

- Bry-Mac Mechanical- Installation
- Ice Plant Heat Recovery
- CIMCO Refrigeration- Installation
- Controls Upgrade
- Douglas Lighting- Equipment supplier
- Keldon Electric -Installation
- KIMCO- DOC Programmer

New Condensing Boiler

Background: The Rutland Arena is a hub of local activity for hockey, ringette and lacrosse, and is the home of the Kelowna Chiefs.

The Arena is located in an area of Kelowna that is currently undergoing re-growth and re-utilization. Through an energy optimization study, Rutland Arena was identified as a Civic Facility with significant energy saving opportunities. Inefficient and aging equipment that had reached the end of its service life along with a need for improved operational control provided an excellent opportunity to show the potential energy savings that exist within the City of Kelowna.

City Council approved the project following the approval of financial support from FortisBC and the CELP program. This project matches the City of Kelowna's strategic goals to:

1. **Grow the Economy** by re-investing in existing assets and actively pursuing partnerships, and,
2. **Create a Sustainable City** through energy conservation projects that will reduce energy consumption, reduce GHG emissions and preserve and protect the City's built infrastructure

Innovation: The implementation of a heat recovery system to the refrigeration plant will allow the facility to recover a significant amount of heat that would typically be expelled into the atmosphere. This will provide a significant reduction in greenhouse gases within the community, and will also significantly increase equipment life, helping to reduce the long term cost of operating the Arena.

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The upgrade to the building automation system will give operations staff much more control over their equipment, which will allow much greater control over the energy that is required to operate the facility.

Hot Water Heat Recovery Tanks

Outcomes: As a result of this project, GHG emissions are expected to be reduced by 132 tonnes of C02e per year from an estimated decrease in natural gas consumption of 2,660 GJ.
The majority of the energy savings will result from the reduction in space heating and hot water heating requirements. In addition to the GHG emission reduction, lower operational costs and increased equipment life will extend the useful life of the facility, providing social and economic value to the community. **GHG emissions calculated using the B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions. 1 GJ natural gas= 49.75 kg C02e.

"Another important success of the project was the desire of City staff to achieve maximum energy savings while also providing a safe and comfortable facility for the community to enjoy."

Project Reflections: Due to the limited time to complete the project, the main success factor can be contributed to the contractors and operation staff who were required to work together to complete the project.
During construction on the hot water system for maintaining the ice, the operations staffs was required to adjust the way they operated the facility to conserve as much hot water as possible. A result of this need to conserve hot water during construction is an ongoing diligence by staff to continue to conserve hot water whenever possible.
Another important success of the project was the desire of City staff to achieve maximum energy savings while also providing a safe and comfortable facility for the community to enjoy.
Constant iteration was required throughout the controls optimization portion of the project to set and test the appropriate temperatures and airflows as well as program the appropriate scheduling.

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