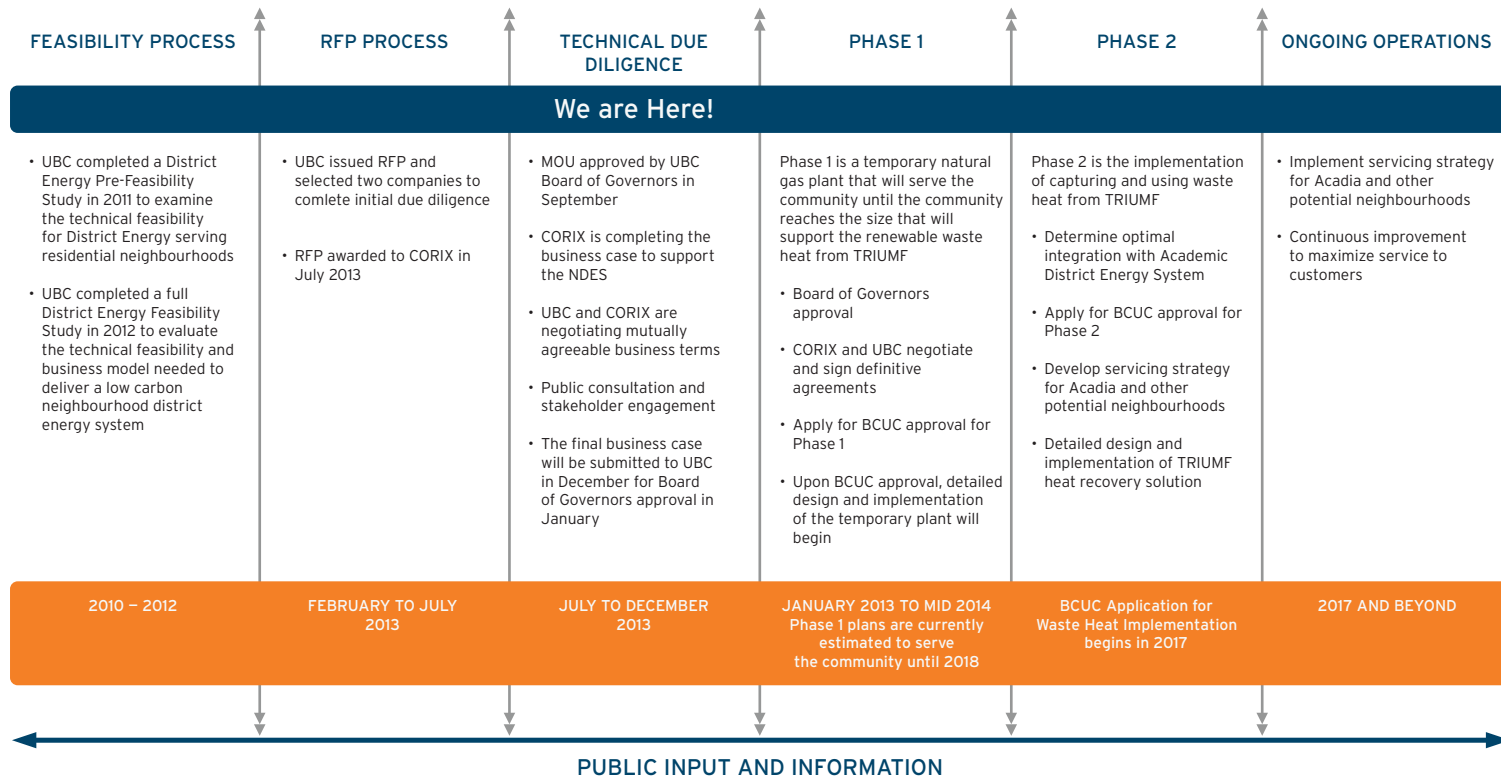




NDES Project Process



UBC Neighbourhood District Energy System

PROJECT DESCRIPTION

As part of its commitment to sustainability, the University of British Columbia is investigating the implementation of a Neighbourhood District Energy System (NDES) to provide space heating and domestic hot water to new developments on UBC lands.

The objective of the NDES is to provide low-carbon energy to UBC residential neighbourhoods. The NDES will also support UBC's goals to reduce greenhouse gas emissions and create a sustainable live-work-learn community. We are currently evaluating the use of waste heat from TRIUMF's cooling towers as the most effective way of providing the GHG reductions needed.

The NDES will serve new developments of UBC lands including:

- Wesbrook Place
- Acadia
- East Campus
- Stadium

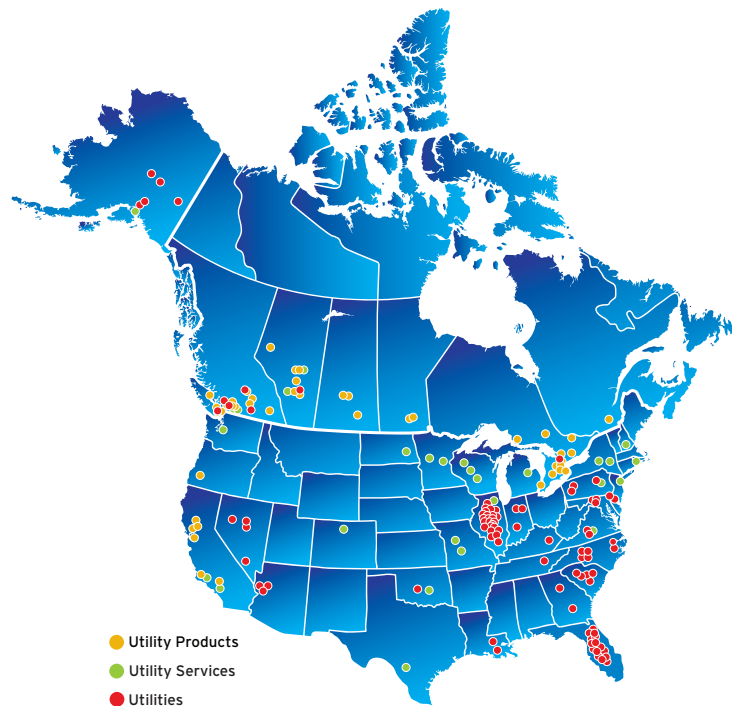
It may also serve neighbouring developments in the area.

Potential synergies between the NDES and the Academic District Energy System will also be explored, including possible research and educational opportunities that are consistent with UBC's goal for the Campus as a Living Lab.



WHO IS CORIX UTILITIES?

In communities across North America, CORIX delivers safe and cost effective utility infrastructure products, services and systems for water, wastewater and sustainable energy. CORIX is a BC based company with extensive experience in the design, construction and operation of innovative energy, water and wastewater systems.



UBC PARTNERSHIP WITH CORIX

The Neighbourhood District Energy System (NDES) will be undertaken by CORIX in partnership with UBC. CORIX was chosen in a competitive bid process based on their established expertise and track record of successful community partnerships for energy and utility systems.

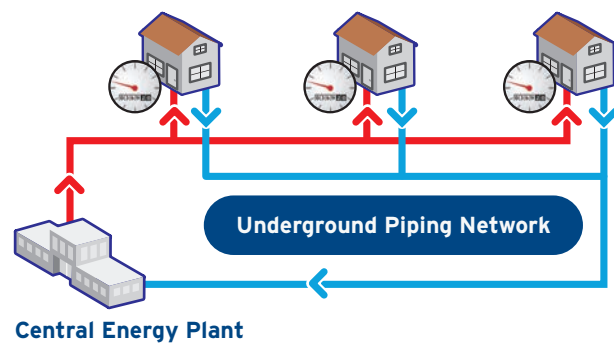
In Phase 1 of the project CORIX will be finalizing the business case for the NDES. If a decision is made to proceed with the NDES Project, CORIX will design, construct, own and operate the system, with oversight by UBC and the BC Utilities Commission (BCUC). The BCUC regulates all energy utilities in BC, and approves rate structures and customer billing models to ensure transparency.

WHAT IS A DISTRICT ENERGY SYSTEM?

District Energy Systems are a way of sharing energy efficiently across a community.

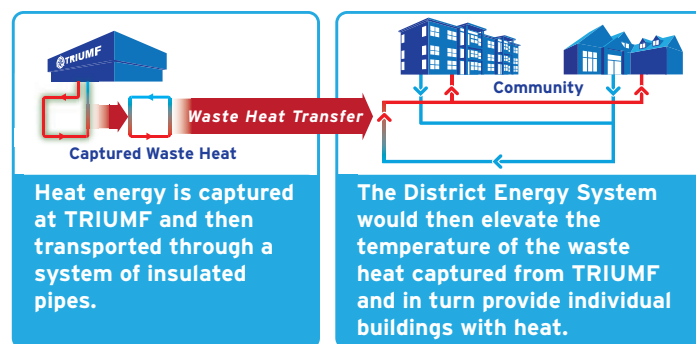
The System uses a central energy plant to produce hot water, which is then distributed through an underground piping network to heat exchangers located in each building. The heat exchangers, in turn, provide space heating and domestic hot water for residents. Once the fluid has cooled it returns to the central energy plant to be reheated and recirculated.

A District Energy System can substantially reduce greenhouse gas emissions through higher efficiencies and the ability to use a variety of alternative energy sources including biomass, GeoExchange, solar and waste heat recovery.



PROPOSED NEIGHBOURHOOD DISTRICT ENERGY SYSTEM (NDES)

One possible source of heat energy for the Neighbourhood District Energy System is TRIUMF, Canada's national laboratory for particle and nuclear physics research, located on the south campus of UBC. The proposed NDES would use the waste heat captured from TRIUMF's cooling towers as the main source of heating for UBC neighbourhoods and portions of the UBC campus. This captured heat would otherwise be released into the immediate environment.



BENEFITS

The UBC Neighbourhood District Energy System will provide numerous benefits to the community and its residents.

Enhanced Comfort – residents will enjoy comfortable space heating provided by radiant sources like in-floor, rather than traditional perimeter electric baseboard heaters.

Increased Price Stability – because the system uses alternative fuel sources, residents' exposure to fluctuating gas and electricity prices is reduced.

Improved Reliability – exposure to weather-related power outages is reduced compared with traditional electricity-based systems.

Lower Operations and Maintenance Costs – the centralized production of heat results in highly efficient delivery and eliminates the need for each building to have its own boilers, hot water storage tanks and other associated equipment, reducing operations and maintenance costs.

Reduced Air Emissions – greater energy efficiency and the use of alternative energy sources decrease the air emissions that lead to climate change.

Flexible Building Design – on-demand hot water systems mean no boilers and no hot water storage tanks, resulting in more usable space for people.

Added Resilience – flexibility to add or change energy sources over time without having to modify building systems.

Reduced Greenhouse Gas Emissions – greater energy efficiency and the use of alternative energy sources decrease the air emissions that lead to climate change.



SUSTAINABLE ENERGY PROJECTS

A Local Example:

Southeast False Creek in Vancouver has a community energy system that delivers hot water for space heating and domestic hot water to all buildings. The system uses sewer heat recovery as the primary source of energy with high efficiency boilers for backup and supplemental heat on the coldest days. The neighbourhood utility also collects heat from solarthermal arrays located on roof-top.

Sustainable energy systems in other CORIX communities:

UniverCity, Burnaby, BC

CORIX is working with UniverCity, an award-winning, mixed-use community, located adjacent to Simon Fraser University, to design and install a biomass-based district energy system that provides heat and hot water to residents. The temporary district energy system started serving the first buildings in 2011.



Sun Rivers Golf Resort Community, Kamloops, BC

CORIX designed, installed and operates a comprehensive range of utilities including ground source heating and cooling, making Sun Rivers Canada's first GeoExchange community.

Beaver Barracks, Ottawa, ON

CORIX designed, installed, owns and maintains a GeoExchange loop field system and central energy plant which provides heating, cooling and domestic hot water to 247 low-cost rental units managed by Centretown Citizens Ottawa Corporation, a private non-profit housing organization.