

DISTRICT ENERGY



Blatchford

Edmonton

WHAT IS DISTRICT ENERGY?

District energy systems centralize the production of heating or cooling for a geographical area. “Most district energy systems generate heat at a central plant or extract heat from other sources. The heat is transferred to a fluid and distributed via underground pipes to buildings where it is used for space and water heating. The fluid is then returned to the source to be reheated and recirculated. Some systems also provide space cooling in a similar way.”¹

District energy systems come in different shapes and sizes. They vary according to the temperature of the fluid used for distribution—which could include steam, hot or ambient temperature water—and the type of fuels used to generate thermal energy including traditional fossil fuels (natural gas, diesel, propane), alternative fuels (biomass, biogas), and renewables (geo-exchange, waste heat recovery, solar, etc.).

WHAT SYSTEM IS RECOMMENDED IN BLATCHFORD?

An ambient district energy sharing system (DESS) is recommended for Blatchford.

A DESS is similar to a traditional district energy system in that energy from a centralized source is distributed to multiple buildings. However, traditional systems deliver high temperature water that can be used directly for heating buildings, whereas a DESS distributes ambient temperature water, which is then upgraded using heat pumps to provide both heating and cooling.

One of the main advantages of a DESS is that it enables greater flexibility to directly tie in renewable energy sources. Many renewables, such as geo-exchange and sewer heat exchange, provide low-temperature energy, which can be used directly by the DESS. In contrast, low-temperature sources must be upgraded before they can be incorporated into traditional district energy systems, which is less efficient and not always possible. In Blatchford, two major sources of renewable thermal energy, which leverage existing on-site resources, have been identified: geo-exchange and sewer heat exchange.

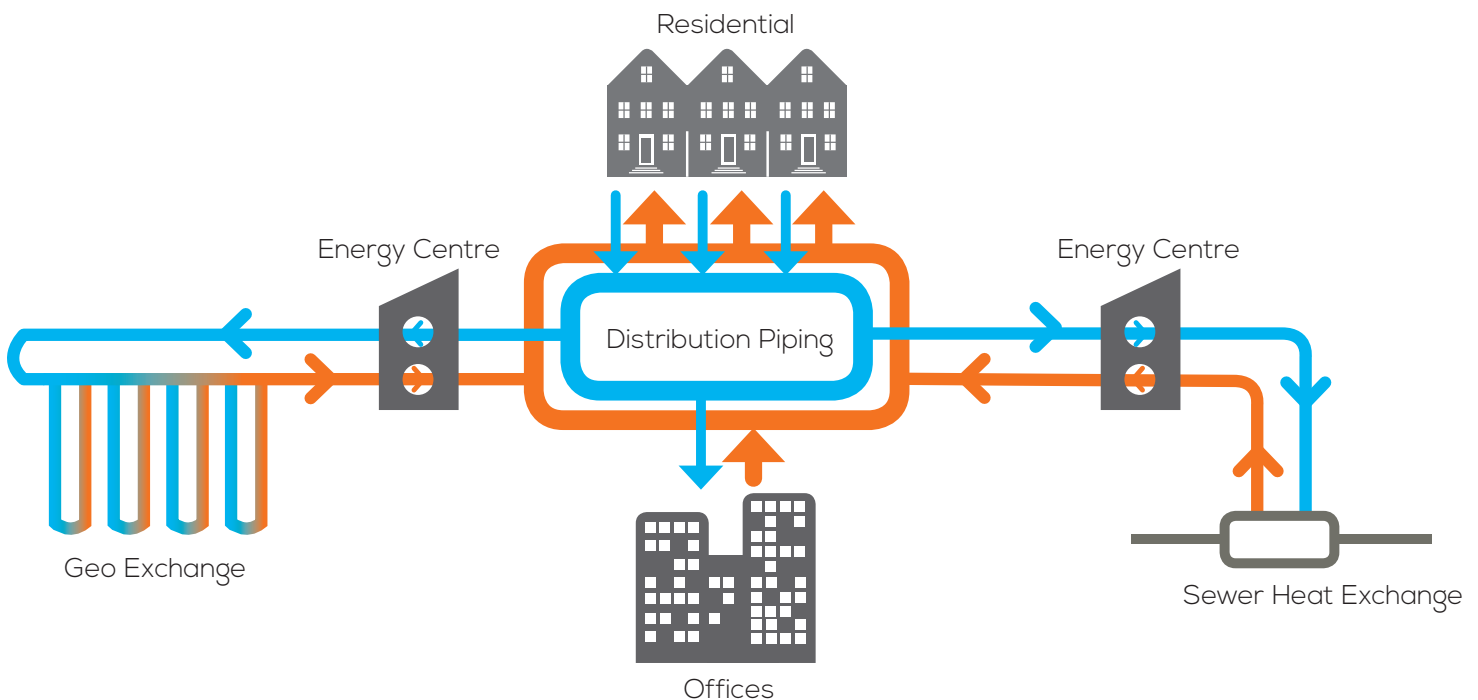
¹“District Energy Systems” - BC Climate Toolkit - www.toolkit.bc.ca/tool/district-energy-systems

Another key benefit to implementing a DESS in Blatchford is the unique ability to share energy between buildings. For example, office buildings usually generate excess heat (due to high density of lighting, computers, and people). This heat energy is usually rejected to the atmosphere, but a DESS can recover that thermal energy and use it to heat residential buildings. Essentially, the office buildings act as a heat source for the residential buildings. In a neighbourhood the size of Blatchford with a large diversity of building types and occupancies, this sharing of energy can reduce overall energy consumption by 15 to 20 per cent. The more energy sharing that occurs—either on a building or a neighbourhood scale—the less external energy is needed.

ADVANTAGES OF DISTRICT ENERGY SHARING SYSTEM

- Provides heating and cooling from a single system
- Allows energy sharing
- Allows tie-in of low-temperature renewables
- Maximizes flexibility of future energy sources and system build-out

Blatchford can influence the way the world thinks about sustainable development. However, this will only happen if its approach to energy is ambitious and creative with an ongoing commitment to visionary leadership.



Blatchford