



SUSTAINABLE BUILDINGS AND COMMUNITIES GROUP COMMUNITY ENERGY SYSTEMS

CLEAN ENERGY TECHNOLOGIES

INTEGRATED ENERGY SOLUTIONS
FOR COMMUNITIES



COMMUNITY ENERGY SYSTEMS

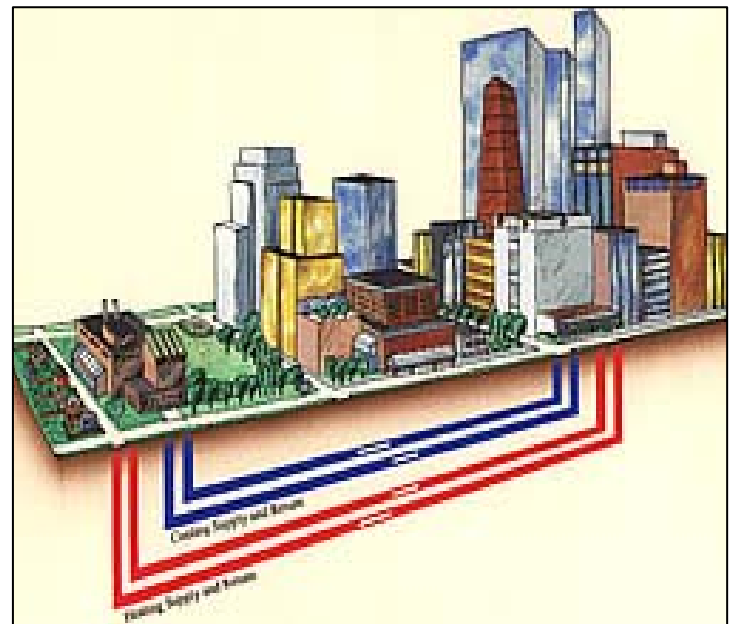
A community energy system, or district energy system, supplies heating, cooling and power to multiple buildings from a centralized plant or from several interconnected but distributed plants. The system is comprised of pipes, heating equipment, cooling equipment, heat exchangers, as well as the social infrastructure for management and settlement.

The benefits of this type of system over current building-based systems include increased efficiencies due to economies of scale, reduced operating costs, increased reliability, reduced emissions such as greenhouse gases, and a broader choice of fuels including renewable energy and low grade heat.

EARLY EXPERIENCE AND FUTURE DIRECTIONS

District energy systems in Canada originated through centralized steam plants where boilers provided steam to nearby commercial buildings. The economic justification for this approach was the availability of less expensive fuel to plant owners, which was not available to individual building owners. However, widespread access to natural gas removed this advantage and saw community energy systems become providers of service rather than simply heating and cooling.

Recent systems have been designed to efficiently supply hot water at around 90 degrees Celsius, a lower temperature than traditional systems. This change has increased the practicality and reliability of these systems allowing for the use of lower grade heat sources available within the community.



Community energy systems are increasingly incorporating renewable and alternative energy sources. These include biomass, landfill gas, industrial waste heat, sewer water, ground-source heat pumps, and solar thermal collection and storage.

This approach to community energy has demonstrated far greater utility than simply efficiency and fuel cost reduction. Positioned as an integrated supply and energy management system for a community, supplies of excess energy may be provided to the network while consumers in need of energy are drawn from the network. The result is an increased synergy and efficiency of energy use throughout the community that maximizes local resources.

