

Notes from Bringing in Low Carbon Energy Solutions Right from the get-go, April 9, 2024

Objective:

The webinar's objective was to provide an overview of geothermal systems and their utility business models, which support the uptake of lower-carbon opportunities by addressing the upfront capital cost barrier.

Main presentation points:

Geothermal Systems Misconceptions

Geothermal energy often suffers from misconceptions that hinder its widespread adoption. Firstly, geothermal heat pumps, sometimes referred to as GeoExchange, earth-coupled, ground-source, or water-source heat pumps, have been in use since the late 1940s. Not all geothermal systems need a heat pump. Geothermal systems and air source heat pumps transport heat energy from one place to another, so they're up to three times more efficient than other HVAC technologies at heating and cooling. From an operational perspective, efficiency is the primary difference between geothermal systems and air-source heat pumps. Since geothermal systems collect and transfer heat from the earth, they draw less electricity than air-source heat pumps. Another misconception revolves around space requirements; while geothermal systems need some space for installation, they can be adapted to fit various property sizes and configurations, making them versatile for urban and rural settings.

Barriers and Opportunity

The main barriers for developers considering geothermal systems are cost, resistance to change, and the risk associated with a change. To overcome the cost barrier, geothermal companies, such as Diverso, are following a utility-like model. They act as a third-party owner that designs, builds, pays for, owns, and operates the geothermal bore field. Construction costs are reduced by eliminating the need for conventional equipment, such as cooling towers and boilers, and replacing them with geothermal borefields paid for by the geothermal company. Because conventional HVAC equipment no longer needs to be installed on a building's rooftop, this prime real estate can be repurposed and marketed for additional amenities, such as a green rooftop or patio space. While the utility-like model offers a positive business case, changing the status quo will not occur until there is a mechanism enabling this change. Fortunately, policies such as Green Development Standards can push developers to adopt low-carbon energy solutions. For example, Toronto Green Development Standards v4 (TGDS) brings a fundamental shift in the impact on geothermal business projects in Toronto. Developers are now considering geothermal systems to meet energy and GHG requirements set in the TGDS v4 and reduce the carbon footprint of a building to up to 70%. Projects such as 101 Spadina and 30 Westwood Gardens in Toronto, Alba Condos in Mississauga, and Downtown Mississauga Exchange District are advancing geothermal systems.

Contact information:

Desi Stefanova: dstefanova@cleanairpartnership.org