TRU Begins Construction on Innovative Low-Carbon Energy System

Thompson Rivers University (TRU) is taking a major step in creating a greener future by constructing a Low-Carbon District Energy System (LCDES). On August 29, 2024, a groundbreaking ceremony was held in TRU's main campus in Kamloops to begin the construction of the Sustainability Powerhouse building. According to the TRU Newsroom, the ceremony was "attended by representatives from TRU, Creative Energy, BC Hydro, local government officials and members of the community."

Once complete, the Sustainability Powerhouse building will become the focal point of the LCDES. It will house the new generation of heating equipment and infrastructure to generate and deliver heat to 13 buildings on the TRU campus in Kamloops. James Gordon, the Manager of Sustainability Programs at the Sustainability Office at TRU, noted, "The building will serve as an energy plant equipped with cutting-edge electricity-powered air-source and water-source heat pumps alongside backup electric boilers. Then, if the electric boilers can't keep up with the energy consumption, the natural gas boilers will make up the differences."

The ground-breaking ceremony marks a major milestone in the initiative, which started in 2021 with a public consultation. It took TRU two years for this project to receive approval from the BC Utilities Commission (BCUC), which is critical to allowing the construction of the Sustainability Powerhouse building. The building is expected to be completed in 2026.

While the goal of creating an LEDC is to maximize the use of renewable energy sources to generate heat for TRU buildings, there is still a role to play for the existing fossil fuel heating equipment. According to the TRU LEDC website, "The Sustainability Powerhouse will feature air-source and water-source heat pumps that provide a renewable energy heating source. Electric and natural gas boilers will be on standby for backup, ensuring resilience and uninterrupted operations. An underground closed-loop distribution system will weave through the campus, connecting buildings to the LCDES and allowing us to retire our old boilers." Putting natural gas boilers on standby and only put into service on demand certainly improves the resiliency of the LEDC system, ensuring TRU provides a comfortable building environment for both staff and students.

As Gordon mentioned, "The underground closed-loop distribution system will connect buildings across the campus, allowing TRU to phase out its aging boiler systems and transition to more efficient, renewable heating." Aging heating infrastructure is both less efficient and more costly to operate, as well as more costly and difficult to maintain as maintenance parts become harder to find.

Using electricity and a system of air and water heat pumps to generate heat for buildings will reduce the reliance on natural gas, a type of fossil fuel that will generate greenhouse gas, to keep the buildings warm in the winter. According to the BC Hydro website, "Over 98% of the power we generate is from clean, renewable sources." Moving the energy source from fossil fuel to electricity will reduce TRU's carbon footprint to heat the buildings. Heat pumps work by capturing heat from the air or water outside the building and transferring it inside the building. Heat pump technology has advanced recently, allowing efficient operations in colder temperatures such as Interior BC.

According to the TRU Sustainability Office website, "Heat will be generated at the Powerhouse Building and pushed throughout the campus in underground pipes to 13 existing buildings." When asked about the impact of this project, Gordon highlighted "that the project aims to reduce the university's greenhouse gas emissions by 95% by 2030, with the remaining 5% coming from sources like car travel that TRU can not fully control." With electric vehicles becoming more available, economical, and popular, it is possible that the remaining 5% of greenhouse gas emissions could be further reduced.

Completion of the Sustainability Powerhouse building will enable TRU to become a leader in increasing the use of renewable energy sources to heat a network of buildings. It is also positioned to expand the service footprint to cover neighbouring buildings in and around the TRU Kamloops Campus.

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