



CREATIVE ENERGY THOMPSON RIVERS UNIVERSITY LOW-CARBON DISTRICT ENERGY SYSTEM

Community Engagement: Discussion Guide and Feedback Form

Provide your feedback from April 20–May 21, 2021.

CREATIVE ENERGY

creative.energy/TRU
TRU@creative.energy

WE WANT TO HEAR FROM YOU

We are providing information about our proposed Thompson Rivers University (TRU) Low-Carbon District Energy System (LCDES) project and are seeking your input from April 20, 2021 to May 21, 2021.

You can learn more and participate by visiting the project website at **creative.energy/TRU** to:

- Read the community engagement discussion guide
- Submit an online feedback form
- Register for an information session, with an opportunity to ask questions or provide comments, to be held on **Tuesday, May 4, 2021** 1:00–2:30 p.m.

You can also send us an email with your feedback to **TRU@creative.energy** or call 604-692-2114.

Please provide your feedback by visiting our website at **creative.energy/TRU** and completing a feedback form by Friday, May 21, 2021.

How input will be used

The input you provide during this engagement process will be summarized and considered as we develop the project and prepare to apply to the British Columbia Utilities Commission (BCUC) for a Certificate of Public Convenience and Necessity (CPCN) for the project.

ABOUT CREATIVE ENERGY

Creative Energy is the owner and operator of one of the largest district energy systems in North America. It is a public utility in BC established in 1968 and is regulated by the BCUC.

Creative Energy has 12 district energy projects in development across Canada ranging from ocean-exchange to geo-exchange. Through collaboration and partnerships, Creative Energy designs, builds, owns, operates, and maintains sustainable neighbourhood scale energy systems that support responsible development, business value, community growth, and shaping great cities. Its system

in Vancouver provides space and water heating to over 200 customers across more than 45 million square feet of connected real estate.

With 53 years of operation in downtown Vancouver and a 99.99% reliability record, Creative Energy contributes to Vancouver as an environmental leader in energy efficiency.

DISTRICT ENERGY SYSTEMS

What is a district energy system?

District energy systems are a way of sharing energy efficiently across a community. They typically use a central energy plant to produce both hot water and/or chilled water, which are then distributed through a network of pipes to heat exchangers located in each building. The heat exchangers, in turn, provide space heating, space cooling and domestic hot water for customers. The water in the system is then returned to the central energy plant to be re-heated/re-cooled and recirculated.

District energy systems are generally one of the most reliable and environmentally friendly sources of energy available to urban communities and campus environments. District energy systems are able to use a variety of energy sources, including natural gas, electricity, geo-exchange, waste heat recovery, biomass and solar. On a life-cycle basis, district energy systems tend to deliver thermal energy at a lower cost than traditional individual building or residential methods.

Background on TRU's energy planning

TRU has been considering their energy usage and systems through a lens of sustainability, reduction of GHGs (greenhouse gases) and cost savings for nearly a decade. District heating was first discussed as part of the Campus Master Plan and Energy Management Plan in 2013, where a central natural gas heating plant was considered instead of building-by-building natural gas boilers.

Since 2013, other concepts were studied and explored, including various iterations of a biomass district heating system which were ultimately abandoned due to public concern on air quality. Once biomass was taken off the table, TRU shifted their strategy to decarbonize via electrification, and in 2018 TRU commissioned the Industrial Technology and Training Centre (ITTC) electric boiler system, which provided low-carbon heating to the new ITTC, as well as to the existing Trades & Technology building to offset existing gas use. In 2019, TRU built their first major academic building without a natural gas connection: the Chappell Family for Nursing and Population Health Building.



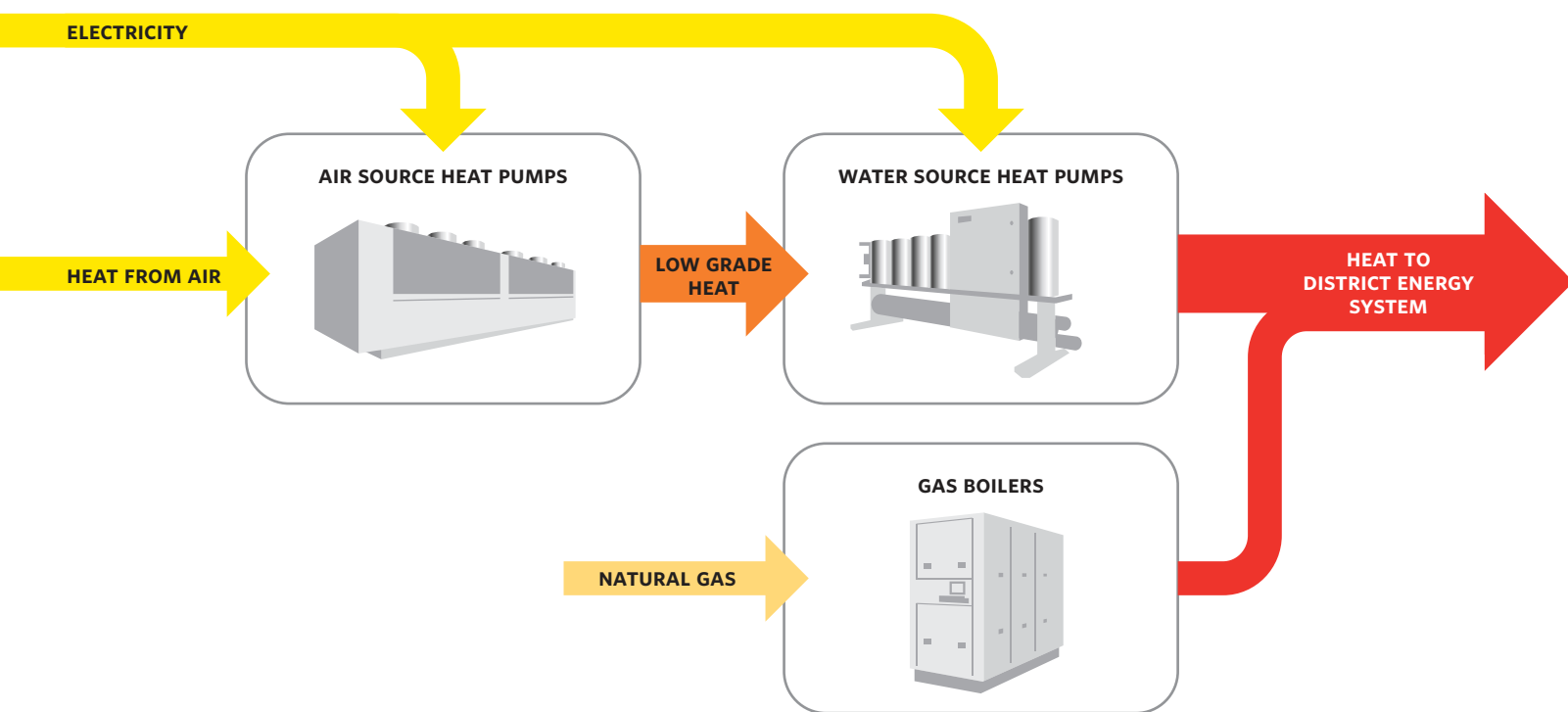
Efforts to minimize TRU's carbon footprint continued with a study in 2019 to better understand the efforts needed to electrify the heating of eight of TRU's academic buildings through a building scale solution that used air-source heat pumps and geo-exchange. In early 2020, Creative Energy was brought in to evaluate if electrifying via district energy was more economical than the building-by-building alternative. Based on alternative testing and strategic assessment, the two-stage air-source/water-source heat pump approach was selected and found to be the most economical electrification approach. Creative Energy and TRU also considered electric boiler, geo-exchange, biomass, sewer heat recovery, building retrofits with air source heat pumps, and building retrofits with geo-exchange.

INTRODUCING THE PROJECT

What is the TRU Low-Carbon District Energy System project?

Creative Energy is proposing to design, build, and operate a Low-Carbon District Energy System (LCDES) to provide reliable low-cost and low-carbon heating while reducing TRU's GHG emissions by 90% for the connected buildings.

Creative Energy and TRU are proposing a two-stage air-source/water-source heat pump system with high-efficient boilers, housed in a new building on campus constructed by TRU.



Example of two-stage air-source/water-source heat pump system with high-efficient boilers.

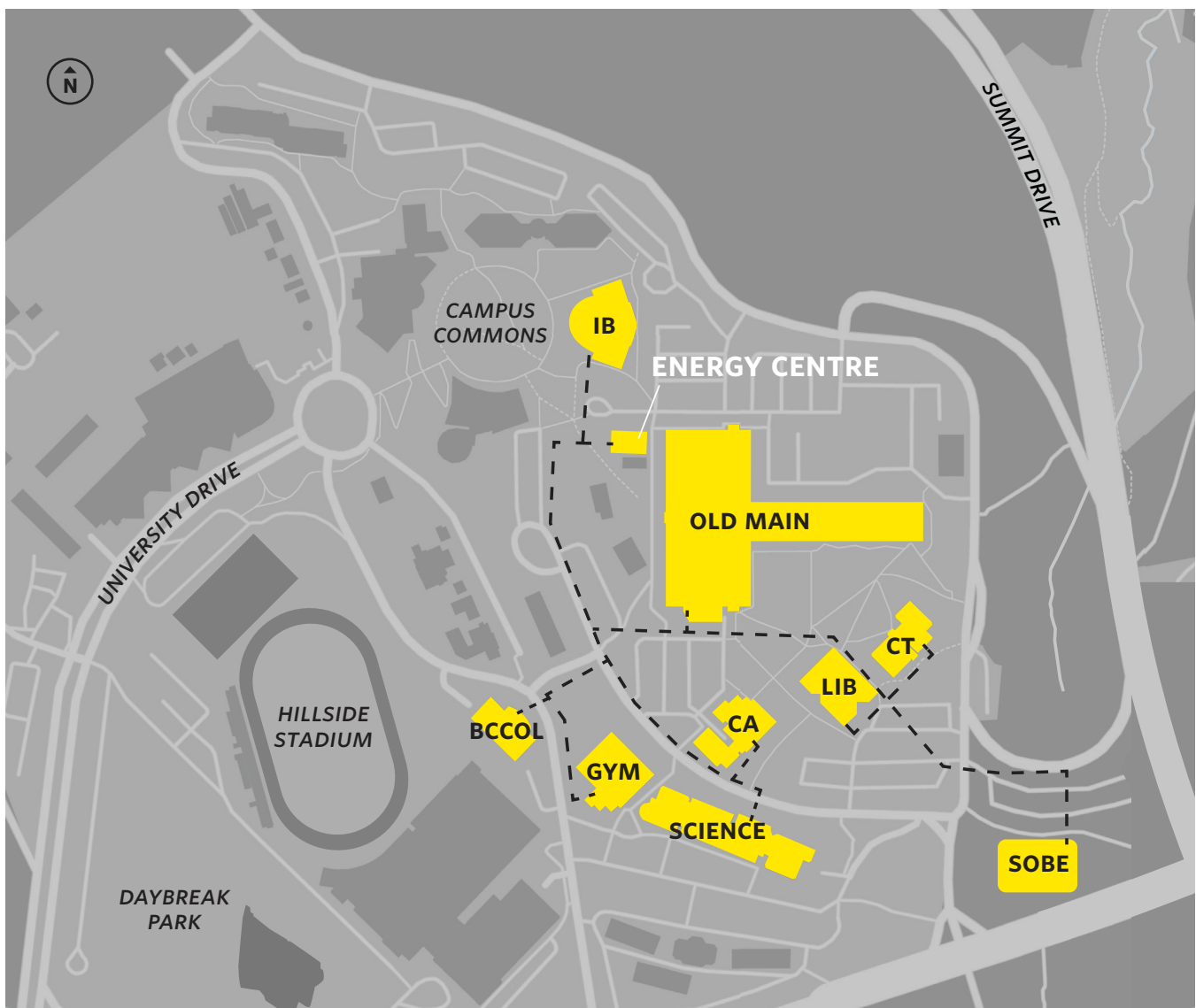
INTRODUCING THE PROJECT

How it works

The Energy Centre would include air-source heat pumps, water-source heat pumps, and high-efficient boilers. Powered through electricity, the air-source heat pumps extract heat from outdoor air for heating the connected building. Water-source heat pumps reheat the generated thermal energy from the air-source heat pumps to increase the temperature to the required level for the connected buildings. The natural gas boilers would be for backup and peaking during winter. The generated heat would be delivered from the Energy Centre to each connected building through an underground piping network.

Subject to regulatory approvals and construction, the project could be operational by April 2024. The proposed LCDES would remove over 90% of GHG emissions per year from the following buildings on campus:

- Old Main
- Ken Lepin building
- SOBE Management building (future building)
- Old Library and Administration building
- BC Centre for Open Learning
- Culinary Arts building
- Clock Tower building
- Gymnasium
- International building



PROJECT BENEFITS AND POTENTIAL IMPACTS

GHGs and air quality

The project would reduce existing GHGs by approximately 950 tons of carbon dioxide equivalent emissions (CO₂e) per year, representing approximately a 90% reduction/avoidance from the current baseline. According to Natural Resources Canada's Greenhouse Gas Equivalencies Calculator, this is the equivalent of removing approximately 300 gas-powered vehicles off the road each year.

The project would provide low-carbon energy for approximately 56,600 square metres of development at TRU, with the potential for further expansion to serve most of TRU's existing major academic buildings and campus development in the future, as well as the City of Kamloops' neighbouring Canada Games Pool and Tournament Capital Centre. The project would support TRU's commitment to achieving carbon neutrality by 2030, as defined in the 2020 Campus Strategic Sustainability Plan.

In addition, the project would help improve air quality in the area by virtually eliminating the use of natural gas to heat the connected buildings.

Lower cost compared to alternatives

The proposed project would result in approximately 20-30% savings in life-cycle costs to TRU compared to achieving similar carbon outcomes through building-by-building electrification. Other alternatives that were considered, such as electric boilers, geo-exchange, sewer heat recovery, building retrofits with air source heat pumps, and building retrofits with geo-exchange, would all have been more expensive than the electrification solution being proposed.

Construction activities

Should the project be approved, construction activities would include:

- Construction of the new Energy Centre (built by TRU, not subject to BCUC approval)
- Excavation between the Energy Centre and the connecting buildings for installation of underground pipes
- Road surface restoration after installation of underground pipes
- Installation of piping and equipment within the Energy Centre and the connecting buildings

Creative Energy will work with TRU staff to develop a plan to ensure access to all areas of the campus is maintained during construction work. The plan would include creating safe pathways with proper signage. Creative Energy will also coordinate with TRU staff to keep building doors and windows closed during construction to lessen the noise impact from construction activities. The dust arising from excavation will be controlled by watering excavated material.

Noise considerations

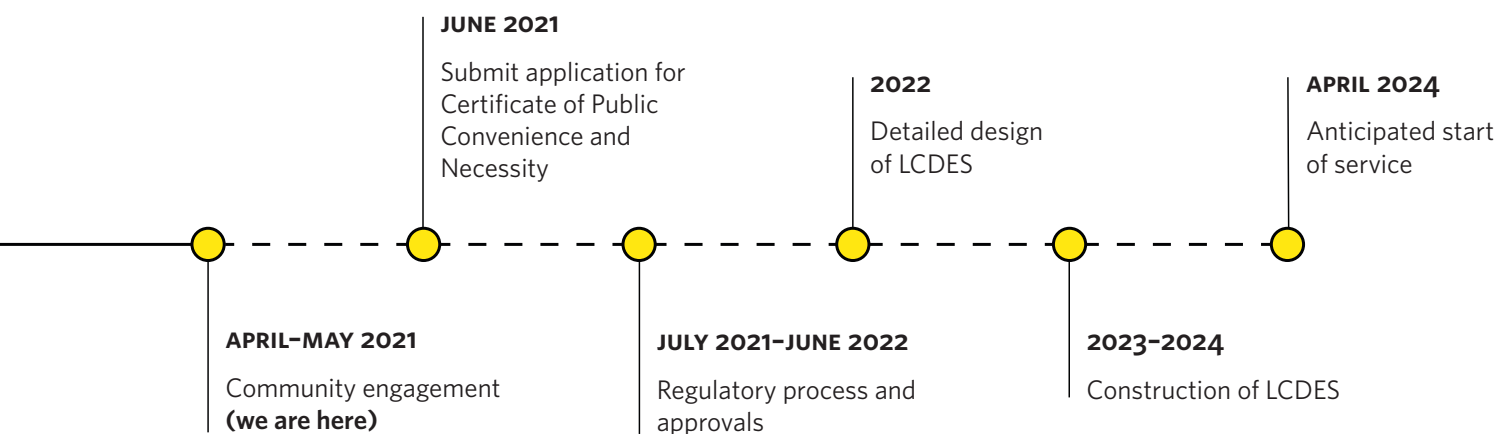
To better understand potential noise concerns during operation of the Energy Centre, TRU has engaged an acoustic consultant to evaluate potential noise effects. Working with the acoustic consultant, TRU will implement the appropriate mitigation measures to include as part of the project. The expected strategy, if any treatment is required, would be to have acoustic screens or louvers on the sides of the Energy Centre building facing the residential units to help reduce any noise produced from the system equipment. Acoustic louvers are pieces of equipment that are added to the air system of buildings or structures to help reduce noise produced by the system equipment.

REGULATORY REVIEW PROCESS

Application to the BCUC

Public utilities in British Columbia like Creative Energy are regulated by the BCUC pursuant to the Utilities Commission Act. Public utilities must obtain a Certificate of Public Convenience and Necessity (CPCN) from the BCUC prior to beginning the construction or operation of a public utility plant or system, or an extension of either.

Creative Energy will be applying to the BCUC to obtain a CPCN for the Project. This application will include a description of the project, information about the need for the project and alternatives being considered, a summary of engagement and feedback received, and a cost estimate.



WE WANT TO HEAR FROM YOU!

Please provide your feedback by visiting our website at **creative.energy/TRU** and completing a feedback form by Friday, May 21, 2021.

You can also email us with additional feedback and questions at **TRU@creative.energy**.

FEEDBACK FORM

1. How important is it to you that TRU be a leader in decarbonization strategies in the community?
Please respond on a scale between 1 to 5 (5 being Very important, and 1 being Not very important)

1 – NOT VERY
IMPORTANT

☐

2

☐

3

☐

4

☐

5 – VERY
IMPORTANT

☐

2.2. Please rate your level of agreement with each of the following value statements.

STRONGLY
AGREE

AGREE

NEITHER
AGREE NOR
DISAGREE

DISAGREE

STRONGLY
DISAGREE

Reducing GHGs and contributing
to climate change adaptation are
important

☐☐☐☐☐

Improving air quality in the area is
important

☐☐☐☐☐

TRU should keep energy costs low

☐☐☐☐☐

It is important to avoid construction
impacts when building this system

☐☐☐☐☐

Managing potential noise impacts from
operation of the facility is important

☐☐☐☐☐

3. After reading the discussion guide, would you say that you support the proposed LCDES project?

VERY SUPPORTIVE

☐

SOMEWHAT
SUPPORTIVE

☐

NEITHER SUPPORTIVE
OR OPPOSED

☐

SOMEWHAT
OPPOSED

☐

VERY OPPOSED

☐

4. Do you have any additional questions or comments about the proposed LCDES project?

FEEDBACK FORM

Tell us about yourself (optional)

NAME:

ORGANIZATION NAME
(IF APPLICABLE):

ADDRESS:

EMAIL:

PHONE:

WOULD YOU LIKE TO RECEIVE
PROJECT UPDATES?

☐ YES

☐ NO



www.creative.energy

Locations

Vancouver
Suite 1-720 Beatty St.
V6B 2M1

Toronto
600-3250 Bloor St. West
M8X 2X9