

# 2023 BC Public Service Organization Climate Change Accountability Report

Thompson Rivers University



Located on one of the most sustainable campuses in Canada, the Chappell Family Nursing and Population Health building meets LEED Gold standards. The campus is moving towards a low greenhouse gas emissions target and this building is the first on campus to emit no emissions. It has an electric boiler, is well-sited to take advantage of passive solar gains, and has 158 solar panels on the roof.

## INTRODUCTION

This Climate Change Accountability Report for the period January 1, 2023, to December 31, 2023, summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2023 to reduce our greenhouse gas emissions, and our plans to continue reducing emissions in 2024 and beyond.

By June 15, 2024 Thompson Rivers University's final *2023 Climate Change Accountability Report* will be posted to our website at <https://www.tru.ca/sustainability/sustainability-office/plans-reports-surveys.html>

## ACTIONS TAKEN IN 2023 TO MINIMIZE EMISSIONS

### BUILDINGS & CAMPUS –

### ENERGY REDUCTION PROJECTS AND INITIATIVES

#### Overview

TRU remains on track towards a 45% percent reduction in GHG emissions by 2023. In addition to technical changes, TRU's involvement over the years in the Energy Wise Network Program and the support of the TRU Environmental Sustainability Advisory Committee, and the TRU Sustainability Ambassador Program (which educates, engages, and empowers students), have helped garner the much-needed internal support towards reducing our carbon emissions and environmental impact. The table below illustrates TRU's reductions in the Energy Management program (EM) to date relative to the growth of building space.

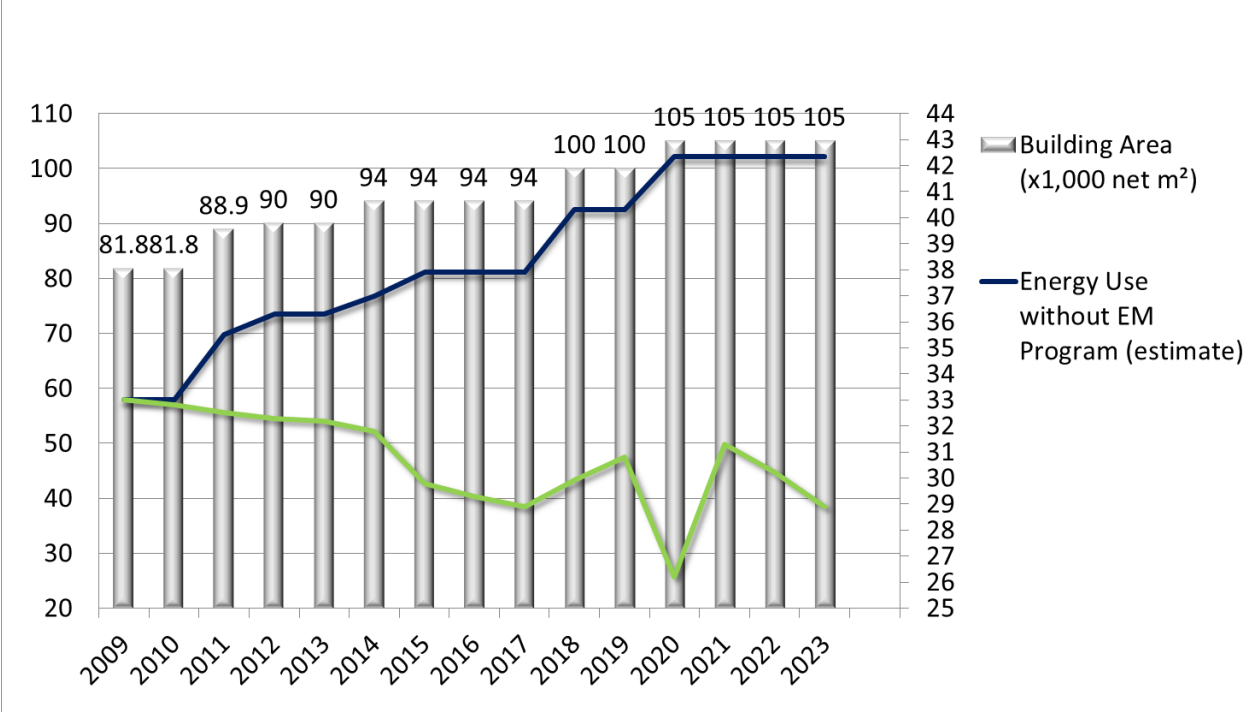


Figure 1: Comparison of Annual Energy Use: with and without Energy Management Program (EKWh)

**Low Carbon District Energy System (LCDES)**

In 2022, Thompson Rivers University (TRU) made significant progress toward the implementation of the Low Carbon District Energy System (LCDES) on campus. TRU focused on obtaining approvals from the British Columbia Utilities Commission, paving the way for the construction of the system, scheduled to begin in 2024 and be completed by 2030. Once operational, the LCDES aims to reduce emissions from heating campus buildings by 95% compared to a 2020 baseline.

The LCDES project has reached several milestones. The system design has been finalized and the project has advanced into contractor procurement. Engagement sessions with the TRU community have taken place, ensuring stakeholders' involvement. Creative Energy, TRU's partner, will finance the distribution piping system and energy centre mechanical system and act as the utility provider for TRU over the next 30 years. This ambitious initiative demonstrates TRU's commitment to combating climate change and aligns with its sustainability goals.

**Renewable Natural Gas Purchase**

Starting in 2022, Thompson Rivers University started purchasing 100% renewable natural gas (RNG) instead of regular natural gas for the Kamloops campus. By switching to RNG, the university was able to reduce its emissions from heating significantly, contributing to its overall goal of carbon neutrality by 2030. This investment demonstrates the university's

commitment to sustainability and its proactive approach toward mitigating the impacts of climate change.

## **Continuous Optimization Program - Round 2**

Old Main and the Williams Lake Campus buildings went through Continuous Optimization Program Round 2 to improve the buildings' performance by tuning-up building systems' again. All Round 1 measures were reviewed, and, based on the changes in occupancy, building use, and the buildings' systems, new recommendations were suggested and implemented to ensure all buildings are performing optimally.

## **DDC (Direct Digital Controls) Optimization**

Based on a campus-wide study (funded by the Fortis Custom Design program), most *DDC Optimization* measures recommended in the study were implemented in the following buildings: Science, International Building, Trades, which are all part of Bundle B (which refers to the group of measures that will be developed in these specific buildings). The most significant measures included: SF Control Upgrade, SAT reset, Lab Control Optimization, heat pump control optimization, AHU scheduling and optimal start, boiler replacement, hot water supply temperature reset, demand control ventilation, heating control upgrade, and weather predictors. TRU has saved about 2,451 GJ of natural gas and more than 289,200 kWh of electricity by doing this.

## **Lighting upgrades**

Based on lighting audits results, lighting fixtures and controls have been upgraded in certain areas in campus buildings (Trades, Old Main and International Building), which resulted in electricity savings of 68,000kWh.

## **ISO 50001 - NRCan Funded Project**

TRU continued the development of its energy management system in accordance with ISO 50001 standards.

## TRANSPORTATION

### **Bicycling Program**

TRU is committed to promoting cycling as a means of commuting among its staff, students, and faculty. TRU's Bicycling Program is aimed at providing better support for commuters and enticing those who don't currently cycle to TRU to do so. The program is focused on promoting electric bicycles due to their numerous benefits. To make it easier for staff and faculty to acquire electric bikes, TRU is offering discounts on the purchase of these bikes. Recent survey results have shown that many potential commuters have expressed concern over the safety of cycling to the university due to a lack of cycling infrastructure. While the university cannot directly control public infrastructure in Kamloops, the TRU Sustainability Office is working closely with the City of Kamloops to address these concerns. TRU and the City of Kamloops have secured a federal infrastructure grant to build an overpass over Summit Road, connecting the TRU campus to the closest residential neighborhood, allowing commuters to reach campus without having to cross one of the busiest intersections in the city. Final preparations were made for the addition of an enclosed outdoor bike shelter that can hold more than 50 bikes, significantly adding to the capacity of the safe storage options. Renovations were completed to make improved shower facilities available to cyclists in the primary gymnasium on campus.

### **Electric Vehicle Conversion**

TRU's Electric Vehicle Conversion Project has been underway for most of 2023. Parts were ordered and an older model Astro minivan was selected. In partnership with instructors and students from the TRU Trades and Technology Department and staff help from the TRU Sustainability Office to convert a gas-powered fleet vehicle to a fully electric one. The project has the side benefit of adding to the knowledge available for those hoping to convert their own older gas/diesel vehicles to electric. The intention of this is to help save vehicles from being needlessly wasted, while still utilizing the best in energy efficient transportation technology.

Several older Astro vans have been around TRU for many years, and while they're in serviceable condition physically, the engines are expensive to maintain and produce high levels of emissions compared to even modern gasoline engines. This project is an effort to reduce the demand for brand new EV's by utilizing existing hardware when possible. The result will be a light-duty service van capable of highway speed and carrying equipment around campus. Once completed, besides the fact that the van will be in service around the campus for many years to come, this project is meant as an educational opportunity

for Trades instructors and students, and as inspiration for others who might consider doing a similar conversion.

### **Relocation of Electric Vehicle Chargers**

TRU committed to relocating electric vehicle chargers to more convenient and accessible campus locations, making it easier for the community to charge their electric vehicles. Additionally, to maintain the upkeep and maintenance of these charging stations, TRU began charging a reasonable fee upon usage. By implementing these changes, the university aims to encourage greater use of electric vehicles and reduce greenhouse gas emissions, contributing to a more sustainable planet for future generations. The addition of a fee to these chargers also means it will be easier for visitors to campus to utilize the charging infrastructure, since, currently, the pass system in use is not suitable for short-term visitors.

### **Car Sharing Program**

The *TRU CarShare* program continues to be an important aspect of the university's commitment to sustainable transportation. The addition of our fully electric Tesla Model 3 to our fleet has helped drivers who are unaccustomed to electric vehicles address range anxiety and reduce the carbon footprint of transportation requirements of the university. The program is still ongoing, and we encourage staff, students, and faculty members to take advantage of this opportunity to reduce their environmental impact while enjoying the convenience of car sharing.

### **Ride Sharing Program**

The *TRU Ride Share* program is a carpooling initiative that started years ago but was put on hold after COVID-19 impacted the community. TRU decided to re-promote this program in 2023 as a key part of our commitment to sustainable transportation. This program aims to connect the TRU community through an app that matches individuals in need of a ride with potential drivers heading to the same destination. By facilitating carpooling, the Ride Share program helps reduce the number of single-occupancy vehicles on the road, lowering overall carbon emissions and promoting a sense of community. We encourage staff, students, and faculty members to participate in this program to enhance their commuting experience while contributing to a more sustainable campus environment.

## CAMPUS COMMUNITY ENGAGEMENT

### **TRU Solar Table Design Competition**

In 2023, the TRU Sustainability Office chose the second TRU Solar Table Design winner through a committee that helped to organize and evaluate the student-only submissions. The committee consisted of a graduate student, members from the Sustainability Office, and faculty members from the following TRU programs: Trades and Technology, Visual Arts, and Architectural and Engineering Technology. The application period closed on February 28, 2023, and in March 2023, the committee held its first meeting to review the ten entries received.

In March, the committee notified the winner. The construction of the solar table, however, will take several more months due to a delay in finding a match between the type of construction work needed to complete the solar table design and Trades Department instructors who have the necessary skills needed for the jobs at hand. Fortunately, the committee approached the North Kamloops High School Trades Program (which has an arrangement with the TRU Trades Department), and they expressed their excitement to be involved in the construction of the solar table that will take place in 2023. The whole Solar Table Design Competition initiative, organized within the TRU community, demonstrates the university's commitment to sustainability and collaboration among various departments and partners. The long-term plan is to hold seven more competitions over the next seven years.

*Competition Guidelines:*

#### **Background**

TRU wants solar tables around the campus for the following reasons: to promote renewable energy use; encourage student participation and learning; and have more outdoor places to study and socialize (which are mostly protected from the snow, rain, and direct sun).

#### **General Information**

The Competition is open only to students from TRU. They can do so individually or as part of a student-only team. There will be one (1) winning submission picked from all submitted designs. One table will be selected each year. The budget for each project is a maximum of \$10,000 including labor, materials, and other miscellaneous fees. Construction and installation will be performed by instructors and students from the TRU School of Trades and Technology.

## The Prizes

The winning submission will see their design built somewhere on the TRU campus. In addition, the student who submits the winning design will receive \$650.

## TRU Campus Tree Program

TRU started its Campus Tree Program in September 2021 and will celebrate its four year anniversary September 25, 2024 during National Tree Day. During the 2024-2025 school year, 54 big trees (6' to 10' tall) and 54 small trees (under 6') will get planted (54 represents the age of the TRU institution).

The program is designed to allow members of the TRU community to actively get involved in helping maintain two of the planet's most vital sustainability attributes: thriving and healthy trees and forests.

Members of the TRU community are encouraged to volunteer in the program, whose three overall goals are tree planting, tree care, and the preservation of trees on the TRU campus. The Sustainability Office is working with members from the TRU Grounds and Horticulture Departments who will supervise all program activities, as well as other members of the TRU community who are helping to ensure the success of the program.

TRU realizes that Planet Earth is in vital need of having more trees planted in the ground. ([link](#)). To highlight this, the Canadian Federal Government has announced a goal of planting 2 billion trees by 2030, and TRU can help with this ([link](#)). The university believes it is important to plant trees because of the irreplaceable benefits they provide, such as carbon sequestration; oxygen production; prevention of soil erosion; assisting with biodiversity; increasing wildlife habitat; health and wellness benefits for generations... just to name a few. ([link](#)).

## PLANS TO CONTINUE REDUCING EMISSIONS IN 2023 AND BEYOND

### BUILDINGS & CAMPUS

#### Continuous Optimization Program - Round 2

TRU is planning for the following buildings to go through the Continuous Optimization Program (Round 2) in 2024: Science, CAC and Trades. All building systems will be reassessed to ensure optimal performance, and any potential measures to enhance energy efficiency will be implemented.



## **DDC Optimization**

TRU plans to continue implementing measures that could reduce greenhouse gas emissions and/or could support energy efficiency. In 2024 TRU will start implementing energy saving measures in the Gymnasium, Horticulture and BCCOL buildings (Bundle D). It is anticipated that more than 770 GJ of natural gas and 50,500kWh of electricity will be saved each year.

## **Clean BC**

TRU, in collaboration with Clean BC and BC Hydro, has been actively working towards updating the heating systems across its facilities. As part of this initiative, a major upgrade is planned to replace the natural gas boiler to a heat pump at the TRU Warehouse. This upgrade is aimed at enhancing energy efficiency and reducing the carbon footprint of TRU's operations.

## **ISO 50001 - NRCan Funded Project**

Based on the Gap Analysis that took place in 2022, TRU has developed an implementation plan which has started on 2023. To keep following the Energy Management System, TRU plans to finish implementing EMIS on both the Kamloops and Williams Lake campuses. TRU is expected to comply with the ISO 50001 standards on the Kamloops campus by Mid-2024.

## **TRANSPORTATION**

### **Bicycling Program**

2023 saw the development of a new plan to support cycling at TRU for staff and faculty, with the goal of creating the best E-Bike purchase incentive program of any university or college in Canada. Through a combination of advocacy, renovations, financial incentives, and an online information hub – primarily focused on electric bikes - TRU will be making changes to how it supports current cycle commuters and how it hopes to entice those that are still undecided. Once the staff and faculty program is launched in 2024, the next major goal is to develop a student version.

## Generic Car Sharing Program

TRU lost its public car share company, Zipcar, when it withdrew from the BC market. Over the pandemic, the need for the car share program was low but when the pandemic subsided in importance and the campus got back to normal, there arose a growing need to address parking and transportation issues once again. TRU is beginning the search for a new car share company to partner with in order to bring convenient transportation options to campus for students, staff, and faculty. The goal is offer simple and affordable options to users in order to make it easy to get errands done without needing to bring a vehicle to campus.

## CAMPUS COMMUNITY ENGAGEMENT

### Sustainability Programs and Events

TRU will continue hosting and organizing a variety of programs and events to engage the campus community in sustainability initiatives and campaigns. Here are just a few initiatives planned for 2024:

- Another *Solar Table Design Competition* will take place during the 2024-2025 school year, and there is tentative approval to do a similar competition annually for another 6 more years After this. The result will be 10 solar tables all around the campus that will help promote renewable energy and provide study and social spaces in an outdoor setting.
- TRU will participate once again in the *Energy Wise Network* and will run one energy conservation behaviour change campaign during the 2024-2025 school year. The campaign will involve students, staff, faculty, and possibly community members.
- TRU plans to continue with its *Campus Tree Program* in 2024, building upon TRU's successful tree-planting events and tree care activities carried out during the first three years of the program. The program aims to continue the momentum by planting 54 large trees (6'-12' tall) and 54 small trees ( under6' tall) on the campus, reflecting the age of the TRU institution. Additionally, volunteers and staff will organize several tree care events to provide ongoing maintenance, including the reapplication of mulch to the bases of existing trees. The initiative strives to enhance the campus environment and promote sustainability.

- Another popular energy conservation event will be restarted during August of 2024, TRU's *Casual Shirt Days* event will happen every Friday during August. Like the rest of the world, TRU must constantly look for opportunities to reduce energy consumption, so the air conditioning in most campus buildings will be turned up 0.5 degrees - making it less cool - and everyone will be encouraged to dress more casually for the warm weather. Changing the temperature will save approximately 3% of TRU's electrical energy used for cooling! To encourage participation from all TRU community members, a variety of fun and unique shirt contests will happen, along with giving out free ice cream each Friday.

## EMISSIONS AND OFFSET SUMMARY:

<b>Thompson Rivers University 2022 GHG Emissions and Offsets Summary</b>	
<b>GHG emissions for the period January 1 - December 31, 2023</b>	
Total BioCO2	<i>2345</i>
Total Emissions (tCO2e)	<i>5459</i>
Total Offsets (tCO2e)	<i>3113</i>
<b>Adjustments to Offset Required GHG Emissions Reported in Prior Years</b>	
Total Offsets Adjustment (tCO <sub>2e</sub> )	<i>-9</i>
<b>Grand Total Offsets for the 2023 Reporting Year</b>	
Grand Total Offsets to be Retired for 2023 Reporting Year (tCO2e)	<i>3104</i>
Offset Investment (\$)	<i>\$77,600</i>

**Table 1:** 2023 greenhouse gas emissions and offsets for Thompson Rivers University

**Disclaimer:** An error was identified in the data entry for the GHG Emissions and Offsets report. The emissions data for Natural Gas was mistakenly recorded as both regular Natural Gas and Renewable Natural Gas (RNG). TRU has been acquiring RNG for all operations, so the emissions should only reflect RNG. As a result, the reported emissions were higher than expected. This error will be corrected in next year's report.

**RETIREMENT OF OFFSETS**

In accordance with the requirements of the *Climate Change Accountability Act* and Carbon Neutral Government Regulation, *Thompson Rivers University* (**the Organization**) is responsible for arranging for the retirement of the offsets obligation reported above for the 2023 calendar year, together with any adjustments reported for past calendar years (if applicable). The Organization hereby agrees that in exchange for the Ministry of Environment and Climate Change Strategy (**the Ministry**) ensuring that these offsets are retired on the Organization’s behalf, the Organization will pay within 30 days, the associated invoice to be issued by the Ministry in an amount equal to \$25 per tonne of offsets retired on its behalf plus GST.

**EXECUTIVE SIGN-OFF:**



May 31, 2024

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Signature

Date

Matt Milovick

VP Administration and Finance

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Name (please print)

Title