



## 2018 Carbon Neutral Action Report





“TRU is an... environmentally responsible institution...”.



**Declaration statement:** This Carbon Neutral Action Report for the period January 1<sup>st</sup>, 2018 to December 31<sup>st</sup>, 2018 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2018 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2019 and beyond.



**THOMPSON  
RIVERS  
UNIVERSITY**

Sustainability  
Office

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Images from various 2018 campus events and campaigns



## 1.0 Executive Summary

Thompson Rivers University (TRU) reached a historical milestone in 2018 when it became the first institution in Canada to achieve a Platinum rating using the Sustainability Tracking and Assessment Rating System (STARS). STARS, developed by the Association for the Advancement of Sustainability in Higher Education (AASHE), is recognized by 931 institutions in 37 countries as the most comprehensive benchmarking tool for sustainability in higher education. In addition to being one of only five institutions to ever achieve a Platinum rating, TRU also holds the highest overall rank globally. In 2013, TRU identified “Increasing Sustainability” as a strategic priority, resulting in the development of a comprehensive Strategic Sustainability Plan (SSP). This plan provides a framework to measure and make improvements on four key sustainability-related areas surrounding the reduction of Greenhouse Gas (GHG) emissions. The four key areas—Operations, Engagement, Learning and Governance—are further broken down into 18 sub-themes; within those themes are 130 initiatives to improve sustainability throughout every level of the institution. In 2018, TRU made significant progress, meeting or exceeding targets and goals in all four key areas. Low carbon electrification strategies have resulted in less net GHG emissions in spite of major new construction and renovation projects. TRU has introduced a new E-bike share program and an employee E-bike purchase program which have helped reduce Single Occupancy Vehicle (SOV) rates to historically low levels.

These achievements and initiatives are supported and run by the TRU Sustainability Office. The Sustainability Office has a full-time director who also serves as TRU’s Energy Manager. In addition, the Sustainability Office has a full-time Environmental Programs and Research Coordinator, a FortisBC funded Energy Specialist, as well as numerous co-op and research students to assist with various initiatives and research. The Sustainability Office works closely with the Facilities Office, Ancillary Services, and the Capital Projects Director on a multitude of projects. The Office also works closely with Human Resources and with staff and students in a variety of sustainability-related co-curricular education and awareness campaigns.

The progress made to date re-affirms TRU’s commitment to meeting or exceeding the requirements of BC’s Greenhouse Gas Reduction Targets Act. Sustainability has become central to the ethos of campus and a common point of pride within a highly engaged community. TRU continues to be recognized as a global leader in advancing sustainability, proving testament to the fact that organizations can make the necessary changes in order to address climate change as well as advance the United Nations Sustainable Development Goals.

A handwritten signature in black ink, appearing to read 'James Gudjonson', written over a background of yellow and pink flowers.

James Gudjonson

Director, TRU Sustainability Office



## 2.0 2018 Greenhouse Gas Emissions

### 2.1 Offsets Applied to Become Carbon Neutral in 2018

Thompson Rivers University's greenhouse gas emission calculations include emissions from both the Kamloops and Williams Lake campuses, along with all in-scope leased or owned regional centres. In 2018, TRU's emissions amounted to 3,715 tons of carbon dioxide equivalent (tCO<sub>2</sub>e) and total offsets required were 3,710 tCO<sub>2</sub>e.

#### Exclusions

It was estimated that stationary fugitive emissions from cooling comprised less than 0.01% of Thompson Rivers University's total emissions. TRU deemed fugitive emissions out-of-scope as per the 1% Rule listed in the *2014/2015 B.C. BEST PRACTICES METHODOLOGY FOR QUANTIFYING GREENHOUSE GAS EMISSIONS*, Annex 8.3 (How to Treat Small Emissions Sources), Table 18, due to the disproportionately onerous task of measuring those emissions.

#### Offsets Applied

Reporting period 2018 offsets were 3,710 tCO<sub>2</sub>e, for a total offset investment of \$92,750.00. 5 tCO<sub>2</sub>e from Scope 1 (Mobile Combustion (Fleet) and Stationary Combustion) did not require an offset payment. Those emissions (5.02 BioCO<sub>2</sub>) were deemed offset exempt, or carbon neutral, as illustrated in the Totals table below.

#### Totals Calendar Year 2018, Thompson Rivers University

	Measure	Quantity	Greenhouse Gases in Tonnes				
			CO <sub>2</sub>	BioCO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	tCO <sub>2</sub> e <sup>1</sup>
<b>Scope 1 (Direct) Emissions</b>							
Mobile Combustion (Fleet)	Litres	61,113.92	140.53	5.02	0.01	0.03	154.58
Stationary Combustion, Reported <sup>3</sup>	GigaJoules	65,807.40	3,262.73	0.00	0.07	0.06	3,282.03
<b>Scope 2 (Indirect) Emissions</b>							
Purchased Energy, Reported <sup>3</sup>	GigaJoules	54,453.41	163.36	0.00	0.00	0.00	163.36
<b>Scope 3 (Business Travel and Office Paper) Emissions</b>							
Office Paper	Packages	19,400.00	114.85	0.00	0.00	0.00	114.85
<b>Total Emissions, Calendar Year 2018</b>			<b>3,681.47</b>	<b>5.02</b>	<b>0.08</b>	<b>0.09</b>	<b>3,715</b>
<b>Carbon Neutral or Offset Exempt</b>			<b>0.00</b>	<b>5.02</b>	<b>0.00</b>	<b>0.00</b>	<b>5</b>
<b>Total for Offsets<sup>4</sup></b>			<b>3,681.47</b>	<b>0.00</b>	<b>0.08</b>	<b>0.09</b>	<b>3,710</b>

1. Each greenhouse gas has been converted to a standard measurement (tCO<sub>2</sub>e) by multiplying its emissions by its global warming potential (GWP). The GWP of carbon dioxide (CO<sub>2</sub>) from both anthropogenic and biogenic sources is 1; methane (CH<sub>4</sub>) is 25, and nitrous oxide (N<sub>2</sub>O) is 298. The Totals for tCO<sub>2</sub>e are shown here rounded to the nearest whole metric tonne as only whole tonnes of tCO<sub>2</sub>e can be purchased for offsets.

2. Estimated data has been calculated based on the methods described in the Methodology Document.

3. Reported data refers to consumption which has been directly billed to the organization.

4. The tCO<sub>2</sub>e value from the "Total for Offsets" line represents the quantity of offset purchases required to become carbon neutral.

## 2.0 2018 Greenhouse Gas Emissions

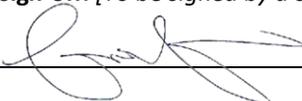
<b>Thompson Rivers University GHG Emissions and Offset for 2018 (tCO<sub>2</sub>e)</b>	
<b>GHG Emissions created in Calendar Year 2018</b> <i>(From SMARTTool <a href="#">Reports</a> page - see Appendix for instructions and cell references)</i>	
Total Emissions (tCO <sub>2</sub> e)	3715
Total BioCO <sub>2</sub>	5.02
Total Offsets (tCO <sub>2</sub> e)	3710
<b>Adjustments to GHG Emissions Reported in Prior Years</b> <i>(from <a href="#">SMARTTool Homepage</a> - see Appendix for instructions):</i>	
Total Emissions (tCO <sub>2</sub> e)	0
Total Offsets (tCO <sub>2</sub> e)	0
<b>Grand Total Offsets for the 2018 Reporting Year</b> <i>(from <a href="#">SMARTTool Homepage</a>):</i> <i>(This is the total of emissions that must be offset for Reporting Year 2018)</i>	
Grand Total Offsets Required (tCO <sub>2</sub> e)	3710
Total Offset Investment <i>(Grand Total Offsets Required X \$25/tCO<sub>2</sub>e)</i>	\$92,750.00

*\*Note, for School Districts, Total Offsets will not equal Total Emissions minus Total BioCO<sub>2</sub> because offset exemptions for school buses are included within Total Emissions.*

### **Retirement of Offsets:**

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, **Thompson Rivers University** is responsible for arranging for the retirement of the offsets obligation reported above for the 2018 calendar year, together with any adjustments reported for past calendar years. The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy 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:** *[To be signed by a senior official, such as **CEO, COO or Superintendent**]*

Signature 

May 31, 2019

Date

James Gudjonson

Director, TRU Sustainability Office

Name (please print)

Title

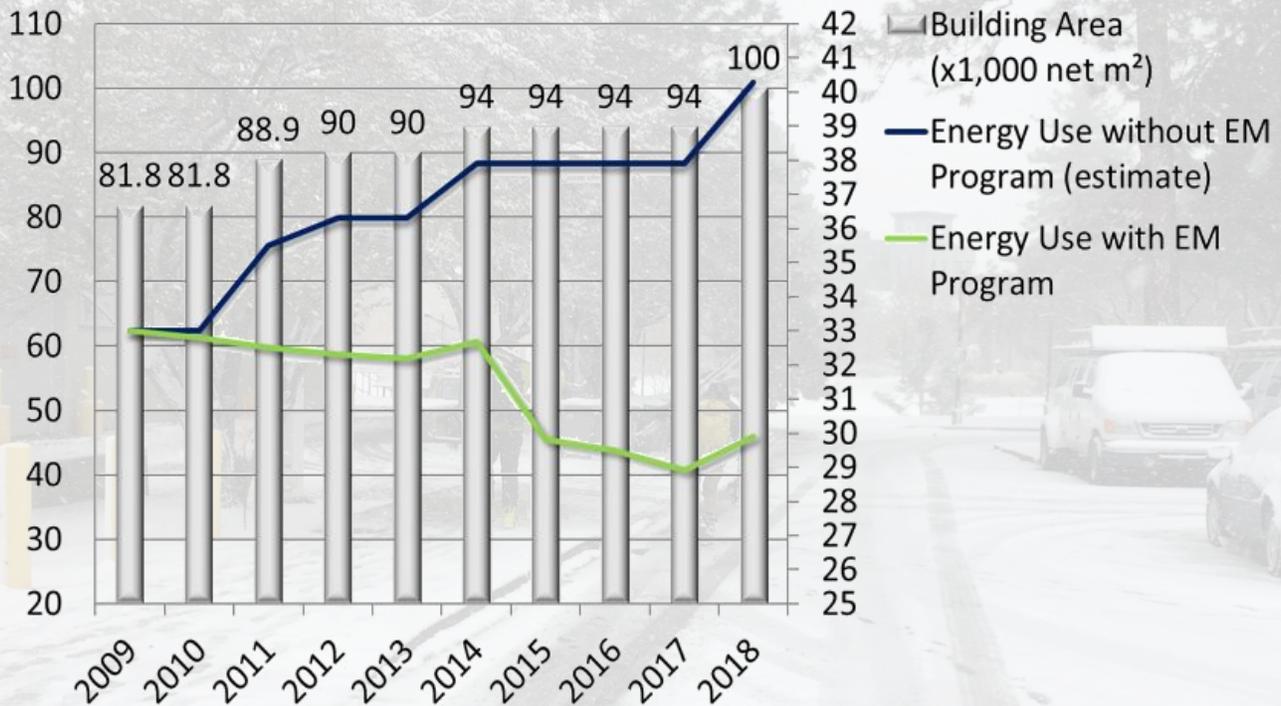


### 3.0 Actions Taken to Reduce Emissions in 2018

#### Energy Reduction Projects and Initiatives

##### Revolving Energy Fund

The Revolving Energy Fund (REF) continues to anchor the energy conservation initiatives and support TRU's Strategic Energy Management Plan (SEMP). TRU's Energy Manager and Energy Specialist oversaw the implementation of numerous technical projects that have resulted in a 35 percent reduction below 2010 baselines. TRU remains on track towards a 40 percent reduction in GHG emissions by 2022. In addition to technical changes, TRU's involvement in the Energy Wise Network Program and the TRU Sustainability Ambassadors Program, which educate, engage and empower students and staff, have helped garner the much needed internal support towards reducing our carbon emissions and environmental impact. The table below illustrates TRU's reductions to date relative to growth.



**Note:** TRU purchased two properties adjacent to the Kamloops campus in 2018 with a total of 12 620 square metres



## 3.0 Actions – continued

### **DDC scheduling optimization**

Building schedules change frequently due to workload, semester and holiday changes. A campus wide DDC scheduling optimization project was completed to accommodate these different schedules and avoid running equipment when buildings are unoccupied. More than 300,000 kWh in energy savings is anticipated from this project.

### **Electric boiler- Industrial Training and Technology Centre (ITTC)**

Two electric boilers were installed in the new ITTC building to employ electric utilities as its primary heat source. In addition to the ITTC, this centralized 720 kW electric boiler plant is also the main heating source for the adjacent Trades and Technology building. The district system interconnects with the existing natural gas boiler plant in the Trades and Technology building, and the interconnection piping is designed to reverse the direction of flow and allow the natural gas plant to back-feed both buildings in an event of a failure of the electric plant. This plant is reducing GHG emissions by over 250 tons

## **Sustainability Initiatives**

### **Transportation**

#### *First Review with E3*

TRU enrolled in the E3 Fleet program ([https://www.fraserbasin.bc.ca/ccaq\\_e3\\_fleet.html](https://www.fraserbasin.bc.ca/ccaq_e3_fleet.html)) in order to improve the fuel efficiency of the 49 vehicles in its fleet and the driver training. E3 Fleet is a fleet review and rating program which offers public and private sector organizations the opportunity to identify and achieve energy savings and emissions reductions in their fleets—and to be recognized for those accomplishments. Launched by the Fraser Basin Council in 2006 with 17 charter fleets, today the E3 Fleet program has 140 member fleets and over 50,000 vehicles. TRU completed its first review in July 2018 and will do another review in July 2019. Upon completion, it will be assessed for a rating from Bronze to Platinum. TRU's goal is to continuously improve its rating until it reaches Platinum status.

### **Recycling Sorting Centre**

In December 2018, TRU opened the Recycling Sorting Centre on campus. This was in response to the fact that many countries would not accept the poor quality of the sorted recycled material that was being shipped to them by Canada and many other nations. China, as the world's leader in accepting the most recycled material to process into new products, began sending back entire boatloads of material since it was so badly contaminated. Due to this, the City of Kamloops—who collects TRU's recycled material—informed TRU that it had to reduce the percent of contaminated material in its recycling to below 5% or all its material would be landfilled. This was something TRU would not accept. Besides hiring someone full-time to work at the Recycling Sorting Centre, the TRU Sustainability Office also worked on improved behaviour change strategies to decrease the number of contaminants entering the recycling stream.

### **Sustainability Procurement Guide**

The TRU Environmental Sustainability Advisory Committee (ESAC) and TRU Sustainability Office employed the services of Reeve Consulting from Vancouver to assist in the development of the TRU Sustainability Procurement Guide. The guide is in the final draft phase and will be complete in the Fall of 2019. It will offer TRU community members 'best-practice' sustainability purchase guidelines for most items and services. The goal is to have all campus community members familiar with the current guide, which will then be expanded in the following years to have more robust information about sustainability purchasing requirements.



## 3.0 Actions – continued

### Sustainability Initiatives - continued

#### Zero Waste Management Centre

The TRU Sustainability Office has procured most of the ‘puzzle pieces’ for its new Zero Waste Management Centre, which will be operational by August 2019. TRU bought an existing building and parcel of land next to the campus which will have the following equipment and operations there:

- **Garbage Compactor:** instead of having the eight current garbage dumpsters on campus, it’s feasible to only have two once the compacting system is in place. Not only will this save TRU money within the first year of operation, it will significantly cut down on the number of diesel garbage trucks around the campus on a daily basis. It’s anticipated that the compactor will only need to be emptied once per week.
- **Cardboard Baler and Office Paper Recycling:** once the baler is operational, TRU will bale its own corrugated cardboard and sell it on the open market. Currently, the City of Kamloops collects the cardboard in its own dumpsters, and TRU pays for the tipping service and dumpster rental. TRU will save money using this new system whilst cutting back on the number of City trucks coming to campus. TRU is also in discussions with a sub-contractor about collecting its office paper, which will also be sold on the open market. This has dual advantages of being a revenue stream for TRU, and cutting down on any possibility that this paper ends up in the landfill, which, with how paper is currently processed for recycling, occurs if it gets contaminated in a mixed recycling bin.

#### Campus Community Engagement

##### *STARS Platinum*

In May 2018, TRU became the highest-rated university in the Association for the Advancement of Sustainability in Higher Education’s global Sustainability Tracking, Assessment and Rating System ([STARS](#)). TRU was joined by Colorado State University, Stanford University, the University of New Hampshire and the University of California, Irvine as other institutions to receive the Platinum rating. TRU also became the first university in Canada to achieve the Platinum rating in the AASHE STARS program. As a charter STARS participant in 2010, TRU was among the first wave of post-secondary institutions to commit to completing a sustainability assessment. TRU obtained a silver rating with its first report in 2011 and achieved gold in 2014 with its second report. That year, TRU developed a plan for sustainability using the STARS reporting system as a framework and reached Platinum two years ahead of schedule. Countless TRU students, staff, administrators and faculty members have commented on how proud they are to be part of this important achievement. This bodes well for engagement with all TRU community members in future sustainability initiatives.

##### *Films for Change*

Films for Change (FFC) is a community inspired film series showing films of positive and inspiring content related to sustainability, with the intention of bringing together the Kamloops community to connect and raise awareness while sharing the desire to make a difference. Films take place at TRU on the last Wednesday of the month (besides Dec, June, July, Aug). Any community group, TRU related or otherwise, can apply to have a film(s) shown. TRU provides the venue free of cost, but the interested group must pay to secure the rights of the film as well as coordinate a facilitated discussion after the film. Films go through a vetting process by a committee to make sure the films are appropriate and deal with sustainability themes with an inspiring and positive over-all message.



## 4.0 Plans To Continue Emission Reductions Moving Forward

### Energy Projects

#### Williams Lake Electric Boiler

As another Low-Carbon Electrification project, the natural gas heating plant at the Williams Lake (WL) campus will be retrofitted to electric boiler. This will continually serve as a backup for the biomass district energy system heating both the TRU WL campus and the school district.

#### UCH Boiler Upgrades and Electrification Options

After a comprehensive custom design study, the outdated heating and cooling plants at UCH will be retrofitted. Condensing boilers and heat pumps will be installed.

#### Old Bandstra building lighting and mechanical energy study and upgrade

An energy study will be conducted for the newly purchased TRU property, Bandstra. Lighting and mechanical energy efficiency upgrades and retrofits will be implemented following its completion.

#### DDC optimization

A campus-wide DDC optimization Fortis Custom Design program-funded study has been completed. Recommended energy-conservation measures will be implemented, which include night-time setbacks, reduction of minimum damper position and weather predictor, etc..

#### New Rez heating plant upgrade

A new Fortis Custom Design funded project is underway for the New Rez building. Based on recommendations from TRU's previously conducted energy study, the upgrade will mainly involve a condensing boiler installation and control upgrades.

#### Solar PV projects

TRU has made an interconnection request to BC Hydro to seek approval for the installation of more than a 100 kW/service account (the current limit for net metering program) solar PV system on campus. BC hydro will be doing studies to review technical compatibility. Whilst waiting for approval, TRU will install more solar PV systems on both the Kamloops and Williams Lake campuses to max out the current limit.

### Transportation

#### Electric Bike Program

E-bikes at TRU have become very popular thanks largely to the TRU BikeShare program. This program allows students, staff and faculty to borrow a bicycle (electric assist or standard mountain bike) for up to 7 days to get out to the city trails, explore the town, or try commuting via e-bike. To help employees make the jump to cycle commuting, the university has partnered with local businesses and online vendors to reduce the cost of these e-bikes, while simultaneously offering financing and purchase incentives to further improve their affordability. In 2017 TRU employees bought nearly 60 new bicycles, most of which are electric assist.



## 4.0 Plans –continued

### Sustainability Projects

#### **Electric Bike Program (continued)**

TRU has installed secure bicycle storage cages for faculty, staff and students to have a safe, limited access location to keep their bicycles. In addition to these cages, to help encourage a reduction of driving, a winter parking pass is now offered for cyclists as well. The parking pass is valid from late November to early March and saves drivers from having to buy parking passes for two semesters if they wish to cycle commute over the riding season.

#### **Electric Charging Bike Barn**

The TRU Sustainability Office has established a well subscribed BikeShare program, which includes many electric bikes in its fleet. In order to bridge the gap between the strong reasons for riding electric bikes—greatly reduced emissions compared to single occupancy vehicles; increased convenience, especially in areas like parking; ease of use; sheer enjoyment of being on a bike—and the strong reasons for getting more renewable energy on-line, TRU is looking at commissioning a ‘renewable energy bike barn’. This ‘barn’ would serve the following functions: storage and lock-up facility, charging station, solar PV electricity generator, information kiosk, and self-maintenance bike shop. The roof of the barn would be covered with solar panels and could function as a stand-alone electricity storage plant or be switched over to tie into the grid. Information about how solar PV works, as well as the benefits of bike riding, would be displayed in order to better educate users.

#### **Car Share Program**

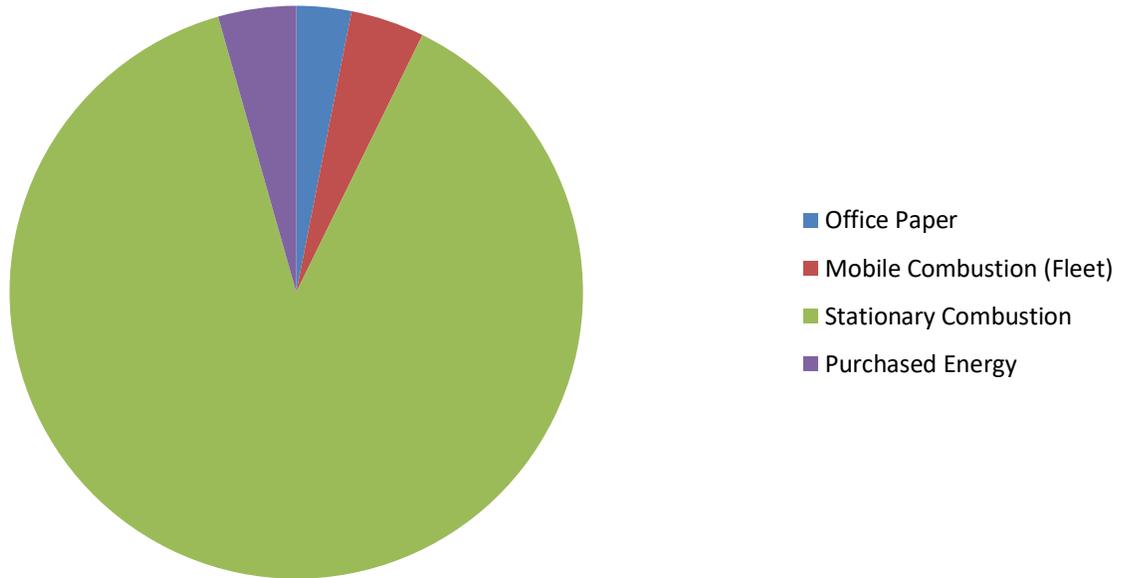
In 2019, TRU bought a Toyota Prius plug-in car to add to the TRU CarShare Program. Use of this program is just as constant as ever, though now eco-friendlier as the addition of the Prius Prime plug-in hybrid allows drivers to travel as far as 40 km before using any fuel. This has made attending in-town meetings and running errands like visiting co-op and practicum students much more affordable. Even when burning gasoline, the Prius Prime produces lower GHG emissions than our other hybrid vehicles.

#### **Fleet Upgrades to EVs**

TRU continues to upgrade its 49-vehicle fleet. When a new vehicle is needed, an electric or hybrid vehicle is procured whenever possible. TRU recently purchased an electric ATV that will be used by the TRU janitors to haul four of the main waste streams to the soon-to be completed Zero Waste Management Centre (landfill waste, cardboard, compost and recycling). The ATV will haul a custom-build trailer and will emit zero emissions on its daily rounds. TRU also added a third vehicle to its CarShare Program, a Toyota Prius Prime plug-in hybrid. The program is very well subscribed and has cut down significantly on costs to TRU as well as emissions. It is estimated that TRU will save almost \$680,000 over seven years starting in 2016 when the program began. As the program expands, only EV or hybrid vehicles will be purchased.



### Thompson Rivers University Greenhouse Gas Emissions by Source for 2018 (in tCO<sub>2</sub>e1)



### Offsets Applied to Become Carbon Neutral in 2018 (generated May 16, 2019)

Total offsets required: 3,710. Total offset Investment: \$92,750.00.

Emissions not requiring offsets: 5\*\*

\*Tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

\*\*Under the Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act, all emissions from sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.