



Royal Roads
UNIVERSITY



2020 CLIMATE CHANGE ACCOUNTABILITY REPORT

Royal Roads University

May 2021

LIFE.CHANGING

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CLIMATE CHANGE ACCOUNTABILITY REPORT OVERVIEW

Declaration Statement

This Climate Change Accountability Report for the period January 1, 2020 to December 31, 2020 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2020 to reduce our greenhouse gas (GHG) emissions and our plans to continue reducing emissions in 2021 and beyond.

By June 30, 2021 Royal Roads University's final Climate Change Accountability Report will be posted to our website at www.royalroads.ca/about/plans-reports.

Overview

Royal Roads University is committed to its stewardship responsibilities and continues to take a sustainable approach to maintaining its campus and online environments while investing for the future. Balancing the demands of a growing and diverse student population, the university continues to be a leader in sustainability in the provincial post-secondary sector through its operations and capital program. Putting plans into practice every year, the university undertakes projects that aim to reduce GHG emissions in accordance with the BC *Climate Change Accountability Act* and Carbon Neutral Government Regulation.

Royal Roads reports 888 tonnes of carbon dioxide equivalent (tCO₂e) in 2020 compared with 992 tCO₂e produced in 2019. This is a 10.5% decrease from the previous year. Royal Roads has reduced its overall GHG emissions by 43% below the provincially mandated baseline of 2007 levels (and almost 40% below 2010 levels).

Significant GHG reductions achieved in 2020 were the result of systematic infrastructure upgrades and retrofits with a goal of improving energy efficiency and mitigating GHG emissions. A reduced presence on the campus due to the COVID-19 pandemic (starting in mid-March 2020) also resulted in decreased building occupancy and, therefore, building heating requirements. In addition, habit and practice changes resulted in reduced fleet vehicle use and printing.

Royal Roads will continue to work toward reducing its GHG emissions in 2021. Infrastructure initiatives such as building retrofits and electrical upgrades will contribute to further reductions in energy consumption and GHG emissions. The new Dogwood Auditorium will be completed and become operational. The auditorium's design honours principles of the [BC Energy Step Code](#)¹ and the open-loop geo-exchange system is anticipated to result in significant GHG emission reductions for the campus.

¹ The BC Energy Step Code is an optional compliance path in the BC Building Code that local governments may use, if they wish, to incentivize or require a level of energy efficiency in new construction that goes above and beyond the requirements of the BC Building Code. Builders may voluntarily use the BC Energy Step Code as a new compliance path for meeting the energy-efficiency requirements of the BC Building Code.

This report details Royal Roads' carbon footprint for the 2021 calendar year. It includes a summary of energy and other sustainability actions undertaken to reduce the university's environmental footprint, and it outlines plans to further reduce the university's carbon footprint.

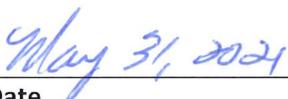
2020 Emissions and Offset Summary

Table 1: Royal Roads University 2020 GHG Emissions and Offsets	
GHG Emissions created in Calendar Year 2020	
Total Emissions (tCO ₂ e)	889
Total BioCO ₂	1.45
Total Offsets (tCO ₂ e)	888
Adjustments to Offset Required GHG Emissions Reported in Prior Years²	
Total 2018 Offsets Adjustment (tCO ₂ e)	-171
Total 2019 Offsets Adjustment (tCO ₂ e)	-130
Total Offsets Adjustment (tCO ₂ e)	-301
Grand Total Offsets for the 2020 Reporting Year	
Grand Total Offsets (tCO ₂ e) to be Retired for 2020 Reporting Year	587
Offset Investment (\$25 per tCO ₂ e)	\$14,675

Retirement of Offsets

In accordance with the requirements of the *Climate Change Accountability Act* and Carbon Neutral Government Regulation, Royal Roads University is responsible for arranging for the retirement of the offsets obligation reported above for the 2020 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:

	
Signature	Date

Name Cheryl Eason, MBA, CPA CGA, RPA, DMC	Title Vice President & Chief Financial Officer Royal Roads University
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² Emissions reported in previous years are updated as a result of new information becoming available, errors discovered in previously entered data, or consumption data reporting period not aligning with required GHG reporting period.

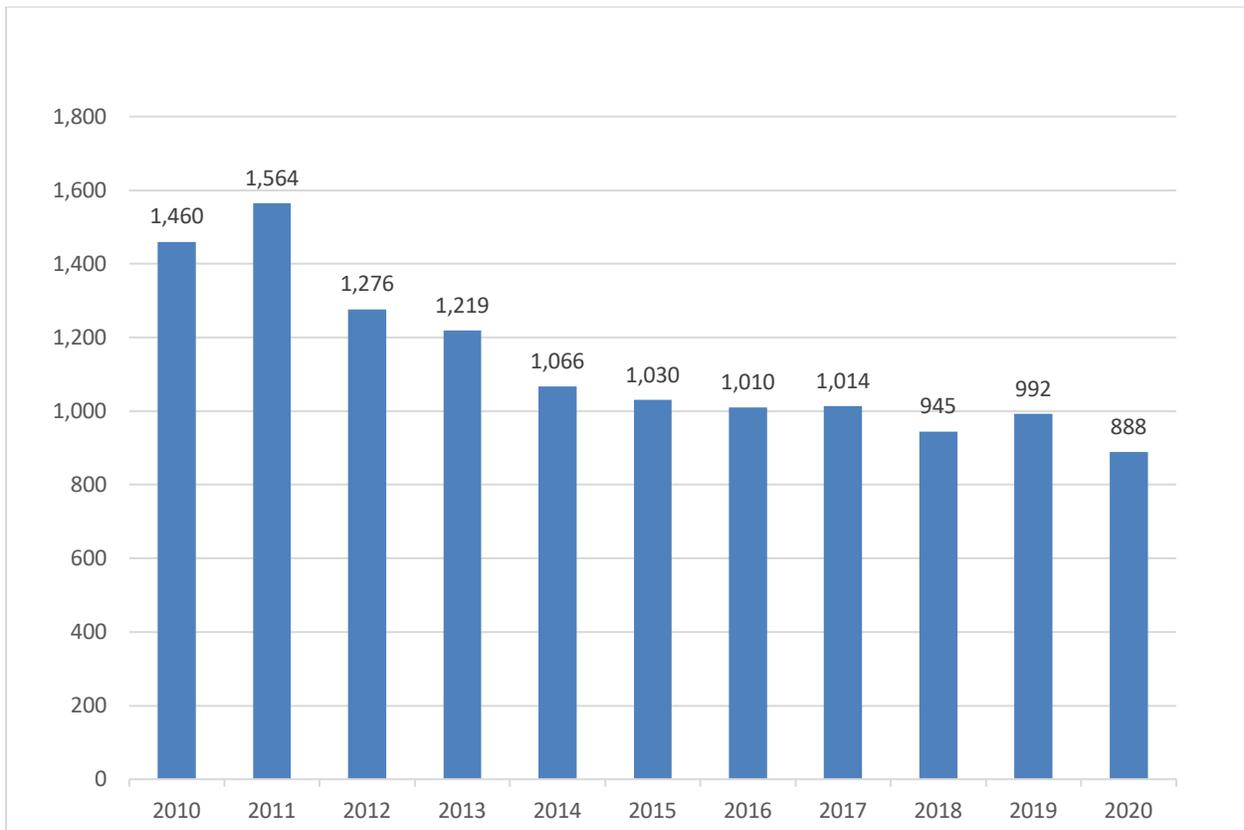
2020 GREENHOUSE GAS EMISSIONS PROFILE

Royal Roads University has committed to reduce GHG emissions associated with its operations as mandated by the BC *Climate Change Accountability Act* and Carbon Neutral Government Regulation. The university is required to measure, reduce and offset carbon emissions from building operations (i.e., stationary fuel combustion and electricity), mobile fuel combustion (i.e., fleet and other mobile equipment) and paper. For any GHG emissions produced, the university is required to offset these emissions on an annual basis at a value of \$25 per metric tonne of CO₂e.

2020 Greenhouse Gas Emissions

In 2020, Royal Roads University's GHG emissions totalled 888 tCO₂e, a 43% reduction from 2007 levels. Through this achievement, the university has surpassed provincial GHG reduction targets for both 2020 and 2030³. See Figure 1 for a graph of GHG reductions over the last 10 years.

Figure 1: Royal Roads University GHG Emission Trend (tCO₂e), 2010 – 2020



³ The provincially legislated GHG target is a 33% reduction from 2007 base levels by 2020, with a further target to achieve a 40% reduction by 2030 (see BC Climate Action Legislation: www2.gov.bc.ca/gov/content/environment/climate-change/planning-and-action/legislation)

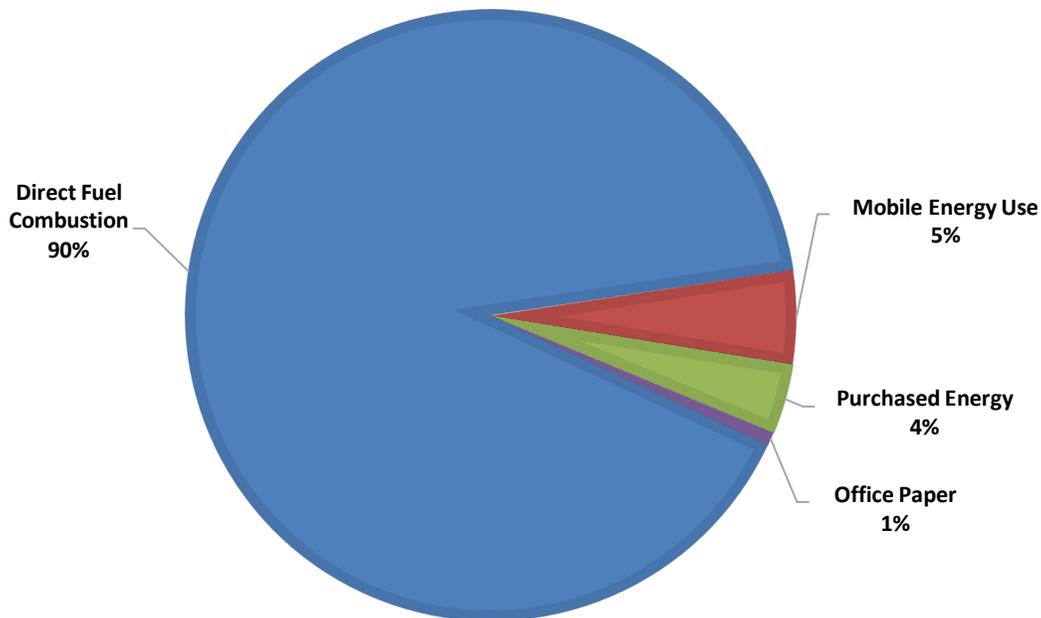
Since 2010, Royal Roads has reduced its GHG emissions by 39%, or 572 tCO₂e. Table 3. includes overall emissions compared to the 2010 total of 1,460 tCO₂e.

Table 3: Royal Roads University GHG Emissions vs. 2010 Baseline			
Year	Emissions (tCO₂e)	Total with Biogenic emissions	Percent Change from 2010 (%)
2010	1,460	1,462	baseline
2011	1,564	1,566	+7
2012	1,276	1,278	-13
2013	1,219	1,221	-17
2014	1,066	1,069	-27
2015	1,030	1,032	-30
2016	1,010	1,013	-31
2017	1,014	1,016	-31
2018	945	948	-35
2019	992	994	-32
2020	888	889	-39

Emissions by Source

Building heating (direct fuel combustion) accounts for the largest source of GHG emissions at Royal Roads University, followed by fleet (mobile energy use), electricity (purchased energy) and, finally, paper. See Figure 2 below.

Figure 2: Percent Total GHG Emissions by Data Source (tCO₂e), 2020



During the period 2019 to 2020, Royal Roads reduced emissions in all categories (see Table 4). These reductions were a 9% (82 tCO₂e) decrease in stationary fuel combustion and electricity, a 27% (15.6 tCO₂e) decrease in mobile fuel combustion (fleet) and a 50% (6.5 tCO₂e) decrease in paper.

Table 4: Comparison of GHG Emissions, 2019-2020			
Emission Source	2019 (tCO₂e)	2020 (tCO₂e)	Percent Change
Stationary fuel combustion and electricity	920	838	-9%
Mobile fuel combustion	59	43.4	-27%
Paper	13	6.5	-50%
Total Emissions	992	888	-11%



Stationary Fuel Combustion and Electricity

The largest source of GHG emissions at Royal Roads University is stationary fuel combustion (primarily building heat, 91%) and electricity (4%), which cumulatively make up about 95% of Royal Roads' GHG emission portfolio. Building heating and electricity produced 838 tCO₂e in 2020.

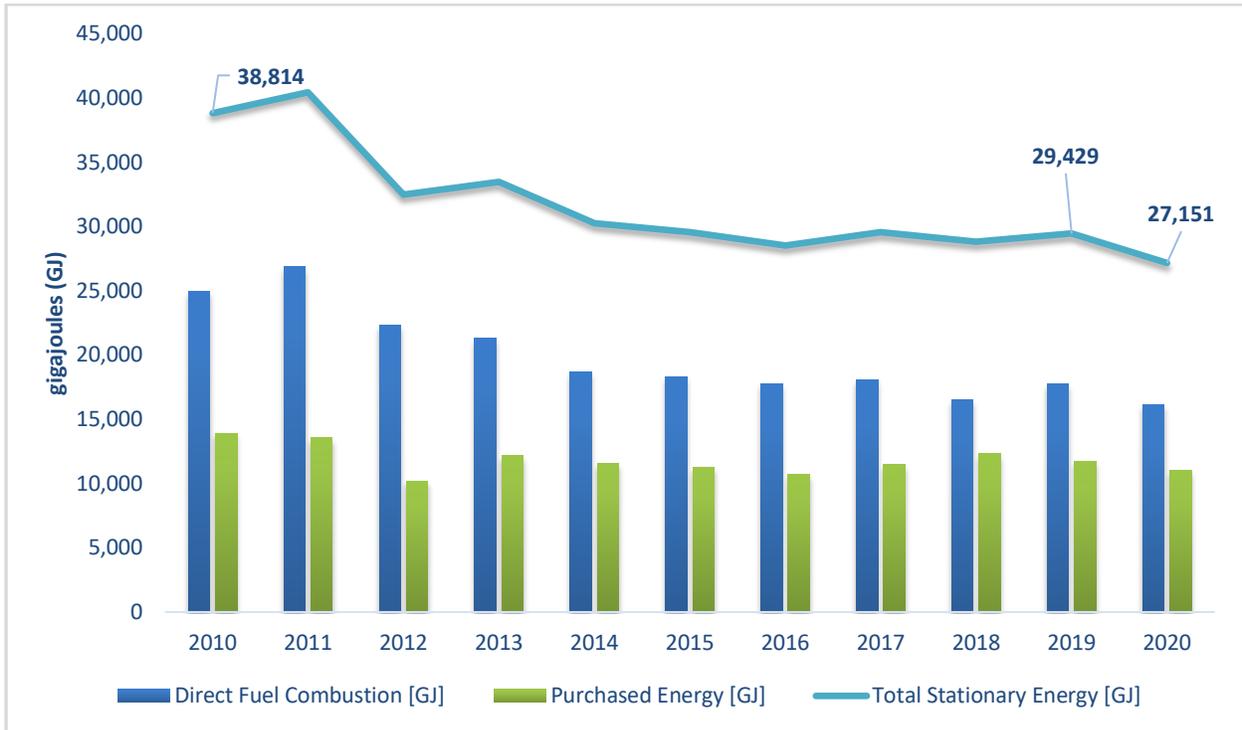
Royal Roads has 26 buildings on campus with a total building area of 45,610 m². Many of the buildings on campus present a range of unique retrofit and maintenance challenges; the building portfolio includes seven designated heritage buildings, along with another 11 that were constructed prior to the Second World War. The heating and cooling systems in campus buildings vary, with the smaller outlying buildings relying on a combination of residential or light-commercial heat pumps, electric resistance heating or hydronic heating with gas. The larger buildings in the campus core are equipped with central air handling systems from local hydronic or steam boiler plants.

From 2019 to 2020, there was a decrease by 9% (82 tCO₂e) reduction in building heat and electricity. This can be attributed, in part, to a reduced physical presence on campus due to the COVID-19 pandemic in 2020. Shifts to online course delivery and remote-working arrangements meant less building energy use was needed; during periods when buildings were unoccupied, thermostats were turned to night mode (17°C) to help reduce overall energy consumption.

Despite the pandemic, construction of the Dogwood Auditorium continued in 2020. Energy for this building will be provided, in part, by the geo-exchange system (anticipated to reduce GHG emissions by an additional 50 tCO₂e once operational) and a high-efficiency gas boiler.

Since 2010, GHG emissions associated with stationary fuel combustion and electricity has declined by 30%. Direct fuel consumption (via natural gas) makes up a greater proportion of the energy use on campus (see Figure 4), and it also accounts for the greatest GHG emissions. As such, it is also a primary focus of Royal Roads' infrastructure improvement projects. Over time, purchased energy (BC Hydro electricity) will increase with fuel switching from natural gas to electric systems in progress.

Figure 4: Stationary Energy Use (Gigajoules), 2010 - 2020





Mobile Fuel Combustion

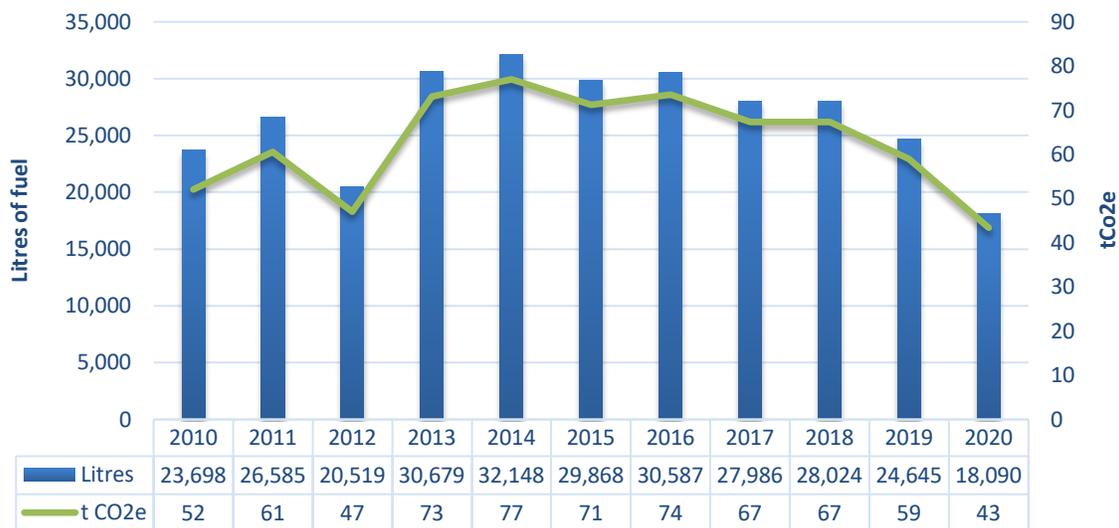
In 2020, the Royal Roads University fleet (mobile fuel combustion) produced 43 tCO₂e and accounted for almost 5% of the university's total GHG emissions. From 2019 to 2020, fleet-related emissions decreased by 26%. This substantial decrease is attributed to reduced activity levels on campus and changes to operational requirements due to the COVID-19 pandemic.

Since 2010, the emissions associated with the university's fleet have decreased 17%. Royal Roads continues to focus on the efficient use of its vehicles, phasing out old, inefficient vehicles and reducing mileage. Royal Roads has made considerable progress since its peak usage year of 2014 (Figure 5). Congruent with provincial targets for zero emissions vehicles, Royal Roads is phasing out gas and diesel vehicles in favour of electric vehicles with the target of a fully electric fleet by 2030.

Currently, the university has a mixed fleet of 55 various on- and off-road vehicles:

- 14 gas powered vehicles (utility vans, trucks, and minivans)
- 1 diesel powered heavy-duty vehicle (dump truck)
- 32 electric golf carts
- 8 working vehicles (tractors, mowers, bobcats and gators)

Figure 5: Mobile Energy Use, 2010-2020





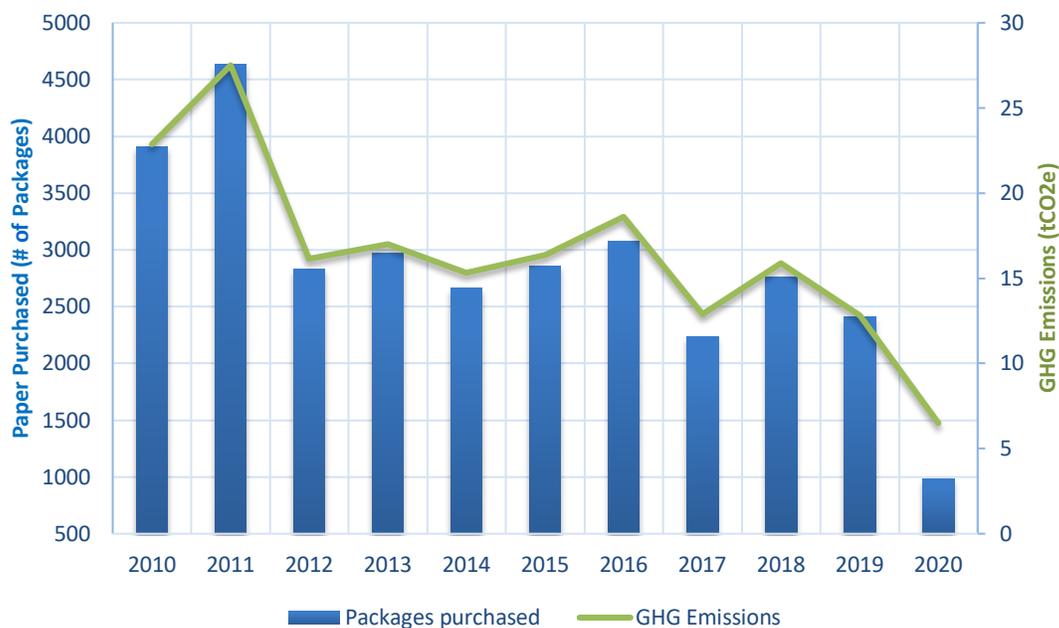
Paper Procurement

In 2020, emissions associated with paper accounted for 0.7% of the university's total GHG emissions. From 2019 to 2020, GHG emissions associated with paper decreased by 50% (a 6.5 tCO₂e reduction).

The university realized a substantial drop in paper use due to reduced activity levels on the campus during the COVID-19 pandemic. From March 2020 onwards, like many others, the university shifted to online course delivery and employees worked from home where possible. Materials and processes that were previously delivered in person and on paper were digitized. The process shift, combined with a change in behavioural habits, has the potential to enhance the organization's long-term resilience and lead to lasting change.

The university's overall emissions associated with paper have decreased by 72% since 2010 (Figure 6). Continued strategies for reducing emissions include the procurement of sugar cane paper as the standard paper stock and programming printers to default to double-sided outputs.

Figure 6: Paper Purchased and Associated GHG Emissions, 2010-2020





Actions Taken to Reduce Emissions in 2020

Prioritizing Energy Efficiency

Royal Roads University continued to include energy efficient upgrades and GHG reduction projects as a priority within the university's capital program and routine operations.

Upgrades and Retrofits to Buildings on Campus

These upgrades and retrofits included an update to exhaust fans in Grant and Nixon buildings and repairs to the solar panels on the Nixon and LIC buildings. The results of these upgrades will be fully realized beginning in 2021 once the new systems have been fully operationalized for a full annual cycle.

Lowered Thermostats in Campus Buildings

During the pandemic and periods when buildings were unoccupied, thermostats were turned to night mode (17°C) to help reduce consumption of natural gas.

Initiated Electrical Infrastructure Upgrades

In 2020, the university initiated a two-phase project to upgrade the aging distribution systems of our electrical infrastructure. This work is critical to support additional electricity

loads as campus energy systems shift away from natural gas. Project design work completed in 2020 will lead to retrofits and energy upgrades across campus in 2021.

Strategic Fleet Management

In keeping with the fleet lifecycle management plan that has been developed to retire, repurpose or replace specific fleet vehicles with electric utility vehicles, Royal Roads retired a 24-year-old diesel cube van and initiated the project work required to upgrade fleet charging infrastructure.

Using Sugar Cane Paper & Less of It

Paper use decreased drastically in 2020 due to the shift to online learning and remote work during the COVID-19 pandemic. This is an exciting realization that demonstrates it is possible to operate at an optimal level without relying on so much paper. In addition to reduced consumption, we continue to use sugarcane paper made using the residue waste of sugar cane; sugar cane paper is less GHG intensive and promotes the preservation of forests and ecosystems.

2020 CLIMATE AND SUSTAINABILITY HIGHLIGHTS

In addition to building retrofits and energy upgrades completed through the university's capital program, several other sustainability projects and climate change-related initiatives at Royal Roads University fostered a culture of positive change and progress in 2020.

Climate Action Planning Process Kicked-Off

With the end of the five-year 2015 Sustainability Plan, the launch of the university's new vision with the goal of positioning the university as a vibrant and sustainable organization, and commitments focused on climate action leadership and reconciliation, a Climate Action Plan development process was kicked off in 2020.

An RRU Climate Action Task Force, co-chaired by representatives from the Operations & Resilience and Academic portfolios, was initiated to lead this planning process. This task force includes representatives from faculty, staff and students from departments across the university. The process has included consultation, research and analysis to develop a strategic plan with five-year targets and ambitious, long-term goals reaching to 2050.



Figure 1: Climate Action Plan - initial strategic focus areas, values and outcomes presented at the February 24, 2021 Campus Conversation.

Divestment and Responsible Investing

Royal Roads has divested from industry groups that contribute to climate change. As of March 5, 2020, the university portfolio no longer holds investments in the fossil fuel, mining or pipeline industries. Looking to the future, the university will continue to evaluate all its investments against an environmental, social and governance (ESG) framework and the principles of responsible investing.

Electric Vehicle Charging Infrastructure Added

An electric vehicle charging hub for four public electric vehicle charging stations was added to the Learning and Innovation Centre plaza adjacent to the Welcome Centre, bringing the university's total number of electric vehicle parking spaces across campus to 14.

Cascade Institute Launched

A new research centre at Royal Roads will identify intervention points that have the potential to positively influence global crises. The Cascade Institute will focus on humanity's critical problems, including climate change, pandemics, growing wealth inequality, economic disruption, political instability and social upheaval, and how these crises are interconnected.

Centralized Waste Strategy Initiated

To improve operational waste diversion during the pandemic, a centralized waste bin strategy was implemented. In addition to optimizing the limited capacity of the custodial team, it is anticipated that waste diversion rates will also improve. Waste diversion rates averaged 78% in 2020.

CLIMATE & SUSTAINABILITY INITIATIVES PLANNED FOR 2021

In 2021, Royal Roads will focus on both strategic and operational initiatives that promote climate action, sustainability and resilience, while supporting overarching goals in the university's vision and continuing to reduce GHG emissions.

Finalize the RRU Climate Action Plan

The consultation process with the Royal Roads community will continue early in 2021 and the new Climate Action Plan (CAP) will be presented to the Board of Governors in September 2021. Proposed CAP outcomes will be shared with key stakeholders through several channels. Engagement plans will aim to promote inclusivity, inform priority-setting and build a community connection to this plan and its eventual implementation. Based on the university's new long-term vision, and of note for this report, activities and targets articulated in the CAP will aim for a reduction of GHG emissions by a further 65% by 2025 (545 tCO₂e).

Update Procurement Policy and Sustainable Purchasing Guide

An updated procurement policy and accompanying sustainable purchasing guide are in the final stages of development and will be released in 2021. The policy will articulate the university's compliance with public-sector procurement requirements and codify the commitment to conducting the university's activities in an economically, socially and environmentally sustainable manner.

Initiate Fleet Electrification Process

In 2021, electric vehicle charging stations will be added to our fleet parking area in support of the electrification of the university's entire fleet by 2030. Royal Roads will sign the West Coast Electric Fleet pledge at a "Diamond Lane" level, committing to at least 90% of all new vehicles purchased being electric.

Harness Geo-exchange System benefits

As part of the Dogwood Auditorium renovation project, the new geoexchange system will be operationalized in 2021. The geoexchange system intercepts an existing irrigation system with perimeter drains that contain a significant amount of groundwater. This new system will

both heat and cool the auditorium and reduce building energy requirements and GHGs (by an estimated 50 tCO₂e annually). Returned geoexchange water will be used for irrigation and excess will be conveyed to the ocean as outfall through an environmentally sensitive system.

Optimize Sustainability and GHG Benefits within Pandemic Recovery

Business process changes and operating adaptations as a result of COVID-19 will be evaluated for their potential benefit to providing long-term reductions to GHG emissions on campus. Areas of investigation include: flexible work policy options, potential to optimize space planning to align with long-term campus plans and reducing building heating and electricity requirements and the completion of business system upgrades to facilitate continue digitization of business processes.

Continue Building Upgrades and Retrofits

Royal Roads will continue to implement building system improvements to improve efficiency, save energy and reduce GHGs. One area of focus will be electrical infrastructure upgrades (moving from single phase to three phase distribution) to enable the conversion from natural gas to electric systems and mechanical system upgrades in facilities selected for new boiler systems.

Launch of Climate Action Courses and Programs

In 2021, Royal Roads will launch several programs and courses to prepare the next generation of practitioners focused on climate science, social justice and change leadership. These include the MA in Climate Action Leadership program, a Graduate Diploma in Climate Action Leadership, a Graduate Certificate in Science and Policy of Climate Change and many individual course offerings.