



Royal Roads  
UNIVERSITY

**ROYAL ROADS UNIVERSITY**

**2015 CARBON NEUTRAL ACTION REPORT**

**LIFE.CHANGING**

## INTRODUCTION

Royal Roads University is a leader in greenhouse gas (GHG) emission reductions among post-secondary and public sector organizations in the province. By the end of 2014, the university had successfully reduced its emissions by 27% (since 2007), and is on target to reaching its legislated goal of a 33% reduction by 2020. A carbon neutral highlight in 2015 was recognition the university received from its peers for its efforts. RRU was featured in the BC Government publication *“Leading by Example: The First Five Years of Carbon Neutral Government in British Columbia”*, a document which was shared at the Paris Climate Summit. As a result of being recognized in the top tier of public sector organizations in B.C., executives from the Climate Action Secretariat visited the campus in November 2015 to determine the ways the university achieves its emission reductions. The university executive team highlighted the following three factors which support its success:

**Leadership** – the B.C. Government’s leadership in setting legislated GHG emission targets, the leadership at RRU, including members of the executive team, the operations team and the Office of Sustainability.

**Reputation** – sustainability has been a pillar of the university since it was created in 1995, with the early adoption of policies in corporate social responsibility and environmental stewardship.

**Culture** – staff, faculty and students are aware of the impacts of GHG emissions on climate change and feel strongly that the university has a role to play in reducing its impact, as part of the province of BC, and the global economy.

Flowing from the sustainability theme, the university acknowledges that the RRU community learns, works, and lives on the traditional lands of the Xwsepsum (Esquimalt) and Lekwungen (Songhees) ancestors and families. RRU also acknowledges the traditional lands and the history, and knowledge-sharing with its neighbouring Nations, Scia’new (Beecher Bay) and T’Sou-ke (Sooke).

The university community shares much more than the land with its surrounding communities; RRU shares the understanding of the value of living in a sustainable manner on the land. RRU is grateful to the Coast Salish peoples for sharing their traditional ways of knowing and being and for reminding the institution of its important stewardship role in society, the community and nature.

The university’s ongoing relationship with Indigenous and Metis students and communities is an important pillar in extending RRU’s reach beyond the classroom experience and mission and the institution will continue to build strong working relationships locally, nationally and internationally. This approach is consistent with RRU’s sustainability objectives.

Bringing this philosophy to life, in 2015 the university celebrated the connected relationships between all aspects of its sustainability goals by raising “S’ael” (a Sencoten word for harmony), a 25-foot welcome pole which greets visitors to the campus.



## **SUSTAINABILITY HIGHLIGHTS IN 2015**

### **Energy Conservation**

From an energy saving perspective, a significant project for 2015 was the conversion of the exterior lights on campus from incandescent to LED; this initiative was jointly financed by the university and the province's Carbon Neutral Capital Program. A total of \$180,000 was received from the program.

Another significant energy project undertaken in 2015 was the completion of the boiler and direct digital controls (DDC) upgrades for the Millward Building – which is expected to contribute to significant GHG reductions in 2016.

Other energy-related projects included upgrading control systems in the Grant building; upgrading pipe insulation in the Nixon building; adding a recirculation line for the solar hot water system in the Millward building; adding LED lighting in Grant room 159 and the Boathouse; upgrading LED lighting and refurbishing air handlers (adding speed drives) in the library; and performing continual maintenance in all campus facilities throughout the year to ensure energy conservation.

Looking to the future, proposals were developed in 2015 including the creation of an outdoor classroom on the Royal Roads campus, a potential solar voltaic system for the Boathouse, as well as a proposed partnership with Encorp for the purchase of outdoor three-stream recycling units for the campus. The university's internal energy committee continues to maintain an active list of potential future projects to be "at the ready" if and when funds become available. These include:

### **Building Envelope Improvements**

Hatley Castle/Library/Mews Conference Centre

- Window Upgrades
- Envelope Sealing

Recreation Centre

- Roof and wall insulation
- Window upgrades

### **HVAC**

- Hatley Castle boilers and DDC control upgrades
- DDC control upgrades – Mews, Boathouse, Blue Heron House
- Heat pumps/boilers – Recreation Centre
- Heat pumps – Boathouse
- Boilers – Mews
- Replacing heat pumps – Arbutus and Building 7B

### **Energy**

- Solar, photo voltaic power – Boathouse
- Meters – Eight different campus facilities
- GoFleet software
- Staff/students behaviour change/awareness

### **Energy Efficient Equipment**

- VSD – Variable/adjustable speed drives

- Server room
- Smart power bars

#### **LED Lighting**

- Millward/Nixon hallways
- Recreation Centre
- Grant
- Library
- Upgrade outdoor wall packs and remaining bollards

#### **Water**

- Water bottle filling stations – Library, Recreation Centre, Building 7B
- Upgrade to campus irrigation system – capacity and redundancy

#### **Waste Management**

- New outdoor waste recycling stations

### **Reinforcing a Culture of Sustainability**

One of the key aspects to success at Royal Roads has been the fostering of a culture of sustainability in all aspects of its operations. From institutional prioritization of larger projects like boiler retrofits and building energy upgrades, to numerous smaller projects and activities involving students, staff and faculty, a culture of action is built and reinforced, encouraging positive change and positive outcomes.

One of the highlights of the smaller scale initiatives from 2015 was the introduction of a very successful bike rental program on campus, which realized revenue of \$1,600 for the year. While not large in terms of the overall sustainability budget, it is significant in that the revenue will allow the program to be self-sustaining – enough to cover bike maintenance, replacement and Recreation Centre staff administrative time – and encourages behaviour which ultimately directly benefits people and the environment.

*In addition to the introduction of a successful bike rental program on campus, six new bike shelters were installed, thanks to a grant received from the Capital Regional District (CRD). The bike fix-it station donated by the RRU Student Sustainability Committee is also installed and fully functioning.*

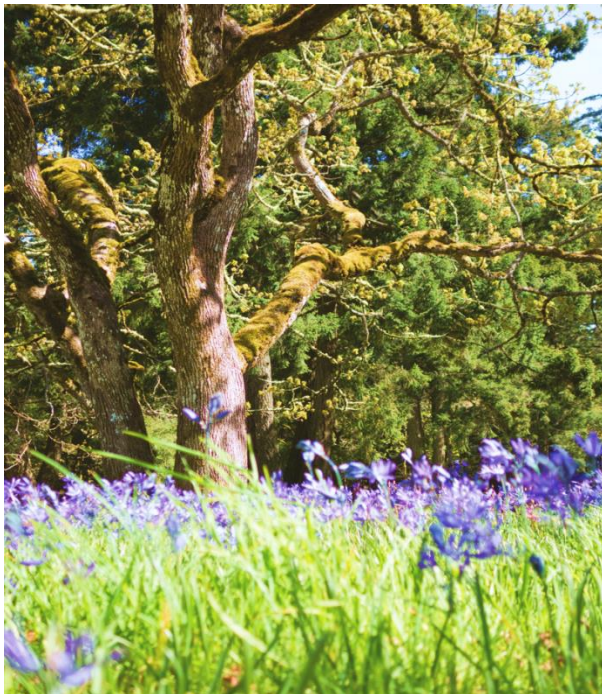


## Academic Programs and Sustainability Orientation

The new RRU five-year Sustainability Plan was released in the fall of 2015 and is available on the RRU website. The plan showcases RRU's successes in a number of targeted areas, and provides the baseline data for the next five-year plan, anticipated in 2020. A copy of the current plan can be found at: <http://www.royalroads.ca/about/sustainability>. Only 100 copies of the plan were printed, reflecting RRU's goal to reduce paper use on campus. All sustainability plan inquiries are being directed to the new sustainability website, launched in 2015.

A review in 2015 of the GHG emissions for RRU identified that fleet vehicle emissions were starting to increase slightly. The response was immediate - determine the cause of the increase in emissions and how to correct the trend. This created an opportunity for staff to submit a project proposal for Bachelor of Science (BSc) students to research RRU fleet vehicle emissions. The project was approved for the 2016 academic year, and results will be available in August 2016. A team of five undergraduate students are conducting the study, which will include surveys of those who use fleet vehicles, a cost-benefit analysis of driving software programs, and design of a community-based awareness program for all staff and faculty on driving behaviour with a goal of reducing GHGs.

Two BSc student projects were completed in 2015. A five-year Invasive Species Plan which covers the "core" lease area of campus, and a new campus guidebook called "*Experience Royal Roads University Beyond the Classroom.*" The guidebook will become an essential component of staff, faculty and student orientation, as it outlines six different walks on campus, detailing the ecological and some of the cultural history of the campus in its setting within Hatley Park National Historic Site. This project was done in order to reflect the "sense of place" that students experience when they study at RRU and to increase knowledge of the ecological significance of Royal Roads, leading to an even greater sense of stewardship responsibility by the campus community.



*Six walking tours outlined in a new campus guidebook encourage staff, faculty and students to explore the grounds to learn about the ecologically significant areas on campus like its Garry Oak meadows.*

The work of the RRU Office of Sustainability is now fully integrated with student orientation programs on campus. In the fall of 2015, 190 international students participated in a one-day sustainability orientation, which included teams of students competing in the *RRU Recycle Olympics!* This event included five different stations, and featured fun events aimed at teaching students about the recycling program on campus. RRU is currently diverting 63% of its waste, and has a goal of increasing that rate to 80% by 2020. A new waste audit was approved in 2015, and will be completed by the Office of Sustainability in 2016. The sustainability initiatives on campus are also included in the online student orientation materials, all of which are slated for updates and enhancements in 2016.

Royal Roads continues to exemplify leadership in sustainability and in reducing its GHG emissions, including within its academic programs. Last year the university announced a new Bachelor of Arts in Environment and Sustainability, with a specialization in First Nations and Sustainability. Enrolment will begin in the fall of 2016.

The faculty continue to play an important role in community engagement. Royal Roads faculty were involved in an idea session with elected officials from the Capital Regional District, which focussed on developing collaboration opportunities between RRU, UVIC, and Camosun College and local and regional governments. As a result, the City of Victoria established, and will be funding annually, a “City Studio” to bring together students and community members to solve issues within the capital region. RRU faculty are also part of leading the Vancouver Island Social Innovation Zone project (funded by the McConnell Foundation), which examines social enterprise, social entrepreneurship, and food security – all tied to Vancouver Island, with involvement from all post-secondary institutions located here.

2015 marked an exceptionally busy year for the university: a growing institution with an expanding mix of academic programs and diverse student population. In the years ahead, Royal Roads will continue to focus on initiatives that will strengthen its leadership in sustainability and enable it to achieve, and perhaps even surpass, its GHG emission reduction targets for 2020.



Dan Tulip  
Vice President and Chief Financial Officer

## ACTIONS TAKEN TO REDUCE GREENHOUSE GAS EMISSIONS IN 2015

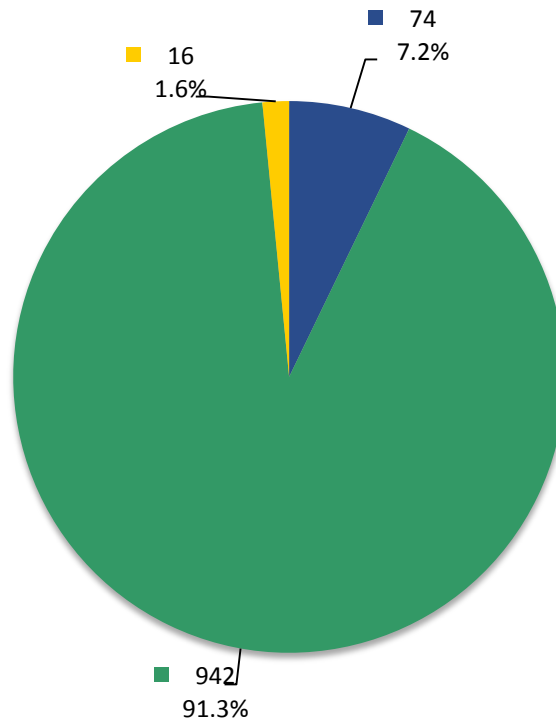
1. The new five-year RRU Sustainability Plan was released and the new sustainability website was launched: <http://www.royalroads.ca/about/sustainability>.
2. Various sustainability projects were undertaken this past year and were completed with a combination of funding from sources including the university, the province of British Columbia through its deferred maintenance program, the provincial Carbon Neutral Capital Program (CNCP), as well as other agencies and associated groups such as the CRD and RRU Student Association. Highlights of these projects include:
  - a. External light conversion on campus to LEDs, which is projected to save \$13,576 in energy costs, \$10,000 in maintenance costs and two tonnes of CO<sub>2</sub>e. (The CNCP contributed \$180,000 to the overall conversion costs for this project.)
  - b. Completion of the boiler upgrades and DDC in the Millward Building.
  - c. Upgrades to building controls in the Grant Building.
  - d. New pipe insulation in the Nixon Building.
  - e. The installation of a new recirculation line for the solar hot water system in the Millward Building, enabling the system to be more efficient, generating future cost savings through hot water heating.
  - f. Installation of LED lighting in Grant 159 and the Boathouse.
  - g. Installation of LED lighting, and refurbishment of air handlers (and speed drives) in the Library.
3. Continual monitoring of energy use during the year in order to optimize opportunities to improve maintenance and energy conservation.
4. Approval of a new Bachelor of Science in Environmental Science (BSc) student project to study the fleet vehicle emissions on campus. The results of the study will be available in August 2016.
5. Completion of two successful BSc student projects: a five-year invasive species plan which covers the “core” lease area of campus and aligns with the Department of National Defence invasive species plan, and a new campus trail guidebook called “*Experience Royal Roads University Beyond the Classroom*”.
6. Continued sustainability and recycling program orientation for RRU students, with an emphasis on international students. This orientation includes teams being involved in the *RRU Recycle Olympics!* and an interpretive forest walk along Charlie’s Trail.
7. The first full year of operation of the RRU bike rental program, which generated \$1,600 in revenue.
8. Six new bike shelters were installed on campus, funded from a grant from the CRD.
9. A bike fix-it station was installed. It was donated by the RRU Student Association, through their Sustainability Committee.
10. The Office of Sustainability participated in Catalyst Conversation – a session which brought post-secondary sector and local government representatives together to discuss possibilities for collaboration in the region. One of the positive results from this session was the establishment of the “City Studio” in downtown Victoria.
11. Conversion of all of the campus washroom paper towel receptacles to paper towel/compost receptacles.

## **ACTIONS PLANNED TO CONTINUE TO REDUCE GREENHOUSE GAS EMISSIONS IN 2016**

1. Setting priorities for 2016/17 on new energy retrofits. These may potentially include: new boilers and controls for the Mews Conference Centre; solar voltaic system for the Boathouse; boiler upgrades and DDC controls for Hatley Castle; heat pumps for the Recreation Centre and Boathouse; meters for eight buildings; and new LED lighting for the Millward/Nixon hallways.
2. Undertaking a new waste audit for RRU, with a goal of achieving 80% waste diversion in 2020, in accordance with the five-year sustainability plan. Reviewing actions based on the audit results.
3. Installing 10 new outdoor three-stream recycling units, in partnership with Encorp.
4. Shifting employee development plans from paper to electronic format.
5. Submitting two proposals to the federal and provincial governments for funding support for a new academic building and the renovation and upgrade of a heritage building: both proposed projects will be guided by LEED sustainability and energy rated building standards.
6. Reviewing a completed BSc student project on fleet emissions, and considering the recommendations developed in the study.
7. Building on the success of the paper towel/compost sticker program, re-organizing all of the recycling bins in the kitchens and lounges on campus, with new signage consistent with the recycling branding in the Grant building.
8. Producing a new campus guidebook "*Experience Royal Roads University Beyond the Classroom*" for inclusion in staff, faculty and student orientation.
9. Reviewing the five-year Invasive Species Plan to determine a course of action for the core lease area of campus aligned with related plans.
10. Undertaking new training/education on recycling with sessions at the Habitat cafeteria recycling station – with new branding information.
11. Launching the new online student orientation program, which includes new sections on sustainability, a new quiz with sustainability focused questions, and a new section on "What YOU can do" to reduce your impact at RRU and on the world.
12. Continuing to participate in staff, faculty and student orientations on campus.
13. Continuing to monitor the bike rental program, and seeking additional funding for additional bikes as demand increases.
14. Collaborating with the Advancement department on developing a new voluntary carbon offset contribution program for students, as a way of raising funds for energy projects on campus.
15. Working with the RRU Student Sustainability Committee to launch a video contest for Earth Day 2017.



### Royal Roads University Greenhouse Gas Emissions by Source for the 2015 Calendar Year (tCO<sub>2</sub>e\*)



**Total Emissions: 1,032**

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion (Building Heating and Generators) and Electricity
- Supplies (Paper)

#### **Offsets Applied to Become Carbon Neutral in 2015 (Generated April 14, 2016 2:59 PM)**

Total offsets required: **1,030**. Total offset investment: **\$25,750**. Emissions which do not require offsets: **2**

\*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

## SMARTTool Greenhouse Gas Inventory Report

Reporting Entity: Royal Roads University

Reporting Year: Calendar Year 2015

Measure	Quantity	Greenhouse Gases in Tonnes				tCO <sub>2</sub> e <sup>1</sup>
		CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O		
<b>Scope 1 (Direct) Emissions</b>						
Mobile Combustion (Fleet)	Litres	29,867.62	66.49	0.01	0.02	71.27
Stationary Combustion, Reported <sup>3</sup>	GigaJoules	18,296.58	905.14	0.02	0.02	910.54
<b>Total Scope 1 Emissions</b>			<b>971.63</b>	<b>0.02</b>	<b>0.03</b>	<b>981.80</b>
<b>Scope 2 (Indirect) Emissions</b>						
Purchased Energy, Estimated <sup>2</sup>	GigaJoules	0.00	0.00	0.00	0.00	0.00
Purchased Energy, Reported <sup>3</sup>	GigaJoules	11,261.52	31.53	0.00	0.00	31.53
<b>Total Scope 2 Emissions</b>			<b>31.53</b>	<b>0.00</b>	<b>0.00</b>	<b>31.53</b>
<b>Scope 3 Emissions</b>						
<b>Business Travel and Office Paper</b>						
Office Paper	Packages	2,860.00	16.35	0.00	0.00	16.35
<b>Total Scope 3 Emissions</b>			<b>16.35</b>	<b>0.00</b>	<b>0.00</b>	<b>16.35</b>
<b>Emissions from Biomass</b>						
<b>Total Biomass Emissions</b>			<b>2.36</b>	<b>0.00</b>	<b>0.00</b>	<b>2.36</b>
<b>Total Emissions, Calendar Year 2015</b>			<b>1,021.87</b>	<b>0.02</b>	<b>0.03</b>	<b>1,032.05</b>

1. Global Warming Potential (GWP) has been applied only to the tCO<sub>2</sub>e values.

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.

*This information is provided by the Government of British Columbia, and is subject to verification.*

# 2015 Carbon Neutral Action Report Survey

Organization Name:

Royal Roads University

Please select your sector:

- Post-Secondary Institution

1) Stationary Sources (Buildings, Power Generators, Ext. Lighting) Fuel Combustion, Electricity use, Fugitive Emissions:

Please indicate which actions your PSO took in 2015:

Have developed an overall strategy/plan to reduce energy use in your organization's buildings inventory:

Yes

If Yes, please describe:

Royal Roads University has an Energy Working Group which keeps a running list of energy projects for campus. This list is continually updated and projects are completed as funding becomes available. The University had previously undertaken an energy audit, which provided the original list of energy projects.

Undertook evaluations of building energy use:

Yes

Performed energy retrofits on existing buildings:

Yes

Built or are building new LEED Gold or other "Green" buildings:

Yes

Please list any other actions, programs or initiatives that your organization has introduced that support emissions reductions from buildings:

- Grant Building - upgraded building controls
- Grant Rm 159 - LED lighting
- Library phase 1 - LED lighting computer commons

- *Library phase 2 - LED lighting, refurbish air handlers and add speed drives*
- *Millward - solar recirculation line*
- *Nixon - pipe insulating*
- *Boathouse - refresh LED lighting*
- *All exterior street lights, post tops and bollards changed to LED*

*The total estimated cost of these energy upgrades was \$1.3 million dollars.*

2) Mobile Sources (Fleet, Off-road/Portable Equipment) Fuel Combustion:

Indicate which actions your PSO took in 2015:

Have put in place an operations policy/program to support systematic reductions in fleet related emissions:

(e.g., program to convert fleet to renewable fuels)

Yes

If Yes, please describe:

*The new Royal Roads five-year Sustainability Plan outlines the emissions from buildings, paper use and fleet vehicles, and sets targets, performance measures and outcomes for these areas.*

Replaced existing vehicles with more fuel efficient vehicles (gas/diesel):

Yes

Replaced existing vehicles with hybrid or electric vehicles:

No

Took steps to drive less than previous years:

Yes

Please list any other actions, programs or initiatives that your organization has introduced that support emissions reductions from fleet combustion:

*A Bachelor of Science student project was approved to review the fleet vehicle emissions and research potential software solutions to reduce emissions, as well to design a community based marketing program to change driver behaviour. The study will be completed in August 2016.*

3) Supplies (Paper):

Indicate which actions your PSO took in 2015:

Have put in place an operations policy/program to facilitate a systematic reduction in paper-related emissions:

(e.g., policy to purchase 100% Recycled Content; default to double-sided printing)

Yes

If yes, please describe:

*An analysis of using Wheatsheet, or similar non-emission producing paper, has been completed, and submitted for review.*

Have put in place an operations policy/program to facilitate behavioural changes from paper use:

(e.g. awareness campaign to reduce paper use):

*Yes*

If yes, please describe:

*In addition to all of the printers defaulting to double-sided printing, the university IT staff have incorporated a notice on all staff and faculty computers which indicates a running total amount of dollars spent on printing by each individual account holder, with a summary at the end of the fiscal year for each person.*

Used only 100% recycled paper:

*No*

Used some recycled paper:

*Yes*

Used alternate source paper:

(e.g., bamboo, hemp, wheat etc.)

*No*

Please list any other actions, programs or initiatives that your organization has introduced that support emissions reductions from paper supplies:

*The cost of switching to Wheatsheet, or similar product, has been incorporated into the five-year budget for the Office of Sustainability, and has been submitted for approval.*

4) Other Sustainability Actions:

Please note that this section is optional

Business Travel

Created a low-carbon travel policy or travel reduction goal:

(low-carbon = lowest emission of greenhouse gas per kilometer per passenger)

*No*

Encouraged alternative travel for business:

(e.g. bicycles, public transit, walking)

*Yes*

Encouraged or allow telework/working from home:

*Yes*

Other:

*(No response)*

Education Awareness

Have a Green/Sustainability/Climate Action Team:

*Yes*

Supported green professional development:

(e.g. workshops, conferences, training)

*Yes*

Supported or provided education to staff about the science of climate change, conservation of water, energy and/or raw materials:

*Yes*

Other:

*(No response)*

## Adaptation Planning for Climate Risks

Have assessed whether increased frequency of extreme weather events and/or long term changes in climate will affect your organization's infrastructure, its employees and/or its clients:

Yes

Have incorporated these anticipated changes in climate into your organization's planning and decision making:

Yes

Other:

*Extreme weather such as continued long, very dry summers or if the winter weather became more extreme (i.e. severe windstorms or heavy snow) it would have significant equipment and staffing implications.*

*Given last year's extremely hot and dry fire season the university is responding with increased emergency planning, in particular the campus response to an interface fire, and awareness training. As a result of this planning the university has shared its interface fire evacuation plan with the Colwood Fire Department and Colwood Emergency Services.*

## Other Sustainability Actions

Established a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models:

Yes

Have put in place an operations policy/program to facilitate the reduction and diversion of building occupant waste stream from landfills or incineration facilities:

(e.g., composting, collection of plastics, batteries)

Yes

Established green standards for goods that are replaced infrequently and/or may require capital funds to purchase:

(e.g., office furniture, carpeting, etc.)

Yes

Incorporated lifecycle costing into new construction or renovations:

Yes

Please list any other sustainability actions your organization has taken not listed above:

(No response)