



Royal Roads
UNIVERSITY

Royal Roads University

Carbon Neutral Action Report 2014

OVERVIEW

Royal Roads University (RRU) is celebrating 75 years of leadership and learning throughout 2015, reflecting 55 years as a military college and 20 years as a public university. For more information on the 75th celebration please visit the website at: <http://www.royalroads.ca/75-years-changing-lives>.

Sustainability highlights for 2014 included a successful application to the government's new Carbon Neutral Capital Program for \$131,475 to upgrade the Grant Building boilers; an energy upgrade to the RRU Library boilers; a renovation of the Cedar Building to provide space to all of the RRU Information Technology (IT) services; a new bike rental program for the university; and expansion of the newly branded recycling program into the Grant Building. The year began with direction from the President of RRU, Allan Cahoon, to produce a new 5 year Sustainability Plan – with the theme of “Living in Harmony”. The Office of Sustainability was given the opportunity to present the highlights of this new plan to the Board of Governors in October, 2014 and the plan will be published in the spring of 2015. The year 2014 also marked the expansion of the Solar Colwood program throughout the Capital Regional District; a program that RRU students have been monitoring since the beginning early in 2011. Solar Colwood was previously scheduled to end on March 31st, 2014, but was extended by Natural Resources Canada to March 31st, 2015. This was excellent news for the continued reduction of the community's energy, but also for the two RRU graduate students funded by the Solar Colwood program.

Highlights from the new RRU Sustainability Plan

The first sustainability plan for Royal Roads University was completed in December 2008 and set the foundation for a number of sustainability achievements since that time. The new sustainability plan was built from many of the goals in the previous plan, but was written with two major differences. Firstly, the underlying theme for the plan of “living in harmony” acknowledges the university as stewards of the National Historic Site and the traditional lands of the Xwsepsum (Esquimalt) and Lekwungen (Songhees) families.

RRU has added responsibilities that most post-secondary institutions don't have – to maintain the ecological integrity of 565 acres, care for the 100 year old plus Hatley Castle, and the Dunsmuir estate, maintain the world class Japanese gardens and continue to grow its reputation as the “life changing” university of the future, serving students from over 60 countries. The university achieves this by working collaboratively with partners, such as members of the local indigenous communities, the military heritage representatives, the Friends of Hatley Park, the members of the Esquimalt Lagoon Stewardship Initiative (ELSI), the Westshore Chamber of Commerce, the local government, the Capital Region District, and the many alumni that continue to give back to the university, and make a difference in their own communities.

The second major difference in the new 5-year sustainability plan is that it is metric based – there are indicators, performance measures, targets and outcomes. Ten target areas were chosen to report on the sustainability performance of the university and can be updated annually over the next 5 year period. The 10 target areas were also chosen to align with the Sustainability Tracking and Rating System (STARS) of the Association for the Advancement of Sustainability in Higher Education (AASHE). Royal Roads was the first Canadian university to participate in the STARS program and received a silver rating in 2010. In 2013, the university improved its rating to gold and will be pursuing a platinum rating in the 2016 reporting period. The year 2014 was spent building the framework of the new 5 year sustainability plan, gathering the data, and writing the plan. The plan will be produced and distributed in 2015, with a new plan expected in 2020.

Samples of five target areas from the new RRU Sustainability Plan:

1. Energy & Emissions

The university has achieved a reduction in energy usage of 26 per cent (Figure 1) and a reduction in GHG emissions of 22 per cent (Figure 2) while expanding the built environment, as illustrated in the figures that follow.

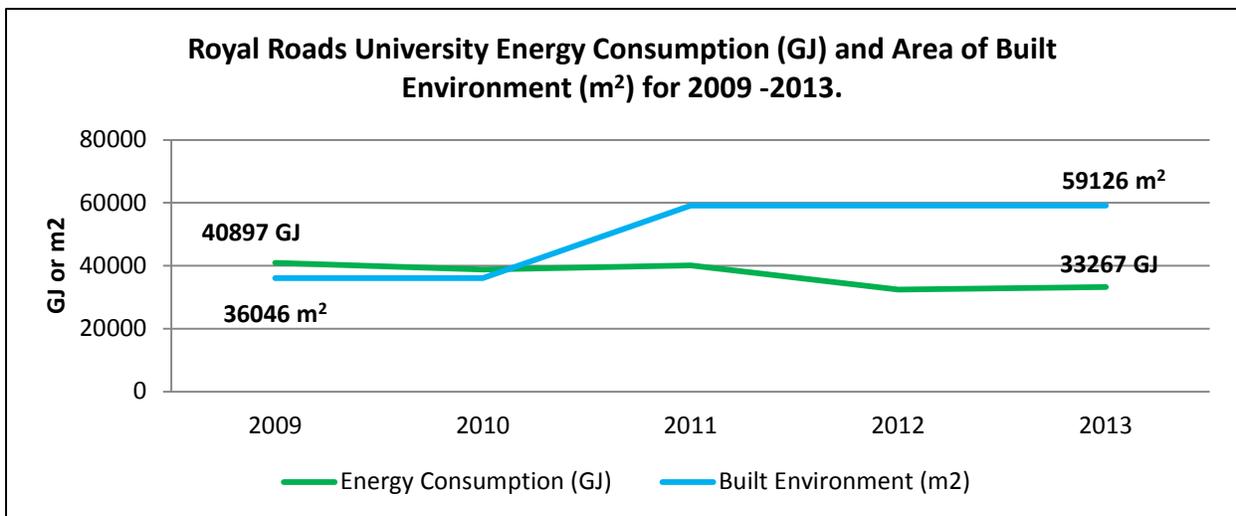


Figure 1 – The changes in the energy consumption and the total area of built environment at Royal Roads University between 2009 and 2013.

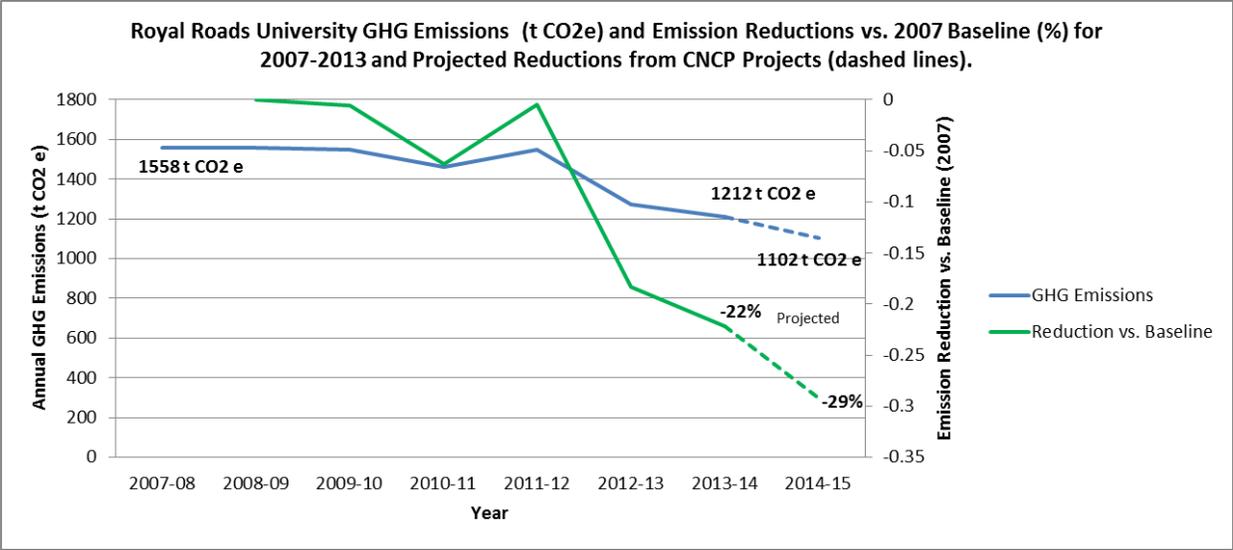


Figure 2 - The change in greenhouse gas emissions for Royal Roads University from 2007 (baseline year) to 2014 and projected emissions for 2014-2015.

2. Paper & Printing

In 2011, the IT-Services department at Royal Roads implemented quarterly notifications of the amount of printing use by staff and faculty. These reminders to staff and faculty have led to a 39 per cent reduction in paper use on campus (Figure 3).

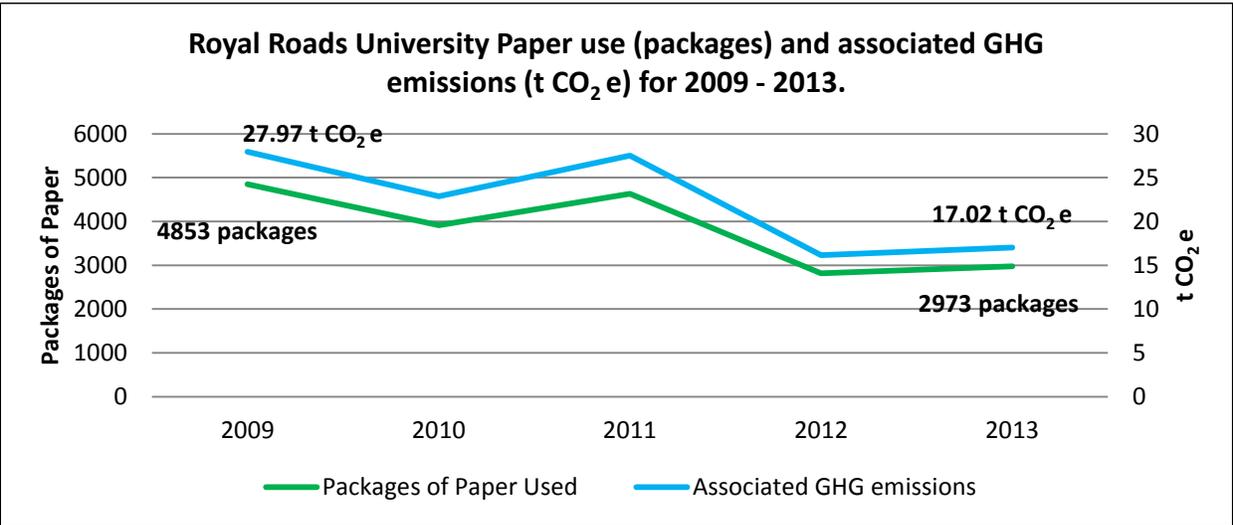


Figure 3 - The reduction in paper use and associated greenhouse gas (GHG) emissions from 2009 to 2013.

3. Compost & Recycling

Waste diversion is a growing priority for the university. Royal Roads' current waste diversion rate is 63 per cent (Figure 4). When RRU reaches the target of 80 per cent diversion, the university will save \$7,000 annually on waste disposal¹.

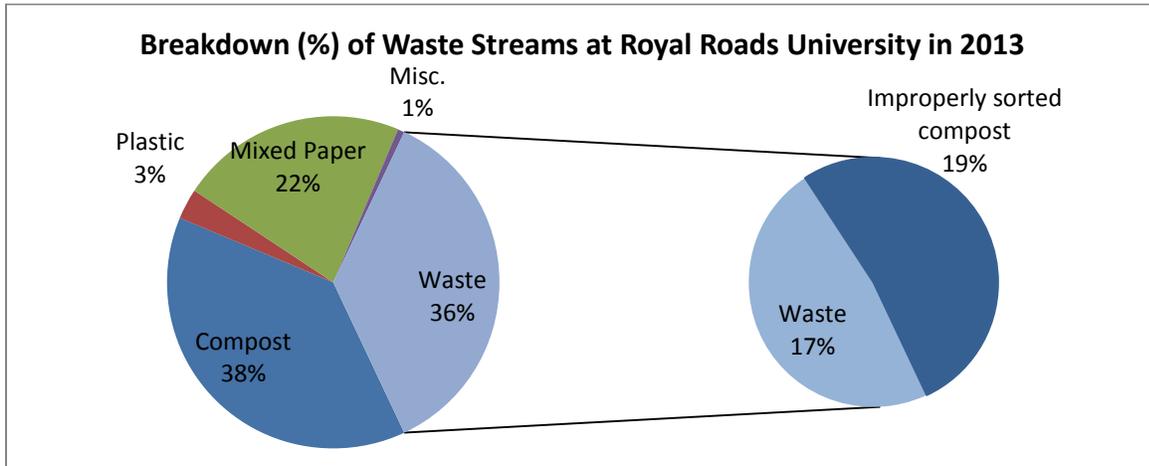


Figure 4 - The breakdown of the waste stream (% by weight) at Royal Roads University in 2013. The pull-out shows that 19% of the waste stream is actually compostable material that has been improperly sorted.

Although the emissions avoided from diverting compost from the landfill (Figure 5) currently fall outside of the university's reporting requirements, Royal Roads University is proud of its composting program. To date, RRU has diverted over 400 tonnes of compostable material from the landfill.

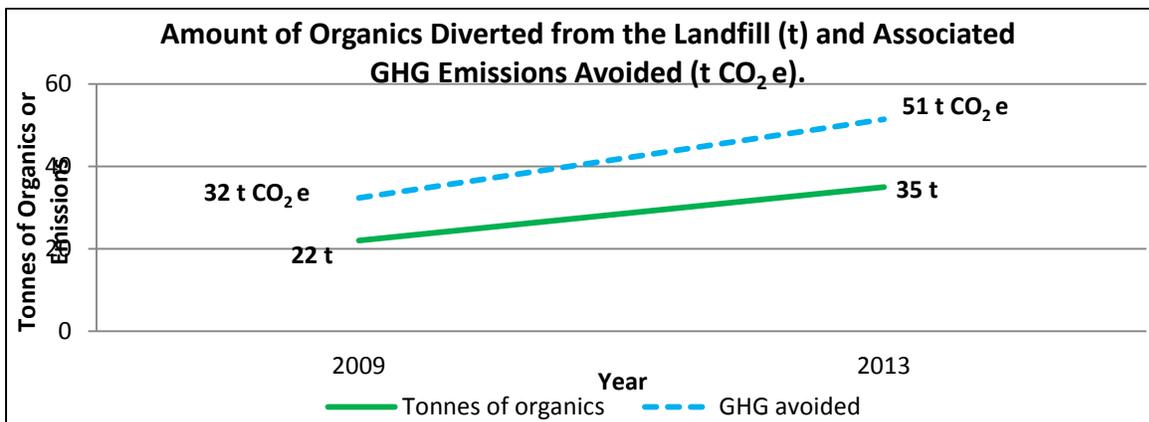


Figure 5 - The amount of organic material diverted from the landfill and the greenhouse emissions avoided through that practice during the period of 2009 – 2013.

¹ The Palindrome Group (2013). RRU 2013 Waste Audit, Bachelor of Science in Environmental Science; Major Project.

4. Water Conservation

Since 1996, the overall water consumption is down 27 per cent (Figure 6) despite the growth in the number of on-campus students and the built environment. However, the financial cost of purchasing municipal water is up 43 per cent. Therefore it is important to keep conserving water and find ways to reduce these rising costs.

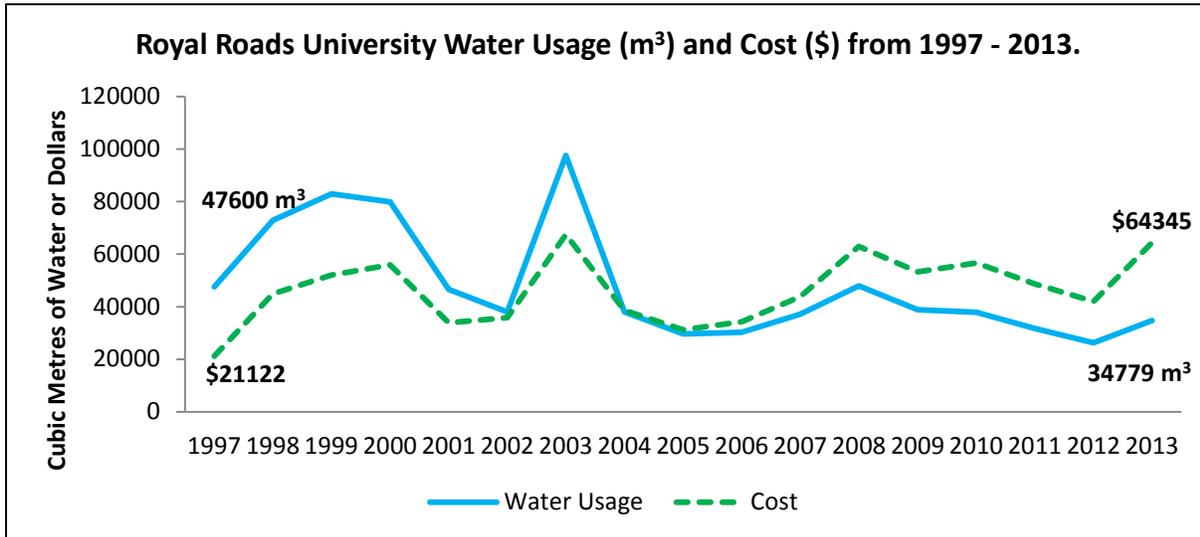


Figure 6 - The water consumption and cost for Royal Roads University for 1997 – 2013.

5. Transportation

For the 2014 year, the fleet vehicle fuel consumption and associated emissions have increased over the last five years (Figure 7), and represent an opportunity for improvement. The university will work to ensure that new fleet vehicle purchases have better fuel economy than the vehicle replaced, and will continue to choose electric utility vehicles over gas powered carts.

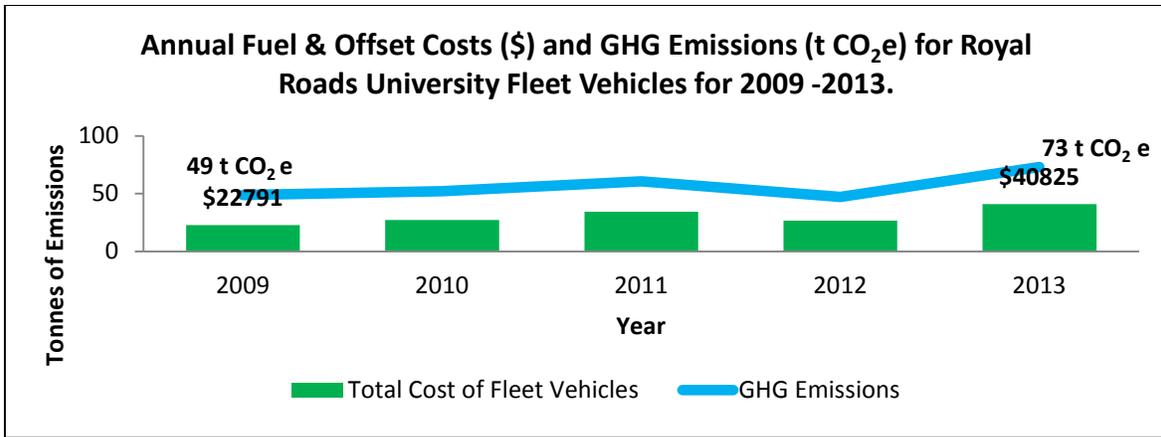


Figure 7 - The annual costs (fuel and offsets) and GHG emissions associated with the fleet vehicles at Royal Roads University for 2009 – 2013.

On-road transportation is responsible for 58 per cent of the GHG emissions produced annually in the province of B.C.². In an effort to address this issue, the students, staff and faculty from Royal Roads are changing the way they travel to campus. Increases in carpooling, public transit use and active transportation (cycling and walking) have led to a 43 per cent reduction in single occupant vehicle (SOV) travel to campus since 2007 (Figure 8).

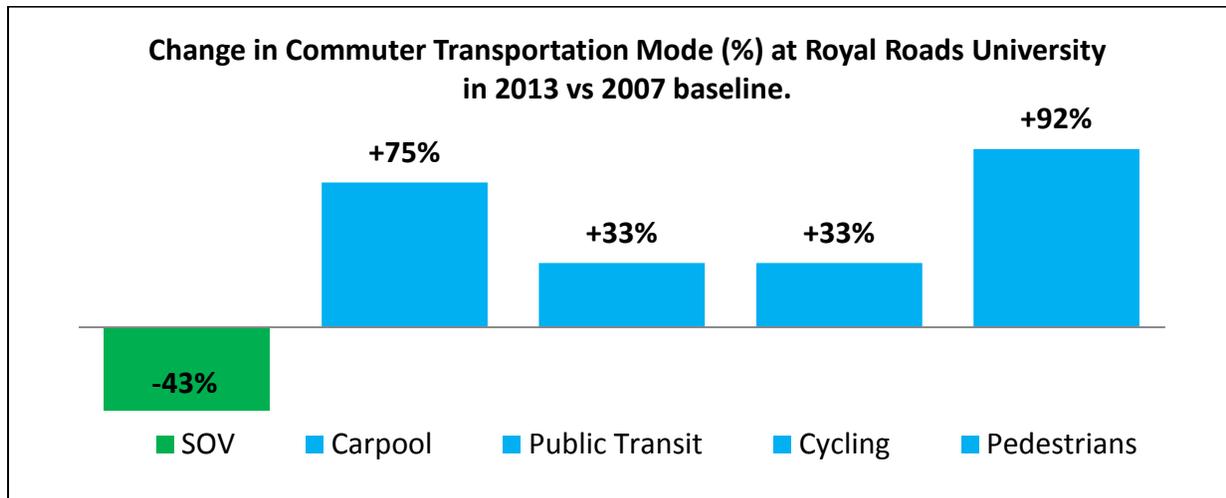


Figure 8 – The change in transportation mode among commuters to Royal Roads University in 2013 versus 2007 (baseline year).

The above samples are drawn from the new RRU Sustainability Plan. The complete plan will be posted on the RRU website in June, 2015.

² B.C. Government (February 10, 2014). Community energy & emissions inventory for the Capital Regional District. Retrieved from <http://www.env.gov.bc.ca/cas/mitigation/ceei/RegionalDistricts/Capital/ceei.2010.capital.regional.district.pdf>

SUSTAINABILITY HIGHLIGHTS FOR THE CARBON NEUTRAL PLAN:

Energy Conservation

RRU created an internal operations “Energy Working Group”, which meets regularly to address energy issues and opportunities on campus. For the 2014 year, the first successful project was in the Grant Building – the most intensely used building on campus, with classrooms, offices and the Quarterdeck, the largest conference room at RRU. With the \$131,475 grant from the Carbon Neutral Capital Program the Grant Building became more energy efficient, and in the first four months of operation of the new system, saved 542 gigajoules of natural gas – 26.96 tonnes of CO₂e. The controls on the existing boilers were updated, a new high efficiency electric boiler was installed for the Quarterdeck heating, the air volume controllers were updated which enabled more control for the air handling units, the digital controls were updated to incorporate optimum starts for heat in the building and the automatic scheduling for individual room controls was updated. These upgrades will also lead to maintenance savings because the monitoring can be done remotely, as opposed to continual site visits. An issue that still remains in the Grant building, and most of the buildings on campus is monitoring the electrical use in the buildings, due to the lack of individual meters in the buildings. There is one electrical meter for the LEED gold Learning and Innovation Centre, one meter for the newly renovated Cedar Building, and one meter for the rest of campus (23 buildings).

The second major energy project on campus was upgrading the boilers in the Library. This work was deemed essential as the Library is being transformed into the centre of student activity. The savings from this project are still to be determined, but will lead to a decrease in natural gas consumption through more efficient boilers. This project qualified for a FortisBC incentive of \$13,500 for the boiler replacements.

New energy projects were submitted for funding under the Carbon Neutral Capital Program, in the fall of 2014, but no results are available yet. These projects included upgrading the Recreation Centre energy system and installing outside LED lights in the parking and roadway areas of campus.

Physical and Environmental Resources department staff are constantly on the search for energy wasting on campus, and submitting ideas to the Energy Working Group for action.

A New Bike Rental Program for RRU

The newest initiative at RRU with respect to transportation was the approval of a Bike Rental Program at the Recreation Centre. 5 bicycles were purchased, along with 10 helmets, and 10 bike repair kits. The capital for this program came from a successful application to the Sustainable Actions for the Environment (SAFE) fund, which is funded by student donations. The bike rental

costs are \$10.00/day and \$35.00/week, and the program has succeeded in bringing in enough revenue to cover the operational costs of the rental program. The majority of use of the bikes has been by students on campus in a 2 or 3 week residency. These students come from over 60 countries and can now rent bikes, as opposed to needing to rent a vehicle while in Victoria.

In addition to the Bike Rental Program, a bike fix-it station was purchased by the Royal Roads Student Association, through their Sustainability Committee. This station (see picture below) has been installed in the core of campus and includes all of the tools, and a pump to ensure cyclists are not stranded because of the need for a bike repair, or flat tire. A grant from the CRD was made available to RRU for the purchase of 6 new bike shelters, and one is included in the picture below – the larger shelter to the right. These new shelters will be placed in the core of campus, and the older shelters will be moved to locations that currently don't have a shelter in place.



Figure 9 - The University's new bike repair station and rack covers.

A new carpooling program in BC called "Go Together" was researched – it is a private company operating a carpooling service, which is currently being tested at Simon Fraser University and the Vancouver Airport. Each entity has a closed site which is password protected, and customized for the users. The cost for RRU would be \$1.00/year/per student. All of the software and the promotion of the program and maintenance are handled through Go Together. A

proposal has been given to the Royal Roads Student Association to see if they would be interested in opting into the Go Together carpooling service.

Composting & Recycling

In the interest of environmental responsibility and in being a good neighbour, RRU continues to explore ways to lower its impact on the local community, and the local landfill.

Based on the recommendations provided from applied learning projects by Bachelor of Science in Environmental Science (BSc-ES) and Bachelor of Business Administration in Sustainability and International Business (BBA) students, the university has invested in new Royal Roads branded compost and recycling sorting stations that are instantly recognizable and easier to use. A new business case challenge in the Bachelor of Commerce (BCOM) program began in 2014 and will continue to inform and inspire improvements to the waste diversion education and infrastructure on campus.

In 2014, the university updated the waste sorting stations on each floor of the Grant building as pictured below.



Figure 10 – An example of the upgraded and consistently-branded waste sorting stations in the Grant building.

Research to support the business case for further improvements to the existing campus waste sorting infrastructure was also completed this year. These improvements include repurposing

the existing paper towel bins in campus washrooms to serve as compost bins for all organic materials and replacing existing external waste bins with three stream waste sorting stations.

Academic Programs and Sustainability Orientation

The Office of Sustainability participated in the orientation program for the International Study Centre, with 4 intakes a year, and numbers ranging from 30 to 100 students. The orientation began with a talk about the university and stewardship responsibilities on the National Historic Site and then participation by the students in “Recycle Olympics”. This event included 6 activities, ranging from bowling pins to disc tossing and sorting – great fun with a message about reducing waste, and how to recycle. Many of these students come from countries without recycling programs, so it is very important that they receive this orientation because they are on campus for at least 2 years, and some for 4 years. Combining fun and learning seemed to be effective and Recycle Olympics is being incorporated into other RRU orientation programs.

The BCOM students undertook the “Cars on Campus” challenge again this year and came up with excellent suggestions on how to reduce the number of single occupant vehicles coming to campus. The BBA students did a recycling challenge, and their research led to improving the recycling branding on campus and outlined the “barrier” to recycling to be education. This was an important finding and there will be a series of education programs on recycling offered throughout the year, on the staff and faculty newsletter site and at special events on campus.

A project was completed by the BSc-ES students sponsored by the Capital Region District (CRD) in 2014. This project was on the governance of invasive species in the capital region, the social, environmental and economic impacts of invasive species and proposals for the coordination of disposal of invasive species in the region. This project was presented to the members of the CRD Roundtable on the Environment, and will go to Environmental Services Committee of the CRD for action. The overall goals of the project were to determine the current best practices for controlling the spread of invasive species within the CRD. The students focused on the impacts and disposal of invasive species; how their control is governed and options for communicating information about invasive species with stakeholders. The students recommended that the CRD approach the Provincial government in order to position invasive species control as an essential service of the CRD. The students suggested that the result would be better standardization of disposal and control actions across the jurisdictional boundaries within the CRD.

Also completed in 2014, was a BSc-ES student project on paper use and printing behaviour at RRU, sponsored by the Office of Sustainability. This project focused on first understanding the paper use and printing behaviour of the RRU community and second on the development of community-based social marketing strategies to help remove the barriers to changing

behaviour with regards to printing. The students recommended that the university explore opportunities to rely more heavily on the existing electronic platforms in place at RRU to supply students with course and lab materials.

Two new projects were approved for 2015, in partnership with the BSc-ES program. The first project will develop a 5 year plan for the removal of invasive species, to complement and support the 5 year Department of National Defence invasive species plan. The second project will undertake a “sense of place” project, which will result in a guidebook for 6 special areas on campus, from ecological to cultural, and a recommendation for an outdoor classroom for RRU.

Staff from the RRU Office of Sustainability gives talks in many of the other academic programs, such as the Masters of Environment and Management, Leadership, and Business, with key messages about sustainability at Royal Roads.

Solar Colwood Partnership

During the four years of the Solar Colwood program, the Office of Sustainability has been responsible for conducting the RRU Solar Colwood Monitoring Program. Staff provided guidance for 7 student-led applied learning projects and collaborated with RRU faculty members who carried out an independent interdisciplinary research study with the School of Environment and Sustainability and the School of Business.

The purpose of RRU Solar Colwood Monitoring program was to measure the changes in household energy use and greenhouse gas emissions (GHG) by homeowners and businesses that installed a solar hot water (SHW) system, ductless split heat pump(s), electric vehicle charging station infrastructure (EV or photo-voltaic PV4EV) and/or other significant energy saving retrofit technologies as part of the Solar Colwood program.

The findings of our four year monitoring program demonstrate that homeowners who installed solar thermal hot water and/or ductless split heat pumps through the Solar Colwood incentive program reduced their energy consumption and greenhouse gas emissions by an average of 26% and 37% respectively in the first year after installation. For the period after installation until December 2014 (including the first year) energy consumption was down 37% and GHG emissions 43% compared to pre-installation values. As expected, homeowners that installed both systems demonstrated greater reductions in energy consumption. Based on these findings, it is clear that the use of financial incentive programs by municipal or regional governments to inspire homeowners to install energy efficient technologies can translate into meaningful reductions in energy consumption and GHG emissions at the community level.

Conclusion

As Royal Roads University looks forward to 2015 there is more work to do in the area of stewardship, greenhouse gas emission reduction, waste diversion, and transportation choices for students, staff and faculty. One of the first steps for the year ahead will be the collection of key data for the energy use in buildings on campus. This information will be essential in making new applications to the province's Carbon Neutral Capital Program. The other highlights for the year ahead include converting the paper towel recycling program to a paper towel/compost program and the installation of external recycling stations to replace single unit waste receptacles. On transportation, the need is to establish a student led carpooling program and continue to encourage alternative transportation modes, such as transit, cycling and walking, versus single occupant vehicles. The year 2014 marked another year of progress in continuing to reduce RRU's greenhouse gas emissions, however, continued effort and leadership will be required. It is expected that the new RRU Sustainability Plan will provide the framework needed to achieve success by the year 2020.



Dan Tulip
Vice President and Chief Financial Officer
Royal Roads University

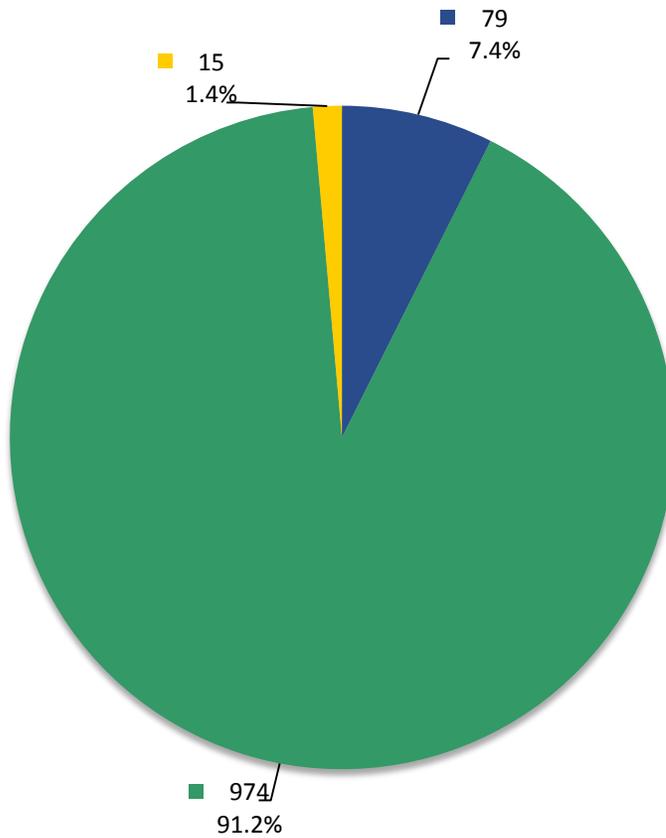
ACTIONS TAKEN TO REDUCE GREENHOUSE GAS EMISSIONS IN 2014

1. RRU was successful in receiving \$131,475 from the new Carbon Neutral Capital program for energy retrofits to the Grant Building.
2. Developed a list of energy saving projects which are critical to the university meeting its 2020 target of a 33% GHG emission reduction, and increasing energy efficiency for submission to the new Carbon Neutral Capital program.
3. Two BSc-ES student projects were completed – one on creating green teams at RRU, with a focus on paper/printing reductions on campus and energy conservation. The other project was on invasive species and was sponsored by the Environment Roundtable of the CRD.
4. Presentation materials on sustainability at RRU were developed and added to the RRU staff and students orientation program.
5. The Office of Sustainability continued the *Cars on Campus* challenge with the BCOM students, the major projects with the BSc-ES students, the joint team project with the BBA and BSc-ES students, and the governance/food sustainability project with the Masters of Environment and Management (MEM) students.
6. Recycling centres were installed on each floor of the Grant building, consistent with the Habitat cafeteria recycling station branding.
7. The Office of Sustainability worked with the higher education carbon neutral network on having GHG emission savings from waste diversion considered in the overall GHG emission reporting framework.
8. Energy retrofits in 2014 included: installing LED lighting in the Cedar Building, installing motion sensors where needed, direct digital control upgrades in the Library and Grant buildings, a new high efficiency electric boiler installed in the Library, new heat pumps in the Cedar Building, updating the controls in the Grant Building, and installing a high efficiency electric boiler for the Quarterdeck.
9. Renovations to the Cedar Building were completed and enabled the university to re-locate all of its Information Technology (IT) services into one building.
10. A bike rental program was introduced to staff, faculty and students and is managed through partnership between the RRU Recreation Centre and the Office of Sustainability.
11. Discussions will continue with the City of Colwood on their master transportation plan, and the potential for bike pathways on RRU grounds to be improved and better connected to the community. RRU was included in the development of the city's economic development strategy.
12. A business case was completed on the installation of solar hot water systems for the Recreation Centre and the Nixon building (student residences).
13. The monitoring program for the Solar Colwood program continued through 2014. The Office of Sustainability was responsible for monitoring both the Solar Colwood program and the new Solar CRD program.
14. An updated, metric-based five-year sustainability plan was developed in 2014, as part of the ongoing RRU strategic planning review and will be released in 2015.
15. The School of Environment and Sustainability changed the BSc-ES lab manuals from the current paper format to an online format, representing a considerable savings in paper, printing costs and subsequent emissions. This initiative by the school will represent a challenge to other schools at RRU to undertake similar paper/printing/emission savings projects.
16. An herb garden was established between the Grant building and the Nixon building and was funded by the Masters of Environment and Management students, through the Sustainable Actions for the Environment fund (SAFE).

PLANNED ACTIONS TO REDUCE GREENHOUSE GAS EMISSIONS IN 2015/16

1. Release the university's new 2015-2020 Sustainability Plan, in accordance with the Communications Plan.
2. Promote and expand the existing bicycle rental program on campus, based on a successful first year of operation.
3. Submit three new energy projects through the Carbon Neutral Capital Program.
4. Update the campus Energy Audit which was done in 2010, in order to have the data to make applications for grants.
5. Convert washroom paper towel bins to accept all forms of compostable materials.
6. Replace external waste bins with three-stream recycling units.
7. Submit two new BSc student projects, subject to sponsorship funding being available.
8. Participate in the orientation programs for domestic and international students as well as for new staff and faculty.
9. Install new drinking water filling stations in priority locations across campus.
10. The Office of Sustainability will continue to work with the higher education carbon neutral network on having GHG emission savings from waste diversion considered in the overall GHG emission reporting framework.
11. Establish a student-led carpooling initiative and active transportation incentive program.
12. Produce a guide to sensitive or representative ecosystems on on-campus, from the research done in the 2014 "Sense of Place" project.
13. Develop a proposal for an outdoor learning space on-campus, as recommended in the 2014 "Sense of Place" project.
14. Implement the first-year of an invasive species plan, in alignment with the Department of National Defence's invasive species plan.
15. Participate in sustainability performance rating systems (eg: STARS, GreenMetrics, etc.).
16. Develop a communications plan for the Office of Sustainability through an applied learning project with the RRU students in the communications program.
17. Work with Bachelor of Commerce students on improving on-campus waste diversion through an applied learning project.
18. Update a re-branded Sustainability website to create a one-stop site for all sustainability related information for Royal Roads University.

**Royal Roads University
Greenhouse Gas Emissions by Source
for the 2014 Calendar Year (tCO₂e*)**



Total Emissions: 1,068

- 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 2014 (Generated April 30, 2015 3:15 PM)

Total offsets required: **1,066**. Total offset investment: **\$26,650**. Emissions which do not require offsets: **3** **

*Tonnes of carbon dioxide equivalent (tCO₂e) 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 the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.

SMARTTool Greenhouse Gas Inventory Report

Reporting Entity: Royal Roads University

Reporting Year: Calendar Year 2014

		Greenhouse Gases in Tonnes				
	Measure	Quantity	CO ₂	CH ₄	N ₂ O	tCO ₂ e ¹
Scope 1 (Direct) Emissions						
Mobile Combustion (Fleet)	Litres	32,148.02	71.57	0.01	0.02	76.69
Stationary Combustion, Reported ³	GigaJoules	18,519.04	916.10	0.02	0.02	921.56
Total Scope 1 Emissions			987.67	0.03	0.03	998.25
Scope 2 (Indirect) Emissions						
Purchased Energy, Estimated ²	GigaJoules	92.47	19.79	0.00	0.00	19.79
Purchased Energy, Reported ³	GigaJoules	11,492.77	32.18	0.00	0.00	32.18
Total Scope 2 Emissions			51.97	0.00	0.00	51.97
Scope 3 Emissions						
Business Travel and Office Paper						
Office Paper	Packages	2,665.00	15.32	0.00	0.00	15.32
Total Scope 3 Emissions			15.32	0.00	0.00	15.32
Emissions from Biomass						
Total Biomass Emissions			2.53	0.00	0.00	2.53
Total Emissions, Calendar Year 2014			1,057.49	0.03	0.03	1,068.07

1. Global Warming Potential (GWP) has been applied only to the tCO₂e 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.

CNAR OVERVIEW TEMPLATE

Title: "2014 Carbon Neutral Action Report"

Organization name: Royal Roads University

Declaration statement: This *Carbon Neutral Action Report* for the period January 1st to December 31st, 2014 summarizes our emissions profile, the amount of offsets purchased to reach net zero emissions, the actions we have taken in 2014 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2015 and beyond.

By June 30 Royal Roads University's final *Carbon Neutral Action Report* will be posted to our website at www.royalroads.com.

Overview: The Overview report is entitled: Carbon Neutral Action Report 2014 and will be submitted on May 29th, 2015.

Emissions and Offsets Summary Table:

Royal Roads University's GHG Emissions and Offsets for 2014 (TCO2E)	
GHG Emissions created in Calendar Year 2014 (from SMARTTool Homepage):	
Total Emissions (TCO2E)	1,068
Total Offsets (TCO2E)	1,066
Adjustments to GHG Emissions Reported in Prior Years (from SMARTTool Homepage):	
Total Emissions (TCO2E)	1,212
Total Offsets (TCO2E)	1,209
Total Emissions for Offset for the 2014 Reporting Year (from SMARTTool Homepage)	
Total Offsets (TCO2E)	1,066

Executive sign-off:



Signature

Date May 15th, 2015

14th

Name Mr. Dan Tulip

Title Vice President and Chief Financial Officer

2014 Carbon Neutral Action Report (CNAR) - Part 2 ACTIONS

Organization Name

Royal Roads University

Actions Taken to Reduce Emissions

1) Stationary Fuel Combustion, Electricity (Buildings): Indicate which actions were taken in 2014:

Performed energy retrofits on existing buildings

Yes

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

Yes

Undertook an evaluation of overall building energy use.

Yes

Please list any other actions taken to reduce emissions from Buildings:

1. Upgraded controls on condensing boilers in Grant Building.
2. Upgraded air volume controllers and added a small electric boiler to isolate and provide heat to Quarter Deck in Grant building.
3. Improved scheduling.
4. Replace boilers in Library with high efficiency condensing boilers.
5. Upgraded lights to LED's on a continuous basis.

2) Mobile Fleet Combustion (Fleet and other vehicles):Indicate which actions were taken in 2014:

Do you have a fleet?

Yes

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

Yes

Replaced existing vehicles with hybrid or electric vehicles

Yes

Reduced the overall number of fleet vehicles

No

Took steps to drive less than last year

No

Please list any other actions taken to reduce emission from fleet:

When the decision was made to purchase new utility vehicles for the grounds and gardens staff, the choice was electric utility carts as opposed to gas ones.

3) Supplies (Paper):Indicate which actions were taken in 2014:

Used less paper than previous year

Yes

Used only 100% recycled paper

No

Used some recycled paper

Yes

Used alternate source paper (Bamboo, hemp, etc.)

Yes

Please list any other actions taken to reduce emissions from paper use:

Every quarter the IT staff send out a notice to staff members about their printing. Overall this has reduced printing by 39%. Very effective when the notice is personalized, and continuous over the year.

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Actions Taken to Reduce Emissions - continued

Explain how you plan to continue minimizing emissions in 2015 and future years:

We will continue to submit applications to the Carbon neutral capital program. The controls in the Millward and Nixon Buildings need upgrading, and the MEWS conference centre needs an overall energy upgrade. New data is required for many of the buildings on campus in order to complete funding applications. Physical and Environmental Resources staff will continue to look for any energy wasting on campus, and take action.

If you wish to list any other "sustainability actions" outside of buildings, fleet, paper and travel check "yes". This reporting is optional.

Yes

Actions to Promote Sustainability and Conservation - OptionalThe following are actions that fall outside the scope of the Carbon Neutral Government Regulation, but which many organizations still undertake and may wish to report on. This section is optional for reporting.

Business TravelCreated a low-carbon travel policy or travel reduction goal (Low-carbon: Lowest emission of greenhouse gases per kilometre per passenger)

No

Virtual Meeting TechnologyInstalled web-conferencing software (e.g., Live Meeting, Elluminate, etc.)

Yes

Made desktop web-cameras available to staff

Yes

Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)

No

Encourage carpooling to meetings

Yes

Education and AwarenessHave created Green, Sustainability, Energy Conservation, or Climate Action Teams.

No

Provided resources and/or dedicated staff to support these teams

No

Provided behaviour change education/training for these teams (e.g., community-based social marketing)

No

Established a sustainability/green awards or recognition program

No

Support green professional development (e.g., workshops, conferences, training)

No

Planning for Climate Change Have assessed whether extreme weather events and/or long term changes in climate will affect our organization's business areas

Yes

Long term changes in climate have been incorporated into our organization's decision making.

Yes

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Actions to Promote Sustainability and Conservation - Optional (continued)

Staff Awareness and Education Provided education to staff about the science of climate change

Yes

Provided education to staff about the conservation of water, energy, and raw materials

Yes

Provided green tips on staff website or in newsletters

Yes

Alternate Work/Commuting Options Allow for telework/working from home

Yes

Staff have the option of a compressed work week

Yes

Commuting by foot, bicycle, carpool or public transit is encouraged

Yes

Shower or locker facilities are provided for staff/students who commute by foot or by bicycle

Yes

Secure bicycle storage is provided

Yes

Other Sustainability Actions Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models

Yes

Put in place a potable water management strategy to reduce potable water demand of building-level uses such as cooling tower equipment, toilet fixtures, etc. and landscape features

Yes

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

Yes

Have implemented a hazardous waste reduction and disposal strategy (Hazardous Waste: E.g., electronics including computer parts and monitors, batteries, paints, fluorescent bulbs)

Yes

Have incorporated minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)

No

Established green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)

Yes

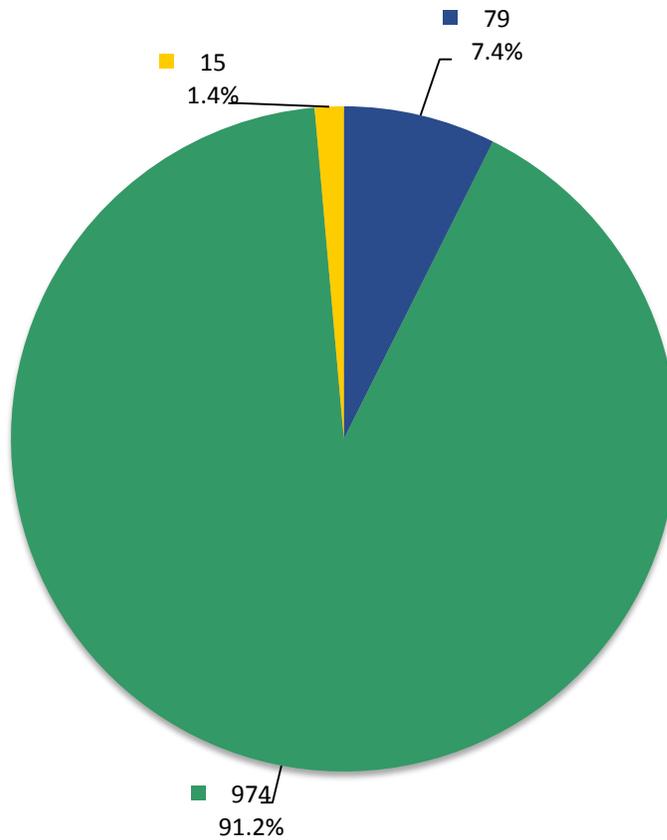
Incorporated lifecycle costing into new construction or renovations

Yes

Please list and other sustainability actions you wish to report not included in the previous list.

1. Established a bike rental program on campus - particularly helpful with students on 2 or 3 week residencies, on campus.
2. New branding for the recycling/composting program and new stations to increase our waste diversion from the landfill. RRU has a 63% diversion rate, with a target of 80% by 2020.

Royal Roads University Greenhouse Gas Emissions by Source for the 2014 Calendar Year (tCO₂e*)



Total Emissions: 1,068

- 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 2014 (Generated June 25, 2015 11:19 AM)

Total offsets required: **1,066**. Total offset investment: **\$26,650**. Emissions which do not require offsets: **2** **

*Tonnes of carbon dioxide equivalent (tCO₂e) 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 the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.