



Royal Roads
UNIVERSITY

CARBON NEUTRAL ACTION REPORT

2013

LIFE.CHANGING

ROYAL ROADS UNIVERSITY – 2013 CARBON NEUTRAL ACTION REPORT

OVERVIEW

Royal Roads University is thriving, with the addition of new programs, staff and faculty in 2013/14, and enrolments which continue to increase. As the university expands and grows, there is full acknowledgement of the need to continue reducing greenhouse gas emissions and increasing energy efficiency. With only one building on campus specifically designed for academic excellence, the LEED gold certified Learning and Innovation Centre, and the remaining 24 buildings, including the 105 year old Hatley Castle, having construction dating to the time of the Dunsmuir family or the military college, there are many challenges, and also opportunities. The university celebrated the 100th anniversary of the Italian gardens in 2013 with a very successful community garden event. In 2015 Royal Roads will celebrate a 75-year legacy of leadership and learning; the first 55 years as a military college and the most recent 20 years as an applied and professional university.

Stewardship of the National Historic Site

Royal Roads University (RRU) continues to demonstrate leadership in the sustainable stewardship of Hatley Park National Historic Site. In addition to maintaining Hatley Castle and its well-established ornamental gardens, the university protects several important natural habitats on campus including fish-bearing streams, a migratory bird sanctuary, old growth forests, wetlands and pastoral landscapes. Royal Roads is proud to compost or reuse all organic yard waste produced on the campus through the effort of the university's grounds and gardens staff. The university also provides the field laboratory for Camosun College's horticulture students and hosts the semi-annual public sale of local vegetable seedlings, annuals and perennials; all propagated in the Royal Roads greenhouses.

RRU has developed an on-going collaboration with local and regional community stakeholders in order to preserve and protect the surrounding landscapes. Together with the CRD, the university monitors the flow of Colwood Creek as part of the harbour monitoring program in the region. As a member of the Esquimalt Lagoon Stewardship Initiative (ELSI), RRU supports and participates in monitoring the Esquimalt Lagoon watershed. Support was provided to the Juan de Fuca Land Trust Society in their endeavour to make the Admiral's Forest (Admiral Charles) a community forest for the protection of its biodiversity and carbon storage potential. The university is the pilot area for the innovative *Petro Barrier* storm drain oil detection system which provides a warning, through the internet of a potential oil spill on campus. This is a partnership between RRU, Camosun College's engineering faculty and RRU alumni from [Petro Barrier Systems Inc.](#)

Energy Conservation

The Energy Working Group has met regularly over the past year and is dedicated to reducing energy use at RRU. Following the success of the energy retrofit program, funded by the Public Sector Energy Conservation Agreement, operational staff is constantly searching for energy savings. As a result of previous energy retrofits, the university has achieved an almost 20% reduction in greenhouse gas emissions and an annual savings of \$130,000 in utility expenses. In 2013 RRU upgraded DDC (direct digital controls) building control systems. The Millward building (student residence) solar hot water system was improved to collect and hold additional hot water, as well the coils on the air handling units on the Grant and Millward buildings were cleaned, thus increasing efficiency and reducing wear on the motors. The outside lights on most of the student residences were put on sensors and were all fitted with LED lights, saving both energy and staff time. More heat scheduling has been set up in all of the major buildings on campus, ensuring that buildings stay in nighttime set back mode when the university is not in session. All new appliances purchased in 2013 were Energy Star® rated, further reducing energy consumption.

The university was fortunate to have both an Energy Manager and an Energy Specialist in 2013, and a comprehensive Energy Management Plan was completed as part of the partnership with BC Hydro and FortisBC. A list of energy projects has been compiled and is ready for implementation, subject to the availability of funding. Added emphasis was put on energy conservation at RRU in 2013, culminating in an *Energy Idea Contest* and a workshop for staff and faculty with Power Smart representatives from BC Hydro and FortisBC. A template was created for a workstation tune-up program and building-by-building energy fact sheets. More work will be done in 2014 on the energy conservation program, with the goal of achieving a 1-3% savings in energy use by 2015.

Transportation on Campus

A major capital works and safety project was completed in 2013, funded by the provincial routine capital, life-safety program. New pathways and pedestrian bridges were built and improved, creating a much safer and pedestrian friendly campus. Upgrades to campus roadways were included in this project and consisted of re-surfacing, re-aligning and re-constructing portions of roads. One road which had partially collapsed over the years was completely re-built with an improved pathway for electric carts/pedestrians as part of the new road design. A hairpin turn was removed from one of the roadways and replaced with a safer roundabout and turn, and new signage and road markings were installed. The road closest to the Esquimalt Lagoon was re-located further away from the lagoon, and the road beside the historical pastoral area of RRU was turned into a one-way road to ensure the pastoral look and feel of the area would be protected. A separate pathway was constructed through the pasture in an effort to reduce the use of narrow roadways by pedestrians, creating a safer route for foot and cycle traffic. The project also included major improvements to the RRU fire alarm system. The total cost of the life-safety project work was \$2.45 million, and it was completed on time and under budget.

Royal Roads University prides itself on the applied nature of its programs and being able to capture the knowledge and experience of its students through the schools major project programs. In 2013, the Bachelor of Science students completed a transportation demand management (TDM) study for RRU. Students established a baseline of transportation mode split and undertook a series of interviews and online surveys of the RRU community to explore the motivation between people's transportation choices. The previous TDM study was completed in 2006 and pre-dated the student Universal Transit Pass (U-Pass) and the additional public transit service to campus. The students found that since the introduction of the U-Pass at RRU, single occupancy vehicle travel to the campus is down 27%. In

addition, public transit use is up 50%, and active transportation has also increased by 400% for walking and 50% for cycling.

Although the public sector is not required to report on vehicular emissions other than fleet vehicles, commuter travel is the largest source of carbon emissions in the community. RRU has invested in expanding transit-related infrastructure on campus and through its continuing partnership with BC Transit, bus service to the RRU campus has doubled with the addition of the #52 Colwood bus stopping on campus, providing the first-ever evening and weekend service. In 2013, improvements were made to the cycling infrastructure at the university, with new covered bike racks placed in strategic locations. Each year the Bachelor of Commerce students undertake a challenge to reduce the single-occupant vehicles coming to campus. Some of the ideas from this project work have been implemented on campus. For example, to encourage students to carpool to campus, parking is free for the first week of classes to allow them to find potential carpool partners before purchasing an annual parking pass. The students have also recommended a bike rental program on campus, particularly for the two-to-three week residencies; this will be analyzed for potential introduction in 2014.

There are two electric vehicle charging stations on campus, funded through the Fraser Basin Council and the Solar Colwood program. A valid parking permit is required for these two parking spots, but there is no charge for the electricity needed to plug-in at RRU.

Academic Programs

In a first-of-its-kind project, between the Bachelor of Science in Environmental Sciences (BSc-ES) and Bachelor of Business Administration (BBA) programs, students worked in interdisciplinary teams to address the challenges around recycling and waste diversion on campus. As the majority of the BBA cohort is comprised of international students, it is hoped that when students return home their increased level of environmental awareness gained through projects like this will help them to effect positive change in their own communities. The students studied recycling habits in different departments and schools on campus and found that although the desire to recycle properly was very evident, there was a lack of knowledge on which items were recyclable, compostable, or waste. Based on the students' work, a new education program is being implemented and the recycling units at the university are being changed.

Through the collaborative efforts of university staff, faculty and learners, RRU has broadened its efforts to raise the profile of food security on Vancouver Island. Food security represents an opportunity for both an adaptation to climate change and mitigation of climate impact. As such, this important issue has been the focus of the second residency of the Masters of Environment and Management (MEM) program for the past three years. Members of the university community continue to take leadership roles on improving the understanding about the connection between food and climate change. For example, faculty members lead the dialogue around the possibilities for urban farming at the [Mason Street Farm](#) and an NSERC-funded master's thesis project will study the energy use and GHG emissions associated with the food service industry. In addition, the university provides community garden plots for staff and faculty on the Royal Roads campus, at a membership fee of \$20 annually, offering raised beds, fencing, water and soil.

In yet another example of the university's pledge to provide real-world learning opportunities for its students, BSc-ES students were tasked with performing an audit of sustainability efforts on campus. The university received a tentative *Gold Star* for the overall sustainability of its operations using the Sustainability Tracking, Assessment & Rating System™ (STARS) from the Association for the Advancement of Sustainability in Higher Education (AASHE), an improvement from its existing silver

ranking. If the gold star ranking is approved by AASHE, RRU will be the fourth school in Canada to have reached this level of achievement. Substantial gains were made in the operations category with improvements on water management, waste diversion, transportation, purchasing, grounds, energy, buildings and dining services. The most significant improvement was in the climate subcategory for the university's continued commitment to reduce GHG emissions on campus.

Solar Colwood Partnership

In 2013, Royal Roads University continued its partnership with the City of Colwood and the Solar Colwood delivery team. Over the past three years students at RRU have undertaken seven major projects of benefit to the City of Colwood. This program began with the signing of a memorandum of understanding between the university and the city to facilitate student projects. The value from these projects is considerable – a total of \$125,000 in consulting value to the City of Colwood, and on-the-ground, real-life learning for RRU students. The Solar Colwood program is another example of this collaboration with the City of Colwood and has resulted in \$100,000 of financial support coming from the city to RRU for the three-year monitoring program, with an equal amount of in-kind and research support by the university. The university's continuing role in monitoring the energy-use changes experienced by households and businesses participating in the program is the first of its kind in Canada, as is the Solar Colwood program as a whole. Preliminary results from the Royal Roads University-Solar Colwood monitoring program, that have been normalized for changing weather patterns, show participating community members are saving between 33% and 68% in energy and related costs. Based on success of the solar Colwood program, there is a planned expansion of the program to include the entire Capital Regional District. This promises to provide more homeowners and businesses with energy savings incentives and a more robust data set for the monitoring program. RRU is located within the scope of the Solar Colwood program and therefore the university qualified for incentive funding for the two electric vehicle (EV) charging stations on campus (as noted above), the solar hot water heating system in the Millward building, and support for \$47,000 in research funding from the Pacific Institute for Climate Solutions.

One of the BSc-ES major projects sponsored by Solar Colwood in 2013 looked at the benefits from powering electric vehicle charging stations by solar voltaic panels. As part of the local government sector, the City of Colwood is required to offset the carbon emissions from its city operations. The study concluded that if Colwood had 60 electric vehicle charging stations, all charged by solar voltaic panels, it would completely offset the city's GHG emissions. With 5,000 households in Colwood, this study showed a tangible and potentially attainable way for the city to offset its emissions without paying \$25 per tonne to the provincial government to purchase offsets.

Another research project was conducted on the social science aspects of the Solar Colwood program during 2012 and 2013. Three faculty members have been working as an interdisciplinary team studying the public uptake and acceptance of a municipal green energy incentive program, using Solar Colwood as the case study. The results are expected in 2014.

Within this research study, a smaller action research project was created and implemented by a Master of Arts in Interdisciplinary Studies student to explore and examine how youth influence parents or guardians in participating in a municipal green energy incentive program, such as Solar Colwood. A three-day workshop was created to provide learning opportunities for youth at the local Dunsmuir Middle School about energy saving technologies. Aspects of the Solar Colwood program were presented to the students by attending a Solar Colwood participant's home to see, touch, and ask questions about the home energy saving retrofits. Youth engagement was encouraged through discussion of how their

families can implement their energy saving ideas, as well as by providing a safe environment for the youth to express their concerns and vision for a sustainable future.

Four BSc-ES students are also participated in this action research project. Their purpose was to learn about the role of youth in generating awareness about energy efficiency and renewable technologies in Colwood. The action research environmental education outreach workshop reached over 120 local youth. Thirty of these youth also attended a field trip to T'Sou-ke First Nation to witness the community's role in the Solar Colwood program. This action research study has been carried out through the collaborative efforts of School District #62, the City of Colwood, the Solar Colwood delivery team, the T'Sou-ke First Nation, and RRU.

Student Activities

In 2013 the Royal Roads University Student Association (RRUSA) was particularly active in promoting climate change awareness and initiatives. Led by members of the Student Sustainability Committee, and with the support of the university's office of sustainability, the RRU community took part in several national and regional environmental initiatives, such as National Sweater Day, Earth Hour, Earth Day, and the *Ban the Water Bottle* campaign in partnership with the members of RRU's CUPE Local 3886.

RRU students were again involved in the *Ready, Set, Solve!* student climate challenge organized by the CRD, and sponsored by BC Hydro and the Pacific Institute for Climate Solutions. One of the RRU teams achieved second place overall for work on developing an environmentally focused curriculum for a City of Victoria youth summer camp program. In addition, the university and its partners received an honourable mention in the Public Section Collaboration category at the 2013 Community Energy Association Climate and Energy Awards for its work on the *Ready, Set Solve!* project.

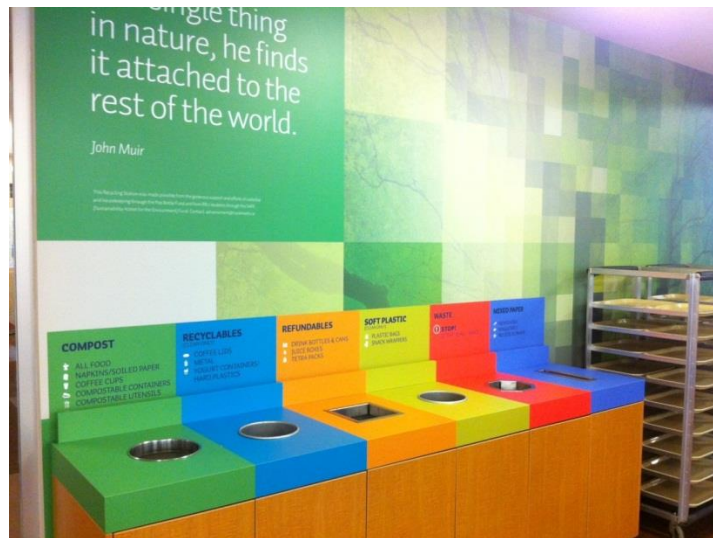
Recycling/Waste Management

An audit of RRU's waste stream was performed by BSc-ES learners in 2013 and found an overall waste diversion rate of 63%. The students also found that nearly 35.5 tonnes of compost is collected annually from the campus and its diversion from the landfill avoids the release of over 52 tonnes of CO₂ equivalents to the atmosphere each year. RRU has contracted *reFUSE* to manage the collection of on-campus compost for the past 12 years. Approximately 400 tonnes (the size of a 767 airplane) of organic waste has been diverted from the landfill through this composting program. This translates into 556 tonnes¹ of CO₂e avoided over the lifespan of RRU's 12-year diversion program.

The BSc-ES student research also identified the opportunity to increase the diversion rate with educational instruction on how to properly sort materials coupled with the use of consistent and more easily understood signage on recycling stations throughout the campus. In response, RRU has begun to apply the student recommendations to its waste diversion program. A recycling/composting education series is being developed for staff, faculty and students, and prizes for the correct sorting of materials were handed out to provide incentives for proper sorting procedures. Starting in the Habitat cafeteria, the largest producer of waste on campus, the university has implemented a new sorting and recycling station complete with new informative signage and branding. This unit and the branding were funded by the MEM students' Sustainable Actions for the Environment (SAFE) fund and the campus pop bottle fund. The latter fund was created by the housekeeping/custodial staff many years ago and continues to

¹ Emissions factor for 1 tonne of organic waste = 1.47 tonne CO₂e (ICLEI Recycling and Composting Emission Protocol: <http://www.icleiusa.org/action-center/tools/recycling-and-composting-emissions-protocol-version-1>; accessed February 4, 2014)

fund environmental initiatives on campus and student bursaries. The signage and branding from the Habitat cafeteria recycling station will be carried over to other areas on campus as the university's old bin system is transformed to a consistent and easy-to-use system of recycling and sorting stations. The goal in these efforts is to improve the university's diversion rate to 80%.



Other Highlights for 2013

Although most of the focus for the sustainability actions by RRU is on the campus, the university also attracts many community collaborations. One example is Vancouver Island 2065, which is a collaboration between the Vancouver Island Economic Alliance (VIEA), the Convening Action for Vancouver Island (CAVI), and the RRU Faculty of Management, School of Environment and Sustainability (SES), the office of research, and the office of sustainability. Looking out 50 years on Vancouver Island, and the future for water, transportation, land use, growth and biodiversity, a RRU graduate student is being funded to work with VIEA, CAVI and local governments on the island to determine the state of sustainability on the island and develop scenarios for 2065.

The university is also a partner in the *Green Economy* initiative, started by the City of Victoria, and transformed into the *Social Enterprise* initiative. Hosting conversations for the community, such as the recent sewage forum, and a previous one with Wade Davis, start to position the university as a hub for important conversations in the community.

RRU continues to be “the nature” for the successful Nature Kindergarten program in Sooke School District #62. Another nature kindergarten has been approved for the Victoria School District, in James Bay, based on the success of the one at Sangster Elementary School in Colwood. This is also an educational endeavour for RRU, with one of its Masters of Environmental Education and Communication (MAEEC) students studying this program, and a professional development program being provided by the university’s continuing studies department.

RRU’s strategic direction is to be a leader for the sustainable stewardship of the Royal Roads historic lands. Through its staff, faculty and students and the many partnerships within the community, the university is realizing this direction, while at the same time providing teaching and learning excellence to learners from over 60 nations in the world and realizing our vision of “connecting people, ideas and experiences to change lives and the world”.



Dan Tulip
Vice President & Chief Financial Officer
Royal Roads University

ACTIONS TAKEN TO REDUCE GREENHOUSE GAS EMISSIONS in 2013

1. Implementation of an Energy Conservation Program on campus, including a workstation energy efficiency tune up, and an energy checklist for buildings.
2. An energy conservation workshop was held for staff and faculty, with presentations by BC Hydro and Fortis BC.
3. Two electric vehicle charging stations were installed for staff, students, faculty and the public. These stations require a valid parking permit, with no charge for the electricity.
4. A demonstration of electric utility vehicles was conducted to determine the feasibility of replacing some of the existing fleet vehicles with electric vehicles.
5. The BSc student project on waste management was completed and its recommendations, together with those of the BSc/BBA project on waste and recycling, will assist the university to improve waste diversion from 63% to 80%.
6. A new recycling station was constructed in the Habitat cafeteria, and new compost bins were installed on each of the floors in the Learning and Innovation Centre. In addition, new compost bins were installed outside the Grant building.
7. The BSc student project on transportation demand at RRU was completed, and its recommendations will guide continuing efforts to reduce the number of single-occupant vehicles coming to campus. The BCom students successfully completed the *Cars on Campus* challenge.
8. The life-safety project was completed, improving roadways on campus and the pedestrian and cycling infrastructure, as well as improving the fire alarm system on campus.
9. The new transit bus loop became operational and bus service to campus was added, providing evening and weekend service for the first time.
10. RRU was re-assessed for its Sustainability Tracking, Assessment, and Rating System™ (STARS) rating, as a result of another BSc student project. A provisional gold score was achieved in the student report, an improvement over the previous silver ranking, and still requires final approval by the Association for the Advancement of Sustainability in Higher Education (AASHE).
11. Three new Ford transit vehicles were purchased to replace less fuel efficient trucks and an SUV.
12. The Recreation Centre washrooms were upgraded, including water efficient toilets and showers.
13. Energy retrofits for 2013 included: upgrading of the DDC control system for optimum starts, allowing air handling units (AHUs) to start only if needed. There is now 100% re-circulation of the air in these systems prior to introducing colder outside air, thereby reducing the energy required to heat the air. Temperature scheduling has been set up in all of the major buildings on campus ensuring that buildings stay in nighttime set-back mode when the university is not in session. The Millward building solar hot water system was improved to hold more hot water better meeting the capacity of the system to heat more water. The coils were cleaned on the air handling units on the Grant and Millward buildings, which increases efficiency and reduces the amperage draw on the motors. Most of the student residences outside lights were put on sensors and were replaced with LED lights.
14. An Energy Star® fridge was purchased for House 10 and an Energy Star® dryer was purchased for use by custodial services in the Millward building.
15. An energy contest was held with staff and faculty, for the best idea to reduce RRU's utility costs – the winning idea was to install computer software to save energy. The second place idea was to install sensor power bars in offices. This contest generated very positive ideas, and interest in saving energy at RRU.
16. A water bottle filling station was installed at the Recreation Centre, with a read out indicating the number of plastic water bottles saved with every use of the filling station.

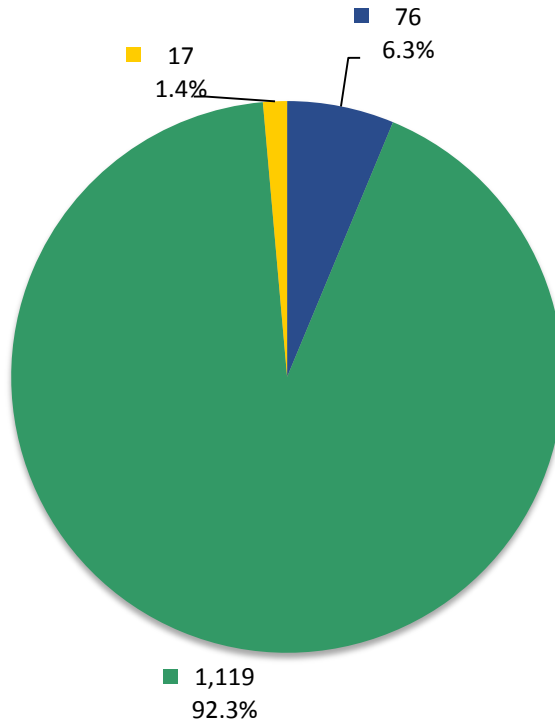
17. A solar hot water study was completed for the commandant's and vice-commandant's houses on campus. It was determined there was not sufficient water use in either of these houses to warrant the investment. This study was completed as part of the Solar Colwood partnership with the university.
18. The Solar Colwood monitoring program continued, with the addition of public presentations on the savings from home energy retrofits, such as solar hot water systems, ductless split heat pumps, insulation, and window replacements.
19. The university initiated an academic scheduling project to find efficiencies in space allocation for classroom bookings. It is expected that this project will result in energy savings by ensuring individual buildings are more fully occupied. The implementation phase of this project will be completed in 2014.

PLANS TO CONTINUE REDUCING GREENHOUSE GAS EMISSIONS 2014-2015

1. Assist the Climate Action Secretariat and the Ministry of Advanced Education in the implementation of the new Carbon Neutral Capital program for the post-secondary sector.
2. Develop an approved 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. The Vancouver Island 2065 project will be initiated, with plans to make the first public announcement of the project at the Vancouver Island Economic Summit in October 2014.
4. Two BSc student projects will be completed – one on creating green teams at RRU, with a focus on paper/printing reductions on campus and energy conservation. The other project is on invasive species and is sponsored by the Environment Roundtable of the CRD.
5. Presentation materials on sustainability at RRU will be developed and added to the RRU staff orientation program.
6. The office of sustainability will continue the *cars on campus* challenge with the BCom students, the major projects with the BSc students, the joint team project with the BBA and BSc students, and the governance/food sustainability project with the MEM students.
7. Recycling centres will be installed on each floor of the Grant building, consistent with the Habitat cafeteria recycling station branding. The Millward, Nixon and Cedar buildings will be next, subject to available funding.
8. The office of sustainability will work with the higher education carbon neutral network on having GHG emission savings from waste diversion considered in the overall GHG emission reporting framework.
9. The energy working group will continue to meet and bring focus to saving energy on campus. Energy retrofits anticipated in 2014 include: installing LED lighting in Hatley Castle, Habitat cafeteria, Quarterdeck, Recreation Centre and the CEDAR Building; installing motion sensors where needed; upgrading the domestic hot water in the Millward building; DDC upgrades where needed; installing hydro meters to measure consumption; a new high-efficiency boiler for the Library, and installing five new heat pumps in the CEDAR Building.
10. Renovation of the CEDAR Building will enable the university to re-locate all of its Information Technology (IT) services into one building, creating efficiencies in space allocation on campus.
11. A bike rental program will be introduced to staff, faculty and students, administered by the RRU Recreation Centre staff.
12. 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 will also be included in the city's economic development strategy.
13. A study will be completed on the solar hot water business case for the Recreation Centre and the Nixon building (student residences).
14. The Solar Colwood program has been extended to 2015, and RRU will continue to monitor the program, but with an expansion of the program into the whole region. RRU will be monitoring both the Solar Colwood program and the new Solar CRD program. Funding for the monitoring program from Natural Resources Canada will continue to March 31, 2015.
15. An updated five-year sustainability plan will be completed in 2014, as part of the ongoing RRU strategic planning review.
16. A second cultural values assessment will be completed by staff and faculty, as part the university's strategic goal to be a *workplace of choice*, supporting professional and personal success.

17. The School of Environment and Sustainability will change Bachelor of Science lab manuals from the current paper format to an online format for the 2014/15 academic year, 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.

**Royal Roads University
Greenhouse Gas Emissions by Source
for the 2013 Calendar Year (tCO₂e*)**



Total Emissions: 1,212

- 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 2013 (Generated May 20, 2014 10:59 AM)

Total offsets required: **1,209**. Total offset investment: **\$30,225**. 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

SMARTTool Greenhouse Gas Inventory Report

Reporting Entity: Royal Roads University
Reporting Year: Calendar Year 2013

| Measure | Quantity | Greenhouse Gases in Tonnes | | | | |
|----------------------------------------------|------------|----------------------------|-----------------|------------------|---------------------------------|-----------------|
| | | CO ₂ | CH ₄ | N ₂ O | tCO ₂ e ¹ | |
| Scope 1 (Direct) Emissions | | | | | | |
| Mobile Combustion (Fleet) | Litres | 30,679.26 | 68.11 | 0.01 | 0.02 | 73.15 |
| Stationary Combustion, Reported ³ | GigaJoules | 21,101.66 | 1,048.54 | 0.02 | 0.02 | 1,054.87 |
| Total Scope 1 Emissions | | | 1,116.65 | 0.03 | 0.03 | 1,128.03 |
| Scope 2 (Indirect) Emissions | | | | | | |
| Purchased Energy, Estimated ² | GigaJoules | 72.58 | 15.89 | 0.00 | 0.00 | 15.89 |
| Purchased Energy, Reported ³ | GigaJoules | 12,093.19 | 48.37 | 0.00 | 0.00 | 48.37 |
| Total Scope 2 Emissions | | | 64.27 | 0.00 | 0.00 | 64.27 |
| Scope 3 Emissions | | | | | | |
| Business Travel and Office Paper | | | | | | |
| Office Paper | Packages | 2,973.00 | 17.02 | 0.00 | 0.00 | 17.02 |
| Total Scope 3 Emissions | | | 17.02 | 0.00 | 0.00 | 17.02 |
| Emissions from Biomass | | | | | | |
| Total Biomass Emissions | | | 2.38 | 0.00 | 0.00 | 2.38 |
| Total Emissions, Calendar Year 2013 | | | 1,200.31 | 0.03 | 0.03 | 1,211.69 |

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.


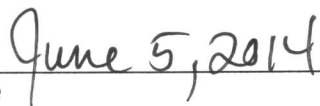
This information is provided by the Government of British Columbia, and is subject to verification.

Carbon Neutral Action Report

This is the Emissions and Offsets summary for the 2013 Carbon Neutral Action Report (CNAR) for Royal Roads University. This report contains our 2013 emissions profile and offsets purchased. The actions we have taken in 2013 to reduce our GHG emissions and our plans to continue reducing emissions in 2014 and beyond are included in the Royal Roads 2013 Overview Report.

Emissions and Offsets Summary:

| Royal Roads University GHG Emissions and Offsets for 2013 (TCO2E) | |
|--------------------------------------------------------------------------|-------|
| GHG Emissions created in calendar year 2013 | |
| Total Emissions | 1,212 |
| Total Emissions for Offsets | 1,209 |
| Adjustments to GHG Emissions Reported in Previous Years | |
| Total Emissions | 6 |
| Total Emissions for Offsets | 6 |
| Credit owing from PCT at end of 2012 reporting year | |
| Credit Owing | 0 |
| Total Emissions for Offsets for the 2013 Reporting Year | 1,215 |

| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p style="text-align: center;">  _____ Signature </p> | <p style="text-align: center;">  _____ Date </p> |
| <p>Dan Tulip RRU Vice President & Chief Financial Officer</p> | |
| <p>_____ Name (please print)</p> | <p>_____ Title</p> |