Mount Allison University Environmental Audit 2018 - Policy 2102g and 2101

Preamble and Policies

This audit has been completed in accordance with Environmental Policy 2102 section 5, Audit and Accountability, which states: "Each summer the University will complete an audit of its compliance with, and the progress made towards goals set out in, at least two of the sub-policies under this Policy, which audit may include criteria from external bodies such as Stars, ISO14000 or others". The purpose of this audit is to assess the progress of the Buildings (Policy #2102g) and Emissions Reduction (Policy #2101) sub-policies of the University's Environmental Policy (Policy #2102). The entirety of Policy #2102 was approved and made effective May 11, 1999 by the Board of Regents, administered by the Vice-President, Administration, and was revised on April 20, 2012. The last audit of policy 2101, Emissions Reduction, was completed in 2014. The last audit of sub-policy 2102g, Buildings Policy of the Environmental Policy, was completed in 2016.

This audit seeks to analyze the strategies used and progress made towards the goals of the policies using both quantitative and qualitative data obtained from various University departments. Additionally, it will endeavour to provide useful recommendations for the Environmental Issues Committee in making further developments towards achieving campus sustainability through these policies. For the purpose of this audit, applicable credits from the STARS 2.1 Credit Checklist will be used to measure additional progress that Mount Allison is making with respect to the Emissions and Buildings policies.

Many thanks go to those who provided guidance and data to help with the completion of this audit, including members of Facilities Management, Neil MacEachern and Perry Eldridge, as well as those from Financial Services, Barb MacIntosh, Ruth Terrio, Mary Phinney, and others including Dr. Michael Fox of the Geography and Environment Department.

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Content

1 – Policy 2101, Emissions

1.1 Introduction

The Emissions Policy was approved and made effective April 28, 2009 by the President, administered by the Vice-President, Administration. This policy seeks to address problems in relation to climate change and the University's carbon footprint, with its purpose being stated as to: "provide guidance and direction to address these challenges, and to establish Mount Allison as one of North America's leading universities in carbon reduction". The last audit of this policy was completed in 2014.

Mount Allison states on its website under "Environment Mount Allison" that it "continually seeks to improve efficiency while reducing its impact on the environment", and that it is constantly seeking new and innovative ways to improve on this for the benefit of future students. The Emission Reduction Policy refers to the demand of the climate crisis, and emphasises that the University needs to build upon its tradition of "innovation and leadership on environmental issues".

This policy has three areas of concentration, heating, electricity and transportation. The initial ideas behind the creation of the policy were developed by students of a fourth-year Environmental Studies seminar and the Environmental Issues Committee.

1.2 Heating

The section of the Emissions Policy addressing heating states that it is a priority for the University to "decrease emissions resulting in the generation of heat for campus buildings". It strives to do so through a number of strategies, including:

- Implementing energy efficiency measures where possible;
- Using alternative energy sources;
- Pursuing Green Globe certifications where applicable; and
- Working with students and employees to reduce the ambient temperature of buildings.

Mount Allison has 4 boilers at 200hp, 400hp, 600hp and 700hp. To heat the school in the summertime, Mount Allison solely operates a 200hp 4-pass boiler systems in areas where the humidity needs to be controlled and in buildings where water needs to be

heated. In the winter, either a 600hp or a 700hp boiler system is used for the baseload, and the 200hp or 400hp boiler system is used for the 'swing-load', meaning the difference between peak and baseloads. The University also keeps light fuel (number 2 furnace oil) on hand, but this has not had to be used since 2014.

In the last audit of this policy, completed in 2014, the conversion from the burning of Bunker A to the use of a natural gas system was analyzed. This conversion resulted in a decrease of emissions by approximately 2,000 metric tonnes (mt) of CO^2 annually, based on the numbers from the 2014 environmental audit. Since that conversion was made, efforts to decrease emissions through heating can be seen through building updates such as:

- The heating lines running through the tunnel systems being reinsulated. This project had a payback period of approximately 2 years.
- The conduction of a steam trap survey and replacement, which found that approximately 20% of the University's 300+ steam traps had failed, constituting about $100,000 annually in heating losses.
- Heat reclamation projects in ventilation systems being planned in buildings such as Barclay and Windsor Hall.

These projects demonstrate the importance of small building projects focused on energy efficiency. The Facilities Management department (FM) has indicated that they are always looking to save on heating where possible, and the building control system operated by FM allows for daily monitoring and tweaking of how heating systems on campus are operating.

Alternative energy sources for heating systems on campus have been and continue to be deliberated at Mount Allison. During the renovation of Jennings Dining Hall in 2000, geothermal energy sources were explored as an alternative method of heating. However, a project of this nature was not pursued due to the cost. According to FM, The University has begun to consider Solar Photovoltaic Energy projects as they would provide the University with the opportunity for net metering. However, there are many factors to take into consideration for such a project, especially given the often windy, snowy climate in which Mount Allison is located. Such a project is only in the stages of initial investigation by the University's Manager of Technical and Energy Services, Perry Eldridge, in the form of a field or roof mounted panel installation. According to Mr. Eldridge, a project of this nature would have an approximate payback period of 15-18 years, so other projects with smaller payback periods would most likely be considered before this one.

Heating systems are a large part of the Green Globe certification process, which Mount Allison pursues for nearly all major building projects on campus. This is elaborated upon in section 2.3 of this audit, under the Buildings Policy audit.

Many efforts to reduce the ambient temperature of buildings on campus through the efforts of students and employees happen through the involvement of Eco Reps on campus and the annual C3 challenge that they work to promote. These efforts are elaborated on in section 3 of this audit.

1.3 Electricity

The second area of concentration of the Emissions Policy focusing on electricity use on campus states that it is also a priority for the University to "decrease emissions through a reduction of the use of fossil fuel sourced electricity". The strategies listed to try and achieve this include:

- Purchasing green power through the grid as it becomes available;
- Retrofitting buildings with energy efficient technology where reasonable to do so;
- Purchasing high efficiency model appliances and computer hardware; and
- Working with students and employees to reduce their use of electricity.

NB Power has yet to make green energy available through the grid, or if they have, its availability has not been made know to Mount Allison. The most recent green energy update on the NB Power website comes from when the Smartflower was being looked into in 2017 as a potential solar energy product for New Brunswick. It was being considered due to its popularity in other Northern countries, its attractive and compact features, and its weather resistance. There have been no recent updates on the testing of this product, although NB Power has indicated they are investigating other renewable energy products such as wind power.

Buildings on campus are gradually being updated to include more energy efficient technology, as per the Buildings Policy (2101g). Projects are selected based on their payback time and convenience, and are often completed by Perry Eldridge of FM. In terms of electricity, this largely occurs through the replacement of lighting on campus. For example, the lights in the Breezeway of the Academic Quad; originally, each one of those fixtures required about 100 watts of energy to operate, but they were reduced to 4 LED wall-packs in order to conserve energy, which is just a fraction of the wattage as opposed to what was being used before. Additionally,

Mr. Eldridge changed all of the outdoor post lights to LED. Most buildings on campus have also been replaced with LED lighting, and dual technology lighting (infrared and motion sensor) has been a part of Mount Allison's standard as of late.

Procurement of goods and services at Mount Allison are authorized through University Purchase orders by the Manager, Procurement Services. Often, the purchasing of high efficiency model appliances and computer hardware is the responsibility of the department through which they are being purchased and is put under the scrutiny of Procurement Services. In other words, purchasing decisions are often made by the staff or department looking to acquire new computers, vehicles, appliances, etc. Additionally, most electrical and mechanical purchases will go through FM before being approved. Under policy 7101 section 8, Environmentally Aware Procurement, it states "the University will purchase, subject to availability and economic considerations, goods and services which:

- Contain post consumer recycled materials;
- Contain materials that lend themselves to recycling;
- Contain a minimum packaging; and
- Are not harmful to the environment, where less harmful alternatives are available."

Mount Allison always seeks to purchase ENERGY STAR® products in order to ensure energy efficiency. Procurement Services have noted that there is an environmental consideration within nearly every purchase that is made at Mount Allison.

As with encouraging students and employees to reduce room temperatures on campus, efforts to reduce electricity usage on campus also often happen through the presence of Eco Reps on campus and the annual C3 challenge. Mr. Eldridge has commented that he is always open to being approached with ideas for energy efficiency projects on campus. For example, a faculty member approached FM seeking funding for the growth chambers in Flemington to be retrofitted with more energy efficient lighting. Since growth chamber lights need to be on 24/7, this project had a very short payback period.

1.4 Transportation

The third and final area of concentration for the Emissions Policy is transportation. This section states that the purpose is to "decrease emissions resulting from University-owned vehicles and University-approved travel". The strategies listed to assist in achieving this goal are:

- Reducing the number of university-owned vehicles where appropriate;
- Replacing the current fleet with low-emission and alternative-fuel options where appropriate;
- Implementing a central accounting system that monitors travel distances and mode of all University-expensed travel; and
- Working with students and employees to consider their use of University approved travel.

The number of golf carts within the University's vehicle fleet has increased significantly in recent years as older vehicles are replaced. All of the golf carts are either solar powered or battery operated, meaning that their carbon footprints are significantly lower than other vehicles within the fleet. The solar powered golf carts are the most recent addition to the fleet, having been acquired one-by-one over the past few years or by converting pre-existing golf carts.

The University will continue to require a certain number of vehicles that are able to drive longer distances and or carry heavier loads. However, the FM plan of reorganizing the vehicle fleet has lead to an evaluation of needs, which in turn, will move the University toward a more efficient and environmentally responsible fleet. FM is currently in the process of converting their fleet to more efficient options, which is primarily accomplished through looking at fleet size relative to work requirements. Often the size of the vehicle itself is considered in the reorganization process. Small electric utility vehicles have been purchased since 2012, some of which have successfully replaced fossil-fuelled road vehicles. The FM fleet currently has 8 electric utility vehicles, 3 of which are 100% continually charged by solar panels. FM will continue to convert as many vehicles to this format as feasible going forward.

FM has indicated that most University-owned vehicles have logbooks where odometer readings in gasoline operated vehicles are kept track of with each day of use. These logs are later submitted to Financial Services to be accounted for within the University's carbon footprint.

Some student-led groups on campus participating in University approved travel already consider carbon offsetting programs, but this past year the Mount Allison Students Union's (MASU) Sustainability Committee included carbon offsetting as a suggestion for clubs and societies on campus in their green training presentation meant to be used for clubs and society training events.

1.5 Financial

Section 3 of policy #2101, Finance, states that the University will:

- Ensure that alternative energy or highly efficient energy measures be incorporated in new building projects;
- Ensure that continued fundraising efforts for building projects defer maintenance to lessen energy consumption; and
- Establish a Green Evolving Fund that will be used exclusively to fund energy efficiency projects or portions of projects that is separate from the A&R budget.

As discussed previously, small-scale energy efficiency projects are being completed by FM on an ongoing basis. The next policy to be audited, which is the Buildings policy, focuses on incorporating energy efficiency projects into both existing buildings and new building projects. As far as large-scale projects go, renewable energy projects often have low return on investment and as a result are not always feasible for the University. FM has indicated that they are more interested in developing a new Master Plan towards sustainability as opposed to adopting just one project to focus on. This way, priorities for energy conservation can be more easily established with regards to cost when moving forward.

It is important to note the existence of the Green Evolving Fund, or Green Initiatives Budget, outlined within the emissions policy. The Green Evolving Fund was created to fund energy efficiency projects on campus in 2010. However, while energy efficiency projects are still being completed, the Green Evolving Fund no longer exists. The fund was established as suggested by the Emissions Reduction Policy, but as of the 2015 budget the Green Evolving Fund has been eliminated. According to Financial Services, this fund unexpectedly grew far beyond the context of the budget. The initiative is still supported by administration and so long as the project has a relatively low payback period (5-7 years maximum), the funds are often still provided. While there is no official criteria, project ideas are continuously brought to Financial Services by FM, and so long as the projects eventually pay for themselves in a reasonable

timeframe they are able to receive an internal loan to complete the project. However, this means that projects that do not pay for themselves at all or in a reasonable timeframe are not approved.

1.6 Indicators

According to Section 4 of the Emissions Policy, Performance Indicators, Accountability and Targets, the Controller is responsible for collecting information and reporting it in the annual Review of Operations completed by Financial Services. As stated within the policy, the metrics for inclusion are:

- Fossil fuel use and emissions from fossil fuels consumed for heating purposes;
- Electricity use and emissions from annual electricity consumption;
- Emissions from University approved travel;
- Energy consumption and emissions per square foot; and
- Energy consumption per student and per employee.

The University's annual carbon footprint is calculated by Financial Services and reported in the Review of Operations each fiscal year. In the Review, the metric tonnes of CO^2 are conveyed for what are described as the "major sources" of carbon emissions, which include Heat, Power, and 'Other'. In the 2017 Review of Operations, the overall carbon footprint calculation was estimated at 10,300 mt.

The "other" portion of the carbon footprint made public through the Review of Operations consists of Field Trips, Team Travel, Employee Travel, Refrigerants, Waste, Diesel and the vehicle Fleet. The Carbon Footprint that is included in the annual Review of Operations does not include employee or student commuting emissions, however the footprint data does indicate that it makes up approximately 13% of total eCO^2 emissions. The data below was obtained from the information used to calculate the 2016-17 overall carbon footprint.

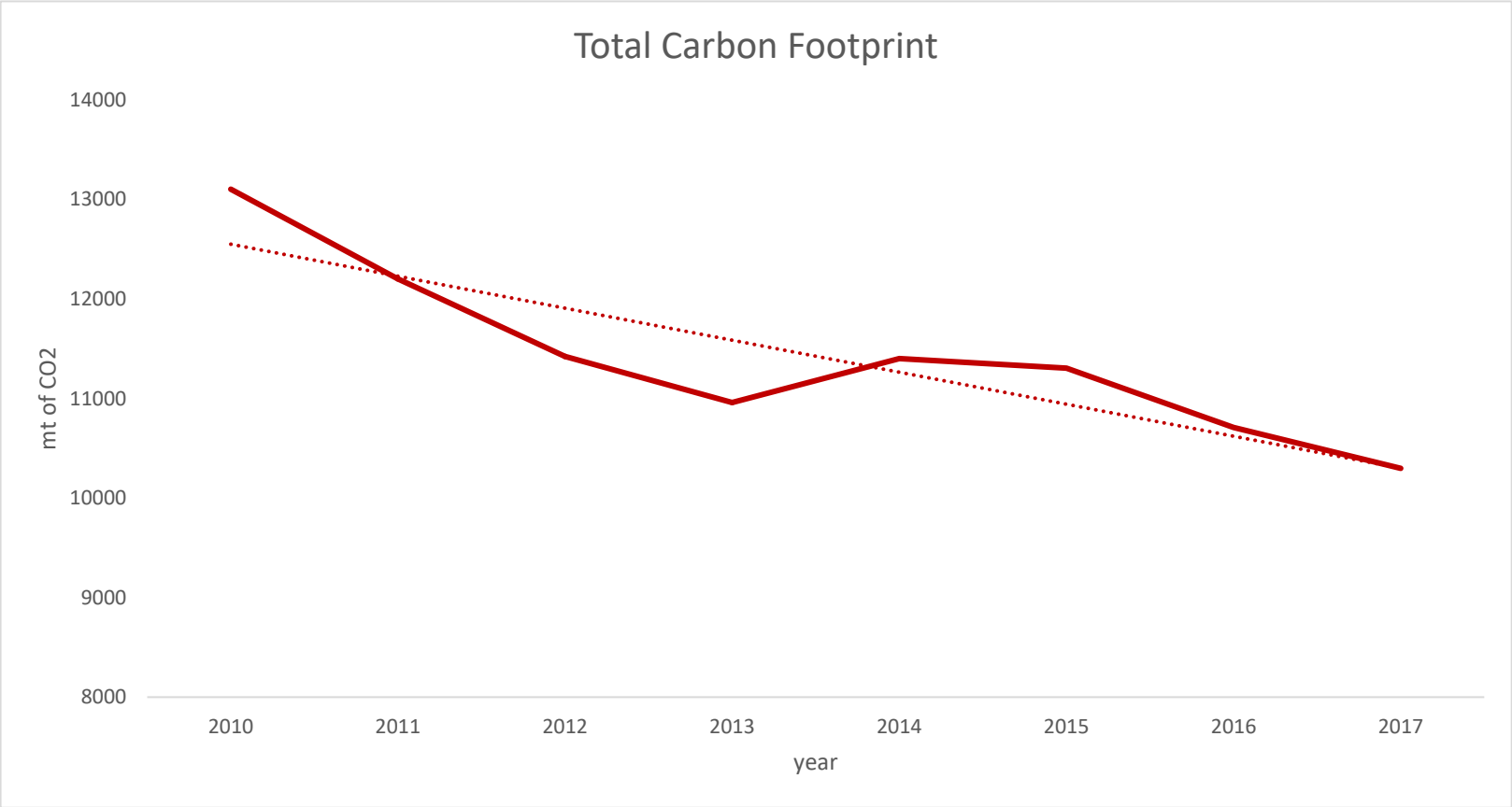


Figure 1.6.1 shows the total CO2 emissions from the University since 2010. This data was obtained directly from the Review of Operations from the 2017 fiscal year as well as the Review of Operations from the 2012 fiscal year. Since 2010, the University has reduced their carbon footprint significantly (from 13,102mt to 10,298mt). This is especially due to the total discontinuation of the use of Bunker A in 2012. While Natural Gas is still a fossil fuel, it produces significantly less greenhouse gas emissions. Since this conversion was made, decreases in CO2 emissions have resulted largely from energy efficiency projects on campus. Building closures, temperatures and equipment performance may also account for rises and decreases in emissions.

Figure 1.6.2 shows the total yearly Natural Gas usage on campus since 2014 in mega tonnes of CO2. The levels of CO2 were taken directly from the Carbon Footprint 2016-17 calculations. New Brunswick dealt with record level snowfalls during the Winter of 2015, resulting in a noticeable increase of heat usage on campus.

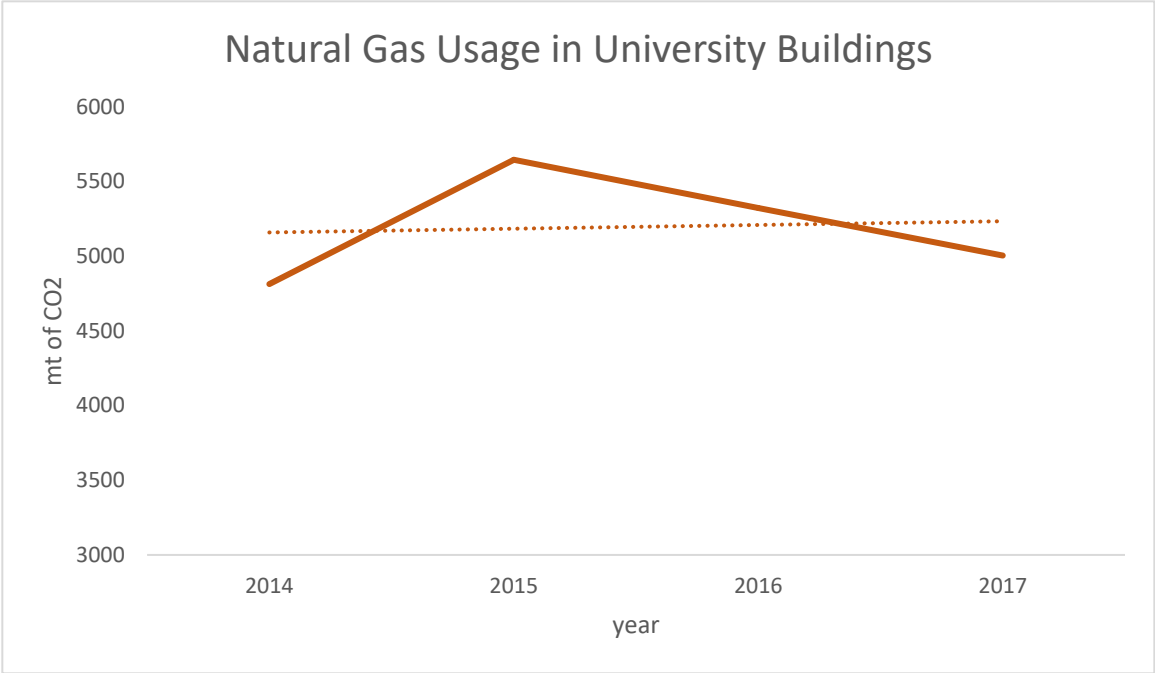


Figure 1.6.3 shows the total yearly Power usage in University Buildings since 2014 in mega tonnes of CO2. The levels of CO2 were taken directly from the Carbon Footprint 2016-17 calculations. Ultimately, power usage on campus has been relatively steady in the past few years, with a noticeable decrease between 2014 and 2015. This is most likely due to lighting upgrades as well as any other energy efficiency projects on campus.

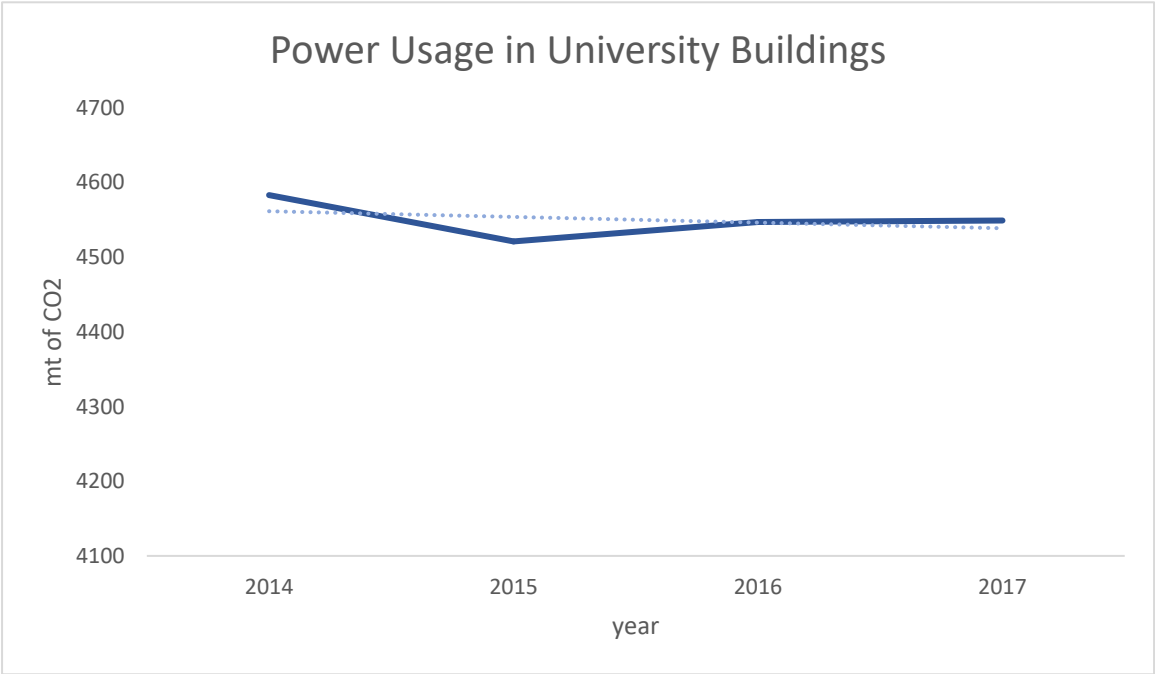


Figure 1.6.4 shows the total amount of CO2 emissions resulting from University approved travel (field trips, team travel, employee travel and the University fleet) each year since 2014. Travel emissions have remained steady since 2015.

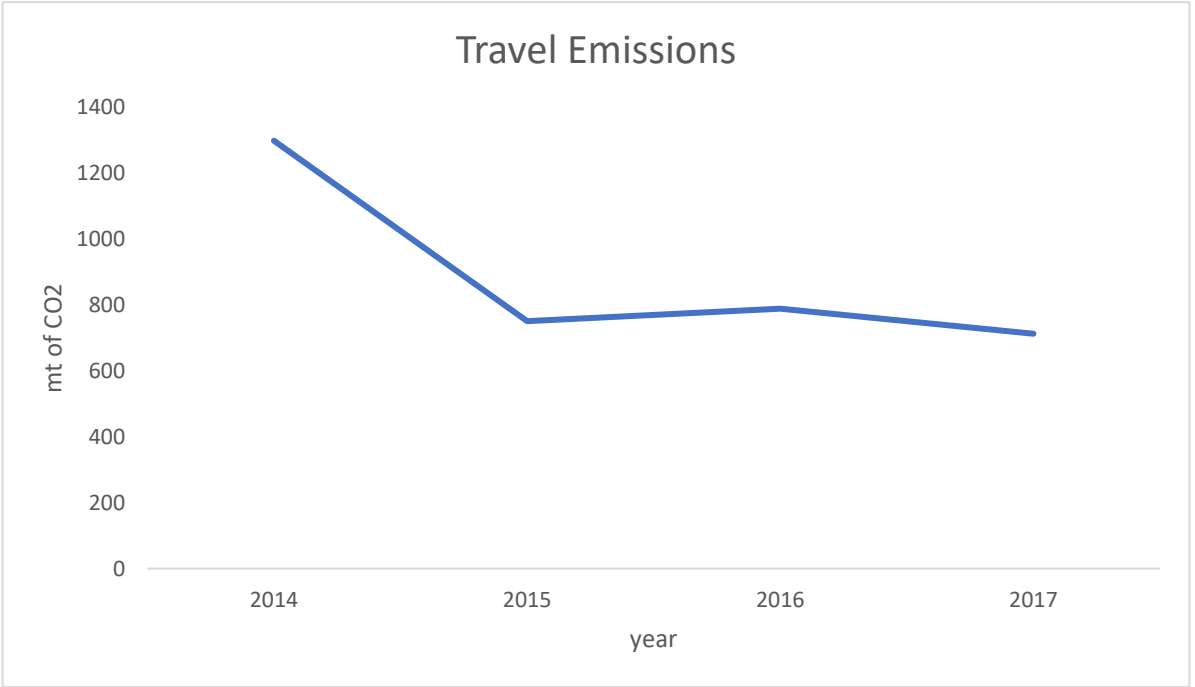
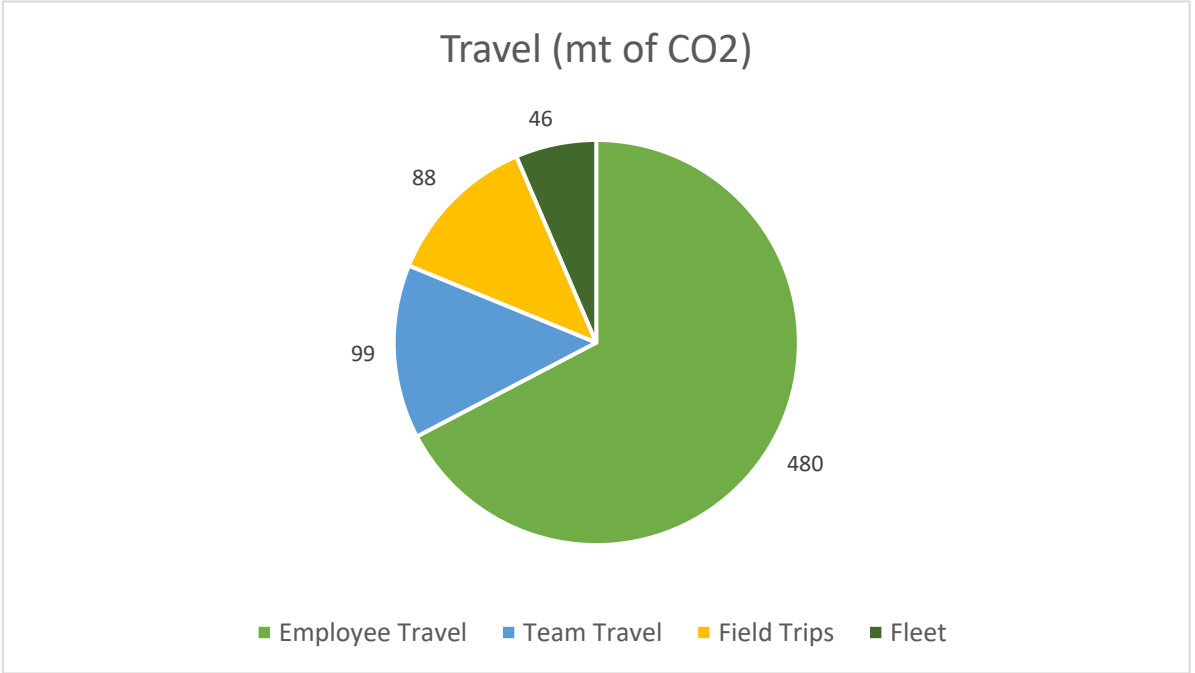


Figure 1.6.5 shows the distribution of University approved travel for the 2017 year. Employee travel produces the largest amount of CO2 relative to other forms of University approved travel including team travel, field trips and the fleet.



1.7 Summary and Recommendations

Overall the University has been making steady strides towards reducing their carbon footprint. This is primarily being accomplished through small-scale energy efficiency projects completed by FM, such as replacing lighting and ventilation systems across campus. However, the Emissions Reduction Policy has not been revised since its approval in 2009, making it close to being a decade old. This policy needs to be revised in order to better reflect changes and current practices of both the University and of the needs of the environment in order for Mount Allison to better align itself with its Environmental Policy. Revisions could include but should not be limited to:

- Updating strategies for decreasing emissions. The University has already switched to natural gas and should more actively investigate alternative energy sources for Mount Allison.
- Mount Allison should plan ahead to adopt energy efficiency projects with longer payback periods.
- Under section 3, Finance, the policy still states that the University will "Establish a Green Envolving Fund". This fund has since been established and later removed from the budget. The policy should accurately reflect that and state where funds for these projects are now coming from.
- Mount Allison should investigate the opportuneness of the Green Evolving Fund. If the funds for green projects are not being set aside, then it should be apparent that the lack of separated funds are not causing less projects to be completed. This includes not only the quantity of projects, but also the scale.
- The University can and should establish more specific targets for this policy to achieve in the future, so that their work towards decreasing emissions are more obvious and transparent.

Recommended Policy Changes

The University should remove or alter the line pertaining to the Green Evolving Fund as that fund no longer exists as an entity of its own. Additionally, the University should consider either reinstating the Green Evolving Fund or a similar initiative so that there are separate funds that can be dedicated to and concentrated on creating a more sustainable green campus, or clarifying within the policy where the funds for green energy projects are coming from and what criteria needs to be met in order for the funds to be made available for such projects. Additionally, projects are only approved if the payback period is relatively low. The University needs to demonstrate a willingness to invest in projects that will eventually decrease their carbon footprint, such as solar energy.

Other Recommendations

Mount Allison should highly consider hiring a Sustainability Coordinator or a position of that nature in order to have a concentrated effort towards green energy projects on campus. Currently, Perry Eldridge takes on much of the responsibilities of a Sustainability Coordinator as Facility Management's Manager of Technical and Energy Services. By spreading out these responsibilities rather than putting everything under one blanket, the University would be able to not only focus on the day to day efficiency of campus, but also potentially take on long-term projects that will increase the University's overall sustainability in the long run, such as a renewable energy project. Having this role will help ensure that the University commits to upholding environmental standards.

The University should consider investing in a carbon offsetting program to account for University-related travel. A program of this nature would not only reduce the University's overall carbon footprint, but it would also appeal to students and staff looking to reduce their individual carbon footprints. It would demonstrate a commitment to footprint reduction and commitment to environmental care by the institution.

Having achieved the ranking as Canada's Top Undergraduate University from Macleans for 19 of the last 27 years, more frequently than any other University, Mount Allison has established itself as a national leader in education and University reputation. This is an enormous achievement, and many students and staff are incredibly proud to call Mount Allison their home. However, from this ranking, stakeholders should be able to expect that Mount Allison is striving to improve upon this reputation by showing continuous efforts to reduce their carbon footprint. This can and should continue to be achieved through small-scale efficiency projects, but larger projects investing in renewable energy should also be considered in order to achieve greater strides towards this goal. Despite the higher payback periods associated with these projects, they are essential in moving forward with emission reduction.

2 – Policy 2102g, Buildings

2.1 Introduction

The Buildings Policy within the Environmental Policy was approved and made effective November 28, 2012 by the Vice President, Administration, and is administered by the Director of Facilities Management. The purpose of this policy is to commit to "constructing, operating and maintaining its buildings in a way that will reduce operating costs, provide healthy environments for students, faculty, staff and visitors and contribute to the goals of protecting, conserving and enhancing the environment".

Buildings play a significant role in energy consumption and emissions across the globe. According to the 2017 ISO 16745 document, buildings contribute approximately one-third of global greenhouse gas (GHG) emissions. Due to this, measuring and reporting the GHG emissions from existing buildings is critical when it comes to cost effective GHG mitigation efforts. This is especially important during the operational portion of a building's life cycle, which accounts for 70% to 80% of its total energy use.

At Mount Allison, each building on campus has unique characteristics. This is especially true due to the age of some of the buildings, such as the Owen's Art Gallery, which is the oldest University art gallery in Canada. Occasionally, upgrading buildings can pose significant challenges if their age causes structural barriers. However, FM has made it a priority to monitor and increase energy efficiency in as many University buildings as possible.

Policy 2102g states three primary objectives, those being:

- Ensuring building projects take all steps necessary to ensure that the building is energy efficient, uses no more water than necessary, and economical in its use of space;
- Ensuring Green Globes design processes and environmental assessments and audits are incorporated in planning for such work; and
- Taking reasonable steps to achieve measurable life cycle cost savings in respect to the building and ensures minimal ecological impact.

In aiming to achieve these goals, the strategies of Policy 2102g are to:

- Rate the energy and environmental performance of existing buildings; and
- To report and implement short-term building repairs in a timely fashion to reduce carbon and water footprints.

2.2 Indicators

The Buildings Policy lists two metrics that are to be used as performance indicators, those being Green Globe Certifications and carbon emissions calculations. According to the policy, it is the responsibility of FM to set and review objectives for buildings, collect building data and report on this information.

Green Globe Certifications

Green Globe Certifications, which are a part of the Green Building Initiative (GBI)(https://www.thegbi.org/), are meant to guide companies towards developing more sustainable buildings in their various stages of design, construction and operation. This includes ensuring factors such as:

- Energy conservation
- Lowered water consumption
- Responsible use of materials
- Efficient use of project team time

Additionally, there are six Environmental Assessment Areas for existing buildings that are each worth various amounts of points. Those categories include Energy, Water, Resources, Emissions, Indoor Environment and Environmental Management.

GBI advertises Green Globe Certifications as being an uncomplicated, practical and affordable method for companies to commit themselves to sustainability. Green Globe scores are given in percentages, which are then translated into a number of 'Green Globes' between one and four. Four Green Globes are equivalent to a Gold LEED rating. The certification process is available for multiple project types including new construction, existing buildings and interiors.

At Mount Allison, Green Globe certifications are pursued for all new construction and any major renovations deemed 'large' enough. This is decided based on the cost of the certification process and the cost of the project.

Building	Green Globe Certification
Purdy Crawford Centre for the Arts	4 Green Globes equivalent
Wallace McCain Student Centre	3 Green Globes (4 Green Globes for the Fitness Centre within this building)
Windsor Hall	Unknown, but pursuing Green Globes
Campbell Hall	Commercial Building Infrastructure Program (predates Green Globes)

Figure 2.2.1 shows the Green Globe Ratings of current Mount Allison buildings as well as which buildings may be pursuing Green Globes in the near future.

Carbon Emissions Calculations

Each fiscal year, Financial Services calculates the University's Carbon Footprint in Metric Tonnes (mt) of CO^2. In Financial Services' Review of Operations made public on the Mount Allison website each year, the Carbon Footprint is broken down to reflect the emissions for "Heat", "Power" and "Other". Over the past 4 years, the University has seen a slow but steady decrease of its total emissions. In 2014, the total emissions were 11,401 mt. In 2017, that number was 10,293mt. On average, total emissions were reduced by 369.33mt each year since 2014.

The total carbon emissions calculations can be found in section 1.6 of this audit.

2.5 Summary and Recommendations

Overall the University is making great progress towards developing sustainable buildings with small footprints. This is especially true when it comes to incorporating environmentally-aware materials and products in new building projects, as seen through the renovations to the Barclay and Gairdner buildings and the upcoming renovation of Windsor Hall. Small-scale energy efficiency projects completed by FM have also helped significantly in improving the efficiency of buildings on campus, including replacing lighting and ventilation systems on campus to consume less energy.

Policy Recommendations

The metrics for this policy are quite broad and not as encompassing as they could be. In order to more clearly calculate the actual footprint of University owned buildings, the University should have a transparent record of waste output, water usage, and energy consumption for each individual building by either reporting or putting in a system to record these metrics. The policy should include these metrics as indicators within the policy in order to provide a clearer snapshot of buildings emissions. According to Perry Eldridge of FM, there is not an individual footprint calculated for each building, and the University has experienced building metering issues over the years. Waste disposal and water consumption records are available, but not without digging. Mr. Eldridge says energy conservation records are “sparse”, but he has been working to rectify metering issues, which requires funding.

Other Recommendations

Since Green Globes are being used as an indicator for sustainability in buildings on campus, a target rating should be incorporated into the policy itself in order to hold projects to a certain standard in every instance. Mount Allison should always strive to achieve the highest rating available in order to prove its commitment to reducing its environmental footprint, as stated on the Mount Allison website. Mount Allison should also consider having existing buildings certified as a way of establishing a standard on campus. Currently, only new building projects and major renovations are rated under the Green Globe certifications. If Mount Allison were to rate existing buildings the University could establish not only a benchmark but also a comprehensive environmental plan for the future of buildings on campus.

More outreach material and campaigns should be generated in order to engage students and staff in lessening the footprints of University buildings. Currently, the C3 challenge is the only outreach campaign conducted at Mount Allison to raise awareness of energy consumption, and it is led primarily by students. In order to encourage the Mount Allison community to play a role, administration should encourage and facilitate year round outreach material including signage, events and online material. This should include communication of current energy efficiency and sustainability measure being taken by the University to current students and faculty.

In January of 2018, a group of students and faculty members presented to the Environmental Issues Committee about potentially developing green rooftops at Mount Allison, specifically in two locations on the Wallace McCain Student Centre. Their presentation highlighted environmental, efficiency and psychological benefits of green rooftops, as well as the research potential and funding options. A project of this nature would not only prove environmental dedication by the institution, but would also increase building efficiency and roof longevity. Mount Allison would benefit from revisiting this project, perhaps through student led efforts, and investigating other potential projects to work towards greener buildings on campus.

3 – Environmental Stewardship in Relation to Policies 2101 and 2102g

3.1 Introduction

Environmental stewardship, based on the idea of noted conservationist Aldo Leopold that our relationship with the land around us matters, refers to "the responsible care of land and resources, while recognizing that humans are a part of complex natural systems on earth and should embody an ethic of care". Additionally, The Canadian *Living Planet* report from 2007 notes that Canada's ecological footprint per person is the fourth largest on the planet. Therefore, it is not surprising that there are a number of initiatives in place both on the Mount Allison campus and on other Canadian University campuses meant to help address problems related to climate change. The majority of these initiatives are student-led or volunteer based. This section of the audit will address some of

those efforts in relation to the objectives and strategies of Policy 2101, Emissions, and Policy 2102g, Buildings. Additionally, this section will also use STARS criteria to further assess Mount Allison's progress towards sustainability.

3.2 AUCSN

Mount Allison is a part of the Atlantic Canada Universities and Colleges Sustainability Network (AUCSN). This is a group that consists of members of participating institutions in the Maritime region. Membership is represented within this network by staff members who are responsible for sustainability initiatives at their respective institutions. The AUCSN meets in the Fall and Spring of each year, and provides Universities and Colleges in the Atlantic Canadian region with opportunities to network amongst each other to better their sustainability efforts. This gives institutions the opportunity to learn about initiatives happening at other schools to build upon one another and gain inspiration. Mount Allison is represented within AUCSN by Perry Eldridge, the Manager of Technical and Energy Services.

3.3 Eco-Rep Program

The Eco-Rep program monitors buildings on campus to work towards improving their environmental efficiency. Eco-Reps are student-held positions on campus that are responsible for carrying out monthly environmental audits in each building on campus. Each Eco-Rep is either chosen within their residence or assigned to an academic building by the Head Eco-Rep, which provides an 'ownership' between them and the buildings. With the help of their FM contact, Perry Eldridge, Eco-Reps serve as the 'eyes and ears' for potential building maintenance that could help with energy efficiency in the building. They look for items such as lights being left on, leaky taps, improper waste disposal signage, etc. They also play a large role in raising awareness about the C3 challenge on campus each year.

The Eco-Rep building audits completed in January of 2018 were made public through the Eco Reps at Mount Allison Facebook Page in a comprehensive report. This report includes audits from residence buildings as well as academic buildings, and reports on items such as waste disposal, energy consumption and efficiency, and advises fixable problems to FM and the Environmental Issues Committee.

3.4 Campus Climate Challenge

The Campus Climate Challenge (C3) is held on campus annually as an initiative to bring awareness to energy use in buildings on campus. Although the challenge is presented as a competition amongst the residences on campus, it is sometimes held as an inter-university competition amongst Atlantic Universities that was originally started at Mount Allison. In recent years, academic buildings have also been included in the calculations.

For this challenge, energy consumption is monitored by meters and displayed as kilo-watts per hour (kWh). A 2 week benchmark is established before the challenge begins, and then energy consumption is tracked for another two weeks during the challenge. Whichever building is able to reduce their weekly energy consumption the most from their baseline is declared the winner. However, the challenge is more so meant to help change the culture of how individuals think about energy and their use of it, and the ultimate goal of the challenge is to decrease energy consumption on campus overall. Eco-reps help to promote this challenge by sharing tips on how to use less energy, such as taking shorter showers, turning off lights, hanging clothes to dry or unplugging devices when they are not in use. The success of C3 is very much dependant on how much the challenge is promoted on campus.

Figure 3.3.1 shows the trends in energy consumption amongst all buildings on campus during C3. Although academic buildings only became a part of the challenge recently (2016), they are monitored throughout the C3 challenge along with the residences.

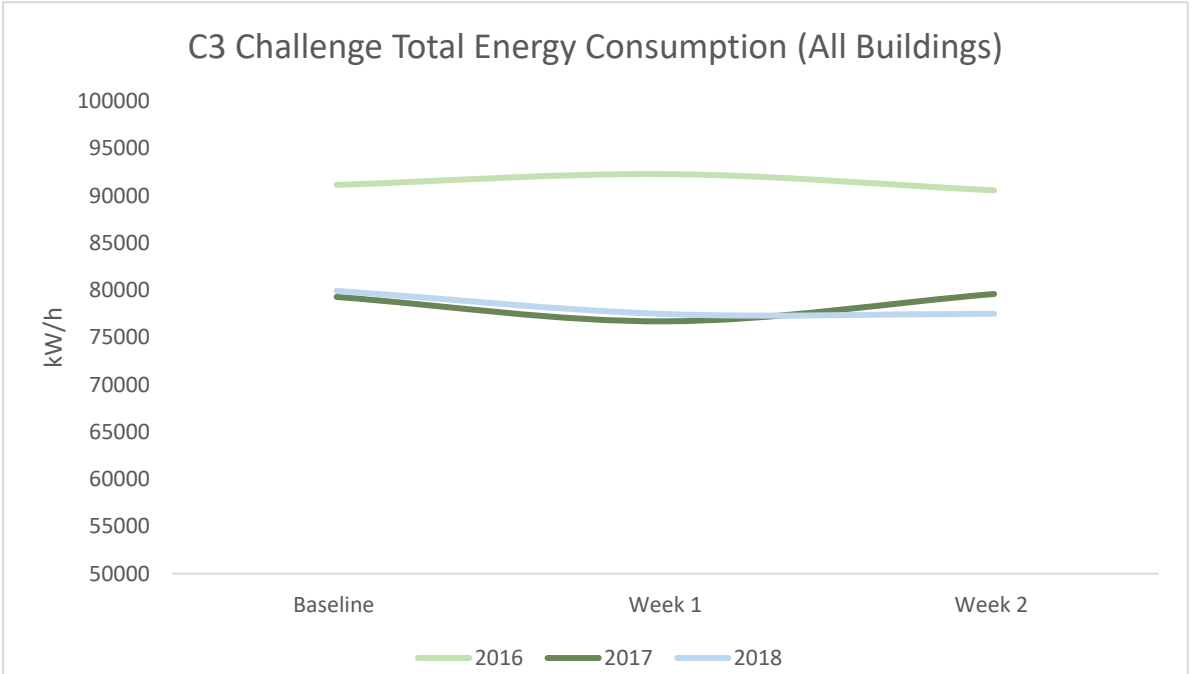
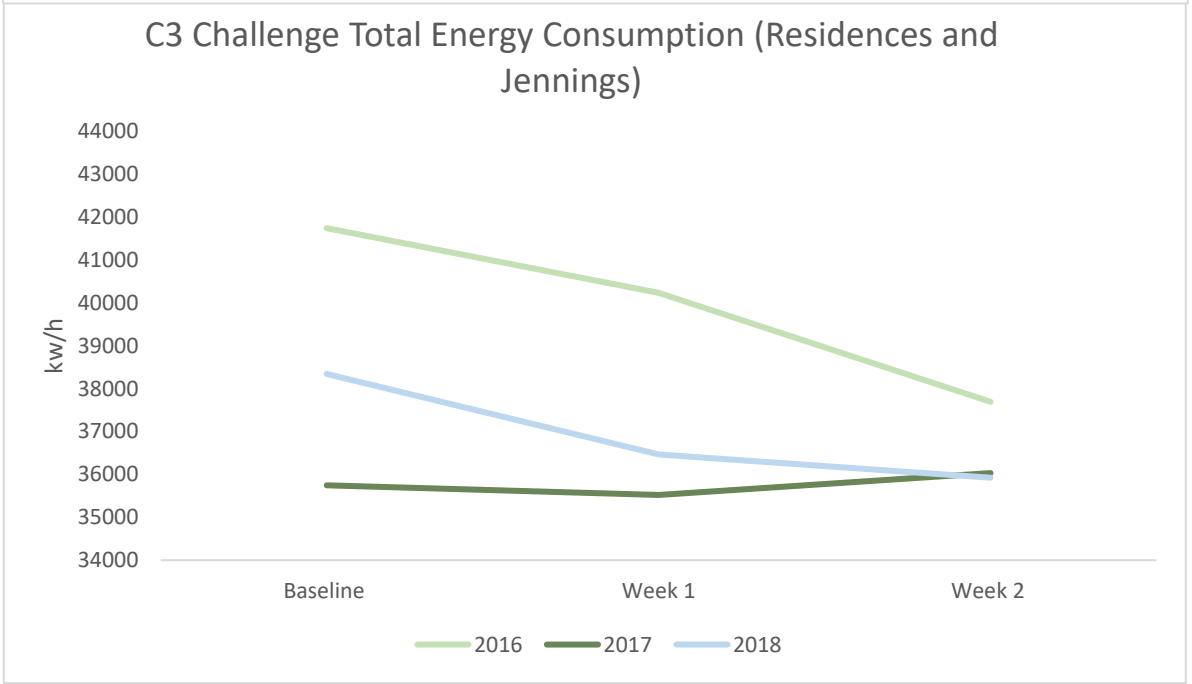


Figure 3.3.2 shows the trends in energy consumption amongst just the residences and Jennings Hall during C3. Jennings is included in the energy measurement for Harper Hall, as the two buildings share power metering. C3 is especially promoted amongst residences, and as shown by this graph most of the decrease in energy consumption comes from within the residences.



3.5 Maple League of Universities

The Maple League of Universities was established in 2013, originally as the U4 League, unifying four small universities that focus on undergraduate education. Consisting of Acadia University, Bishops University, St. Francis Xavier University and Mount Allison University, the Maple League boasts collaboration as a means to increase the opportunities available for students. The four universities are easy to compare, as they all exist in considerably small towns and advertise similar experiences both on and off campus.

Mount Allison should gain inspiration from and build upon the initiatives being taken by their partnering universities through the Maple League when working towards becoming a more sustainable, green campus. Not only would this compliment the Maple League's collaborative abilities, but it would also help Mount Allison to identify what sort of initiatives are feasible within our small campus. Below are just of a few of the many initiatives being taken by the other 3 Maple League schools. Additionally, Mount Allison should seek opportunities for collaboration amongst the Maple League schools in terms of increasing sustainability efforts.

Acadia University

- Acadia University boasts a Sustainability Office that works to advance sustainability initiatives at the University. This office employs a Sustainability Coordinator.
- Most recently, Acadia has taken steps towards becoming a plastic-free campus by working directly with Chartwells Catering and the Acadia Students' Union.
- Acadia has a 400 watt wind turbine and two 200 watt solar panels on top of the Student's Union Building. Acadia also has an energy dashboard, created in partnership by the Department of Computer Science and the Sustainability Office, that displays real-time energy consumption on campus.

St. Francis Xavier University

- From 2008 to 2016, St. FX reduced their GHG emissions by 21.8%, which is 5,746 metric tonnes of CO2, and they have plans to reduce their footprint even further, The university is currently in the process of a $12 million replacement project of various lighting and mechanical fixtures to reduce their energy consumption by up to 20 per cent.
- In March of 2017, St. FX launched St. FX Sustainability, a campaign to build a more environmentally-friendly campus.
- In 2017, students created a successful proposal to increase the number of solar panels on top of the Bloomfield Student Centre.

Bishops University

- In an effort to reduce their GHG emissions on campus, Bishops has been harnessing geothermal energy, which saves them more than 2300 metric tonnes of CO2 emissions annually and over 1 mission cubic metres of natural gas annually. This underground energy loop became the first geothermal district heating system in Canada.
- In 2014, Bishops became a Carbon Care Certified Campus through Enviro-access, and are taking steps towards becoming a carbon-neutral campus.

3.6 STARS Credits

In section 5 of the Environmental Policy, Audit and Accountability, it states that the annual audit of two of the sub-policies under this policy may "include criteria from external bodies such as STARS". STARS certifications focus on the overall, general sustainability of an institution, and were developed by the Association for the Advancement of Sustainability in Higher Education (AASHE). On their website they write:

> *"AASHE defines sustainability in a pluralistic and inclusive way, encompassing human and ecological health, social justice, secure livelihoods, and a better world for all generations. STARS attempts to translate this broad and inclusive view of sustainability to measurable objectives at the campus level. Thus, it includes credits related to an institution's environmental, social, and economic performance."*

There are 901 institutions registered with the STARS rating system, 76 of which are in Canada. Of those registered, 461 are active participants in reporting STARS data. STARS ratings focus on assessing sustainability, which they define as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs". This is directly in line with Mount Allison's dedication to providing intergenerational equity amongst its campus, making it an ideal rating system to be used in assessing Mount Allison's overall progress.

In order to remain specific in auditing the Buildings and Emission policies, this section will look specifically at criteria listed in the STARS 2.1 Credit Checklist in relation to Buildings and Emissions under the Operations, Planning & Administration, and Engagement categories. In the chart below, relevant criteria are listed along with their descriptions and an explanation of how Mount Allison is striving to meet this criteria. It should be noted that an actual STARS assessment allocates points and is more all-encompassing of overall sustainability; this chart only aims to use relevant criteria to assess Mount Allison's progress in terms of the Emissions Reduction and Buildings Policy of the Environmental Policy being assessed in this audit.

Category	Subcategory	Credit Title	Requirement	Mount Allison Status
Engagement	Campus Engagement	Student Educators Program	Institution coordinates an ongoing peer-to-peer sustainability outreach and education program for students (sometimes known as an "Eco-Reps" program).	Mount Allison operates an Eco-Rep program on campus through Facilities Management.
		Student Life	Institution has co-curricular sustainability programs and initiatives.	Mount Allison has multiple student-led groups operated under the MASU constitution that promote sustainability on campus such as Eco-Action, the Geography and Environment Society, etc.
		Outreach Materials and publications	Institution produces outreach materials and/or publications that foster sustainability learning and knowledge.	Mount Allison hopes to make changes to the environmental section of the website, and as of now outreach material is limited. Student-led initiatives such as Eco-Action and the MASU Sustainability Committee do a significant amount of student outreach.
		Outreach Campaign	Institution holds at least one sustainability-related outreach campaign directed at students and/or employees that yields measurable, positive results in advancing sustainability.	The C3 challenge is the only outreach effort that was held on campus this past year. The University also provides education on the garbage system to students and staff.
		Assessing Sustainability Culture	Institution conducts an assessment of campus sustainability culture that focuses on sustainability values, behaviors and beliefs.	In terms of culture, the University does not conduct anything of this nature as of yet. However, the Environmental Issues Committee does act as

				an instrument to help gage the culture, as it is a multidisciplinary group.
		Staff Professional Development	Institution's staff participate in sustainability training or professional development opportunities that are provided or supported by the institution.	Sometimes staff (Perry Eldridge) are sent to conferences for this type of training (eg., AUCSN 2018 Spring Network Meeting). The University provides training as required, but there is room for improvement.
	Public Engagement	Community Partnerships	Institution has one or more formal community partnership(s) with school districts, government agencies, nonprofit organizations, NGOs, businesses and/or other external entities, to work together to advance sustainability.	The University works closely with the town and other Sackville based groups. The university is also working with Siemens Canada in Moncton to examine opportunities for energy efficiency programs on campus. They previously had done an assessment on campus.
		Intercampus Collaboration	Institution collaborates with other colleges and universities to support and help build the campus sustainability community.	In the past, Mount Allison has completed the C3 Challenge in collaboration with other Universities, but this is not always the case. Mount Allison is also a member of the AUCSN (Atlantic Universities & Colleges Sustainability Network).
Operations	Air and Climate	Greenhouse Gas Emissions	Institution has conducted a greenhouse gas (GHG) emissions inventory that includes, at minimum, Scope 1 and Scope 2 GHG emissions.	Mount Allison does conduct a GHG emissions inventory in order to calculate their annual carbon footprint, which

				includes both Scope 1 and Scope 2 GHG emissions.
		Outdoor Air Quality	Institution has 1) adopted policies or guidelines to improve outdoor air quality and minimize air pollutant emissions from mobile sources on campus and/or 2) completed an inventory of significant air emissions from stationary sources on campus.	The University does not currently have a policy addressing air quality, although an inventory of emissions that may affect air quality is kept. The University does have a tree planting policy (2102f, Ground Policy), and although tree planting helps towards this, the policy does not specifically reference air quality.
	Buildings	Buildings Operations and Maintenance	Institution owns and operates buildings that are 1) certified under a green building rating system for existing buildings (e.g. LEED O+M) or 2) operated and maintained in accordance with formally adopted sustainable operations and maintenance guidelines and policies.	Mount Allison certifies new buildings and major renovations through the Green Globe rating system. However, it does not have a certification process for existing buildings.
		Building Design and Construction	Institution owns buildings that were constructed or underwent major renovations in the previous five years and are 1) certified under a green building rating system for new construction and major renovations (e.g. LEED BD+C) or 2) designed and built in accordance with formally adopted green building guidelines and policies.	New building projects or major renovation projects at Mount Allison pursue Green Globe certifications and are built with the intent of receiving a high rating under Green Globe standards and regulations.

	Energy	Building Energy Consumption	Institution has data on grid-purchased electricity, electricity from on-site renewables, district steam/hot water, energy from all other sources (excluding transportation fuels), and gross square feet/metres of floor area.	Mount Allison keeps track of building energy consumption data through receipts in order to calculate the institution's annual carbon footprint.
		Clean and renewable energy	Institution A) generates electricity from clean and renewable energy sources on campus, B) uses renewable sources for non-electric, on-site energy generation, C) catalyzes the development of off-site clean and renewable energy sources, or D) purchases the environmental attributes of electricity in the form of RECs, GOs, or renewable electricity from a certified green power purchasing option.	Mount Allison does not generate electricity from its own renewable energy sources, nor are there any available through the grid from NB Power.
	Transportation	Campus Fleet	Institution supports alternative fuel and power technology by including in its motorized fleet vehicles that are hybrid, electric and/or alternatively fueled.	Mount Allison's campus fleet is being reorganized, and is moving towards becoming more efficient.
		Support for Sustainable Transportation	Institution has implemented strategies to encourage more sustainable modes of transportation and reduce the impact of student and employee commuting.	This is something that the Environmental Issues Committee is working on, but no such strategies have been implemented as of yet. Ride sharing occurs are Mount Allison on an irregular basis, and is not organized through a formal program.

	Purchasing	Sustainable Procurement	Institution 1) has written policies, guidelines or directives that seek to support sustainable purchasing across commodity categories institution-wide, 2) employs Life Cycle Cost Analysis (LCCA) as a matter of policy and practice when evaluating energy and water using products, systems and building components, or 3) has published sustainability criteria to be applied when evaluating products and services.	Mount Allison's Procurement Policy includes a subsection entitled "Environmentally Aware Purchasing", which outlines environmental considerations with regards to procurement. Additionally, Procurement Services does look at LCCAs when making purchasing decisions. Sustainable procurement at Mount Allison could be improved upon, as the current policy acts as guidelines only.
		Electronics Purchasing	Institution purchases EPEAT registered products for desktop and notebook/laptop computers, displays, thin clients, tablets/slates, televisions and imaging equipment.	Mount Allison does not specifically look for EPEAT products, although it does solely purchase Energy Star electronic products.
Planning and Administration	Coordination and Planning	Sustainability Coordination	Institution has at least one sustainability committee, office, and/or officer tasked by the administration or governing body to advise on and implement policies and programs related to sustainability on campus.	Perry Eldridge of Facilities Management is tasked with completing energy efficiency projects, but Mount Allison does not have a staff position working towards sustainability.
		Sustainable Planning	Institution has formally adopted plans that include measurable sustainability objectives.	The Environmental Policies serve as the primary sustainability objectives, as well as the Carbon Footprint Reduction Targets found on Mount Allison's Environment Mount Allison Page. Aside from these documents, the Campus Master Plan includes some

				wording regarding the sustainable use of space on campus.
		Participatory Governance	Institution has adopted 1) a framework for engaging internal stakeholders (i.e. students, staff, faculty) in governance; and/or 2) a framework for engaging external stakeholders (i.e. local community members) in the institution's governance, strategy and operations.	Mount Allison's board and board committees have various mechanisms for some engagement. On every committee there is at least one faculty and student. Additionally, there is an open board meeting once a year, and the University regularly engages with the town.
	Investment and Finance	Sustainable Investments	Institution and/or its system, foundation or management company makes positive sustainability investments and/or has investor engagement policies and practices.	On Mount Allison's website under "Climate Change and Responsible Investing", there is a section which states: "there are opportunities to take environmental, social and other factors into account when managing the University's investments but it does not support embracing a binary choice — to hold or not to hold fossil fuel securities."
		Investment Disclosure	Institution makes a snapshot of its investment holdings available to the public.	Yes. This can be found under Financial Reports "Endowment Fund Holdings" on Mount Allison's website.

4 Sources

1. Emissions

Cited Work

Data and Information Provided by

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Barb Macintosh, Controller, (Interview and Email)

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2. Buildings

Cited Work

https://www.iso.org/home.html

https://www.thegbi.org/green-globes-certification/

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3. Environmental Stewardship

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https://sustainability.acadiau.ca/campus-sustainability.html

https://www.stfx.ca/

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https://stars.aashe.org/

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Perry Eldridge, Manager of Technical and Energy Services, (Interview and Email)

Dr. Michael Fox, Department Head of Geography and Environment, (Interview)

Robert Inglis, Vice-President Finance and Administration, (Interview)