Mount Allison University - Policy 2102 Environmental Audit 2017

Introduction to the audit

From policy 2102 section 5 audit and accountability: “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…” (Mount Allison). This year the food (2102.d) and water (2102.b) policies have been audited.

This audit has been done with consultation from financial services, administrative services, facilities management and the Town of Sackville for more qualitative evidence. Data was provided by financial services and facilities management for more quantitative evidence. Reporting on the University’s policies has been done as accurately as possible to truly represent the efforts related to these two policies. Under each indicator examined, there is a digestion of the information provided, a statement saying if the University has been following the policy or not and recommendations that will enhance the sustainability at Mount Allison in the future.

In the face of rapidly changing climate with unpredictable and often devastating impacts of climate change here in Sackville, and around the world it is vital that Mount Allison operate sustainably by reducing its impact on the planet. As one of the top undergraduate universities in the country, it is the community’s (staff, faculty and students) and leader’s responsibility to foster a meaningful conversation surrounding not only water consumption and food but all anthropogenic impacts on the climate. Updating and ensuring that these policies are followed is important to the operations and sustainability of this institution.

Thanks to all the Mount Allison community members who helped me gather data and information surrounding food and water. Thanks goes to Neil MacEachern, Perry Eldridge, Andrea Ward, Mary Richards, Dr. Fox, Michelle Strain, Stuart MacDonald, and of course Barb MacIntosh.

Jessie McIntyre

Policy 2102.d – Food

This policy was last approved on November 28th, 2012 by the Vice President Administration.

Policy purpose: "The University recognizes its responsibility to take a leadership role in its commitment to incorporating environmental initiatives into planning and decision making in its dining operation. The purpose of this policy is to provide guidance and direction in the exploration and adoption of more sustainable practices."

INTRODUCTION

Mount Allison University is a small university but provides three regularly operating eating establishments to students, staff and faculty along with catering services for University functions and conferences held on campus. Various efforts have been made in regards to local food and menu options and waste reduction in dining services operations.

The three main dining venues on campus are: Jennings Dining hall which mostly serves students that live in residence; The Flying Bean, a small café located in the Ralph Pickard Bell Library; and Gracie's Cafe, a restaurant style café in the Wallace McCain Student Centre. All food that is served through dining services is provided by Aramark; a large transnational company that provides food to education, healthcare, sports, entertainment, business and government institutions. Mount Allison has a contract with Aramark Canada that allows the University to direct what is to be purchased and served students and staff at these establishments.

Local and seasonal food has been shown to decrease greenhouse gas emissions along with dietary shifts away from meat and dairy products (Garnett, 2011). Efforts are being made to serve local and seasonal food at Jennings Dining Hall from the three Maritime Provinces: New Brunswick, Nova Scotia and PEI. Currently it is reported that 40% of the food served at Jennings is considered local, but more clarification is needed between seasons as the growing season is limited. Various definitions of local food are used and making these definitions clear is the first step in identifying environmental conscious food targets. Approximately 22% of food was vegan and vegetarian at the time of the last audit in 2013. A new chef is in the process of being hired, with experience in world, vegan, vegetarian and local cuisine. This could be an asset to increasing local food and lower on the food chain initiatives.

Waste from dining services makes up a large portion of the overall waste on campus. The food scraping station at Jennings Dining Hall has been a success since its implementation in 2008 along with composting the leftover food waste. There are current efforts to focus on buying bulk food and to use biodegradable service ware in the cafés. These efforts can be coupled with initiatives to reduce the consumption of single use cups and cutlery by promoting alternatives.

INDICATORS: The food policy is centered on two central policies – Local food & Menus, and Waste Reduction. Each of these will be explored through their appropriate indicators.

LOCAL FOOD AND MENU AVAILABILITY

Serving of local & seasonal food, and its promotion:

Jenning's has partnered with various producers in New Brunswick, PEI and Nova Scotia to increase local food served to students. The current definition of local food is currently food from Nova Scotia, New Brunswick and PEI – a 5hr drive. Food served at the dining hall is 36-40% local. Some examples of this are potatoes from Port Elgin NB, and milk from Elmsdale Nova Scotia all year long. During the months of September, October and early November 50% of the food is local as the growing season permits. Almost $1,000,000 is being spent on food each year. Data re the percentage and dollar value of local food being collected, but not being reported, which does not follow the policy in the current metrics portion of the policy: "percentage and dollar value of food items sourced in New Brunswick, Prince Edward Island and Nova Scotia" (Mount Allison). These can be published yearly along with the environmental auditor reports on the Mount Allison "Environment" section of the website. Clarification surrounding the policy on where and to whom these are to be reported needs to be updated.

There are currently no plans to increase the amount of local food served at Dining Services beyond an average of 40% due to constraints on cost, through correspondence with Michelle Strain, director of administrative services. This is following the current policy of "continue to explore sources of affordably priced local food grown or produced in the three Maritime Provinces and to maintain its ratio of locally sourced food at a minimum of 40%" (Mount Allison).

Promotion of local food at Jennings is currently being done with a menu board and lists of all the local options; with nutritional information print outs on each of the menu options. In discussing with this Michelle Strain, she states there are new plans to increase awareness around the source of the food. Dining services has purchased new software that will give nutritional information and where each of the menu options come from, these will be placed above each of the menu options. This will increase student's awareness of where their food is coming from.

Comparing Mount Allison's local food initiatives to Dalhousie's, they are on par. Dalhousie has implemented the STARS (Association for the Advancement of Sustainability in Higher Education) program with 28% of food coming from Atlantic Provinces. They also have a "farm to table" program, where seasonal, sustainable seafood and dairy, fair trade coffee and tea are bought whenever possible. Specific producers and farmers are listed and what they provide to the university and listing specific products which they commit to always being local (Dalhousie University).

Recommendations

Having a clear definition of what "local food" constitutes is important, and this can be be stated in policy 2102.f. This definition could be expanded to include not just geography, but sustainable production methods, social justice and corporate responsibility. This would allow Mount Allison to shift to a more holistic view of food and promote food systems awareness. I recommend that local food be shifted towards a definition of sustainable food to include:

1) Geography – less than a 5-hour drive

2) Fair treatment of employees and

3) Sustainable methods of processing, using companies that are committed to using less energy and water.

By using this definition and shifting framework from just local to a more holistic view, Mount Allison can support fair, local businesses that focus on environmental responsibility.

In addition to clearly defining what local and/or sustainable food means, we can specifically measure the percentage of local/sustainable food served and how dining services can increase this. As the climate in Atlantic Canada limits the growing season, sustainable food could be measured by semester. Reporting the percentage of sustainable food served during each semester will allow for more specific goals to be met during the winter semester, when local food isn't as plentiful.

Dalhousie has farmers and suppliers listed on their dining services website, I recommend that Mount Allison do the same to inform students exactly where their food is coming from and if their processing and treatment of employees is acceptable (Dalhousie University). Transparency of food sourcing is important to ensuring that food is sustainable and local. In addition to this, I recommend that Mount Allison adopt and adhere to the STARS program to increase accountability surrounding food.

Increasing the amount of local or sustainable food is another clear recommendation I am making. This can be done while at the same time keeping costs low through making partnerships with local and on campus farms to allow them to increase production and keep costs lower. I recommend increasing this from 40% overall to 80% in the fall semester and 50% in the winter semester by 2022 – a five-year target.

<u>Fish species that are at risk are not served:</u>

Jenning's has partnered with seafood suppliers and conservation groups attempting to move toward 100% contracted sustainable seafood as per Marine Stewardship Council (MSC), Best Aquaculture Practices (BAP), Ocean Wise Certifications and/or identified as sustainable by the Sustainable Fisheries Partnership (SFP). A goal was set by 2013, to have 95% of contracted sustainable seafood across all operations (Mount Allison Dining Services). This is currently being met according to Michelle Strain, except for one instance where shark was ordered. Fish

species that are at risk and commonly served in the Maritimes are: Atlantic Bluefin Tuna, Atlantic cod, Atlantic Salmon (all populations), Atlantic Whitefish, and various shark species (Department of Fisheries and Oceans). Mount Allison is complying with this policy. This policy is comparable to a similar one at St. Francis Xavier, where Sodexo (food supplier) does not serve fish that are at risk (Sodexo Canada).

Recommendations

Although no fish at risk species are served at Mount Allison, there is still room for improvement by increasing the amount of local fish served and ensuring that these follow the current sustainable fishery groups above: MSC, BAP, SFP and ocean wise certified.

Purchase of vegetable grown on campus:

The Mount Allison Farm is currently operated by students in the summer and fall months. Equipment and seeds are provided to the students hired to operate as they see fit, as they keep the profit. Produce grown at the farm is then sold through CSA vegetable boxes and at the local farmer's market. If the produce is not sold through boxes or at the Market, the rest is sold to Jennings at less expensive prices. There is no clear measure of produce that is grown on campus that is used in the dining hall.

An Urban Cultivator has been purchased to be put in place this coming school year in Jennings. This is a fridge-like automatic system that adjusts humidity and light for optimal growing of small vegetables. There are going to be 32 flats of leafy small vegetables grown at the time. Example vegetables will be herbs such as basil and greens such as arugula. This will increase the use of the amount of vegetables grown on campus used.

Recommendations

Acadia University has a program, where student volunteers pick vegetables for the dining hall on campus (Acadia Farm). This would give students good volunteer experience and allow the Jennings Dining Hall to increase local food. The farm also has individual plots where community members, outside Acadia can rent and grow their own vegetables (Acadia Farm). I believe a similar program could be implemented with the MTA farm, where students volunteer or are paid a small wage and community members are also able to rent out plots. Serving more vegetables grown on campus either at the farm or in a garden would allow dining services to increase the local food and decrease costs. It would also increase the community atmosphere and culture around food sustainability, even though it does not directly influence dining on campus.

Although the Urban Cultivator is a great step forward with increasing the amount of food served that is grown on campus, more can be done. Green roofs are increasing in popularity with universities such as Saint Mary's, Ryerson and University of Toronto using them for research and food production purposes. I recommend that Mount Allison investigate green roof

options suitable for growing vegetables for Jennings Dining Hall. This would increase the amount of produce grown on campus and decrease costs for local food. This proposed green roof could be managed by dining services, a class or a student led club at Mount Allison.

Besides tapping into the potential for possible harvesting of produce, green roofs also offer many other benefits. This includes but is not limited to: decreasing building energy consumption, decreasing temperature increases of urban spaces, decreasing water runoff, increase of sound insulation, and ecological preservation (Berardi, GhaffarianHoseini and GhaffarianHoseini, 2014). These benefits do not directly influence the policy 2102f at Mount Allison, but could improve the overall ecological integrity of the campus, along with increasing local food.

Vegetarian and vegan menu options:

Approximately 25 – 35% of students at Mount Allison are self-identifying vegetarian or vegan according to Michelle Strain. Vegetarian options make up approximately 60% of the food served at MTA which is currently measured by administrative services by the policy "Administrative Services will collect information and report metrics and progress on both local food and menus and reduction of food waste. The metrics to be considered for inclusion are … 2) percentage of vegetarian items on the menu" (Mount Allison). Despite being collected it is not being reported. I recommend that this data be published yearly along with the environmental auditor reports on the Mount Allison "Environment" section of the website. Clarification of to whom this should be reported to needs to be made in the policy.

Approximately 60% of food served at Jennings Dining Hall is vegan or vegetarian. This is made possible through the various stations having "make your own options". If students are vegan, vegetarian or just didn't want meat based protein they could just chose another option such as tofu or extra vegetables. This not only increases ease for vegetarian eaters, but also decreases food waste.

Recommendations

In addition to collecting the percentage of vegetarian options available, vegan options could also be collected and published, as this is an increasing trend in lifestyle and eating habits. This could be added to the "Performance indicators, accountability and targets" section of policy 2102.5. This would show Mount Allison's commitment to providing more sustainable food choices.

WASTE REDUCTION

Composted food:

In 2016, 18,000kg of compost was produced from dining services. This comes from pre-consumer and post-consumer food scraps from Jennings and other café options. The path from food waste to compost at Mount Allison is (Fig 1.):

1. Food is scraped at station or collected at cafés
2. Food is put through the pulper.
3. After it is pulped, the food is rice sized pellets.
4. Pellets of food are then put in the BigHanna composter. The food pellets are put through four temperature cycles and turned into a coffee ground like substance.
5. The final product is dry compost, coffee grinds like substance.
6. The dry compost is stored in a trailer outside Jennings. When full (capacity 500kg), the trailer is then taken to the MTA farm to be used in its operations or facilities management in campus gardens.

1. 
2. 
3. 
4. 
5. 

Figure 1: Steps of composting operations in Jennings Dining Hall.

The volume of food waste being composted is being collected by administrative services. This is in compliance with the current metrics section of the policy “Administrative Services will collect information and report metrics and progress on both local food and menus and reduction of food waste. The metrics to be considered for inclusion are … and 4) volume of food waste composted” (Mount Allison). Despite it being collected it is not being reported. These should be

published yearly along with the environmental auditor reports on the Mount Allison "Environment" section of the website.

The volume of post-consumer food waste per student is not being collected by Administrative Services. This is not in compliance with the current metrics section of the policy "Administrative Services will collect information and report metrics and progress on both local food and menus and reduction of food waste. The metrics to be considered for inclusion are … and 3) volume of post-consumer food waste per student" (Mount Allison). This should be published yearly along with the environmental auditor reports on the Mount Allison "Environment" section of the website.

Recommendations

I recommend that current composting efforts be continued on campus. I also recommend that in the third section of policy 2102.5, "Administrative Services will collect information and report metrics and progress on both local food and menus and reduction of food waste. The metrics to be considered for inclusion are … and 3) volume of post-consumer food waste per student" be removed (Mount Allison). As pre-consumer food waste is mixed with post-consumer food waste in the composting process it cannot be measured properly. I recommend that Administrative Services continue to collect the post-consumer food waste but also measure the amount of energy that the composting process uses and examine ways to decrease this energy consumption.

Another recommendation that I am making is to put in place a five-year goal to decrease food waste and compost. Although composting efforts are good, it still requires energy to process so minimizing food waste would be ideal. Food waste can never be completely eliminated in dining services or at home, but continuing decreasing portion size and prep would help decrease the food waste. I recommend that decreasing the amount of compost produced to by 23% (14,000kg per year) by 2022 – a five-year target.

<u>Biodegradable service ware in café operations:</u>

Biodegradable corn starch cutlery is used in the café dining options along with catering services. This cutlery is placed in the current green stream with the new Eco360 sorting system.

Recommendations

Along with increasing signage to increase awareness about proper sorting of biodegradable cutlery, I recommend that there be a small charge put in place for using service ware, my recommendation is 15cents per item. Although the current service ware is biodegradable, reducing the amount used will be a nice addition and increase awareness about waste reduction. A campaign similar to ones for increasing water bottle and thermos use could be put in place around campus to encourage students and staff to use cutlery from home and decrease waste.

Volume of used vegetable oil:

800L of vegetable oil is used per year at Jennings. This oil has been increased in efficiency, by being reused up to three weeks from an oil filtration device that filters out the bits of food from the oil (Fig 2). The unit costs approximately $2500 and is safe, effective at filtering food out and quick. After the oil has been used three times, in the fryers, it is collected in large drums and picked up by a recycling company Ron's Grease Removal for recycling.

Fig 2: Oil recycler at Jennings Dining Hall. This device gets inserted directly into the deep fryers to filter out the food, and can even be done while the oil is hot.

Recommendations

To decrease the amount of vegetable oil used in deep drying, I recommend that dining services explore alternative low oil options such as more oven baking or different fryers that require less oil, as opposed to deep frying. The current oil recycler is a step in the right direction but these can be furthered through decreasing the amount of deep-frying.

Food bought in bulk:

It is reported by Michelle Strain and Stewart MacDonald that all food is bought in bulk except for catering milkers, creamers and sugar packages. Buying food in bulk reduces cost and waste for dining services.

Recommendations

For catering and café services I recommend that individual packages be eliminated to decrease this waste. I recommend that further exploration be done into buying food in bulk to further

waste. Food such as yogurt does come in 650g sized containers, which is not ideal for high volume use. Yoplait does offer a large 1800g and a dispensing nozzle on the bag and something similar could be explored to further food packaging waste.

Packaging waste:

The current packaging waste is not being reused for any other purposes, just recycled per the Eco360 three stream systems. On the dining services website, it states that cardboard from packaging is used to fuel the Big Hanna composting machines. The composting machines are no longer being fueled from cardboard as the wood pellets burn more efficiently, and although this does not fall under policy 2102.5 directly, this should be changed to reflect the true fuel – wood pellets. Along with decreasing waste, reusing packaging could also be explored.

Recommendations

With the recent switch in Westmorland County to a three stream garbage waste system, dining services staff need to ensure that all waste material is properly sorted and that all efforts are done to reduce waste. A relationship between Eco360 and dining services could be enhanced, with potential consultation on how to reduce waste for operations. Yearly meetings between stakeholders can take place with Dining services supervisors, Eco360, experts from the Mount Allison community in order to look at options to decrease and reuse packaging waste to make Dining services more sustainable.

Long-term goals

There are currently no long-term goals or efforts set in place to increase local food in dining operations. I recommend that targets be put in place to increase sustainable food whether that be from around the Maritime provinces or on campus through green roofs. Green roofs are an excellent opportunity to maximize growing space on a small campus, decrease food cost and increase the carbon travel footprint of food. Increasing the amount of vegetables bought from the farm could also be increased; I recommend that at least 50% of produce picked from the farm be bought and used in Jennings Dining Hall. Through these specific initiatives, the cost of local food can be decreased. In addition to these on campus initiatives, increasing sustainable food sources from surrounding areas will help dining services meet my 80% sustainable food in the fall semester and 50% sustainable food in the winter semester by 2022 – five-year goal.

There are also no long-term goals set in place to decrease food waste and packaging. Food should continue to be bought in bulk and ways to decrease this packaging could be explored. Biodegradeble food service ware is a good effort but a campaign by community members could promote students and staff to bring their cutlery from home. This can be achieved through charging for cutlery with the purchase of an item, similar to the coffee cups at the café establishments. Continuing to support the use of thermos' and water bottles on campus can also be done through facilities management and Eco-Reps.

Policy 2102.b – Water

This policy was last approved on November 28th, 2012 by the Vice President Administration.

Policy purpose: Mount Allison is located within the Tantramar River watershed and plays an important role with respect to water use in the region. As a steward of the environment the University is committed to responsible water management. The purpose of this policy is to provide guidance and direction to address the roles and responsibilities of Mount Allison in meeting this commitment.

INTRODUCTION

Water is a precious resource that is needed for all life. Access to clean drinking water is often taken for granted and living in a country where there seems to be unlimited clean drinkable water, it doesn't seem like a concern. The Mount Allison community must work towards conserving this resource for current and future generations, on the local and global scale. Proper maintenance of infrastructure by facilities management and practices by community members will help in conservation.

Mount Allison uses approximately 1/3 of the Town of Sackville's water. As Mount Allison is such a large user of this resource, it is important to have a good working relationship between Facilities Management and the Town of Sackville in regards to policy surrounding water infrastructure, practice and runoff.

There are current efforts in conservation of water on campus. This includes conservation posters and stickers around taps which is done through Eco-Reps and administrative services in residence. The Eco-Rep program is under the direction of facilities management. A student volunteer is assigned to each residence and academic building, to monitor it for efficiency improvements whether it be water, energy or heat. Each month a report is completed with Facilities Management, and posted on Facebook under the Mount Allison Eco-Rep page while actions are taken to fix leaks, install sensor lights etc. The Reps also promote conservation of resources and are a great asset to water conservation education on campus.

INDICATORS: This policy is centered on two central policies: efficient infrastructure and practices. These will be explored through appropriate indicators.

INFRASTRUCTURE

Current water consumption:

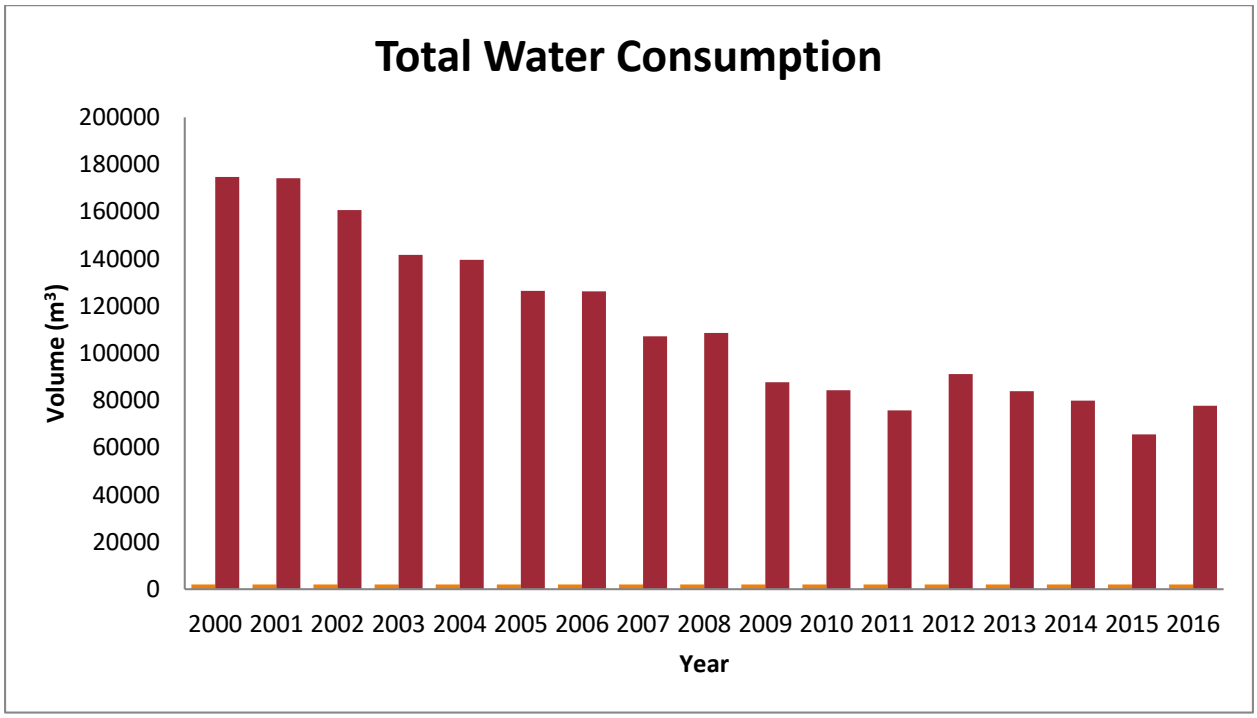

Figure 3: Total water consumption from 2000-2016 (financial services).

There has been a general decrease in water consumption, from 175,000 to 77,000 gallons per year between the years 2000-2016. This is a positive sign to signify that the conservation efforts by members of the Mount Allison community and increasing efficiency of infrastructure are working. There was a slight increase in consumption in 2016, but this is likely due to the large amount of water with the construction on Alumni field and replanting of Park St. Field.

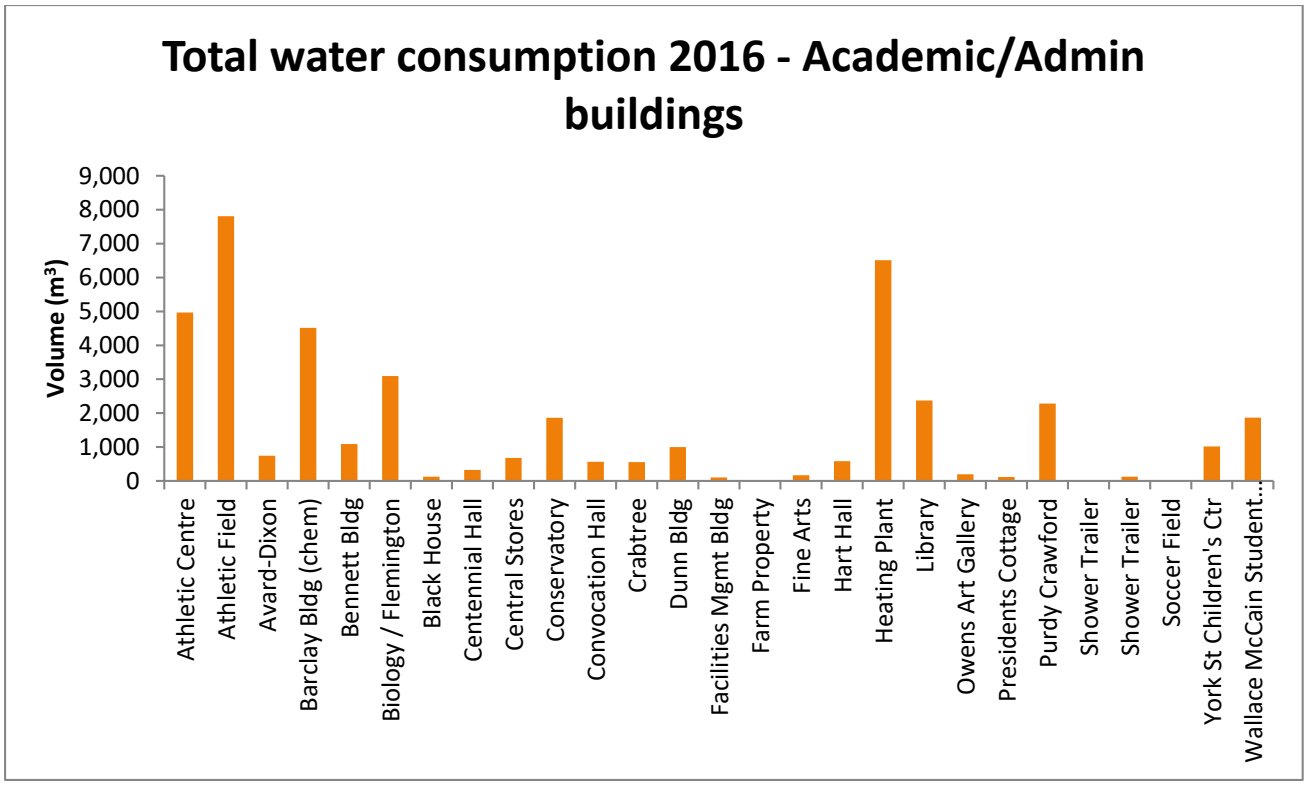

Figure 4: Total water consumption for academic and administrative buildings 2016

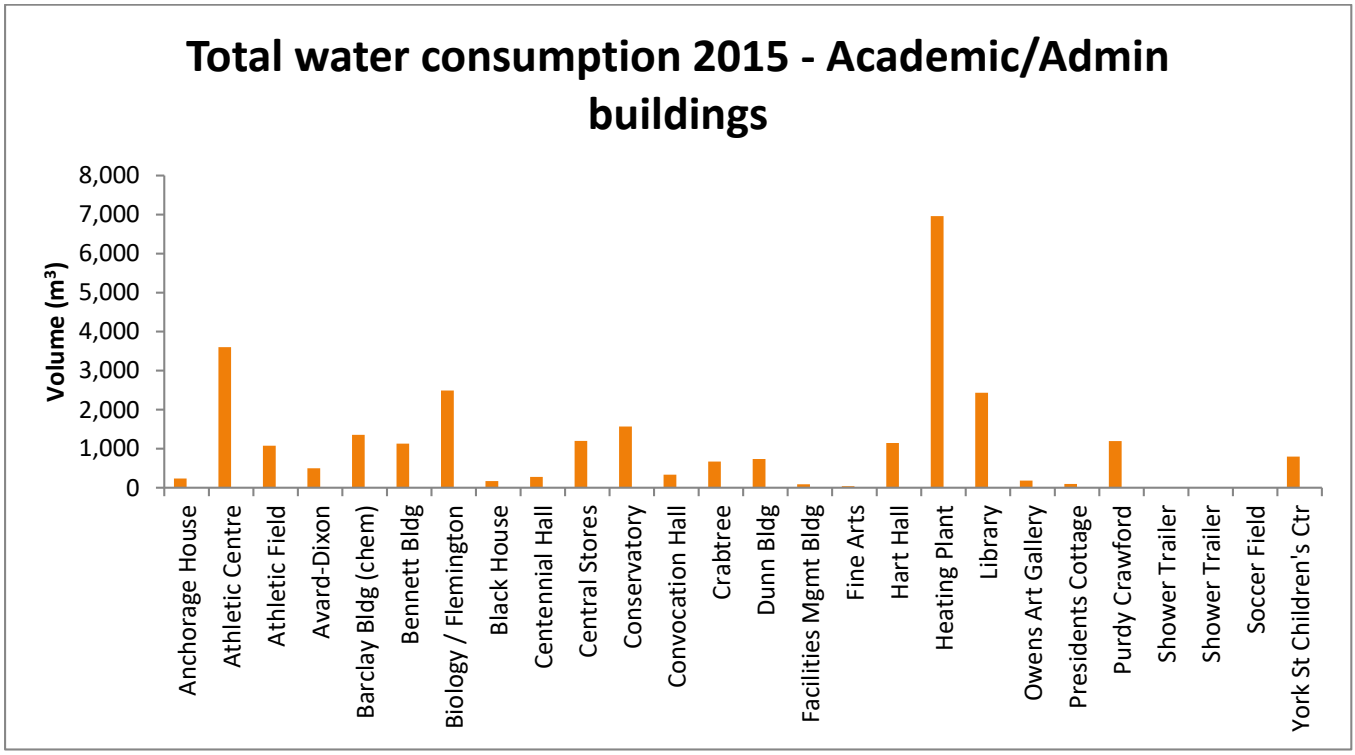

Figure 5: Total water consumption for academic and administrative buildings 2015.

There are fluctuations between years of water consumption in each building. These are due to circumstances surrounding leaks, grounds projects going on nearby and other unexpected uses of water. The largest portions of non-residence water consumption are the athletic field, athletic centre and heating plant. Comparing 2016 and 2015 water consumption it is easy to see that there was much higher consumption for the athletic fields in 2016. This can be explained by the construction going on with Alumni field and sod being replaced and watered on the Park St. field. The athletic centre has a large consumption of water. This is likely due to the showers being used very regularly and refilling the pool.

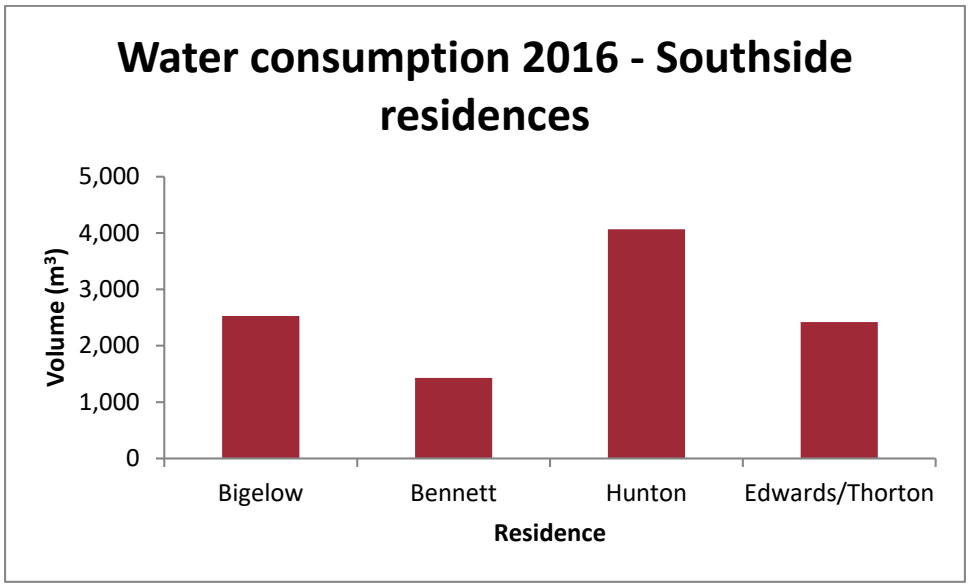

Figure 6: Total water consumption for South Side residences – 2016.

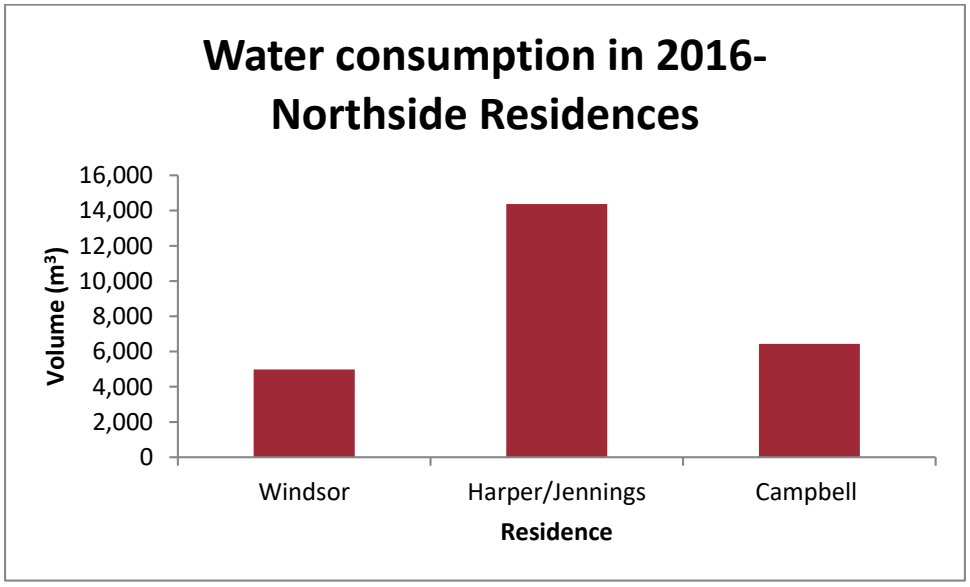

Figure 7: total water consumption for North Side Residences – 2016.

Bennett had the lowest amount of water consumption on South Side, and Hunton with the most. This is likely due to replanting and construction around the athletic fields and a water main break next to Hunton House. Another possible explanation could be an issue with the metre in that residence. Harper has the highest consumption out of all the residences, likely due to it being connected to Jennings Dining Hall, which requires a significant amount of water for its operations. Campbell and Windsor are comparable due to their size, with Campbell having slightly more usage, likely due to the number of their ensuite bathrooms.

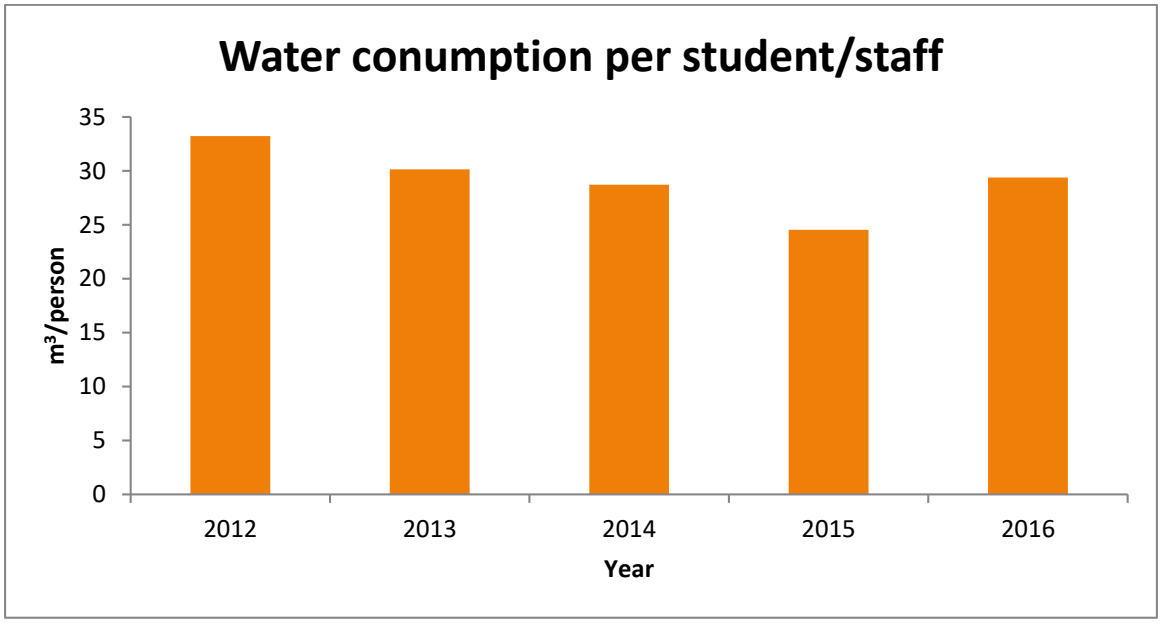

Figure 8: Total water consumption per student staff from 2012-2016

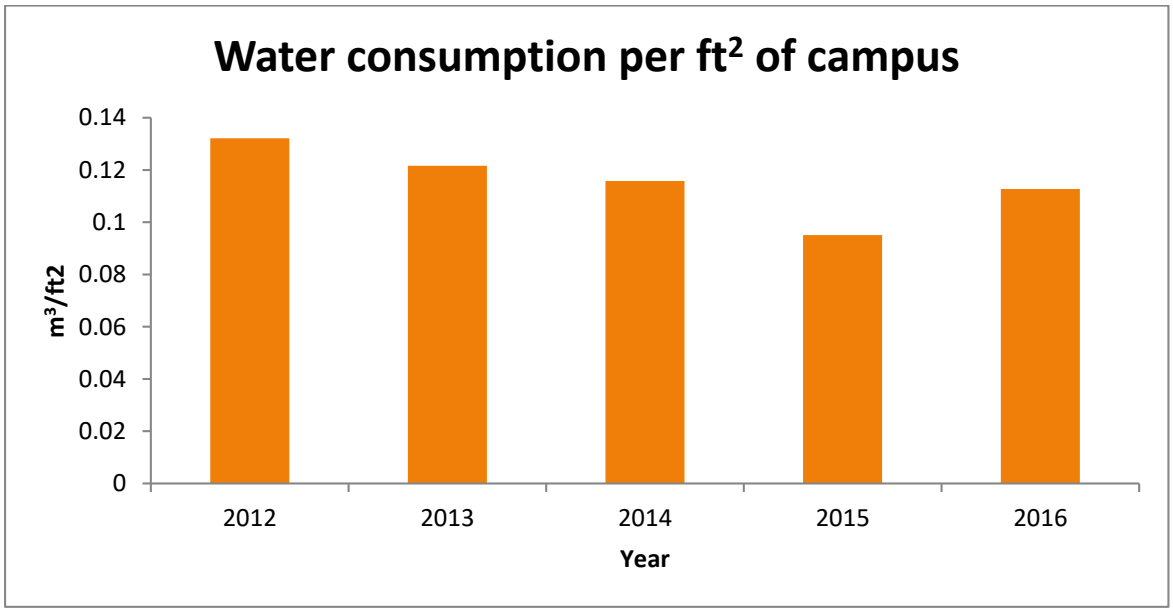

Figure 9: Total water consumption per ft^2 of campus.

Total water per student and staff and per ft^2 was calculated for the past five years. There is an overall decreasing trend but a slight increase in 2016, similar to the total water consumption seen above (fig. 9). With minor shifts in the student, staff populations, it is hoped that a decrease will continue in 2017.

Recommendations

Although there has been progress in decreasing water consumption on campus, there is more to be done. Increasing water conservation initiatives such as signage would increase knowledge about this resource. Increasing awareness surrounding the Fix-It form in regards to leaky taps, toilets and showers would also have an impact on water consumption. Decreasing the amount of time facilities management does not know about a leaking tap, sink or shower will decrease water waste. Awareness surrounding this could be distributed through emails and regular residence reminders by residence staff. Maintaining the current Eco-Rep program would also help decrease water consumption through their awareness initiatives and regular checkups on their respective buildings. Including water consumption in the C3 (Campus Climate Challenge) if possible would be an extra incentive to decrease water consumption within residences and academic buildings. Separating Harper and Jennings in terms of water consumption if possible, would also be beneficial to monitor the specific uses of each of those buildings.

Consumption and cost of water is being collected by financial services for each building on campus, which is in compliance with the current metrics section of the policy "Financial Services will collect information and report metrics and progress on water management. The metrics to be included are 1) Annual potable water consumption; and 2) Annual potable water consumption per square foot, per student and employee" (Mount Allison). Despite being collected it is not being reported, which does not follow the policy. I recommend that these be published yearly along with the environmental auditor reports on the Mount Allison "Environment" section of the website. Clarification surrounding the policy on where and to whom these are to be reported to should be made.

<u>Water bottle refill stations on campus</u>

There are 13 water bottle refill stations, with one soon to be installed in the Bell Conservatory of Music. These are an excellent alternative to buying bottled water from vending machines. They promote awareness surrounding waste of plastic water bottles by just being present. On each of the refill stations, they indicate how many water bottles have been diverted from the landfill or further processing in recycling. With increasing the use of these stations, it would be expected that water consumption would increase as well, although the difference would be minimal and overall better for campus.

Recommendations

Although water bottle waste is not directly correlated to the water policy currently, waste from water bottles could be considered in this policy. To decrease the waste from one use water

bottles, more water bottle refill stations could be installed when buildings undergo renovations and new construction. Promoting a sustainable attitude to water consumption can be promoted through these refill stations and through signage around vending machines to encourage people to bring their own water bottles to campus. Acadia University has implemented a program to increase the number of water bottle refill stations on campus.

I recommend that in the infrastructure portion of policy 2102.b, water bottle refill stations be added so "The University acknowledges that promoting conscious consumption behaviour is an important component in an effective water management strategy. Strategies are to include 7) adding water bottle refill stations on campus when renovations take place or new construction is being done". Not only would it decrease single use water bottle use, but it would also promote awareness for sustainable water consumption.

Low flow toilets, taps and showers on campus:

All showers and toilets in all eight residences are low flow while faucets are all equipped with low flow devices called aerators. Approximately 15% of academic and administration buildings currently have low flow faucets and toilets. When replacement of the older infrastructure is needed, low flow options are being installed. I see this as reasonable as longevity should be maximized from existing infrastructure, but replacement of low flow features in construction must be followed to reduce water use and comply with the policy "installing low flow faucets, shower heads, and toilets to decrease water consumption when feasible" (Mount Allison).

Recommendations

This policy is being followed from discussions with facilities management staff, but I do believe the policy could be changed to "installing low flow faucets, shower heads, and toilets to decrease water consumption when replacement of old toilets, sinks and showers is needed". This will provide clear guidelines when they need be changed into more efficient infrastructure.

Facilities management was only able to provide an approximate percentage of low flow toilets and sinks. I recommend that facilities inventory each toilet and sink in academic buildings to ensure that they have an accurate understanding of this infrastructure. This would allow facilities the opportunity to make goals surrounding the replacement of this infrastructure when needing replacement.

Grey/rain water recycling:

Rain water is currently being collected in the Wallace McCain Student Centre for flushing toilets. Rain water from the roof is being collected in a 13,000L cistern. At the present time this is the only rain water collection device used on campus. In the policy 2102.b it states that "The University will ensure that the University's built environment reflects a commitment to responsible water consumption. This includes, but is not limited to …5) maximizing the use of recycled rainwater and grey water for new and existing buildings" (Mount Allison). Although

use of rainwater in the student centre is a great step forward, it is the only building out of 34. There are currently no efforts to use grey water in any capacity on campus as other buildings have small water demands and grey water would not be financially feasible. As rain water is only being used in one building, the policy is not being followed.

The Purdy Crawford Centre of the Arts began construction in 2012. As this policy was last updated in late 2012, it would not have been in place during the time of design and construction. From the environmental audit in 2013, it states that there was not room in the building budget to install a rain water collecting device. If this was constructed under the new policy, it would not comply as "maximizing the use of recycled rainwater and grey water for new and existing buildings" and "ensuring that increasing water efficiency is a considered factor when new buildings and renovations are carried out" (Mount Allison).

No rain water collecting device and system will be installed as part of the Gairdner building renovations. This is not complying with the policy. Discussing this with Neil MacEachern, installing a rain water collecting system was too expensive for the return in this building, as it does not have many toilets. A similar project was carried out at Acadia University in 2009 with the construction of the biology building. This was a Gold Level accredited LEED (leadership in energy and environmental design) with features such as all rain water flushing toilets, geothermal heat and shifting lights (Callaghan & Noiles, 2009.) Although only rainwater collection falls under this policy, a LEED certification could be sought out for future building renovations at Mount Allison. In policy 2012.8 (Buildings), it states "ensure Green Globes design processes and environmental assessments and audits are incorporated in planning for such work where it is appropriate to do so" (Mount Allison). Green Globes is a similar program to LEED certification, but after investigation Green Globes seems to have less rigorous environmental standards in buildings with a simple "yes/no" questionnaire, rather than a ranking system (Green Globes, 2014).

There is currently no grey water recycling on campus, but discussing this with facilities management, they are open to the idea, but needs to have sufficient return. New lost cost grey water recycling options could be explored on campus.

Recommendations

Rain water recycling for toilet flushing is a potential resource that is not taken advantage of at Mount Allison. As the Wallace McCain Student is currently the only building on campus that reuses rain water, efforts to increase rain water use will help reduce water consumption. Exploration of potential buildings to use rain and grey water for flushing toilets could be done. I recommend that rain water collection systems, similar to the one in the Wallace McCain Student centre be installed in all future buildings and renovations, if the water consumption is feasible for rain water collecting.

LEED certification is a rating system used for designating green building in many countries around the world. Each level of certification surrounds various sustainable concepts such as

rain water collection, energy, material and heating. Although Green Globes (current system) is a good start with making new buildings or newly renovated buildings more efficient, it seems that LEED offers a more rigorous certification with nine categories to be ranked, rather than seven with more consultation (Green Globes, 2014). Both systems are similar and offer benefits for institutions that put them in place, but with this certification, Mount Allison can be recognized on a local and global scale to committing to sustainability as LEED has more certifications globally than Green Globes. With this information, I recommend that Mount Allison implement LEED certification in newly renovated and constructed buildings.

Efforts to increase water efficient infrastructure:

There have been efforts by facilities management to reduce water consumption with regards to infrastructure on campus. Through discussions with Perry Eldridge, Technical Services manager he has expanded on these efforts. In the Barclay building, vacuum at the lab benches was done through a venturi, with water continuously flowing through it. These have been replaced with a mechanical vacuum pump system, greatly reducing the water consumption. Jennings Dining Hall will install a new dishwasher for this upcoming school year that will decrease water use. Along with this all water cooled chillers and refrigeration equipment have been replaced with air cooled systems. The current policy states that "The University will ensure that the University's built environment reflects a commitment to responsible water consumption. This includes, but is not limited to …1) ensuring that increasing water efficiency is a considered factor when new buildings and renovations are carried out" (Mount Allison). This policy is being followed.

Recommendations

Currently there is no systematic approach to installing water efficient infrastructure on campus, only during construction projects or repairs. To follow the policy "The University will ensure that the University's built environment reflects a commitment to responsible water consumption. This includes, but is not limited to: … 4) regularly reviewing opportunities and emerging technologies for reduction of water consumption", facilities management could meet yearly to take inventory of current low flow and water infrastructure and opportunities to improve them. When a new project is proposed, the technology reviewed at this meeting can be considered for the construction. A yearly inventory will help facilities management prioritize its water conservation efforts.

Water use for grounds/landscape operations:

Current water for landscaping and grounds work comes from buildings nearby with appropriate hose attachment. This consumption is not monitored specifically, rather it gets incorporated into each building's total water consumption.

Recommendations

Per policy 2012.f, there are efforts being done to reduce pesticide use and water consumption through Xeriscaping – landscaping using plants that require little water. I recommend that these efforts be continued to ensure that water consumption is being heavily considered when planning and seeing grounds projects through.

PRACTICES

Promotion of water conservation to staff and students:

Other than the signs and promotion by the Eco-Reps, there are no specific water conservation promotions around campus done by facilities management. Promotions done by administrative services are done in residence with posters and stickers.

Recommendations

I recommend that current water conservation and the fix-it form promotion done by the Eco-Reps be continued and expanded. The head Eco-Rep could partner with other environmental groups and clubs around campus to promote sustainable water consumption and promotion of the fix-it forms. Each of these would reduce water consumption. I also recommend that the C3 challenge include water consumption along with energy usage. This would promote awareness to students, and even further if data of the volume of water consumed were released to each building.

In conversation with facilities management employees, it seems as though there is more education needed around dual flush toilets, on how they work and when the appropriate time to use each of the flush functions is. I recommend that this be built into C3 week and education be done through Eco-Reps and groups on campus for students and staff. I also recommend that this be done during orientation week for new students, along with promoting and educating students on steps that Mount Allison has taken to reduce environmental impact. To ensure that these water saving toilets are actually saving water, the users need to be educated on how to use them.

Runoff to Waterfowl park:

Current water runoff to Waterfowl Park is managed on a individual project basis. If construction is taking place and may impact the water flow it is built into the construction contract according to Andrea Ward, Grounds supervisor. This is normally done through silt fencing, as that is the likely threat to Waterfowl Park from campus. Along with this, water that flows from behind the King St. Parking lot and into the Waterfowl Park is monitored for contamination.

Along with each project-based management, fish management is done to prevent carp species from Swan Pond to enter Waterfowl Park as they are an invasive species to the Waterfowl Park and can cause ecological concerns. This is done through building up of rocks in the passage between the pond and Waterfowl Park near Main St.

Recommendations

I recommend that facilities management continue their project based management and regular monitoring for runoff into Waterfowl Park. This information should be made public to the university and to the Town of Sackville. Collaboration on this issue between the Town of Sackville and Mount Allison should continue and is essential between the main stakeholders to ensure that the University is not negatively impacting Waterfowl Park.

Town of Sackville is made aware of Mount Allison's water policy and management strategies

Dwayne Acton, Town of Sackville's Engineer works closely with the university and meets on a regular basis with facilities management to collaborate on issues that concern the town and university. Despite this good working relationship, Acton has not been made aware of the specific water management and runoff policies in the past three years. During correspondence, he was eager to learn about the water policies at Mount Allison, especially concerning runoff.

Recommendations

Although there is a good working relationship between facilities management and the Town of Sackville Engineer, he has not been made aware of the water policies at Mount Allison. As it states in the policy 2102.b, "…the Town of Sackville is aware of the University's water management decisions and practices." (Mount Allison). At the moment this is not being upheld. This knowledge gap between the Town of Sackville and the University can be bridged through yearly meetings to provide updates to the town Engineer, education surrounding policy 2102.b and environmental audits conducted yearly.

Long term goals

There are no current long term goals in terms of water consumption. Goals should be implemented by the University to ensure that they are decreasing the consumption of this precious resource. I recommend that the university decreases water consumption by at least 5,000 m^3 of water per year, for the next 3 years. This would bring the water consumption to around 50,000 m^3 of water per year. Maintaining a low water consumption will demonstrate that Mount Allison is committed to good water management and execution of its Environmental Policy. These goals can be placed under the "Performance, indicators and targets" section of policy 2102.b. Decreasing water consumption can be done through recycling rain water and exploring opportunities to recycle grey water.

There are a few promotions across campus to decrease water consumption. This could be expanded through Eco-Reps, clubs and societies and including water consumption in the C3 challenge.

Conclusion

Mount Allison University has made strides to increase its sustainability around campus surrounding food and water. In this report I have recommended that the amount of local food increase and the definition be switched to a more holistic definition to ensure all aspects of food systems be included and made aware to students. In terms of water use, facilities management has and is making improvements to infrastructure and practices to conserve water. This should be expanded to increase rain water use, infrastructure improvements and awareness of consumption.

Many connections can be made between food and water policies here at Mount Allison. In addition to this I have found that many of the sub policies in policy 2102 are interconnected. Without auditing all of these policies and in conversation with facilities management, no significant changes or recommendations can be made in terms of decreasing Mount Allison's impact on the environment if only certain policies are audited. I recommend that all policies be audited at least once every two years and this be done by an external group. In conversation with Dr. Fox, a class on environmental auditing would be able to take this task on, not only giving "experiential learning" to students but also being able to have a more comprehensive audit done. If this is not possible due to external factors, I recommend that policies that are more interconnected be audited at the same time. Three possible configurations could be:

1) Emissions, transport, buildings
2) Water, grounds, transport
3) Food, waste, paper

The environmental issues committee works towards increasing awareness of environmental issues and initiatives on campus. It could also be involved to ensure that the audit and recommendations translate into meaningful policy updates.

Several other universities such as Acadia and Dalhousie employ sustainability officers on campus. Their role is to increase awareness and make their respective campuses more sustainable in all realms of facilities, energy and awareness. I recommend employing a sustainability officer to aid and work with various departments and organizations around campus. This employee can continue to work on reducing the environmental impact on the campus and ensuring the university policies are being followed diligently, along with the completion of bi-annual audits of the policies.

A membership to STARS - Sustainability Tracking, Assessment & Rating System should also be considered. This system is a transparent, self-reporting framework for colleges and universities to measure their sustainability performance. It surrounds areas of environment, economy and society that parallel ideas by the UN publication "Transforming our world: the 2030 agenda for sustainable development" which aims to increase awareness surrounding issues of the environment and climate change. Various benefits come with participating with STARS and these include: gaining recognition of sustainability around the world, generate and collaborate

to form new ideas about sustainability, engage the community and make real progress towards sustainability (STARS). With membership to STARS, the policy can be audited against other universities and improved to decrease impact on the environment.

Collecting information surrounding food and water consumption at Mount Allison is being done, although not being reported; which is not complying with the current policy. Updates to the policy should be made in terms of who to report to and where this will be reported. In addition to reporting these on the website, section three of each policy should be updated. Currently section three of the policies states “Performance indicators, accountability and targets”. Current metrics are being collected by respective departments, but there are no targets listed. This policy should be updated to include the reasonable targets Mount Allison can reach in terms of water consumption, food and all other sub policies.

Spreading the knowledge surrounding the policies to make sure the community is aware is a key recommendation I am concluding in this audit. Along with the environmental issues committee, outreach can be done through the student auditor, facilities management, eco-reps, geography and environment society and department and administration. Making these policies more accessible and transparent to the community who is affected by them is essential to upholding and ensuring that Mount Allison is reducing its environmental impact on the local and global scales.

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