

Sustainability Recommendations: Leonard Center & Athletics Department

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Macalester College has been a prime example of an academic institution aligning practice with its values in terms of environmental sustainability. With the development of the Institute of Global Citizenship's Platinum status, we have gained official recognition for implementation of waste reducing and energy efficiency practices but this can really be seen as well in the athletic center for Macalester College as well. While it can not flaunt an official recognition for sustainability, there is a history of intentional design and process incorporated in the Leonard Center. Thanks to the push from students during the construction of the Leonard Center, building plans had been modified to become more parallel with environmental considerations allowing for much more efficient utilization of space and energy infrastructurally.

While the Leonard Center is already very intentional in the ways it aligns with Macalester's goal of reach Zero Waste production by 2020. According to AASHE buildings are some of the most important areas to focus on when assessing and adapting sustainability concerns. One of the highlighted streams of waste for buildings is the amount of potable water used as well as energy consumed to operate the building. We chose to focus on the Leonard center as it is a building that is one of the most utilized buildings, has large amounts of students interacting with it whether it is through personal fitness use, nourishment at Scotty's, or the Health and Wellness Center.

In this paper we will go over the sustainability concerns of the Leonard Center (L.C) as well as the athletics department which operating in this facility. In each of the section we will

review sustainability recommendations made by a previous group in our course: Sustainability and the Campus written by Erin Daly and Grace Caird (2011). Recommendations will be made for relevant departments and personnel to take into consideration in order to decrease the environmental impact that this building is responsible for on our campus. Recommendations that provide suggested visuals will reside in the end of this paper in the appendix for easy reference.

I. Review of Sustainability Recommendations

In the Fall 2011 semester, two students in the Sustainability and the Campus course, Grace Caird and Erin Daly, wrote a report on sustainability in the Leonard Center and Athletics Department. In their paper, they analyzed five areas of inputs and waste: competition and spectator impact, training room, fitness center, Leonard Center functioning as a whole, and the office activities of the Athletic Department. We will review their recommendations and the actions the Athletic Department has taken to address their recommendations. Below is a chart that summarizes the five recommendations and whether they were implemented.

Topic	Recommendation	Implemented?
Competition and Spectator Impact	Use recycable cups and reduce paper use for game day flyers	Reduced size and number of game day flyers, but still use styrofoam cups
Training Room	Use reusable wraps and cloth ice bags	No. Not practical from hygiene or convenience perspective
Fitness Center	Turn off lights and TVs when low occupancy	Turn off televisions, but keep lights on since people use LC
Leonard Center Overall	Turn off building lights when LC closed	Lights on only in areas where custodial staff is currently cleaning
Athletic Department Office	Use washable dishware and silverware for SAAC meetings	Don't use plates or silverware at meetings.

1. Competition and Spectator Impact

Although there are a large breadth of inputs and energy uses that take place before, during, and after a sporting event, the two streams of waste that were discussed in the most detail were styrofoam cups and game day flyers. Coffee and hot chocolate were sold by concessions during sporting games in styrofoam cups, and game day flyers were produced by the Sports Information Department, which include rosters of the home and away teams, season records and schedules, statistics, and MIAC standings.

In response to concerns about these waste streams, the Athletic Department has made adjustments to limit paper waste. The Sports Information Department has made an effort to limit paper waste by reducing the number of flyers that they print, decreasing the size of the flyers, and placing recycle bins throughout the stadium. Additionally, the Athletic Department is working on making a game day app, which would make all rosters and statistics accessible on peoples' phones. Having such an app would save the same purpose as the paper flyers handed out, so we believe this could significantly decrease the amount of gameday flyers needed. Regarding styrofoam waste, concessions still uses styrofoam cups for selling hot chocolate and coffee.

2. Training Room

When evaluating waste use in the training room, Flexiwrap and ice bags were two training room elements that received attention. Flexiwrap is a heavy duty cellophane that is used to wrap ice bags around a person's joint or muscle. Both the flexiwrap and ice bags are thrown out after one icing session. An estimated 12,000 to 15,000 ice bags are used per year, which accounts for \$450-580 of the athletic budget.

Although Flexiwrap and plastic ice bags are sources of waste, the training room did not implement the use of reusable or cloth ice bags. Reusable wraps were not practical due to hygiene purposes and the need for frequent washing. Reusable cloth ice bags were not implemented either because of many people do not ice in the training room. Ultimately, the combination of hygienic concerns and inability to take icing materials out of the locker room made Flexiwrap and plastic ice bags more practical to use.

3. Fitness Center

The third area the previous paper considered was lighting and television use in the weight room. Grace and Erin noted the weight room lights and televisions were on regardless of if people were there or not. They suggested student workers monitor the weight room area more closely and turn off the lights when nobody is in the area or televisions when people are not there or not watching them.

The Leonard Center student workers have addressed the television concern, but they did not implement the lighting suggestion. The workers reduce energy use related to televisions by keeping the televisions off when nobody is using the machines or does not want to watch television. To turn on a tv, a person has to go to the front desk and request that the television be turned on. The student workers do not turn the lights on and off in the fitness center due to the relative constant presence of people using the fitness equipment. Although early and late hours have much less traffic, there are still some people using the equipment, making it difficult to turn the lights off.

4. Leonard Center Overall

Previous sustainability reporting from prior investigation lead to suggestions reducing lighting inefficiencies while the L.C is closed. Custodial activities were reason for lighting

during closed hours so that custodians can clean and manage the facilities which is still the case. Previous recommendations for adjusting the shifts of L.C custodial staff was left unaddressed as it would require significant scheduling modifications that interfere with already established work hours separated into three staggered periods to best suit the college's needs (1st, 2nd, and 3rd shifts). Current practice is for energy use for lighting to only occur in the portions of the building actively being cleaned and maintained. This allows for safe working conditions for custodial staff and staff work to keep unnecessary lighting off when they can.

Lighting in the L.C is a part of the TRANE network where facilities programs times lighting is necessary for different areas to improve efficiency. This program schedules turn on and shut off times for various locations and those that are not on this system are likely on motion sensors where traffic may be less frequent.

Lastley low flow faucets and showerheads were a suggestion for decreasing the water consumption and waste in the L.C, specifically the locker room. Research into options for low flow faucets and showerheads was not followed through on but is to be later in this report.

5. Athletic Department Office Activities

The athletic department housed in the Leonard Center is one of many departments on campus that encourage personal responsibility and awareness of sustainability practices to be incorporated into each worker's life. While there is not much room for improvement that can take place at the current state of operation, daily actions such as utilizing personal reuseable water bottles, printing on blanks sides of previously used paper, and limiting lighting in personal offices during hours of the day with sunlight are ways they attempt to better address waste on an individual level.

For administrative meetings and Student Athletic Advisory Council (SAAC) meetings streams of waste centered around meals and the utensils provided for these meetings. Previously plastic silverware was used and created a consistent stream of waste from plates, napkins, and utensils. The previous sustainability recommendations centered around using washable dishware and silverware but to address this waste stream the L.C has switched to utilizing all compostable dishware as to help divert waste from landfills to organic recycling on campus.

Locations in the athletic department that had water coolers came up as an area of concern for staff's reliance on paper or styrofoam cups in the past. This practice was addressed on previous recommendations by moving the water cooler to an area with less foot traffic and by not providing disposable cups for getting water. This encourages the use of refillable water bottle in alignment with the college's ban on disposable plastic water bottles.

III. Our Sustainability Initiatives

Building off of the work done in the previous report, we met with members of the Athletic Department, Kim Chandler and Vanessa Seljeskog, to discuss the previous report and brainstorm sustainability initiatives that we could pursue for our report. After meeting with Kim and Vanessa, we also met with Facilities Services and the head chef at Bon Appetit, Chef Royal. Through our conversations, we have decided to pursue five sustainability initiatives for the Leonard Center revolving around water usage, lighting, athletic team waste, game day concessions, and Scotty's. For each initiative, we will describe why we pursued each initiative, our sustainability recommendation, and how it will be implemented.

1. Water Usage

Problem: Water usage is a significant expense

Whether it be for drinking, cleaning, washing, or disposing waste, the Leonard Center uses a lot of water from its water fountains, sinks, toilets, urinals, showers, and washing machines. According historical water usage data provided by Michael Pumroy, Energy Manager at Macalester, the Leonard center used an average of 4,063 CCF (hundred cubic feet) of water annually from 2013-2015. One CCF is equivalent to 748 gallons of water, so this equates to 3,039,124 gallons of water a year! The average annual amount spent on water from 2013-2015 was \$22,114.20, so water use is a significant expense. Although year over year water usage has declined slightly, the cost of water has increased by 18% over the past two years. With increasing prices, water bills may increase in the future if water usage is not decreased.

Recommendation: Install faucet aerators

Our first recommendation for decreasing water usage is to install low-flow faucet aerators on all of the sinks in the Leonard Center. The current sinks use 1.5 gallons of water per minute (GPM). Installing a 0.5 GPM aerator would decrease water usage at each sink by over 66% without sacrificing water pressure. Considering the significant water savings and cheap cost of faucet aerators, the cost of purchasing the aerators will easily be offset by annual water savings.

We recommend that aerators be installed on all of the sinks in the Leonard Center. Facilities can purchase the [Niagara 0.5 GPM Low Flow Dual-Thread Faucet Aerator](#) on Amazon for all of the sinks in the Leonard Center. They are \$1.47 each.

We considered looking into other low-flow fixtures, such as shower heads, toilets, and urinals, but Dave Scheele, who leads plumbing at Macalester, and Mike Pumroy did not think

these would be practical. There are durability and water quality issues with low-flow shower heads, and cost concerns with installing energy efficient toilets and urinals.

Recommendation: Put signage in shower area to raise awareness of water usage

Another recommendation we have focuses on the education and awareness around water usage. Through personal experience and interviews with students who utilize the L.C locker room showers we know that there is a wide variety of showering times for students who use these facilities. Some students may shower quickly for hygienic purposes while some use the heat and pressure of the showerheads to help them relax and decompress after a workout or practice. We hope to reach those students who are taking excessively long showers by educating them on the impact of their water use.

We would be able to inform students about the amount of water they use by providing visuals to help them develop awareness on how much water they individually consume and ideally get them to reconsider taking showers that last longer than needed. In an interview with a student athlete who admittedly takes excessively long showers (20-40 minutes in length) we were encouraged to provide some sort of 3D visual to accompany any signage that would be used to educate those using the showers.

We recommend producing and displaying laminated signs inside the L.C locker room showers informing students how much clean water they use according to how long their showers are. Another suggestion on the more 3D visual would be to have signage that would show how long it would take one of the showers in the locker room to fill up the volume of the showering area. This would be done in cooperation between facilities with the approval of Kim Chandler in the L.C who is already in support of this. See the Appendix for the proposed signage.

2. Lighting

Problem: Inefficient light fixtures and usage lead to higher electrical bills

Michael's Energy, an environmental consulting firm, estimates that lighting contributes to 35% of electrical energy usage in the Leonard Center, indicating it has substantial energy and cost implications for the building. Cost concerns arise from using inefficient light bulbs and leaving lights on during times of vacancy. The Leonard Center's light fixtures are inefficient due to the relatively high wattage of their existing fluorescent light bulbs. Because the bulbs have a higher wattage than necessary, more energy is being used and higher costs being taken on. When these lights are left on during vacant periods, the losses are amplified. When Michael's Energy used data loggers to track gymnasium usage in the Leonard Center, they found that the gymnasium was vacant nearly 15% of the time that the lights were on. It is reasonable to assume a similar phenomenon occurs in the fieldhouse.

Recommendation: Install LED, motion sensing lighting fixtures

To reduce electricity usage and costs, we recommend that the Leonard Center installs LED lighting with motion sensors where appropriate. The added cost of LED lighting is more expensive than the current lighting fixtures at the Leonard Center, but the annual energy savings and attractive rebate programs from Xcel Energy will outweigh the added cost. Similarly, the motion sensors will decrease costs by shutting off lights during vacant periods. Replacing all of the lights at once and installing motion sensors is not feasible, but the Leonard Center can pursue individual projects that have a low payback period and high internal rate of return (IRR).

Mike Pumroy, Macalester's Energy Manager, is currently looking into an LED lighting proposal from Michael's Energy. Two projects in the report that would be reasonable to implement are the automated lighting controls in the gymnasium and fieldhouse and installing

LED retrofits with occupancy sensors in the racquetball courts. For the automated lighting controls in the gymnasium and field house, the total materials and labor cost is \$3,612, but a payback period of 0.6 years and IRR of 26% indicates that the project would result in considerable energy savings. Similarly, replacing the 400-watt metal halide fixtures currently in the two racquetball courts, which use 454 watts of electricity each, with an LED retrofit can provide the appropriate amount amount of lighting using only 184 watts, reducing racquetball energy usage by over 40%. The total material and labor cost of the project would be \$4,538, but the payback period of 1.9 years and 14% IRR suggest it would be a good investment. Mike Pumroy is still examining the bids and tweaking the assumptions used in the Michael's Energy report, but he suspects the projects will be implemented in the near future.

3. Team Waste

Problem: Waste streams exist only varsity athletes are aware of

There are many different streams of waste and inefficiencies in varsity athletics. Each individual team has opportunities for sustainable behavior changes that would only be known to those within their sport. One team such as Men's Tennis may generate waste season by season in the form of tennis balls being thrown out, jerseys being given to athletes who may not use them, etc. Men's baseball team may also produce waste but in ways specific to the practices of their team and their coaches. There are multiple instances where sustainable practices have been adopted as seen in the Track and Cross Country teams having donated their discarded good conditioned equipment, Forest Redlin's '17 supporting the donation of goods from Women's Soccer, Football, Tennis, Volleyball, and Basketball to refugee camps in both Ethiopia and the Philippines. These initiatives, while great, were showing of individual team motivation. Overall there is opportunity to support a social norm amongst all teams on campus to be innovative with

sustainability in their own spheres of control.

Recommendation: Channel to inform sustainability reps of potential opportunities

By mirroring a student athlete sustainability initiative at Middlebury College, we propose implementing a voluntary outlet for student athletes on teams to suggest or spark sustainability initiatives their teams could do to address their unique situations. This program would make athletes advocates for sustainability by encouraging them to be aware of waste and propose ways that a sustainability coordinator or worker could encourage or support initiatives to address them.

In order to implement this program in a way that won't create additional work or time commitment for athletes who are already heavily committed to their academics and performance, we suggest an online document able to be accessed by all athletes. Using a Google form that allows an outlet for athletes to bring up sustainability concerns specific to their team to be monitored and investigated by a student worker in the sustainability office would be the most efficient and easy to raise support for by the athletics department. Our current thought would be that all athletes would be exposed to this information through email and having a sustainability student employee present at the beginning of a practice or sporting event where they can advertise this form.

After discussions with SAAC and student environmental leaders on campus, we found it unlikely to get this staffed by volunteers or on an opt-in basis. We think it would be most effective if a sustainability representative who was already being paid to work on initiatives like this, could have this delegated to them for initial opportunity investigation.

4. Concessions

Problem: Styrofoam cups not sustainable

As discussed in the review of previous sustainability recommendations, Concessions still uses styrofoam cups to serve coffee and hot chocolate at sporting events. Although styrofoam is useful for its lightweight insulation abilities, it also has many concerns, including styrene, a component of styrofoam, being a potential human carcinogen, being non biodegradable, emitting many chemicals into the air, and being made with petroleum.¹

Recommendation: Compostable cups for concessions

We recommend using compostable cups for concessions. Bon Appetit uses compostable cups, so the Athletic Department can either buy cups from the same vendor or look into other compostable cup companies. Through the use of adopting more expensive cups by choosing the compostable option, there will be more incentive to use them with more intention. The switch will align with current college practices and help in our shared goal of diverting waste streams from landfills through use of composting in this case.

5. Scotty's

Problem: Unnecessary Waste of Burrito Bowl Lids

While compostable dishware is used at Scotty's for orders, many people order burrito bowls to eat immediately and do not require the entire containers. Current practice is to provide a container and lid for each order so that it can be taken to go around campus to eat or save for later. Considering the on-campus presence of Macalester students as well as the dining area and seating provided in and around the Scotty's area, it can be observed that many people who eat these burrito bowls actually eat them entirely while still in the seating area or nearby.

¹ http://greenliving.lovetoknow.com/How_Styrofoam_is_Bad_for_the_Environment

Recommendation: To-go option for burrito bowls without lid

We recommend imitating the practice of most restaurants and food establishments by offering a “to-stay” option. The people planning to eat their food at Scotty's immediately can have an option of not getting a lid. This could possibly speed up lunch rushes by eliminating a step but at least reduce the amount of Lids Macalester is buying for use as well as reducing the amount of lids being composted or thrown away unnecessarily.

By discussing with Chef Royal, we would like to see an additional question asked when inquiring about customer orders. Adding a “to-Stay” option where a lid would not be required could easily address the extra waste generated by the immediate consumption of burrito bowls at Scotty’s. Lids could still be made available if students needed them later on and were not given one as well but for those who have a routine or know they will be finishing the bowls, they can avoid this waste.

Currently Scotty’s goes through about 3½ cases a week of their burrito bowl compostable shells. After having had a conversation with Chef Royal Dahlstrom about this idea, it had been tested which allowed us to see a current trend of 75 customers refusing lids for their meal swipes. We will need to see if this trend increases as people become more aware of the option and impact it may have. This idea has been very welcomed from Chef Royal and will be practiced for the time being but we likely doubt it will be a step they stop practicing in the future. According to Bon Appetitt, a case of the lids is \$42 and contains 200 lids in each, with even the initial lid refusal of 75 one week, there is cost savings that wouldn't exist if unnecessary lids were not being purchased and disposed of immediately after.

Conclusion

This project has helped us learn that sustainability initiatives can be cost-effective and easily implemented. Through brainstorming and personal experiences, we found five ways the Leonard Center could be more sustainable. By installing aerators, putting water awareness signage in the shower areas, installing LED lighting, creating a Sustainability Coordinator position to organize recycling team waste, using compostable cups at concessions, not giving out lids to people eating-in at Scotty's, the Leonard Center can decrease the number of inputs and waste streams used and save money.

Appendix - Proposed Signage for Leonard Center Showers

DID YOU KNOW?

ONE 10 MINUTE SHOWER USES

**Help conserve water
Be mindful**

- Take shorter showers
- Turn off shower completely

25 GALLONS OF WATER!

THAT IS ENOUGH CLEAN DRINKING WATER TO MEET THE SUGGESTED NEEDS OF THE AVERAGE U.S. CITIZEN FOR APPROX.

**35!
DAYS!**

MAC
MACALESTER ATHLETICS

(25 to be printed full sheet sized, laminated and placed inside showers to visualize how much water is consumed for a 10 minute shower along with signage above)

