

The logo for Macalester College Athletics, featuring the letters 'MAC' in a large, bold, red font with a white outline and a blue shadow effect.The word 'ATHLETICS' in a bold, white, sans-serif font, positioned below the 'MAC' logo.

Athletic Sustainability: Macalester College

Grace Caird and Erin Daly

Cities, Sustainability, and The Campus

12/13/2011

Concerns about sustainability are surfacing across college campuses nationwide with increasing frequency. Here at Macalester College this concept has been on our radar for years and is an issue on which students, staff, and faculty can pride themselves. From students to administrators and every position in between, members of the Mac community are taking the initiative to incorporate sustainability into all aspects of our campus' inner workings. This sweeping movement has attempted to include each department on campus by providing a framework for action through departmental sustainability plans.

As student athletes at Macalester, we have noticed room for improvement in various aspects of sustainability within the Athletic Department. Macalester is home to 19 varsity athletic teams, state of the art workout and competition facilities, and numerous club sports and classes. For a private liberal arts institution of our size, a significant amount of financial resources have been directed towards athletics. Knowing, then, that physical activities play such a major role in the lives of so many Macalester students, we decided that an equal amount of emphasis should be placed on the sustainability aspects of such daily activities.

After discussions with Director of Athletics Kim Chandler and Assistant Director of Athletics (Facilities) Ron Osterman, we established the need for a departmental sustainability plan in athletics. In line with the previously mentioned movement within the Macalester campus, this plan (which is currently nonexistent for this department) would be a significant step for athletics to further align with institutional goals. We analyzed the state of sustainability in the Athletic Department, and created an outline to 1) represent the current state of the Macalester Athletic Department's environmental impact and 2) recommend actions to reduce this impact.

The following outline is broken down into five major divisions to properly analyze inputs and wastes: competition and spectator impact, training room, fitness center, Leonard Center

functioning as a whole, and office activities of the Athletic Department. Through the individual analysis of these sections within athletics, we identify the major sources of resource waste that we feel can be alleviated through basic substitutions or behavior changes. The recommendations that we make are meant to serve as a base for present and future sustainability improvements within the Athletic Department. It is our hope that our outline will be an impetus for change in current wasteful behaviors within the department and serve as a foundation for any future efforts in athletic sustainability; clearly laying out any progress which has already been made while suggesting starting points for future endeavors.

I. Competition and Spectator Impact

Confronting the environmental impact of the average sporting event is no easy task. As we began to analyze the spectator sports at Macalester, it soon became evident that many more factors than we originally thought were at play. The blinding lights that ring most stadiums look like massive energy consumers. In fact they are, but only minor contributors to a single game's environmental impact. The energy used to illuminate and heat an arena or stadium is dwarfed? by the energy spent just from fans getting to the game. The latter energy expenditure is less of a factor on a college campus, as students are not likely to drive to games. Couple the amount of energy required to facilitate a sporting event with the resulting waste, and you have quite a significant strain on the environment.

Concessions

Issue

Concessions sales create a significant issue to tackle in terms of fostering a more sustainable athletic environment. Styrofoam cups are used to sell coffee and hot chocolate at games. This is

a popular item that generates a lot of waste. Furthermore, Styrofoam is produced with a chemical called polystyrene, a petroleum-based plastic. The major building block of polystyrene is Styrene, a chemical classified as a human carcinogen both by the US Environmental Protection Agency (EPA) and the International Agency for Research on Cancer (IARC).

Projects to Date

Those in charge of running and overseeing sporting events within Macalester's Athletic Department recognize the challenge of minimizing their environmental impact and have taken steps to address this. To stay consistent with the bottled water ban on campus, Athletics decided to sell reusable water bottles at football and soccer games. Before every game, they are filled up and chilled in the refrigerator to guarantee the ban is not affecting water availability or quality. After selling 350 water bottles during the fall season, this is an initiative that the department aims to continue.

Recommendation

An alternative to Styrofoam should be used in concessions. Macalester's catering company, Bon Appétit, uses recycled paper cups that serve the same functions as the Styrofoam cups in a more environmentally-conscious package. We recommend that Athletics work with Bon Appétit to use more recyclable packaging – getting rid of Styrofoam cups and clam-shells and using cardboard ones instead. This can be possible by contacting Leah Thomas (extension 6313) of Bon Appétit to order about 2000 cups for the remainder of the 2011-2012 athletic season.

Game-day Programs

Issue

The waste resulting from a sporting event at Macalester contains a large amount of paper. Now to some, this would seem illogical. Why would so much paper be used for a football or soccer

game? The answer is simple: a game-day program is created for each game that provides fans with the home and away team rosters, season records and schedules, and individual performances. Football games are the biggest producers of paper waste. In addition to the game-day programs, media guides are also prepared for each season and given out at every game. Also distributed at these games is a weekly national magazine about collegiate football. Once combined, these pamphlets are available at the entrance to every sporting event and most people take one just out of habit. Much to the Grounds Crew's dismay, the majority of these end up in the bleachers after each game.

Recommendation

To encourage recycling, we recommend that a reminder be placed at the top of each program to recycle it on the way out of the stadium or gym. It would also be beneficial to use the new stadium scoreboard to promote recycling and program re-use. Further, we recommend that people be reminded to save these media guides for use throughout the entire season so they don't pick one up at every game. Fans could also be encouraged to return the media guides on their way out of the stadium.

We were able to implement two similar tactics for the latter half of the fall season and were met with noticeable success. Media guides were held behind the concessions stand so people would have to ask to have one instead of possibly mindlessly taking one simply because it's there. Further, media guides and game day programs were separated rather than offered together. This way parents and fans who were already familiar with the team could take only a game-day program and avoid wasting a media guide altogether.

Redesigning the game-day programs was also discussed during several meetings as a way to mitigate waste. The programs could all be posted online on the athletic website alongside the

season schedules. This could all be done ahead of time and could be accessed in the stadium or gym on people's smart phones. Grace will undertake this project for her work-study job in the athletics department. If implemented, this would decrease a huge portion of the waste resulting from any given sporting event.

Stadium and Facilities Use

Projects to Date

A huge amount of energy goes into holding a sporting event at the Macalester stadium. Among energy intensive stadium operations are lighting, rest rooms, concessions, locker rooms, scoreboard use, and the broadcasting booth. The Athletic Department and Facilities Services have taken a positive step to reduce the impact of waste from these processes by placing recycling and trash receptacles by the entrances and exits to the stadium. It also takes a substantial effort to keep the baseball diamond in top form. It is mowed on a regular basis and sprayed with aerosol spray paint for lines on the field. This is of concern because of the chemical makeup of the paint. Volatile organic chemicals (VOCs) are found in aerosol paints and are emitted as gases from certain solids or liquids, including aerosol paint. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects. The Grounds Crew tries to keep maintenance as energy efficient as possible.

Recommendation

More should be done to promote recycling and reduce game-day waste. Increased emphasis should be placed on responsible disposal of garbage at games. Again, the new scoreboard should be used to advertise what should be thrown away and recycled and where the trash receptacles are. Along these lines, we should make sure that proper receptacles are placed in the proper locations to facilitate convenient recycling and correct waste disposal. As of now paper recycling

bins only exist within the indoor entryway of the stadium; there are not receptacles in the bleacher area. Thus we recommend that Facilities place paper recycling bins next to the trash cans and bottle bins closer to the fans. If people do not have to go out of their way to recycle their programs, they will be more likely to do so. To continue, we recommend that Grounds Crew student employees are given an hour or so of work after stadium events in order to more responsibly dispose of waste left behind after games. The existing schedule allows for 48 hours to pass before the stadium is cleaned, by which point many of the recyclable wastes have been tainted with food refuse, or a rain storm has made the paper difficult to collect/recycle. Immediate cleaning would allow for proper disposal, and as an added benefit give student employees the chance to get in some hours outside of the school week.

A good example of an athletic sustainability initiative is the University of Colorado at Boulder. CU-Boulder's "Ralphie's Green Stampede" initiative to move the campus toward a zero-waste football stadium makes CU the first BCS school -- and the first major collegiate or professional sports program in the United States -- to undertake such a sustainability measure. Virtually all public food and beverage services in Folsom Field have converted to recyclable or compostable materials and containers. Virtually all packaging within the stadium will be refillable, recyclable or compostable. This year officials anticipate recycling or composting at least 90 percent of the waste generated at Folsom Field. Although this may be too large an undertaking for Macalester's athletic facilities at the present time, this initiative is a good model to inspire future smaller projects. We have been in contact with Dave Newport, the Environmental Center Director at CU-Boulder and Associate of the Environmental Studies Department who helped jumpstart the "Green Stampede" project. He is willing to give us

suggestions on how to make incremental changes to meet our greater goal of increased sustainability within athletics.

II. Training Room

Issue

The major source of waste that we as athletes see leaving the Athletic Department involves materials related to medical treatment. The training room within the Leonard Center provides all varsity athletes basic medical attention, generally in the form of injury prevention and recuperation. The wastes involved with these vital functions include plastic wrapping, tape, and plastic ice bags for the most part. Problems occur in dealing with sustainability in this arena due to the critical nature of these activities and materials, as well as various hygienic standards that must be upheld. In order for our athletes to function wholly and efficiently, certain procedures cannot be compromised in the name of sustainability.

Projects to Date

That being said, the trainers at Macalester have already made an effort to consider their environmental impact. They have instituted small changes in the way water is distributed to athletes during practice times. To replace the large coolers of water and excessive number of paper cups brought to each practice location, trainers and their assistants have begun to bring reusable water bottles instead. This action alone cuts down on a noticeable percent of the waste associated with the day to day functions of Macalester's athletic teams.

Also noted in the training room is the absence of paper towels. While one such dispenser does hang solemnly on the wall next to the sink, it is essentially never used. The training and student staff avoid paper towels in all equipment cleaning processes, instead opting to use small

towels which are washed in the same manner as team laundry. Even for drying one's hands after using the sink, the staff uses these cloth towels rather than contribute any paper waste.

Recommendations

To further address sustainability in the training room, we have teamed with Head Athletic Trainer Paula Natvig to focus on two potential material replacements: Ace bandages and biodegradable ice bags.

Ace bandages

Issue

The use of plastic wrapping to secure athletes' ice bags onto their body when leaving the training room is an abominable waste of resources. Every day numerous athletes come to the training room after practice to have ice bags positioned on their aching joints and hard to reach muscles. This is done by wrapping the affected area and ice bag with Flexiwrap, or what appears to be heavy duty cellophane. Athletes then proceed with the rest of their evening's activities while simultaneously providing relief to their tattered muscles.

Not only is Flexiwrap extremely harmful in its environmental implications, but it is similarly detrimental to the Athletic Department's budget. This disposable supply costs significantly more than the reusable elastic bandage alternate. This financial discrepancy alone has motivated athletic staff in the past to examine alternatives for Flexiwrap. Thus the trainers are extremely willing to consider sustainable, reusable replacement options.

Recommendations

We are thus recommending that the Macalester Athletic Department purchase reusable elastic bandages to eliminate this wasteful process. These bandages (similar to ACE bandages) will replace plastic wrapping by performing the same critical function. However they will be a one-

time investment (with small annual additions to replace lost/dysfunctional stock) that will not involve daily trips to the trash can. These can be obtained in the same manner as the rest of the training room's supplies: through a bidding process that takes place at the beginning of every fiscal school year. Paula is currently evaluating trends in training room treatments to determine an appropriate quantity of bandages to order. Regardless of the quantity, these elastic bandages will provide significant economic gains in both the short and long term.

Biodegradable Ice Bags:

Issue

Another current consumption by athletes in the training room (and at the front desk of the L.C.) involves the plastic ice bags themselves. Each year Macalester athletes consume between 12,000 and 15,000 ice bags for their various injuries and ailments, accounting for \$450 to \$580 of the athletic budget. Clearly, there is room for improvement here.

At the moment however, the solution to this dilemma is by no means an obvious one. While reusable cloth ice bags are commercially available, we feel as though they would not be the most convenient solution for our athletes. Cloth bags would require athletes to ice while in the training room, and therefore would not be as mobile as the current plastic version. As indicated by the aforementioned concern with plastic wrapping, many busy student athletes prefer to ice on-the-go. Therefore cloth bags may compromise their ability to recover within their hectic schedule.

The best possible solution to this dilemma would be to completely alter the social norm of icing on the go. Restructuring our daily schedules and priorities to allow for 15 or 20 minutes of icing in the Leonard Center would then allow for reusable cloth ice bags or other sustainable solutions. However a behavior change that vast is simply not a practical option. Thus if we

cannot address the behavior itself, we should at least confront the negative environmental implications of such behavior. Therefore we will focus on the material composition of ice bags used in our athletic department.

Recommendations

The best alternative to our current plastic ice bags would be a biodegradable substitute.

Unfortunately there is not a large market for this demand at the present time, and therefore such options are extremely difficult to find. When this concern was mentioned to Paula Natvig, she responded with an enthusiastic “why not use grocery produce bags?” In her past experience with other academic institutions (albeit smaller than Macalester) it was not an uncommon norm to use produce bags as ice bags. School representatives asked local grocery stores to donate a certain number of bags a month, and that was that. Therefore we decided it would be reasonable to seek out grocery stores which provide biodegradable produce bags and inquire as to their source. Whether we may be able to partake in some outside purchasing, or even obtain bags through donation (dependent on our desired quantities) this is definitely an option to look into.

One potential limiting factor of using biodegradable produce bags is their durability. Produce bags are generally not as thick as our current plastic option, and therefore are clouded with some well warranted skepticism. It may take two biodegradable bags to equal to strength of one of their plastic counterparts. The issue then becomes this: is it better to use two, more environmentally friendly ice bags than one synthetic ice bag? We say “more environmentally friendly” because biodegradable does not mean ideal. These “green” options still require energy and resources to produce, even if it does leave a smaller trace upon disposal. Full-cost accounting may have to be employed to determine the magnitude of any environmental gains from this substitution.

It may also be possible to implement a dual solution to this problem. The athletic department could purchase a small number of reusable cloth bags for any icing that occurs within the training room. That way if athletes require ice while receiving treatments, it can be done in a sustainable manner.

III. Fitness Center

The third major aspect of sustainability within the Macalester Athletic Department involves the Deno Fitness Center. As the most common place for students to work out, the fitness center receives the highest traffic and consequently the most attention of the various facilities in the Leonard Center. It is therefore crucial that proper emphasis is placed on sustainability in this arena.

Projects to Date

As with the training room, the staff in the fitness center (mainly Fitness Center Director/Strength and Conditioning Coordinator, Steve Murray) have considered numerous aspects of the facility's environmental impact. As there are not many day to day tangible resource flows in and out of the fitness center, staff took into consideration the effects of various systems and machines instead. For example, motion sensors dictate the amount of energy being expended for air circulation at any given point in time. Therefore energy is not wasted during times of extremely low occupancy. Also, the ellipticals and stationary bikes create no environmental impact to operate, as any power they require is user generated. Mechanical energy produced through exercising on these machines drives their computers/display screens.

Cleaning the various machines in the fitness center is also done with environmental considerations in mind. As with the training room, student employees use cloth towels and a 3M green certified cleaning solution to sanitize the apparatuses. The latter of these is based on a

Macalester student-driven initiative to use less environmentally damaging chemicals in the cleaning solutions used across our campus.

The topic of cleaning does bring up one aspect of waste within the fitness center that we feel we cannot alter, however. Each individual user is responsible for wiping down a machine after he/she has finished working out. For sanitation reasons, this is done with either a paper towel and cleaning solution, or a moist toilette made available from a large dispenser. While neither of these options are sustainable, we are limited by hygienic standards that cannot be achieved any other way in such a high-use facility.

Recommendations

We do have two recommendations though for reducing energy use within the fitness center, both of which rely on student employees to perform. The first involves adjusting lighting options in the weight-lifting area. There are two settings for different levels of overhead lighting which can be manually controlled. We propose working with student employees to make sure that they are adjusted appropriately according to occupancy levels of the weight section, as well as the amount of natural light coming in. Therefore when no one is actively lifting weights or when the sun is providing sufficient illumination, we can be saving energy. Steve has asked however that we make sure the lights are maintained at a reasonable level during high traffic times out of respect for the users. (Studies have shown that lower lighting can reduce motivation and have detrimental effects on an individual's work out.)

The other potential source of energy reduction can be found through changing the defaults associated with television use in the fitness center. There are five televisions in the fitness center which currently run during all hours of Leonard Center operation. We are proposing that only two or three of these be turned on when the facility opens in the morning.

Users can then request that the others to be turned on as more people arrive, but a new default will be set which eliminates excessive energy consumption. Users are more likely to be satisfied with only two or three operating televisions if that is what they are presented with than they are to request that two televisions be turned off for the sake of energy conservation¹.

IV. Leonard Center Overall

The Leonard Center was constructed in 2008 at a cost of 45 million dollars. This 175,000 square foot complex boasts of a state of the art fitness center, health and wellness facilities, and several multipurpose rooms; as well as a 200 meter indoor track, gymnasium, and natatorium that are capable of hosting national level competitions. In addition to these already impressive statistics, the Leonard Center is also an extremely efficient building constructed with the utmost energy efficiency in mind.

Projects to Date

Sustainability in the L.C. (as it is commonly referred to) began with the demolition of the former athletic facility on campus. 93.3% of demolition wastes from the old complex were either recycled or reused²; that's over 15,000 tons. For example the old field house was reused as a horse stable for Maple Hill Stables in Monticello, MN³.

The Leonard Center was constructed using multiple techniques and technologies to optimize energy efficiency. For comparison's sake, the new building is twice the size of the old facility, but uses the same amount of energy to function. One cause for this phenomenon is the energy saving roof, which has a high R value (or resistance to heat flow) that better insulates the building⁴. Another sustainable aspect of the L.C. involves the system for wastewater

¹Pichert, Daniel, and Konstantinos V. Katsikopoulos. "Green defaults: Information presentation and pro-environmental behaviour." *Journal of Environmental Psychology* 28 (2008): 63-73.

² Leonard Center Fact Sheet, http://athletics.macalester.edu/sports/2011/8/25/GEN_0825112913.aspx?id=190#Recycling_Facts

³<http://www.macalester.edu/sustainability/initiatives/projectsbuildings.html>

⁴ Roofhelp.com/Rvalue

management put into place with construction of the facility. A six foot trough buried around the perimeter of the Leonard Center collects storm water runoff before it has a chance to overflow into the sewer system. This is an integral part of the external sustainability plan for the grounds surrounding the athletic complex. Plans are also in the initial stages to introduce sustainable landscaping around the building as a part of Macalester's soon to be implemented campus wide initiative⁵.

Also, natural lighting considerations create minimal need for artificial illumination of the fieldhouse during the day, saving a significant amount of electricity. Lights in the locker rooms were similarly designed in a sustainable way, albeit not with natural light. Motion sensors detect occupancy levels in the locker rooms (along with stairwells and other various areas of the L.C.) to eliminate unnecessary energy expenditures.

Sustainability can also be found in the northeast corner of the L.C., which is home to the Riley Pool and Leonard Natatorium. With a 25 yard by 25 meter pool capable of hosting both regulation water polo matches as well as swimming and diving competitions, this complex is a tremendous asset to Macalester's athletic program. In the past however it has been known as a heavy consumer of significant energy and chemical resources. Therefore facilities and athletics have installed a moss filter to greatly reduce the amount of chemicals needed for sanitizing the pool water. This not only has obvious environmental benefits, but it also is much less detrimental on the health of our varsity athletes and Leonard Center visitors.

Recommendations

While the aforementioned sustainability efforts have made quite an impact in the Leonard Center, one major area of energy waste exists regarding lighting. Many times the lights in heavy

⁵Sustainable Landscape Master Plan, <http://www.macalester.edu/sustainability/initiatives/sustainablelandscapeplan.pdf>

traffic areas (that may not be on sensors or timers) are left on for the duration of time that the L.C. is closed, solely for the custodial staff. While that may not seem substantial, six hours a day for 360 days of the year can really add up to a lot. This concern was expressed by Director of Athletics, Kim Chandler, when discussing energy consumption in the Leonard Center. There is a potential solution to curb this unnecessary waste however. By shifting custodial work schedules to overlap with either the last few or first few hours of L.C. operation, the building could be left to rest with no lighting needs for at least a small portion of every evening. Generally these time periods involve the lowest frequency of users, and therefore custodial staff would still be able to do their work without significant obstacles.

A similar concern was expressed by Ron Osterman, Assistant Director of Athletics (Facilities) here at Macalester, regarding energy use from lights in the gymnasium. These lights are on a timer that regulates conditions based on Leonard Center hours of operation. There are plenty of instances however, when no one is utilizing the gym yet the lights remain on regardless of this fact. It would be beneficial to have a manual override made available to the student workers at the front desk, who would then have the ability to control these lights based on occupancy.

A final recommendation we have for increasing Leonard Center efficiency is to install low flow faucets and showerheads in all of the bathrooms, and more importantly the locker rooms. Research is currently underway to determine what the current status of this is, and whether it even needs to be a consideration. There is a good chance that through the emphasis on efficiency in the design of the L.C. this initiative has already been completed. We are awaiting confirmation of this notion from a member of Facilities.

V. Office Activities

According to a recent article in Time Magazine, one office worker in the United States can produce a quarter-ton of waste per year. Heating and cooling costs account for over forty percent of carbon dioxide emissions per year, and over seventy percent of total electricity usage is eaten up by office spaces⁶. While these numbers are staggering, it is easy to find ways to personally help reduce the impact our Athletics office has on the environment.

Projects to Date

In line with the sustainable nature of the Leonard Center, the offices are already fully equipped with motion-sensing lights. Similarly, due to a campus-wide Macalester policy, all paper used is also made from 100 percent recyclable materials. One behavior change made specifically by the office staff exercising their sustainability autonomy though, regards the office water cooler. This year the staff placed it in a less convenient location in order to cut down on use. The water cooler used to be placed right at the entrance, but to make it more difficult to access staff relocated it to the back of the office; making it an easier/more preferable option to fill your water bottle at the sink instead. The paper cups were also removed from the dispenser to minimize waste and encourage the sustainable use of a personal water bottle. Permanent dishware is also provided in the staff kitchen to minimize the use of paper products at meal time.

Recommendations

We recommend that permanent dishware also be used for Student-Athlete Advisory Council (SAAC) meetings. A large group of student-athletes meet monthly in the Hall of Fame Room over lunch to discuss pertinent issues and develop programming to support the mission of the NCAA SAAC. Lunch is served on paper plates with plastic utensils and cups. It would be wise to invest in reusable dishware for these meetings, and keep them in the Athletic Department office. One suggestion for maintenance of this supply would involve either designating a SAAC

⁶ Takeuchi Cullen, Lisa, "Going Green at the Office." *TIME Magazine*. June 7, 2007.

member to be responsible for cleaning them (with the Athletics dishwasher) or having a rotating maintenance schedule. The Environmental Studies Department has already done this and Professor Chris Wells can be contacted for questions about purchasing.

Conclusions

Unlike other aspects of daily life and work, the pursuit of sustainability in our communities requires an understanding of complex and sometimes counterintuitive processes that unfold over a long period of time. Having worked within the Macalester Athletic Department, we realize that time and understanding are necessary to bring about the kinds of changes that will promote sustainable practices. Yet we have duly noted the presence of great enthusiasm for improvement on the greater part of the Mac Athletic staff.

The environmental impacts of activities within the Athletic Department are difficult to assess quantitatively. The general assessment process, which we have begun, is the first step towards a more sustainable department as a whole. We maintain that the integration of sustainable measures can be achieved only through the specific contribution and shared responsibility of each sector of the department. Information needs to be shared between departments on campus, management, coordinators, athletic trainers, coaches, and student-athletes to create an informed body to implement incremental changes. Knowledge and information that facilitate public awareness will improve implementation and provide meaning to sustainability.

Integration of the aforementioned proposals must be achieved collectively. Coordination of projects and strategies should occur at the onset of implementation to influence decision-making processes in a positive way. By collectively working to identify, evaluate, and manage sustainable initiatives, the ultimate goal of sustainability can be achieved. The take-home point

here is that sustainable development needs interdisciplinary action from Macalester's campus. Identified issues within the Athletic Department are no more than opportunities for everyone involved to learn how to work together in creative ways to achieve a more sustainable athletic environment.

We would just like to thank the following members of the Athletic Department staff for all of their cooperation and help with our endeavor:

Director of Athletics, Kim Chandler
Assistant Director of Athletics (Facilities), Ron Osterman
Head Athletic Trainer, Paula Natvig
Deno Fitness Center Director/Strength & Conditioning Coordinator, Steve Murray