Environmental Activism on Campus

Spring 2019

Projects developed and implemented by students in ENVS 256/POLS 255 Environmental Politics

Instructor: Pablo Toral
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Activism Project:

**Oscar Mayer Restrooms and Waste Water Conservation**

ENVS 256: Environmental Politics

May 7th, 2019

Eleanor Carpenter, Sophia Hopp, Stepha Kvokov, Desire Piphus, Jennifer Pantelois, Amy Ward
The Team

*Eleanor Carpenter* is an Environmental Studies major.

*Sophia Hopp* is an Environmental Geology major.

*Stepha Kvokov* is a 3:2 Chemical Engineering major.

*Jennifer Pantelios* is an Environmental Geology major.

*Desire Piphus* is an Environmental Geology major and Chinese minor.

*Amy Ward* is a French and Political Science double major and Environmental Studies minor.

Introduction

This project delves into the particulars of a project to conserve water resources on Beloit College campus, targeting Oscar Mayer Hall. The project proposes to decommission the wasteful, self-flushing urinals and replace the old toilets in the Oscar Mayer Hall basement bathrooms. In addition to doing background research on the ethics and ecological benefits of our project, we also reached out to resources on the college campus for scientific measurements, access to Beloit College’s water consumption costs, as well as guidance around the legalities of the renovations. We worked together to make sure that our deadlines were met and that our classmates were up to date with our progress. With funding from the Revolving Loan Fund, we will be able to supplement the cost of the professional work, and installation needed to carry out the project, along with the cost of the materials that will be used.

Problem

The idea for this project stemmed from Desire and the Beloit College Facilities Department. The urinals in the men’s basement restroom in Oscar Mayer Hall has self-flushing urinals that flush
automatically 7-8 per hour. Additionally, the toilets are an outdated style that use 3.5 gallon per flush. Desire and Facilities saw the tremendous amount of water being wasted for restrooms that were rarely used, which led our team to pursue this project.

Goals

Our original goal was to apply the four components of the “holy diamond” of environmental sustainability (sociopolitical, scientific, economic, ethical) along with a cost-benefit analysis to evaluate the need for renovation in the basement restrooms of the Oscar Mayer building. At first, we strived to replace the sink valves, toilets and valves, and taking out the urinals completely. However, for a more cost effective and viable goal, we decided to only shut off and board up the urinals as well as replace the toilets with low-flow ones. The success of our goal meant that we were able to directly aid in Beloit College’s transition to becoming a campus that uses and manages its resources in a sustainable way.

Strategies

Political

In order to achieve our goals we worked extensively with Facilities, also known as PhysPlant, and the Beloit College Revolving Loan Fund Committee (BCRFLC). These actors helped us understand the viability of our project and guided us in the right direction. In the beginning we worked with Bruce Hamilton, the Facilities supervisor to introduce our sustainable project to him. Hamilton was able to provide to us background information about the installation and models of the toilets and urinals. Between email exchanges and in person meetings, Hamilton provided beneficial information that allowed us to move on with our project. We also met in
person with other members of PhysPlant to discuss the actual implementation of our project and they were able to provide recommendations for contractors. Towards the end of our project, we were in contact with members of the BCRFLC to establish our presentation date. In order to present to BCRFLC, we established a meeting and went in to give an overview of our project, present the economic benefits, and answered questions. Since that meeting we have been in contact, over email, in which BCRFLC informed us our proposal passed.

*Scientific*

With little previous knowledge on the college’s water conservation efforts, our group had to investigate the water use of the toilets and urinals in the Oscar Mayer basement. Hamilton was able to provide insight into how the old toilets in Oscar Mayer work. He explained how the older models of toilets are only 60 percent efficient and flush roughly 3-3.5 gallons of water. In contrast, the updated toilets will flush about 1-1.5 gallons, since these valves are closer to 94 percent efficient.\(^1\) Based off of our calculations, by updating the toilets with new valves this would save 2 gallons per flush. Assuming the low estimation that each student uses the basement bathrooms only once a week, Beloit College would save 304 gallons per week alone, in updating the toilet. As for the urinals, we discovered that there are two tanks, each controlling three urinals. The first three urinals connected to Tank 1 flush eight times per hour, while the last three urinals connected to Tank 2 flush seven times per hour. We measured the volume of each tank to be 945 in\(^3\). So, the first three urinals flush about 7,560 in\(^3\) and the last three urinals flush about 6,615 in\(^3\). After converting inches cubed into gallons, we established that in total the urinals are flushing 61.3 gallons of water per hour, approximately 1,471 gallons of water per day, and 536,988 gallons of water per year. Due to this high number, our group saw this as a perfect opportunity to address the Oscar Mayer basement bathrooms and reduce the college’s water consumption. In implementing this project, Beloit College would be reducing their water usage by around the size of an Olympic swimming pool each year. Once we established the science

\(^1\) Hamilton, Bruce, “Physical Plant Meeting”, 12 February 2019.
behind our project, we were able to go in and apply what we had learned to the economics, to find the cost and benefits of our project.

**Economics**

In order to find out the cost of installation and appliances we had to do work with Bruce Hamilton, Director of the Beloit College Facilities Department; Lori Rhead, The Financial Director for Facilities; Baar’s Plumbing, a local plumber that will provide labor; and Goodin Company, The supplier of our low-flow toilet parts. They were able to provide quotes for the Oscar Mayer basement bathrooms. This helped us get a better understanding of what our project might cost and provided a starting point to work from. Originally, we planned to replace the toilets, remove the urinals, and fix the sinks, however, we soon realized this was too much to do in one semester. When we narrowed our goals to just address the toilet and shutting off the urinals, they were much more economically attainable, as we lowered the overall cost and shortened the loan repayment period. In calculating the economic benefits in relation to the cost, our project became much more desirable. Attached in the appendix is our economic cost-benefit analysis, repayment summary, and other economic resources we used to properly determine the cost of the project.

**Ethical**

Through our project we not only wanted to benefit the college, but also benefit the local community of Beloit. In implementing this project we kept in mind Beloit College’s sustainability mission and have aligned with its mission of being an increasingly more sustainable school, by reducing its water consumption and therefore its energy consumption.\(^2\) We understand that Beloit College is part of a greater community of Beloit residents and it is not equitable or sustainable to irresponsibly consume large amounts of water. In this case, we have put our project on the moral high ground as we work to not only improve the conditions for students, faculty, and staff of Beloit College, but also those in the local community who live in

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Beloit. In reducing water consumption we see the reduction of energy usage to treat wastewater which reduces greenhouse gas emissions generated by coal and natural gas during treatment. 3 We also wanted to honor the Beloit College Sustainability mission statement that says:

“Beloit College is committed to being part of the solution to climate change. We are working with students, faculty, and staff to make sustainability not only a priority, but also an essential part of our liberal arts culture.”

Challenges

Our main challenge with the original high cost of installation, however, we were able to get the cost down to a reasonable amount by more economic research. Overcoming this challenge allowed for our project to pay itself off in a shorter amount of time.

Another challenge was that group members had a lack of economic background, but the few who worked on the economic portion of the report worked hard to accurately calculate the amount of water and money that would be saved when installing the new toilets, how long it would take for the low flow toilets to pay off the loan, and several other economic calculations. Other minor economics challenges included finding time to meet with the financial head of PhysPlant, Lori Rhead, and getting her approval to have PhysPlant bear the responsibility of loan repayment until the project pays off its own debt. Initially Rhead hesitated in confirming the project, but during further discussion in the meeting she agreed to it.

Lastly, there were few small challenges that popped up randomly which slowed down our progress according to our initial. For instance, finding time to collaborate as a team was somewhat difficult. Another example was possible occupancy issues with decommissioning the

4 Beloit College, 5 May 2019.
urinals which lead to a stall in the project until Bruce Hamilton contacted the city plumbing commissioner. All of our challenges, however, did not impede the success of our project.

Accomplishments

1. The BCRLFC accepted our proposal which will lead to construction on the restrooms over the summer.
2. Beloit College will save over 500,000 gallons of water a year, most of it from decommissioning the urinals.
3. The BCRLFC acknowledged how thorough, accurate and well-written our proposal was.
4. Our activism group worked well together and everyone put in an equal amount of work into our project.
5. Oscar Meyer Hall is now a completely gender neutral space.
6. Group members collaborated closely with the Facilities maintenance supervisor, Bruce Hamilton, and other members of the PhysPlant team which fostered positive staff-student relationships.
7. We have directly aided in Beloit College’s mission to become a more sustainable institution.
8. We have provided a template for future Beloiter’s to use for aid in success of sustainability projects of their own.

Advice for the Future

Moving forward, we recommend that this project extend across campus to further advance the college’s conservation efforts. The World Affairs Center (WAC) also uses urinals that flush automatically when the water tank fills; this building should be the next to have urinals removed and outdated toilet valves replaced. Ideally, all the toilets on campus should eventually be
converted to low flow toilets. After the wasteful urinals are decommissioned, the top priority buildings are those with the highest traffic and have not undergone recent renovations. For future implementations of this project to be the most effective, we advise that the WAC and old dorm buildings, such as Blaisdell and Peet, are the first to be renovated. As one can see from our report, the economic payoff for Beloit College is worth the startup installation cost.

Conclusion

The work of this project to install low flow toilets and decommission the wasteful urinals in the basement of Oscar Mayer Hall has been overall successful. Through consistent communication with workers of PhysPlant, research, and the presentation of our project to the BCRLFC, we were approved for funding. Our project was successful because of the balance of strategies rooted in sociopolitical, ethical, scientific, and ecological aspects of the “Holy Diamond of Sustainability”. We hope that other students are empowered to pursue sustainability projects with enthusiasm by using our project, and others as a template.

Bibliography


Appendices

Appendix A: Beloit College Water Bill for Oscar Mayer Hall

![Image of the Beloit College Water Bill]

### Bill Details
- **Bill Date:** 01/12/2019
- **Payment Questions:**
  - Water Resources Staff is available for water and sewer emergencies 24/7. Call 608-364-2888.

### Payment Information
- Payment must be received by 5:00 PM on Due Date to avoid penalty charges.

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A $30.00 PROCESSING FEE WILL BE CHARGED FOR ALL RETURNED CHECKS.

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THANK YOU FOR YOUR PROMPT PAYMENT

ACCOUNTS MAY BE SUBJECT TO A 1% PENALTY IF PAYMENT IS NOT RECEIVED BY THE DUE DATE.

RETURN THIS PORTION WITH YOUR PAYMENT. PLEASE ALLOW 5 DAYS FOR PAYMENT TO REACH US BY MAIL.

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- **Customer Number:**
- **Address Change:**
- **On Reverse Side:**

PLEASE MAKE CHECKS PAYABLE TO:
- **Beloit Utilities**
- **PO Box 2841**
- **Milwaukee, WI 53201-2841**

Page 77 of 77 (Seq# 2520)
Appendix B: Quotes for labor and materials

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Page 1
Baars Plumbing  
2728 S. Nature's Ridge Rd.  
Beloit, WI 53511  
(608) 728-1864

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Plumbing bid for installation and materials for the following:

**DEMO**
- Bathroom fixtures (wall hung toilets)
- Water lines
- Beloit College to dispose of fixtures
- Cap off water line to urinals

**FINISH**
- Install wall outlet toilets (supplied by Beloit College)
- Install flush valves (supplied by Beloit College)
- Install new nuts (supplied by Beloit College)
- Install new foam gaskets (supplied by Beloit College)
- Permit Fee

For the sum of ................................................................................. $2200.00

Work as stated, if other code violations are found other than ones stated above, they will be repaired on a time and material basis.

Any questions, contact Jeff Baars  608-728-1864

Baars Plumbing LLC, will not be responsible for the installation, service, warranty or replacement of equipment not furnished by our company.

We Propose hereby to furnish material and labor, complete in accordance with above specifications, for the sum of Two thousand two hundred and ...........................................00/100 dollars ( $ 2200.00 )

Authorized Signature: Jeff Baars  
Customer:
All Gender Restroom (Available/In Use) Sliding Engraved Sign EGRE-25512-SYM-SLIDE_WHTonBLK

Excellent ★★★★★ 3,146 reviews on ★ Trustpilot

Select Material
- Plastic View all

Select Size
- STANDARD Plastic Sliding Sign 8x3 in. w/ 12 in. GOLD Finish Bracket $31.00
- STANDARD Plastic Sliding Sign 8x3 in. w/ 12 in. SLVR Finish Bracket * $31.00

Quantity: – 1 + Total: $31.00
Price Each: $31.00
STANDARD Plastic Sliding Sign 8x3 in. w/ 12 in. SLVR Finish Bracket.

Product Details

Sizes
- Construction: Engraved Plastic
- Mounting Option: Slider

Description
White-on-Black Sliding Engraved Plastic All Gender Restroom (Available/In Use) Sign with Symbol

This colorful, engraved plastic Restrooms sign with text and pictogram symbol slides left and right in a metal bracket to indicate room status.

- This durable Gender Neutral sign is manufactured from a 1/16-in. acrylic core with a laminated top color layer.
- Our precise engraving process removes the top color layer to reveal the underlying core color.
- UV-made engraved acrylic sign measures 8x3-in. and includes a 12-in. bracket.
- Choose silver- or gold-finish mounting bracket (Select above). Bracket installs easily with adhesive mounting strips (included) on screens.
- Recommended for indoor use.

Click Add To Cart to order this sliding Gender Neutral sign today.

Read Customer Reviews

There are no reviews for this item. Write Review

Questions and Answers

Questions that need answers | My Posts
## Appendix C: Economic Cost Benefit Analysis

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### Oscar Mayer Hall Bathrooms

**Material and Labor Cost**: $4,940.06

**Estimated Cost Savings (per year)** = $1,105.86

This is the benefits from just water cost savings, it does not include labor cost savings

**Simple Payback (years)** = 4.47

### Project parameters

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<td>$1,300</td>
<td>$4,000</td>
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</table>
Appendix D: Pictures of the Urinal Tanks and Urinals
Appendix E: Emails and Communication for the Project

You are welcome. The quotes are for parts only. No installation. I hope that the information helps.

Sent from my iPhone

2 attachments

Mayer Bathroom Fixture Quote
1.pdf 6K

Mayer Bathroom Fixture Quote
1.pdf 6K

5/3/2019 Basset College Mail - Price Quotes

I have uploaded notes from the PhysPlant meeting onto our GoogleDrive Folder which I can talk about in our meeting tonight. Also, one of the quotas attached in this email is incorrect and I have the correct one which I will bring tonight too. [Quoted text hidden]
**Price Quotes**

5 messages

**Wayne Perez**

Wed, Feb 13, 2019 at 1:19 AM To: Desire Marie Piphus

Good morning Desire. I hope that you are having a great day. I am including 2 attachments that are quotes for the Toilets, valves, seats and gaskets for Mayer Ground Floor Bathrooms. I hope that this helps.

" Wayne Perez
Purchasing and Inventory Coordinator Beloit College

" Look for success in any line and you will find a man or woman who has mastered the knack of dealing with people--a person who has a way with others."

Mayer Bathroom Fixture Quote
2.pdf 40K

---

Feb 13, 2019 at 2:57 AM

Thanks, Wayne! I will forward this to my group members. [Quoted text hidden]

---

Feb 13, 2019 at 3:54 AM

[Quoted text hidden]
Sustainability Project
46 messages

Hi everyone. So I began working on the RLF proposal but I noticed that we don’t have any numbers for how much it would cost to remove the urinals. I’ve emailed Bruce and Wayne, but with that said I don’t think we can even continue until we have that amount. So far, our cost for toilets and valves is so much more than the savings, which we predicted would be the case, which was why we originally just wanted to propose the urinals and then use any extra money for sinks and toilets. So maybe we could just meet as a group on Saturday, and you guys won’t need to meet tonight. How does this sound? —Desire

-------- Forwarded message -------- From:

Hi Desire, To throw a guesstimate at materials and paint to cover the urinals would be $500. Hope this helps. Thanks Bruce

On Thu, Feb 21, 2019 at 3:32 PM Desire Marie Phiphus wrote:
Hi Bruce! Is there any way that you could give me an estimate for how much it would cost to box up the urinals? I assumed that my group members would have discussed that with you. Thank you! Desire Phiphus

On Wed, Jan 23, 2019 at 6:10 AM Bruce wrote:
Hi Desire, Is there a time that you would be available to stop at our office and discuss your project. You could contact Leeann in our office to find available times to meet. Thanks Bruce

On Mon, Jan 21, 2019 at 2:36 PM Desire Marie Phiphus wrote:
Hello
My name is Desire PIPHER, a junior Environmental Geology major at Beloit College. I'm interested in doing a sustainability project focused on water and heating on the campus. Specifically, I'd like to learn more about how much the school spends each year towards heating water for sinks and showers. I would also like to offer some ideas for saving money. Could you let me know if it's possible to turn off the water heater between midnight and 6am for just one week? If so, then I would like to try that for my project.

Best, Desire
PIPHER

Sent from my iPhone

---

"Bruce Hamilton

hey guys when do we want to do the proposal for BCRFL? March 1, this Friday? I just want to check before I send them an email.

Amy [Quoted text hidden]

Yes [Quoted text hidden]
No I don’t think we should offer for this Friday.

I talked to PhysPlant today and they said a woman name Lou Reed who works in Middle College would be the one to sign our Revolving Loan Fund form for the department. Bruce said there are already a few past projects that needed to be paid for so there may not be money in their department for ours. Also, he thinks we should get a better estimate of the urinals by figuring out how many gallons it holds & uses for flushing. Maintenance can help us with it but we would need to schedule it and go with them. I can explain the process to measure the gallons better in person. Would anyone have time this week to do that with PhysPlant? I'm pretty busy but can try to find time if no one else can.

Best, Jennifer

[Quoted text hidden]

https://mail.google.com/mail/u/0?ik=1531:cb6e7d&view=pt&search=all&permthid=thread-c3A16261181268282057915&smime-attachment&i=16261181268282057915&ti=6261181268282057915

I'm just a little confused as to why we have to do the measurements over. Bruce himself measured the tanks and I wrote down the numbers. If we were not having the right measurements he should have told us in the very beginning, that would have saved so much time we spent on all of these calculations. ~Desire

Sent from my iPhone

[Quoted text hidden]

I was confused by that too

I thought the only things we guestimated were toilet related

[Quoted text hidden]

Can we have a meeting to discuss everything that's going on with our project? I don't think we are all on the same page.

[Quoted text hidden]
So the toilet measurements are fine but Bruce said we don't know for sure how much water the urinals are using every time they flush. [Quoted text hidden]

Hi there
--

Miriam from Revolving Loan Fund said she can help us with the economics section and to understand the interest rate stuff before we present to the whole group.

Stepha -- she said she can meet with us tomorrow if that works for you. We could meet with her either before or after talking to Phys Plant? I may be able to meet earlier than 3 pm. I can email you but probably around 2:30 I could meet. Just depends when my meeting is done with my thesis adviser.

Best, Jennifer
[Quoted text hidden]

We can go afterwards. What do we need to cover with Phys plant?
[Quoted text hidden]

Okay, sounds good! We will go and find Lou Reed in Middle College and explain our project + the economics of it, and ask if we the PhysPlant department would be able to take responsibility of the loan. [Quoted text hidden]

So Jennifer and I had to schedule a meeting to go over the finances with Phys plant finance manager, which isn't until Wednesday. I think we should wait until after that to propose. It'll most likely have to be after spring break, unfortunately. [Quoted text hidden]

Sun, Mar 3, 2019 at 12:41 PM
Hi Jodie,

I was wondering if we could reschedule for either this Thursday at 4 pm or Friday around 2:15 pm?

Best, Jennifer

Mar 6, 2019 at 1:27 PM

Hi Jennifer.

It appears that Lori is available on Thursday at 4:00 but unfortunately, she is not available at the requested time on Friday.

If the Thursday time slot works for Stephanida, then I am happy to send out the Google Calendar invite.

Thank you,

Jodie Vogt
Executive Secretary

Wed, Mar 6, 2019 at 1:50 PM

Hi Jodie,

Yes, 4 pm works for both Stepha and me. Thanks!

Best, Jennifer

[Quoted text hidden]
Hi all,

Hope everyone is having a good spring break! Desire was asking for updates on the project so I wanted to email everyone to get us back on the same page.

Since we last spoke, you know that our group was looking to get confirmation from PhysPlant to be responsible for the loans of our project until it is able to pay itself off. Miriam Wilch from the Revolving Loan Fund group helped Steph with the economics section and I took notes on some things we need to add to our proposal before we present to them. Emma Brady (RLF Chair) told me we can email them to set up a meeting for whenever we are ready and they are happy to meet with us after break. This past Thursday, Steph and I met with Lori Rhead, who is the money managing person of PhysPlant. At first she was hesitant to approve of our project because of Oscar-Mayer's low traffic flow but then after talking some more she agreed that PhysPlant is willing to be responsible for our project loans. Whoopee!! The Monday after break, Steph and I are going to meet with Bruce in PhysPlant to figure out the details for labor costs and some other logistics. Then we need to update Lori Rhead before meeting with RLF.

We should find a date to meet as a group next week to create our presentation and also we need to edit our proposal.

Best,
Jennifer

---

**Occupyancy/Restroom Assessment of Oscar Mayer Hall**

13 messages

---

Hello Mr. Gens,

I am part of a group of students working on renovating the Oscar Mayer Hall basement restrooms as part of our Environmental Politics course. We are working with Beloit College Facilities Department, and Bruce Hamilton brought up possible occupancy concerns regarding our renovations and that you are the person to consult. We are hoping you would have the time to meet with a few of us, and Bruce, sometime this week or next so we can make sure we do not violate any rules.

Thank you for your time, we look forward to hearing back from you at your convenience!

Best, --
M. Kvok
Beloit College, Class of 2020 3/2
Engineering Major Chemistry Minor
Chemistry Department Teaching Aid
Gender Neutral Bathroom Signs (Time Sensitive)

3 messages

Wed, Apr 10, 2019 at 12:47 PM

Hello Mr. Jones,

I am a student currently working on a project for renovating the restrooms of Oscar Meyer Hall. One of the outcomes of the renovations would be making the restrooms completely gender neutral. My group and I have already presented to the Revolving Loan Fund, and they suggested that we reach out to you, as a member of the communications and marketing team, for gender neutral signs pricing and details. The RLF committee, mainly Sue Swanson, told us that the Powerhouse will also have gender neutral restrooms, and that you might already have sign designs and prices that we could use for the Oscar Meyer restrooms as well.

We do need to have a design and price quote to the RLF by Monday, so if you could get back to me soon, that would be great.

Thank you. -- Stephanie

Wed, Apr 10, 2019 at 12:53 PM

Hello! Thanks for reaching out. What a great project. At this particular moment we don’t have a design/pricing model for the Powerhouse just yet. We’re working with the architects to finalize those designs and budgets as part of all the signage in the Powerhouse, but we haven’t gotten to that final step yet. Hopefully, we’ll be able to take those ideas and then use them in other spaces on campus when we do, as that’s part of the plan.

Please feel free to keep me in the loop and let me know how I can help!

Tim [Quoted text hidden] -- Tim Jones

Thank you so much for reaching out so soon! Since we do not have anything for the powerhouse yet, do you have a website/manufacturer that Beloit College usually gets their signs from? Alternatively, what are the guidelines that are acceptable for permanent signs on academic buildings? We are just trying to make sure that a design we pick will be accepted by the communications and marketing department before commissioning them!

College Mail - Gender Neutral Bathroom Signs (Time Sensitive) Thank you, Stephanie [Quoted text hidden]
Meyer Project

6 messages

Apr 15, 2019 at 11:33 AM

Good Afternoon

I'm following up to an email I sent last week. We are in the process of creating a committee report for the upcoming board meeting. I'm trying to include student-led projects and I was wondering if any of you could write a couple of paragraphs on the planned renovation on the Meyer restrooms. It could even be the documentation that you submitted to the revolving loan committee. It would be great if you could get something to me by Wednesday afternoon.

THANK YOU!

Kerry Satterwhite

Tue, Apr 16, 2019 at 5:27 PM

Hello Kerry! Below is the general overview of our project on the planned renovations of the Oscar Mayer building. I have also attached a copy of our Revolving Loan Fund proposal for reference. If you would like any more documentation just let us know, we are happy to be able to contribute our project to the committee report.

The Oscar Mayer Project is a student-led project that was done as part of LAPC credit through the Spring 2019 Environmental Politics course taught by Pablo Toral. Students involved are Ellie Carpenter, Sophia Hopp, Steph Kovokov, Jennifer Pantellos, Desiree Piphus, and Amy Ward. The main goal of the project was to apply the four components of the "holy diamond" of environmental sustainability (Economic, Sociopolitical, Ecological, and Ethical) to an issue on campus, taking into consideration Beloit College's commitment to being part of the solution of climate change. The location of interest was the Oscar Mayer building, a building that still has water waste infrastructure from the 50's, which has contributed to over 500,000 gallons of water wasted every year on the Beloit College campus. Through research and working closely with Physical Plant, we were able to determine that the renovation of the Oscar Mayer building is definitely a project worth pursuing due to its low cost and high economic, ethical, ecological and sociopolitical benefits. The project is currently waiting for the approval of the Revolving Loan Fund, after the approval renovations will begin as early as May of 2019.
Hello,

Sue,

I was just wondering if there was any updates on the decision of our RLF proposal? We are hoping to know soon so that we can start working on our final project.

Please let us know if there is any other information you guys need!

Thank you, --  Stephanie Krylov Belott
College, Class of 2020 32 Engineering Major
Chemistry Minor Chemistry Department
Teaching Aid Office of Sustainability Energy
Team Leader

Hi

I am passing your ques on along to Emmy. We had a meee snafu. Emmy can explain our meline.

Cheer
s- Sue

Sue
Hi there!

We didn’t get a chance to vote this week because of my lack of reminders, but we are voting this coming Monday and I can guarantee you that it’s going to pass so you guys can move forward as if it was already passed. Unfortunately we cannot take financial action until we get everyone together for a vote.

I apologize for the delay.

- Emmy

Thank you so much for getting back to us! [Deoblet text: hidden]
Are y’all okay with me sharing the spreadsheet that we have where we calculated the economics section?

Hi
Jenny!

We have your proposal, but we are looking for your cost summary, cost-benefit analysis, and loan amortization schedule in an excel format (or google sheets).

Thanks
1 Emmy

Yes of course! [Quoted text hidden] --
Replacing CFLs with LEDs in Porter Hall
Melinda Balades, Linh Do, Aaron Holzmueller, Broakeen Sheffield

Introduction

Even though lighting is incredibly essential, Beloit College, like many other campuses and homes around the world, has not attempted to improve their lighting in several decades. While there have not been many alternatives in the past to improving lighting and efficiency, the invention of LED lights has presented Beloit College with a simple and easy solution to manage its electricity usage more effectively. This semester, our group developed a project to change the lightbulbs in Beloit College’s residential hall from fluorescent to LED light bulbs. Due to resources constraints, our group chose to focus primarily on floor 2 through floor 4 in Porter Hall as the main scope of this project.

Problems

Original Problem - Currently, the inefficient consumption of light energy on Beloit College is contributing to the community’s unsustainable energy use. Whether individuals are unaware or simply apathetic about their energy consumption, inefficient lighting has costed Beloit college financially and ecologically. For that reason, in order to be more sustainable, fluorescent lights should be replaced by the new more energy-efficient LED bulbs.

New Problem - The new problem that would arise out of this project is to enlarge the scale of this project to promote and strive for the LED lights to be used on the whole campus instead of just three floors on Porter hall. The are also efforts needed to make sure that the project will fund itself within the fifteen year span.
Goals

*Original Goal* - our original goals was to help conserve energy and lower the cost of energy for Beloit College. We wanted to find a way to be more efficient with the use of energy around the college campus, because unfortunately Beloit College’s energy comes from Alliant energy and they use coal to produce electricity.\(^5\) The combustion process of burning coal to generate electricity emits carbonic gas (CO2) which is one of the main greenhouse gases.\(^6\)

*Installation Goal* - A goal in order to achieve our bigger goal was to contact Beloit Maintenance Department (Phys Plant) and get an estimate of how much it would cost to install the lights and how much it would be in labor. We want to ensure that everything is set and construction is ready to undergo during the summertime when the students already leave campus.

*Funding Board Goal* - After finalizing our cost and benefit analysis, we will then submit a proposal to Beloit College Revolving Loan Fund to acquire for financial support to carry out this project.

Modified Goals and Strategies

Our modified goal was to change the light bulbs in Porter Hall from fluorescent to LED bulbs. Our strategy to meet the ecological goal was to propose that we could switch out


fluorescent lighting for more energy efficient and longer lasting bulbs in one entire residence hall. The LED bulbs will use less electricity and will burn less coal, making them much more energy efficient and reducing Porter Hall’s carbon footprint substantially. We planned to make our project economically viable by choosing a project that will pay itself off over time in energy savings. The installation itself will cost $2,184 and it will more than pay for itself over the course of 15 years in both operation and maintenance costs and in energy savings. The amount of energy savings will decrease over time, but only by a very small amount ($78.68 year 1, and by year 15 it will be 62.01) so it is a very reasonable economic investment that will pay for itself over time and continue to generate energy savings over time as well. From a socio-political perspective, our strategy was to reach out to the Revolving Loan Fund at Beloit College (BCRLF) as well as to Physical Plant at Beloit College. In this way, we worked specifically within our institution to make changes in approved manners. From an ethical perspective, we felt this project was well in line with our Beloit College Mission Statement and Sustainability Statement. There were not big ethical challenges or controversies in our project, other than the fact that we could not propose to make this change in all the dorms on campus.

**Challenges**

We ran into several challenges in conducting our project. The first challenge occurred when we realized that our original idea of caulking and sealing windows would not work as the college would not approve it. We had to react quickly and design a new project, conducting all the original steps and reporting again. We tried to react as quickly as possible, but given our different schedules, it was often hard to arrange meetings. In order to really design a new project it was necessary, however, to meet as a group and talk things over. Thus, scheduling was a significant challenge for us. In addition, it was difficult to stay organized and focused on this
project. We had additional projects for this class, and also of course projects and exams for our other classes. Because this was a semester long project it was challenging to stay organized and make sure things were getting done when other projects and demands were coming up with earlier due dates. It was also a challenge to coordinate our schedules with the different actors who were charged with helping us develop and implement our project. For example, we needed to meet with the BCRLF and sometimes people were unable to attend; thus our meeting was cancelled up and we were only able to meet with them a week ago.

**Accomplishments**

Our main success is the approval of our project by the Beloit College Revolving Loan Fund. With their approval, the essential funds will now be allocated to PhysPlant in order for them to implement the operation over the summer of 2019. The email holding confirmation for the approved vote from Emeline Brady, the chair of the Board, is attached in the Appendix. Other lesser known, but equally important accomplishments we, as a group, have achieved this semester was our ability to swiftly and effectively transition from our first project to a completely new project. After spending nearly a month of work and effort on our initial project which involved weatherstripping Spanish House, we discovered the operation to be too substantial to be completed in one semester, with more actors involved outside of Beloit College which we had not previously taken into account. Nonetheless, by communicating early and productively with Bruce Hamilton, the PhysPlant manager, we were able to completely shift and immediately pursue our new activism project in replacing fluorescent lights with LEDs in Porter.
Advice for the Future

Despite the eventual success of our project, there are still other actions that we could have taken in order to lessen the stress of the operation. For one, we underestimated the difficulty of maintaining close, consistent communication with crucial actors. While Bruce Hamilton was quick to respond to our emails, he was not always present in his office to answer essential questions for our cost-benefit analysis. Other important actors we often had difficulty communicating with were the Board members from the BCRLF. Whether they were students or professors, they had other priorities and therefore could not always meet with us or had the fastest response time to our emails. To help counter these issues, we encourage future groups and/or individuals to not be afraid to follow up with another email or to meet with actors in person. Many can be found in their office and are available at posted hours which can be found on the Beloit College website, like Sue Swanson and Bruce Hamilton.

In addition to maintaining effective communication with resources on campus, whether they are professors, actors or gathering information on Beloit’s website, we would also advise placing priority on a timeline. For our group, we finally received approval of our project the day before our final presentation. Ways to avoid the issue of a time-crunch would be to not focus too heavily on all the different aspects of the BCRLF process and trying to understand it. We advise future individuals/groups to concentrate most of their effort on the cost-benefit analysis of their project. Talk to Bruce and facilities early on to collect needed numbers for calculations on your project. Even if you still are unsure about the BCRLF process, calculate the costs and benefits because that portion is often the most complicated and most important. Learning about the major aspects of the actual process takes only one or two meetings with a board member and examination of the BCRLF’s website, which includes examples of past projects. Meanwhile,
finish the rest of the proposal and then add the calculations at the end. Multi-tasking and efficient timelines will become increasingly important.

The idea of design and implementation of sustainability projects relates back to several discussions our group has participated in our Environmental Politics course. In our case, we see firsthand how bottom-to-top design faces issues from significant actors when investigating the logistics of implementation, and its ensuing adaptation. Furthermore, we learn personally of the importance of organized, connected political actors when finally facing the opportunity to implement our project. While the power of the actors (from PhysPlant to the BCRLF) is how we were able to make our project possible, it is disconcerting to know that something as minor as not responding to an email could make or break our project.
Appendix:

Sources:


How many light bulbs are there in your room? (only count the over-head light, don't count desk lamp, ...)

4 (80%)
1 (20%)

Approximately how many hours per day do you leave your light on (the overhead long-tube light bulbs)?

12
3
7
6
5-6
Hi,

I wanted to follow up on your prospectus with some tips for your project. I will organize my comments along the four corners of the holy diamond for clarity.

I want to start by highlighting that your project is based on a clear problem.

- You will not have any trouble finding scientific/environmental data to support your analysis.
- Your economics should be straightforward as well. I don’t know that you’ll find data from our own college campus. It will be great if you do. If not, you can use data available from recognized sources online.
- Your ethics will be a bit more difficult. You’ll need to find clear statements of principles that Beloit College upholds. You’ll then need to consider counter arguments that can be raised against your claims. I can think of a clear argument against your project. Since it is likely to be expensive, what should we stop funding in order to devote funds to this project? Or should we increase tuition to cover this?

- The most difficult part of your project is the socio-politics. Who will bear the costs? Who will do it? Is there liability involved? You do not identify who makes decisions on these kinds of projects. Who can make or break this project?

Looking forward to your action plan.

---

Hi all,

Based on Pablo’s suggestions, I think we have quite a few things that needed to be discussed. I think it should be best if we can all meet up sometime soon to split up the work and discuss our action plan. I am free tomorrow except from 5pm to 7pm; or Monday after 7pm. I am flexible with my time too but I think we should meet sometime before our next class on Tuesday. What do you all think?

Best

---

Yeah, tomorrow would be best, I think. I’m free all day, so maybe some time after lunch we can meet in the library or somewhere?

---

Yeah. Should we do 2 pm at the library? I will try to go early and grab a study group for us.

Sounds good to me. I’ll put it in the group chat. 2pm in the library, hopefully in one of the back rooms. Thanks

---

Hi all,

I was able to grab Group Study B for us in the library. See you at 2pm!

Best

---

Where in the library is that?
Dear [Name],

I am [Name] and this semester our group has to do an environmental activism project for Pablo’s POLS 255 class. Our project is to install weather strips or caulk in the special interest house’s windows (preferably Spanish House) to prevent heat loss, thus saving the money and electricity. We just wonder whether or not there is any liability or issue around installing the weather strips or caulk in the college buildings.

We also would be very grateful if you can share with us the electricity bill or heating bills for different dorm halls at Beloit College to do our calculation. Will we be able to get hold of that stat?

Thank you so much and have a great day! I am looking forward to hearing back from you.

Best regards,

[Name]
Dear [Name],

We would love to know the energy information for all the special interest houses, especially the Spanish House. For our project, I don’t think we have

We can get electric readings but no gas readings for Spanish house because it is not metered. We’re stripping we would evaluate, and see what is a.

Hi [Name]. Thank you so much for answering our question. Can we schedule a time to meet with you? We are free now and would love to talk to you as soon as.

The contractor said to base it as 1 hour per fixture at $65 per hour. Hope this helps. Thanks

Thank you so much! Thanks for taking your time to meet with us.

Have a nice day!

New Prospectus and New Action Plan

Thank you so much for your patience. Our group finally manage to finish our new prospectus and action plan. To avoid any issue by submitting via Moodle, I will just attach our documents below.

Thank you so much and have a great day!

Best regards,

2 Attachments
ENVS 256 Feedback on your action plan

Pablo<br>toral@beloit.edu<br>Tue, Mar 5, 5:43 AM

Hi!

Just sending you the suggested reminder for the quotes and examples from this upcoming Friday's meeting. Thank you again for the help!

Pablo

Hi Pablo,

I am attaching your action plan. Please make sure you read the comments that I made on the margins, along with those that I made at the end. Do not hesitate to contact me again if you have any questions.

Looking forward to your update,

Toral

ENVS 265<br>toral@beloit.edu<br>Thu, Mar 7, 4:14 PM

Hi all,

Since some of you were not in class on Thursday, I will just send this email to summarize what Pablo wants for the presentation:

- The presentation is 10 minutes long = 5 minute Q&A

- It is an overview of our project: need to 1. identify the problem; 2. Lay out the strategy on how our group addresses the problem; 3. Solution

- The overview is basically a summary of everything

- The presentation needs an introduction, the body with the overview part above + division of labor + timeline for our project; conclusion (include what we have done so far and what is left to do). Pablo wants the timeline to be in a line with the mark point for each deadline. He doesn’t like the boring timeline in which we just state the date and what we do

- The presentation needs to be evidence-based: include graphs, tables, numbers. Evidence includes statistics, visuals, quotes, ...

- Need to show teamwork: everyone should all present

- Body language: smile

- Need to introduce yourself and your major -> give a sense of what you could bring to the table.

I hope this will be helpful for Broken and Aaron who are in charge of creating the powerpoint for the presentation. I checked Moodle and our group will go FIRST on Tuesday right after we come back from spring break. So we need the powerpoint by Monday, and we’ll probably need to meet on Monday after spring break to go over the presentation.

42
Dear [Name],

It's me again who had met with you several times before break to talk about changing the light bulbs in Porter to LEDs. Our group is in the process of completing and submitting the proposal to the Revolving Loan Fund. Sue Swanson has agreed to be our faculty sponsor but we still need a department to be our project's department sponsor. Since this project requires us to work very closely with PhysPlant, we wonder if the Maintenance Department can be our department sponsor?

We will try to finish our proposal within these two weeks and will send you our draft proposal once we finish. If you need us to meet in person to discuss more, please let us know. I am here on campus during the spring break and would be happy to meet with you any time in your convenience.

Thank you very much and have a great day!

Best regards,

***

Mon, Mar 11, 2:31 PM

Hi [Name],

If we could meet one more time to go over the project would be great. When do you have some free time available?

Thanks

***

Mon, Mar 18, 4:36 PM

Hi [Name],

I can meet on Wednesday from 8-9am, or from 12:30 pm to 2:30pm depending on what time is convenient for you.

Best,

***

Mar 18, 2019, 4:31 PM

Hi [Name],

Hi Bruce, I did not hear from you again about confirming to meet on Wednesday so I didn’t come. Can we try to meet again soon? On tomorrow Thursday, I am...

***

Mar 20, 2019, 2:58 PM

Hi [Name],

Sorry I missed this, Is it to early to have you come at 8:30 am this morning? Thanks

***

Thu, Mar 21, 7:31 AM

Hi [Name],

Hi [Name], I can’t come this morning. I have class from 8 to 10. Best,

***

Mar 21, 2019, 7:41 AM

Hi [Name],

Hi [Name], Do you have any time before 4 pm today? I will be gone all day Friday. Thanks

***

Mar 21, 2019, 8:15 AM

Hi [Name],

Hi [Name], I am free from 11-12pm. Will that work for you?

***

Mar 21, 2019, 9:03 AM

Hi [Name],

Hi [Name], Yes that will work for me.

Thanks

***

Mar 21, 2019, 9:47 AM
Hey

I sent me the proposal for the 609 lighting. I thought this may also be an helpful example.

---

Hi!

Now that all of the groups have presented their updates I had a chance to evaluate where everyone is at and am comfortable providing feedback and suggestions. My notes below summarize both my advice and the students', as conveyed through the evaluations I wrote and submitted to me. I hope you find them useful.

**Introduction.** Great personal intro. You gave us a clear understanding of your technical/professional background. This helps you persuade your audience that you have the credentials.

- **Body language.** Stand on both sides of the screen. All of you spoke. Great teamwork.
- **Division of labor.** Good start. You need to build this into your introduction to save time. Explain how your division of labor is built on your credentials.
- **Problem and goal/solution.** You need to support with empirical evidence. If your audience doesn't see the data, why should they believe you? You assume they give you a lot of credit. In a professional environment, they won't. You'll need to earn every bit of credit you think you deserve, and you can only do this by proving each claim with evidence. You did a good job addressing this later in the body of your presentation. However, you should not keep your audience guessing. Build some "big data" when you first introduce the problem and then elaborate in detail as you walk us through the presentation.
- **Holly diamond.** Great job addressing each angle of the holy diamond.
- **Timeline.** Very clear graph.
- **Progress report.** Great job.
- **Data delivery.** When you provide the name of people, identify their title. They are not involved in your project at a personal but at an institutional level.

**Grade.**

Please do not hesitate to follow up if you find that something is unclear or needs further development.

Thanks for your hard work,

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Fri, Apr 8, 6:23 PM

Hi,

At first I was a bit bothered, but I can't seem to find Emory Brady's email on Belkin's website and simply typing in her name into the recipient box of the email doesn't seem to bring it up. Would you mind sharing her email address with me? Thank you so much. I will continue looking for it until then.

From:

Fri, Apr 8, 6:50 PM

To:

Hi,

Sure here it is: Emeline Louise Brady <bradyel@color.edu>

Have a great weekend!
My name is [redacted] and this semester my group and I have placed a lot of effort and time into a project we believe has high potential for the Revolving Loan Fund. I have met with Sue Swanson multiple times, where at the last meeting, she reviewed our proposal. With her solid support, she enthusiastically encouraged that I send you the document (attached below) for possible review. Sue also notified me that the Board will be meeting Monday between 12 and 1. If you have the opportunity to discuss my group’s proposal then, perhaps it may even be possible that I could attend the meeting after my class at 12:30? My group and I would love the chance to discuss more about our project with everyone!

Best Regards,

Melinda Balades

Reschedule

Hi,

I know this is late notice, but the person I asked to look over the numbers still hasn’t gotten back to me. I also dropped the ball on getting everyone on board for a meeting tomorrow (Monday).

Basically, are you alright with presenting to the RLF Board the following Monday, the 22nd at 12:30? Sorry about the inconvenience and thank you for your flexibility.

Best,

Melinda Balades

Hey,

I believe the 22nd should work alright. I’ll let my group know. Thanks for the heads up!

Melinda Balades

I’m sorry this is so last minute and unprofessional, but there was some miscommunication between the board and a few necessary members couldn’t make it to the meeting today so we can’t have your group present today. We officially will be meeting next Monday the 29th.

Have a good day,

Melinda Balades

Next week works fine, the sooner the better. So we will see you next Monday on the 29th. Thanks!
Hi

I am attaching below our final proposal for our project.

Thank you so much and have a great day!

Best regards,

***

Hi

I just wanted to briefly check in to see whether or not the Board had voted on our project. Since we have to report back to our class tomorrow, we just want to have an idea of how things are progressing.

Best regards,

***

Hi

We voted today and your proposal has been approved. Now we just need an electronic copy of your cost summary, cost-benefit analysis, and loan amortization schedule in an excel format (or google sheets).

Best,

***

Hi

I believe I already attach above our cost summary and cost-benefit analysis. You said during our meeting last week that you will do our loan amortization schedule since you calculate that on your computer the last time. If you need our excel file of the CNB analysis, I can also email it to you.

Best,

***
Energy Conservation in the Dorms

By: Sophia Lugo, Willa Witkoski-Fields, Yi Ye, Jose Gutierrez, Renny Klein
Problem: According to data provided by the Open Energy Dashboard (OED) website, which monitors energy used in the dorms Aldrich, Chapin, and Maurer, energy use has not steadily decreased from 2016, to the present. Because the energy use fluctuates, we are not conserving energy as we should be. Thanks to the metering project, we are able to monitor energy consumption throughout these three buildings and have come to see that we are wasteful as a campus.

Goals: Our goal is to raise awareness in the campus community about energy use in the dorms through posters, surveys, and workshops. We hope to see a reduction in energy use in three specific buildings, which are Aldrich, Chapin, and Maurer. We decided to focus on the residential side of campus, and by doing this, it made easy for us to at least track energy usage with the OED dashboard.

Solution: Our solution to tackle this problem is to create posters describing the energy use in each building on a monthly basis, determining whether energy use has increased or decreased based on data from the current, as well as the previous months. Additionally, the posters include tips that people can implement in order to save energy. A QR code is included on the posters that takes people to the OED dashboard website. We also held workshops in the three dorms being observed—Aldrich, Maurer, and Chapin—to discuss our project with the residents and get their input. We also sent out two surveys, one before the project, and one after, to see if the various means of outreach have caused awareness and changes in students’ behavior.

We decided on doing an awareness campaign partly because we have seen them done on campus before, and therefore have some experience as being a targeted audience of campus projects. This helped us decide our format for the posters, which ended up using contrasting colors to make posters stick out and grab our audience’s attention. We also learned some key characteristics of successful awareness campaigns from a report given by the European Commission, detailing effective campaign strategies in the EU to curb energy use. This report emphasizes the importance of the visual presence of a campaign as well as the facilitation of interactions with the community in order for a campaign to be successful in changing the energy use habits of individuals. The posters acted to grab the visual attention of students, while the QR code on the poster, surveys, and workshops were used to make the campaign more interactive.

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7 Rivas, 2016
8 Ibid.
Challenges: The project conducted had quite a few challenges. Primarily, student engagement was really difficult. For example, trying to get student participation at our workshops for Aldrich, Maurer, and Chapin was really difficult. Trying to get different floors of a building to come together for 5 to 10 minutes at a given date and time was really difficult, despite having help from the RAs. The participation was really low, thus spreading the awareness through the workshops was limited. Another challenge was also communicating with different actors such as the RAs and Steve Huss-Lederman. For example, waiting to hear back from RAs and establish a set time and date for the workshops was challenging. Alongside sticking to the timeline of the project was also quite difficult since as college students, we all have very different schedules which made it complicated to meet regularly. Alongside this, our timeline was also dependent on communication with other actors involved in our project and how that coincided with our deadlines. The OED dashboard is also not 100 percent accurate at all times, which is difficult because the data can have anomalies. However, the one time there was an anomaly was because someone had turned off the meters, according to Steve Huss-Lederman.

At first, we had a few different goals we hoped to accomplish with this project, such as raising awareness about the OED website, sharing tips for reducing energy use, and having students decrease their energy use. However, because we were not as clear on what we were determining our goals to be, this made it difficult to measure our success. For example, in the OED website, it shows the energy use for the month as well as the week. In some cases, the month would show an increase in energy use, but the week would show a decrease, creating complications in determining whether the energy use had decreased, which was an aspect we should have considered earlier in the project.

Another challenge was the discrepancies in answers from the two surveys, in which the first survey expressed how people found posters helpful, and in the second one, people stating that they did not find posters helpful. Because the surveys were open to all students, but the workshops and posters were only in the three dorms, this made it difficult to see whether the efforts in the dorms had been useful. Therefore, expanding the metering project to the whole campus, as well as creating this project for all the dorms would be something that could be useful for the future, especially in terms of student engagement.

Accomplishments: For this project, one of our goals was to raise awareness about energy use and the OED website in the campus community. Through the posters, workshops, and responses to the survey, we were able to share our information with other students. For the posters, we placed them in the three dorms that are metered on the OED website. The posters mentioned how much energy that building had used for the month, and a link to the website, as well as ways to reduce energy. Some of the tips discussed decreasing shower time, or using cold water for laundry, so we also placed the posters in the bathrooms and laundry rooms, so people could see the tips when going about the activities discussed on the posters. We then updated the posters for the next month.
We sent out two surveys, one at the start of our project, to get an overview for people’s energy habits, and asking whether they knew about the OED and metering project. We then conducted three workshops in Aldrich, Chapin, and Maurer, for the residents of the buildings. Through in-person interaction we were able to get their input and about the project. Again, we discovered that not many people know about the metering and the OED website. Some people gave us some suggestions to make the tips more specific to their dorm. Through the surveys, we were able to get feedback about what people found useful in this project, and how to make it more engaging in the future.

Another thing we learned through this project was negotiations with other actors that go into a project like this, but can also be applied more broadly to larger regimes. Learning how to communicate with various actors in working on the project related to Chapter Two of Global Environmental Politics by Chasek, which discusses various actors, both state and non-state, involved in global environmental politics. Additionally, the ways that these actors must come together in order to solve environmental issues. Communicating with multiple people, and ensuring that everyone worked collaboratively in order to reach the project’s goals, was very useful in understanding the importance of cooperation amongst actors on a larger scale.
Holy Diamond:

Ecological Sustainability

The meters used are to track electricity usage. According to Steve Huss-Lederman, director of the OED metering project, “there is a CT loop around the actual electrical wire that measures the electricity as it goes by. This gets fed into the WattNode to note what is seen. Finally, the value is sent to a Maverick that records the value and makes it available on the internet.”9 Basically, this is how the meters function. The Wattnode and Maverick are important pieces of technology that are made by MAMAC systems. This company considers themselves pioneers in green technologies. Their founder developed microcomputers and sensors that could automate and control mechanical equipment in real time in order to improve efficiency and reduce energy consumption. There is a clear environmental benefit to this metering technology that helps collect data on energy consumption. If there is an ecological or environmental impact, it would be at the manufacturing level of the technology used in these meters. The information of specific raw materials used in the production of these MAMAC technologies is not readily available thus there will be a comparison to standard semiconductor devices. Even so, the life cycle analysis and manufacturing processes of semiconductor devices are not easily accessible as many producers do no comply with environmental regulations.

The rundown of the process in basic terms “includes wafer fabrication, production of silicon wafers starting from quartz, the synthesis of a subset of chemical inputs to fabrication, and the assembly/packaging stage.”10 A key component in the fabrication process is the heavy use of toxic chemicals which can result in emissions that are potentially harmful to the air, water, and ground systems. Another component is electricity and the manufacturing processes use vast amounts of it. This includes heating, ventilation, air conditioning, and wafer processing tools which account for 83% of the energy consumption according to the article by Environmental Science and Technology.11 Water is another resource used in the production process and a plant manufacturing semiconductor devices can average at least 2-3 million gallons per day.12 These figures and data are not necessarily directly related to MAMAC systems, but they do serve as an indicator and a basis as to what goes on during the production of such devices. Although the meters being used in the OED project are not directly harming the environment, the technology making them run definitely have been negatively impactful.

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9 Interview with Director of OED Metering Project, Steve Huss-Lederman
10 Nikhil, 2008
11 Nikhil, 2008
12 Nikhil, 2008
Economic Sustainability

Energy costs money. Therefore the energy consumption for running the dormitories is a big number as well as the cost. According to Beloit’s Open Energy Dashboard, the data of three dormitories seems to be unrelated with the timeline and cannot show the reason of increasing or decreasing of present month/week compared with the previous month/week. There could be an amount of energy that is wasted or being inefficiently used. Promotion of more efficient energy use can cut off the waste of energy as well as decrease the cost of money. Students being able to pay more attention to their energy consumption can not only save energy on campus, but also off campus.

Ethical Sustainability

One of the ethical considerations for this project is taking into account the impact students have on the environment. According to data from the OED website, energy use in the three dorms has not steadily decreased in the years 2016-2019. Beloit College states that it wants to give students, “knowledge and skills to become part of the solution to climate change and other sustainability challenges.” As well as creating people to be, “leaders,” in confronting these issues. By providing information about the OED website as a way to motivate people, and have them monitor their energy use, as well as suggest simple ways that people can reduce their consumption, this aligns with the goals spelled out in Beloit’s efforts to become a more sustainable campus. Because students may be unaware that the way they are using energy is wasteful, we wanted to suggest ways that they could incorporate energy efficiency into their daily lives in a way that can contribute to lowering their energy consumption. According to our survey results, the majority of respondents did not know about the OED website and the metering project.

Additionally, Beloit participates in the Sustainability Tracking, Assessment, and Rating System (STARS), a system which monitors different aspects of sustainability on college campuses. Beloit had a silver rating in 2017, and held 3.53 points out of 6 for energy consumption in their buildings. By creating a reduction in the use of energy, Beloit can further advance its commitments in participating in this program, which seeks to promote efficient energy use, and sustainability, on college campuses. Another factor to consider are the economic consequences of energy consumption. By reducing energy use, this will also save money for the school, which is important especially because the college is currently in a deficit, and should not be spending money on any unnecessary expenses. In terms of ecological impact, because people are the ones that have created the increasing energy use in the dorms, we should be the ones to counteract the harm caused by it. It is especially important for students to make changes to our behavior not only so current students can benefit from these changes, but also so future students can as well, in addition to also having an outline for how they can follow more sustainable practices. There are many benefits to energy efficient buildings, for the health of people as well

13 Sustainability at Beloit College: About Us. Beloit College.
14 Beloit College Scorecard. Institutions. STARS Reports.
as for the environment. These benefits include cleaner air quality, more moderate temperatures within the buildings, lower humidity (which decreases the chances for issues such as mold), lower costs, and less production of greenhouse gases.\(^\text{15}\)\(^\text{16}\) By reducing energy usage, Beloit can move towards its goal of becoming a more sustainable campus, as well as creating a healthy living environment for all.

**Sociopolitical Sustainability**

On an institutional level, Beloit College has claimed to be “dedicated to equipping students with the knowledge and skills to become part of the solution to climate change and other sustainability challenges” and is maintaining a clear goal to be a sustainable campus.\(^\text{17}\) On an institutional and social level, this project is targeting this mission and attempting to encompass the community on a bigger scale. Beloit College can be dedicated to becoming a greener, more sustainable organization but without a continuous flow of this information to the general public, it’s difficult to continue striving for sustainable change.

Campuses on a national level have begun to strive for more sustainable practices. Following a national trend of policymaking and the creation of other benefit programs for greater efficiency and use of ‘green’ energy, campuses have begun to implement sustainability into their campus cultures and missions. Some, like Beloit, participate in The Sustainability Tracking, Assessment & Rating System (STARS) program which gives participating schools a score and rating for their efforts in sustainability. Currently, 938 institutions have registered to STARS and 654 of those members are also enrolled in AASHE–The for the Advancement of Sustainability in Higher Learning.\(^\text{2}\) Beloit, as of 2017, held a silver STARS rating but looking into the report, one of the scores/points contributing to a lower score was STARS’ rating on energy use and building operations. A total of 3.53 points out of 6 were awarded to Beloit for their Building Energy Consumption. The credentials for this category look for schools who have successfully decreased their annual energy usage in their buildings by 50%, partial credit is given for the amount decreased.\(^\text{18}\) Some points given to Beloit is significant in that Beloit is decreasing their usage but it is still not where it could be.

This project focuses on awareness and the impact of it, at an institutional scale this can begin to greatly affect the social sustainability climate as well as making a better strive towards bigger sustainable projects. It's been proven that increased awareness and feedback about energy consumption on campuses does impact and decrease use.\(^\text{19}\) With greater awareness, greater

\(^{15}\) “Benefits of Energy Efficiency.” City Green Solutions.


\(^{19}\) Petersen, John E., et al. “Dormitory Residents Reduce Electricity Consumption When
incentives for more sustainable developments can begin to follow. This project functions like a smaller scale of things we witness nationally: awareness at a larger scale within the society affects the national culture and attitude towards the topic and in turn can push for greater institutionalized change whether it is through local, state, or national policies/mandates.

**Advice for future projects:** One piece of advice is to make sure the goals of the project are very specific and easy to measure. Another would be to plan ahead in general, but especially when communicating and negotiating with different individuals outside of the group. Make sure the division of labor is clear within the group, and that the group follows its timeline. Ensure that there is clear communication with everyone involved in the project, and that everyone understands what the goals are.

It may also be more effective to change our goal and measurement of success. One possibility could involve our goal focusing on changing students’ energy consumption habits in dorm life, measuring the change with campus-wide surveys. Our strategy would be similar to what we did in Aldrich, Chapin, and Maurer, however it would be extended to the rest of the campus. Since the OED currently only provides data on the three dorms, that would not be applicable to other spaces on campus. However, they could be used as examples for other dorms to analyze, and the posters in other dorms could focus more on energy saving tips and nationwide data. We would then measure our success based on how many students were exposed to the posters through the surveys, and include questions pertaining to how useful and impactful the posters were on their energy choices. Making these changes would also allow us to hold workshops that incorporate the whole student body, rather than focusing only on certain dorms.

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Appendix:

Poster Sample:

Maurer,  
Great Job, Keep reducing your consumption!!!  

You Have Used **3% Less** Energy This Month.... KEEP It Up!

Just Follow These Simple Tips to Reduce:
- Use LEDs for your lamps
- Reduce shower time. Reducing shower by 1min. will save 1,355 Watts
- Wash laundry with COLD water. 90% of energy in hot wash cycle is used to heat the water
- Power down & Unplug devices when not in use
- Use a Powerstrip
- Lower thermostat before you go to class
- Do not leave building doors propped open

BTYB: Sophia Lugo, Renny Klein, Yi Ye, Jose Gutierrez, and Willa Wilkoski-Fields Energy Conservation Group from Environmental Politics Class
Data Obtained: OED Dashboard/Sub-metering Project
First Survey Responses:

**What residence hall/building do you live in?**
63 responses

- 810: 2 (3.2%)
- 840 College: 3 (4.8%)
- Aldrich: 2 (3.2%)
- Bushnell: 2 (3.2%)
- Feminist Collective: 4 (6.3%)
- Maurer: 3 (4.8%)
- Peet Hall: 2 (3.2%)
- SAGA: 4 (6.3%)
- Tke house: 2 (3.2%)
- Wood tower A: 4 (6.3%)

**During the day, how many appliances do you leave plugged in?**
63 responses

- 0: 22.2%
- 1-2: 30.2%
- 3-5: 22.2%
- 5+: 44.4%
At night, how many appliances do you leave plugged in?
63 responses

- 0: 44.4%
- 1-2: 28.6%
- 3-5: 23.8%
- 5+: 3.3%

Do you use a power strip?
64 responses

- Yes: 82.8%
- No: 17.2%
If you use a power strip, do you leave it on all day/night?

- Yes: 79.7%
- Only All Day: 13.6%
- Only All Night: 1.9%
- No: 2.9%

59 responses

How long do you typically spend in the shower?

- 1-5 min: 43.8%
- 5-10 min: 39.1%
- 10-15 min: 15.6%
- 15+ min: 1.6%

64 responses
Do you leave the water running while brushing your teeth?
63 responses

- Yes: 95.2%
- No: 4.8%

Do you leave any lights on in your room while you are out?
64 responses

- Yes, the ceiling light: 79.7%
- Yes, small lights (ex: fairy lights, lamp): 17.2%
- No: 3.1%
When you do laundry, do you use the cold, warm, or hot water setting?
64 responses

![Pie chart showing 64.1% Cold, 32.8% Warm, and 3.1% Hot]

Have you heard of Beloit College's sub-metering project?
64 responses

![Pie chart showing 90.6% Yes, 9.4% No]
Do you use the kitchen in your dorm building?

64 responses

- Yes: 59.4%
- No: 40.6%

Have you heard of the OED (Open Energy Dashboard) website?

64 responses

- Yes: 85.9%
- No: 14.1%
Do you read the student-made posters around campus?
64 responses

- Usually: 43.8%
- Sometimes: 12.5%
- Rarely: 43.8%
- Never: 0%

Do you read the posters placed in bathrooms/bathroom stalls?
64 responses

- Usually: 75%
- Sometimes: 17.2%
- Rarely: 0.6%
- Never: 0.6%
Have you found student-made informational posters on campus useful?

64 responses

- 50% Yes
- 43.8% Sometimes
- 6.2% No
Second Survey Responses:

What dorm building do you live in?

- 840: 1 (4.5%; 4.5%; 4.5%; 4.5%)
- Bushnell: 2 (9%; 1%)
- KD: 1
- Maurer: 3 (13.6%)
- Off campus: 1
- Performing arts house: 1
- Whitney: 1
- Porter: 1

If you live in Aldrich, Chapin, or Maurer: have you seen the energy use posters in your dorm?

- 10 responses

60% Yes
40% No
Did you read the posters?
10 responses

Did you follow the QR code to the energy-dashboard website?
10 responses
Did you find the information provided by the posters and/or website
10 responses

Did seeing the posters impact your energy usage?
9 responses
If you do not live in Maurer, Aldrich, or Chapin, did you see the energy consumption posters?
18 responses

- Yes: 88.9%
- No: 11.1%

Did you stop to read the posters/use the QR code?
14 responses

- Yes, both: 85.7%
- Read the poster: 14.3%
Did you find the information provided:
15 responses

- Very useful: 86.7%
- somewhat useful: 13.3%
- not useful: Did not read the posters

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Did you attend any of the energy consumption workshops?
19 responses

- Yes, the one in Chapin: 63.2%
- Yes, the one in Maurer: 21.1%
- yes, the one in Aldrich: 15.8%
- Knew of the workshops, but could not attend: Did not know about the workshops
- No: No
If you attended one of the workshops, did you find it:
2 responses

100% very useful

If you did not attend one of the workshops, would you be interesting in attending one in the future to learn about energy-saving tips for your dorm?
21 responses

38.1% Yes
14.3% Maybe
47.6% No
OED Dashboard DATA:

April/2019

Aldrich total has used 28% more energy this month

Last month: 13238 kW
This month: 16879 kW

Mauer total has used 3% more energy this month

Last month: 20529 kW
This month: 21076 kW
Chapin total has used 1% more energy this month

April 29-May 4, 2019

Aldrich total has used 15% more energy this week
Mauer total has used 13% less energy this week

Last week: 6329 kW
This week: 5509 kW

Chapin total has used 15% less energy this week

Last week: 13784 kW
This week: 11677 kW
Aldrich total has used 15% more energy this week

Last week: 3881 kW
This week: 4477 kW
6147 kW
Bibliography


Participants & Reports | Institutions | STARS Reports. https://reports.aashe.org/institutions/participants-and-reports/


Sustainability at Beloit College: About Us | Beloit College. https://www.beloit.edu/sustainability/about/

Jacob Kolp: Ethical Analysis, Morgan Monteiro, Mizuki Matsui: Ecology Analysis, Gareth Geering: Social Political Analysis, Fahim Ahmad: Economic Analysis
When it came to our original goals for the project, they started with, reduce Beloit College’s Carbon Footprint and help Promote Sustainable Energy Choices. After that, another goal was to increase Demand for Renewable Energy. The things we accomplished over the semester were that we, met our outlined steps, Worked to reform a bad project into a better one. We also made a poster to help raise awareness. The places we failed were in the first draft of the project. This project was far to ambitious. There was not enough time to do the project. The second project that our group came up with also involved talking to a lot of people. This lead to a failure in the socio political aspect of the project. There were far too many people to try to convince. Also the economics failed. The project was more of an investment when it came to the economics. It did not make a lot of money in the short term but would be a great investment for the college long term. This would have been an issue because trying to convince the college, that is having financial issues, that spending money that they would not get back for a while, would not have been very appealing. Therefore the project ultimately failed.

The experience that we had when attempting to implement this project had a lot of similarities to national and even international case studies surrounding the implementation of environmental regimes. There were several different factors that we had to consider when attempting to switch Beloit College to Alliant Energy’s Second Nature program, that can also apply to the broader scope of environmental policy. In a way, it makes a great deal of sense to view Beloit College as a microcosm for the larger body of study.

There are many different stakeholders in the case of switching our energy sources. The most obvious is the student body. Since students are the ones who pay to attend the school, it is their money that would make up the extra cost at the end of every month, unless a fundraising
campaign was also set up to help foot the bill. They aren’t the only stakeholder, however. Facilities, who is in charge of maintenance on campus, would also be affected by a change in the energy processes. While the Second Nature program doesn’t actually require any new technological advancements, it does still require a monthly contribution that Alliant must be made aware of, as it is not standardized from month to month. This discussion of stakeholder communities also applies to larger governing bodies, just on a bigger scale. Instead of students and facilities, stakeholders could be large cultural groups and different government agencies.

We learned that every citizen’s involvement in making an effort to make their city greener is a necessity in order to actually make a city more green. In Curitiba’s case, everyone is involved in the recycling phase, build and utilizing the transportation system and so on\textsuperscript{20}. We applied the lesson from the sustainable city into our project in terms of educating and enhancing the awareness of the importance of knowing what the energy source for this college and how important it is to turn off the lights as much as we can with the poster making and distribution.

We also can apply ”Principles of Environmental Justice” to our project. What we tried to do was to make Beloit College greener by switching coal to renewable energy for the energy source of this college. This aim can be applied to many principles that are listed in the document.

When it comes to strategy and how the strategies succeed and failed, Some of our strategies did not work because they were far to ambitious. These plans would make it very hard to complete within a semester and also come with a significant cost. When it came to our original action plan our plan was to install motion detecting lights and solar panels\textsuperscript{21}. This would


\textsuperscript{21} Renewable and Sustainable Energy, Gareth Geering, Morgan Monteiro, Jacob Kolp, Fahim Ahmad, Mitzuki Matsui, 2-14-19, Beloit College
have been very hard because it would have cost a lot of money to install the solar panels. There would also be a lot of labor required to put them up.

There was also motion detecting lights included in the plan\textsuperscript{22}. These lights would have made visibility in the buildings concerning because of the fact that the lights would be off and there would have to be installations that could have been costly. The labor as well as the cost of the materials. Also time was an issue and ultimately would have lead to the project not being completed.

The strategy that would have worked is the idea with Alliant energy. This strategy would have worked because there is a very minimal effort to change the energy over to renewable energy. This is because Alliant Energy has the infrastructure already implemented and all that Beloit had to to was pay them. The students would not be affected because of the ease of the change. The change is a lot more behind the scenes and very seamless. Therefore it would be easy to sell to the student body and get money for the project. This strategy works because it addresses the issues of our previous action plan. It is cheap, as well as easy to install and has no effect on day to day life.

In the future our group would make several changes to the actions that we took under the activism project as a whole. This group in particular faced many challenges in our attempt to have Beloit College use energy from more sustainable sources. To stave off similar problems in the future the first action we would take is to be cohesive and organized as a group. In the future we would decide on a leader earlier on in the project and this person would be able to focus the

\textsuperscript{22} Renewable and Sustainable Energy, Gareth Geering, Morgan Monteiro, Jacob Kolp, Fahim Ahmad, Mitzuki Matsui, 2-14-19, Beloit College
group on a specific goals of the group. In the future we would also have a project that uses all the resources available on campus. Rather than having to go to off campus sources in order to complete the project. In the future we would also make student involvement a priority from the very beginning of the project. This would aid in getting the notice of the administration and the acknowledgement that renewable energy sources are important to the people of this campus. The final change that we would make is to find a way to make this project have greater return for the college in order to be eligible for the revolving loan fund.

Our first suggestion to the college is to take action based on its mission statement. The college claims to support sustainable development while taking little to no action in support of this claim. A prime example of this is the powerhouse currently under construction. The building is designed to be energy efficient, however this does not mean that it doesn’t require energy when in use. The college continues to use Alliant Energy to provide power and the main source for creating this energy is coal. If the college were committed to its mission statement then it would use energy from another, more lean source of energy.
Environmental Activism Project Report

Science Center Nesting Platform

ENVS 256 01 Environmental Politics: Spring 2019

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Purpose

The purpose of our environmental activism project was to provide the predatory bird population with nesting options in an urban/industrialized area. With this, we also believed that the nesting platform would be a good educational opportunity for both Beloit college students and those community members interested in the surrounding area.

Original Goal

Originally our goal was to build a medium sized nesting platform out of wood and chicken wire on top of the Marjorie and James Sanger Science Center, coming to an estimated cost of no more than $1,500. Our plan was to receive all of the needed funds from the Beloit College funding board. This platform would have been the perfect size for red tailed hawks and other medium to small sized predatory birds to nest. We wanted this platform to be on top of the science center because red tailed hawks like most predatory birds require a nest that is the highest point in the area. Being particularly picky about their nesting spots, birds of prey will only settle their nest on top of a perch that is the highest in the area, that provides a canopy, and has a stable food supply. A study done in Milwaukee showed that there were plenty of urban areas with more than suitable habitats for the red tailed hawk specifically, a kind of predatory bird23.

New Goal

Our goal changed after meeting with the head of Beloit College Physical Plant Bruce Hamilton. Mr. Hamilton had suggested making the nesting platform larger and out of metal instead of wood in order to increase the longevity of the structure. Mr. Hamilton also brought to our

attention the potential to have an eagle nest on this platform, which furthered the reasons we switched from wood to metal. The new cost for making the platform out of metal was estimated to be $6,000. With that large of an increase in cost, we decided it was unrealistic to receive that much money from funding board so we began to look into potential outside sources of funding. We realized that loans were not an option as this project does not have the potential to earn money back, and so our group decided that grants were the most appropriate funding source for us to look into.

**Status of Project**

Currently, we are still looking for funding for our platform. We are waiting to hear back from the grants we applied to: the Rock River Raptor Society Grant and the Field Study Grant: Go Outside Fund. Our team is still looking into several potential outside funding sources such as the Local DNR and Local Audubon Society, and are in the process of applying for more grants. Besides funding, the rest of our project is secured. We have a full design with a quoted cost for assembly and installment of the platform. The project also has the support science center building committee and physical plant. However, since our project is still waiting on funding and the semester is coming to an end, the plan is to hand our project over to the Green Team while the status of the grants we have applied to are being determined.

**Strategies**

Pertaining to the Holy Diamond of Sustainability, every side was balanced except for the economic side. In order to make this balanced, we looked for funding from various organizations through grants. We are currently still looking at funding options and have discussed this with Green Team to make the passing of the torch will be as smooth as possible.
Early on into the project we realized that in order to be successful we needed a lot of support from several key actors on campus. So we organized meetings and sat down with individuals like Sue Swanson, Bruce Hamilton, and Taylor Ajamian to present our project idea. We later found that this strategy was one of the reasons our project was able to get as far as it did, because after getting the support from the various important actors on campus, the only thing left we needed was the funding.

Economically we struggled to acquire the funds needed for our project to be successful. Our project was projected to cost between $6,000-7,000 and in realizing it was impossible to ask the college to fund all of that we had to think of off campus sources. However, in order to adapt to this obstacle we found several sources of outside grants from Rock River Raptor Society (Dean Amdom Grant, Tully Memorial Grant) and Field Study Grant. Since we were unable to finish our project by the end of the semester we planned with the Green Team club on campus. We arranging for them to take on the project and finish installment once the funding was approved.

**Future Plans**

We have been in communication with Green Team and are planning to hand our project over to them once this semester is over. Ian McGee, this projects team leader, is a member of the Green Team and intends to continue the project next year. Green Team will receive the funding from the grants we have applied for and use it for installation costs. Hopefully, after this is all accomplished, a large predatory bird will establish a nest on the platform.

**Suggestions**

Somethings that we could have done improved upon include: our timing, preparation, and communication. We struggled with the grant writing, if we had to do this again, we might have
brought in someone who is familiar with grant writing and the process in order to be more prepared. In addition to that, we would start the process of grant writing earlier to allow for more time for future plans of the project. For projects similar to this one meeting with your group often is also very important and one aspect which our group struggled with at times. With regular meetings we may have been able to identify more grants and options to find funding.

**What We Learned**

Throughout the course of this semester, we have learned a tremendous amount about biodiversity and the importance of sustainability. In addition to sustainability, we have learned a lot about what it takes to make a sustainability project successful and also the importance of balancing each side of the Holy Diamond. In our project the scientific backing of increased biodiversity was very strong. The ethics aspect of our project was one of our strongest components being that we were providing a home for displaced predatory birds. Politically our project was very strong as well seeing that many of the key actors required for the project were in full support of the idea. However, after receiving our second estimate our project was not economically feasible without a good amount of leg work. The increased cost of our project and weakening of the economic part of the holy diamond halted our project. Even though we had three out of the four points perfect just having one not right became one of the biggest problems we faced. From this adversity we learned that there is a solution to strengthen the weak parts of your project, and for us the solution was grants and dividing up the cost among several sources.

**Conclusion**

In conclusion, the Beloit College Science Center nesting platform project was not a success. We did not secure the funding to erect the nesting structure. However, the members of
this team learned valuable lessons about what working in a group in environmental activism looks like, the level of effort required, and the logistics behind organized project efforts. The members of our group put in a great deal of effort in order to put the pieces into play for this project to be a reasonable goal for students in the future to complete. We secured support from both the Physical Plant and Science Center Building Committee, received a quote for the structure, and have applied to three grants and have identified several more to apply to in the future. This project will be passed along to student activists in the Green Team, and with determination and effort will be completed in the near future.
Bibliography

"Go Outside Fund." Natural Resources Foundation of Wisconsin.


"Grants and Awards." Raptor Research Foundation.


Appendix
Dear Professor Swanson,

My name is Ian McGee and I am currently in Pablo Fiori's Environmental Politics class. As a part of that class we are required to complete a sustainability project by the end of the semester, and my group and I have been looking into the possibility of having a structure installed on the top of the science center that would be host to nesting birds for students to study. Included on this structure would be a solar-powered web cam that would be streaming 24/7 to a web address connected to the Beloit College website.

Last Thursday I met with Taylor Ajamian about this idea and she recommended that I get in contact with you and other members of the Science Center Building Committee to 1) get a grasp on what logically needs to be done for this project to come to fruition, and 2) your opinion on the merits of this project. Is there any time that I could meet with you to discuss this project further?

Thank you,
Ian McGee

Sue Swanson
Professor of Geology
Media Chair, International and Ocean Geography
Beloit College

Ian McGee
Mar 11, 2019, 12:50 PM

Hi phys. plant,

Thanks for meeting with Will and I on Thursday. We are excited to get the ball rolling on this project. We did some research and have concluded that in order to accommodate the largest of birds the nesting box itself should be 5 ft x 5 ft and should be able to withstand up to 600 lbs. As far as the camera itself, assuming the attachment is built from the center of the box it needs to be at least a foot and a half long in order to capture the entirety of the nest plus half a foot on either side in its image.

Please let me know if there is any other information we can provide to help this process.

Thank you,

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Bruce Hamilton
Mar 11, 2019, 3:59 PM

Hi Ian,

Do you have any more information about the nesting box? Like how high the sides may be, or are there no sides and just a flat platform with expanded metal in the bottom? Do you have any literature for this you can forward to us? Or can you stop by our office for us to meet and kid of draw this up. Then we can meet with the contractor with all the answers.

Thanks,
Bruce

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Ian Michael McGee <mrgem@sfbist.edu>  
Mar 11, 2019, 5:30 PM

Hi Bruce,
The sides of the box should not be very tall, if there are any sides at all as to not interfere with the accessibility of the platform for the bird. So essentially we want it to be just a flat platform with expanded metal on the bottom. We’ve been using this osprey wooden nesting platform plan as our example:


If this still doesn’t quite get the picture I am on campus this week and can come into phys plant and help draw out the design we had in mind.

Thank you,

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Bruce Hamilton <hamilton@sfbist.edu>  
Mar 12, 2019, 1:39 PM

Hi Ian,
Kerry and I met with a contractor today to discuss plans for the raptor platform and hope to get some pricing back soon. We will forward the pricing to you when we receive it.
Thanks

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Ian Michael McGee <mrgem@sfbist.edu>  
Mar 13, 2019, 6:18 PM

Hi Bruce,
Sounds fantastic!

Thank you.

***

Bruce Hamilton <hamilton@sfbist.edu>  
Mar 19, 2019, 5:31 AM

Hi Ian,
Here is the quote for the platform. I did send an email back asking about the angled camera mount arm and the 5x7 ft. dimensions you asked for and not the 4’ ft. platform quoted. Also was asking him for the powder coat to be flat black and not silver. I will send that info when it arrives, but here is a budget number.

Thanks

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Ian Michael McGee <mrgem@sfbist.edu>  
Mar 19, 2019, 9:53 AM

Hi Bruce,
Thank you for working with us to get this figured out.
We have a few questions and concerns regarding the quote, is there any time you could meet with us this week to discuss what the contractor has put out?

Thank you,

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Furnish and Install.

One eagles nest using angles for the frame of the nest with mesh for the floor inside the frame.

One Tube 4 x 2 ½, 36 inches long that will be the support bolted to the existing structure of the building.

Material is to be powder coated and installed.

For the sum of $5825.00 no tax included

Accepted By: ____________________________
Date: ____________________________

Tim Arnsmeier
President