

SUSTAINABILITY @ BUCKNELL

Update



Fall 2021 Edition



Director's Message



President's Sustainability Council Update



Student/Faculty & Staff Corner



Carbon Neutrality



Pathway to Zero Waste



Ecological Conservation and Restoration



Socially Responsible Investing (SRI)



Learning and Working on Sustainability



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Victor Udo, Ph.D.
Director, Campus Sustainability



Fall 2021 was another thriving semester at Bucknell. We made it together by accomplishing what many other institutions could not do during the pandemic. We kept our students safe, we delivered on the Bucknell promise of residential education and even conducted in-person Commencement. Ray Bucknell! Sustainability @ Bucknell was not left behind throughout Fall 2021.

We exceeded three of our Climate Action Plan set in 2010 by:

- Breaking ground on a 1.6 megawatt solar farm – 70% completed
- Reducing carbon footprint by 29% versus the goal of 20% from 2008 baseline by 2020
- Continuing to integrate sustainability in operations, education and research across campus.

In this edition we have an action-filled update from the President's Sustainability Council (PSC) which is the primary governance and leadership authority for Sustainability @ Bucknell. We'll also hear from the students, who are the only reason we are here, as they share their commitment to campus sustainability. Outgoing, current and incoming faculty members of the PSC provide their sustainability perspectives.

Turning to the four PSC Working Groups, we begin the Carbon Neutrality update with two very exciting projects. First the carbon footprint inventory that documents both the process and status of our journey to carbon neutrality by 2030. A key step in that direction was taken when the provost and the vice president of finance and administration joined two of our very successful alumni at "Golden Shovel for Campus Sustainability" — a groundbreaking event for the Bison Solar Farm Project, which is now more than 70% completed.

We are making small steps on the Pathway to Zero Waste status. At the end of the spring 2021 semester, we diverted **5,000 pounds of waste from the landfill** through our sustainable move-out program. In this edition, we cover two interesting waste reduction initiatives: the installation and operation of a biodigester that is diverting a daily average of more than **300 pounds** of food waste from the landfill as well as a plan to minimize office supply waste through the Sustainable Office Supply Store (SOSS).

The Ecological Conservation and Restoration aspect of campus sustainability is expansive. In this edition, we cover three interesting initiatives: farming (bees), connecting with the outdoor environment and the story of a group of students who planted 100 trees in 100 minutes. The Socially Responsible Investing Group has been repositioned to focus on environmental, social and governance (ESG) educational opportunities for Bucknell stakeholders.

We close this edition by discussing the student side of sustainability. First, we'll share a summary of the Engineering 100 Course that focused on sustainability during the fall 2021 semester. Then we'll share news of interns' activities in the Office of Campus Sustainability (OCS). It is our hope that you will find this version of Sustainability @ Bucknell an interesting and rewarding read. Ray Bucknell! Ray Sustainability!



PRESIDENT'S SUSTAINABILITY COUNCIL UPDATE

By charter, the President's Sustainability Council (PSC) meets at least twice every semester under normal conditions. During the pandemic, nothing has been normal. That said, toward the end of the semester before the Omicron variant spread, President John Bravman convened a well-attended in-person PSC meeting. Below are some of the key action items from the meeting, held on Nov. 18, 2021.

PSC Membership Changes

President Bravman opened the meeting by expressing his appreciation to everyone who serves on the PSC. The following membership changes were noted. Three new student members selected by the BSG Sustainability Committee were added to the PSC. They are Maggie Zipfel, Ben Fink and Clara Chaplin. Two new faculty members were added to the PSC. Professor Neil Boyd was replaced by Professor Karen McGrath while Professor Claire Campbell was replaced by Professor Paul Siewers. John welcomed the new members and thanked the outgoing members for their service.

Climate Action Plan of 2010, Strategic Plan Alignment and Draft Sustainability Plan

Consistent with the Climate Action Plan established in 2010, a draft scenario toward carbon neutrality by 2030 and potential decarbonization in the future is to be revised for a potential presentation to the Board of Trustees (BOT). Such a presentation to the BOT will be at the appropriate time to be determined by the president. Victor Udo, Peter Jansson, Jeff Loss and Eileen Petula will be responsible for preparing the presentation as may be determined by the president. As a demonstration of the strategic alignment, the president directed Robert Midkiff and Victor Udo to ensure inclusion of campus sustainability to in the overall strategic plan update to the BOT in February 2022. The president will forward the Draft Sustainability Plan to the Communications Division for review before circulation to PSC members.

Exciting Campus-wide Sustainability Projects

Three interesting sustainability projects were discussed during the Fall 2021 PSC meeting. The Walking Path (Sustainability Trail) was reviewed. The design was approved by the president for phased-in implementation under the leadership of Jeff Loss (Dominic Silvers) and Victor Udo. Signage on the Path will include sustainability, historical and wellness points of interests under the leadership of Paul Siewers, Jeff Loss (Dominic Silvers) and Victor Udo in collaboration with HR, Communications and DEI.

Bison Solar (1.6MW Farm) Project was also discussed. In addition to helping to reduce both carbon footprint and utility bill, this project will help with waste management (mulch), sheep grazing and other research/learning and will be under the leadership of Victor Udo, Jeff Loss (Jim Knight), Mark Spiro and Peter Jansson. Campus Tree Planting is another ongoing project on campus. Clarity was obtained on the "1,000 Trees in 1,000 Days" objective in light of ongoing initiatives like "100 Trees Planted in 100 Minutes," held on Oct. 14, 2021, in partnership with the Chesapeake Bay Foundation. Victor Udo, Mark Spiro and Jeff Loss will collaborate with all stakeholders for effective tree planting at appropriate locations.

Working Groups Update and Process

The four campus-wide students, faculty and staff voluntary Working Groups (WG) continue to make progress even when Covid has limited the number and frequency of meetings. Under the leadership of *Jeff Loss*, *Victor Udo* and *Kat Wakabayashi*, Pathway to Zero Waste WG will focus on waste stream auditing to divert as much as possible from landfill. The BSG Sustainability Committee will research what Georgetown University did to eliminate single-use plastic and collaborate with OCS and BCSE to improve Sustainable Move-out process for Spring 2022.

Socially Responsible Investing WG is focusing on Environmental, Social and Governance (ESG) education under the leadership of Eileen Petula, Karen McGrath and Victor Udo. Each WG will vet project ideas for budgeting through appropriate OMG members and forward recommendations, suggestions, white papers and similar proposals to Victor Udo who will consult with Eileen Petula to determine next steps. Vetting will vary based on topic, scope and anticipated budget.



STUDENT, FACULTY & STAFF CORNER

Students, faculty and staff are the primary stakeholders of Sustainability @ Bucknell. In this edition, we cover the student's perspective through the BSG Sustainability Committee. For faculty perspectives, we'll cover outgoing, ongoing and incoming faculty members of the PSC.

Students Perspective

Bucknell Students Government (BSG) – Sustainability Committee:

“The purpose of this committee is to promote sustainability efforts on campus. This may be related, but is not limited to, the promotion of: ecological health of campus and surrounding communities, fair and equitable societies, and responsible management of financial resources.”

Bucknell Student Government Update:

BSG Sustainability Committee Members as of Fall 2021:

Ally Riuli '24, Ben Fink'24, Brendan Baganski'25, Clara Chaplin'25, Juliette Chandler'23, and Lindsey Kulp'23.

The at-large members include: Jack Quinn'23, Jacqueline Rounsavill'23, and Meghan Taner'22. This committee represents all four class years and many majors, a fact that allows the group to have a diversity of opinions when making decisions regarding important sustainability initiatives on campus.

From the Desk of the Committee Chair, Maggie Zipfel, '23

I am a junior Animal Behavior major on the Pre-Vet track. I have served on BSG since I was a first-year student. I originally was an at-large member for the sustainability committee, then last spring I became a house representative for the committee, and this fall I was chosen as the new chair of the committee.

In addition to BSG, my current involvement on campus includes Biology research with Professor Takahashi's lab, facilitating study groups for the Teaching and Learning Center (TLC), being a member of the Environmental Club, as well as the pre-health, pre-vet, and animal behavior societies. I am a student in the College of Arts & Sciences major and a member of Kappa Alpha Theta.

This year, we have been working very closely with the Office of Campus Sustainability (OCS). Dr. Victor Udo is our amazing adviser, and he is a great resource for us. He frequently directs our energy into projects where more support is needed. In the past, we have worked with the Environmental Club to promote events and gain/give some extra sets of hands. Going forward, we will work with appropriate key stakeholders to enhance student engagement on sustainability in collaboration with the OCS and Bucknell Center for Sustainability & the Environment (BCSE).

Projects Considerations

- Continuing sustainable move-out initiative in partnership with the OCS and BCSE and improve on what was accomplished in Spring 2021
- Getting residence halls to participate in a competition that will earn “sustainable certification.”
- Starting a student action group or coalition that will work closely with our committee, BCSE, OCS to enhance sustainability opportunities on campus
- Considering metal utensils for Bison Dining use as well as researching what other universities (e.g. Georgetown University) are doing to eliminate single-use plastics
- Hosting an educational talk addressing the truth about recycling at Bucknell.
- Bringing back stickers for reusable bottles that will allow students to get a small discount (10-15 cents) at 7th Street Café and the Library Café if they bring their reusable cup and sticker.



Faculty Perspective



Neil Boyd
Outgoing Member of the
President’s Council for Sustainability



Peter Jansson
Current Member of the
President’s Council for Sustainability

Dr. Neil Boyd is a professor in the Freeman College of Management, serving as the department chair for Management and Organizations. He also works very closely on sustainability within the College of Management, teaching many of the upper-level courses and advising a majority of Managing for Sustainability students. He served on the President’s Sustainability Council (PSC) for one three-year term with an additional one-year stint, working as the council’s at-large Management Faculty Representative.

His main goals while working on the council were to “help stimulate movement toward being a more sustainable campus” and “infuse sustainability logic throughout Bucknell as a whole.” Through his perspectives and expertise in management, Professor Boyd helped advise the council on ways to integrate management ideals into sustainability projects like the Socially Responsible Investing Working Group and creating benchmarks to assess the progress of sustainability projects underway.

Under his own coursework, Professor Boyd has successfully incorporated the use of the United Nations Sustainable Development Goals into the College of Management. He is pushing students to think critically about sustainability from a holistic viewpoint, not just environmentally. Although the COVID-19 pandemic impacted some of PSC work in the past year, Professor Boyd is optimistic that critical sustainability issues on campus such as carbon neutrality and zero-waste initiatives will gain more traction as restrictions are loosened.

Dr. Peter Jansson is an associate professor of Electrical Engineering, as well as serving as the faculty director of the Bucknell Center for Sustainability and the Environment (BCSE). He has served on the PSC for multiple years as the co-sponsor of two Working Groups – Carbon Neutrality and Ecological Conservation and Restoration with a focus on creating habitats for the coexistence of native species and humanity.

One notable project that the PSC Ecological Conservation/Restoration Working Groups this semester was the “100 Trees in 100 Minutes” event, which is detailed elsewhere in this newsletter. Additionally, Professor Jansson has been involved with the Bison Solar Project — a carbon reduction initiative underway near Bucknell West, behind the Art Barn. This project has the potential to reduce carbon usage on campus by around 10%.

Through his coursework, Professor Jansson integrates sustainability ideals into many of his engineering classes. He also teaches a renewable energy course during spring semesters. The course is focused on educating students about sustainable alternatives to fossil fuels.

In terms of the future of sustainability in relation to the PSC, there are potential considerations and studies to phase out the co-generation plant and replace it with electrically produced hot water systems in the future. Such systems do not employ the burning of fossil fuels on campus. Additionally, the lack of funding and engagement with sustainability is the biggest roadblock to many projects and initiatives in the eyes of Professor Jansson.

“One of the biggest missing pieces is the students’ passion for wanting to get it done. My biggest hope is not only for students to make a difference when they leave Bucknell, but to make a difference while they are still here.”

Faculty Perspective cont.



Karen McGrath
Incoming Member of the
President's Sustainability Council

Professor McGrath is an assistant professor of Finance in the Freeman College of Management, with a specific interest in Environmental and Social Governance (ESG). Additionally, she has been a very active player in the Socially Responsible Investing (SRI) Working Group of the PSC. SRI Working Group is focused on understanding and educating the campus community on ESG and sustainable investing processes.

An aspect of this process is for a small group of students, faculty and staff to work together in giving the campus community appropriate information as well as experiential learning with investing through the execution of real-life transactions. Additionally, to obtain campus community perspectives on what may be considered important investments. Appropriate Bucknell stakeholders can gain feedback on socially responsible investing.

Professor McGrath has worked tirelessly to incorporate the ideas of ESG into her coursework, especially because the SRI Working Group has been in a phase of restructuring since the COVID-19 pandemic hit at Bucknell. When asked to define ESG, she stated, "ESG is all about perspective, it

means different things to different people." However, one main part of ESG that Professor McGrath stressed was the fact that markets are consumer-driven, meaning investors now have more power than ever when it comes to being the difference they want to see in the world.

ESG and SRI are directly linked with sustainability. By investing in and supporting certain firms with actual capital from the University, they are actively helping trend the market toward supporting the same companies. Whether it be pushing for companies with low carbon footprints or higher diversity and inclusion rates. ESG and SRI support a move towards more equitable global sustainable development.

Professor McGrath is improving sustainability at Bucknell by helping inform the next generation of responsible and environmentally friendly investing techniques. She is also helping to ingrain ESG ideals across campus through her coursework.





CARBON NEUTRALITY UPDATE

Two critical carbon neutrality initiatives relevant to the Climate Action Plan are covered in this edition. First, the assessment of the university's carbon footprint trajectory is summarized. Secondly, we cover the largest solar project on campus as Provost Elisabeth Mermann-Jozwiak and Vice President of Finance and Administration Eileen Petula led several stakeholders in a groundbreaking ceremony for the Bison Solar Project – “Golden Shovels for Sustainability.”

Carbon Footprint Inventory Assessment Update

Over the past decade, Bucknell has made progress toward reducing our carbon footprint and reliance on fossil fuels as a University. In the year 2010 Bucknell University developed and adopted a Climate Action Plan including five main targets:

- Deployment of renewable energy
- 20% reduction from 2008 carbon footprint baseline by the year 2020
- Offsetting of all Scope 3 Carbon emissions by the year 2020
- Become carbon neutral by 2030
- Greater integration of sustainability in operations, education and research.

We are on track on most of these goals including the deployment of the 1.6MW Bison Solar Farm – see the Golden Shovel Story. With the “help” of COVID-19, we exceeded the 2020 reduction target of 20%. This reduction was measured in 2021 through the carbon footprint inventory update under the leadership of the Office of Campus Sustainability (OCS) with help from most divisions of the University, especially Finance and Administration.

Previous updates to the carbon footprint included the one conducted in 2019 covering fiscal years 2017 and 2018. This 2021 update covered fiscal years 2019 and 2020. It was impacted by three main events. The first was the COVID-19 pandemic. The second impact was the change in leadership of OCS with the recruitment of the Director, Campus Sustainability (DCS) and the subsequent establishment of the four PSC Working Groups. The third impact was the change in the reporting relationship of the DCS to the new vice president of finance and administration.

Based on the above impacts, this latest update (conducted in summer 2021) was implemented in two parts with six workflow steps. It was conducted under the leadership of the DCS with the assistance of many campus partners. Compared with the previous ones, this update was enhanced with a detailed process documentation and audit trail at the directives of the vice president, finance and administration. The update was implemented as follows:

Part A: Internal Facing

1. Initial information gathering
2. Collection and compilation of operational data and assumptions
3. Documentation of the process in steps 1 & 2 above.

Part B: External Facing

4. Submission to the Sustainability Indicator Management and Analysis Platform (SIMAP) developed and managed by University of New Hampshire for Scope 1, 2 and 3 emissions analysis
5. External process documentation including SIMAP submissions, linkage to Second Nature Website where institutions' performance on Climate Action Commitments are tracked.
6. Presentation of the Carbon Footprint Update to the PSC and subsequently, the public – See a graphical summary in Figure 1 and Figure 2.

Carbon Footprint Inventory Assessment Update cont.

A more detailed narrative is available upon request. It is covered in seven sections. The first section is an introduction and background information. The remaining five sections of the narrative cover each of the above steps while the seventh section will provide conclusion and recommendation for future work.

The first step of the 2021 process was to review how carbon footprint inventory is currently performed at other universities and institutions as well as how it has been done at Bucknell in the past. Key takeaways included:

- Most institutions performing inventory have targets, goals or commitments
- Three main types of targets – Carbon Neutrality, Net Zero and Science Based
- Some institutions include Nitrogen and other Greenhouse Gases (GHG)
- Bucknell’s commitment is focused on carbon neutrality by 2030
- Three main concerns: Carbon washing, External Verification and Restatement Risks
- Bucknell performs inventory every two years with the last completed in 2019
- Internal data collection processes need better documentation for future use.

The most important conclusion from this step of the process was the directive of the new vice president of finance and administration to split the process into two. These were the internal facing and external facing. The internal-facing phase focused on Bucknell data collection and the development of a detailed narrative to document the full process which will enhance efficiency and consistency in compiling data needed for future updates. The external-facing phase focused on integration with SIMAP and Second Nature. Results of the inventory are summarized in Figures 1 and 2.

Carbon Footprint Inventory Assessment Updated in 2021

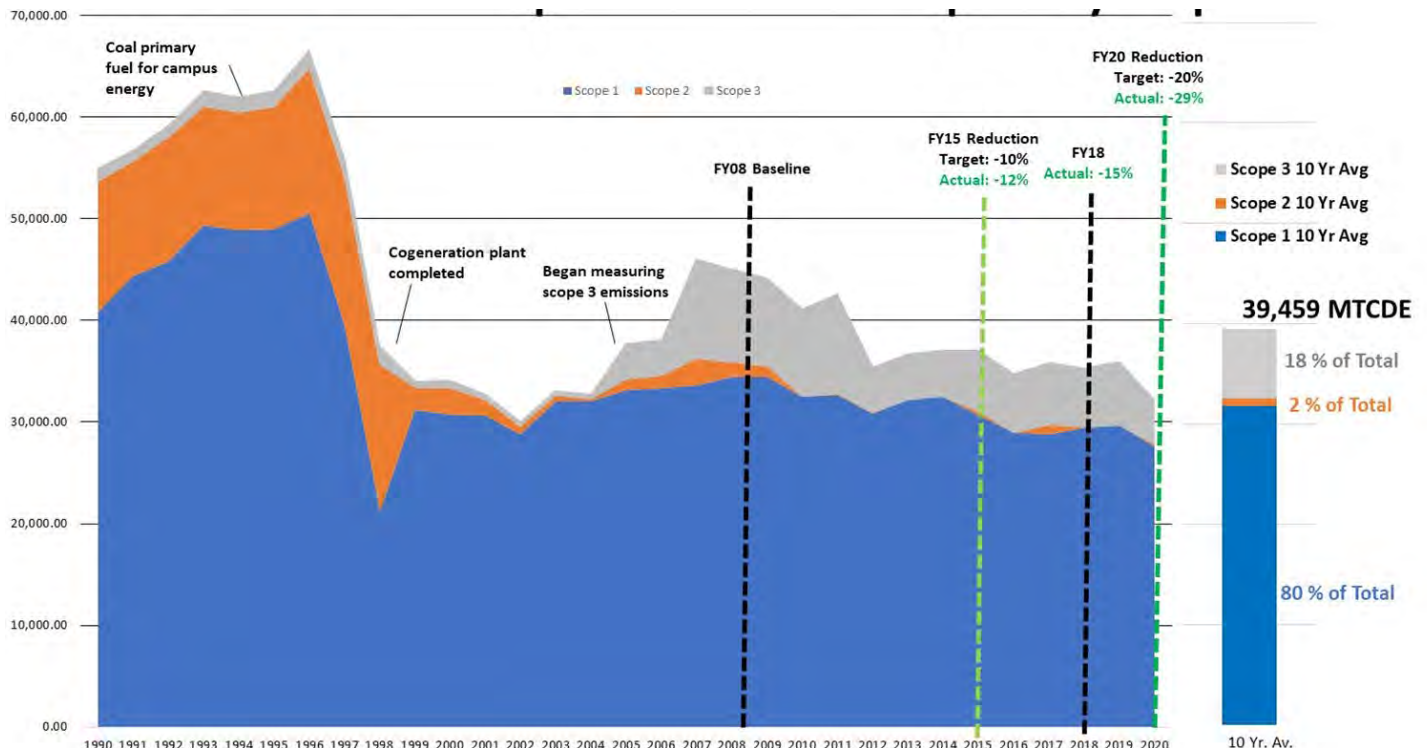


Figure 1: Summary of Bucknell’s Carbon Footprint Performance by Scopes of Emission

Blue is Scope 1 Emissions – the main portion of our carbon footprint from direct operations like the cogen; Orange is Scope 2 Emissions – the portion of our carbon footprint from the purchase of electricity from the external providers; Gray is Scope 3 Emissions – the portion of our carbon footprint from all other sources like air travel, supply chain etc.

Carbon Footprint Inventory cont.

Dashboard Screenshot from Second Nature’s Website

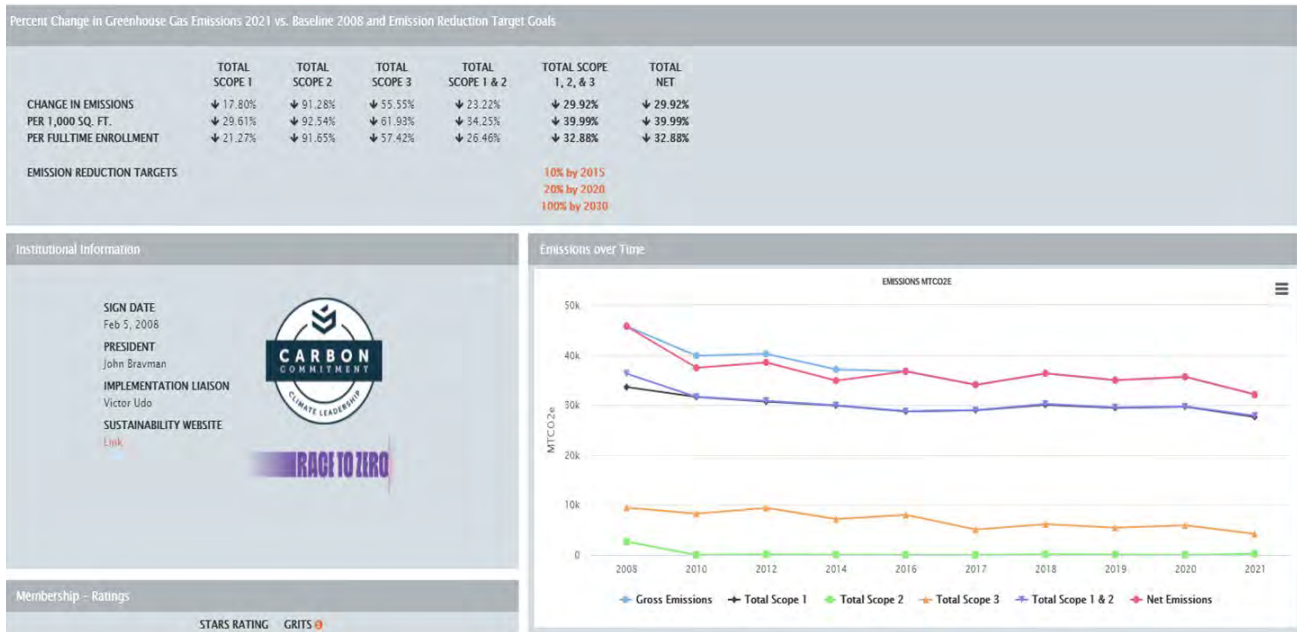


Figure 2: Externally Reported Climate Action Plan Commitment at Second Nature’s Website.

This graph represents the external reporting of Bucknell’s performance on our Climate Action Plan commitment as reported to the third party organization – Second Nature who manages such commitments for several institutions.

Golden Shovels for Campus Sustainability



The Fall 2021 groundbreaking for the 1.6MW Bison Solar Farm Project was a great accomplishment for sustainability @ Bucknell! It was indeed a “Golden Shovels” event for “Campus Sustainability” and the project is over 70% completed as of the time of this writing. The foundation for this project was laid in 2010, when Bucknell created a new Climate Action Plan in order to address carbon emissions, waste management, and other key sustainability issues on campus.

Through key work from faculty and staff such as Jim Knight, Ken Field, Andrew Stuhl, Ellen Herman, Molly McGuire and Jeff Loss, this project was approved by the Lewisburg township, with a proposed completion and fully operational date in June of 2022.

The university has partnered with Encore Renewable Energy, and even had special appearances from Founder and CEO Chad Farrell and President and CFO Blake Sturcke both Bucknell alumni!

The groundbreaking ceremony was a very inspirational event, with speeches given by members of Encore, Provost Elisabeth Mermann-Jozwiak, and Vice President of Finance and Administration Eileen Petula. Students, faculty, staff and alumni were in attendance to watch this historic event, marking the beginning of an exciting and revolutionary new development regarding sustainability at Bucknell.

This project is in alignment with and contributes to the accomplishments of Bucknell’s 2010 Climate Action Plan consistent with the four PSC Working Groups:

Carbon Neutrality – Reduce Bucknell’s Scope 1 carbon footprint by about 10% through lower utilization of natural gas during the daytime.

Pathway to Zero Waste – Provide an immediate solution for diversion of mulch and leaf compost that cannot be stored and needs to be diverted with financial and environmental cost.

Ecological Conservation and Restoration – Create biodiversity and a natural habitat for wildflowers, bees and the potential for experimenting with plants and animal farming.

Socially Responsible Investing – An example of Environmental, Social and Governance (ESG) impact investment by leveraging existing assets (land) for “Budget Neutral, Carbon Neutrality.” The project will actually have a net positive impact on the budget via electricity cost reductions. The University did not make up-front capital cost payment except leveraging our land to derive energy cost savings from the project.



PATHWAY TO ZERO WASTE

BioHiTech Digester



Carlos Soza
District manager
Parkhurst Dining

Carlos Soza is the resident district manager with Parkhurst Dining at Bucknell and is in charge of the day to day operations of the digester at Bostwick Dining Hall. The on-site food digesters use a combination of warm water, oxygen, and natural microorganisms to break down food waste into a liquid (gray water).

This liquid is then drained down the sewer line to the wastewater treatment plant at Lewisburg Sewage Authority Facility. The process safely and environmentally disposes food waste that would otherwise be taken to landfills. Diversion of waste from the landfill is the primary measure of zero waste. The more waste we divert from the landfill, the closer we are to attaining zero-waste status.

As the main kitchen on campus, Bostwick produces the highest amount of food waste. Installation of the digester at that location was strategic and has had a significant impact on the campus food waste as a whole. By minimizing food waste and diverting it from landfills, there are many positive environmental impacts such as limiting pollution at waste-dumping locations. After only around six weeks of operations at the time of this interview, the digester has already diverted 14,500 pounds of waste from the landfill.

As the digester is in operation longer, we expect even more positive impacts on sustainability at Bucknell. For instance, workers at Bostwick have already experienced waste diversion from the landfill and less waste to deal with in general. The performance of the digester can be observed in two ways – the physical equipment at Bostwick shown in Figure 3 and through online displays as summarized in Figure 4.

Two Pathway to Zero Waste Initiatives are featured in this edition. The first deals with how we handle food waste and the second covers an upcoming initiative on how we handle excess office supplies.



Figure 3A: External View of the Digester



Figure 3B: Internal View (digesting "stomach") of the Digester

BioHiTech Digester cont.

Screenshot of Biodigester Performance between December 1–4 2021

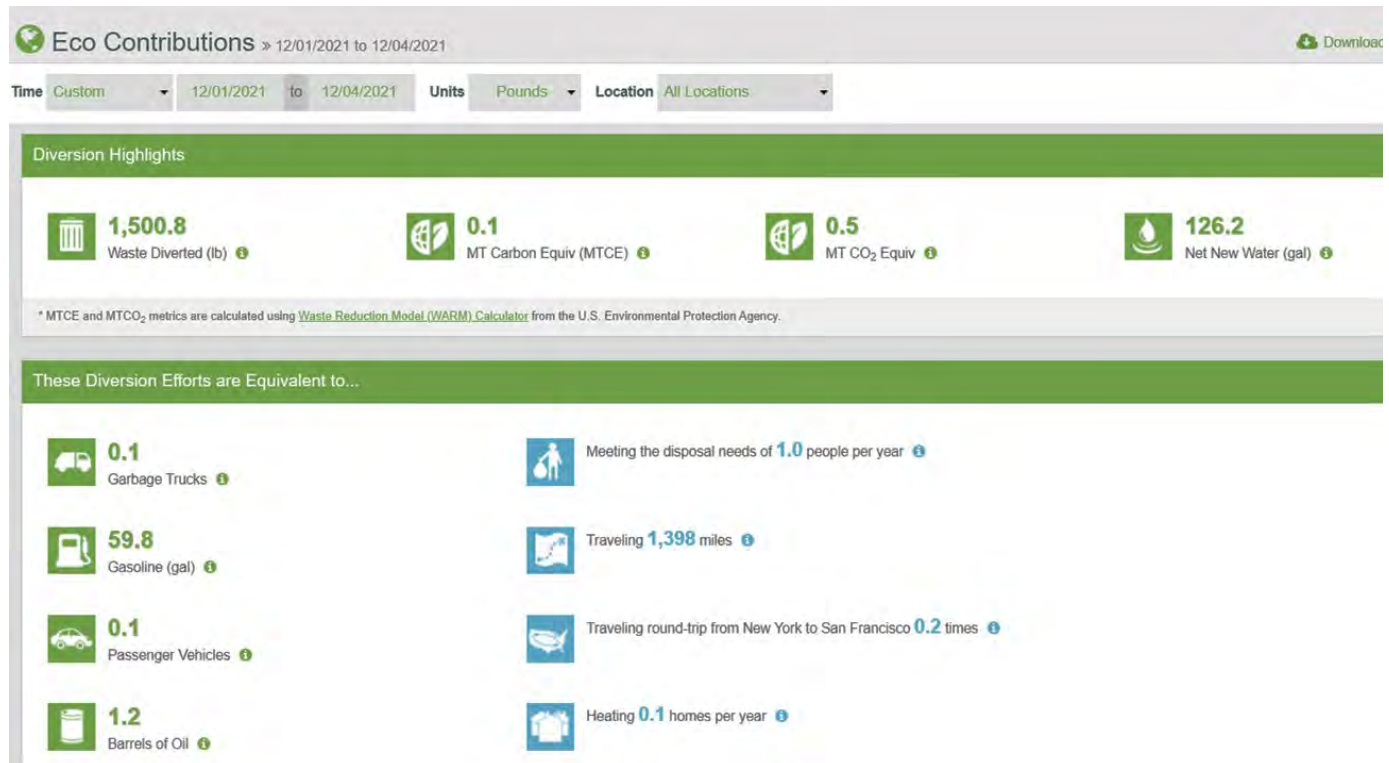


Figure 4: Online Electronic Report of Digester Showing Eco Contributions

Sustainable Office Supply Store (SOSS) coming soon!

Over the past few years, the Procurement Office has received multiple requests about the office supply swap that used to occur in the summer. That stopped a few years ago. However, people still ask questions about the program. In addition, there are periodic posts to the message center and signs in hallways about free supplies.



The University Space Committee has allocated two rooms for faculty and staff to recycle office supplies. The Facilities department has identified Taylor Hall rooms 15 and 18 under the condition that SOSS should be staffed. The approved space is centrally located on Campus, and will be accessible as Taylor Hall will be used as a swing space for a few years. SOSS is intended to help further Bucknell's continuing goal to be more sustainable and help avoid office supplies from being thrown away.

The space already has shelves and tables for displaying the office supplies so nothing additional is needed to get started. Volunteer students will be recruited by OCS to manage (SOSS) and provide limited operating hours as an aspect of the Pathway to Zero Waste Working Group.

Faculty and staff who have excess office supplies will bring such items to SOSS. Students will receive and organize such items on the shelves for easy access. Faculty and staff that need office supplies will first check with the SOSS before buying new items.

SOSS is an innovative solution to waste management by reducing the cost of buying new products. It will also provide faculty and staff the opportunity to exercise by walking from their work space to the SOSS. It can help to reduce minor university spending by encouraging the reuse of items.

SOSS will provide students the opportunity to identify potential new ways of waste reduction. Finally, and most importantly, this process will help the university toward the zero-waste objective by diverting some of the unwanted items from being taken to the landfill.



ECOLOGICAL CONSERVATION AND RESTORATION UPDATE

Ecological Conservation and Restoration is the most expansive and inclusive aspect of Sustainability @ Bucknell as it touches most environmental items of the university. In this edition, we focus on three important areas and a special accomplishment of ECR – farming (bee)/coursework integration, connections with the outdoor environment especially during this pandemic period and the planting of “100 trees in 100 minutes” by students.

Farming (Bee) and the Bucknell Farm



Elizabeth Capaldi
Director of Neuroscience
Professor of Biology



Jen Schneidman Partica
Bucknell Farm and Lewisburg
Community Garden Manager

Professor Capaldi and Jen Partica have worked very closely over the last few years to improve honey bee colonies at the Bucknell Farm. Since the beginning of this semester, there have been 28 separate courses involvement at the Bucknell Farm, under the leadership of Professor Mark Spiro. Through research projects, volunteer hours, and outdoor lectures and tours of the farm, student engagement at the farm was very high as of Fall 2021. More than 765 students worked on the farm on multiple projects. These projects have a wide range of impacts on the ecosystem around the farm, as well as the greater Lewisburg community.

The Bucknell farm uses organic farming methods, as some of the main goals of the farm are to mitigate climate change, sequester carbon, cycle nitrogen and practice regenerative agriculture. The use of synthetic pesticides has been discontinued in order to build up the health of the soil as well as lessen negative impacts on the local watersheds. Through the construction of the Hoop House, the farm has been able to extend growing seasons resulting in year-round harvesting.

In collaboration with the Dean of Students Office, a portion of all the food grown on the farm gets donated to the B-Eats Food Pantry, as well as the Union County Food Hub. The donation of food to these two organizations contributes directly to fighting food insecurity on campus as well as the larger Lewisburg community.

Bee Farming

Dr. Elizabeth Capaldi, a professor of Biology and Animal Behavior, has been tending beehives on campus since her arrival at Bucknell. She is now supporting both the Bucknell Farm and the Lewisburg Community Garden by tending some of the Bucknell hives adjacent to these spaces. Keeping colonies of honey bees supports pollination services and may increase vegetable harvests from crops that are insect pollinated. Over the years, populations of honey bees have been impacted by a variety of challenges, including global changes in climate that affect floral resources that bees eat, parasites and viral diseases that make bees sick, and exposure to agrochemicals often used in traditional agricultural settings. The hives at the Farm and Garden offer an opportunity for visitors to learn more about the importance of insect communities in sustainable agriculture.

Students in Professor Capaldi's courses also have the opportunity to learn about food production work through visits to the hives in these locations. Other Animal Behavior courses have used the Farm to explore the ways that other local animals use this space. For example, trail cams have been installed to monitor the presence of animals such as deer, foxes, and bears, all regular visitors to this space in Lewisburg.





Connections with the Outdoor Environment



Samantha Myers
Operations Manager of the
Bucknell Center for Sustainability & the Environment

Samantha Myers is in fourth year as the Operations Manager of the Bucknell Center for Sustainability & the Environment (BCSE). BCSE was founded in 2005, meaning it has been operating on campus for 16 years as the academic and research arm of sustainability at Bucknell. While the Office for Campus Sustainability (OCS) is focused on operational aspects of sustainability, the BCSE's goal is to incorporate sustainability into coursework, research opportunities, and outreach programs.

Sitting at the nexus of all three colleges, the BCSE has faculty members from management, arts & sciences, and engineering working together to further sustainability curriculum. Teaching in and out of the classroom, providing support to both student and faculty research are typical activities of BCSE.

BCSE was able to deal with the COVID pandemic and still maintain a high level of student engagement through the introduction of outdoor classes. The BCSE has always had a history of including field excursions into coursework, in order to give students and faculty an immersive experience of class materials in the environment. However, in an attempt to overcome the pandemic-related digital disconnect between students and professors, the BCSE was awarded the Mellon Confounding Problems Grant, and constructed an outdoor classroom. It sits behind the BCSE's site Sustainable, Experiential, Learning, Laboratory (SELL).

There has been interdisciplinary participation with outdoor classes offered by the BCSE. Professors from all three colleges bringing their students to the outdoor setup in order to teach in a different setting. Students enjoyed this change of scenery, with many other professors citing an interest in using the space. The BCSE is planning to open the outdoor classroom to additional interested professors in the management and engineering schools in order to include more of an experiential learning aspect to their courses in the future.





100 Trees in 100 Minutes



Milton Newberry
Director of the Bucknell Center for Sustainability & the Environment Sustainable Technology Program

Dr. Milton Newberry is the director of the Sustainable Technologies Program (STP). He supports the teaching of sustainable technology, renewable energy and environmental conservation on campus. The STP helps to think about ways to capitalize on innovation by engaging students through volunteer work and research opportunities.

Supported by BCSE's STP, Facilities Department and OCS worked together for the success of the 100 Trees planted in 100 Minutes by students. This initiative helped plant 18 different species of trees and shrubs to create a riparian buffer by the Miller Run.

This buffer helps to limit flooding and enhance erosion control. By using natural innovations such as trees that are native to the area, this project will prove to be much more cost-effective than other alternatives. These plants also will help to absorb agricultural chemicals from the Bucknell Golf Course as well as vehicular chemicals from Smoketown Road before they enter the water table.





SOCIALLY RESPONSIBLE INVESTING (SRI)

Socially Responsible Investing (SRI)

The Socially Responsible Investing Working Group has been repositioned. As with the other three Working Groups, it has two co-sponsors who are members of the PSC – Professor Karen McGrath as the faculty co-sponsor and Eileen Petula, Vice President Finance and Administration as the administration co-sponsor. Membership has been expanded to include more students while each of the three colleges of the university are represented.

The SRI Working Group met during the semester and discussed a new mandate based on contemporary information. Also discussed was the best way to align with the BOT Investment Committee’s Environmental, Social and Governance (ESG) Subcommittee. It was observed that members of Bucknell Community are passionate about various aspects of ESG, SRI, sustainable investing and sustainable development in general.

In respect of this passion, the SRI Working Group is committed to enhance community education for more people to understand and see the importance of ESG and sustainability consistent with the BOT objectives. To this end, the working group will prepare educational and campus engagement materials for review through the President’s Sustainability Council.

The SRI Working Group does not have, nor have ever had, the ability to dictate what investments are undertaken by the Board of Trustees. The group can help to communicate and prioritize issues. The above encompasses much of what the original intent of the SRI Working Group has been with appropriate adjustments in organizational changes that have taken place since pre-Covid days.

As a more practical step forward, Professor McGrath is offering a 0.5 credit class in sustainable investing. The class is open to the community and has no prerequisites.

The table below illustrates the typical breakdown of ESG issues.

SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT		
Environmental Sustainability Indicators	Social Sustainability Examples	Technological Sustainability Enablers
E	S	G
Environmental	Social	Governance
Energy and Resource Utilization	Human Rights	Management Quality
Pollution	Child and Forced Labor	Independence and Diversity of the Board
Decarbonization – Climate Change	Community Engagement	Conflicts of Interest
Waste Reduction – Zero Waste Status	Employee Health, Wellness, Security & Safety	Executive Compensation
Ecological Conservation and Restoration	Stakeholder Relations	Transparency Disclosure, Decentralization and Digitalization
Biodiversity and Animal Welfare	Employee Relations	Shareholder Rights
SUSTAINABLE INVESTING, ESG AND SRI		



LEARNING AND WORKING ON SUSTAINABILITY

Sustainability is an age-old human endeavor predating most of modern life. The United Nations Commission on Environment and Development – the Brundtland Commission report of 1987 “Our Common Future” reenergized the notion of sustainability.

It defined sustainable development as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs”. To this end, our students continue to learn and work on sustainability in different ways. In this edition we cover two aspects – engineering learning and students intern activities.

Fall 2021 Engineering 100 Course Focused Sustainability Theme

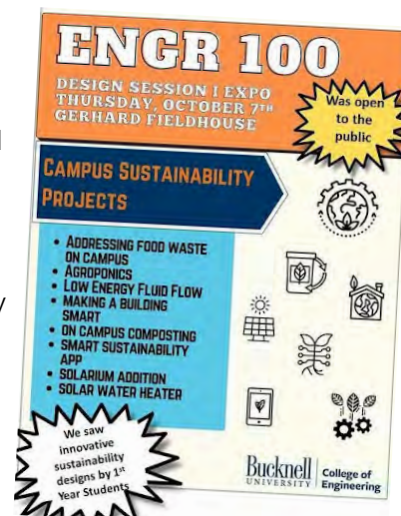
ENGR 100 is a first-year, first-semester course for all students in the College of Engineering and those students who are interested in learning about what engineers do. ENGR100 has been a part of the College of Engineering curriculum for over 30 years. Every year, the cornerstone course enrolls about 200 students. Each section is taught by a faculty member in the College of Engineering.

The Fall 2021 rendition of ENGR 100 went through a major revamp, as we look forward to the future of engineering and the next generation of Bucknell students. A coordination team consisting of Professors Kelly Salyards (Civil & Environmental Engineering), Kat Wakabayashi (Chemical Engineering) and Ben Wheatley (Mechanical Engineering) took on the redesign project for the College of Engineering. They researched best practices around the nation.

One major change installed for Fall 2021 was the establishment of an overarching, common theme to the concurrent 8 sections of the ENGR 100 course – “Sustainability on Campus.” The theme was chosen to respond to the interests of today’s first-year students, provide an interdisciplinary platform for engineering, and to align with the University and College Strategic Plans.

Under this central theme, the first-years got to work on authentic, hands-on design projects including smart grids and homes, fluid flow, solar power, agriculture, composting and waste management, and building renovation.

The first of a three-year course redesign project in Fall 2021 was a major success, thanks to the dedicated ENGR 100 instruction team (Kevin Gilmore, Charles Kim, Rich Kozick, Karlo Malaga, Jonathan Torres, Lea Wittie, Stacy Woodley) and the support from many colleagues on campus, including those from BCSE and OCS.



Interns Activities at OCS



TIM CHILEMBA '22

Tim is a mechanical engineering senior from Malawi. His primary work was in the summer of 2021. His assignment was to support in the data collection, analysis, documentation and presentation of the carbon foot print inventory process.

ZACHARY BOBECZKO '23



My name is Zach Bobeczko, and I am from Arlington, Va. I'm a junior majoring Managing for Sustainability, intended Environmental Studies and Spanish double minor. I am one of the sustainability outreach interns, mainly focused on communications and campus engagement during Fall 2021 semester.

My project for the semester was to coordinate the content for the production of the newsletter, through interactions with faculty, staff and my peers. This project has been very interesting, as we provide updates on sustainability at Bucknell this fall.

ZIHENG ZHENG '23



My name is Ziheng Zeng. I'm a junior Chemical Engineer. I'm from Lanzhou, China. My role is to help in compiling and tracking key performance indicators of sustainability at Bucknell by consulting with staff and faculty members, as well as calculating data from existing reports such as AASHE/ STARS websites.

Using such data, we will consider possible alignment with sustainable development goals and make sure our current plan is trackable, and leading toward the University's 2030 carbon neutrality and other sustainability goals. I'm also taking on a job from previous interns building a sustainability campus map using ArcGIS software. The maps will be used for sustainability project design, implementation monitoring, and tracking by internal teams and service providers.

BEN FINK '24



Hey everyone! My name is Ben Fink and am a sophomore Environmental Studies major. I started working as an intern for the Office of Campus Sustainability this fall and it has been such an amazing experience! I am working on a project to drive down sustainability accountability across campus. The hope is that this will hold all departments accountable for their actions, so we can find the "holes" in where we can do better in our sustainable efforts. Hopefully, this will help us achieve the university's goal of being carbon neutral by 2030. Be the change you want to see!

MOLLY GARRAHY '24



My name is Molly Garrahy. I am one of the interns working with the Office of Campus Sustainability. I am from Hartford, Conn., and am currently a sophomore majoring in Environmental Studies. I am very excited to be working with this team towards our goal of making Bucknell University more sustainable. I am working on zero-waste dealing with ways to combat food waste, our recycling efforts and much more!

Currently, I am working on ways to reduce consumer impacts through reworking the connection students have with sustainability efforts on campus. Other parts of Bucknell's campus will be looked at to make sure we are maximizing every effort, from residence halls to minimize waste from going into the landfill. The end goal is to have a solid plan for Bucknell University to attain zero waste status.