



Sheep grazing at the Nittany One solar array. Credit: Lightsource bp

SUSTAINABILITY AT PENN STATE

2020 / 2021 Highlight Report



PennState

sustainability
INSTITUTE

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A Message From Emeritus President Eric Barron

At Penn State, we believe that sustainability starts by centering people as the solution, and we strive to create holistic approaches to human health, economy, and happiness. A stable and clean environment is an important part of that vision; but so, too, are issues like ending poverty, creating dynamic community infrastructure, and guaranteeing gender equity.

Our definition of sustainability is one that includes the simultaneous pursuit of human health and happiness, environmental quality, and economic wellbeing for current and future generations.

In 2020, we all were affected by catastrophic climate events, political turmoil, social unrest, and the COVID-19 pandemic. It was a pivotal year that caused an immediate shift in our priorities as a University and accelerated the need for an intentional comprehensive response to the intersection between these issues and our sustainability progress. Two years later, we continue to be challenged to overhaul our traditional operations and beliefs in response. And at the core of that response, we find *people* as the solution.

Through our partnerships, we are proud to be making rapid progress towards our sustainability goals and ensuring the health and well-being of our community. In 2020, we began purchasing renewable electricity generated from three Lightsource bp solar farms in Franklin County. As a result, 25 percent of our University's power over the next 25 years will be provided by the largest solar farm in Pennsylvania history, helping us meet our goals of reducing greenhouse gases, regenerating farmland, and supporting the Penn State Strategic Plan, which places heavy emphasis on the stewardship of our planet's resources.

We have several bright moments of progress to be proud of. Some of our most recent sustainability accomplishments include the recent addition of the pollinator garden at the Arboretum, the expansion of the Student Farm, the formation of the Carbon Emissions Reduction Task Force, and many more, which are highlighted in this report.



A Message From Emeritus President Eric Barron (*continued*)

These advancements highlight the University's ability and commitment to take bold and actionable steps forward on the path towards sustainability.

It is with humble recognition of the road ahead that we express our gratitude for the committed individuals that make up our student body, faculty, staff, and alumni network. Your efforts increase our ability to drive sustainability advancements and collectively improve our impact, bolstering resilience across the Commonwealth of Pennsylvania, the nation, and the world.

Thank you for your interest in Penn State and the Sustainability Institute. Together, we are working towards a fair, equitable, and sustainable world for all. 🐾



Old Main Bell on Penn State University Park Campus. Credit: Penn State.

A Message From Paul Shrivastava

What does sustainability progress look like? The answer isn't a single person, unit, or task force – it is a collective effort bolstered and driven by individuals across Penn State.

Throughout our University, we find people working together to advance sustainability in the areas of research and curriculum, student and staff engagement, community outreach, finance and business, and operations.

In the following report, you will find impactful stories of your sustainability achievements at work. From the creation of new Sustainability Councils to the introduction of the Carbon Emissions Reduction Taskforce, to the prioritization of sustainability within Penn State's strategic plan, it is clear that you have all stepped up and contributed to our University's greatest sustainability successes.

It is with much gratitude for your support that I also announce I will be stepping down from my roles as Chief Sustainability Officer and the Director of the Sustainability Institute at Penn State at the end of June 2022. I will continue to celebrate your achievements both while on sabbatical and when I return to the Penn State community again as a research and teaching faculty member in the fall of 2023. It has been an honor and a privilege to encourage Penn State's sustainability initiatives over the past five years. The accomplishments from the last two years are as much yours as they are the Sustainability Institute's and we have tremendous gratitude for you, your colleagues, and our students who work tirelessly to promote sustainability progress across the entire University. This report celebrates the key ways Penn State has succeeded in implementing the Global Sustainable Development Goals (SDGs) of the UN Agenda 2030 as a framework to prioritize our strategies.

My hope is that as you read the following stories, you are inspired by this whole University effort to ensure a sustainable future for Penn State, Pennsylvania, and the planet. Please note that this report is not exhaustive. As we are unable to report on every sustainability achievement at Penn State, we have chosen to feature significant highlights from the course of the past two years. 🐾



About Penn State's sustainability INSTITUTE

The experts at the Sustainability Institute at Penn State serve as consultants and coaches who guide and bolster sustainability efforts at the University. Our staff specializes in numerous areas of sustainability, including curriculum development, communication, staff engagement, student-community projects, and research.

Our Philosophy

Our mission is to advance the cause for a healthy, prosperous, just, and peaceful planet. We aim to increase sustainability literacy, expand commitment to sustainable practices on our campuses and in the communities we serve, address systemic challenges, and build capacity in leadership toward a more sustainable future through our teaching, research, outreach, and operations.

Community Resilience

SI's 2021 thematic emphasis focused on community resilience. As the world begins to adjust to the new normal of COVID-19, economies open up, and new challenges are being met, it is more important than ever to have social, economic, and infrastructural systems that support sustainable development. The pandemic brought racial, economic, and class inequalities throughout the world into sharp focus, which is why SI views the goal of community resilience not just through the lens of economic development and clean energy, but also through a lens of diversity, equity, and inclusion. As the Penn State community adjusts to these new challenges, SI has been working to facilitate the rebuilding of our economic and social structures for a more sustainable, equitable, and resilient future.

THE SUSTAINABLE DEVELOPMENT GOALS

A shared blueprint for peace, prosperity and a healthy planet by 2030

Mount Nittany in State College, PA. Credit: Penn State.



What are the United Nation's Sustainable Development Goals?

In 2015, the General Assembly of the United Nations adopted 17 Global Sustainable Development Goals (SDGs). These goals, which include social, economic, and environmental components, serve as the blueprint to realize a more sustainable world for all by 2030. The SDGs comprise a holistic and comprehensive framework that emphasizes systems thinking, intergenerational equity, and intersectionality. Through collective pursuit of these goals, local and global communities have the opportunity to address the urgent call for action to ensure a more just, equitable, and environmentally sustainable future.

The SDGs and Penn State

The SDGs are reflected in many elements of Penn State's *Strategic Plan 2020-25: Our Commitment to Impact*. Woven throughout the plan, you'll find several thematic and foundational elements that draw inspiration from the SDGs. Objectives like "Enhancing Health," "Stewarding Our Planet's Resources," "Enabling Access to Education," "Driving Economic Development," "Fostering and Embracing a Diverse World," and "Ensuring a Sustainable Future" are all concepts that simultaneously are connected to the SDGs and profoundly emblematic of Penn State's commitment to addressing sustainability challenges.

Penn State's Potential for Impact

Penn State's impact on advancing the SDGs is seen in a variety of ways, including through our outreach, research, and engagement activities with the communities we serve. In a 2021 ranking of each state's performance on the SDGs, Pennsylvania placed 29th out of 50 states, demonstrating that Penn State's expertise is still needed on many fronts. With a geographic footprint that includes 24 campuses in Pennsylvania, Penn State is uniquely positioned to share our sustainability leadership and make a positive impact on the achievement of the SDGs in communities throughout Pennsylvania. 🐾

SUSTAINABILITY WITHIN PENN STATE'S STRATEGIC PLAN

The Lion Shrine on the Penn State University Park Campus. Credit: Penn State.

In 2019, Penn State's Strategic Plan began mapping onto the UN Sustainable Development Goals (SDGs). Strategic planning is used by Penn State to identify and to articulate the University's goals and priorities for the coming five years.

SI worked with several units across the University to incorporate sustainability into the 2020-2025 Penn State Strategic Plan. In the University-wide plan, one of the foundations is "Ensuring a Sustainable Future," representing Penn State's commitment to tackle climate change and pursue sustainable development aligned with the UN Agenda 2030 and the SDGs.

Likewise, the foundations of "Advancing Inclusion, Equity, and Diversity" and "Enhancing Global Engagement" correspond to SDGs Ten (Reduced Inequalities) and 17 (Partnerships for the Goals).

"Penn State's strategic plan addresses most of the 17 sustainable development goals of the UN Agenda 2030, which is our guiding framework," said Paul Shrivastava, chief sustainability officer and director of the Sustainability Institute. "Because we are so large and diverse, collectively our units are able to make contributions to all aspects of sustainability."

In addition to University-wide strategic planning, many unit-level strategic plans have incorporated sustainability or the SDGs into their objectives. Each strategic planning unit at Penn State represents a campus, college, or administrative unit. In all, 41 of these strategic planning units have incorporated the foundation of "Ensuring a Sustainable Future" into their strategic plans. Collectively, units have identified 151 objectives furthering sustainability within their plans across the University and Commonwealth campuses.

The priority themes incorporated into strategic plans include "Stewarding our Planet's Resources," "Enhancing Health," and "Transforming Education." By focusing on the environment, sustainable development, education, and economic and personal health, Penn State is taking a holistic approach to sustainable development, as is laid out by the UN SDGs, where not only is clean energy and life on land prioritized, but also sustainable development that does not leave behind any marginalized communities. 🐾

COVID-19: Lessons for Sustainability

PSreUse reusable to-go container program revitalized

After ending the Green2Go program in 2019 due to sanitation concerns during the COVID-19 pandemic, PSreUse has rebranded and returned, addressing the increase in single use plastic and pandemic related waste.

PSreUse introduced reusable takeout containers into Penn State dining halls. Students request a reusable container when they swipe into the dining halls and are given one that can be returned at any dining hall or convenience store cashier location to be washed and reused. This significantly reduces the amount of styrofoam waste in residential dining.

Previously, students were required to put down a \$5 deposit in order to enter the program, which would be refunded after the containers were returned. In response to feedback about barriers to joining the program, students are no longer charged unless they fail to return the container at

the end of the semester. This change is expected to increase student participation.

The program is also exploring options to expand the number and kind of drop-off return points to include areas in central campus and to include different types of reusable kitchenware, such as takeout bowls or coffee cups. There is even the possibility of expanding the program to include HUB dining.

So far, the program has assigned over 20,466 containers at 20 locations across campus with about a 90 percent return rate. With the help of groups such as EcoReps and Schreyer Honors College to promote the program, participation and support continue to increase in popularity. 🐾



COVID-19 impacts on Penn State's sustainability efforts

The University first set a goal to reduce its greenhouse gas (GHG) emissions in 2006. Since then, it has seen a 42 percent reduction in emissions from the 2005 baseline. The original goal was an 85

percent reduction from 2005 levels by 2050 and the Office of the Physical Plant (OPP) and the Sustainability Institute (SI) continue to work together with offices, colleges, and campuses to measure emissions and to identify where improvements can be made.

Although the COVID-19 pandemic had an overall detrimental impact on the University's finances, it also had a positive, albeit temporary, impact on the University's GHG emissions. During the first year of the pandemic in 2020, there were fewer faculty, staff, and students on campus, which resulted in an overall decline in energy used to heat, cool, and light buildings. This resulted in a temporary reduction in our Scope One and Scope Two GHG emissions. A decrease in business travel, cessation of international travel, and fewer people commuting to and from Penn State's campuses also reduced the University's Scope Three GHG emissions. A rough estimate shows that seven percent of the reduction was due to our COVID response.

The pandemic delivered many lessons about health and safety and the wise use of technology to deliver courses and convene meetings, allowing for the reduction of both cost and our environmental footprint - lessons that could have a lasting impact as we try to move toward carbon neutrality.

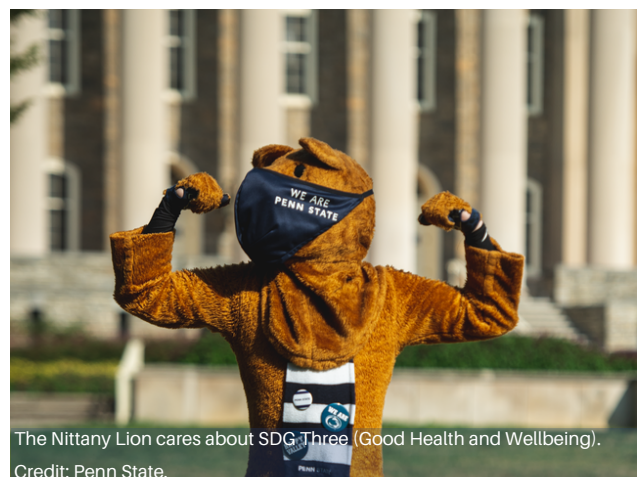
Penn State didn't let the pandemic disrupt our teaching, research, and outreach and quickly pivoted to virtual learning, Zoom meetings, and remote work. As the pandemic recedes and there is a return to more in-person activities, there is an opportunity to learn from our experience and avoid returning to pre-pandemic levels of GHG emissions. The University is examining remote work policies and space utilization changes that could permanently reduce our emissions across all three scopes. 🐾

What's Included in Penn State's Emissions Inventory?

Scope 1: Direct emissions from sources owned or operated by Penn State.

Scope 2: Indirect emissions relating to the generation of purchased utilities.

Scope 3: Indirect emissions from waste, university sponsored air travel, commuting and transportation & distribution loss related to purchased electricity



The Nittany Lion cares about SDG Three (Good Health and Wellbeing).
Credit: Penn State.

Biodiversity Seed Grants

Seven Penn State faculty teams received seed grants for biodiversity research as part of the 2021 “Mainstreaming Biodiversity in a Decade of Action” symposium, developed in collaboration with Penn State’s Sustainability Institute (SI) by Dr. Christina Grozinger, publicus vergilius maro professor of entomology and director of the Center for Pollinator Research.

The nine-week symposium fostered a dialogue about biodiversity, connected different programs across Penn State, and inspired proposals for future projects to study and support biodiversity, which is critical for the health of all ecosystems.

“Biodiversity loss, in my view, is as important a global problem as climate change,” said Dr. Paul Shrivastava, director of SI and Penn State’s chief sustainability officer. “We are losing thousands of species each year and degrading the quality of earth's biological ecosystem.”

Attendees of the symposium had the opportunity to form teams to apply for

“The symposium highlighted the creative and diverse research, education, and extension efforts of Penn State faculty and their collaborators,” said Dr. Christina Grozinger.

seed funding to support creative and cross-disciplinary projects that address biodiversity. The SI; Institute for Sustainable Agricultural, Food, and Environmental Science; Ecology Institute; and Insect and Biodiversity Center provided funding for the seed grants.

The researchers and projects awarded the grants were:

- **“Green Stormwater Infrastructure: Design, Maintenance and Location Impacts on Biodiversity”** with Principal Investigator (PI) Dr. Margaret Hoffman, Department of Plant Science assistant professor, and Co-Principal Investigators (Co-PIs) Dr. Lauren McPhillips, assistant professor of Civil and Environmental Engineering, and Dr. Hong Wu, assistant professor of Landscape Architecture.

- **“Evaluating Child-to-Adult Intergenerational Learning As a Potential Solution To Help the Illinoian Rusty Patched Bumblebee”** with PI Dr. Danielle Lawson, assistant professor of Recreation, Park, and Tourism Management, and Co-PIs Dr. Theresa Melton, a postdoctoral scholar in Recreation, Park, and Tourism Management, and Dr. Lucy McClain, Shaver’s Creek Environmental Center assistant teaching professor and Science and Education program director.
- **“A Method To Study Avian Window Strikes”** with PI Dr. Chris Martin, assistant professor of Mechanical Engineering at Penn State Altoona, and Co-PIs Dr. Julian Avery, associate research professor of Wildlife Ecology and Conservation, and Dr. Andrew Mack, grants and contracts coordinator at Altoona.
- **“Effects of Above and Belowground Woody Competition on Herbaceous Communities”** with PI Dr. Autumn Sabo, assistant professor of Biology at Penn State Beaver, and Co-PIs Art Gover, research support associate in Plant Science, Dr. Phillip Jones, a postdoctoral scholar in Ecosystem Science and Management, and Dr. Emily Lavelly, a postdoctoral fellow in Ecosystem Science and Management.
- **“Integrated Art & Science Program for Biodiversity: Design, Delivery, and Evaluation”** with PI Dr. Bryan Wang, associate teaching professor of Biology at Penn State Berks, and Co-PIs Dr. Sandy Feinstein, professor of English at Berks, Dr. Samantha Kavky, associate professor of Art History at Berks, and Dr. David Livert, associate professor of Psychology at Penn State Lehigh Valley.
- **“Climate-adapted Forests: From Geology to Genes”** with PI Dr. Margot Kaye, associate professor of Forest Ecology, and Co-PIs Dr. Jesse Lasky, associate professor of Forest Ecology, and Dr. Tetyana Zhebentyayeva, associate professor of Ecosystem Science and Management.



Illustration by Rachel Easley, SI Graphic Design Intern

- **“A Gender-Sensitive Analysis of the Global Biodiversity of Food and Agriculture (Agrobiodiversity) and Values to Food/Nutrition Security in the COVID-19 Pandemic: Experiences of Indigenous Communities in Latin America”** with PI Dr. Karl Zimmerer, professor of Environment and Society Geography, and Co-PIs Dr. Kathleen Sexsmith, assistant professor of Rural Sociology and Women’s, Gender, and Sexuality studies, and Dr. Paige Castellanos, assistant research professor and director of gender equity through the Agricultural Research and Education Initiative.

Final project reports will be available during the fall 2022 semester.

The steering committee that developed the symposium with Grozinger and SI included Zimmerer; Avery; Dr. Derrick Taff, assistant professor of Recreation, Park, and Tourism Management; Dr. Erica Smithwick, professor of geography and director of the Ecology Institute; Dr. Jason Kaye, professor of Ecosystem Science and Management; and Dr. Natalie Boyle, assistant research professor of Entomology. 🐾



Pictured above is a quilted Carolina Wren created by Martha Ressler in association with the “Integrating Art and Science to Engage the Public with Biodiversity” seed grant.



Pictured above are participants in the “Evaluating Child-to-Adult Intergenerational Learning As a Potential Solution To Help the Illinoian Rusty Patched Bumblebee” project, engaging in action projects during the pandemic.



Penn State ranked 4th in the U.S. and 32nd in the world out of 1,115 institutions that participated in the 2021 **Times Higher Education (THE) University Impact Rankings**, placing Penn State in the top three percent of universities worldwide. Penn State's ranking is due in part to its breadth and depth of exceptional research, including its strength as Pennsylvania's land-grant and sea-grant University.

\$19.9 Million Grant to improve climate risk decision making along coastlines

Penn State has been awarded a \$19.9 million grant from the National Science Foundation's Coastlines and People Program (CoPe) that will help bring researchers and stakeholders together to equitably support coastal communities to better manage coastal climate risks.

The five-year grant will support the CoPe Megapolitan Coastal Transformation Hub (MACH), a multi-institution research project. MACH will bring together researchers from many academic disciplines, including natural scientists, social scientists, civil engineers, and humanists along with stakeholders and decision-makers in the New York City-New Jersey-Philadelphia region to improve climate risk management decisions. The researchers will work with a diverse stakeholder advisory panel to ensure continuous engagement with the communities directly impacted by climate risks and the decisions made to mitigate those risks.

The researchers will focus on building a knowledge base to inform decisions as communities adapt to a changing climate in ways that benefit all neighborhoods instead of prioritizing certain parts of the metropolitan area over others. They will also work with faculty and students from community colleges to encourage broader participation in the STEM workforce. 🐾

Commonwealth Campus Sustainability Updates

Across our campuses, Penn Staters are prioritizing sustainability initiatives to improve communities throughout Pennsylvania. Here are a few updates of the sustainability leadership in 2020-21 from the Commonwealth Campuses:



Penn State York prioritized town-and-gown collaborations, as exhibited by their partnership with the York Suburban Impact Foundation to aid student groups collecting nonperishable food items and hygiene products for distribution to students in need. They also hosted a Wellness Fair to share information about related community resources.



The Penn State Wilkes-Barre Sustainability Council developed a curriculum survey, circulated to faculty each academic year.

The survey allows faculty the opportunity to identify courses that emphasize sustainability themes in learning objectives, outcomes, and assignments.



Penn State New Kensington introduced their interactive reNew Kensington Sustainability Stroll, which is designed to educate the local community about the 17 Global Sustainable Development Goals (SDGs) by providing real life examples of how local businesses incorporate the SDGs into their business plans. As a part of New Student Orientation, incoming students will be bused to the starting point of the stroll and explore the downtown area with a host of new businesses.



Penn State Mont Alto contributed to community resilience while tabling at its Earth Day celebration, handing out seed packets and information about the UN SDGs. The Mont Alto Day of Service removed one ton of trash from state forest roads, composted 30 bags of debris, distributed 102 hygiene kits to a local agency in need, shared 99 Care Cards

expressing gratitude for local elementary school educators, and more.



The Penn State Great Valley Sustainability Council hosted an SDG training program utilizing resources provided by the SI. They also performed a basin naturalization and pollinator meadow project in addition to creating a forager's field guide. Campus faculty and staff also piloted the revitalized Green Paws Program.



Penn State Greater Allegheny introduced Project GAGA (Goats at Greater Allegheny) and added several beehives on campus. In addition, they also created an edible walking trail, welcomed speakers for their "Crossing Bridges" series, and fostered town-and-gown relationships through their "Free Store" that provides free necessities to combat food and clothing insecurity.



Penn State Behrend has created a sustainability strategic plan and has completed 26 percent of their goals with a further 44 percent in progress. Progress is driven by six academic subcommittees:

Waste/Recycling, Academics, Green Spaces, Food/Compost, Energy, and Engagement/Access. Actions in progress include the execution of a recycling audit, participation in the world-wide climate teach-in, a litter research project, and more.



Penn State Beaver grew flowers and produce in high tunnels to enrich student knowledge about plantings. The resulting crops were donated to community hospitals and food banks. They also replaced their use of peat moss with coco coir and a locally produced recycled paper material called "Pitt Moss." 🐾



Pictured above is one of the project GAGA goats who will be helping to clear overgrown, woody, and invasive terrain at Penn State Allegheny. "Goatscaping" is an eco-friendly and waste-free practice that leaves the soil naturally fertilized.

WATER CONSORTIUM'S "SOUNDINGS" FILM SERIES MAKES A SPLASH



In an era of climate change, water will increasingly be a central topic of concern at the local, state, and federal levels, from a scarcity of water and drought on one extreme to sea-level rise and flooding on the opposite extreme, not to mention issues of water quality. Water is essential to life and to everything we do on the planet, from growing food to sanitation and manufacturing processes. To better address these challenges and inform decision-making, Penn State has pulled together faculty expertise from a wide variety of disciplines to form the Penn State Water Consortium. The consortium builds upon long-standing strengths in engineering and natural and social sciences, while expanding engagement with health sciences, law and policy,

emerging technologies, arts and the humanities, and other disciplines.

Led by Director Andy Warner, the consortium is focusing its efforts on enabling and supporting transdisciplinary research, conducting outreach and engagement aimed at informing policy, and transforming water education at the undergraduate and graduate levels.

To support the launch of the consortium, in 2021 the Sustainability Institute developed a water-themed film series aptly titled "Soundings," after the name for a measurement taken below the surface of a body of water. The series aims to highlight connections water has within our society, its importance, and how resources are being

impacted by humans, while simultaneously connecting the films to current research and projects at Penn State. “We hope to raise the visibility of water issues within and beyond the Penn State community and increase the understanding that we all have roles to play in addressing water challenges,” said Warner.

In the spring semester of 2021, the series made its debut with two film showings: *Water Blues*, *Green Solutions* and *The Water Front*. Experts from across the university were invited to share their perspectives on the films and guide discussion and reflection on the topics.

Due to the pandemic, film screenings were conducted entirely online, which allowed a larger portion of Penn State’s faculty, staff, and students to participate. 🐾

Climate Crossover advocates for classroom discussion of climate issues



Lanterns on the steps of Old Main on the Penn State University Park campus during Earth Hour 2021.

In 2019, Awaken State, an initiative devoted to increasing awareness of environmental topics, executed a study of eco-anxiety within the Penn State student body. Of nearly 1,600 students surveyed, 74 percent think climate change is a threat to humanity, 50 percent are angry about climate change, and 65 percent feel helpless.

As a result of this study, “Climate Crossover” was born. The resulting program, led by Professor of Philosophy Mark Sentesy and Assistant Professor Nichole van Beek, posited that the most important thing to do about climate change is to talk about it. Climate Crossover advocated for strong well-informed discussion to start in the classroom and connect students with climate issues across disciplines.

In Spring 2020, dozens of instructors across Penn State accepted the invitation to include climate modules and guest speakers or to infuse sustainability principles into their classes holistically.

Prior to the pandemic, workshops were held with a goal of generating relationships among faculty as they navigated the discussion of climate issues relating to their individual fields. Subject experts were invited to provide one-pagers with key information and questions to help spark

robust, informed discussion of the topics from a variety of angles.

“We recognize that climate change touches on all the issues, not just the science or technology but also the human sciences and the role of the arts in visualizing impacts and futures and integrating climate into identity and law,” said Sentesy. “Every single part of the university has something to contribute on the issue. So, we wanted to facilitate people finding interesting and innovative ways that their specific disciplines can contribute to people’s understanding of these issues and the public discourse.”

In the second year of Climate Crossover, the number of participants tripled and nearly 60 instructors integrated climate conversation into their classrooms. In the full scope of the program, over six thousand students have benefitted from these efforts to draw connections between their courses and climate issues.

“The secondary goal of Climate Crossover was that once you begin having these conversations in classrooms then it’s easier to generate public discourse on these issues because more people are already talking about it and then are given the

opportunity to take those conversations into the public sphere,” explained Sentesy.

Efforts to transition conversations from the classroom to the public sphere were somewhat impacted by the emergence of the COVID-19 pandemic, but Sentesy and van Beek still ensured there was progress with safe, socially distant approaches like public art projects hosted at the HUB, chalking events in which climate-positive messages were shared with community members, and more.

Currently, Sentesy is working to embed the core project of Climate Crossover into institutions at the university, promoting the formation of climate minor and major programs, and advocating for public engagement on climate issues through Sustainability Councils and the Carbon Emissions Reduction Task Force (CERTF). This effort includes developing material for courses, and continuing conversations with deans across the university to formalize the incorporation of climate and sustainability topics into their curricula. 🐾

Sustainable Communities Collaborative (SCC)

The Sustainable Communities Collaborative (SCC), a program of the Sustainability Institute, facilitates partnerships between Penn State classes and local governments, community organizations, and campus partners. Students engage in applied, real-world projects and research that increase the partner's capacity to make better, more informed decisions to advance their sustainability goals. The pandemic did not slow the program down. During the 2020-2021 academic year, 45 projects were completed, connecting over 700 students in 18 classes and two independent study projects to 30 community partners across Pennsylvania.

The SCC is approaching its tenth anniversary, which will occur in 2023. Thus far, the project has demonstrated rapid growth, as both partners and faculty see the mutual benefits of participation. For community partners, student projects

provide innovative and creative approaches that advance the community's sustainability goals. Faculty are able to provide their students with an expanded understanding of sustainability grounded in real-life experience.

Since its inception in 2013, the SCC has connected over 3,555 students across 12 colleges and campuses to more than 300 projects, while more than 70 community partners have benefitted from this program.

Below, we highlight four of the 45 projects that took place during the 2020-2021 academic year:

Watershed Health and Climate Change Workbook Design (Graphic Design GD 203 - Advanced Typography, taught by Emily Burns in Spring '21)

In partnership with Keystone Water Resources, the Penns Valley Conservation Association created lesson plans aimed at middle-school-level instruction on the effects of climate change in local watersheds. Graphic Design students were tasked with creating designs for the teachers' workbook and the student journal that were engaging and attractive. Student designs were chosen for publication based

on the thoughtful connection between the teacher workbook and student journal with a playful, creative, and useful format for the students.

Solar Design Evaluation for Williamsburg (EGEE 437 - Design of Solar Energy Conversion Systems, taught by Paulo Soares in Spring '21)

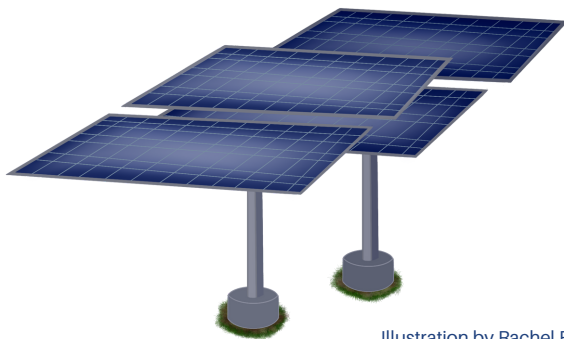


Illustration by Rachel Easley,
SI Graphic Design Intern

Students evaluated solar feasibility at different locations within the Borough of Williamsburg, PA. This small, rural community is financially stressed, and offsetting energy costs with solar may help the community save money in the long run. Savings varied depending on both location and implementation strategies. The class project also addressed design challenges to reconcile the visual impact of a larger ground-mounted solar installation with the community's desire to focus on outdoor recreation as an economic development opportunity.

Talleyrand Park Flood Plain Research (BE 460/466 - Bioengineering, taught by Megan Marshall in Fall '20/'21)

This two-semester capstone project in Bellefonte Borough examined flooding issues in Talleyrand Park in Bellefonte at the confluence of Big Spring and Spring Creek. Students conducted research, received assistance from stream restoration faculty at Penn State, and proposed a design solution that had been unpopular with borough leadership in the past, but has gained traction due to the students' research findings. The project is the foundation for a future SCC project in which a new team of students will explore design specifics and environmental impacts to provide Borough leadership with the comprehensive information necessary to make lasting improvements and reduce future flooding.

Reinvigorating the Envirothon Marketing Plan (Comm 473 - Public Relations Campaigns, taught by Tara Wyckoff in Spring '21)

A group of students in COMM 473 worked with Envirothon, an environmental high school competition that originated in Pennsylvania but has since been replicated and expanded nationally and internationally. The PA chapter for Envirothon realized that it was not reaching

urban populations and that its outward image was not inclusive and diverse. The COMM 473 student team devised a campaign for more transparency, equity, and inclusion of diverse, urban populations. Student suggestions are being implemented to promote the competition. 🐾

Sustainability Alumni Interest Group (AIG)

In the fall of 2021, the Sustainability Institute assisted in forming a Sustainability Alumni Interest Group (SAIG), which aims to soon be a part of the Penn State Alumni Association (PSAA). The AIG's goal is to help alumni and colleges who are fostering their own sustainability alumni groups connect with one another and provide them with networking opportunities, events (beginning in the summer of 2022), service projects, and mentorship programs that keep alumni connected to the university's sustainability work.

"Since the Alumni Association's founding, there hasn't been a proper space where interested alumni can network, form relationships, host service events, fundraise for projects at Penn State campuses, and

better their communities in the name of sustainability," said Matt Long, AIG associate vice president for communications & outreach. "With this alumni interest group, we hope to change that so future generations of Penn Staters can not only have a sustainability-focused group to get involved with as an alum but have a cleaner and more just future."

This opportunity is free and open to all. Membership with the PSAA is not required to participate, however, to join as a member of the executive board and for the AIG to achieve provisional membership within the PSAA, 50 dues-paying PSAA members are needed to register as AIG members. Graduating seniors are eligible for a free year of membership with the PSAA.

So far, the AIG's current members come from diverse academic and professional backgrounds and are leading sustainability efforts worldwide in sectors like renewable energy, research, communications and more. To learn more or to suggest initiatives for the new group, contact Dr. Peter Boger, SI assistant director of community engagement, at pgb45@psu.edu. 🐾



EXPANSION OF POLLINATOR SPACE AT THE ARBORETUM

The new pollinator space at the Arboretum on Penn State University Park campus. Credit: Penn State.

In June 2021, the Arboretum at Penn State opened the long-awaited Pollinator and Bird Garden, which added over three acres to the H.O. Smith Botanic Gardens – increasing its acreage by more than 60 percent.

The addition was designed with the dual intent of creating a space to attract regional insect pollinator species and resident and migratory birds and to demonstrate how to create attractive, pollinator-and bird-friendly landscapes to the public.

Working with a large team of Penn State-based and outside experts, including Penn State’s Center for Pollinator Research, the design was developed to encourage ecological diversity by incorporating habitats such as a pond, wetlands, woodland, and dry meadow. The new gardens showcase a large array of plants—over 390 unique species and varieties—most of which are native to Pennsylvania or the greater Appalachian region. The installation of the vast majority of the 143,000 plants added during this expansion was volunteer-driven.

“Beneath that beauty [of the garden] is a palette of plants and soils chosen and crafted using the best science toward our goal of attracting a great variety of birds and insect pollinators. The garden is a marriage of really good design and really good science, and I think that makes it very interesting,” said Kim Steiner, retiring arboretum director and professor of forest biology in the College of Agricultural Sciences.

Unique features include a bird blind, a honeybee observation hive, and two dead Table Mountain pine trees that were harvested and mounted to serve as perches for birds, especially raptors, and as a source of food and homes for woodpeckers and other wildlife. 🐾

MAPPING A JUST AND SUSTAINABLE FUTURE



For the past three years, students have led the Environmental Justice Mapping Project: Mapping a Just and Sustainable Future that aims to reduce gaps in negative environmental exposure by identifying high-risk census tracts within Pennsylvania.

With oversight from Dr. Peter Buck, the Sustainability Institute's (SI) academic program manager, graduate students and SI Environmental Justice Interns Nyla Holland (Public Policy with a Specialty in Education Policy) and Nebraska Hernandez (Geography) have been using ArcGIS to map environmental exposures and pollutants for different regions and

demographics. The project aims to identify which census tracts are experiencing environmental injustice and environmental racism and at what rates.

By identifying populations that are experiencing negative environmental exposure, the map will become a tool for community groups and government officials to focus their attention on reducing inequities through additional research opportunities and/or legislative action. Once complete, the map will be published so that the general public can access and interpret this data for personal use as well. 🐾



From left to right:
Jasmine Pope,
Capricia Williams,
Senator Jay Costa,
Mike Keefe, and
Ayanna Jones.
Credit: Capricia
Williams.

GROWTH OF CITY SEMESTER, AN URBAN SUSTAINABILITY EXPERIENCE

City Semester, previously known as Study Away, is a unique learning experience for Penn State students of all majors and backgrounds to spend a semester learning about urban sustainability dynamics in Pittsburgh. The program, a joint effort between Penn State Center Pittsburgh, a service of Penn State Outreach, and the Sustainability Institute, was launched in the fall semester of 2017 and is designed to connect students to an internship opportunity with a prominent community partner.

Simultaneously, students take a senior-level course covering urban sustainability issues and solutions. The immersive program connects students to real-world issues rooted in climate action, architectural design, clean energy, landscape architecture, urban equality, urban food systems, education, and more.

“City Semester students gain valuable field experience as active participants in Penn State’s efforts to address urban sustainability to improve quality of life in the Pittsburgh region,” said Tom Bartnik, director of the Penn State Pittsburgh Center.

During the first four semesters of the program, City Semester placed a total of 15 students from six different colleges and 11 majors in community projects. Due to the impact of COVID-19 on study abroad opportunities and with the advent of a new summer program, City Semester experienced significant growth in 2020-21, placing a record 34 students.

In total, spanning the seven-semester history of the program, City Semester alumni now total 49 students, from 19 majors, who have worked as interns for 27 community partners, such as the Pennsylvania Environmental Council, Sankofa Village Community Garden, Fourth Economy, and more. Roughly one-quarter of City Semester alumni have also completed the Sustainability Leadership minor.

“I can share the relationships I cultivated in the City Semester program with my fellow members of Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) so they too can experience a unique aspect of agriculture and opportunities in Pittsburgh,” 2021 summer semester participant Capricia Williams. 🐾

INAUGURAL SMEAL UNDERGRADUATE SUSTAINABILITY CASE COMPETITION



Photo provided by Erik Foley.

The inaugural Smeal Undergraduate Sustainability Case Competition was held in Spring 2021, with three winning teams demonstrating the college's dedication to business that makes a difference not just a profit. The competition drew 80 students from four Penn State campuses who were challenged with a business case at the intersection of clean energy, climate change, and economic development. The case asked students to address how businesses can implement community solar while providing economic benefits to low-income communities.

In addition to cash prizes, finalists were invited to apply for paid internships with Summit Ridge Energy, a Coalition for

Community Solar Access partner; share presentations with alumni during Impact Smeal Day; and present a case for solar to Pennsylvania state legislators.

Pictured above are the winning teams in Spring 2021.

MakeSustainable Lions Consulting

Lehigh Valley - 1st Place - \$3,000

BJC Consulting

University Park - 2nd Place - \$2,000

NLCGreen

University Park - 3rd Place - \$1,000 🐾

2021 ENVIRONMENTAL COLLOQUIUM - DR. ROBERT BULLARD



Credit: DrRobertBullard.com.

Renowned scholar and activist Dr. Robert Bullard presented the virtual keynote address at Penn State's 2021 Colloquium on the Environment titled, "The Quest for Environmental and Climate Justice in the U.S." The presentation was well-received by an online audience of over 600 participants.

Bullard is known as the "father of environmental justice" and has spent his career studying the disproportionate effects that environmental issues have on communities of color.

Bullard's talk focused on the principle of "environmental justice," which affirms that all people and communities have a right to the equal protection of environmental laws and regulations. The idea stemmed from a 1979 lawsuit (*Bean v. Southwestern Waste Management Corp.*), which challenged environmental discrimination through the use of civil rights laws. Bullard's talk traced the movement from that case to the present day, connecting social problems like air pollution, food and pharmacy deserts, heat islands, and housing redlining to documented increases in negative consequences for marginalized communities such as higher instances of COVID related deaths, less access to medical care and economic opportunities, exacerbated effects of climate change, increased health risks, and increased exposure to natural disasters.

The presentation highlighted the need for sustainability and climate action plans to address environmental and racial justice in sectors including, but not limited to, transportation, energy, food and water insecurity, equitable development, poverty, and health and wealth gaps. "Addressing equity is a prerequisite to achieving healthy and climate-resilient communities," explained Bullard.

The colloquium - co-sponsored by the Institutes of Energy and the Environment, the Sustainability Institute, the Office of Human Resources, the Office of Educational Equity, and the Office of Diversity and Inclusion - was the culmination of a year of programming and initiatives engaging the Penn State community on issues of environmental justice. 🐾

\$20,160 AWARDED IN SUPPORT OF SUSTAINABILITY RESEARCH

In 2021, the Center for the Business of Sustainability in the Smeal College of Business awarded \$20,160 in support of three research proposals that are advancing global understanding of sustainable business and its interconnections with social, political, and economic systems.

“This past year, our researchers made clear that our contribution to sustainability knowledge is a substantial and durable component of the Center, as our society faced the challenges of the pandemic as well as political and social unrest,” said Dan Cahoy, Research Director of the Center for the Business of Sustainability.



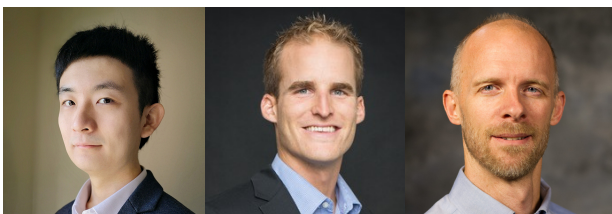
Tessa Recendes. Photo Provided.

“Walking the talk: The effects of CEO Political Ideology, CSR Actions, and CSR Rhetoric on Firm Performance” by Tessa Recendes, assistant professor of management and organization.

“Estimating and Increasing the Demand for a Corporate Ridesharing Initiative in Brazil” by Aydin Alptekinoglu, associate professor of supply chain management, and Sergey Naumov, assistant professor of supply chain management.



From Left to Right: Aydin Alptekinoglu and Sergey Naumov. Photos Provided.



From Left to Right: Muhan Zhang, Mark DesJardine, and Forrest Briscoe. Photos Provided.

“How Social Unrest Triggers Corporate Diversity Actions: A Look at The Black Lives Matter Movement” by Muhan Zhang, PhD student, Mark DesJardine, assistant professor of management, and Forrest Briscoe, professor of management. 🐾



PENN STATE POWERS UP WITH SOLAR

Credit: Lightsource bp.

In October of 2020, Penn State began purchasing renewable electricity generated from three Lightsource bp solar farms in Franklin County. The 70-megawatt Power Purchase Agreement (PPA) was signed in 2019, under which Penn State agreed to purchase 100 percent of the electricity generated by the projects constructed and operated by Lightsource bp.

The solar farms produced over 100 million kilowatt-hours of electricity in year one, supplying 25 percent of the University's state-wide electricity needs and lowering Penn State's greenhouse gas emissions by 57,000 mtCO₂e per year - the equivalent of removing 12,100 fuel-burning cars from the road. The agreement provides Penn State with an estimated savings of over \$14 million over the span of the 25-year contract term.

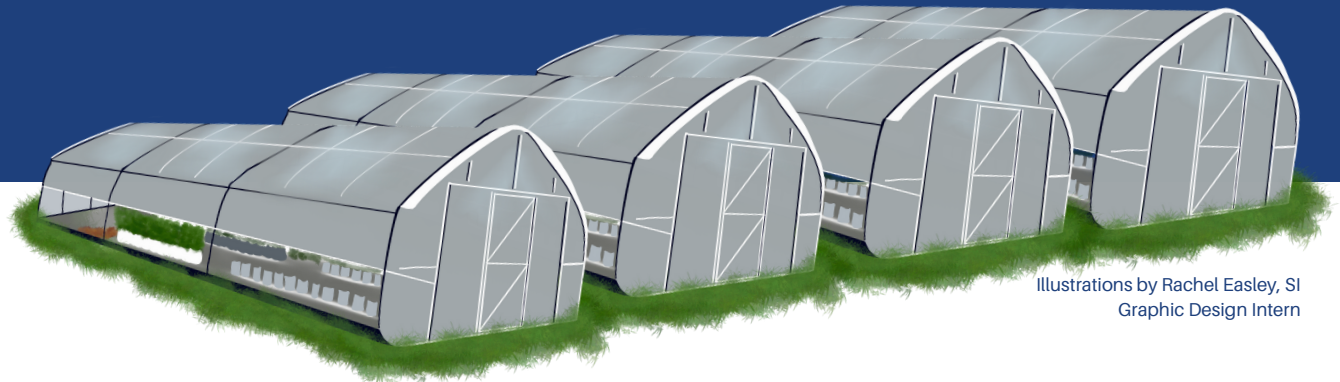
The three solar farms (Nittany One, Two, and Three) are situated on 500 acres of land leased from Franklin County landowners. In partnership with Penn State, farmers, and ecology and grazing experts, Lightsource bp created a plan to enhance biodiversity as well as continue agricultural use through rotational sheep-grazing to maintain the land and provide supplemental income to local farmers.

Each of the three solar farms were seeded with a specially formulated seed mix named "Fuzz" and "Buzz," which was developed by the American Solar Grazing Association in partnership with Ernst Conservation Seeds and Pollinator Service, to support both grazing and a range of pollinator species.

Beyond the carbon reduction and cost-savings benefits of the solar farms, Penn State and Lightsource bp have a wider mission to maximize the sustainability impacts of solar farming in the U.S. with an approach that bolsters resilience in rural communities, fosters biodiversity, improves soil health and pollinator habitat, and provides a long-term living laboratory for students to innovate for a sustainable future.

The project contributes significantly to the ongoing efforts to reduce Penn State's greenhouse gas emissions and the State of Pennsylvania's goal to reduce its emissions by 80% from 2005 levels by 2050." 🐾

STUDENT FARM EXPANDS TO THREE PLUS ACRES & FOUR HIGH TUNNELS WITH FUNDING FROM KEIKO MIWA ROSS ENDOWMENT



Illustrations by Rachel Easley, SI
Graphic Design Intern

In December 2020, in recognition of Dr. Keiko Miwa Ross's generous support of Penn State's land-grant mission to educate the Commonwealth, the Student Farm at University Park was renamed the Dr. Keiko Miwa Ross Student Farm.

Dr. Ross, a resident of State College, donated \$2 million to the Student Farm. Her gift supports the farm's mission of serving as a living laboratory for students, providing freshly grown produce to the campus community, and showcasing innovative sustainable agricultural practices.

The Student Farm was originally established and piloted in 2016 with support from the Sustainability Institute, Campus Housing and Food Services, the College of Agricultural Sciences, and the Student Facilities Fee. Following the

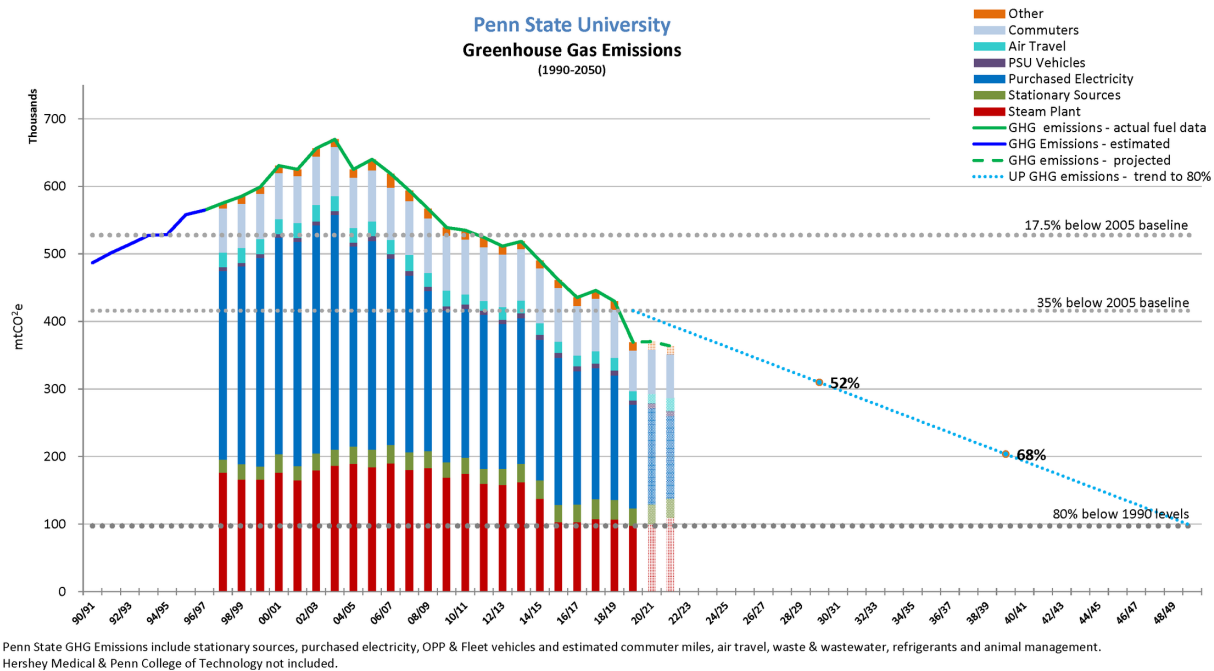
success of its four-year pilot, Penn State Executive Vice President and Provost Nick Jones approved funding to increase the farm's footprint from one to 3.6 acres. The expansion included installation of three high tunnels in June 2020, which enable year-round crop production, as well as frost-free water lines and electricity installed by the Office of the Physical Plant in the fall of 2020.

With this larger physical footprint, production space is increasing from 1.25 acres to two acres, with the remaining space allowing for expanded programming areas, farm facilities such as tool and equipment storage, and on-site refrigeration. 🐾



OPERATING SUSTAINABLY: PENN'S GREENHOUSE GAS EMISSIONS

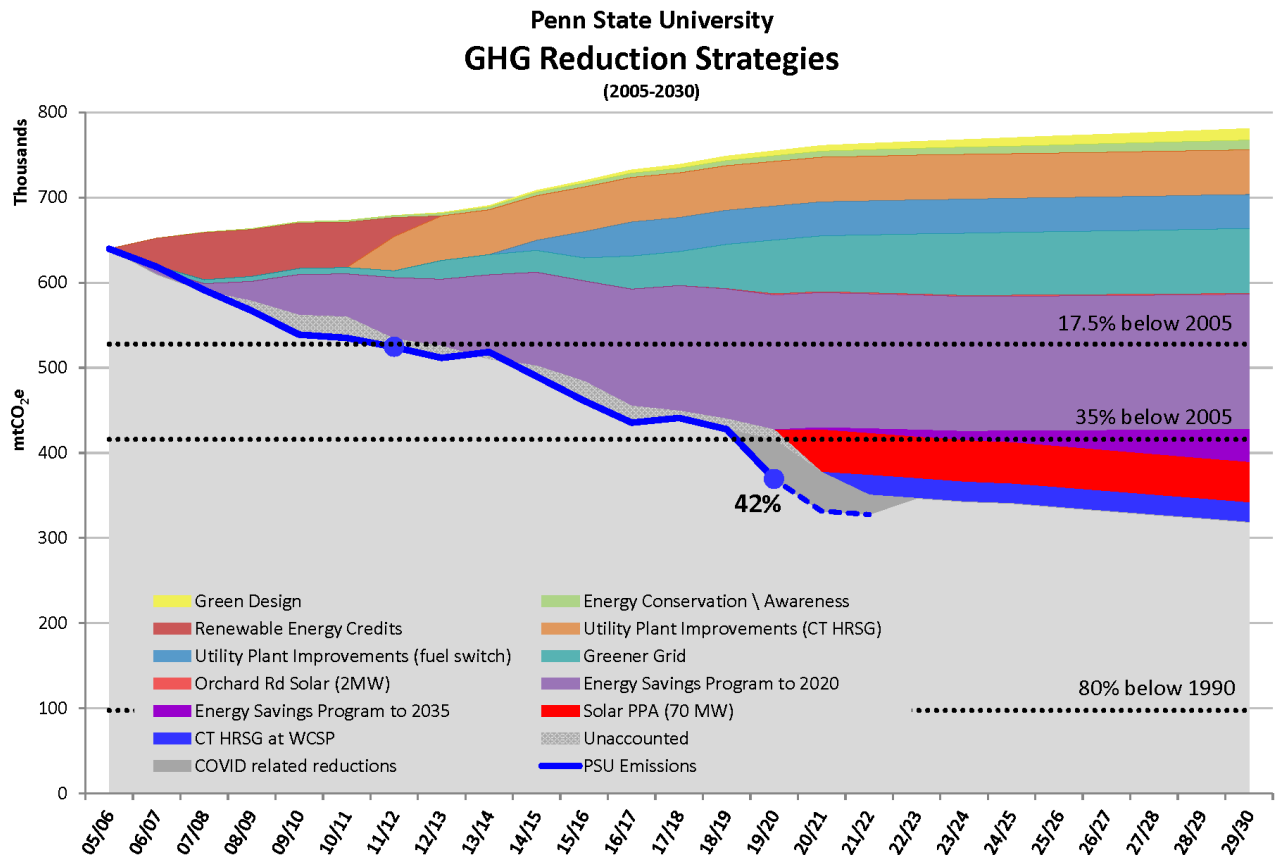
Penn State leads by example throughout its operational efforts and its commitment to reducing greenhouse gas emissions. In 2017, Penn State signed the "We Are Still In" pledge that affirmed the University's support of efforts to follow through with targets outlined in the Paris Climate Accord and to continue working towards the Penn State goal set in 2012 of a 35% reduction by 2020 from a 2005 baseline. These goals also reflect Pennsylvania's goals, signed by Gov. Wolf in January 2019, to reduce GHG emissions by 26 percent by 2025 and by 80 percent by 2050, compared to 2005 levels.



(Figure A)

Energy usage is the largest contributor to Penn State's emissions profile. Penn State has reduced its campus greenhouse gas emissions by 42 percent since 2005. In addition to converting the university's coal-fired power plant to natural gas, other significant reductions have been achieved by focusing on a foundation of energy conservation, increased efficiency, increased levels of combined heat and power (CHP), increased use of solar power, targeted renewable purchases, and awareness campaigns. 🐾

FORMATION OF THE CARBON EMISSIONS REDUCTION TASKFORCE



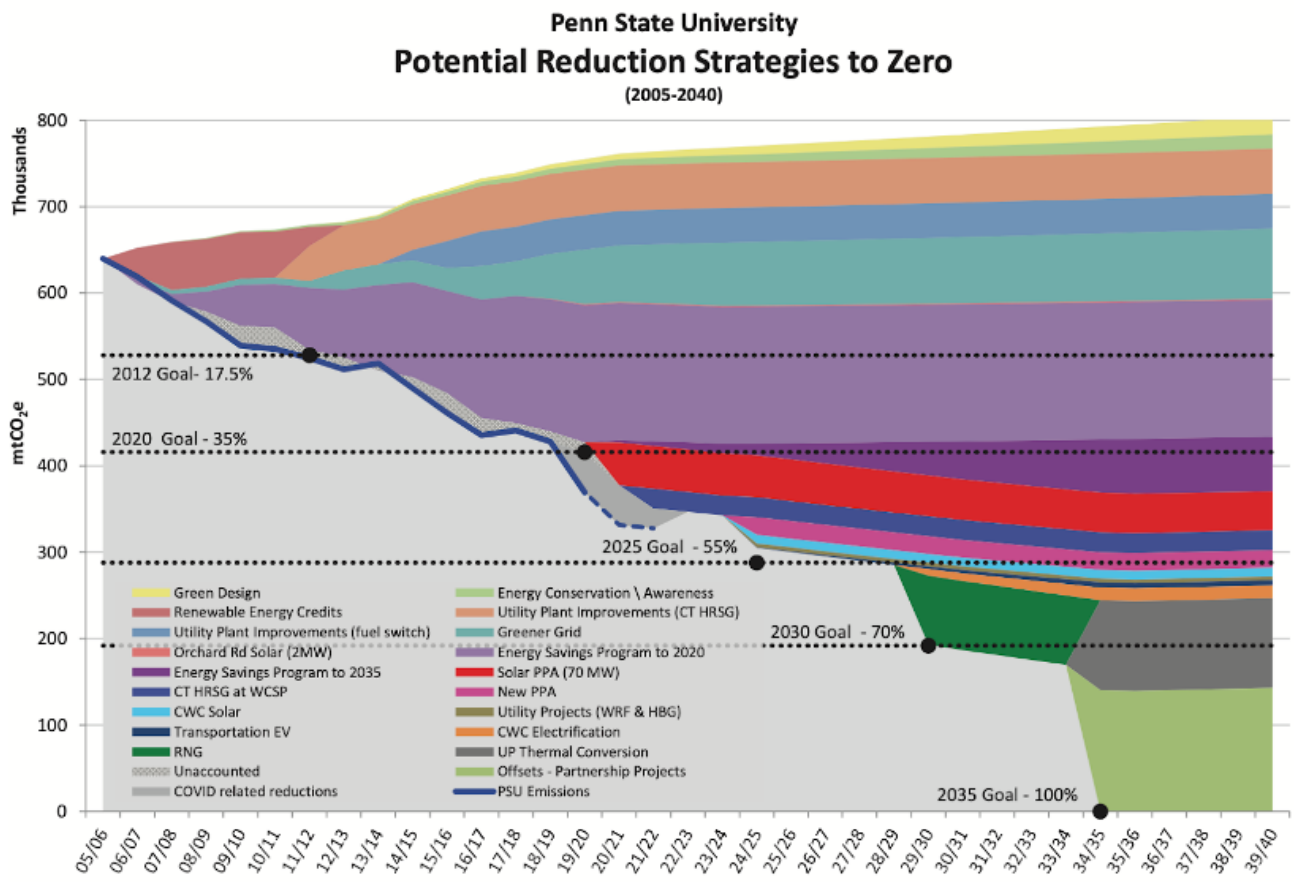
(Figure B)

At the direction of President Barron, Penn State formed a Carbon Emissions Reduction Task Force (CERTF) in the summer of 2021 with more than 20 core members, including faculty, staff, and students, charged with reconsidering Penn State’s greenhouse gas emissions goal and formulating a plan to achieve any revised goals. Additional subject matter experts contributed through ten subcommittees focused on everything from benchmarking our efforts against other Savings universities to considering our greenhouse gas impacts in specific sectors like transportation.

The team composed a comprehensive report outlining milestones and actions that will position the University as a leader in climate-smart solutions. The full report was presented to President Barron in December of 2021 and is now available to view online.

Recommendations include a phased approach to lower greenhouse gas emissions by 100 percent by 2035. Suggestions include but are not limited to:

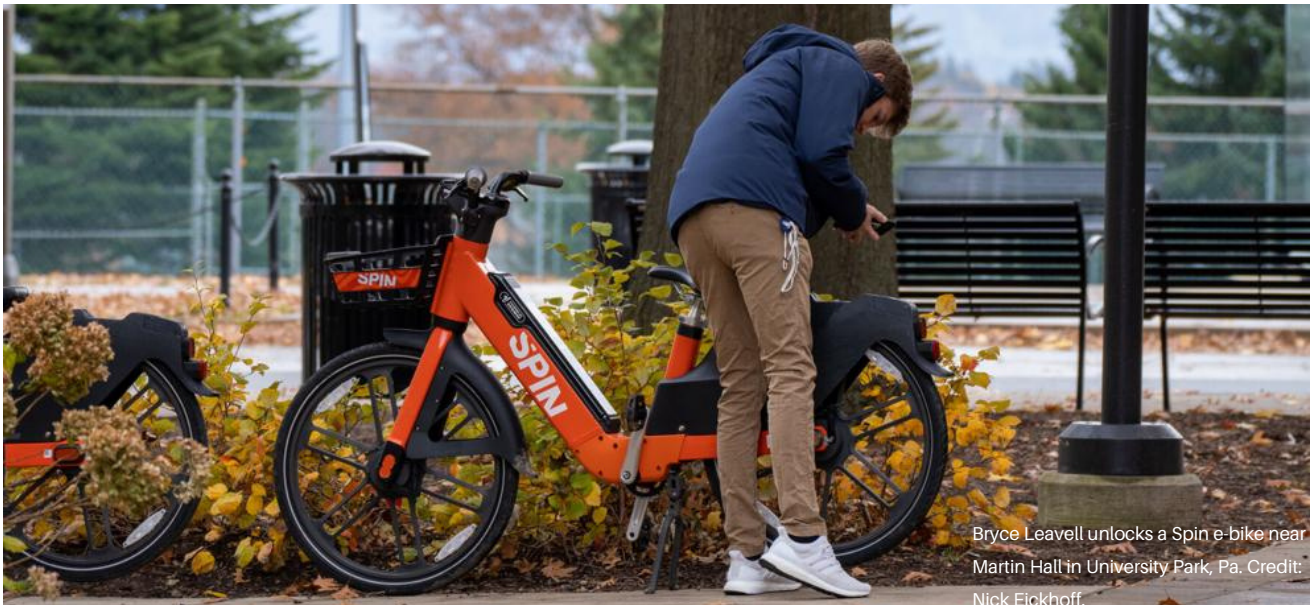
- Electrifying Penn State’s fleet vehicles
- Expanding solar infrastructure through public-private partnerships
- Decarbonizing building heating and cooling systems
- Continuing the existing Energy Savings Program
- Exploring philanthropy as a funding source for bold climate action
- Consider carbon emission metrics as part of procurement activities



(Figure C)

Figures A and B on the preceding pages reflect Penn State's current trends. Figure C shows a potential path forward to achieve the goals outlined in the CERTF report. 🐾

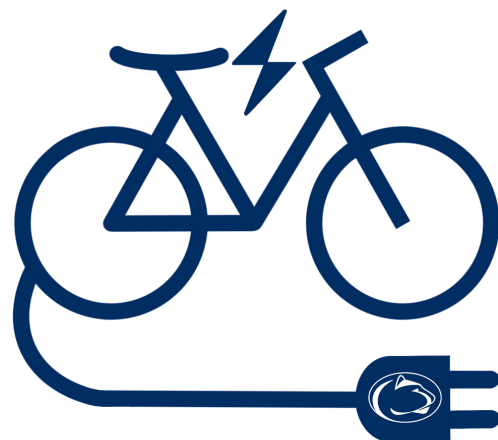
SPIN ELECTRIC-ASSIST BIKE SHARE PROGRAM COASTS INTO UNIVERSITY PARK



In August of 2021, Penn State Transportation Services partnered with the Borough of State College and Spin, a San Francisco-based micro-mobility unit of Ford Motor Co., to offer the Penn State and State College communities a new bike share program.

Approximately 300 Spin electric-assist (e-bikes) are available across campus and in the neighboring Borough of State College to offer both Penn State and community members convenient access to low-impact, sustainable transportation.

In 2021, the Penn State University Park campus was awarded the gold Bicycle Friendly University designation by the League of American Bicyclists for achievements in establishing and promoting biking on campus. The addition of Spin bikes builds on past achievements, making bicycling accessible to even more community members. 🐾

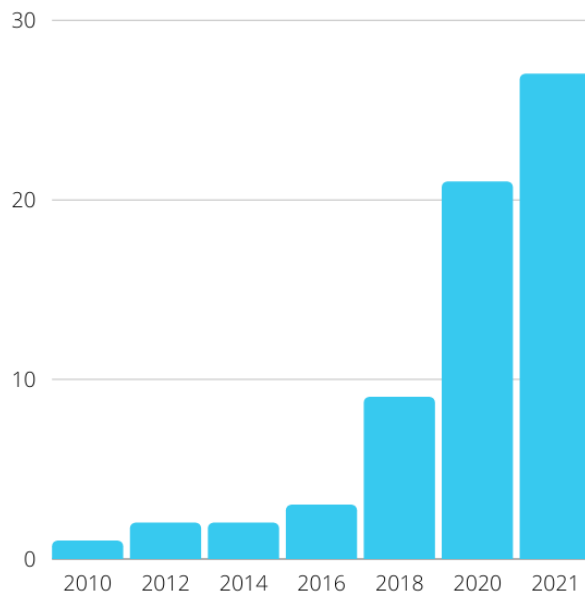


SUSTAINABILITY COUNCILS: COLLEGES, CAMPUSES, AND ADMINISTRATIVE UNITS

When Dr. Paul Shrivastava began his tenure as Penn State’s chief sustainability officer and the director of the Sustainability Institute in 2017, one of his first initiatives was inviting colleges, campuses, and units at Penn State to form Sustainability Councils with the aim of systemically and strategically advancing the University’s sustainability goals from within individual units. Three units had already established Councils before he arrived, with Penn State Altoona establishing the first in 2010.

Growth of Sustainability Councils by Year

Campus, College, and Units



Although Dr. Shrivastava envisioned a slow, progressive establishment of these councils, he was delighted to see a rapid movement with six created in 2018 and eight in 2019, so that by 2021, there were a total of 27 councils: 15 in the colleges and administrative units, 11 at the campuses, and one, the Sustainable Operations Council, representing Finance and Business units. The councils are comprised of hundreds of faculty members, staff, and administrators working to integrate sustainability into their unit’s operations, teaching, research and outreach. This is excellent progress, but there is still room for councils to be established in every unit that participates in the University’s strategic planning process. 🐾



Penn State, through its Green Paws Program, is creating a baseline of stewardship best practices, approached through both group and individual actions. Since its inception in 2012, over 2,300 Penn Staters have participated in this effective way for faculty and staff to deepen their understanding of sustainability concepts and their application to an office environment.

Recently, Green Paws was revised to offer a more holistic and robust understanding of sustainability. The program is now offered through the Canvas platform and presently consists of two levels of certification, rather than the previous model which featured four. Successful participants earn a certificate towards their Professional Development Training through the Learning Resource Network, and their office group, if they complete the level, is awarded a framed certificate, signed by the University's president and its chief sustainability officer and director of the Sustainability Institute.

"We felt that the Green Paws Program provided an opportunity to self-educate about sustainability issues, beyond the

stereotypical topics of recycling and clean water, and then use that expanded understanding to educate our business clients. It was a discovery process for us," said John Peterson of the Penn State Small Business Development Center whose unit recently completed the program.



Green Teams are groups of faculty, staff, and students volunteering to engage and educate their peers to help their organization (a college, department, building, etc.) operate in a more efficient, innovative, and healthy way. They focus on making their operations more sustainable through initiatives unique to their departments and/or through implementation of the Green Paws Program. Currently, the University has 30 Green Teams operating across several colleges and units, with 8 teams at the Commonwealth Campuses. This network of change agents works with the Sustainability Councils, which have been formed to strategically advance the University's sustainability goals, matching the sustainability work to each college and unit's unique mission. The Sustainability Institute supports the Green Teams with information, resources, and training. 🐾

RANKINGS AND RATINGS

Penn State is dedicated to tracking our progress in sustainability to improve performance and to measure progress towards our sustainability goals. Our most recent achievements highlight research as a sector of sustainability where we especially are excelling.



STARS: Sustainability Tracking, Assessment & Rating System

In 2020, the University Park campus earned a gold ranking in STARS (a program of the Association for the Advancement of Sustainability in Higher Education), with a score of 74.49--the highest among all participating Big Ten universities--and with full points received for the Research category.

In 2020, Penn State Behrend also earned a bronze rating from STARS. It is the first Penn State Commonwealth campus to earn a STARS rating.



Times Higher Education Impact Rankings

In 2020, Penn State participated for the first time in the Times Higher Education Impact Ranking, a truly global assessment, with 1,115 universities from more than 85 nations participating. The assessment is structured around the 17 UN Sustainable Development Goals and uses indicators to provide comparisons across three broad areas: research, outreach, and stewardship. The 2021 ranking showed Penn State in 32nd place globally, and 4th among US universities.

Penn State ranks number 14 nationally and number two in the Big Ten in terms of total kilowatt-hours of green energy used, according to the U.S. Environmental Protection Agency Top 30 College & University List of largest green power users from the Green Power Partnership.



FINDING YOUR ROLE IN SUSTAINABILITY AT PENN STATE

Penn Staters have a long history of sustainability involvement and the need for action remains urgent. By getting involved with sustainability initiatives across a variety of disciplines, we can improve our lives and the lives of others through steps big and small.

Opportunities for Everyone

- Sign up to receive *Mainstream*, the bi-weekly e-newsletter from the Sustainability Institute (SI)
- Join the SI Affiliate Program
- Attend sustainability-related events
- Lead your office in its Green Paws certification
- Connect with the Sustainability Council at your college, campus or unit
- Request information about the Sustainability Planning Guidebook

Opportunities for Students

- Join a student organization that advances one or more of the Sustainable Development Goals
- Consider whether the Sustainability Leadership Minor might be the right fit for you
- Understand the roles of student government organizations at Penn State
- Dig into programs related to the Student Farm at Penn State and other campus gardens

Opportunities for Faculty and Staff

- Join or establish a Green Team in your office

Giving Opportunities

Those seeking to make a positive difference through the advancement of sustainability efforts at Penn State and around the globe can do so through a contribution to the Sustainability Institute. Contact the Institute today to discuss the many opportunities to make an impact.

Partnership Possibilities

Corporate sponsorships make it possible for the Sustainability Institute to reach more individuals and sustainability goals throughout the year. To discuss partnership possibilities, please contact Dr. Meghan Hoskins, Director of Operations and Partnerships at the Sustainability Institute, at meh200@psu.edu. 



NURTURING DEEP DECARBONIZATION

The need to address today’s global challenges is an urgent one that will not be advanced through modest actions. In 2022, in response to growing necessity, the theme of our work at the Sustainability Institute will be “Nurturing Deep Decarbonization - Advancing Bold Reduction in Climate Impact.”

It is the responsibility of every individual, organization, community, and nation to face the challenges associated with the development and implementation of deep decarbonization strategies in the coming year. As individual citizens and community members, it is our duty to act in our respective capacities towards this group effort.

This year’s theme refers to our encouragement of the economic, technological, and policy changes necessary to drive our collective educational, operational, and outreach efforts. 🐾

STAY IN TOUCH

Email: sustainability@psu.edu

Web: www.sustainability.psu.edu

Social: [@sustainPSU](https://www.instagram.com/sustainPSU)

Data Dashboard: sustainability.psu.edu/campus-efforts/by-the-numbers/view-our-progress/



SPECIAL THANKS

Prepared by Sierra Keller, director of communications for the Sustainability Institute at Penn State, with assistance from the Sustainability Institute communications intern team: Halina Dingo, writing intern, and Rachel Easley, graphic design intern. We offer gratitude to the countless individuals across Penn State who provided input to share the sustainability achievements and highlights within their campuses and units.



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Credit: Penn State.