



President's Sustainability
Advisory Committee

2017-2018 State of Campus Sustainability Report



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Executive Summary

Sustainability implies that the activities of the University of Kentucky are ecologically sound, socially responsible, and economically viable; and that they will continue to be so for future generations. A sustainability focus also encourages the integration of these principles in curricula, research and outreach. This principled approach to operational practices and intellectual pursuits prepares students and empowers the campus community to support sustainable development in the Commonwealth and beyond. Dr. Eric Monday, UK EVPFA, succinctly captured the importance of sustainability for our campus in a recent (7.9.2018) blog post that he opened by stating:

“When we think about our mission at the University of Kentucky—to improve the lives of Kentuckians and beyond—environmental stewardship and sustainability are core parts of our legacy.”

This report highlights the key efforts and achievements of the past year by UK’s Sustainability leadership bodies. It is important to note that sustainability has blossomed at the University of Kentucky over the past decade, and is now manifest in a broad set of initiatives, guiding documents, and academic and operational programs. Several of these efforts culminated in 2017-2018 and provide a carefully crafted, interdisciplinary and inclusive foundation that can/will:

- Support the University’s mission
- Create differentiating engagement opportunities for our students, faculty, and staff; and
- Facilitate dynamic, engaging progress toward our sustainability goals

This report is organized into three parts: 1) Annual summaries of the efforts of sustainability-focused leadership bodies/entities; 2) Key plans and reports published in the past year; and 3) Progress and projects made possible through the Sustainability Challenge Grant Program.

Goals for 2018-2019

The President’s Sustainability Advisory Committee will continue to address the responsibilities it has been assigned through AR 6:8¹. In addition to these standing charges, we have identified the following accomplishments as the most critical to our continued success:

- Enhance the capacity of the Office of Sustainability to address the growing responsibilities and opportunities that have emerged from our past successes.
- Support the implementation of the Faculty Sustainability Council’s recommendations².
- Chart a course to achieving Gold Status on the Association for the Advancement of Sustainability in Higher Education’s (AASHE) Sustainability Tracking Assessment and Rating Systems (STARS) report by 2020 (Currently Silver³).
- Broaden the engagement of Colleges, Centers and Institutes with the Sustainability Challenge Grant Program.
- Establish October as Campus Sustainability Month.

¹ AR 6:8 was revised in the summer of 2018 and a copy of the new AR is included as an appendix to this report. The revision updated the composition of the committee to better represent our campus community and, where needed, aligned the committee responsibilities with current campus priorities.

² See *Faculty Sustainability Council Report to Provost* in Section 2.

³ Appendix B -Executive summary of the 2015 STARS Report. We will submit a new report later this year.

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Leadership Efforts

In addition to the President's Sustainability Advisory Committee, there are several other leadership bodies on campus that are helping advance our sustainability initiatives. This sections provides a brief summary of each along with highlights of their accomplishments in 2017-2018.

Faculty Sustainability Council (Provost)

The Faculty Sustainability Council (FSC) is a technical advisory group to the President's Sustainability Advisory Committee (PSAC), appointed by the Provost, and charged with:

1. Review the efforts of benchmarks and national leaders at integrating sustainability with their curriculum and research
2. Evaluate strengths, weaknesses, opportunities and challenges of the current of state of sustainability in the curriculum and research at UK
3. Propose short, medium and long-term goals for better supporting and promoting this integration
4. Set in place an assessment and evaluation process

The FSC completed its report in May and presented the report to Provost Blackwell in July. The Provost requested that the FSC be re-charged with implementation of the recommendations in the report. Their report is included in the *Reports and Plans* section of this report.

There are multiple academic degree and certificate programs, housed within several colleges, which are enhancing the integration of sustainability in our curricular and research efforts. These are highlighted in the FSC report to the provost.

Student Sustainability Council (Student)

The Student Sustainability Council was formed in 2009 to supervise the distribution of the Environmental Stewardship Fee in order to responsibly advance the theory, practice and reality of Sustainability at the University of Kentucky. Any member of the University of Kentucky community can submit a proposal for funding support. The group is composed of at-large members selected based on the merits of their applications, and representatives from the student organizations included in the group's constitution. The current mandatory fee of \$4.50 per student, per semester will generate approximately \$190,000 for 2018-2019.

The SSC distributed its \$1 millionth dollar in 2017-2018 in support of sustainability projects at UK. A full report on the work of the SSC and the projects they funded is included in the following section of this report.

UK HealthCare Sustainability Steering Committee

Sustainability is a core principle in the University of Kentucky Master Plan and UK Healthcare, an international leader in research and patient care, is well positioned to support the University's commitment by becoming a national leader in sustainability-focused efforts specific to the healthcare industry. To that end, the mission of this work group is three-fold:

1. Identify challenges and opportunities for integrating sustainability initiatives with the operations, policies, planning and programming efforts of UK Healthcare,
2. Recommend triple-bottom-line-driven solutions to UK Healthcare Administration and
3. Assist with the implementation, coordination and assessment of data-driven sustainability initiatives supported by UK Healthcare Leadership

The potential initiatives undertaken by this group can range from active transportation-focused efforts and procurement policies, to best practices in energy efficiency and sustainable food systems, and everything in between. However, the initial effort of this Work Group shall be focused on developing recommendations for a set of comprehensive waste reduction strategies that safeguard staff and patients from improperly disposed of waste and maximize cost avoidance. The group shall meet quarterly and may establish work groups as needed to address specific issues. Accomplishments:

- Added Recycling where needed and continued education
- Battery recycling - in 2017 recycled 6.7 tons and so far in 2018 recycled 2.57 tons
- Expanded Blue wrap recycling program – in 2017 5.32 tons and so far in 2018 recycled 4.27 tons
- Added a recycling compactor to the new Linen Dock
- Added plastic film recycling – in 2017 recycled 2.14 tons and so far in 2018 3.39 tons
- Relaunched Nursing Sustainability Group
- Continued recycling PHI (Confidential paper) – in 2017 494 tons and so far in 2018 recycled 311 tons

Goals and Plans for the coming year:

- Begin using Practice Green Health
- Implementing Sustainability Strategic Plan
- Look into Food Waste diversion and composting
- Continue to reduce Styrofoam use by providing reuse options for staff and patients

UK Athletics Sustainability Team

UK Athletics, under the leadership of Kevin Saal and Scott Geisinger, established a Sustainability Team in the fall of 2017. The team includes stakeholders from across Athletics operations and the UK Sustainability Coordinator. This group was charged with identifying targets and goals in support of the University's Sustainability Strategic Plan. Toward this end, they developed a Sustainability Action Plan (included in the following section) and created a website for communicating their plan (www.ukathletics.com/sustainability).

Office of Sustainability (Facilities Management)

The Office of Sustainability (established 2009) is led by Shane Tedder, UK's Sustainability Coordinator. The Office reports directly to the Vice President for Facilities Management, and works broadly with stakeholders across campus and community. The Office provides direct support to all of the leadership bodies listed above and also leads or co-leads the following initiatives:

- Sustainability Strategic Plan and reporting
- Emissions Reduction Plan and reporting
- The Sustainability Challenge Grant Program

- The Sustainability Internship Program
- The Pick It Up – Litter abatement program
- UK's Sustainability eNewsletter
- UK's STARS reports

This past year was a very productive year for the Office with several multiyear projects reaching major milestones. The Sustainability Strategic Plan and the University's Emissions Reduction Plans were both completed in 2017-2018 (both are included in the *Reports and Plans* section of this report). The groundwork was also laid for an exciting new partnership with UK Dining and UK Recycling to engage the UK community in efforts to reduce the plastic pollution resulting from single use plastic items. The Office secured funding for, and hired, a graduate assistant for 2018-2019. This will enhance the capacity of the office and improve the quality of existing efforts.

Tracy Farmer Institute for Sustainability and the Environment (VPR)

The Tracy Farmer Institute for Sustainability and the Environment was established in 2009, with the mission to improve built, natural and managed environments, thereby enhancing the health and well-being of Kentuckians and the global community. TFISE is a cross-college research institute, whose goal is to facilitate interdisciplinary efforts of faculty, staff and students to create transformative, new approaches to environmental and sustainability issues under-pinning today's grand challenge: providing the food, energy and water necessary to support an expanding global population in a sustainable manner in the face of a changing climate. The Institute promotes integrated transdisciplinary programs of fundamental and applied research in the physical, life, economic and social sciences, and is supported, developed and implemented by the Faculty of the Environment (FoTE), a group of over 100 faculty representing 55 University units and 15 community partners.

TFISE supports research, teaching and outreach/engagement activities of the FoTE by:

- Providing seed money and administrative support to active working groups with new exciting ideas
- Hosting an annual undergraduate and graduate level research showcase
- Assisting in the development/coordination of environmental and sustainability curricula
- Collaborating with other sustainability groups on campus to create new initiatives
- Promoting sustainability related activities from all across our campus on the TFISE website

The 2017-18 academic year was a year of ongoing support and partnerships, including our continued partnership with the Office of Sustainability to support the undergraduate student intern program, with 4 interns funded by TFISE; continued collaboration with the President's Sustainability Advisory Committee to maintain the highly successful Sustainability Challenge Grant program for faculty, staff and students, and other efforts of this group; and sponsorship of the university-wide Sustainability Forum to highlight the accomplishments of individual faculty and students as well as the Challenge Grant teams and provide research presentation opportunities for students. Additional TFISE accomplishments for the year include:

- Our annual "Water Week" received a Keys to Our Common Future mini grant for it's first ever inaugural Ignite presentations on water in relation to climate change.

- Design Week, which involved over 80 student, faculty, staff and LFUCG participants including working on a unique project plan tailored to the needs of each district
- Successful creation of two interdisciplinary undergraduate certificates from our working groups: 1) Certificate in Urban Forestry (Urban Forest Initiative), and 2) Certificate in Food Systems and Hunger Studies (Food Systems Initiative). We anticipate these certificates to populate in the Fall 2018 semester, the first Fall semester following approval by the UK Senate.



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Section 2 - Reports and Plans

- a) Sustainability Strategic Plan
- b) Emissions Reduction Plan
- c) Faculty Sustainability Council Report to Provost
- d) Student Sustainability Council Annual Report
- e) UK Athletics Sustainability Action Plan

University of Kentucky.

SUSTAINABILITY STRATEGIC PLAN

 Sustainability



THE SUSTAINABILITY STRATEGIC PLAN STEERING COMMITTEE

The Sustainability Strategic Plan Steering Committee was established by Mary Vosevich, Vice President for Facilities Management, in September of 2016.

CHARGE

Develop a campus sustainability strategic plan to guide the University’s efforts and investment of resources relative to sustainability in campus operations for the next five years. Engage the campus community in the development of the plan.

MEMBERS

Rachel Cook,

Student - Double majoring in Natural Resource and Environmental Science and Environmental and Sustainability Studies (2019)

Melody Flowers,

Office of the Executive Vice President for Finance and Administration

Whitney Harder,

Public Relations and Marketing

Bill Harris,

Director of Purchasing

Mari Long,

Waste Management and Recycling

Rebecca McCulley,

Director of the Tracy Farmer Institute for Sustainability and the Environment

Lauren Renée Moore,

Sustainability Manager for UK Dining

Judy Needham,

Campus Planning

Shane Tedder,

Campus Sustainability Coordinator

Ben Troupe,

Student - Philosophy with minor in Political Science (2018)

Jeff Zumwalt,

Director of Utilities and Energy Management

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THIS IS A LIVING DOCUMENT.

The University released this draft of the Sustainability Strategic Plan in the spring of 2018. Updates to the document will be posted at www.uky.edu/sustainability/strategicplan. Please send all comments and suggestions to Shane Tedder at shane.tedder@uky.edu.

Letter from the President

Sustainability is essential in industries, endeavors and communities across the world.

Indeed, it is a value of the University of Kentucky as a leader in education, research and innovation. As Kentucky's university, we are charged with addressing the challenges that confront our Commonwealth and those we serve beyond its borders. As such, we have both a moral imperative and financial obligation to implement practices that streamline and build capacity as a sustainable campus.

As an institutional priority, sustainable practice has guided our work over the last several years. It is one of the principles guiding our Campus Master Plan, and has helped shape the remarkable physical transformation of the University in recent years:

- Since 2010, new construction projects have targeted Leadership in Energy and Environmental Design (LEED) Certification by the Green Building Council.
- Our commitment to sustainability led to our bold efforts to reduce our carbon footprint by 25 percent by 2025.
- The University's Transportation Master Plan is changing our campus by encouraging multi-modal transportation and improving our bicycle, pedestrian and public transit infrastructure.
- Since 2011, UK has received annual recognition as a Tree Campus USA campus by the Arbor Day Foundation for our commitment to restoring the campus tree canopy.

As a learning institution, the University engages in this work by collaborating with faculty, staff and students across all colleges and departments. Sustainability efforts have been integrated into research programs and classroom coursework.


The Sustainability Challenge Grant Program, for example, has provided \$700,000 in funding for more than 20 faculty- or staff-led projects. Across all fields of study, discovery and service, we provide every member of our campus community with opportunities to engage with our physical campus as a living laboratory for cultivating and testing ideas promoting sustainable development.

Institutions of higher learning play vital leadership roles in the communities they serve. They contribute to economic success, ensure social well-being and enhance our shared sense of place.

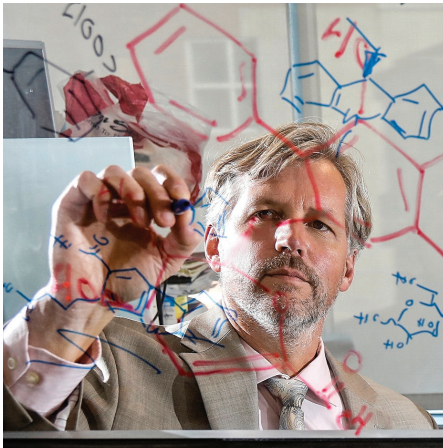
Sustainability is a crucial component of that leadership role, and this document highlights our future commitment to sustainable practice.

The "Sustainability Strategic Plan" will guide our effort to more fully embrace this institutional priority across the academic, research and health care enterprise. As importantly, it will guide the integration of these practices with all facets of campus operations over the next five years - a future bright with the potential for growth in our mission and in our commitment to sustainability that benefits this campus and the Commonwealth we serve.

Sincerely,



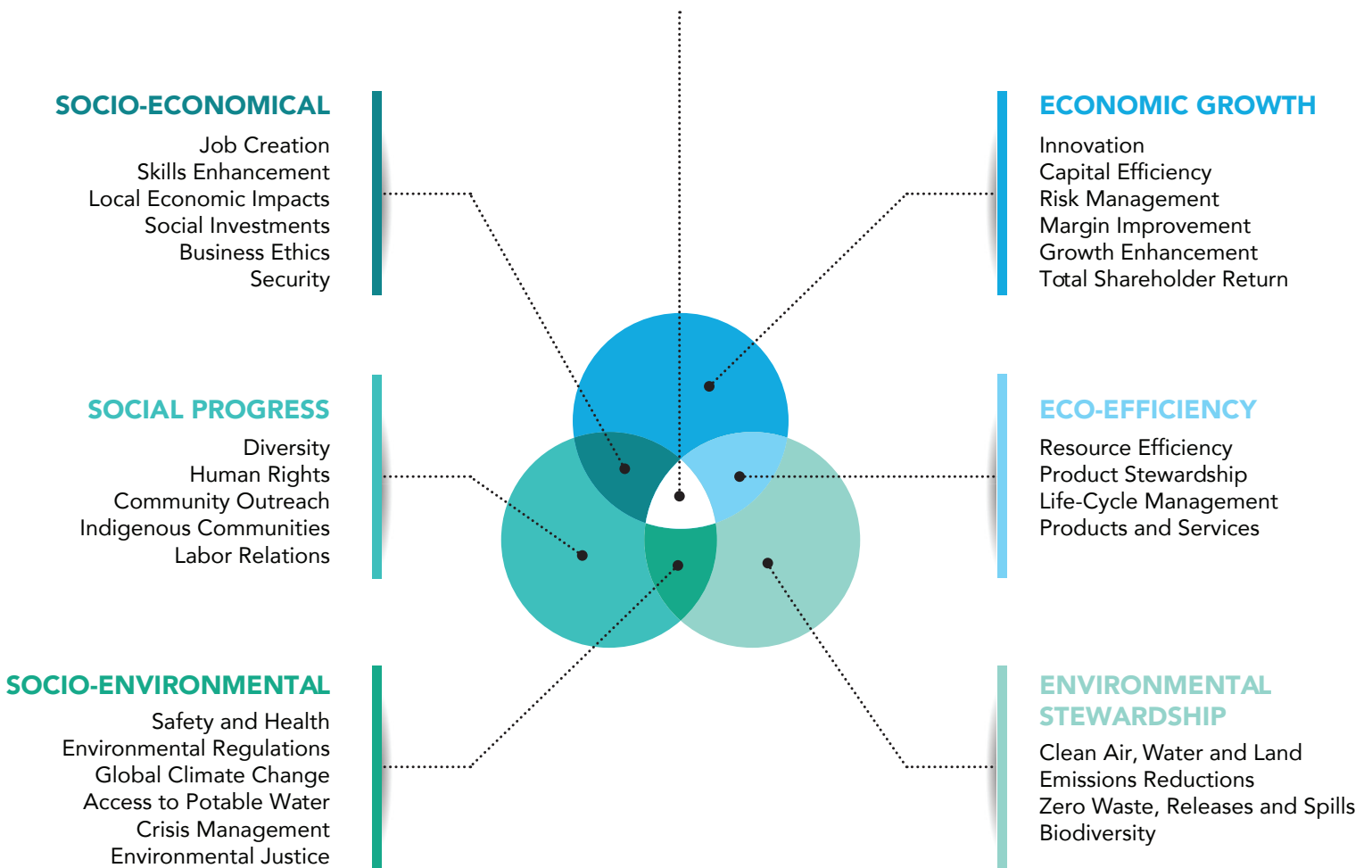
Eli Capilouto, President



Executive Summary

Sustainability implies that the activities of the University of Kentucky are ecologically sound, socially responsible and economically viable; and that they will continue to be so for future generations. A sustainability focus also encourages the integration of these principles in curricula, research and outreach. This principled approach to operational practices and intellectual pursuits prepares students and empowers the campus community to support sustainable development in the Commonwealth and beyond.

SUSTAINABILITY



Sustainability has blossomed at the University of Kentucky over the last decade and is now manifest in a broad set of initiatives, programs and guiding documents. A team of students, staff and faculty assisted the UK Office of Sustainability in the creation of this plan to guide the University's efforts relative to sustainability in campus operations for the next five years. Tactic teams, working with input from the campus community, selected six operational areas of focus and developed strategies, tactics and action items for each.

STRATEGIES



1. MATERIALS MANAGEMENT:

Gain a deeper understanding of the life cycle of materials at UK; engage in education, waste reduction and landfill diversion; and improve the sustainability of material purchased across all areas of the University. These efforts will include materials from day-to-day operations, public-private partnerships and new construction.



2. ENERGY:

Reduce the financial, social and environmental impacts of campus energy consumption through conservation, efficiency and production/delivery system improvements.



3. FOOD AND DINING SERVICES:

Implement innovative strategies for a comprehensive and increasingly sustainable campus food system. Enhance existing practices and develop new initiatives in the areas of procurement, operations and disposal across all dining services.



4. TRANSPORTATION:

Promote safety, health and environmental stewardship by providing incentives and programs designed to increase the number of faculty, staff and students using sustainable transportation options.



5. BUILDINGS AND GROUNDS:

Design, construct, operate and maintain spaces that support the mission of the University while promoting environmental stewardship and the well-being of the community.



6. GREENHOUSE GAS EMISSIONS:

Reduce the greenhouse gas emissions of the campus to 25 percent below 2010 levels by 2025.



Sustainability Strategic Plan

INTRODUCTION

The University of Kentucky is a public, land grant university dedicated to improving people's lives through excellence in education, research and creative work, service and health care. As Kentucky's flagship institution, the University plays a critical leadership role by promoting diversity, inclusion, economic development and human well-being.

Though not explicit in this mission statement, sustainability is an institutional priority of growing importance and integration at the University of Kentucky. We strive to ensure that the activities of our campus are ecologically sound, socially responsible and economically viable; and that they will continue to be so for future generations. This focus also encourages the integration of these principles in the teaching, research and outreach efforts of our community. Through this principled approach to operational practices and intellectual pursuits, we strive to prepare students and empower the campus community to support sustainable development in the Commonwealth and beyond.

This document will serve as a guide to the integration of sustainability with the operations of the University of Kentucky for the next five years. Specific performance targets are set for tactics organized by six key operational focus areas. The scope, components, process and organization used in developing this plan are described in detail below.

BACKGROUND

Sustainability was included as one of the seven core principles in the Campus Master Plan adopted in 2014 and has been an important component of all the planning documents that have been adopted since, including the Transportation Master Plan, the Campus Landscape Guidelines and the Utilities Master Plan. UK collaborated with a private sector partner in 2016 to conduct an in-depth evaluation of campus operations. The establishment of campus-wide sustainability targets was one of the key recommendations of the resulting report and served as a catalyst for development of this plan.



SCOPE

This plan encompasses the operational aspects of the University’s core academic campus in Lexington, Kentucky. This includes UK Athletics, UK HealthCare, and our partners in housing and dining.

By the numbers, the operational areas included in this plan cover:

- More than 19 million gross square feet of building space in more than 400 buildings connected across an 800-acre campus with an urban forest of over 9,000 trees that provide a 17 percent canopy cover.
- 20 miles of roadway, 75 miles of sidewalks and 16 miles of dedicated bicycle facilities connect the campus.
- Utilities consumption of \$23 million of electricity, 600 million gallons of water, and on-campus production of 1,200,000 mmbtus of steam in natural gas and coal boilers at three campus heating plants.
- More than 30,000 students, 12,000 employees and thousands of patients and visitors.
- More than a half million metric tons of greenhouse gas emissions annually.

This plan does not set specific goals for integrating sustainability with curriculum and research, and does not set targets for student involvement. Independent efforts are underway to set goals for the integration of sustainability within the curricula and research initiatives of the University. Similarly, student efforts to promote sustainability are critically important and growing in number. A summary of these efforts is provided on the following pages.

COMPONENTS

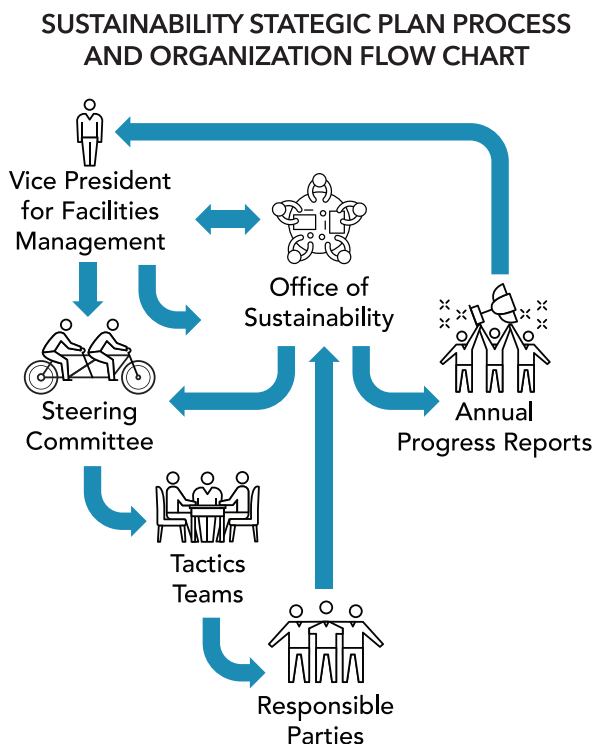
Strategies, action items, target dates, performance measures and responsible parties are the structural components used to organize the plan. Strategies are high-level directives focused on sustainability and encompassing multiple operational units. Tactics are quantified targets related to fulfilling the strategy. Action items are deliverables necessary to complete each tactic. Measures of success are the performance metrics that will be used to track progress toward the completion of each action item. The diagram below provides a description of each of these components and illustrates how they relate to one another.



PROCESS AND ORGANIZATION

UK's Vice President for Facilities Management, Mary Vosevich, charged the Office of Sustainability with the creation of this plan and appointed a leadership team to the task in the fall of 2016. This steering committee, composed of students, staff and faculty, guided the creation of the plan and selected six, interconnected areas of strategic focus. Six tactic teams, composed of key campus stakeholders, developed the tactics and action items associated with the strategic areas listed below.

- **MATERIALS MANAGEMENT:** The life cycle of the goods and services that we purchase, including use, reuse/recycling and disposal.
- **ENERGY:** The production, delivery and consumption of the heat and electricity used by the campus.
- **FOOD AND DINING SERVICES:** The sources and processes that provide food and dining options to the campus.
- **TRANSPORTATION:** The ways our community moves to, from and around our campus.
- **BUILDINGS AND GROUNDS:** The design, construction and maintenance of campus structures and green space.
- **GREENHOUSE GAS EMISSIONS:** The heat trapping gases produced by the activities of the campus.



The six key areas of emphasis for this plan were selected based on relevance to sustainability, connection to current campus priorities and existing efforts and resources. The strategies and tactics included in this five-year plan are not exhaustive of all possible areas for the integration of sustainability with campus operations. Rather, they represent the six areas identified as the most strategically important for the next five years by members of our community during the planning process.

CAMPUS ENGAGEMENT

More than 700 students, faculty, staff and community members provided input relative to the potential tactics for the plan through a campus-wide survey conducted in February 2017. The tactic teams carefully considered this feedback as they developed the scope and priorities for their tactics and action items. This plan is a living document. Please send feedback and suggestions regarding any aspect of the plan to Shane Tedder at shane.tedder@uky.edu.



STUDENT INITIATIVES

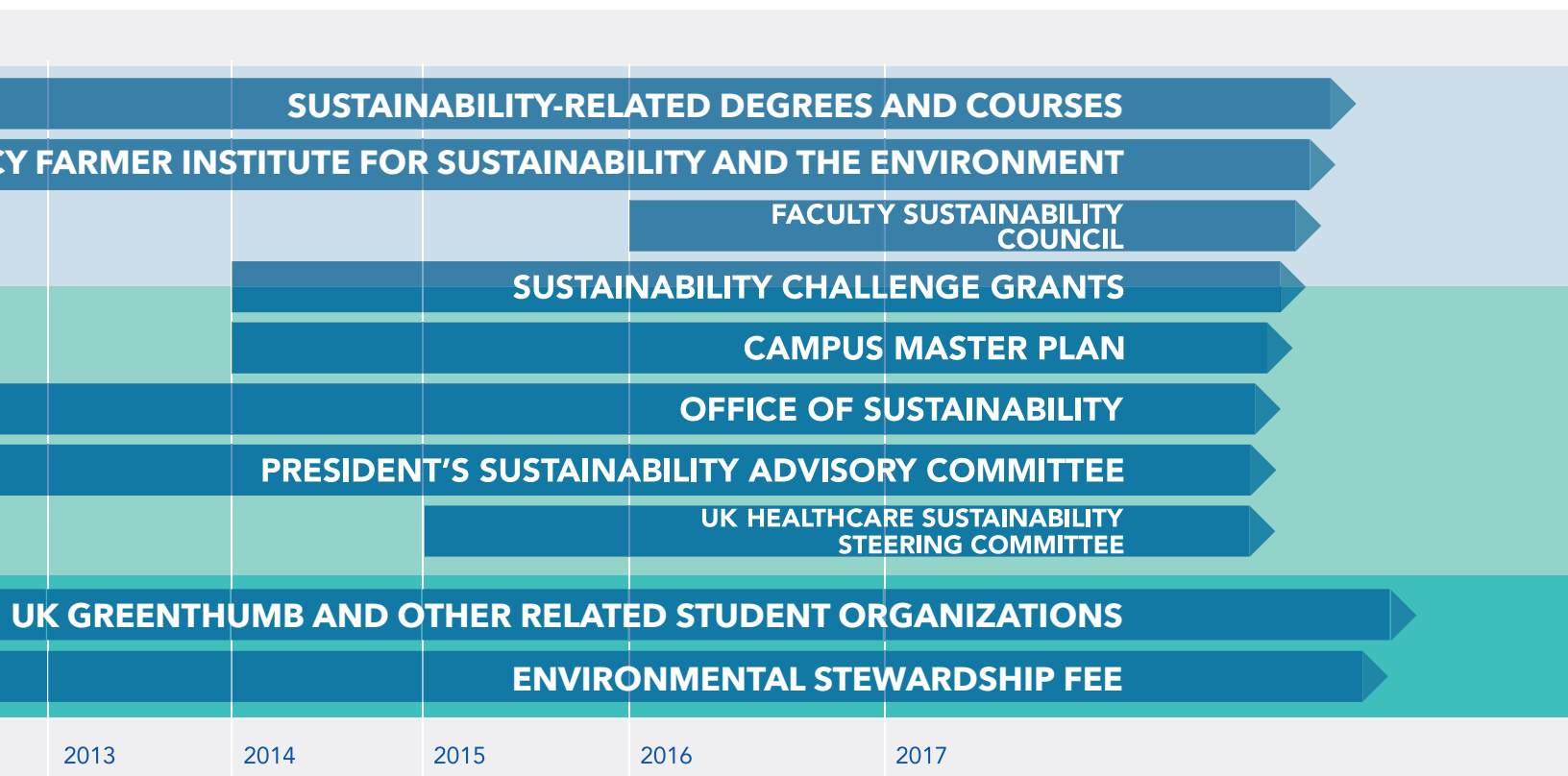
Student interest in sustainability at the University of Kentucky is strong and hundreds of students are involved in co-curricular initiatives and organizations that promote sustainability. The Student Sustainability Council invests more than \$190,000 in student-focused sustainability initiatives each year, and has been a major catalyst for sustainability at UK since 2009. Other organizations focus on specific aspects of sustainability. Campus Kitchens and Big Blue Pantry are two student initiatives dedicated to relieving hunger in our community by recovering and repurposing food from campus dining services, area farms, and local business that would have otherwise ended up in area landfills. The Lexington Environmental Youth Outreach (LEYO) works with public schools in Lexington to promote a passion for sustainability issues while providing marginalized youth in Lexington with skills necessary to combat environmental injustices. UK Greenthumb, a student environmental organization founded in the early 1990s, worked closely with the University over the past few years to promote the adoption of an emissions reduction commitment. The efforts described above highlight just a few key student initiatives. For more information on student efforts, visit www.uky.edu/sustainability/student-organizations.

THE UNIVERSITY OF KENTUCKY EMISSIONS REDUCTION COMMITMENT

On December 15, 2016, the University established its first Greenhouse Gas Emissions Reduction Commitment. That commitment, a 25 percent reduction in emissions by 2025, has been included in this plan as one of the six core strategies. The effort to establish this commitment predates the work of developing this plan by several years and the timeframe for achieving the emissions reduction is slightly longer than the period for the other strategies. A task force established by the President’s Sustainability Advisory Committee has developed a draft implementation plan for the emissions reduction commitment. As a result, the format of the emission reduction strategy section is slightly different from that of the other strategies in this plan. For more detailed information on the Greenhouse Gas Emissions Reduction Commitment, visit www.uky.edu/sustainability/greenhouse-gas-emissions-reduction-commitment.

TRACKING PROGRESS AND ANNUAL REPORTS

The Office of Sustainability will track and report progress toward the goals in this report on an annual basis. The website www.uky.edu/sustainability/sustainability-strategic-plan will include progress reports and a detailed annual report will be shared with the campus each fall.









TACTIC TEAMS

Each tactic team was chaired by a member of the Sustainability Strategic Plan Steering Committee. Each team was charged with developing a list of potential tactics for their respective areas. The teams selected the final tactics for this plan after considering the feedback received from the campus community. For each tactic, the teams also developed action items, target dates, performance measures and responsible parties.



Materials Management Team

Steve Feese
 Scott Henry
 Debbie Konichek
 Mari Long
 Nathan Maiwald
 Esther Moberly (chair)
 Lauren Moore
 Sarah Nikirk
 Cassie Odom (student)



Energy Team

Richard Krysiak
 Ron Mercer
 Britney Ragland
 Galen Tolliver
 Ben Troupe (student)
 Zack Tyler
 Carter Whitton
 Jeff Zumwalt (chair)



Food and Dining Services Team

Lilian Brislen
 Madison Elder (student)
 Bill Harris (co-chair)
 Scott Henry
 Lee Meyer
 Lauren Moore (co-chair)
 Bradley Scarboro
 Erika Wilkins



Transportation Team

Sandra Broadus
 Melody Flowers (chair)
 Stuart Kearns
 Judy Needham
 Lee Poore
 Shane Tedder
 Chrissie Tune



Buildings and Grounds Team

Stacy Borden
 Bob Brashear
 Kelvin Bright
 Dall Clark
 Tim Clark
 Jerry Hart
 Krishna Hobbs
 Chris Sass
 Martin Summers
 Shane Tedder (chair)
 Helen Turner



Greenhouse Gas Emissions Reduction Team

John Garlasco (student)
 Tyler Hill (student)
 Bob Kjelland
 Britney Ragland
 Andrea Smith
 Shane Tedder (chair)
 Alice Turkington
 Paul Vincelli
 George Wagner
 Jeff Zumwalt



MATERIALS MANAGEMENT

Gain a deeper understanding of the life cycle of materials at UK; engage in education, waste reduction and landfill diversion; and seek to improve the sustainability of material purchased across all areas of the University.

Using our purchasing power to promote sustainable, resilient economies and moving toward zero waste by reducing, reusing and recycling are two critical and connected components of sustainability in the University's operations. Together these processes can be considered as materials management. Reducing the generation of waste decreases the flow of material to incinerators and landfills. These facilities produce greenhouse gas emissions, can contaminate air and groundwater supplies and may have disproportionate negative impacts on low-income communities. Human rights and working conditions can also be improved through purchasing protocols that prioritize human rights throughout the supply chain.

TACTICS



1. Increase UK's waste diversion rate to 50 percent



2. Develop and implement a sustainability purchasing protocol



3. Conduct waste audits to understand the University's waste stream and identify reduction, diversion and procurement improvements



4. Increase education and outreach on waste diversion/reduction and procurement practices

TACTICS AND ACTION ITEMS

1. Increase UK's waste diversion rate to 50 percent

- 1.1 Establish protocols for collecting, handling and tracking for these waste streams: surplus, recycling, organics, universal waste, medical waste and construction waste
- 1.2 Reduce production and increase diversion of organic waste, including food, pallets and other organics (i.e. limbs, leaves, tree stumps)
- 1.3 Increase waste diversion through the surplus program and other reuse programs
- 1.4 Increase recycling rate by 25 percent (vs. 2017) by expanding options and promoting participation
- 1.5 Increase waste diversion from construction and renovation projects and capture weight data for each project
- 1.6 Identify opportunities to increase waste diversion from UK HealthCare operations

2. Develop and implement a sustainability purchasing protocol

- 2.1 Assemble team to draft the protocol

- 2.2 Present protocol to President's Sustainability Advisory Committee for review
- 2.3 Present protocol to EVPFA for review and approval

3. Conduct waste audits to understand the University's waste stream and identify reduction, diversion and procurement improvements

- 3.1 Conduct waste audits
- 3.2 Use audit results to strategically identify waste minimization and diversion opportunities

4. Increase education and outreach on waste diversion/reduction and procurement practices

- 4.1 Create comprehensive outreach and education plan using audit results
- 4.2 Conduct targeted education and outreach efforts
- 4.3 Improve and expand web pages for Recycling, Waste Management and Surplus Property
- 4.4 Target print publications and request that they are printed on recycled content paper, include statements of recycled content and encourage recycling of the publication





ENERGY

Reduce the financial, social and environmental impacts of campus energy consumption through conservation, efficiency and production/delivery system improvements.

The primary use of energy at the University of Kentucky is to provide comfortable and effective environments for learning, research and health care. The energy used to power, heat and cool our campus comes from electricity we purchase from a private utility and on-campus combustion of natural gas and coal. Natural gas and coal are used for heating campus buildings, cooking and producing hot water. Electricity is used to produce chilled water and to provide ventilation, lighting and power. These functions are the University's primary source of greenhouse gas emissions and a significant component of campus operational expenses. Efforts to reduce campus energy use must include a thorough understanding of how our academic and health care activities consume energy. This understanding will help determine the best tactics for reducing energy consumption.

TACTICS



1. Optimize, renovate and upgrade buildings for energy efficiency



2. Optimize electricity used for campus lighting



3. Increase energy awareness



4. Optimize utility plants and distribution systems

TACTICS AND ACTION ITEMS

1. Optimize, renovate and upgrade buildings for energy efficiency

- 1.1 Work with private partner to achieve contractual targets for optimizing buildings for energy efficiency
- 1.2 Determine energy consumption of buildings and list in accordance with potential for energy conservation and synergy with capital plan
- 1.3 Identify energy saving projects in up to 10 buildings; focus on heating, ventilation and cooling improvements
- 1.4 Obtain funding for 2019 projects, assign to project team and complete projects
- 1.5 Repeat actions 1.2 and 1.3 for 2020, 2021 and 2022 projects

2. Optimize electricity used for campus lighting

- 2.1 Update campus standards for indoor and outdoor lighting
- 2.2 Create inventory of indoor and outdoor lighting with metrics and list in accordance with potential for energy conservation and synergy with capital plan
- 2.3 Identify up to 10 opportunities for optimizing lighting and develop a scope of work for each
- 2.4 Obtain funding for 2020 projects, assign to project team, complete projects
- 2.5 Repeat actions 2.3 and 2.4 for 2021 and 2022 projects

3. Increase energy awareness

- 3.1 Develop and distribute regular communications about energy awareness for the campus through a variety of channels
- 3.2 Develop and distribute key documents relative to campus energy awareness including energy policy, usage guidelines and an annual energy report

- 3.3 Organize and participate in campus outreach events focused on energy awareness

- 3.4 Develop and implement annual assessment instrument to track energy awareness among students and employees

4. Optimize utility plants and distribution systems

- 4.1 Survey campus utility distribution systems and identify, prioritize and implement efficiency improvements, such as targeting 85 percent return rate on condensate systems

- 4.2 Optimize heat exchangers with poor performance (low differential between the chilled water supply and return or Delta-T); target a minimum Delta-T of 10 degrees system wide

- 4.3 Improve plant metering to increase operator awareness of energy consumption in order to increase plant production efficiency

- 4.4 Establish preventative maintenance programs in these areas to sustain savings/performance





FOOD AND DINING SERVICES

Implement innovative strategies for a comprehensive and increasingly sustainable campus food system. Enhance existing practices and develop new initiatives in the areas of procurement, operations and disposal across all dining services.

Food is one of the areas where the importance of sustainability's triple bottom line is most clear. Sustainable food systems have far-reaching impacts for environments, economies and communities. The production of food has implications for land use, water quality, worker health and producer livelihoods. The preparation, transportation and distribution of food has implications for resource use, human health and hunger.

As an institution of higher education, we recognize the centrality of food and eating to campus operations and the lives of the UK community. We strive to promote ecological sustainability by emphasizing efficient operations, waste reduction and environmental stewardship in our procurement choices. We bring attention to economic sustainability through a focus on locally and fairly sourced products. We focus on community sustainability by prioritizing efforts to track and reduce food insecurity. Through the tactics of this strategic plan, we hope to raise awareness of the importance of food to the sustainability of human and ecological communities near and far.

TACTICS



1. Integrate sustainability metrics and targets in dining operations



2. Improve stakeholder engagement and education



3. Improve sustainability through local and sustainable purchasing goals



4. Work with dining units, catering and UK HealthCare to further integrate sustainability in the campus dining experience



5. Expand programs that address food insecurity

TACTICS AND ACTION ITEMS

1. Integrate sustainability metrics and targets in dining operations

- 1.1 Achieve annual increase in waste diversion rate
- 1.2 Pursue annual decrease in single use beverage cups and to go containers
- 1.3 Improve and track employee training related to sustainability
- 1.4 Minimize, with a goal of elimination, the use of polystyrene (foam) in all dining locations
- 1.5 Increase use of reusable containers by students and other customers

2. Improve stakeholder engagement and education

- 2.1 Increase student knowledge of food and dining sustainability year over year
- 2.2 Increase knowledge of dining and sustainability among non-student customers and staff year over year
- 2.3 Expand opportunities for stakeholder input on local and sustainable dining offerings and initiatives

3. Improve sustainability through purchasing goals

- 3.1 UK Dining shall increase the amount of its total Kentucky Farm and Food Business impact purchases year over year

3.2 Establish purchasing targets for the food and dining operations of UK HealthCare

3.3 Measure and increase the variety of sustainability certified food products offered on campus

3.4 Measure and increase the percentage of given products that fall under one or more sustainability certifications

4. Work with dining units, catering and UK HealthCare to further integrate sustainability in the campus dining experience

4.1 Promote and track dining and franchise participation in existing corporate social responsibility commitments

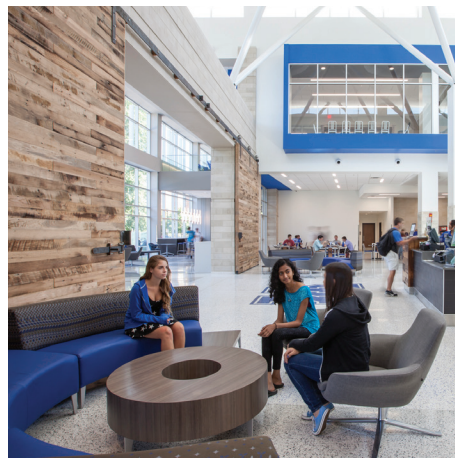
4.2 Improve vending product selection to include and market products with health and sustainability certifications

4.3 Develop and offer zero waste catering options

5. Expand programs that address food insecurity

5.1 Increase efforts to address food insecurity on campus and in the community

5.2 Collect data related to food insecurity from UK community





TRANSPORTATION

Promote safety, health and environmental stewardship by providing incentives and programs designed to increase the number of faculty, staff and students using sustainable transportation options.

As a large campus community consisting of more than 50,000 people visiting each day, we know that transportation is a crucial piece of the sustainability puzzle for the University of Kentucky. We aim to promote sustainability by providing students and employees with a wide variety of mobility choices, as well as encouraging sustainable transportation at an institutional level.

Bicycling, walking and public transit provide tangible health benefits and can mitigate the need for large and costly parking facilities. This helps preserve that space and capital for other uses and has a positive impact on air quality and storm water management. Reducing the demand for parking can also result in cost savings for individual members of the campus community. The tactics of this strategic plan highlight the importance of transportation mode choice to our community, economy and environment. These tactics also incentivize and promote alternatives to driving a single-occupancy vehicle.

TACTICS



1. Improve access to transit options and increase ridership



2. Expand and enhance campus bicycle infrastructure



3. Launch a commuter incentive program



4. Implement parking strategies and technology

TACTICS AND ACTION ITEMS

1. Improve access to transit options and increase ridership

- 1.1 Establish level of service standards for campus transit stops
- 1.2 Evaluate all transit stops on and adjacent to campus and develop a plan to bring all stops up to the newly established standards
- 1.3 Partner with Lextran to improve convenience and efficiency of public transit for campus commuters
- 1.4 Expand BluPass partnership with Lextran to provide free public transit to UK students and employees beyond 2019 with annual increases in ridership

2. Expand and enhance campus bicycle infrastructure

- 2.1 Add on-street facilities in strategic locations and enhance existing facilities
- 2.2 Increase quantity and quality of campus bike parking
- 2.3 Expand bicycle incentive programs, including the bike voucher program and Wildcat Wheels

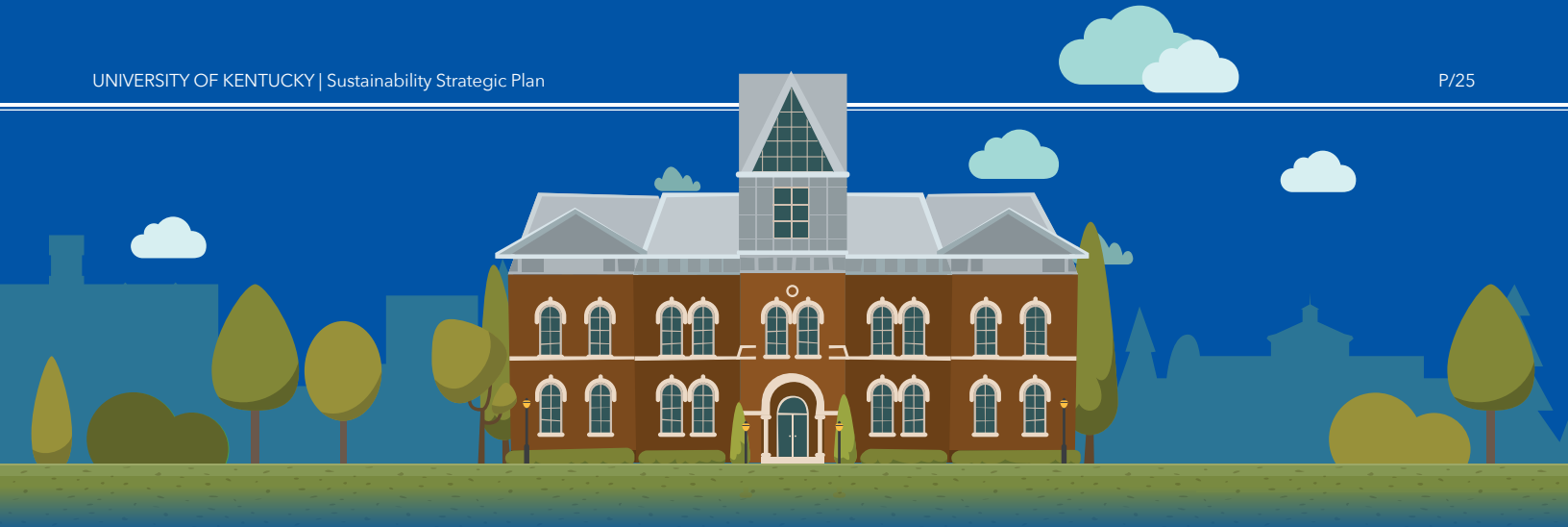
3. Launch a commute club program to incentivize transportation options other than driving alone

- 3.1 Implement a "cash out" program to encourage former permit holders not to renew parking permits
- 3.2 Assess and implement ride sharing options for the campus
- 3.3 Create and promote a robust and convenient guaranteed ride home service
- 3.4 Implement a personalized commute planning program
- 3.5 Implement a car sharing program with incentives for club members

4. Implement parking strategies and technology to increase predictability, save time and reduce vehicle miles traveled

- 4.1 Evaluate and implement parking strategies that improve the predictability of locating available spaces
- 4.2 Add technology to provide real-time data on available spaces in structures





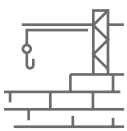
BUILDINGS AND GROUNDS

Design, construct, operate and maintain spaces that support the mission of the University while promoting environmental stewardship and the well-being of the community.

Our buildings and grounds are the spaces where the members of our community gather to pursue the University's mission of excellence in education, research and creative work, service and health care. Our buildings are also the primary consumers of critical resources like energy and water and are our largest source of greenhouse gas emissions. How we design, construct, maintain and operate our buildings can also become part of our curricula and research through use of the campus as a living laboratory/classroom. For these reasons, buildings are a critical component of our sustainability initiatives. Facilities are not islands - they are connected to and by our landscape - another key area for sustainability.

The campus landscape is a fabric that physically and visually connects our campus community and serves as a gateway to and from the broader community. Our goal is to design and maintain this landscape to support the university's commitment to sustainability. In pursuit of this goal, we will enhance ecosystem services and the health of our urban forest; improve habitat for pollinators and other keys species; and reduce erosion and storm water run-off.

TACTICS



1. New construction



2. Building maintenance and operation



3. Building renovations



4. Grounds maintenance and operation



5. Urban forest management

TACTICS AND ACTION ITEMS

The buildings and grounds tactic team chose to prioritize the development of operational protocols to build a secure foundation for the integration of sustainability with these core functions. Five core functions were selected for developing protocols. For each of these areas, a lead person will be selected and charged with assembling a team to draft the protocol. Each of these drafts will be reviewed by appropriate stakeholders and the President's Sustainability Advisory Committee and then submitted to the Vice President for Facilities Management for final approval. The five areas of focus are:

1. New construction

All new construction, including projects managed by Capital Projects Management, those managed by the Physical Plant Division and those constructed/managed by private partners on University property.

2. Building maintenance and operation

Includes custodial services, preventative maintenance, equipment repair/replacement and pest management. Responsibility for these functions falls to one of the following groups: Campus Physical Plant, Medical Center Physical Plant, Contracted Services and building-specific staff.

3. Building renovations

All new renovation projects managed by Capital Projects Management, those managed by the Physical Plant Division and those constructed/managed by private partners on University property.

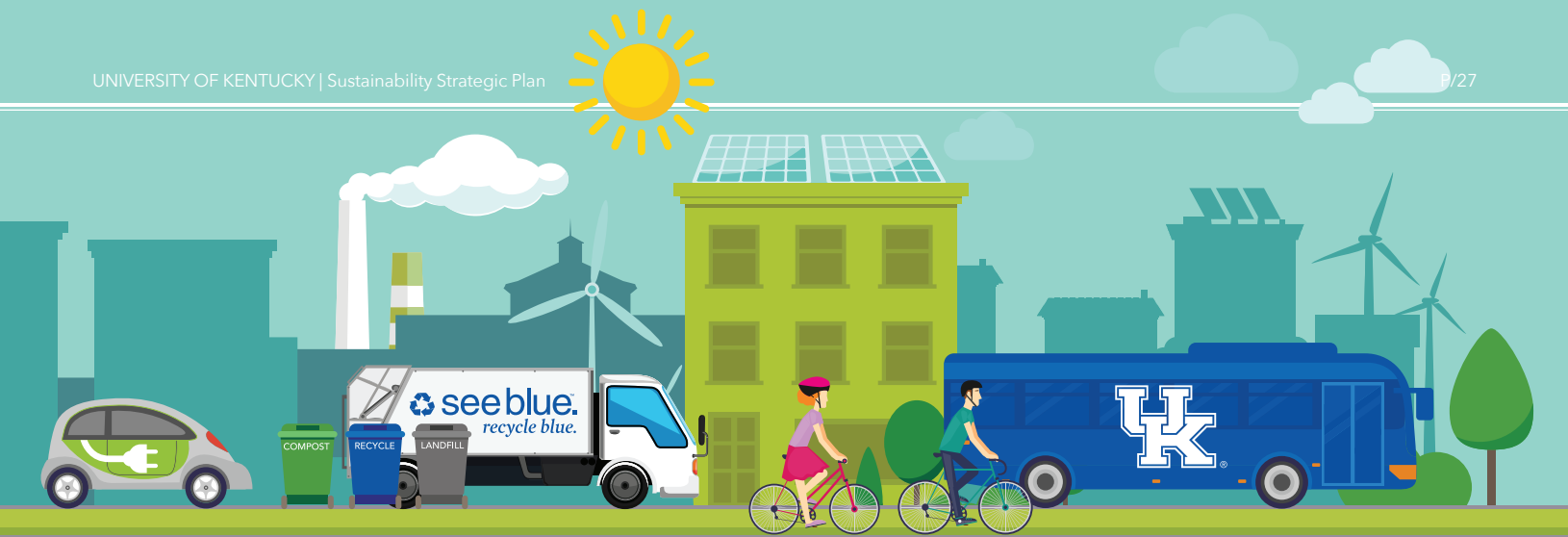
4. Grounds maintenance and operation

This includes all landscaping and maintenance, litter removal, snow and ice removal and servicing of outdoor furnishings (i.e. recycling bins, tables, benches, etc.). These functions are the responsibility of the Physical Plant Division's Grounds Department.

5. Urban forest management

Includes the management and care of existing trees and oversight of species selection and planting by private partners.





GREENHOUSE GAS EMISSIONS

Reduce the greenhouse gas emissions of the campus to 25 percent below 2010 levels by 2025.

As the Commonwealth's flagship university, the University of Kentucky will serve as an exemplar by implementing strategies that lower greenhouse gas (GHG) emissions while enhancing campus operations and reducing long-term energy costs. The University's approach will be guided by its mission to improve people's lives through excellence in education, research and creative work, service, and health care.

The University has a long-term objective of achieving carbon neutrality. To achieve meaningful and measurable progress, the University committed to reducing campus greenhouse gas emissions to 25 percent below 2010 levels by 2025.

The University will take a two phase approach to accomplishing this goal. Phase 1 will cover July 1, 2017-June 30, 2021. Phase 2 will cover July 1, 2021-June 30, 2025. For more information on the UK Emissions Reduction Plan, visit www.uky.edu/sustainability/greenhouse-gas-emissions-reduction-commitment.

TACTICS



1. Energy conservation and efficiency



2. Waste reduction



3. Transportation



4. Research and evaluate Phase 2 strategies

TACTICS AND ACTION ITEMS

1. Energy conservation and efficiency

- 1.1 Optimize buildings for energy efficiency
- 1.2 Renovate and upgrade buildings for energy efficiency
- 1.3 Optimize electricity used for lighting through equipment upgrades
- 1.4 Add new campus chillers for more efficient chilled water production
- 1.5 Optimize steam distribution systems



2. Waste reduction

- 2.1 Increase campus waste diversion rate to 50 percent

3. Transportation

- 3.1 Reduce the emissions from student and employee commuting by launching and promoting programs and policies that increase the convenience, efficiency, safety and cost benefits of modes other than driving alone
- 3.2 Work with campus and community partners to develop a service learning-focused initiative to offset a portion of the annual emissions associated with the passenger air miles resulting from business travel and education abroad



4. Research and evaluate Phase 2 strategies

- 4.1 The President's Sustainability Advisory Committee will assemble a task force in the summer of 2020 to develop emissions reduction strategies for Phase 2. That task force will deliver a Phase 2 Implementation Plan by December 2020.







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University of Kentucky Emissions Reduction Plan

Reduce campus emissions to 25 percent below 2010 levels by 2025

Prepared by the Emissions Reduction Plan Task Force of the President's Sustainability Advisory
Committee

April 6, 2018

University of Kentucky Emissions Reduction Plan

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Our commitment to reducing greenhouse gas emissions

On December 15, 2016, President Capilouto signed the University of Kentucky's first greenhouse gas emissions reduction commitment. In announcing this commitment, President Capilouto noted,

"We are, above all else, a learning institution. This new commitment will catalyze not only concrete, strategic actions that will improve our environment, but also a thoughtful approach to how these issues can help further our educational and scholarly missions."

Universities are uniquely positioned to spearhead the research, innovations, and cultural shifts necessary to address human-induced climate change. As the Commonwealth's flagship university, the University of Kentucky will serve as a leader by implementing strategies that lower greenhouse gas emissions while enhancing campus operations and reducing energy costs.

The University is committed to modeling and implementing strategies that reduce greenhouse gas emissions and promote a healthy and ecologically sustainable society. UK will reduce campus emissions by employing new technologies, conserving energy, reducing waste, and encouraging campus participation. These strategies will be integrated as high-impact, hands-on components of teaching, research, and service.

The University is committed to reducing campus greenhouse gas emissions to 25 percent below 2010 levels by 2025.

The University has a long-term objective of achieving carbon neutrality. To achieve meaningful and measurable progress, the University is committed to reducing campus greenhouse gas emissions to 25 percent below 2010 levels by 2025.

The student organization UK Greenthumb and the President's Sustainability Advisory Committee (PSAC) have been key to developing the foundational documents and campus support needed to make this commitment. In the spring of 2016, PSAC and students from UK Greenthumb initiated a collaborative effort to draft the University's emissions reduction commitment. Following the President's adoption of the commitment, the PSAC assembled a task force of students, staff, and faculty to develop this plan.

Institutional boundaries

Sources of emissions

This plan, and all future reports, will include annual emissions from eight distinct sources of campus emissions. These sources are listed below and **Appendix A** provides the emissions quantification methodology for each source. These eight sources do not include every source of campus emissions; however, they do represent the vast majority of campus carbon footprint. **Table 1** provides the University's inventory of emissions from these sources for fiscal years¹ 2010 through 2017. Selected sources were excluded based on a combination of these four criteria: 1) the source is outside of the physical boundary described below; 2) historic data on the source are unavailable or unreliable; 3) the estimated emissions from the source are negligible² and/or; 4) tracking and reporting on the source is difficult or unreliable. **Appendix B** provides additional details on excluded sources.

This plan uses the emission categories, known as scopes, established by the International Greenhouse Protocol Standard (<http://www.ghgprotocol.org/>). These standards organize emissions sources into three levels based on the degree of control and influence an entity has over the source and quantity of the emissions. The standard unit of measure is a metric ton of carbon dioxide equivalent³ (mtCO₂e).

Scope 1 - Entity controls the amount and source of the processes and products producing the emissions

- Coal and natural gas burned in equipment owned and operated by UK and partners in housing and dining
- Fuel used in campus-owned vehicles

Scope 2 - Entity controls the amount but not the source of the processes and products producing the emissions

- Purchased electricity

Scope 3 - Entity controls neither the amount nor the source of the processes and products producing the emissions

- Commuting activities of students, staff, and faculty
- Student air travel for Education Abroad
- Directly financed air travel
- Solid waste sent to landfills
- Wastewater treatment

Physical boundaries

This plan, and future reports, will include emissions from the sources listed above that originate from the main campus in downtown Lexington, Kentucky. This includes the operations of UK HealthCare, UK Athletics, and the facilities operated by UK's partners in student housing and campus dining services.

¹ The University's fiscal year is July 1-June 30. Example: Fiscal year 2017 runs from July, 1 2016-June 30, 2017.

² Based on finding from the 2014 Greenhouse Gas Emissions Inventory and Mitigation Strategy Assessment Report.

³ <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>

Table 1: Campus emissions inventory 2010-2017									
See Appendix A for calculation methodologies									
Calculated Emissions (mtCO ₂ e)	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	
Emissions for Scope 1: Direct Emissions									
Coal for UK Heating Plants	77,373	82,627	61,996	39,152	24,694	25,306	21,858	21,125	
Natural Gas for UK Campus	38,807	44,440	48,927	68,916	79,802	79,343	72,314	70,518	
Gasoline for Fleet Transportation	1,783	1,811	1,772	1,781	1,777	1,773	1,693	1,791	
Diesel for Fleet Transportation	733	739	762	790	777	727	656	564	
Emissions for Scope 2: Purchased Utilities									
Electricity for UK Campus	323,484	338,356	348,201	337,394	352,141	348,737	362,381	372,139	
Emissions for Scope 3: Indirect Emissions									
Air Travel: Business	3,549	3,809	3,837	4,080	4,323	4,566	4,781	5,534	
Air Travel: Education Abroad	485	987	1,373	1,341	1,704	1,811	1,762	1,798	
Campus Commuting: Employees	21,800	23,064	22,978	23,348	23,479	24,587	23,591	25,681	
Campus Commuting: Students	5,154	5,318	4,887	4,921	4,838	4,417	3,951	4,116	
Landfill Waste	30,430	31,388	26,387	24,276	24,475	24,881	15,200	2,582	
Wastewater	320	334	301	310	312	309	301	302	
Scope 1 subtotal	118,696	129,616	113,457	110,639	107,049	107,149	96,521	93,999	
Scope 2 subtotal	323,484	338,356	348,201	337,394	352,141	348,737	362,381	372,139	
Scope 3 subtotal	61,738	64,899	59,762	58,276	59,132	60,572	49,586	40,013	
Total Emissions	503,918	532,872	521,420	506,309	518,322	516,458	508,488	506,150	

Quantifying the reduction target

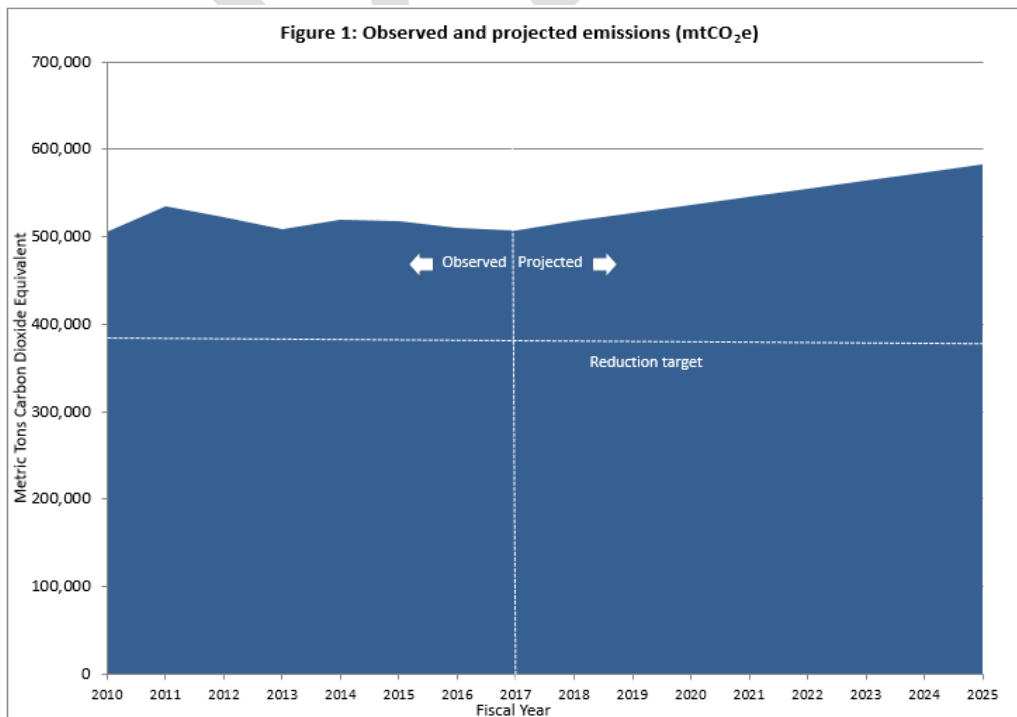
The University's emission reduction target is 25 percent below 2010 levels by 2025. Campus emissions in 2010 totaled 505,736 mtCO₂e based on the sources and methodologies included in this plan. Twenty-five percent of this is 126,434 mtCO₂e. Therefore, the University's commitment is to reduce or offset the annual emissions of the main campus in Lexington to no more than 379,302 mtCO₂e by the end of fiscal year 2025.

Considering the growth UK has experienced since 2010, and the growth projected for the next eight years, achieving this reduction will represent a nearly 50 percent drop in the University's emissions per gross square foot of building space (mtCO₂e/gsf). This will result in a decrease from the observed 0.0295 mtCO₂e/gsf in 2010 to the targeted 0.0161 mtCO₂e/gsf in 2025.

Projecting future growth

Developing a set of emissions reduction strategies sufficient to achieve this commitment required making assumptions about projected growth and its impact on campus emissions. The growth projections used in this plan are based on student enrollment during the period 2010-2016. During that time, enrollment of full-time equivalent (FTE) students⁴ increased by an average of 2.09 percent annually. Projected increases for all emissions sources in this plan are a function of that growth rate.

Figure 1 projects the emissions of the campus assuming none of the reduction strategies contained in this plan are implemented and that the emissions intensity of key activities (i.e. steam production and electricity generation) are static across time⁵. This growth projection is referenced in this plan as the business-as-usual scenario.



⁴ Integrated Postsecondary Education Data System (IPEDS) method – UK Interactive Fact Book – Student Data – FTE Enrollment.

⁵ Both of these assumptions err on the side of over estimating future emissions. This conservative approach was chosen to ensure that reduction strategies allow the University to hit its target, even in worst case scenarios.

Emissions reduction strategies

The University will pursue the 25 percent reduction target with a two-phased approach. The reduction strategies for Phase 1 will cover fiscal years 2018 through 2021, and focus on energy conservation and efficiency, waste reduction, and transportation opportunities. Detailed reduction projections for these strategies are provided in **Table 2** and **Figure 2**. See **Appendix C** for the methods used to estimate the emissions reduction potential for Phase 1 strategies. Phase 2 strategies will cover fiscal years 2022 through 2025 and build on the reductions achieved during Phase 1.

Phase 1 Strategies (FY2018-2021)

1. Energy Conservation and Efficiency

- 1.1 Optimize building performance for energy efficiency
- 1.2 Renovate and upgrade buildings for energy efficiency
- 1.3 Optimize electricity used for lighting through equipment upgrades
- 1.4 Improve the efficiency of baseload chilled water production
- 1.5 Optimize steam distribution systems

2. Waste Reduction

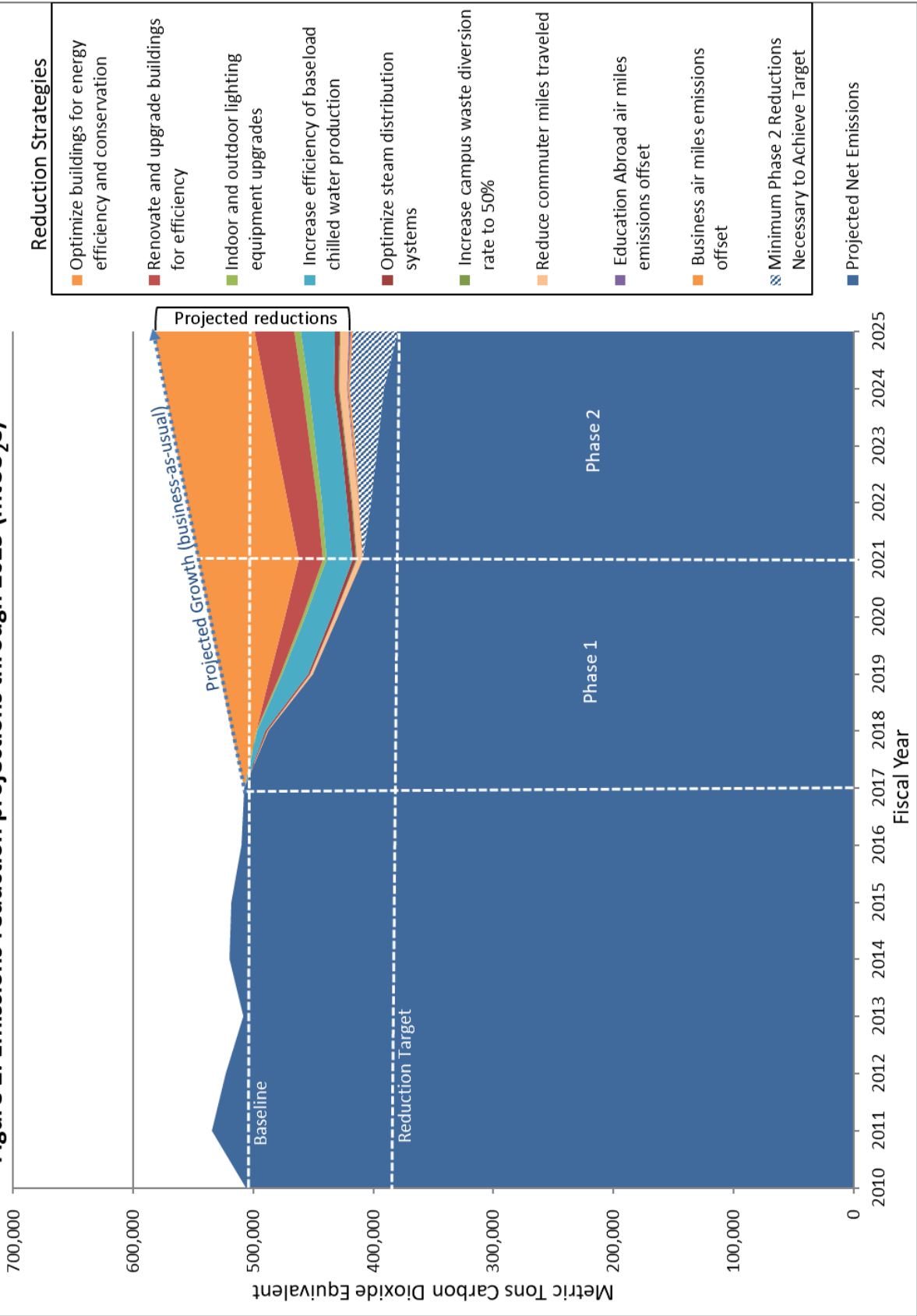
- 2.1 Increase campus waste diversion rate to 50 percent

3. Transportation

- 3.1 Launch and promote alternative transportation programs and policies
- 3.2 Work with campus and community partners to develop a service learning-focused effort to offset 50 percent of the annual emissions associated with Education Abroad air miles by 2025
- 3.3 Work with campus and community partners to develop a service learning-focused effort to offset 25 percent of the annual emissions associated with University business air miles by 2025

Fiscal Years	Table 2: Phase 1 emissions reduction projections (mtCO ₂ e)										Business-As-Usual Emissions
	Projected Net Emissions	Optimize buildings for energy efficiency and conservation	Renovate and upgrade buildings for efficiency	Indoor and outdoor lighting equipment upgrades	Increase efficiency of baseload chilled water production	Optimize steam distribution systems	Increase campus waste diversion rate to 50%	Reduce commuter miles traveled	Education Abroad air miles emissions offset	Business air miles emissions offset	
2018	485,992	20,898	0	770	7,064	861	0	842	0	0	516,427
2019	449,114	41,795	8,359	1,540	21,191	1,722	179	1,685	0	0	525,584
2020	427,643	62,693	15,046	2,310	21,191	2,582	365	2,527	159	241	534,757
2021	407,504	83,590	20,396	3,080	21,191	3,443	557	3,369	326	490	543,946
2022	410,186	83,590	24,676	3,850	21,191	3,443	758	4,212	499	747	553,151
2023	413,718	83,590	28,100	4,620	21,191	3,443	965	5,054	679	1,012	562,372
2024	418,124	83,590	30,839	5,390	21,191	3,443	984	5,896	866	1,286	571,610
2025	416,015	83,590	33,030	6,160	28,255	3,443	1,003	6,739	1,061	1,569	580,864

Figure 2: Emissions reduction projections through 2025 (mtCO₂e)



Potential Phase 2 Strategies (FY2022-2025)

The reduction strategies proposed for Phase 1 will significantly reduce the emissions of the campus. However, these strategies alone are not projected to be sufficient for hitting the 25 percent reduction target (see **Figure 2**). Closing the gap between Phase 1 reductions and the University's 2025 target will be accomplished through a second round of reduction strategies. A detailed plan for Phase 2 strategies will be developed in the fall of 2020 by a task force appointed by the President's Sustainability Advisory Committee. In anticipation of that effort, this plan considered a range of potential strategies that could be implemented during Phase 2. Brief overviews of three of these possible strategies are included below.

1. Combined Heat and Power Generation

Combined heat and power (CHP) can offer a number of benefits compared to conventional electricity and thermal energy production, including:

- CHP requires less fuel to produce a given energy output and avoids transmission and distribution losses that occur when electricity travels over power lines.
- Because less fuel is burned to produce each unit of energy output and because transmission and distribution losses are avoided, CHP reduces emissions of greenhouse gases and other air pollutants.
- CHP can save facilities considerable money on energy bills due to high efficiency, and can provide a hedge against electricity cost increases.
- Unreliable electricity service represents a quantifiable business, safety and health risk for some companies and organizations. CHP is an on-site generation resource and can be designed to support continued operations in the event of a disaster or grid disruption by continuing to provide reliable electricity.

There are a number of challenges relative to CHP at UK. Primary among these are costs and the logistics of fuel delivery to the potential facility. Combined heat and power was evaluated in the UK Utilities Master Plan and continued efforts to explore the feasibility of this initiative are being led by UK's Utilities and Energy Management Division.

2. Renewable Power Purchase Agreement

A renewable power purchase agreement (rPPA) is a financial agreement where a developer arranges for the design, permitting, financing, and installation of a renewable energy system at a defined location. The developer sells the power generated to the host customer at a fixed rate that is typically lower than the local utility's retail rate. This lower electricity price serves to offset the customer's purchase of electricity from the grid while the developer receives the income from these sales of electricity as well as any tax credits and other incentives generated from the system. PPAs typically range from 10 to 25 years and the developer remains responsible for the operation and maintenance of the system for the duration of the agreement. At the end of the PPA contract term, a customer may be able to extend the PPA, have the developer remove the system or choose to buy the renewable energy system from the developer. More information about rPPAs is available at www.seia.org/research-resources/solar-power-purchase-agreements.

3. Kentucky Utilities Green Energy Program

The Kentucky Utilities Green Energy program uses monetary contributions from customers to purchase Renewable Energy Certificates (RECs). One REC represents the property rights to the environmental, social, and other non-power benefits of 1,000 kilowatt-hours (kWh.) of renewable electricity. RECs purchased by the program are sourced from renewable power generator in Kentucky and bordering states. More information about RECs is available at <https://lge-ku.com/environment/green-energy-program/how-green-energy-program-works>.

Reporting

The Office of Sustainability will coordinate and produce annual reports summarizing progress toward the University's emissions reduction commitment. Progress reports will be available in the fall of each year for the years 2018-2025.

DRAFT

Appendices

- A. Methodology for calculating campus emissions
- B. Evaluation of excluded emissions sources
- C. Phase 1 Strategies and reduction methodologies

DRAFT

Appendix A: Methodology for calculating campus emissions

There are several heat-trapping gases that are by-products of the activities of the University included in this plan. Each of these has been converted to a carbon dioxide equivalent for the purposes of this report. Metric tons of carbon dioxide equivalent (mtCO₂e) is the standard unit of measure for campus emissions.

Stationary Combustion for Steam Production

The University owns and operates 14 primary boilers that produce the steam needed to heat campus facilities and meet campus hot water needs. Ten of the boilers are fueled by natural gas and four are fueled by coal. The University operates these 14 boilers in compliance with regulations and permits provided by the Kentucky Division of Air Quality and the United States Environmental Protection Agency (USEPA). The emissions factors for these two fuels are:

- Coal combustion is tracked by the number of short tons (2000 lbs.) burned. Each short ton of coal burned releases 2.47664 mtCO₂e.
- Natural gas combustion is tracked by British thermal units (Btu) and one million BTUS (MMBtu) releases .054431643 mtCO₂e.

University-Owned Vehicles

The University owns and operates a large fleet of automobiles, service vehicles, buses, heavy equipment, and golf service carts. These vehicles run on a variety of fuels including gasoline, diesel, bio-diesel, and electric batteries. The emissions factors provided by the University of New Hampshire's Sustainability Indicator Management and Analysis Platform (SIMAP) are used to convert the fuel use of these vehicles to mtCO₂e.

Purchased Electricity

Purchased electricity is the largest single source of UK's GHG emissions. UK purchases all of its electricity from Kentucky Utilities (KU). The resulting emissions are considered Scope 2 because UK has control over the amount consumed, but not over the method used to produce the electricity.

KU has a current grid mix composed of 94.62 percent coal, 5.01 percent natural gas, and 0.37 percent renewable sources. The average heat rate is approximately 10,270 British thermal units (Btu) per kilowatt hour (kWh) for Kentucky power generation and grid loss is approximately 5.82 percent. The USEPA has established CO₂e emission rates of 210 pounds of CO₂e per million Btu (MMBtu) produced for coal and 120 lb./MMBtu for natural gas. Based on those rates and using the calculations below, the emissions factor for the electricity purchased by UK is 0.001007 mtCO₂e/kWh.

- Coal: $10,270 \text{ Btu/kWh} \times 210 \text{ lb./MMBtu} \times 0.9462 \div 1,000,000 = 2.04 \text{ lb. CO}_2\text{e/kWh}$ plus
- Natural gas: $10,270 \text{ Btu/kWh} \times 120 \text{ lb./MMBtu} \times 0.0501 \div 1,000,000 = 0.06 \text{ lb. CO}_2\text{e/kWh}$
- Subtotal: 2.10 lb. CO₂e/kWh or 0.00095255 mtCO₂e /kWh
- Grid loss: 5.82 percent of 2.10 lb. CO₂e/kWh = 0.12 lb./kWh
- Total: 2.10 lb./kWh + 0.12 lb./kWh = 2.22 lb. CO₂e/kWh or 0.001007 mtCO₂e /kWh

Directly Financed Air Travel and Education Abroad Travel

The total air miles traveled by the UK community for business and Education Abroad purposes is tracked by two offices. The UK Education Abroad Office tracks the student air miles traveled for education abroad opportunities and UK Travel Services tracks all university-funded travel for staff and faculty. This report uses the emissions factors developed by the USEPA for short-, medium- and long-haul flights to convert the air miles traveled into emissions equivalents (https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf).

Commuting Activities of Students, Faculty, and Staff

Travel to, from, and around campus for daily activities generates a tremendous number of vehicle miles traveled (VMT) with corresponding emissions impacts, congestion, air quality issues, and safety concerns. Calculating the emissions that result from the vehicles driven to, from and around campus by employees and students is challenging due to the number of variables at play.

Employee commuter emissions are calculated using these figures, assumptions, and estimates:

- The number of employee permits sold for a given fiscal year
- The average employee makes five, round-trip commutes between home and campus per week
- The average employee works 48 weeks per year
- The average round-trip commute distance is estimated to be 15.9 miles based on survey data collected by UK Transportation Services from 2,604 employees
- All of these trips are made in vehicles that use unleaded gasoline and that the average fuel economy for these vehicles is 20.79 miles per gallon based on National Highway Traffic Safety Administration (NHTSA) data
- An emissions factor of 0.009795 mtCO₂e /gallon of gasoline from USEPA data (<https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>).

Employee emissions calculation (mtCO₂e) = {[Permits sold x 5 (trips) x 48 (weeks) x 15.9 (miles)]/20.79 (mpg)} x .009795 (mtCO₂e per gallon)

Student commuter emissions are calculated using the following figures, assumptions, and estimates:

- The number of commuter permits (C permit) sold for a given fiscal year
- The assumption that the average student makes four round trip commutes between home and campus per week
- The assumption that the average student is on campus 34 weeks per year
- The average round-trip commute distance is estimated to be 7.66 miles based survey data collected by UK Transportation Services from 1,010 students
- The assumption that all of these trips are made in vehicles that use unleaded gasoline and that the average fuel economy for these vehicles is 20.79 miles per gallon based on NHTSA data for model years 1982-2011 and

- An emissions factor of 0.009795 mtCO₂e /gallon of gasoline from USEPA data (<https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>).

Student commute emissions calculation: {[Permits sold x 4 (trips) x 34 (weeks) x 7.66 (miles)]/20.79 (mpg)} x .009795 (mtCO₂e per gallon) = mtCO₂e per year.

Landfilled Waste

When placed in a landfill municipal solid waste (MSW) generates methane, a very potent greenhouse gas. There are also greenhouse gas emissions associated with the transport of the waste. This report uses the methodology developed for the University of New Hampshire's Sustainability Indicator Management and Analysis Platform (SIMAP) to convert tons of landfilled waste to carbon dioxide equivalent. Emissions factors for landfilled MSW vary widely depending on the presence and/or type of landfill gas recovery system in use at the landfill in question.

The landfill receiving the University's solid waste had very limited, if any, methane recovery or flaring until late 2015. In late 2015, a system for recovering landfill gas for power generation was activated in partnership with Toyota Motor Manufacturing of Kentucky. This significantly impacted the emissions associated with the University's solid waste. For FY2010-FY2015, this document uses the emissions factor of 3.1 mtCO₂e /short ton of MSW based on the SIMAP emissions factor for solid waste with no methane recovery or flaring. For FY2016, this document uses the factor above for half the year and the SIMAP emissions factor for solid waste with methane recovery and flaring of 0.31 mtCO₂e /short ton of MSW for the other half. Starting in FY2017 and projecting forward, this document uses the 0.31 mtCO₂e/short ton of MSW. Additional information is available at <https://sustainableunh.unh.edu/calculator>.

Wastewater

Lexington's wastewater treatment process generates methane as a by-product. Due to methane capture and storage technologies installed at the treatment plant, the emissions from wastewater are quite low relative to the volume of water processed. The methodology from the University of New Hampshire's Sustainability Indicator Management and Analysis Platform (SIMAP) is used to convert the gallons of wastewater to carbon dioxide equivalent.

Appendix B: Evaluation of excluded emissions sources

Source of emissions	Description	Reason(s) excluded
Refrigerants	Fugitive emissions from refrigerants used in cooling equipment	Historic data on the source are unavailable or unreliable and the estimated emissions from the source are negligible
Agriculture - Fertilizer	N ₂ O emissions from fertilizer use	Estimated emissions from the source are negligible
Agriculture - Livestock	CH ₄ emissions from animals	UK owns livestock, however, they are managed on lands outside the physical boundary for this plan
Purchased Goods and Service, including capital goods	Extraction, production, and transportation of goods and services purchased or acquired by the reporting company in the reporting year	Difficult to track and quantify and estimated emissions from the source are negligible
Fuel and Energy related activities	Extraction, production and transportation of fuels and energy purchased or acquired by the reporting company in the reporting year	Not available
Upstream Transportation and Distribution	Transportation and distribution of products purchased by the reporting company in the reporting year between a company's tier 1 suppliers and its own operations	Not available
Upstream leased assets	Operation of assets leased by the reporting company (lessee) in the reporting year and not included in scope 1 and scope 2 – reported by lessee	Not available
Downstream transportation and distribution	Transportation and distribution of products sold by the reporting company in the reporting year between the reporting company's operations and the end consumer	Not available
Processing of sold products	Processing of intermediate products sold in the reporting year by downstream companies	Not available
Use of sold products	End use of goods and services sold by the reporting company in the reporting year	Not available
End of life treatment of sold products	Waste disposal and treatment of products sold by the reporting company (in the reporting year) at the end of their life	Not available
Downstream leased assets	Operation of assets owned by the reporting company (lessor) and leased to other entities in the reporting year, not included in scope 1 and scope 2 – reported by lessor	Not available
Franchises	Operation of franchises in the reporting year, not included in scope 1 and scope 2 – reported by franchisor	Not available
Investments	Operation of investments (including equity and debt investments and project finance) in the reporting year, not included in scope 1 or scope 2	Tracking and reporting on the source is difficult or unreliable

Appendix C: Phase 1 strategies and reduction methodologies

1. Energy Conservation and Efficiency

- 1.1 Optimize building performance for energy efficiency to reduce emissions by 93,132 mtCO₂e.
Methodology: Through a contract with a private partner, energy specialists will review, monitor, and make recommendations regarding the performance of all campus buildings with a goal achieving a nearly 20 percent reduction in campus energy consumption.
- 1.2 Renovate and upgrade buildings for energy efficiency to reduce emissions by 36,329 mtCO₂e by FY2025.
Methodology: Each year 10 buildings will be targeted for equipment upgrades from a list of buildings prioritized by their documented energy consumption. The goal will be a 20 percent reduction in energy consumption for each building as a result of the upgrade. The potential reductions in successive years are estimated to be 80 percent of the previous year's reduction.
- 1.3 Optimize electricity used for lighting to reduce emissions by 6080 mtCO₂e by 2025.
Methodology: UK purchased 354,394,077 kWh of electricity in FY2016. Nationally, lighting is estimated to account for 17 percent of electricity consumption on University campuses (https://www.mge.com/saving-energy/business/bea/article_detail.htm?nid=2390). Using that number, we estimate that 60,246,993 kWh was used by campus lighting systems in FY2016. The target for this strategy is a 10 percent reduction in electricity consumption by campus lighting by the end of FY2025. Ten percent of the estimated 2016 lighting consumption is 6,024,699 kWh. Using the established methodology for calculating emissions from the Kentucky Utilities grid mix (0.0010091 mtCO₂e /kWh), the annual emissions reduction from this strategy in FY2025 would be 6,080 mtCO₂e. Progress toward this goal will be incremental, with an estimated year one reduction of 760 mtCO₂e.
- 1.4 Add four new campus chillers by 2025 for more efficient baseload chilled water production to reduce emissions by 27,466 mtCO₂e.
Methodology: The four new chillers will be used for baseload chilled water production, with existing chillers being kept in ready state for peak demand days. Utilities and Energy Management staff estimate that each new chiller will reduce annual emissions by 6,867 mtCO₂e through more efficient use of electricity.
- 1.5 Optimize utility plants and distribution systems to reduce emissions by 46,000 mtCO₂e by FY2025.
Methodology: By repairing leaks, upgrading valves and other components of campus steam delivery infrastructure, this strategy is targeting a five percent reduction in annual steam consumption.

2. Waste Reduction

- 2.1 Increase campus diversion rate to 50 percent to reduce annual emissions by 10,030 mtCO₂e by 2025.

Methodology: At current diversion rates and projected campus growth, landfilled waste is projected to be 9,707 tons in 2025. Each short ton of material sent to the landfill generates an estimated 0.31 mtCO₂e. Increasing the diversion rate from 25 percent (FY2017) to 50 percent diversion rate by 2025 through recycling, composting, redesign and reuse will divert an *additional* estimated 3,236 tons of material from the landfill in 2025.

3. Transportation

- 3.1 Launch and promote alternative transportation programs and policies that increase the convenience, efficiency, safety, and cost-benefits of commuting choices other than driving alone to decrease annual emissions by 25 percent of 2010 levels yearly by 2025.

Methodology: 2010 Commuter emissions were estimated to be 26,954 mtCO₂e using methodology described above. 25 percent of this is 6,739 mtCO₂e. We project a steady ramp up alternative transportation programs across the 8 performance years, with annual net emission reductions of 842 mtCO₂e.

- 3.2 Work with campus and community partners to develop a service learning-focused effort to offset the emissions associated with University business and student Education Abroad air miles.

Sustainability in Research and Instruction at the University of Kentucky: Challenges and Goals

Prepared by the Provost's Faculty Sustainability Council
June, 2018

Executive Summary

The Faculty Sustainability Council, at the request of the Provost and with the support of the University Senate Council, was charged to investigate the curricular, research and other academic dimensions of sustainability and make recommendations. Over 18 months of work, the Council identified strengths, key barriers, and goals and objectives to better leverage the integration of sustainability across our teaching and research missions. We are confident that pursuing these goals will help UK achieve its mission of being the University *for* Kentucky, be of pragmatic value in recruiting and retaining passionate faculty and students, help leverage opportunities for grant-supported research and to serve clientele in outreach programs.

A strong academic sustainability program will provide critical support for the objectives in the UK strategic plan. Specifically, a strong integration of sustainability into academic programs positions UK to:

- *Recruit high caliber students interested in solving real-world problems.* According to the [Princeton Review's annual Hopes and Worries](#)¹ survey, a majority (64%) of respondents said having information about colleges' commitment to environmental issues (a critical component of sustainability) would contribute "strongly," "very much," or "somewhat" to their application/attendance decisions.
- *Retain outstanding faculty who are passionate and motivated in this area.* Our benchmark institutions offer a variety of certificates, courses, and university-wide learning outcomes relating to sustainability or sustainable development. Our process highlighted the demand by faculty across the Colleges for a richer culture of sustainability scholarship.
- *Expand research competitiveness in high profile, extramural funding efforts.* The National Science Foundation, US Department of Agriculture, and National Institutes of Health are increasingly orienting toward highly interdisciplinary, transformative research programs to address society's grand challenges, which explicitly and implicitly incorporate sustainability research themes.

This report summarizes the current strengths and opportunities relative to the integration of sustainability in the curricula and research at the University of Kentucky. We also provide details on the most significant challenges to enhance integration and provide goals relative to these with short, medium and long term outcomes. There are strong synergies between the goals described herein, the [University's Strategic Plan](#)², and the recent Graduate School Blue Ribbon Panel report.

Challenges:

- Structural Barriers to Interdisciplinary Programs
- Lack of Support for Interdisciplinary Teaching
- Sustainability is not a Clear Academic Priority

Goals:

- Facilitate Interdisciplinary Research and Instructional Efforts
- Ensure that All UK Students Experience Sustainability in their Academic Careers
- Become a Recognized Leading Institution in Sustainability

¹ <https://www.princetonreview.com/college-rankings/college-hopes-worries>

² <http://www.uky.edu/sotu/2015-2020-strategic-plan>

Defining Sustainability

Symbolically and pragmatically, the Faculty Sustainability Council felt it was important to start this work with a definition of sustainability appropriate to our context. The definition provided below guides this report and was endorsed by the President’s Sustainability Advisory Council, the Tracy Farmer Institute for Sustainability and the Environment, and the Student Sustainability Council.

“Sustainability implies that the activities of the University of Kentucky are ecologically sound, socially just, and economically viable, and that they will continue to be so for future generations. A sustainability focus encourages the integration of these principles in curricula, research, and outreach. This principled approach to operational practices and intellectual pursuits prepares students and empowers the campus community to support sustainable development in the Commonwealth and beyond.”

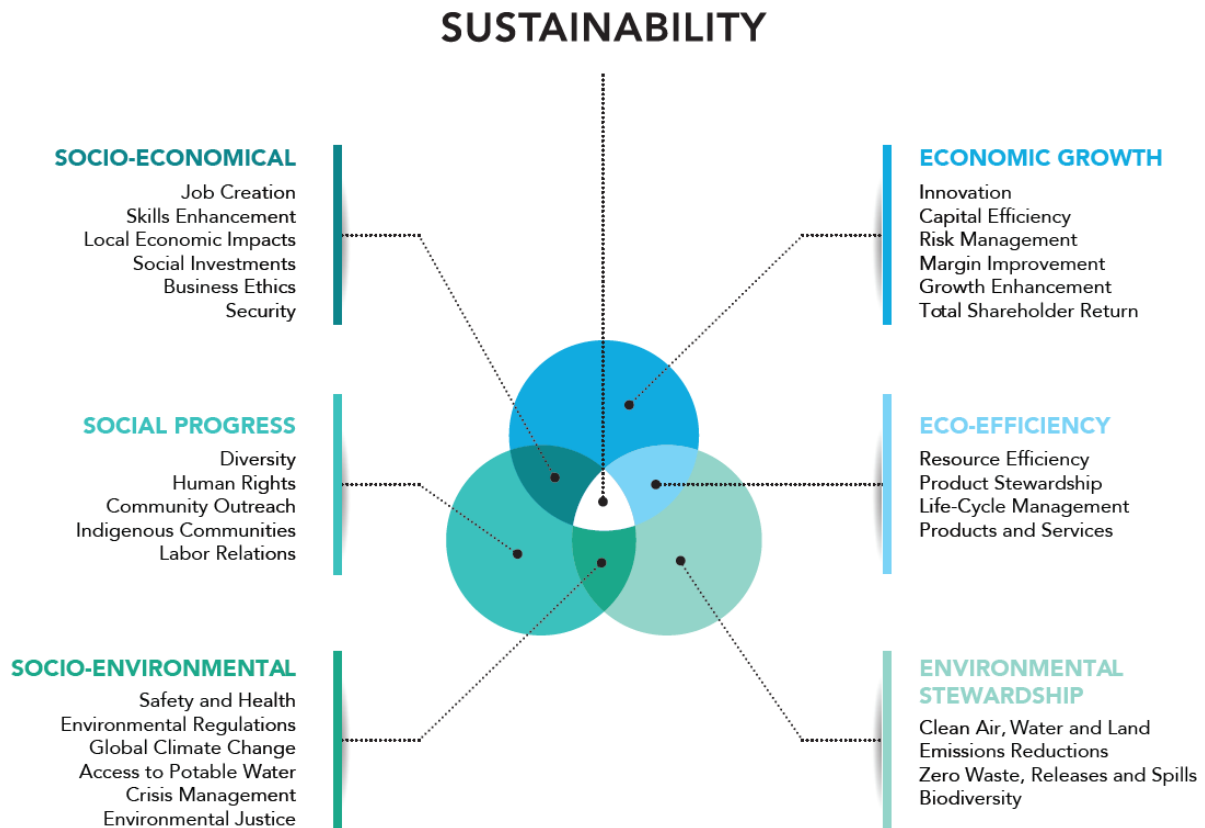


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Background & Charge

The [President's Sustainability Advisory Council](https://www.uky.edu/sustainability/presidents-sustainability-advisory-committee)³ (PSAC), established in 2008, is charged with focusing and coordinating the University's activities within the broad meaning of sustainability. Dialogue between the President and this committee, originally on the topic of greenhouse gas emissions, highlighted the need for a faculty-led effort to assess the integration of sustainability in the instructional and research areas of the university. Many faculty and units are engaged in sustainability-oriented instruction and research, however, there has been no University-wide mechanism on UK's campus to bring focus or coordinate these efforts. In response, the PSAC leaders worked with the Provost and University Senate Council, to create a Faculty Sustainability Council (FSC)⁴ charged with an 18-month task to:

- Review the efforts of benchmarks and national leaders at integrating sustainability with their curriculum and research;
- Evaluate strengths, weaknesses, opportunities and challenges of the current of state of sustainability in the curriculum and research at UK;
- Propose short, medium and long-term goals for better supporting and promoting this integration;
- Establish an assessment and evaluation process.

Provost Tracy instructed the Council to “take a strong leadership role, starting with a thorough discussion of what sustainability is in the academic programs of a leading land grant university,” adding “– we are called upon to answer still lingering questions while daring to pioneer the questions yet asked.” Considering, but not limited by other institutions’ actions, he expressed the desire for the Council to consider whether the current attention directed at sustainability education and research was visible, appropriately supported, and exemplary.

³ <https://www.uky.edu/sustainability/presidents-sustainability-advisory-committee>

⁴ The names and departmental affiliation of the FSC members are included in Appendix A of this document.

Process

Over 18 months, the FSC held monthly meetings to discuss findings and develop a sustainability strategy. Meetings included guests from across campus to inform the Council on efforts that might be allied directly with or could help shape recommendations to strategically align with other initiatives on campus.

This meeting structure, informed by ad hoc experts and ongoing discussions with campus academic leadership, led to a thorough review of our climate for sustainability internal to UK academics, as well as discussion of initiatives by benchmark institutions and national leaders.

Avenues of investigation of sustainability research and teaching in higher education considered the following internal and external factors:

- Internal
 - “Case studies” of previous efforts to evaluate and/or integrate sustainability into UK coursework;
 - Sustainability efforts within our facilities and operations that include opportunities for academic integration; and
 - Organizational changes to undergraduate and graduate programs that create opportunities for interdisciplinary sustainability curriculum.
- External
 - Strategic organizational efforts to create institutional structures, such as sustainability institutes and administrative positions (e.g. Associate/Assistant Provost), to support cross-college collaboration on sustainability curriculum and research;
 - High-level initiatives such as hiring and internal funding mechanisms to bring focus and resources to sustainability issues.

In Spring 2018, FSC leaders presented an overview of the process and sought feedback on draft recommendations from the University Senate Academic Planning and Priorities Committee, the University Senate Council, and Provost Blackwell. The goals, recommendations, and evaluation measures shaped by these discussions are presented in the Recommendations section of this report.

Current Climate for Sustainability at UK

Our Strengths

Administrative Support. Notable efforts to foster University-wide coordination around sustainability include the President’s Sustainability Advisory Council, the Provost’s Faculty Sustainability Advisory Council, and the [UK Healthcare Sustainability Steering Committee](#)⁵. The mission of the FSC demonstrates the explicit desire and commitment at the University of Kentucky both to bolster existing interdisciplinary degree programs and to increase the educational opportunities for the study of sustainability across campus and at all educational levels. The FSC exists because a combination of faculty/staff interest, a presidential challenge, and the support of the Provost and UK Senate.

Additional administrative support is evident in the myriad of allied strategic efforts, including the [UK Greenhouse Gas Emissions Reduction Plan](#)⁶, [Sustainability Strategic Plan](#)⁷, and ongoing funding of the [Sustainability Challenge Grant Program](#)⁸. These efforts are described further in the “Existing Campus Initiatives” section below.

Instructional and Research Programs. The University of Kentucky has worked conscientiously for over a decade to develop interdisciplinary education across its campus. Many colleges across campus have courses, faculty and research programs with connections to sustainability. Three undergraduate degree programs currently exist at UK with a focus specifically on sustainability, though many departments and degree programs emphasize sustainability. The College of Agriculture, Food, and Environment offers two Bachelor of Science degree programs, [Sustainable Agriculture \(SAG\)](#)⁹ and [Natural Resources and Environmental Science \(NRES\)](#)¹⁰. The College of Arts and Sciences offers a Bachelor of Arts degree in [Environmental and Sustainability Studies](#)¹¹ (ENS).

Faculty across the colleges have been consistently successful in obtaining competitive extramural funding for sustainability-oriented research through federal institutions such as the US Department of Agriculture, the National Science Foundation, the US Department of Energy, and the National Institutes of Health. Several UK Centers and Institutes support sustainability-oriented research and academic integration. These include the [Tracy Farmer Institute for Sustainability and the Environment](#)¹² (ISE) and the [Center for Applied Energy Research \(CAER\)](#)¹³, housed in the Vice President for Research, the Food Connection, housed in the College of Agriculture, Food and Environment, and the [Institute for Sustainable Manufacturing](#)¹⁴, housed in the College of Engineering.

Efforts to systematically assess and track sustainability in academic programs and research at UK are included in our regular reporting through the Association for the Advancement of Sustainability in

⁵ <http://www.uky.edu/sustainability/uk-healthcare-sustainability-steering-committee>

⁶ <http://www.uky.edu/sustainability/greenhouse-gas-emissions-reduction-commitment>

⁷ <http://www.uky.edu/sustainability/sustainability-strategic-plan>

⁸ <http://www.uky.edu/sustainability/sustainability-challenge-grants>

⁹ <http://sustainableag.ca.uky.edu/>

¹⁰ <https://nres.ca.uky.edu/>

¹¹ <https://ens.as.uky.edu/>

¹² <https://www.research2.uky.edu/tracy-farmer-institute-sustainability-and-environment>

¹³ <http://www.caer.uky.edu/>

¹⁴ <https://www.engr.uky.edu/ism/>

Higher Education's (AASHE) [Sustainability Tracking, Assessment & Reporting System \(STARS\)](#)¹⁵. Highlights of research strengths reported in 2015 include nearly 250 UK faculty and staff engaged in sustainability research, across 74 departments. These results represent research efforts that include more than 20% of our faculty and over 1/3 of our departments. Instructional strengths reported in 2015 include almost 200 courses that have a sustainability component and the degree programs highlighted above. The methodology and additional results of the 2015 AASHE STARS reporting efforts in the Academic Research area are presented in Appendix B.

Faculty Motivation and Expertise. Faculty with a passion for sustainability have stepped forward, often with extra energy, to help UK make the progress that it has. Notable examples include faculty-led efforts to develop interdisciplinary, sustainability-focused undergraduate degree programs as well as a myriad of courses. They are motivated to do this work because of their passion for sustainability, and occasionally supported by extramural funding to initiate these efforts. This work has been facilitated, in part, by the ISE's "[Working Groups](#)"¹⁶, which align faculty across the Colleges around five sustainability focus areas. The Working Groups have generated highly visible, annual events that highlight sustainability efforts on campus around the built environment, water resources, and urban forests, and have facilitated development of at least two new undergraduate certificate programs (Hunger and Food Systems and Urban Forestry).

Existing Campus Initiatives. Sustainability has blossomed at the University of Kentucky over the last decade and is now manifest in a broad set of initiatives, programs and guiding documents. The recommendations of the Faculty Sustainability Council complement several important existing initiatives, including the following.

UK Sustainability Strategic Plan (SSP). The SSP lays out a detailed vision for integrating sustainability with campus operations over the next five years with specific targets and deliverables for six key areas: 1) Materials Management 2) Energy 3) Food and Dining Services 4) Transportation 5) Buildings and Ground 6) Greenhouse Gas Emissions. The SSP was developed with the understanding that the Council would make recommendations for integrating sustainability in teaching and research. Once complete, the SSP and the work of the Council will provide a comprehensive set of sustainability targets for operations, curriculum, and research.

UK Greenhouse Gas Emissions Reduction Commitment. Signed in December of 2016 by President Capiluto, this commitment set a target of a 25% reduction in campus emissions by 2025 and highlighted that the Council would explore and initiate opportunities to promote and support sustainability-related research and education. The commitment also pledges that the operational strategies deployed to reduce campus emissions will be integrated as high-impact, hands-on components of teaching, research, and service.

UK Student Sustainability Council (SSC)¹⁷. This student organization oversees the Environmental Stewardship Fee, a mandatory student fee that generates approximately \$200,000 annually. The

¹⁵ <http://uknow.uky.edu/campus-news/uk-earns-stars-silver-rating-leadership-sustainability>

¹⁶ <https://www.research2.uky.edu/tracy-farmer-institute-sustainability-and-environment>

¹⁷ <http://www.uky.edu/sustainability/student-sustainability-council>

SSC solicits, reviews and approves project proposals from the UK community that promote the theory, practice and reality of sustainability with a focus on student impact.

Sustainability Challenge Grant Program. This ongoing internal grant-making program, a collaborative effort of the President's Sustainability Advisory Committee, The Tracy Farmer Institute for Sustainability and the Environment and the Office of Sustainability, is designed to engage multidisciplinary teams from the University community in the creation and implementation of ideas that will promote sustainability by simultaneously advancing economic vitality, ecological integrity and social equity. It has incentivized academic integration of sustainability efforts and provided a funding and organizational mechanism that overcomes some of the institutional challenges associated with cross-college and interdisciplinary collaboration. In the first four years of the program, 26 projects have been awarded a total of \$700,000 to pursue transformational, sustainability-driven projects on our campus and beyond. Funding support for the program, \$200,000 annually, is provided by the Executive Vice President for Finance and Administration, the Provost, the Vice President for Research and the Student Sustainability Council.

UK Graduate School Blue Ribbon Panel.¹⁸ The Blue Ribbon Panel (BRP) on Graduate Education identified issues which hinder UK's goal of maximizing the graduate student experience. Not surprisingly, several of these issues overlap with those related to sustainability. The BRP's final report includes recommendations which reinforce those of the FSC. Recommendation #2, which is to "Stabilize and strengthen the proposed College of Graduate Studies ..." proposes to "Develop incentives and decrease barriers to innovative initiatives, including interdisciplinary programs and non-traditional methods to transfer knowledge." And, recommendation #5, which states: "Ensure university regulations provide flexibility to promote interdisciplinary studies and new initiatives" directly reinforces recommendations made by the FSC. While these recommendations are targeted toward graduate students, if implemented, they would affect faculty as well.

Annual UK Sustainability Forum. An annual campus event aimed at bringing the community together to share sustainability-related research and other scholarly endeavors and celebrate our efforts towards improving sustainability on campus and beyond. The Forum, sponsored by the Tracy Farmer Institute for Sustainability and the Environment and the Appalachian Center, occurs in early December at the Boone Center, The Forum consists of a judged poster session for undergraduate and graduate students engaged in sustainability-related scholarly activity. Two undergraduate, two graduate, and one Appalachian Center awards are given. Additionally, undergraduates involved in the Sustainability Intern program present summaries of their experiences, and current recipients of the Sustainability Challenge Grant Program are encouraged to present on the results of their funded projects. The Forum, in its current format, has been in place for four years, and draws ~80-100 individuals.

¹⁸ <http://www.uky.edu/provost/blue-ribbon-panel-graduate-education>

Our Challenges

Structural Barriers to Interdisciplinary Programs. Challenges for sustainability efforts are emblematic of the challenges facing interdisciplinary degree programs in general. Cutting edge, problem-focused training that crosses college boundaries and prepares students for real-world problem solving is inhibited by traditional academic silos. These programs require shared resources and cross-unit administrative support. Our benchmark institutions have engaged this issue in a variety of ways, and many have developed, programs, courses, and university-wide learning outcomes relating to sustainability or sustainable development. Examples from our benchmark institutions are listed in Appendix C.

Currently at UK, there is no administrative unit that can house interdisciplinary educational programs that cross colleges, share ownership and resources in a way that address budgetary and administrative constraints, and for the purposes of this report, is in the “spirit” the interdisciplinary nature of sustainability. The Tracy Farmer Institute for Sustainability and the Environment (ISE) currently provides staff support and related resources for organizational, outreach, and research efforts under its mission area. However, ISE is housed under the Office of the Vice President for Research and is limited in resources and scope to administer curricular efforts. A University-level institute or initiative must include curricular efforts, and as such, requires support that falls under the Provost’s purview.

Lack of Support for Interdisciplinary Teaching. Although faculty in many colleges have great passion for and expertise in developing sustainability coursework, they have received mostly passive support. As a result, progress is sporadic, occurring independently inside individual colleges. Faculty engaged in these issues are typically required to find their own resources and struggle with a structural environment which makes cross-disciplinary work problematic. Further, instructional credit should be awarded equally for teaching in interdisciplinary programs and earn equivalent credit as instruction in departmental majors.

Lack of Sustainability as a Clear Academic Priority. The FSC internal review process identified several key indicators that highlight a lack of a systemic, university-wide emphasis on sustainability. For example, although the AASHE STARS reporting has highlighted several instructional and research strengths, our institutional scores are reflective of a lack of systemic, university-wide emphasis on sustainability. In particular:

- Of the 74 ranked institutions that have 20,000+ students, UK ranks 72nd on overall score.
- On the academics’ side of things, UK is 67th out of 74.
- On the research side of things, UK is 54th out of 64.

There are simple, high-return investments in incentives and assessment structure that that could significantly improve our STARS standing as well as elevate sustainability literacy and interdisciplinary thinking capacity among our students. These include ensuring students take at least one course with an associated sustainability-oriented Student Learning Outcome, ensuring all students have some exposure to sustainability opportunities during their orientation process; and, elevating the marketing of sustainability degree programs by o-marketing and coordinating between sustainability degree programs across colleges.

Scoping how sustainability is articulated from an organizational visioning perspective, the FSC reviewed the University and all publicly-available College-level strategic plans. Working from a broad, inclusive

definition of sustainability, the FSC found less than thirty sustainability-relevant passages among all strategic plans considered. Further, no consistency between colleges was found with regard to use of terminology and explicit framing of goals related to sustainability. Appendix D provides a list of sustainability-related passages by college. Clarity from university leadership on the importance of sustainability as a priority in research, instruction, and our campus as a living, learning laboratory would provide guiding language and a cohesive vision to units as they conduct their strategic planning processes.

Goals

We propose three goals in response to the challenges described above. These goals leverage strengths and synergies in sustainability-oriented academic efforts and are defined by short-term (1-2 years), medium-term (3-5 years) and long-term (6-10 years) objectives as examples of means by which goals may be operationalized. It should be noted that the Council encourages ongoing discussion with the campus community to ensure action towards these goals are inclusive and well-aligned with other strategic initiatives.

Goal 1: Facilitate Interdisciplinary Research and Instructional Efforts

UK is not alone in its struggle to break down disciplinary “silos” and address structural issues that create barriers to faculty efforts in sustainability and other interdisciplinary areas. Considering these impediments as well as the benchmarks created by other institutions leading in sustainability, the Council recommends that the university take steps to facilitate interdisciplinary research and teaching through the following:

Short-Term Objectives

- **Reward faculty for interdisciplinary research and instructional efforts.** Increasing opportunities for extramural funding, as well as growing demand for interdisciplinary curricula are drawing faculty towards critical growth areas, such as sustainability. Faculty, particularly junior-level, need assurances that their efforts in these areas are valued. This requires addressing administrative issues regarding effort and credit toward promotion and tenure, which require intentional effort and time to revise processes, administrative regulations, etc. As reviews of these issues are undertaken, we highly recommend listening to and nurturing faculty currently working in these areas, and creating a climate where successful teaching and research in interdisciplinary areas, such as sustainability, are seen as synergistic and supportive of the disciplinary expertise and home department. This might include mentoring a mentoring program for faculty as well as chairs as well as sustainability-focus development programs.
- **Hold “Town Hall” meetings to gain campus-wide dialogue and perspective on interdisciplinary barriers.** Fall 2018 is an ideal time to host a series of facilitated listening sessions, as it would capture energy from synergistic efforts such as the Graduate School Blue Ribbon report. Provost-level organization and support of such an effort would inform all of these goals and objectives, and illuminate a path forward for interdisciplinary programs, using sustainability-oriented programming as a first step in these efforts.

Medium- Term Objectives

- **Administrative Changes in Promotion and Tenure and Merit Reviews Explicitly Valuing Interdisciplinary Efforts.** These structural changes to how “statements of evidence” and

intellectual contributions are valued will benefit sustainability programming, as well as other interdisciplinary topical areas. Currently, faculty members are subject to unit-level support for these efforts. Uniform guidance at the Provost-level would institutionalize University-wide valuation of these efforts. Specific initiatives may include additional instructional credit (DOE percentage) for interdisciplinary, co-taught faculty efforts.

Long-Term Objectives

- **Establish a “School of Sustainability.”** The creation of an academic unit outside of the colleges would institutionalize support, administration, and provide ongoing oversight and assessment for sustainability efforts.

Goal 2: All UK Students Experience Sustainability in their Academic Careers

Sustainability is inherently interdisciplinary, providing an opportunity to expose our students to broad cross-college collaborations and innovative pedagogical approaches. The Council process highlighted faculty energy and unmet demand among the faculty and students for sustainability curricular and instructional efforts.

Short-Term Objectives

- **Support Efforts to Build Instructional Capacity for Sustainability Coursework.** Sustainability-oriented courses present unique challenges to instructors, including balancing the breadth and depth, potentially reaching beyond a faculty members disciplinary training, and others. A unique workshop, funded by a 2018 Sustainability Challenge Grant called “Teaching Sustainability, Teaching Sustainably” has provided support for instructors to generate new sustainability-oriented content and cohort building around these efforts. The Council recommends continued support for these efforts.
- **Facilitate Co-Branding and other Resource Sharing Among Existing Sustainability Curricula.** Unifying promotional and recruitment efforts, would help prospective students interested in sustainability find the right major, communicate how students can engage in sustainability-related coursework and strengthens faculty’s collective voice. Further, it would ensure we are not duplicating efforts and are fully leveraging opportunities for shared academic experiences such as capstone courses, experiential learning activities, etc.

Medium-Term Objectives

- **Create a Graduate-level Sustainability Certificate,** designed to be accessible to all of the Colleges. Elements would include introductory and capstone coursework that would engage students across colleges in real-world problem solving and experiential learning activities, as well as sustainability-themed coursework within the discipline area.
- **Examine the UK Core for Opportunities to Integrate Sustainability Learning Objectives for All Undergraduates** – perhaps in the Community, Culture and Citizenship or Global Dynamics course opportunities in the current UK Core model.

Long-Term Objectives

- **Establish a “School of Sustainability.”** As stated in Goal 1, this would provide an institutional home that could provide administrative support and an instructional home for these efforts.

Goal 3: Become a Recognized Leading Institution in Sustainability. Looking to and learning from national and international benchmarks for sustainability in higher education, the Council believes it is possible for UK to become a leading institution in sustainability. This will require supporting, promoting, enhancing, and assessing existing efforts to leverage our strengths and address our weaknesses in order to best serve our role as the University for Kentucky.

Short-Term Objectives

- **Celebrate our Successes and Support Allied Efforts.** We are at a unique moment where a suite of successful initiatives has created synergy and momentum for broader sustainability efforts on campus. These efforts should be celebrated, and supported for as long as they continue to provide these critical support functions. These include:
 - o *The Annual Sustainability Showcase*
 - o *The Sustainability Challenge Grant Program*
 - o *The Sustainable Pedagogies Faculty Workshop Program*
- **Create Ongoing Assessment Through Creation of a Permanent Faculty Sustainability Council.** Provost Tracy directly charged this group with developing an ongoing plan to monitor sustainability efforts on campus, so that this report and others may not sit in isolation or momentum on this work be lost. As such, we recommend an ongoing Faculty Sustainability Council, with the short term charge of assessing the campus community's response to this report, perhaps through town hall meetings, and to report findings to the Provost, Senate Council and President's Sustainability Advisory Committee. In the longer term, the FSC could be charged with assessing progress toward these recommendations. These efforts may include the advocacy for/development of mechanisms to better identify sustainability-related curricula and research at UK, which in its present form is problematic and often incomplete.

Medium-Term Objectives

- **Leverage Opportunities to Align Sustainability Efforts with Strategic Planning Processes.** The University of Kentucky Strategic Plan (2015 – 2020) for Research has an overall objective to expand our scholarship, creative endeavors and research across the full range of disciplines to focus on the most important challenges of the Commonwealth. Strategic Initiatives to achieve this overall objective include investing and recognizing areas of scholarly excellence, and recruiting and retaining outstanding faculty, staff and students. Further, many colleges are undergoing strategic planning processes of their own and provide similar opportunity. These are presented in Appendix B.

Long-Term Objectives

- **Establish a "School of Sustainability."** Such a structure has been demonstrated by national and international leading edge institutions to generate nationally-recognized undergraduate and graduate programs, as well as high impact research and service.

Appendix A. Composition of the Faculty Sustainability Council

Appointments of faculty for the 2016-2018 Council were made either by the offices of the Provost, Vice President for Research, or the UK Senate, through its Academic Planning and Priorities Committee.

Members and Departmental/Unit Affiliations

President's Sustainability Advisory Council (PSAC)

Krista Jacobsen, Horticulture (PSAC and FSC co-chair)

Shane Tedder, Office of Sustainability

Tracy Farmer Institute for Sustainability and the Environment

Rebecca McCulley, Plant and Soil Science

(resigned in December, 2017 to become department chair)

Student Representative

Ben Troupe, Philosophy and Political Science

University Senate

Kevin Yeager, Earth and Environmental Science

Margaret Mohr-Schroeder, STEM Education

Bob Sandmeyer, Philosophy

Provost and Vice President for Research

Mark Swanson, Public Health

Eric Reece, English

Fazleena Badurdeen, Mechanical Engineering

Greg Davis, Medicine

Helen Turner, Interior Design

Rebecca Bromley-Trujillo, Martin School of Public Policy and Administration

Wally Ferrier, Management, Gatton College of Business and Economics

Lee Meyer, Agricultural Economics (FSC co-chair)

Ad Hoc

Robert Shapiro, Libraries

Emily Bergeron, Historic Preservation

Appendix B. 2015 UK AASHE STARS Report – Academic Research

Excerpts¹⁹ from the Academic Research section of UK’s 2015 Sustainability Tracking Assessment and Rating Systems (STARS) Report, compiled by Dr. Rebecca McCulley, TFISE Interim Director.



Overall Academic Research Score: 8.99/12.00

Overall STARS Rating: Silver

Overall STARS Score: 45.25

Reporting Fields

- *Number of the institution’s faculty and/or staff engaged in sustainability research: 249*
- *Total number of the institution’s faculty and/or staff engaged in research: 1,214*
- *Number of academic departments (or the equivalent) that include at least one faculty or staff member that conducts sustainability research: 74*
- *The total number of academic departments (or the equivalent) that conduct research: 198*
- *A copy of the sustainability research inventory that includes the names and department affiliations of faculty and staff engaged in sustainability research: [Sustainability Faculty List STARS.xlsx](#)²⁰*

Methodology for the Research Inventory: [Dr. McCulley] performed a search in the Sponsored Project Information Files (<http://www.research.uky.edu/aspnet/vsprojects/spifi/search.aspx>) for the word ‘sustain’ in the project title, key words, or abstract, with the data limit being ‘active’ only. This generated 339 individual faculty with funded research projects. I then went through the abstract of each project and determined whether the work fit the STARS definition of ‘sustainability research.’ I marked in the spreadsheet when I thought the fit was somewhat questionable, and I eliminated those that were obviously not a fit. This generated 222 faculty with research in sustainability. Then I went through the active Tracy Farmer Institute for Sustainability & the Environment (TFISE) faculty working groups, and added any faculty that appeared there and were not already in the list. Then I checked that all faculty and staff in the 2014-2015 funded Sustainability Challenge Grant Program were included, and finally, I checked with Courtney Fisk at the Center for Applied Energy Research and added a few additional names of individuals she knows are active in sustainability research. I also included three staff members that are important to Sustainability research on our campus: Shane Tedder, Courtney Fisk, and Suzette Walling. I checked the UK Directory for the Departmental association (or institutional equivalent) for each person listed.

The website URL where information about sustainability research is available:
<http://www.tfise.uky.edu/facultyofTheEnv>

¹⁹ The STARS tool and entirety of UK’s Academic Research reporting may be accessed via:

<https://stars.aashe.org/institutions/university-of-kentucky-ky/report/2015-10-16/AC/research/AC-9/>

²⁰ <https://stars.aashe.org/media/secure/266/6/470/2678/Sustainability%20Faculty%20List%20STARS.xlsx>

Appendix C. Sustainability Programs at our Benchmark Institutions

Degree programs, coursework, and curricular highlights compiled during the FSC's External scoping process, led by Dr. Emily Bergeron, Department of Historic Preservation.

Summary. Programs at institutions other than the UK Benchmark Universities offer a variety of certificates, courses, and even university-wide learning outcomes relating to sustainability or sustainable development. The best of these programs incorporates holistic or systemic thinking and interdisciplinary/trans-disciplinary teaching and research. There is an emphasis on applied learning, community outreach, evidence-based learning, and on changing attitudes and values. This is reflected in learning outcomes that are broken down into knowledge and skills, application in academic/professional career, and personal values. Although the goal of these programs is to create students that are “agents of change”, it is not uncommon for these programs to take a more superficial look at sustainability (e.g. recycling, consumption, etc.), considering only environmental issues rather than considering the triple bottom line. The University of Michigan's Graduate Certificate provides the best model for an equivalent program at UK; however, the structure of the University of Wisconsin-Madison and University of Iowa undergraduate certificate programs have incorporated excellent learning objectives and program structures as well.

Benchmark Programs

University of Michigan-Ann Arbor²¹. The University offers more than 700 courses that address sustainability. Students can choose from more than 10 undergraduate degrees, a dozen master's degrees, and 15 doctoral programs related to sustainability—as well as a wide variety of minors, concentrations, dual-major programs, and certificate options. The institution also offers a **Graduate Certificate in Sustainability**²² through the School for Environment and Sustainability. The Sustainability Graduate Certificate is open to students enrolled in any University of Michigan graduate program. The certificate requires six credits of coursework in fundamental knowledge, six credits of coursework in skill development and a capstone experience, which may entail an additional 3-credit course or an approved co-curricular experiential activity. The Sustainability Knowledge Fundamentals portion focuses on foundational theory and background within a specific topic, including courses in the principles of sustainability, ethics, behavior, education, biodiversity conservation, policy, law, or other sustainability-themed courses that look at case studies. Skill Set Development courses focus on developing techniques and tools of analysis, intervention or design principles, and generally often incorporate problem sets, laboratory or field-based components, design projects, mock negotiations, or other experiences directly related to skill development. Courses are related to modeling, mapping, design, policy-making, behavior change, analytical problem solving, and otherwise acquiring experience applying different tools or techniques.

UC Davis²³. The University offers numerous courses that address sustainability at the graduate and undergraduate levels, which have been curated for students to pick from as part of the institution's 2010 Climate Action Plan. Students also have an opportunity to take part in an Education for Sustainability Program - a seminar focused on 1) interdisciplinary lectures addressing principles of sustainability and 2) applying them to daily life. Students in this program may also participate in an Action Research Team project. Various research groups on agricultural sustainability, energy

²¹ <http://sustainability.umich.edu/>

²² http://seas.umich.edu/academics/grad_cert/sustainability

²³ <http://sustainability.ucdavis.edu/students/classes/>

efficiency, environmental studies, and transportation provide sustainability-focused programs (only one supporting a major in Sustainable Agriculture and Food Systems). UC Davis Extension and its Center for Entrepreneurship also offer a series of professional and continuing education certificates relating to energy efficiency, sustainable building design, and green entrepreneurship.

University of Iowa²⁴. Iowa offers a certificate in sustainability to undergraduate students and post-baccalaureate students not enrolled in graduate or professional programs. This 24 credit certificate draws from multiple disciplines to provide knowledge and skills necessary for contributing to the development of sustainable systems. No more than three courses may be taken in a single department. According to the University, certificate students will “enhance their preparation for a variety of vocations such as researcher, corporate officer, technology specialist, farmer, government official, and grassroots advocate.” The certificate is overseen by a nine- person advisory board.

Michigan State University²⁵. Michigan State has multiple degrees, minors, and specializations addressing sustainability including an MA and PhD in Community Sustainability, BA in Environmental Studies and Sustainability, and a BA, MA, and PhD in Sustainable Parks Recreation and Tourism/Sustainable Tourism and Protected Area Management. The University has undergraduate minors in Environmental and Sustainability Studies, Sustainable, Agriculture and Food Systems, Sustainable Natural Resource Recreation Management, and The City: Environment, Design, and Society. It additionally has a graduate specialization in Business Concepts for Environmental Sustainability and Conservation. There are no certificates in sustainability.

University of Missouri- Columbia. The institution has a BS in Sustainable Agriculture and the College of Engineering has a mission in sustainability in food, energy, water, and sustainable cities.

University of Arizona. Sustainability at the University of Arizona is evident extensively across the campus. The institution has undergraduate degrees in Sustainable Built Environments, General, Sustainable Built Environments, Heritage Conservation Emphasis, Sustainable Built Environments: Sustainable Buildings Emphasis, Sustainable Built Environments: Sustainable Communities Emphasis, Sustainable Built Environments: Sustainable Landscapes Emphasis, Sustainable Plant Systems: Agronomy, Sustainable Plant Systems: Controlled Environment Agriculture Emphasis, and Sustainable Plant Systems: Environmental Horticulture. Additionally, 36 of the University’s graduate programs in STEM fields, education, design, public policy, and planning emphasize sustainability in their degree descriptions. There are two certificates (Aquaculture and Heritage Conservation) that address sustainability; however, there is no sustainability certificate.

University of Minnesota-Twin Cities²⁶. The institution has an undergraduate Sustainability Studies Minor that is open to all undergraduates and addresses the ecological, social, ethical, political, and economic forces impacting human society and the natural environment. An introductory core course provides students an overview of models for understanding sustainability using case studies to illustrate the challenges of sustainability in practice. Students choose additional electives from multidisciplinary courses with perspectives related to sustainability. Finally, a capstone project requires students to synthesize and apply knowledge to actual sustainability problems. Students complete 6 credits of required courses for the core and the capstone, and 9-12 restricted electives, for a total of 15-18 credits. There are also undergraduate degrees in Sustainable Agriculture Minor and Sustainable Systems Management.

²⁴ <https://sustainability.uiowa.edu/teaching-a>

²⁵ <https://reg.msu.edu/AcademicPro>

²⁶ <https://www.cfans.umn.edu/academics/majors-minors>

The Ohio State University. The institution offers 340 courses that focus specifically on sustainability issues and over 700 additional courses that feature sustainability topics. The university also offers a major in [Environment, Economy, Development and Sustainability](#)²⁷ and many colleges offer minors with a sustainability focus. There is no graduate certificate focused specifically on sustainability.

University of Wisconsin-Madison²⁸. The institution has a 12 credit undergraduate certificate in sustainability that helps students develop literacy in environmental, social, and economic dimensions of sustainability, as well its inherent systems nature. Students must complete courses approved for each of the above four dimensions of sustainability and must complete an additional community engagement requirement.

University of North Carolina, Chapel Hill²⁹. The institution's 12 credit undergraduate certificate provides an understanding of sustainability utilizing a "unifying approach" to human and environmental problems. Courses in the program include a variety of classes in STEM fields, policy and advocacy, planning, business, and others. One clear limitation of the program is that students who major in the B.A. or B.S. environmental degree programs are not allowed to minor in sustainability studies.

University of Florida³⁰. The University of Florida has several [undergraduate and graduate degree programs](#)³¹ in sustainability. The institution also offers graduate certificates in Sustainable Agroecosystems, Sustainable Construction, Sustainable Engineering, Sustainable Land Resource and Nutrient Management, and Sustainable Development Practice. There is no general graduate certificate in sustainability.

²⁷ <https://senr.osu.edu/undergraduate/majors/environment-economy-development-and-sustainability>

²⁸ <https://www.nelson.wisc.edu/undergraduate/sustainability-certificate/index.php>

²⁹ <http://catalog.unc.edu/undergraduate/programs-study/sustainability-studies-minor/>

³⁰ <http://sustainable.ufl.edu/academics-research/>

³¹ <http://sustainable.ufl.edu/academics-research/sustainability-degree-programs/>

Appendix D. Sustainability in College-Level Strategic Plans

Passages from College Strategic Plans that include sustainability-oriented language from the FSC internal scoping process.

Summary. As discussed in the body of the FSC report, no consistency between colleges was found with regard to use of terminology and explicit framing of goals related to sustainability. From our analysis, especially given the paucity of sustainability-relevant elements expressed in these strategic plans, we offer the following conclusions and insights: 1) Although some colleges have strong, explicit elements of their curricula and research squarely positioned in domains related to sustainability, it is insufficiently and inconsistently expressed as values, ideals, or goals in their strategic plans; 2) Independent of whether some colleges actually engage in sustainability-related curricula or research, the strategic emphasis on constructs such as social responsibility, community/civic engagement, or public good are encouraging and, perhaps, imply an alignment with sustainability. However, we urge that colleges be more explicit; and 3) Many colleges emphasize collaborations with other academic units and wider range of stakeholders as a strategic goal. So, given that sustainability is inherently multidisciplinary, the expressed willingness of some colleges to widen its engagement both within and outside the university shows promise for a deeper and more comprehensive embrace of sustainability.

College	Documents	Sustainability-relevant Passages
Arts & Sciences	Academic plan 2007-2012	<ul style="list-style-type: none"> • Perpetually re-evaluating the assumptions, prejudices and aspirations of <i>one's society</i>, community • Biological-related undergraduate degrees are passports into a variety of postgraduate degrees in health, <i>environmental</i> and agricultural sciences • Today's fastest-growing occupations are rooted in the arts and sciences ... <i>environmental</i> scientists...college places a priority on interdisciplinary learning and career preparation
Agriculture, Food & Environment	Strategic plan	<ul style="list-style-type: none"> • finding solutions to improve lives today and creating a <i>sustainable</i> future • students who are competent, <i>responsible</i> • addressing needs in agriculture, <i>natural resources</i> • expanding knowledge to improve the quality of life and <i>sustainability</i> • provide a culturally aware environment for successful <i>engagement in a global society</i> • new state-of-the-art <i>green, LEED-certified</i> classroom building • implementation of <i>certified "green" technologies</i> for all on- and off-campus facilities
Business & Economics	Strategic plan	<ul style="list-style-type: none"> • Gatton Code of Conductthat fosters professionalism...<i>social responsibility</i> • New honors program in <i>Social Enterprise</i>

Communication & Information	Strategic plan	<ul style="list-style-type: none"> • Promote research that maximizes <i>social</i>, intellectual and economic opportunities • To promote <i>civic responsibility</i> • We value integrity...<i>social responsibility</i>
Design	Strategic plan	<ul style="list-style-type: none"> • A way of thinking that can be applied to all scales of human existence...healthcare, <i>soil, water and climate change</i> • Develop programs and certificates that include...design and <i>climate, adaptive reuse</i>
Education	Strategic plan	<ul style="list-style-type: none"> • Identify, in partnership with local and global community stakeholders, <i>emerging issues</i>, challenges
Engineering	Strategic Plan	<ul style="list-style-type: none"> • Expand number of faculty...in energy, manufacturing and <i>sustainability</i>
Health Sciences	Strategic plan	<ul style="list-style-type: none"> • Provide opportunities for...<i>community engagement...volunteerism...expand our students' world views</i>
Fine Arts	Strategic Plan	<ul style="list-style-type: none"> • To...affect personal, economic, and <i>social change</i> • Establish relationships...with <i>non-traditional external organizations</i> (e.g. military, healthcare, etc.)
Honors	College proposal	<ul style="list-style-type: none"> • <i>Multidisciplinary curriculum...prepares students for advanced study and global competency</i> • <i>Social responsibility...civic engagement</i> • Partnerships with other programs; <i>social enterprise, SEAM</i>, etc.
Law	Strategic plan	<ul style="list-style-type: none"> • Develop plan to engage students in <i>community initiatives</i> hosted by legal, civic, education, business and <i>non-profit sectors</i> • newly created Enterprise Strategy Office (ESO) will lead...implementation of strategy...<i>political, social, economic, technological trends</i>
Medicine (UK Healthcare)	Strategic plan	<ul style="list-style-type: none"> • physical expansion for UK HealthCare, with more than \$1.6 billion invested in <i>new and improved facilities</i>
Pharmacy	Strategic plan	<ul style="list-style-type: none"> • Promote the <i>public good</i> through the application of our expertise and resources to meet social, economic, educational, and health challenges

University of Kentucky
Student Sustainability Council
2018-2019 Welcome Report



Author: Julianna Dantzer

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Introduction

The Student Sustainability Council (SSC) was formed in 2009 to distribute the newly created “Environmental Stewardship Fee” in the University of Kentucky student tuition. The Environmental Stewardship Fee was implemented as a means to fund sustainability initiatives brought forth by members of the UK community. Since 2009, the fee has grown from \$0.50 to \$4.00, allowing the Council’s funding capabilities to grow from approximately \$20,000 to \$191,000 annually.

The Council consists of between 11 and 29 undergraduate and graduate students. At-Large members are selected based on their knowledge of and passion for sustainability and their ability to provide valuable input on the Council. Approved student organizations may also internally select members to reside on the Council. As of the 2017-2018 year, the number of At-Large members cannot be less than half the number of organization representatives.

Council Member	Major(s)	Year	Representation
Baller, Cameron	NRES; Economics	Senior	At-Large
Beavin, Sophie**	NRES	Junior	At-Large
Bourque, Adam	NRES	Senior	At-Large
Collins-Patterson, Maya*	Forestry	Senior	At-Large
Cook, Rachel**	ENS; NRES	Senior	At-Large
Dantzer, Julianna**	ENS; NRES	Senior	At-Large
Gabrielson, Zoe*	Ag Econ; Marketing	Junior	At-Large
Hagan, Macy	Ag Econ; Marketing	Sophomore	At-Large
Halmos, Viktor*	NRES; SAG	Senior	At-Large
Hilbrecht, Claire	NRES; Geology	Sophomore	At-Large
Huether, Joel	Chemistry; Spanish; Physics	Junior	At-Large
Jenkins, Isabel*	NRES	Junior	At-Large
Luker, Cameron*	NRES	Sophomore	At-Large
Ritter, Celia	Biology; ENS	Senior	At-Large
Sanchez, Maria**	Political Science; ENS	Junior	At-Large
Van Son, Megan*	Management; Marketing	Senior	At-Large
Bartley, Evan			Engineers Without Borders
McAllister, Laura	English; ENS	Junior	Greenthumb
Jones, Cody	NRES; SAG	Senior	Hort Club
Hall, Emily			LEYO
Batty, Evan	Geography	Grad Student	PEWG
Cashdollar, Nickie	Management; Marketing	Junior	Social Enterprise Scholars
Edmonson, Ashlee			Society of Women Engineers
Crosby, Claire*	Human Nutrition	Junior	SSTOP Hunger
			WRFL
			Mountain Cats
			PSAC

*: served on the 2016-2017 Council; **: also served on the 2015-2016 Council

2017-2018 Summary Statistics

- a) Funding
 - i) 37 Projects were proposed for a total of \$383,289.46. Of these, 34 were funded, approving a total of \$244,407.43. Of the funded projects, 7 were only approved for partial funding, providing \$66,013 less than requested.
 - ii) 12 (35.2%) of the funded projects were repeats, totaling in \$98,359, or 25.7% of funds going towards repeat projects. This funding amount is a significant drop from the previous year, where 42.9% of funded projects were repeats, accounting for 49.1% of the 2016-2017 budget.
 - iii) The projects comprised of 14 discipline/focus areas, with projects falling into 8 different categories. Funding was provided to 29 different departments and organizations. 11 (32.4%) of the funded proposals were proposed by undergraduates, but that only accounted for \$33,583, or 8.8% of the total budget.
 - iv) At least 20 of the 34 funded projects have been completed.
- b) Membership
 - i) Applications were reviewed for 4 new organizations (Horticulture Club, Mountain Cats, and Social Enterprise Scholars were approved, Students Against Sweat Shops was not).
 - ii) 2 organizations were removed (Greenhouse Club and Interfraternity Council).
 - iii) There were 24 At-Large applicants to become full members on the 2017-2018 Council, and 7 mid-term At-Large applicants.
 - iv) 10 members of the 2016-2017 Council served on the 2017-2018 Council, and 10 members of the 2017-2018 Council will serve on the 2018-2019 Council.
- c) Constitution
 - i) There were 5 major constitutional changes, regarding:
 - (1) Council demographics
 - (2) Changes related to the newly created webform
 - (3) Outreach Chairs
 - (4) Tie-breaking
 - (5) Abstention

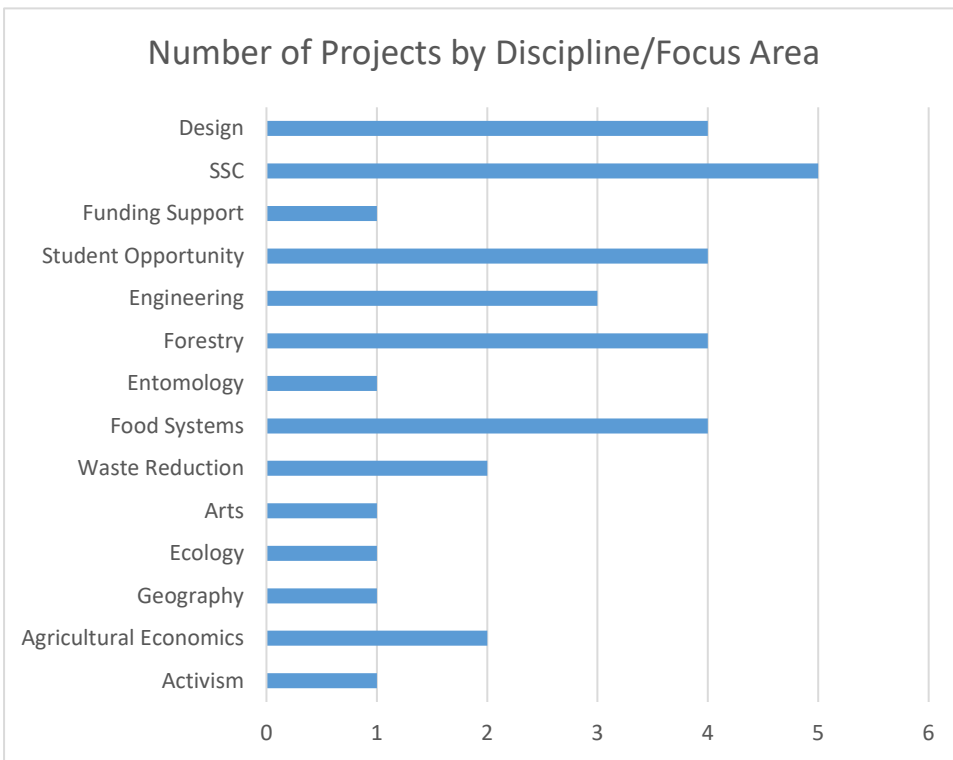
Funded Projects 2017-2018

Funded Projects 2017-2018									Remaining to be	Repeat
Date	Discipline/Focus	Amount		Distributed	Repeat					
Approved	Title	Area	Category	Submitter	Position	Dept./Org. Affiliation	Requested	Approved	(as of 6/21)	Project?
8/29/2017	Bleed Blue, Live Green	Agricultural Economics	Research	Josey Moore	U	Dept. of Agricultural Economics; UK Dining	\$2,800	\$2,800	\$0	N
9/5/2017	Forgotten Coast Film Screening	Forestry	Seminar	Shane Tedder	S	Office of Sustainability	\$1,950	\$1,950	\$1,950	N
9/19/2017	AASHE Conference	Student Opportunity	Conference	Zoe Gabrielson	U	SSC External	\$5,800	\$5,800	\$0	Y
10/3/2017	UFI Seminar Speaker Series	Forestry	Seminar	Lynne Rieske-Kinney	S	Urban Forest Initiative; Dept. of Entomology; Dept. of	\$7,000	\$7,000	\$0	Y
10/3/2017	DOPE 2018	Geography	Conference	Alex S. Brown	G	Dept. of Anthropology; UK Political Ecology	\$8,010	\$6,000	\$0	Y
10/3/2017	UK Gato del Sol Solar Car Project	Engineering	Education	Emma Deye	U	College of Engineering	\$13,000	\$13,000	\$0	Y
10/3/2017	800 Acorns	Design	Education	Bruce Swetnam	S	College of Design; School of Architecture	\$2,375	\$2,375	\$0	N
10/17/2017	From Garden to Table: Sustainable Solutions through	Food Systems	Campus Sustainability	Chase Thorton	U	Campus Kitchen at the University of Kentucky	\$3,195	\$3,125	\$0	N
10/17/2017	Students for Zero Waste Conference	Waste Reduction	Conference	Lauren Thomas	U	SSC Internal	\$1,082	\$1,082	\$0	N
12/5/2017	Maasai Mara Martial Eagle	Forestry	Research	Richard Stratton	G	Dept. of Forestry	\$8,525	\$8,525	\$0	N
12/5/2017	Summer Sustainability	Student Opportunity	Research	Evie Russell	S	Office of Undergraduate	\$16,500	\$16,500	\$0	Y
12/5/2017	Water, Electricity, and Gas Conservation through	Agricultural Economics	Research	Mehdi Nemati	G	Dept. of Agricultural Economics	\$1,500	\$1,500	\$0	N
12/5/2017	SSC Spring Retreat	SSC	SSC	Zoe	U	SSC Internal	\$1,543	\$1,543	\$1,543	Y
1/17/2018	Sustainability Interns 2018/2019	Student Opportunity	Stipend	Shane Tedder	S	SSC External; Office of Sustainability; Tracy Farmer Institute for Sustainability and the	\$9,000	\$9,000	\$9,000	Y

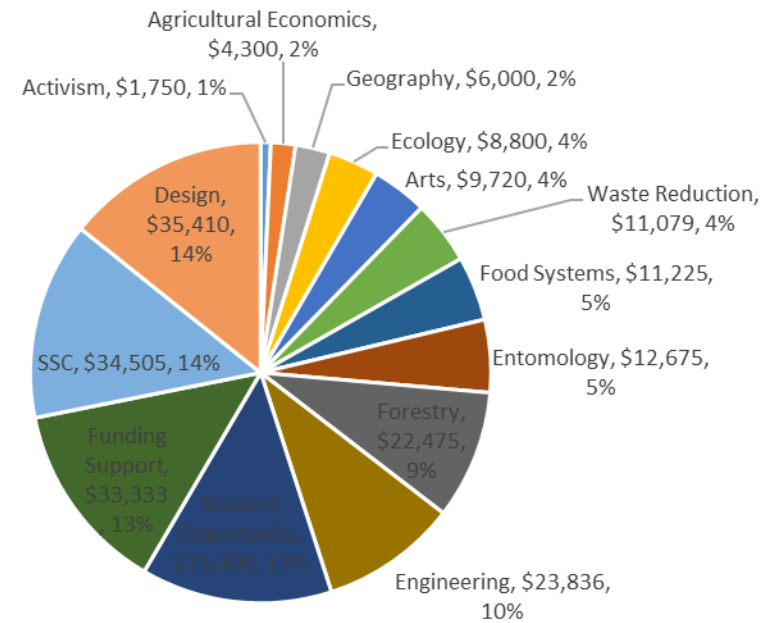
1/17/2018	Humanitarian Architecture Design Studio	Design	Education	Bruce Swetnam	S	College of Design; School of Architecture	\$22,800	\$11,250	\$0	N
1/17/2018	SSC Online Proposal	SSC	SSC	Gabriel Smith	G	SSC Internal	\$1,800	\$1,800	\$0	N
1/17/2018	UK Campus Troubadours	Arts	Campus Sustainability	Dieter Hennings	S	School of Music	\$15,620	\$9,720	\$0	N
2/7/2018	Sustainability Challenge Grants	Funding Support	Campus Sustainability	Shane Tedder	S	SSC External	\$33,333	\$33,333	\$33,333	Y
2/7/2018	Outreach	SSC	SSC	Sophie	U	SSC Internal	\$435	\$435	\$54	Y
2/7/2018	Peru Entomology Program 2019	Entomology	Education	Josiah Ritchey, Leslie Potts,	G	Dept. of Entomology	\$16,575	\$12,675	\$12,675	N
2/7/2018	Bur Oak Tree Crutch at	Design	Community Sustainability	Helen Turner	S	College of Design; LFUCG	\$12,760	\$12,760	\$0	N
2/21/2018	SAG Spring Break	Food Systems	Education	Mark Williams	S	Dept. of Horticulture; Sustainable Agriculture	\$3,000	\$3,000	\$0	Y
2/21/2018	Fair Trade at UKY	Food Systems	Campus Sustainability	Megan Van Son	U	SSC External	\$2,100	\$2,100	\$380	N
3/7/2018	On-Campus Outdoor Recycling	Waste Reduction	Campus Sustainability	Joanna Ashford	S	PPD Dept of Waste, Recycling, & Trucking	\$9,997	\$9,997	\$9,997	N
3/21/2018	2018 Sustainability Pitch Competition	Student Opportunity	Campus Sustainability	Zoe Gabrielson	U	College of Business & Economics	\$2,000	\$2,000	\$2,000	N
3/21/2018	SSC Intern 2018	SSC	SSC	Zoe	U	SSC Internal	\$2,405	\$2,748	\$2,748	Y
4/4/2018	CAER Research	Engineering	Research	Michael Hayes Wilson	S	UK Center for Applied Energy Research	\$6,836	\$6,836	\$0	N
4/4/2018	Sustainability Graduate Assistantship	SSC	SSC	Jennifer Taylor	G	SSC Internal	\$27,979	\$23,979	\$23,979	N
4/18/2018	EREC Stream Restoration	Ecology	Education	Philip Crowley	S	Dept. of Biology, Ecological Research and Education Center;	\$40,796	\$8,800	\$8,800	N
4/18/2018	Otter Research	Forestry	Research	Gabriela A. Wolf-	G	Dept. of Forestry	\$7,000	\$5,000	\$0	N
4/18/2018	Sustainable Manufacturing Conference	Engineering	Seminar	Ridvan Aydin	G	Institute for Sustainable Manufacturing and	\$4,000	\$4,000	\$0	N

4/18/2018	Connecting Food to the First-Year Experience	Food Systems	Education	Alissa Rossi	S	College of Agriculture; The Food Connection	\$3,000	\$3,000	\$3,000	N
4/18/2018	Catalyst Summer Training Program 2018	Activism	Education	Sophia Dovenbarger & Cameron	U	Kentucky Student Environmental Coalition	\$1,750	\$1,750	\$1,750	Y
4/18/2018	Berlin Architecture Study	Design	Education	Jason Scroggin	S	College of Design; School of Architecture	\$9,025	\$9,025	\$0	N

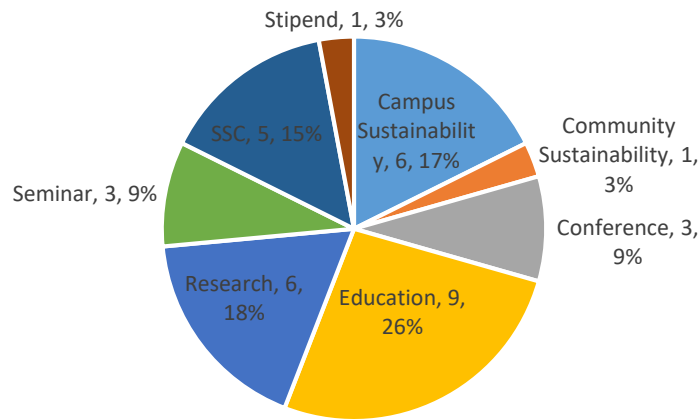
2017-2018 Funded Proposals Data Analysis



Amount Approved by Discipline/Focus Area



Number of Projects Funded by Category



Analysis of Funding by Discipline/Focus Area

- The discipline with the most funded proposals was the SSC. 5 of the 34 (14.7%) proposals funded were for the SSC. This accounts for a total of \$34,505, or 14.2% of total funds.
- Design, Student Opportunities, Forestry, and Food Systems each had 4 (11.8%) proposals. Student Opportunities represent projects that any UK student could apply and benefit from.

Analysis of Funding by Category

- Education was the largest category at 9 (26.5%) proposals. This category includes projects that assist with student or community education.

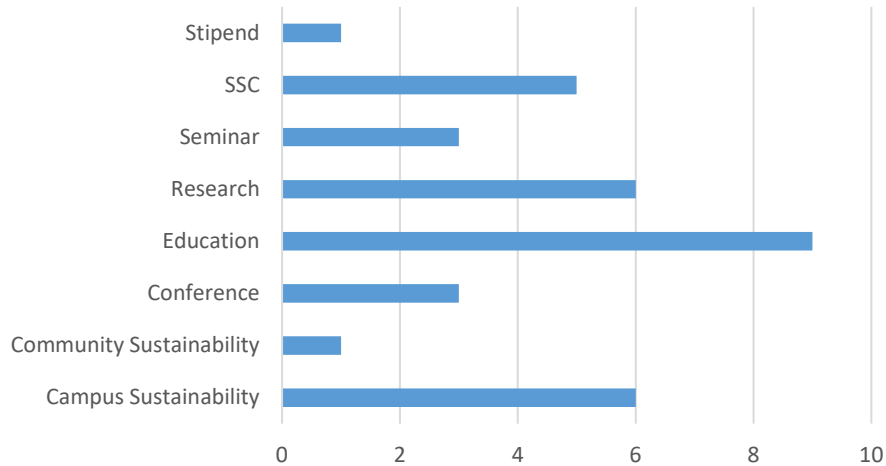
Analysis of Funding by Submitter's University Standing

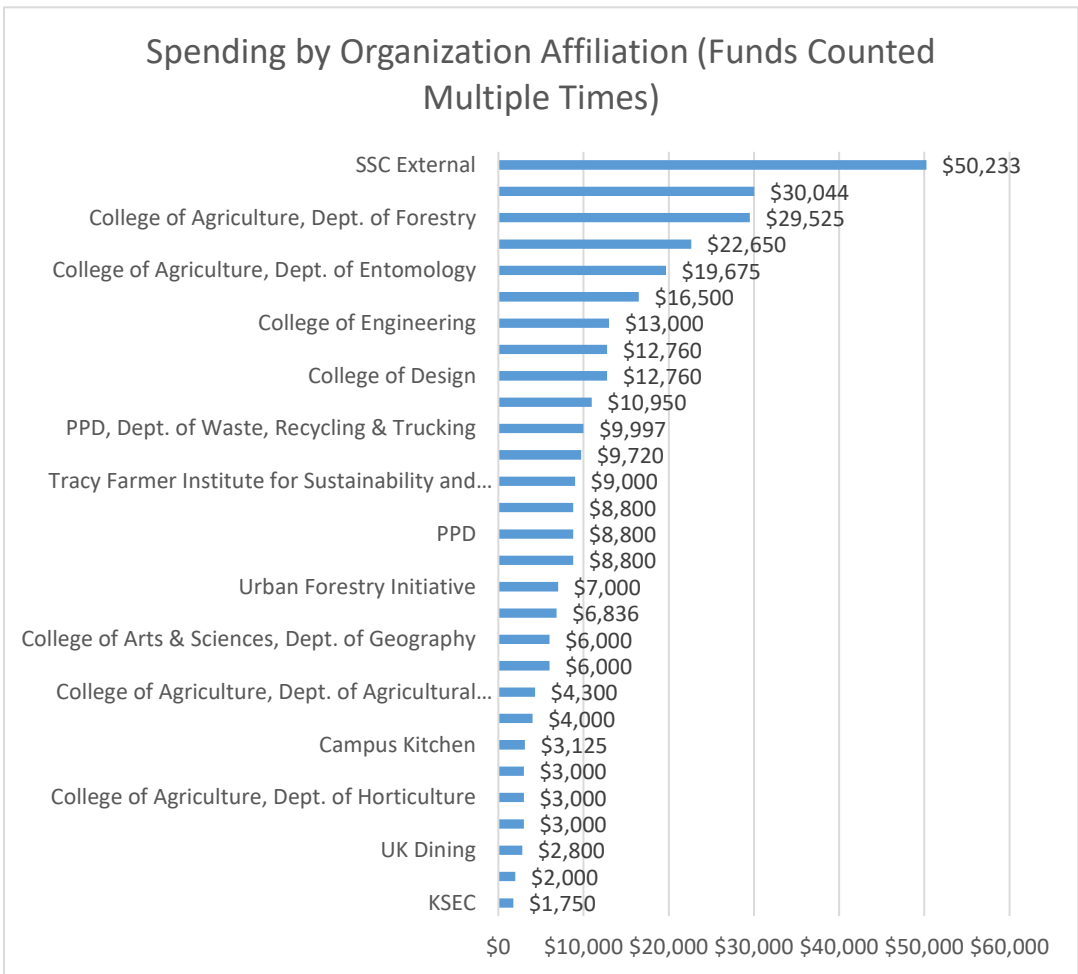
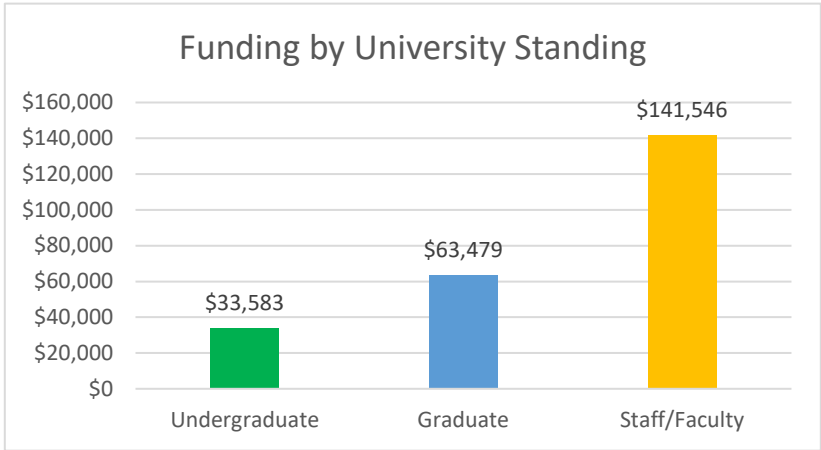
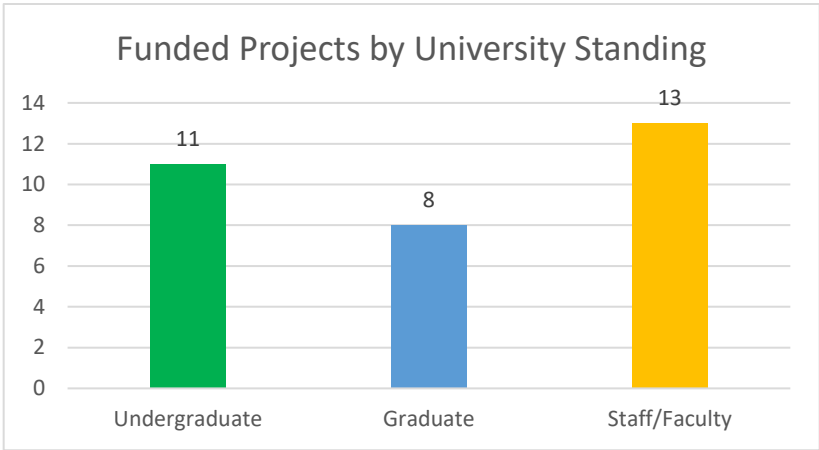
- 11 (32.4%) of the funded proposals were proposed by undergraduates, but that only accounted for \$33,583, or 8.8% of the total budget.
- 8 (23.5%) of the funded proposals were proposed by graduates, accounting for \$63,479, or 26% of the total budget.
- Staff/Faculty had both the most number of proposals and the most funding, at 13 (38.2%) and \$141,546 (57.9%), respectively.

Analysis of Funding by Submitter's Department or Organization

- External SSC projects accounted for the greatest amount of funding at \$50,233 (20.6%), followed by SSC Internal projects at \$30,044 (12.3%), a significant increase from the 7.2% of funds that went to SSC Internal projects in the 2016-2017 year.

Number of Projects Funded by Category





2011-2018 Total Project Funding

	Number of Proposals Approved (Submitted)	Amount of Funding Approved	Amount of Funding Requested	Lowest Requested, Highest Requested
2011-2012	20	\$102,327	\$151,547	
2012-2013	32	\$141,701	\$187,677	
2013-2014	34 (39)	\$214,411	\$244,670	\$200, \$46,000
2014-2015	28 (40)	\$206,299	\$259,576	\$60, \$50,000
2015-2016	31 (38)	\$148,616	\$194,759	\$200, \$33,333
2017-2017	35 (41)	\$216,555	\$306,777	\$350, \$50,000
2017-2018	33 (37)	\$244,407	\$383,289	\$1,082, \$33,333

Repeat Projects, 2011-2018

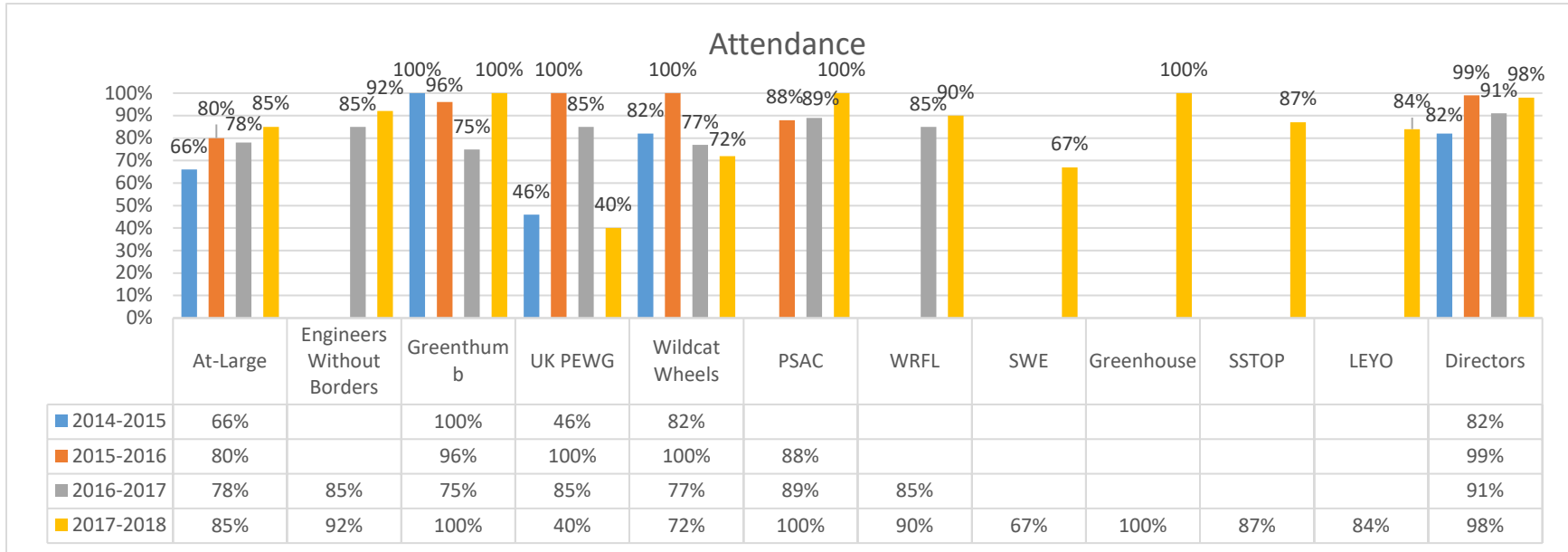
Name	SSC? Y/N	Year of First Request	Years Funded	Total Approved Funds from 2011-2012 through 2017-2018	Average Amount
SAG Trip	N	2016-2017	2	\$3,960	\$1,960
Martial Eagles Research	N	2015-2016	2	\$15,025	\$7,513
Recycling Bin Expansion	N	2015-2016	2	\$19,997	\$9,999
CKUK	N	2015-2016	3	\$11,125	\$3,708
Outreach Materials	Y	2015-2016	3	\$2,496	\$832
UFI Seminar Speakers	N	2015-2016	3	\$15,725	\$5,242
In Motion: Student Design Exhibition	N	2015-2016	2	\$5,766	\$2,883
Sustainability and Garden Science	N	2015-2016	2	\$11,040	\$5,520
Catalyst Summer Training Program	N	2014-2015	4	\$6,600	\$1,650
Student Summer Sustainability Fellow	N	2014-2015	4	\$47,000	\$11,750
Beaux Arts Ball	N	2014-2015	3	\$8,000	\$2,667
Fall Retreat	Y	2013-2014	5	\$4,093	\$816
SSC Summer Intern	Y	2013-2014	5	\$10,394	\$2,079
Sustainability Challenge Grant	N	2013-2015	5	\$158,332	\$31,666
UK Solar Car	N	2012-2013	5	\$43,000	\$8,600
Student Interns	Y	2011-2012	7	\$48,000	\$6857
AASHE	Y	2011-2012	7	\$43,375	\$6,196
DOPE	N	2010-2011	8	\$58,877	\$8,813

2017-2018 Council Information and Attendance

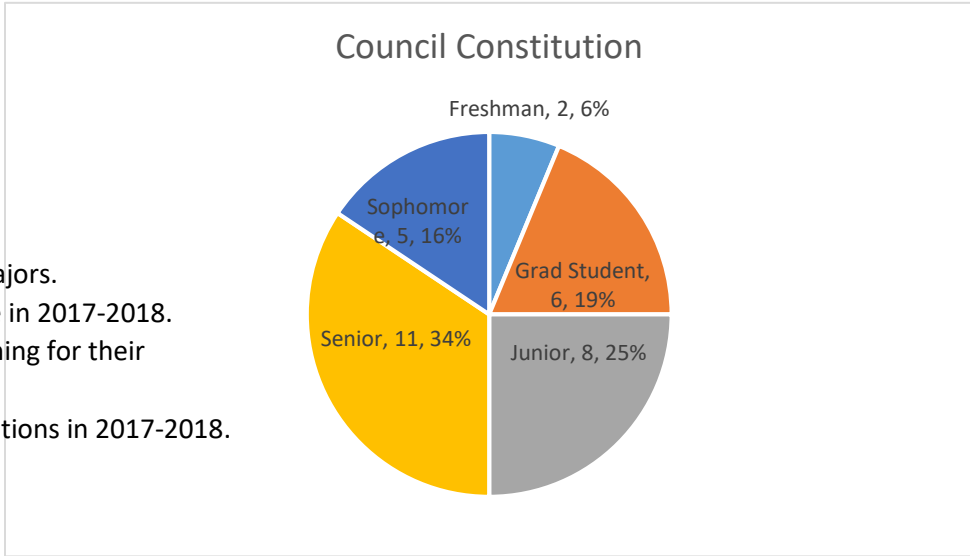
Council Member	Major(s)	Previous Council Experience	Future Council Member	Year	Representation	Fall	Spring	Total
Beavin, Sam	Med School			Grad Student	At-Large	N/A*	61.54%	61.54%
Beavin, Sophie	NRES	X	X	Sophomore	At-Large	100%	100%	100%
Beavin, Zach	MBA			Grad Student	At-Large	100%	N/A*	100%
Braga, Nachie	NRES			Junior	At-Large	100%	83.33%	90.28%
Collins-Patterson, Maya	Forestry		X	Junior	WRFL	100%	83.33%	90.28%
Cook, Rachel	NRES; ENS	X	X	Junior	PSAC	100%	100%	100%
Crosby, Claire	Human Nutrition		X	Sophomore	SSTOP	100%	76.92%	86.53%
Dalton, Sarah	ENS			Senior	PEWG	40%	N/A*	40%
Dantzer, Julianna	NRES; ENS	X		Junior	At-Large	100%	90.91%	94.70%
Dunoyer, Luc	Entomology			Grad Student	At-Large	N/A*	46.15%	46.15%
Gabrielson, Zoe	Ag Econ; Marketing		X	Sophomore	At-Large	100%	85.71%	91.66%
Gershtenson, Maya	Biology			Senior	LEYO	100%	72.73%	84.01%
Halmos, Viktor	NRES; SAG		X	Junior	Greenhouse	100%	100%	100%
Harral, Carson				Freshman	At-Large	N/A*	83.33%	83.33%
Jenkins, Isabel	NRES		X	Sophomore	At-Large	N/A*	100%	100%
Kreppert, Rachel	Marketing; ENS			Junior	At-Large	N/A**	71.43%	71.43%
Lark, Ryan	Animal Science; Biology; ENS	X		Senior	Greenthumb	100%	100%	100%
Lee, Beungchan	Electrical Engineering			Senior	At-Large	50%	N/A*	50%
Luker, Cameron	NRES		X	Freshman	At-Large	N/A*	85.71%	85.71%
McPherson-Hathaway, Braydi	Controlled Environment Systems Engineering			Grad Student	At-Large	N/A**	100%	100%
Miniard, Jared	Electrical Engineering			Senior	EWB	100%	85.71%	91.66%
Mullins, Mitch	Computer Engineering; Computer Science	X		Senior	At-Large	100%	83.33%	90.28%
Odom, Cassie	Geography; ENS			Senior	At-Large	80%	71.43%	75%
Peter, Sarah	NRES			Junior	At-Large	100%	N/A*	100%
Potts, Leslie	Entomology			Grad Student	At-Large	75%	N/A*	75%
Sanchez, Maria	Political Science; ENS	X	X	Sophomore	At-Large	N/A*	83.33%	83.33%
Shelton, Abby	Electrical Engineering			Senior	SWE	N/A**	66.67%	66.67%
Smith, Gabe	Electrical Engineering	X		Grad Student	At-Large	100%	100%	100%
Thomas, Lauren	Communications; ENS	X		Senior	At-Large	100%	100%	100%
Van Son, Megan	Management; Marketing		X	Junior	At-Large	N/A*	83.33%	83.33%
Varney, William	Mechanical Engineering	X		Senior	Wildcat Wheels	83.33%	64.29%	72.22%
Williams, Amanda	Biosystems & Agricultural Engineering	X		Senior	At-Large	100%	71.43%	83.33%
Xu, Alan	Ag Econ			Grad Student	At-Large	100%	N/A*	100%

N/A*: Wasn't on Council; N/A**: Excused Class Conflict

2014-2018 Council Statistics, Attendance Rates, and Group Representation



- 43.5% of the 2017-2018 Council returned after serving on the 2016-2017 Council.
- % of the 2017-2018 Council will return to serve on the 2018-2019 Council. (Need to know how many orgs will give reps)
- Of the total majors/fields of study on the SSC:
 - i. 16 were in the College of Agriculture, Food, & Environment
 - ii. 9 were in the College of Arts & Sciences
 - iii. 7 were in the College of Engineering
 - iv. 3 were in the College of Business & Economics
 - v. 1 was in the College of Communication & Information
 - vi. 1 was in the College of Medicine
- 10 (30.3%) Council members were NRES majors and 7 (21.2%) were ENS majors.
- SWE, Greenhouse, SSTOP, and LEYO served on the Council for the first time in 2017-2018.
- Horticulture Club, Mountain Cats, and Social Enterprise Scholars will be joining for their inaugural year in 2018-2019.
- Greenhouse Club and the Interfraternity Council were removed as organizations in 2017-2018.



Summary of Constitutional Amendments

Article IV, Section A: Composition

- Defined quorum as more than half of the Council's current sitting membership.
- The number of At-Large members on the Council must not be less than half of the member organizations or greater than one and a half times the number of member organizations—if there were 8 organizations on the council, there could be 4-12 At-Large members.

Article IV, Section C: Appointment At-Large Council Members

- At-Large applicants must score above an average of 3, or they are not considered for membership.

Article IV, Section D: Appointment of Executive Structure

- The Director of Outreach can nominate up to 4 members to the Outreach Chair positions before the second meeting of the fall semester, except the Green Talks Chair, which must be appointed before the end of the Spring semester in order to receive WRFL training. Nominations must be approved by the majority of SSC directors. If no one volunteers, or if the Director does not accept anyone, then the Director of Outreach must assume those responsibilities.

Article IV, Section E: Director Responsibilities

- The Director of Operations is in charge of creating a standing committee of at least 2 other members to vote on applications for approved proposals that require it (conferences, awards, etc). These members cannot be applicants themselves, nor can they have a personal stake in the outcome—if this applies to Director of Operations, then the Director of Transparency & Accountability will chair the committee instead.
- The Director of Development will no longer lead a standing development committee, instead the Director will organize and lead meetings on an as needed basis.
- The Director of Outreach now has four Chairs to nominate and oversee, which are WRFL Green Talks, Social Media, Promotional Material, and Tabling. The standing outreach committee now consists of the Director and Chairs.

Article IV, Section F: Committees

- Participation on a committee is no longer mandatory requirement of SSC members. Council members may instead join committees on a voluntary basis. Once elected an Outreach Chair, however, Outreach meetings will be mandatory.

Article IV, Section G: Removal and Replacement of a Council Member

- Committee meeting attendance is only mandatory for Outreach Chairs, but if members who had previously volunteered for the Selection or Development Committees can no longer attend meetings, they must notify the Director and leave the committee, so long as the absence is excusable by university policy.

Article VII, Section B: Allocating Funds

- In the event of a tie, the Director of Operations may either cast an additional vote to break the tie or table the proposal until the next meeting, at their discretion.

Article VII, Section E: Abstention

- Council members must abstain if they are listed on the proposal, will directly benefit from funded awards, or are an officer/employee of the organization or office receiving funds. If the proposal requires applicants, council members may vote even if they have the intention of applying for the award/funds/conference/etc.

Though not yet formally codified, the liaison process has been eliminated, and will be handled primarily by the Director of Development, as the webform now does the vast majority of the process independently.

Appendix

Repeat Projects 2011-2018

Name	SSC? (Y/N)	Year of First Request	2011-2012		2012-2013		2013-2014		2014-2015		2015-2016		2016-2017		2017-2018	
			Request	Encumbered	Request	Encumbered	Request	Encumbered	Request	Encumbered	Request	Encumbered	Request	Encumbered	Request	Encumbered
SAG Trip	N	2016-2017											\$960	\$960	\$3,000	\$3,000
Martial Eagles Research	N	2015-2016									\$6,500	\$6,500			\$8,525	\$8,525
Recycling Bin Expansion	N	2015-2016									\$10,000	\$10,000			\$9,997	\$9,997
CKUK	N	2015-2016									\$5,000	\$5,000	\$6,500	\$3,000	\$3,125	\$3,125
Outreach Material	Y	2015-2016									\$818	\$409	\$1,737	\$1,652	\$435	\$435
UFI Seminar Speakers	N	2015-2016									\$3,725	\$3,725	\$5,000	\$5,000	\$7,000	\$7,000
Sustainability & Garden Science	N	2015-2016									\$6,820	\$6,820	\$6,720	\$6,720		
In Motion: Student Design Exhibition	N	2015-2016									\$1,900	\$1,900	\$3,866	\$3,866		
Catalyst Summer Training Program	N	2014-2015							\$1,000	\$1,000	\$2,100	\$2,100	\$1,750	\$1,750	\$1,750	\$1,750
Beaux Arts Ball	N	2014-2015							\$6,000	\$2,000	\$4,000	\$2,000	\$4,000	\$4,000	\$6,500	\$0
Student Summer Sustainability Fellow	N	2014-2015							\$8,000	\$8,000	\$10,000	\$10,000	\$10,000	\$12,5000	\$16,500	\$16,500
Fall Retreat	Y	2013-2014					\$2,000	\$1,832	\$2,150	\$2,150	\$1,832	\$1,832	\$1,832	\$1,832	\$1,543.2*	\$1,543*
Summer SSC Intern	Y	2013-2014														
Sustainability Challenge Grant Partnership	N	2013-2014					\$25,000	\$25,000	\$33,000	\$33,000	\$33,000	\$33,000	\$33,000	\$33,000	\$33,000	\$33,000
UK Solar Car	N	2012-2013			\$6,000	\$6,000					\$8,000	\$8,000	\$16,500	\$10,000	\$13,000	\$13,000
Student Interns	Y	2011-2012	\$6,000	\$6,000			\$6,000	\$6,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000
AASHE	Y	2011-2012	\$4,600	\$4,600	\$3,752	\$3,752	\$1,308	\$1,308	\$6,700	\$6,700	\$10,145	\$10,145	\$11,070	\$11,070	\$5,800	\$5,800
DOPE	N	2010-2011	\$8,051	\$8,051	\$11,150	\$8,000	\$12,000	\$10,000	\$10,100	\$8,000	\$11,000	\$7,955	\$10,871	\$10,871	\$8,010	\$6,000

Constitutional Changes

ARTICLE IV: COUNCIL STRUCTURE

SECTION A: COMPOSITION

The SSC shall consist of no fewer than eleven and no more than twenty-nine members. The Council shall be composed of representatives from campus groups and At-Large members. The number of At-Large members on the council shall not be less than half the number of member organizations on the council and shall not exceed one and half times the number of member organizations. The number of a quorum of the SSC is hereafter defined as more than half of the Council's current sitting membership.

SECTION C: APPOINTMENT AT-LARGE COUNCIL MEMBERS

The sitting Council will select new At-Large members by using a ranking system with predefined criteria whereby the sitting Council members rank applicants from one to five. In order to serve as an At-Large member of the SSC, an applicant must score a higher average than 3. Of those with qualifying scores, the highest average ranked applicants will be selected for the incoming Council, filling the number of seats determined by Article IV, Section A. Selection of At-Large Council members must by the second Friday of April finalized by the end of the Spring term.

SECTION D: APPOINTMENT OF EXECUTIVE STRUCTURE

5. The Director of Outreach may nominate up to 4 council members to the Outreach Chair positions, as defined in Article IV Section E, before the second meeting of the Fall semester, including the annual retreat. With the exception of the Green Talks chair, which must be appointed before the end of the Spring Semester to allow for WRFL training. If there are no volunteers for the position, or the Director chooses not to accept anyone, they will assume the responsibilities of the position themselves. Any chair so nominated must be approved by majority of the SSC Directors.

6. Election for all Director positions will occur at the last meeting of the semester. Nominations will be open for one week, beginning two weeks before the final meeting and ending exactly one week before the final meeting of the academic year.

SECTION E: DIRECTOR RESPONSIBILITIES

In order to ensure the transparency and smooth operation of the Council, permanent director positions will be created and filled via election on an annual basis. The responsibilities of each of these positions is described in detail below. By accepting a nomination for a Director position, each candidate affirms that they have read, and agreed to fulfill, these constitutionally defined responsibilities. All Directors are expected to attend a meeting the week in advance of any SSC general meeting to review proposals with the SSC advisor. The times for these meetings will be set at the first general meeting of each semester and the attendance policy is identical to that outlined for general meetings in Article 5, Section A.

Subsection I: Director of Operations

The Director of Operations is responsible for keeping the Council organized and functioning efficiently. Their responsibilities are defined as follows:

1. Coordinating Council retreats with the SSC faculty/staff advisor each semester.
2. Setting amenable times and locations for both Council and director meetings.
3. Drafting Council meeting agenda seventy-two hours before the meeting, which includes compiling proposal material and making this available to every member via google drive.
4. Notifying proposers of the meeting times, presentation time allotment and location.
5. Leading general Council and director meetings in an organized and efficient manner. This means establishing Robert's rules of order and adhering to time allotments.
6. Any disciplinary action against a Council member. This includes tracking excused absences and informing Council members of attendance or rule violations.
7. Ensuring other directors are fulfilling their responsibilities to the Council as they are established in this section and the Article 4 Section G with penalties defined therein.
8. Leading elections and disseminating appropriate application materials according to the timeline laid out in the constitution.
9. The Director of Operations is responsible for breaking a tie vote, as defined by Article 5: Section B of this document.
10. Creating a standing committee of at least 2 other members to serve as a selective body for proposals that require it. These members must not be applicants for the opportunity in question and must have no personal stake in the outcome. In the event that one of these conditions is met, the Director of Operations will appoint a temporary member to fill their seat on the committee. If the Director of Operations meets one of these conditions, the Director of Transparency and Accountability will chair the selection committee.
11. Working with the SSC advisor to ensure fair election of At-Large members by facilitating voting.

Subsection III: Director of Development

The Director of Development is generally responsible for both internal and external development of the Council. Internally being defined as shaping new Council policy and externally as assisting with the composition of proposals, at the request of the original author, and communicating the Council's suggestions to them. Specifically, their responsibilities may be defined as follows, in no particular order.

1. Organizing and leading a development committee on an as needed basis.
2. Working with proposers to prepare their proposals for review by the Council. This includes relaying any concerns of the directors or SSC faculty/staff advisor and offering feedback before submission, at their request.
3. Completing an annual review of the SSC constitution to proofread and ensure that Council policy is clear and without contradiction.
4. Presenting any constitutional amendments drafted by the development committee to the Council for a vote.
5. Serving as an authority on any issues of constitutionality that may arise during meetings or Council function.
6. Adding newly applied proposals, and their budgets, to the financial spreadsheet after approval by the Directors and SSC faculty/staff advisor.
7. Monitoring the liaison process and following up with funded proposals.

Subsection IV: Director of Outreach

The Director of Outreach is responsible for promoting the SSC and encouraging individuals to apply for funding. Their responsibilities are defined as follows:

1. Nominate (subject to Director approval) and oversee the Outreach Chairs, including:
 - a. WRFL Green Talks Chair to conduct a once-weekly, thirty-minute segment of Green Talks.
 - b. Social Media Chair to update social media at least once per week.
 - c. Promotional Material Chair, to design new promotional materials.
 - d. Tabling Chair to coordinate at least seven tabling events per semester and maintain contact with project liaisons as a means of scouting potential tabling events.
2. Advertise opportunities and programs including the creation of new promotional materials.
3. Organize and lead at least one Outreach Committee meeting monthly.
4. Ensure the supply of and the updating of information contained in promotional materials.
5. Send regular website updates to SSC Faculty/Staff Advisor.
6. Add SSC meeting minutes to campus calendar through UKNow
7. Seek out potential SSC campus and community collaborative partners which may include:
 - a. Promoting community and campus events
 - b. Tabling at community and campus events

SECTION F: COMMITTEES

The Director of Outreach is expected to maintain a standing committee to assist in their Director duties. The Director of Development shall form temporary committees in order to complete tasks as needed. The Director of Operations will head a standing selection committee to make decisions on any proposals that require an additional selection process, i.e. SSC scholarships or interns. Participation on all committees is voluntary and subject to approval by the Directors. Temporary committees shall be formed for other tasks as needed, by a simple majority of a quorum.

SECTION G: REMOVAL AND REPLACEMENT OF A COUNCIL MEMBER

2. Failure to Meet Council Responsibilities

In addition to general meeting attendance a Council member has numerous other responsibilities. These responsibilities, and their method of verification, are shown below.

- a. Committee Meeting Attendance as Needed - All chairs selected for the Outreach committee are required to attend meetings as stipulated by the Director of Outreach. The Selection Committee and Development Committee are voluntary and only meet on an as needed basis. As such, if a member is unable to regularly attend meetings they may notify the Director and leave the committee, so long as the absence is excusable by university policy.
- b. Tabling and Outreach Events - All members of the SSC, excluding Directors and Chairs, are required to table at least once during the semester. The Chair of Tabling is responsible for ensuring everyone tables and reporting any infractions to the Director of Outreach/Operations.
- c. Meeting Deadlines – Potential members of committees may be given additional assignments by their Director or committee. Repeated failure to meet these deadlines can serve as grounds for dismissal if and only if the task is recorded in the committee or general meeting minutes.

ARTICLE VII: FUNDING PROTOCOLS

SECTION B: ALLOCATING FUNDS

Any funding allocations must be approved by a simple majority of a quorum of the SSC. Funding proposals must be made available to the entire Council at least seventy-two hours before the next meeting. In the event of a tie, the Director of Operations may cast an additional vote to break the tie or table the proposal until the next meeting, at their discretion.

SECTION E: ABSTENTION

Abstention from voting is only allowed if there is a direct relationship between the Council member and the proposal in question. Abstention is required if the Council member is listed on the proposal, will directly benefit from awarded funds, or is an officer/employee of the organization or office receiving funds.

SUSTAINABILITY



Vision

The University of Kentucky has made great strides in sustainability over the last decade and now has a strategic plan in place to enhance those efforts further over the next five years. UK Athletics is proud to join its partners on campus in putting that plan into action.

UK ATHLETICS SUSTAINABILITY ACTION PLAN

MATERIALS MANAGEMENT

UK Athletics has significantly expanded its recycling operation to include every on-campus facility on game day – from Kroger Field to Memorial Coliseum and everywhere in between. We are also working to encourage participation by fans and students and asking the entire Big Blue Nation to join in.

BUILDINGS AND GROUNDS

We want our facilities to last. In all construction, we are targeting LEED certification, which the U.S. Green Building Council awards for environmental performance and sustainable design. UK's two newest facilities – [Kroger Field](#) and the [Joe Craft Football Training Facility](#) – have already received the prestigious designation.

We have also set a goal to reduce usage of nitrogen-based products by 50 percent in the maintenance of our grounds. We will also mitigate usage of phosphorous and potassium products to continually improve air and water quality.

ENERGY

We are working first to paint a full picture of our electricity consumption. Once that baseline is established, we will set a goal to reduce our consumption by 15 percent.

FOOD AND DINING

It takes a lot to fuel 500 student-athletes for peak performance, but in doing so we have set a goal of zero waste at our training tables. We are also making a commitment to increase the amount of food we purchase from local Kentucky suppliers each year. Finally, we are working to eliminate the use of polystyrene in our food and dining operation.

TRANSPORTATION

Our shuttle program, in partnership with Lextran, has been in place for home football games for years. We will work to further promote it to fans, as well as commit to establishing ride-sharing programs for fans attending our events.

The Sustainability Challenge Grant Program

Website:

<http://www.uky.edu/sustainability/sustainability-challenge-grants>

The Sustainability Challenge Grant program is designed to engage multidisciplinary teams from the University community in the creation and implementation of ideas that will promote sustainability by simultaneously advancing economic vitality, ecological integrity and social equity. In the first four years of the program 26 projects have been awarded a total of \$700,000 to pursue transformational, sustainability-driven projects on our campus and beyond. The program has been successful in these endeavors. In the first two years of the program the work of the 14 funded projects led directly to:

- Engagement with nearly 1200 k-12 students, almost 1500 students at UK and more than 1600 community members
- The teams conducted 17 presentations at conferences and published 8 articles
- Cumulatively, the teams used their projects to seek almost \$650,000 in external funding and were successful in securing over \$180,000 of this.

The program is a collaborative effort of the President's Sustainability Advisory Committee, The Tracy Farmer Institute for Sustainability and the Environment and the Office of Sustainability.

Funding support for the program provided by the Executive Vice President for Finance and Administration, the Provost, the Vice President for Research and the Student Sustainability Council.

Funding (\$200,000) for a fifth call for proposals (August 2018) has been secure from the four founding partners:

- EVPFA \$100,000
- Student Sustainability Council \$33,333
- Provost \$33,333
- Vice President for Research \$33,333

2018 Sustainability Challenge Grant Recipients

- Sustainability Guidelines for Historic Campus Buildings (\$32,715) [Project Abstract](#)
- Engaging Elementary Students in Horticulture (\$19,272) [Project Abstract](#)
- Developing a KY Master Naturalist Program (\$14,257) [Project Abstract](#)
- Root to Branches (\$38,890) [Project Abstract](#)
- S.KYBLUE at the UK Organic Unit (\$47,118) [Project Abstract](#)
- Teaching Sustainability + Teaching Sustainably (\$47,085) [Project Abstract](#)

Project Abstracts for the 2018 can be found on the following pages.

Final Reports from 2017 Projects are also included in this section.

2018 Sustainability Challenge Grant Program Funded Project Abstracts

Sustainability Guidelines for Historic Campus Buildings (\$32,715)

This project will direct College of Design faculty expertise to Facilities Management's concerns with the historic buildings in campus' core through detailed analyses of six buildings. The subject buildings will be determined through consultation with facilities staff before work begins. Based on conversations University Architect Warren Denny, they are likely to include Lafferty Hall, McVey Hall, Kastle Hall, Scovell Hall, Miller Hall, and the Margaret I. King Memorial Library. All are expected to undergo substantial renovations in the near future. Investigations will generate: (1) guidelines concerning treatment, maintenance, and upkeep; (2) recommendations regarding potential improvements to reduce energy costs, comply with the Americans with Disabilities Act (ADA), and achieve more efficient usage; (3) identification of near- and long-term needs; and (4) a database of comparable buildings that have been rehabilitated to serve modern needs and that meet sustainability standards.

Recommendations will be based on detailed historical and case study research; assessment of current conditions; and the collection and analysis of data reflecting environmental conditions and energy use. This project will provide information Facilities Management personnel needs to make informed decisions about maintenance, operations, and adaptive design. Keeping existing buildings operational and maintaining their historical character meets several sustainability goals. "Recycling" this existing infrastructure, increases efficiency, reduces operating costs, and avoids the costly, carbon-intensive sequence associated with demolition and new construction. Historic buildings possess a quality of construction generally not seen in new buildings. Moreover, they are markers of tradition, evidencing institutional longevity and growth, and underscoring UK's role as the Commonwealth's flagship higher education institution.

Team members: Julie Riesenweber, Daniel Vivian, Doug Appler and Robert Travis Rose from Historic Preservation; Chris Birkentall, Interiors; Brent Sturlaugson, Architecture

Engaging Elementary Students in Horticulture (\$19,272)

The UKREC Botanical Garden is a 5-acre setting located at the University of Kentucky-Research and Education Center, Princeton. It was created in 1980 to evaluate and select superior environmentally sustainable plants for enhancing Kentucky's environments and landscapes. The garden is visited by master gardeners, extension county agents, students and residents of nearby communities. Being an enclave in a rural region, with limited resources; the garden has the potential as a learning center to teach science based knowledge and outreach. This project will offer hands-on activities for fourth and fifth grade students of Caldwell County and Lyon County Schools. Teaching will be focused on plant diversity in different categories (natives, invasive, ornamentals, small-fruit crops, and vegetables), insect-plant and plant-soil interactions, and the importance of environmental protection for a sustainable future. Science teachers will work with us to prepare, organize and deliver planned activities. These events will be scheduled in March- May, and August-October to coincide with the school year. The students will be aware of how plants affect their lives and vice versa. Extension agents and master gardeners will collaborate during the students' visits. Also, training classes will be offered to

enhance Master Gardeners' knowledge. The botanical garden scenery offers students an open classroom to learn through a direct contact with the different stages of plant development and interactions with its surrounding. We expect to foster scientific interest and curiosity in elementary students' minds to explore and protect their environments and be active executor of demonstration gardens in their schools.

Team members: Zenaida Vilorio, Winston Dunwell, and Daniel Becker from Horticulture; Ric Bessin and Raul Villanueva, Entomology; Edwin Ritchey, Plant and Soil Science; Amanda Martin, Regulatory Services

KY Master Naturalist Program

We propose piloting a Master Naturalist program for Kentucky with UK students that will then be expanded across the state. The mission of the Kentucky Master Naturalist (KNM) program will be to develop a community of well-informed citizen-volunteers to advance education, research, and outreach efforts dedicated to the conservation and management of Kentucky's natural resources and areas. Kentucky is one of only five states without such a program and the creation of the KNMs will help fulfill a sustainability need.

Specifically, this project will:

1. Develop the KMN curriculum
2. Develop a KMN website and social media presence
3. Train two cohorts of KMN (one UK student, one UK students and community)
4. Develop a statewide network for the KMN program that helps connect trained citizen-volunteers with communities and organizations in need

We envision training two cohorts in this initial phase of the proposed KMN program. Individuals in each cohort will attend 40 hours of classroom and field instruction, 40 hours of approved volunteer service, and 8 hours of advanced training. The first cohort will consist of UK students participating through a for-credit course. The second cohort will target community members as well as students, and will be open to all, regardless of prior science or environmental training, with diversity sought out and encouraged. Modeled after the highly successful Master Gardener program, the KMN program will utilize the University of Kentucky Cooperative Extension Service (UK CES) network to gain and maintain a presence at the county-level.

Team members: Carmen Agouridis and Donald Stamper, Biosystems and Agricultural Engineering; Ellen Crocker, Laurie Thomas, and Matt Springer, Forestry; Wayne Sanderson, Public Health; Amanda Gumbert, Agriculture and Natural Resources; Chris Barton, Appalachian Center/Forestry; Corinne Belton, Shelby County Extension Service; Wayne Long, Jefferson County Extension Service

Roots to Branches

Urban trees provide a key vehicle for addressing sustainability issues in cities, but only if people champion and build on those connections. UFI has successfully raised awareness of the connections

between sustainability and urban trees through outreach, education, research, and service, working collaboratively with UK students, staff, and faculty to engage campus and Lexington communities. UFI's success is evident in signs that urban forestry is increasingly embedded on campus, including the development of student organizations, sustained collaborations through service learning events, and the incorporation of urban forestry content into UK courses. Here we propose three new projects that build on these successes with new, substantive, and potentially transformative programs:

- Re-envision UK as a living-laboratory by training students to serve on a Collegiate Arborist Team (TreeCATs) to conduct campus tree care and mapping, extended to local neighborhoods and a KY town, thus enhancing tree-based ecosystem services.
- Extend the self-guided mindfulness tree walks into a series of in-person mindfulness programs in partnership with UK Integrative Medicine and Health (IMH) and Nursing for faculty, staff, students and patients on campus and K-12 schools.
- Develop and replicate UFI tree campus models for successful urban forestry programming to college/university and K-12 campuses through development of a Tree Campus Toolkit coupled with direct collaboration with individual campuses.

Successes will be measured in direct involvement of UK students (TreeCATs) and community members (mindfulness programs), increased awareness of UK's Tree Campus USA status, and the replication of successful UFI programming by other campuses and communities.

Mary Arthur, Nic Williamson, and Grace Coy, Forestry and Natural Resources; Lynne Rieske-Kinney, Entomology; Brianna Damron, Nursing; Ellen Crocker, Forest Health Resource and Education Center; Stacy Borden, PPD Grounds; Connie Jennings and Ann Powell, Integrative Medicine

S.KYBLUE at UK Organic Unit

This multidisciplinary project will relocate the s.ky blue Solar House from its Farm Road campus site to the Organic Farming Unit (OFU) on the SW corner of Nicholasville and Man O War Roads. The award-winning s.ky blue house (<http://www.uky.edu/solarhouse/house.html>) was built to compete in the 2009 Solar Decathlon International Competition in Washington DC. S.ky blue is optimized for energy and water efficiency (<https://www.solardecathlon.gov/past/2009/>). Since its inception, s.ky blue has been used as the visitor's center for the FEI World Equestrian Games, and as a learning laboratory to study energy generation. Once relocated and all utilities are connected and grid-tied, the house will substantially contribute to the reduction of the carbon footprint of the farm through its 13-kW photovoltaic system, and be used to combine learning with living. This integration will demonstrate how technological solutions can be used to optimize efficiency in home design, and will directly embrace the three pillars of sustainability by: reducing energy costs through solar power and geothermal climate control; reducing negative environmental impacts by embracing alternative and environmentally sound technologies; and by expanding awareness of these technologies through student educational activities and extension programming. Area stakeholder and student participation will be woven into each part of this project and will include classes from Architecture,

Landscape Architecture, Biosystems and Agriculture Engineering, and Sustainable Agriculture, working collaboratively under the direction of the Challenge-funded faculty team. Measurable outcomes will include: lower electric bills, student and stakeholder learning, and a robust data set documenting the functionality of each house component.

Team members: Mark Williams, Horticulture; Greg Luhan, Architecture; Joe Dvorak, Biosystems and Agricultural Engineering; Carolina Segura, Landscape Architecture

Teaching Sustainability + Teaching Sustainably

In November 2016, Provost Tracy created the Faculty Sustainability Council (FSC) and gave it a three-fold charge: (1) review sustainability related academic policies and culture at our benchmarks, (2) identify our areas of strength and weakness relative to the academic aspects of sustainability, and (3) propose short, medium and long run goals. The proposal for this project stems from these three charges. While the University of Kentucky has made great strides to increase campus sustainability in its operations, the advances on the curricular front are murkier. The FSC has discovered there is little awareness amongst UK faculty about sustainability curricula at UK, who is teaching such curricula, or how this is taught. A need exists for the creation of a network of faculty which can harness the native wealth of talent and information throughout the University and which can facilitate the exchange of ideas and practices about sustainability. Aiming to untap this potential, this project will create a sustainability pedagogies workshop of participating faculty from across the University and at a variety of scales across campus. This workshop will be both interdisciplinary and transdisciplinary. However, beyond merely teaching about sustainability,

the workshop will attempt to push the needle by focusing on the ways which faculty can implement sustainable methods of teaching into their curricula. Hence the aim is to maximize understanding of sustainability by modelling it at the classroom level through a network of faculty to act as agents of change by transforming educational practices across the colleges. Accepting [applications](#) through February 12, 2018.

Team members: Helen Turner, Interiors; Bob Sandmeyer, Philosophy

2017 Sustainability Challenge Grant Final Reports

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- Enhancing Student Development (\$38,996) 3
- Gathering at the Table (24,111.98) 4
- Measuring Up (\$42,990) 5
- Mobilizing Tree Ambassadors (\$49,774) 6

2017 Sustainability Challenge Grant Final Report

Date Submitted:

Date Submitted: 1/29/2018

Project Title:

Community Engaged Sustainability Education in the First-Year Experience: GEN100 and Retention (Nickname for the Project: REO Tracks)

Report Submitted by:

Alissa Meyer Rossi, Brooke Gentile, Lindsay Shade

Summary of the project

GEN100 is a required course for all first-semester freshmen in the College of Agriculture, Food, and Environment (CAFÉ). As part of this project each of the twenty-two GEN100 Instructors chose a REO (research-education-outreach) Track topic and facilitated the semester-long project which included:

- Introduction to the project, sustainability, the land grant mission
- Guest lecture on the topic
- Information literacy training & workshop
- Diversity session
- Hands-on outreach activity
- Student group research project & in-class presentations
- Project reflection and evaluation.

REO Track topics included (1) Hunger, Malnutrition and Food Security, (2) Urban Forestry, (3) Community Gardens, (4) Diversified Organic Vegetable Production, (5) School Nutrition, and (5) Watersheds.

Objectives –

- Strengthen the first-year experience by providing new GEN100 Instructors with a pre-planned, engaging, and effective class activity.
- Increase interdisciplinary networks across the College of Agriculture, Food, and Environment, and across campus & community.
- Expose students to the land grant mission – research, education, and outreach. Help students feel a part of the community, the University, and the College. Build

student research abilities, presentation skills, and group dynamics. Provide students with deep knowledge of a key issue in Agriculture, Food, and Environment. Instill a sense of community responsibility.

- Increase student retention through accomplishment of the above objectives.
- Provide a useful service to the community – local agriculture benefits to fellow UK students, expanding urban forests to the city, nutrition education to underserved elementary school students, and community garden vitality to food insecure neighborhoods in Lexington.

Methods

Project facilitators worked with GEN100 instructors to explain the goals of this project and to facilitate the quite complicated logistics of 22 sections and 350 students participating in a multi-part project. An essential part of the project was collaboration with partners including UK's Diversity Team, Agricultural Information Center Librarians, and Community Stakeholders including UK Campus Kitchen, the UK Urban Forestry Initiative, Lexington Seedleaf Community Gardens, UK Organic Community Supported Agriculture program at the Horticultural Research Farm, Fayette County Public School Nutrition department, the UK Water Week group, and the GEN100 Instructors.

Using a Google doc spreadsheet to coordinate scheduling, each GEN100 instructor chose a REO track topic and adjusted their semester schedule to fit the approximately seven steps of the project, as below.

- Introduction to the project, sustainability, the land grant mission
- Guest lecture on the topic
- Information literacy training & workshop
- Diversity session
- Hands-on outreach activity
- Student group research project & in-class presentations
- Project reflection and evaluation.

Outcomes –

Students achieved many of these goals (above) and studied specific topics including: the role of urban forests in climate change, biodiversity, inequality and food access, childhood malnutrition, and public perspectives on organic agriculture.

GEN100 Peer Mentors (undergraduate instructional assistants) were key facilitators in the project. They provided guidance to student research projects, documented the process, and facilitated reflective dialogue about the overall educational and outreach experience.

Because GEN100 enrollment jumped by over 50% this Fall it was the first time teaching this class for most of our instructors. However every instructor signed on gladly to participate in this REO tracks project, and it provided a shared project across the 22 GEN100 sections which facilitated commonality. The majority of instructors felt that the REO projects achieved the stated goals and objectives, while 2 felt that it did not. The primary challenges were logistics (e.g. scheduling) and integrating the project with the rest of the course curriculum.

Community Stakeholders raised awareness of their missions and activities, and utilized stipends to purchase materials and equipment. The main challenges were weather and coordinating roles and expectations between stakeholders and instructors.

The campus served as living laboratory in a few ways – students participated in Campus Kitchen gleaning, preparing, and packaging food, they planted and mulched trees around south Campus with the Urban Forestry track, they maintained the rain gardens with the UK Water week, and they observed and did a bit of work on the Horticultural Research Farm.

Nearly all of the collaborations mentioned above were new relationships (except the library, diversity, and urban forestry ones) and all were strengthened by this project. Again, all community stakeholders said they enjoyed and benefited from the project.

The project facilitators are planning on presenting on this project at the Rural Sociology Annual Meeting July 2018; other scholarly products are still being discussed.

Reflection –

The outreach component was especially valuable for student community-building and hands-on learning. We have a meeting planned with all 2018 GEN100 instructors to discuss in detail how to maintain and even deepen this component in the future. The in-class student group research and presentations were less effective than hoped; future manifestations of this project may redirect this time and energy to enhance and extend the outreach activity.

Overall we feel strongly that this project provided direction and commonality across the expanded GEN100 program, especially considering the large proportion of first-time GEN100 instructors. In some cases, though, it restricted the breadth of issues that the GEN100 curriculum usually covers. The challenge is how to make a community-integrated outreach project be simple enough for first-semester freshmen, but also sufficiently in-depth for maximum impact.

Budget Analysis: Include planned and actual spends in the following categories:

Planned 12-month January-December 2017 budget

- (a) \$300/section (*20 sections) for materials - \$6000
 - (b) \$500/section (*20 sections) for stakeholder stipends – \$10000
 - (c) \$1640 total Urban Forestry Initiative involvement – \$1640
 - (d) \$6400 total research facilitation stipend for co-PI
- TOTAL \$24040

Actual 12-month January-December 2017 budget

- (a) \$300/section (*20 sections) for materials - \$5737.02
 - (b) \$500/section (*22 sections) for stakeholder stipends – \$11000
 - (c) \$0
 - (d) \$6400 total research facilitation stipend for co-PI
- TOTAL \$23, 137.02 (was \$24,040, mid-project adjustment budget \$23,400; \$262.98 was unspent & returned)

- Direct consumables - \$5737.02
- Travel - \$0
- Salaries (and honoraria) - \$17,400

Visuals- If available, please include 5-7 captioned images directly related to the program

**We collected several dozen photographs from our projects; If you would like access to the full album I can add you to the Canvas page on which they are stored. Here are a few examples.



GEN100 students working on campus raingarden maintenance for the Watersheds REO track (top and bottom right), and student creation of a “veggie person” for the Childhood Nutrition REO track (bottom left).



Hands-on learning about weeds at the UK horticultural research farm as part of the Diversified Organic Vegetable Production REO track (top left), making a delivery of gleaned food as part of the Hunger, Malnutrition, and Food Insecurity REO track (top right), learning about the benefits of urban forests and best practices for planting trees as part of the Urban Forestry REO track (bottom left), observing and end-of-season Lexington Seedleaf community garden (bottom right)

2017 Sustainability Challenge Grant Quarterly Progress Report (4th Quarter)

Date Submitted: 31 Jan 2018

Project Title: *Connectivity promotes community: Refurbishing a major pedestrian conduit to improve safety, aesthetics, and sustainability*

Report Submitted by: Lynne Rieske-Kinney*, Garry Bibbs, Carolina Segura, Rebekah Radtke

Reporting Period: 4th quarter, Oct 16 – Jan 15 2018

Progress to Date 4th quarter:

1. UK NRES student Nachie Braga was hired (Oct. 12) for 5-10 h/wk to process data and develop materials.

2. Construct base map and topographic site survey.

Status: Complete.

3. Construct usage maps from April 2017 pedestrian counts.

Status: Nothing to report.

4. Implement a 'Call for Design Ideas'.

Status: Complete. Three design ideas were received.

5. Preparation for Design Showcase

Status: In progress. Intern Nachie Braga assembled submitted design ideas on 11 x 17 posters (copies attached) for a showcase event to solicit public input.

We plan to also assemble these idea submissions into location-specific summaries (e.g., northbound tunnel approach, tunnel interior, southbound tunnel approach), which will allow us to receive input on portions of each idea for a more meaningful synthesis. Once completed, a showcase event will be scheduled.

Goals for next quarter:

Develop and implement the 1-day workshop featuring submitted design ideas and gather community input. Hoping for an on-site event, weather permitting, to solicit input from stakeholders (CAFE, MED Center, VA, other users).

Grant funds spent this quarter, organized by the line items included in your original budget:

Student intern Nachie Braga was hired October 12.

Funding period	Amount requested	Amount received	Amount spent
1 st quarter (Jan 16 – Apr 15)	\$1,000	\$1,000	\$0
2 nd quarter (Apr 16 – Jul 15)	\$4,000	\$4,000	\$1,521
3 rd quarter (Jul 16 – Oct 15)	\$9,032	\$9,032	953
4 th quarter (Oct 16 – Jan 15)	0	0	\$1368
Total	\$14,032	\$14,032	\$3,842

Goals for next quarter:

An on-site 1-day workshop featuring submitted design ideas to gather community input is planned (target dates March 1 or 2; Good Barn or PSB if weather doesn't cooperate). Event will feature poster displays mounted in or at the tunnel entrance, asking passers-by to vote on specific designs or on design components for specific aspects of the renovation. We hope to have the troubadours play and offer contributing stakeholders light refreshments.

Projected budget needs for next quarter. Please organize by the line items included in your original budget and specify how these expenditures will help accomplish the goals for the next quarter.

No monies are requested for 4th quarter. We have sufficient funds (\$10,190) to fulfill the commitment of implementing the Design Idea Event in early March 2018.

Please attach representative photos or video of your progress to date to the email and submit this form and photo documentation to Shane Tedder (shane.tedder@uky.edu).

COOPER TUNNEL REDESIGN Proposal #1

PHASE 1 - Tunnel Interior

- Line walls and ceiling with flush-mounted non-corrosive stainless steel, hammered or patterned to provide texture.
- Install solar panels on South tunnel face to power LED lighting and sound.
- Variable programming reflects lights and patterns off of textured interior.
- Continuous student involvement in evolving programming.
- Creative painting and solar lighting on exterior pavement enhances safety and aesthetics.

Example of LED lighting reflecting off of a stainless steel structure



Solar-powered 'Starry Night' illuminating pathway

PHASE 2 - North Approach

- Natural limestone slopes serve as inspiration for construction of retaining walls.



Native plants, fables, benches, will encourage use

Sculpture slabs will provide opportunity for continued student engagement

PHASE 3 - South Approach

- Drainage issue on West side will be transformed into an asset.



Pondless waterfall

PLACE A STICKER IN THE
BOX TO THE RIGHT TO
VOTE FOR THIS PROPOSAL



COOPER TUNNEL REDESIGN Proposal #2

AESTHETICS

- Print photographs of country horse farm road on large waterproof canvas and completely cover both sides of the tunnel.
- Add planters with trees and flowers along the pathway at both entrances, as well as bird feeders and bird-baths to attract wildlife.
- Add park-style benches and picnic tables to woods on the southside, and stairs up the slope to improve access.
- Paint one of the following quotes above either entrance to provide comfort and inspiration, and as a tribute to our beautiful Kentucky home:

"I never met a Kentuckian who wasn't either thinking about going home or actually going home" - Happy Chandler

"Heaven must be a Kentucky kind of place" - Daniel Boone



CULTURE

- Build a small raised stage with appropriate mural backdrop and lighting to the North side, and invite local artists and UK performing arts groups.
- Install an announcement board where amateur performers can advertise.
- Add cafe-style tables and chairs to the area, affixed to the ground if necessary.
- Invite coffee vendors or food carts, ameliorating lack of food options South of Cooper.

SAFETY

- Add designated bike path opposite to the raised sidewalk, and connect to other paths.
- Add light poles all along road into and out of the tunnel.
- Add another security station at the intersection of Veteran's and Hospital, with a view of the North tunnel entrance.

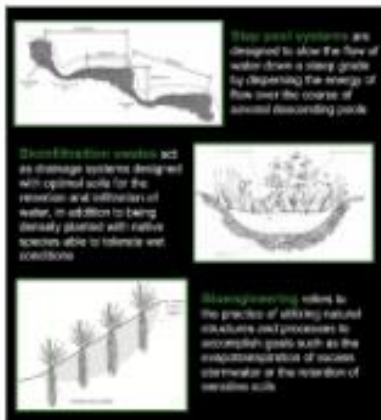
**PLACE A STICKER IN THE
BOX TO THE RIGHT TO
VOTE FOR THIS PROPOSAL**



COOPER TUNNEL REDESIGN Proposal #3

ECOLOGICAL RESTORATION AND PERMACULTURE

- Prioritize remediation of existing environmental issues on site, e.g. excess stormwater runoff and erosion.
- Implement ecological restoration techniques that will improve the area with innovative landscaping.
- Leverage new installations to enhance the aesthetics, safety, connectivity, and public gathering spaces surrounding the tunnel.



PLACE A STICKER IN THE BOX TO THE RIGHT TO VOTE FOR THIS PROPOSAL



2017 Sustainability Challenge Grant Final Project Report

Date Submitted: 1/31/2018

Project Title: Enhancing Student Development through Experiential Research

Report Submitted by: Michael Wilson, Stephanie Kesner

Reporting Period: January 1 – December 31st 2017

Summary of the project

This goal of this project was to design and implement a program for undergraduate students that presented unique opportunities for hands on experience, as well as educational and professional development. Pre and post assessments surveys of the students were used to track the efficacy of this type of program in order to inform the development of a more formal Research Experience for Undergraduate program, which could attract further funding opportunities.

By bringing together a multidisciplinary group of students, the University of Kentucky Center for Applied Energy Research (CAER) opened itself up to the unique perspectives of a broad range of fields such as engineering, chemistry, sustainability, and design. Students worked together alongside CAER researchers, as well as conducting individual student projects, that helped improve the existing processes at CAER. Scientific seminars were held weekly to introduce the students to different areas of research at CAER in addition to energy issues facing the Commonwealth. After each seminar, lab tours and Q&A sessions and were held. Speakers provided valuable feedback and resources to students who showed interest in the field. Over the 12 week period, marked interest in continuing education in research was observed in the students.

This project not only provided CAER with meaningful tools to further develop student programs, but also provided the students with a lasting insight into the importance of research, sustainability, and working as part of a multi-disciplinary team.

Objectives – What you initially planned to accomplish and objectives achieved

During the program, a total of seven undergraduate students were exposed to the day to day realities of hands on applied research. Five students from the University of Kentucky were supported directly from the Sustainability Challenge Grant, while two more from Kentucky State University were also involved in the program supported by NSF EPSCoR funding related to developing a bio-economy in Kentucky. All of the students were exposed to cutting edge workplace and laboratory safety culture, and trained to be productive members of a multidisciplinary research group. Two students expressed interest in learning how to use analytical equipment, ion chromatography, to support research activities. The goal of the project was to expose all of the students to this type of training, but not enough interest was shown to warrant this effort.

All of the students put together posters that summarized their contribution to the team, as well as highlight the results of their individual projects. It was the intention to have the students present these posters at the sustainability forum, but the timing of the event conflicted with academic requirements. One student went on to present his work at a national sustainability conference in San Antonio.

One objective that was not met was the exposure of the student team to design thinking and evaluating problems from that perspective. Tragically a co-investigator of this project, Sarah West from the Department of Interior Design, fell gravely ill in March and passed away in July. This limited her contribution to the project and added a certain element of uncertainty to the project program, but also had an important impact on the team. It is a significant loss and was keenly felt by the project team and by the broader UK community.

Pre and post program surveys were brought to bear in an attempt to understand the effectiveness of the program. While the results of these assessments were somewhat inconclusive, they did provide insight into various improvements that could be made going forward. For example, a twelve week program may not be long enough for significant improvement to occur in the metrics which were measured, and the metrics themselves could be adjusted to provide a more detailed picture of overall student engagement.

Overall, the project was a success, with a multidisciplinary research team learning to work together and contribute to hands on, applied energy research.

Methods

During the 1st quarter of 2017, the team met with CAER support staff to create a developmental seminar program; a concept that would leveraged formats from successful Research Experiences for Undergraduate (REU) programs and provide opportunities for summer students and researchers to gain a broader perspective on ongoing energy research at the University of Kentucky, and energy challenges facing the Commonwealth. Thus, the “Summer Student Seminar Series” was established; a weekly ‘brown bag’ lunch seminar every Thursday at noon in which senior researchers informally presented their research, led lab tours, and provided networking opportunities. The response from the CAER research community was impressive with the Director of CAER, Dr. Rodney Andrews, kicking off the series.

Student recruitment efforts were also conducted during this time, with a flier (attached) and job posting been made available. <http://ukjobs.uky.edu/postings/142465>

Researchers from the UK CAER worked with staff members with educational background and training to develop assessments to evaluate the potential impact of the program, as well provide background data to pursue further funding opportunities

Five undergraduate students were successfully recruited from the UK community, oriented, and safety trained to perform research this summer related to algae based CO₂ utilization at the

CAER. Additionally, two students joined the team from Kentucky State University funded through the Kentucky EPSCoR program. The team was interdisciplinary, with students from 6 different majors.

In addition to helping out with day to day research, the students spent 30-50% of their time on individual research projects. The students worked with up to 6 full time research staff on their various projects to receive guidance and mentoring.

Outcomes

Student/Community Engagement:

- Seven undergraduate students were directly involved in the day to day execution of this project. Additionally, another 8 students from the CAER participated in the weekly seminar series.
- Food Chain, a local nonprofit, was a great community partner, providing tours to both the research staff to develop collaborative opportunities as well as an educational experience for the cohort of students. This strengthened a relationship with Food Chain, and provided a conduit for further collaboration.
- 8 Senior Staff at UK CAER were impacted, providing an opportunity to informally interact with undergraduate research assistants as well as share their research and experiences.
- The students worked with the Lexington Re-Store to upcycle used and ancillary plumbing parts, directly benefiting Habitat for Humanity, while also cleaning out work and storage areas. The team was able to fill an entire box truck with parts that will be re-used in the broader Lexington community.

Campus as a living laboratory

- This project focused on using an offsite University of Kentucky research campus (CAER) to conduct the majority of this project. The students were hosted using CAER facilities and their work focused on supporting federally funded research focused on algae based carbon dioxide utilization.
- The primary focus of this project was to engage students from the University of Kentucky. The response to the job application for this program was extraordinary and served to highlight the breadth and depth of the talent pool at UK. We easily identified 2-3 times more candidates than we could afford to support.
- The various research interests ongoing at the UK CAER were used as topics for discussion for a weekly seminar series.
- Students and research staff shared their experience with the broader campus community by participating in a radio show on WRFL and presenting a poster at the Tracy Farmer Sustainability Forum.
- This project enabled a broad student base to be exposed to the UK CAER. Because of the sheer numbers of students, an orientation process was formalized to recruit, hire, safety train, and introduce the participants at the lab. This will be valuable moving forward as opportunities for undergraduate experiential education continue.

Direct contribution to research:

The cohort of students worked collectively and individually on projects that advanced the ongoing research conducted the UK CAER algae program, part of the Biofuels and Environmental Catalysis research group. The meaningful contribution included:

- The development of a new control system for operating photobioreactors. Madan Archarya (KSU / UK Electrical Engineering) used (mostly) spare parts he found in the greenhouse, designed and prototyped hardware to interface with an existing bioreactor design, and learned a new programming language to implement the process. His efforts enable another photobioreactor (PBR) to be brought online while realizing a cost savings of over 90% compared to existing infrastructure.
- Ashely Cutshaw (UK Biosystems and Agricultural Engineering) conducted experiments investigating the production of high value chemicals from a unique strain of microalgae. During this time she was able to develop a new analytical technique to determine the concentration of 'redness' within the algae culture as well as determine methods to trigger the production of these potentially high value products through stressing the cultures.
- William Azzinaro (UK Mechanical Engineering) developed a new standard operating procedure (SOP) for operating the large scale bioreactors at the UK CAER. Additionally, he provided invaluable assistance performing maintenance on existing infrastructure while also contributing to the design and prototyping of new equipment
- Ryan Lark (Sustainability Studies/Biology) conducted a sustainability assessment of the PBR operation at the UK CAER which highlighted strengths and areas of improvement for the process. He also made invaluable day to day contributions to the day to day operations of the PBR system, and showed incredible maturity and willingness to learn.
- Laura Gruenberg (UK Chemical Engineering / Math) developed analytical tools to analyze process data from the PBR process to better understand and maximize system performance.

New collaborations:

Relationships were strengthened with Food chain, with many avenues for synergistic collaborative research discovered and discussed.

Megan Combs from the UK Environmental Research Training Laboratories (ERTL) also emerged as a potential partner moving forward. Her participation would improve access to state of the art analytical techniques, equipment, and training opportunities.

The prospect of applying for the UK CAER to become a Research Experience for Undergraduates (REU) site funded by the National Science Foundation (NSF) was investigated. We learned that the application for such a program would need to be much broader, and be more of a campus wide initiative, with faculty leading the effort. Other funding programs are being investigated, including the development of a proposal to NSF regarding experiential education. Some of the results and program of this project were used as an input into this ongoing development effort.

The research program was highlighted in an article in UKNOW in April 2017 (<https://uknow.uky.edu/research/sustaining-next-generation-energy-innovators>).

Poster Presentations:

R. Lark, “Cradle to Gate Life Cycle Energy Analysis”, Association for the Advancement of Sustainability in Higher Education, San Antonio, TX, October 15-18, 2017.

S. Kesner, “Enhancing Student Development through Interdisciplinary Research & Sustainable Process Development”, Tracy Farmer Sustainability Forum, December, 6, 2017

Reflection –

Most of the students were already fairly well-versed in their field and didn’t need much guidance in starting their individual projects, although, as their projects progressed and became more technical, some needed further guidance from the researchers that wasn’t always available. This oversight in time management proved valuable in that it highlights the need to properly budget not only for the cost of students, but to also budget for a certain amount of time to set aside for each of them.

Another unexpected aspect was the high level of skills some of the students already possessed. A few of the students that were proficient with computer coding and data manipulation worked so quickly that at times it became difficult to keep up with them. They were so eager to do more, but the program was not designed rigidly enough to respond to their needs. This issue made it clear that students can work at drastically different paces, so a program must also be flexible to that. While keeping the program flexible regarding focus helped attract broad student interest, a more structured program could have been beneficial.

Overall, this program was an immense success. Initially getting students from different disciplines all working together on the same wavelength was slow going at first, but once commonality was found, the ideas and progress they made together was unique to this particular group. They seemed to learn a lot from each other as well as the program itself.

Budget transfers were not delivered on time and, in some cases, complicated project execution.

The loss of Sarah West was of significant impact to the project and its execution of its goals to introduce design based thinking into the program. In addition to the loss to her family and the broader UK community, further opportunities to work together and develop a cross disciplinary partnership were lost.

Budget Analysis:

Table 1 shows the budgeted and actual expenses over the course of the project. An unexpected development occurred in the project whereby CAER covered the cost of the full time research staff. This made more funds available to support student salaries, expanded supply resources, and supported a portion of Ryan Larks trip to Houston.

	Actual	Budgeted
Senior Personnel	\$0	\$12,122
Supplies	\$15,596	\$4,500
Student Salary	\$22,575	\$21,874
Food Chain	\$450	\$500
Travel	\$375	\$0
Total	\$38,996	\$38,996

Table 1: Actual vs planned program budget

While this cost sharing was welcome, it was unexpected and should not be counted on in further projects. Another valuable insight was that, in the future, more monies should be dedicated to support supplies as this had a significant impact in the development of the various research projects. Additionally, students aren't interested in working 4 days a week. The properly motivated student wants to work, and be compensated for, a full work week.

Figure 1 shows the team of students and staff researchers in the CAER greenhouse.



Figure 1: Sustainability Challenge Grant Students and Algae team. Left to right, Ryan Lark, William Azzinaro, Michael Wilson, Daniel Mohler, Steven Hall, Ashley Cutshaw, Laura Grueneberg, and Stephanie Kesner



Figure 2: The SCG team visits Food Chain as part of their Summer Seminar Series

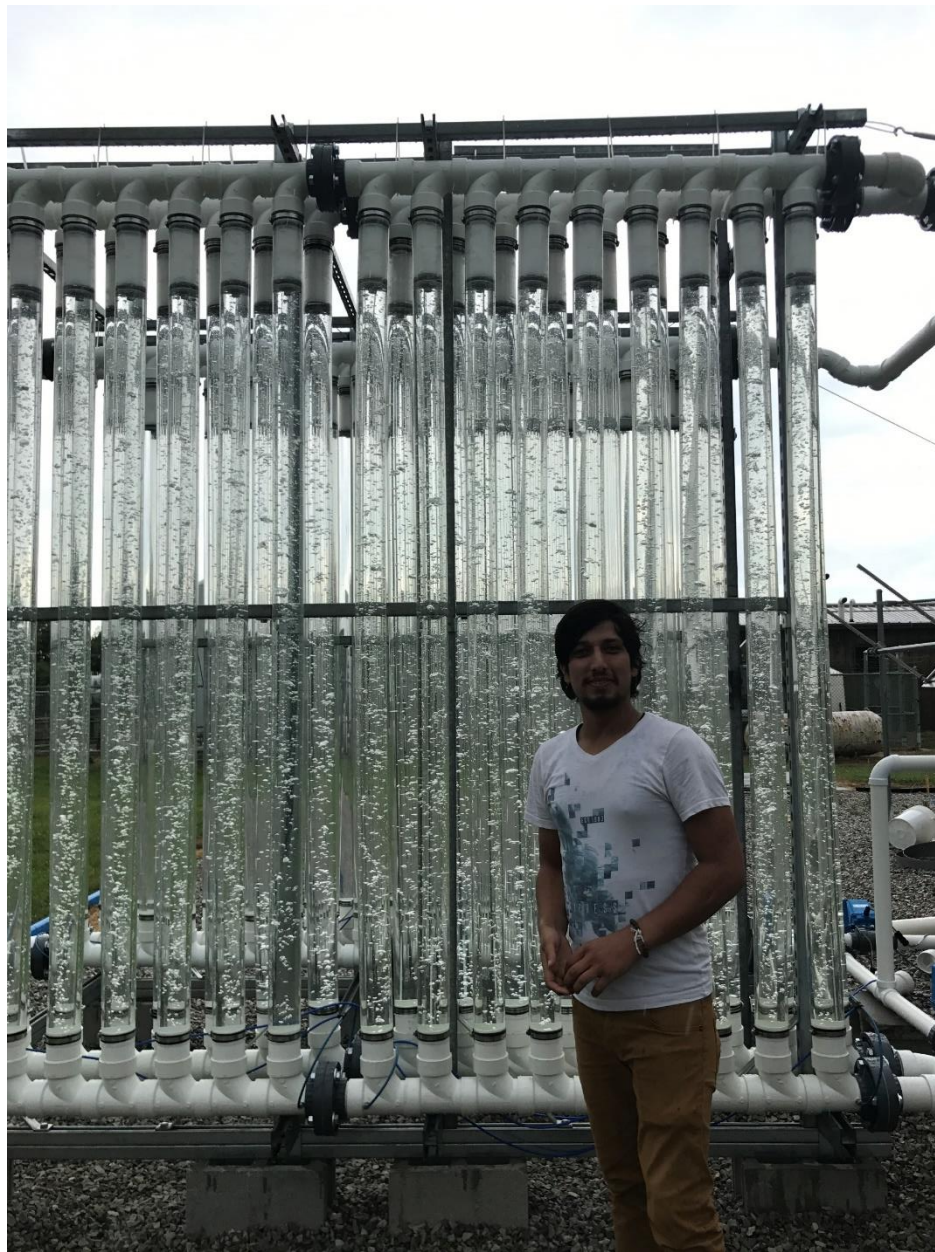


Figure 3: Madan Archaya, a Nepalese Electrical Engineering student from UK /KSU in front of the reactor operated using the control system he developed

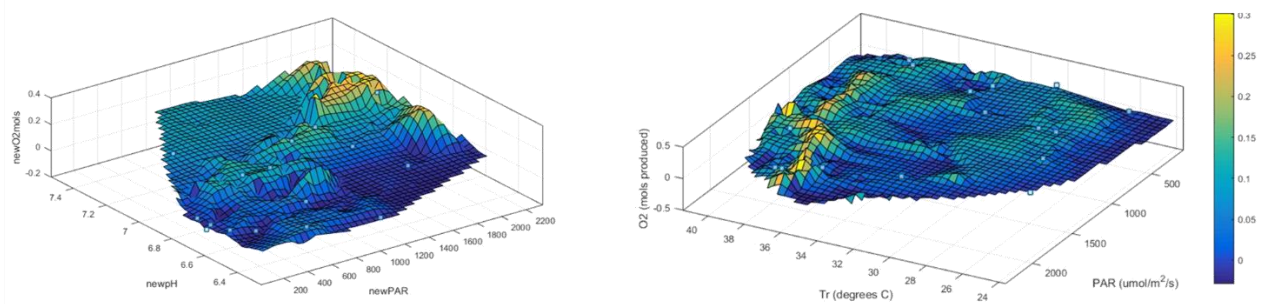


Figure 4: 3D plots of PBR process data produced by Laura Gruenberg



Figure 5: Expanded facilities at CAER Algae Greenhouse, Fall 2017



Research Experience for Undergraduates Opportunity



The Center for Applied Energy Research at the University of Kentucky has been engaging undergraduate students in day to day research since it opened in 1977, focusing on energy and environmental issues relevant to Kentucky. This summer, these activities will be expanded beyond summer employment and experiential learning opportunities, to include weekly seminars, lab tours, and professional development opportunities thanks to funding from the University of Kentucky Sustainability Challenge Grant Program

Requirements

- Completed sophomore or junior level classes (>3.0 GPA)
- Seeking **engineering, science, design** and **sustainability** majors
- Good written and verbal communication skills
- Ability to work outside
- Willingness to learn and grow!

Job Description

- Interdisciplinary research team investigating algae based carbon utilization & bioproduct production
- Algae cultivation, reactor design & operation, analytical instrument training, laboratory methods, etc.
- Design thinking and professional development opportunities



Interested candidates should email a resume and cover letter to Michael.Wilson@uky.edu

Figure 6: A copy of the flier to recruit students for the program

2017 Sustainability Challenge Grant
Gathering at the Table:
Cultivating Future Leaders in Sustainable, Community Food Systems
Final Report

Summary of the Project

Gathering at the Table is an innovative program created by the Department of Dietetics and Human Nutrition, The Food Connection and the Campus Kitchen at The University of Kentucky that brings together passionate student leaders, community food justice advocates, and eaters of all kinds to grow a sustainable, community food system. Through a combined strategy of hands-on culinary training, grassroots cooking demonstrations, local food recovery, and facilitated community dialogue, *Gathering at the Table* 'connects the dots' between sustainable food production, vibrant food economies, health and social justice to establish leaders of a thriving community food system.

Objectives

What you initially planned to accomplish and objectives achieved.

Project Goals:	Objectives Achieved:
1. Build a network of student and community leaders who share an interest in food justice, food security, and sustainable regional food systems. (social)	Hosted hands-on dinners that engaged more than 100 individuals: <ul style="list-style-type: none"> • March 22: 36 participants, 40% students, 30% faculty and staff, and 30% community • September 12: 36 participants, 75% students 10% faculty 15% community • October 10: 17 participants, 75% students 10% faculty 15% community • November 14: 15 participants 85% students 10% faculty 5% community
2. Increase knowledge about the importance of regional food systems as they relate to food security, health, and the environment. (ecological)	<ul style="list-style-type: none"> • Taught 5 classes of Chef Training: Recruited 10 students who improved skills and knowledge as it relates to knife handling, reading and interpreting recipes, incorporating local and sustainable foods, teaching recipes, and understanding how food systems relate to food security, health and the environment. • Trained 18 student leaders from the Campus Kitchen at the University of Kentucky (CKUK) in cooking demonstrations, food

	<p>safety, culinary skills, and strategies for integrating local, sustainable foods.</p> <ul style="list-style-type: none"> • Hands-on cooking dinners (mentioned above) engaged more than 100 individuals in discussion and education related to building healthful, locally sourced meals on a budget.
<p>3. Empower the next generation of culinary citizens with the tools and knowledge necessary to feed themselves, their families, and their communities. (economic, social)</p>	<ul style="list-style-type: none"> • Managed 2 student fellows who led the marketing and promotion of the hands-on dinners in addition to assisting with program delivery. • 5 student leaders conducted 2 food demonstrations at Fresh Stop Markets on August 2, 2017 and October 3, 2017. • Hands-on dinner participants learned culinary skills, received resources for incorporating local, seasonal food on a budget, and discussed accessibility, justice issues, sustainability, and economy along the food chain. • On October 17, 2017, program leaders presented information about the project at the Association for the Advancement of Sustainability in Higher Education (AASHE) in San Antonio engaging an audience of 40 people. The presentation was well-received and networking connections were established.
<p>4. Establish a self-supporting curriculum and program. (social)</p>	<ul style="list-style-type: none"> • Piloted and critically evaluated the hands-on dinner curriculum in the Fall to be utilized by the Campus Kitchen at the University of Kentucky in the Spring. The teaching methods, structure, recipe selection, recruitment, and location were assessed. • Dinners will continue on (tentatively) March 6, March 28, and April 10th. The pay as you can registration fees cover the costs of paying local farmers for their produce and other recovery efforts provide pantry, freezer, and perishable foods.

5. Promote a cooperative, local agro-food economy. (economic)	Engaged 100 students from a variety of disciplines, organizations, backgrounds, knowledge, experiences and ideas in productive dialogue about building thriving community food systems. The pay-as-you-can model generated nearly \$300 that was used to pay farmers for their produce.
6. Decrease food waste in Lexington. (ecological)	For this specific program, we recovered or purchased nearly 750 pounds of fresh produce from local farms and paid local farmers and producers \$965.64. Dinner participants took excess food home to prevent post-consumer food waste.

Methods

To cohesively reach our goals and build on existing assets, we combined the Food Justice Dinners and Chef Training Series into a simplified, two-hour curriculum that incorporated cooking together and eating together. The structure for the hands-on dinners built on the positive response we experienced in the first Chef Ambassador training and the Food Connection’s Year of South Asia cooking series. As opposed to passive reception of a prepared meal, our new approach emphasized simultaneous skill and community building among those experiencing food insecurity with those working to foster food justice. Side by side, participants learned skills that highlighted budget-friendly, healthful, local, and sustainable meals while also introducing participants to food access resources and support networks.

To recruit participants for the classes, tailored promotion occurred at the beginning of the fall semester for the entire class series. Primary methods included email communications through college and department lists, social media, speaking to classes in the College of Agriculture, Food and the Environment, Campus Kitchen volunteer opportunities, flyers, and word-of-mouth. When asking participants how they learned about the dinners, majority of them said they learned about them through a friend or while volunteering with CKUK. Since targeting recruitment occurred at the beginning of the semester, we experienced a decline in participation at the end of the semester.

The 2-hour curriculum included the following class outline:

- Introduction (20 minutes)
 - Welcome participants. Provide an overview including length and content.
 - Introduce volunteer instructors.
 - Encourage discussion and sharing.

- Cooking and Food Safety (60 minutes)
- Eating Together, Informed Education and Dialogue (40 minutes)

Each class incorporated education, informed dialogue, and guests around central themes:

Class Date	Theme	Goal	Dinner Guests
March	Food sovereignty and justice	Increase knowledge about the importance of regional food systems as they relate to food justice.	Dr. Rosalind Harris, Ms. Anna Townsend
September	Stock your kitchen with healthful foods	Increase knowledge about the importance of regional food systems as they relate to health.	Vanessa Oliver, RDN, LD Shannon Winke, RDN, LD Lauren McKnight-Ford, RDN, LD
October	Eat in season	Increase knowledge about the importance of regional food systems as they relate to the environment.	Invited local farmers
November	Stretch your food dollar	Increase knowledge about the importance of regional food systems as they relate to food security.	Samantha LaMar and Erica Daly, Big Blue Pantry

After each hands-on dinner, we evaluated and altered the curriculum in order to develop a self-supporting model. All participants completed an evaluation that asked about their confidence in the kitchen, knife handling skills, ability to use recipes, and motivation to cook with local foods and in an environmentally conscious way (see outcomes below).

Outcomes

Students impacted:

- Facilitated engagement with 70 students at the hands-on dinners.
- Mentored 2 student fellows, including one graduate and one undergraduate student.
- Trained 28 students as experts in providing cooking demonstrations incorporating food safety, culinary skills, and strategies for integrating local, sustainable foods.

Community partners:

- Fresh Stop Market - Bi-weekly fresh food markets that "pop-up" at local churches, community centers, and housing authorities in fresh food insecure neighborhoods. Community members purchase shares of 10-12 varieties of seasonal produce in advance so that farmers don't face the same degree of risk as they would with a standard farmers' market. Our trained student leaders offered cooking demonstrations at these markets, which paired local, seasonal food with budget-friendly recipes.
- GleanKY - Gathers and redistributes excess fresh fruits and vegetables to nourish Kentucky's hungry. We utilized recovered produce from local farmers for our dinners. This produce would have otherwise gone to waste.
- Lexington Farmers' Market – Student leaders purchase produce through farmers at the market to supply local, seasonal foods and support a local agro-food economy.

Community participants:

- Engaged 20 community members at our hands-on dinners.
- Empowered approximately 25 community members during our cooking demonstrations with the skills, knowledge, and confidence necessary to build healthful, locally sourced meals.

Use of campus as living laboratory – How was this achieved, where, who was involved?

The Chef Trainings and hands-on dinners occurred at the Food Connection at the 90. In this culinary lab, students, community members, and Faculty gathered around a table to engage in informed dialogue about healthful cooking, food justice, and the environment. As a result of these *Gathering at the Table Dinners*, participants:

100%	Feel more confident in the kitchen.	100%	Understand how to cook in an environmentally conscious way.
96%	Are more confident in knife handling skills and ability to use recipes.	96%	Connected with others interested in food systems, food security, and food justice.
100%	Better understand issues of student food access and resources available.	100%	Increased understanding about how food systems relates to the environment and health.
90%	Motivated to purchase and cook using local foods.	91%	Understand how to build a healthy, local plate on a budget.

Participants shared:

- “I enjoyed the positive, upbeat learning environment and being in community with those interested in food systems.”
- “It was fun trying new foods.”
- “Cooking and eating with other people while talking about local food was the highlight of the class.”
- “I had no idea that was how you carved a chicken. I can’t wait to try this at home!”

New collaborations – What entities are involved; did you identify grant opportunities you will be or may be going for in the future?

In addition to building on existing relationships, a close collaboration was developed between the Food Connection, the Campus Kitchen at the University of Kentucky (CKUK), and Big Blue Pantry (BBP), the on-campus food pantry who serves those experiencing food insecurity. In order to better reach those experiencing hunger, recruitment for the Spring dinners will primarily focus on clients of Big Blue Pantry. Additional grants we are exploring include Farm to Fork, offered by the Kentucky Department of Agriculture, and a proposal through the national Campus Kitchens Project.

Student leaders with CKUK, BBP, and SSTOP Hunger are also interested in creating a Fresh Stop Market on UK’s campus to increase fresh food access for food insecure students while also adding another opportunity for faculty and staff to participate in and grow the local agro-economy. We are still seeking funding opportunities.

Relationships were developed with the Cooperative Extension Nutrition Education Program professionals who are looking for resources for educating their clients about budget-friendly methods to eat healthy and incorporate more vegetables.

Published or planned scholarly products – Please provide documentation: abstracts (meeting name, place, title, presenters/authors), websites, blogs, manuscripts, etc.

Published

Whitehouse, T., Brislen, L., Hege, A., VanMeter, C., Stahl, D., Littlefield, N., McGuire, S., (October, 2017). *Gathering at the Table: An Innovative Approach to Sustainable Food Systems and Food Justice Programming*. Association for the Advancement of Sustainability in Higher Education (ASHE) Conference, San Antonio, TX.

Abstract: Gathering at the Table is an innovative program created by The Food Connection and Campus Kitchen at The University of Kentucky that brings together passionate student leaders, community food justice advocates, and eaters of all kinds to grow a sustainable, community food system. In this session, we will share the lessons we have learned while engaging a diversity of on- and off- campus community members in experiential learning and informed dialogue on key issues in the sustainability and social justice of our local food

system. Through a combined strategy of hands on culinary training, grassroots cooking demonstrations, food recovery, pay as you can dinners, and facilitated community dialogue, Gathering at the Table 'connects the dots' between sustainable food production, vibrant food economies, and social justice to establish leaders of a thriving community food system.

Planned

Kentucky Hunger Dialogue and The Campus Kitchens Project Boot Camp, Fall 2018

Reflection

Include insights on your individual projects, things you might have changed, next steps and feedback on your experience with the Sustainability Challenge Grant Program

In reflecting on the program, recruitment for the dinners were successful during the first half of the fall semester but participation dropped for the latter half of the series. Participants at all events shared the same level of enthusiasm in feedback. We will focus on tailored recruitment by narrowing our focus from the student-body to reach primary voices on-campus who are experiencing challenges in food justice, access and security. Recruitment will occur in partnership with Big Blue Pantry and utilizing the results of the UK Food Access Survey. The Campus Kitchen at the University of Kentucky will utilize the curriculum to continue building upon the success of the hands-on *Gathering at the Table Dinners*.

Budget Analysis

Expenditures	Planned	Actual
Direct Consumables	\$7,069.70	\$5,164.12
Travel	\$540.00	\$2,430.86*
Fellowships and Salaries	\$15,146.00	\$15,146.00
Total	\$22,755.70	\$22,740.98

*An increase in travel expenditures was due to the leadership being invited to present at the AASHE Conference in September, 2017 and share with individuals from across the nation about *Gathering at the Table*.

This project was sponsored by significant matching contributions of staff time and expertise by The Food Connection and the Department of Dietetics and Human Nutrition. This project also benefited from the volunteer contributions of the leaders of Fresh Stop Markets and the Campus Kitchen at the University of Kentucky. Additionally, the project made extensive use of the facilities and equipment of The Food Connection Learning Kitchen.

Matching Funds	
Amanda Hege, RDN, LD; 10% FTE	\$ 4,955
Chef Tanya Whitehouse; 8% FTE	\$ 5,044
Lilian Brislen, Executive Director; 5% FTE	\$ 4,750
Facility use 10 classes (\$45 per hr., 4 hrs. each)	\$ 1,800
Facility use 6 dinners (\$45 per hr., 4 hrs. each)	\$ 1,080
	\$ 17,629

Visuals

Please include 2-5 captioned images directly related to the program



Chef Tanya leads students in a cooking demonstration



Students review a recipe and prepare to cook



Fresh, locally sourced ingredients that will be used in the meal



A student plating the final product, a local Mediterranean tuna salad



Students making fresh pasta to be used in the meal.

Additional photos can be accessed online:
<https://goo.gl/photos/xQtVrD49qxstgeFG6>

2017 Sustainability Challenge Grant Final Report

Date Submitted: June 14, 2018

Project Title: Measuring Up: Sustainability Assessment of Campus Buildings at the University of Kentucky

Report Submitted by: Anita Lee-Post, Brent Sturlaugson, Bruce Swetnam, Rebekah Radtke, and Yoonbai Kim

Summary of the project

The primary goal of this project is to examine the role that sustainability assessment and reporting plays in realizing UK's vision of creating a sustainable campus for academic excellence. A prototype sustainability assessment and reporting system is developed for triple bottom line impact analysis of the built environment of the newly expanded and renovated Gatton building. The prototype system utilizes a toolkit to collect environmental, social, and economic data of Gatton's built environment for sustainable design performance analyses. The system also employs a comprehensive set of sustainability metrics to measure and report Gatton's triple bottom line impacts on academic success. In sum, our project succeeds in (1) expanding the definition and evaluation of campus buildings' sustainability to include environmental, social, and economic factors, (2) providing campus stakeholders with a toolkit for assessing the sustainability of campus buildings, and (3) creating a comprehensive sustainability metric for benchmarking and tracking campus buildings' triple bottom line impacts on academic success.

Objectives

Our project has three objectives:

1. Develop a toolkit to measure the sustainability of campus buildings.
We developed and tested a toolkit for assessing the sustainability of the Gatton building in a pilot study. The toolkit consists of (a) building performance measuring equipment, (b) methods for collecting data on social patterns of use, and (c) a model linking sustainability design impacts and academic support. It is made available in a lending library at the College of Design for campus stakeholders to use for sustainability assessment related learning and research activities.
2. Complete a pilot study of the built environment of the Gatton building.
We performed a data-driven assessment of the triple bottom line impacts of Gatton's built environment using the toolkit. A comprehensive metric that considers environmental, social, and economic factors in sustainability assessment was created. The metric, with its the 2017 baseline measures, allows the continual assessment and reporting of the triple bottom line impacts of Gatton's built environment on academic success.
3. Disseminate resources and findings from the project.
We established a dedicated project website, <http://www.ukymeasuringup.org/>, to continue engaging campus stakeholders and the public in pursuing a sustainable campus for academic excellence.

Methods

Our project adopted a case study approach using the following qualitative and quantitative methods:

1. Interviews: we interviewed Gatton design engineers/architects ([RossTarrant](#)), construction firm ([Skanska](#)), and UK physical plant to collect data on sustainability goals, features, and challenges during the design, construction, and operation stages of the Gatton building.

2. Document reviews: we gathered and reviewed documents on building design, construction, and building operation of the Gatton building to help identify data sources for environmental, social, and economic data collection.
3. Field work: we collected environmental data at critical data points of public spaces throughout Gatton for environmental design performance analyses.
4. Site visits: we visited the delta room at UK to gain an understanding of UK's energy conservation efforts.
5. Observations: we conducted direct observations of social usage patterns of the public spaces at Gatton for social design performance analyses.
6. Survey: we collected subjective data on campus stakeholders' perceptions of Gatton's built environment and its triple bottom line impacts on academic success using a survey instrument.
7. Statistical testing and modeling: we performed reliability testing of survey instruments. We validated a sustainability model linking Gatton's triple bottom line design impacts with academic support.

Outcomes

- Student/community engagement
 - Three undergraduate students were involved directly with the project as research assistants. They helped creating equipment tutorials, collecting building performance data, building a website for outreach, collecting space utilization and usage pattern data, and preparing a poster presentation of our project at the Fall 2017 Sustainability Forum.
 - Two graduate students from Applied Statistics Lab were involved in analyzing survey data and performing model testing for sustainability assessment.
 - 14 students in ARC253 (Design Studio III) conducted a site analysis with building performance equipment to understand the environmental conditions at different locations along Short Street.
 - 2 undergraduate RAs demonstrated the functionality of each tool in the tool library in ARC 332 (Environmental Controls I) to explain the roles these tools play in architectural research applications. 60 students in ARC 332 learned how to use the toolkit.
 - 2 undergraduate RAs demonstrated the functionality of each tool in the tool library in ARC 631 (Building Systems Integration) to explain the roles these tools play in architectural research applications. 30 students in ARC 631 learned how to use the toolkit.
 - 537 students in AN 300 (Analyzing Business Operations) participated in pilot testing the sustainability student survey in the spring and summer of 2017.
 - 280 students taking classes in Gatton participated as survey respondents in Fall, 2017.
 - 22 Gatton faculty participated as survey respondents in Fall, 2017.
 - 35 Gatton staff and UK physical plant personnel participated as survey respondents in Fall, 2017.
- Use of campus as living laboratory
 - All team members are involved in a pilot study using the toolkit to collect data for the triple bottom line impact analyzes of the Gatton building.

New collaborations

We have one grant proposal under review at NSF's smart and connected communities program: Lee-Post, A., Sturlaugson, B., Radtke, R., Kern, K., and McQuerry, K., "Smart and Connected Communities for Academic Success".

Scholarly products

- **Measuring Up: A Case for Redrawing the System Boundaries of Sustainability**
Abstract: How are the system boundaries of sustainability in architecture defined? What technologies might enable a more thorough understanding of sustainability in design? In addressing these questions, this paper argues three points. First, to better understand sustainability in design, research must engage other disciplines. Second, to effectively measure sustainability, technology must be understood in the broadest possible terms. In addition to embracing the latest innovations in hardware and software engineering, technology must also be understood to include the methods by which these hardware and software are deployed. Third, to promote sustainability in design, the methods by which sustainability is measured must themselves be sustainable. This paper draws on multidisciplinary research that examined the social, environmental, and economic sustainability of a recently completed academic building. Sturlaugson, B., Radtke, R., and Lee-Post, A., research manuscript under preparation for journal submission
- National Council for Undergraduate Research, Edmond, Oklahoma (2018) **Measuring Up: Sustainability Assessment of Campus Buildings at the University of Kentucky.**
Meg Haley, poster presentation.
- **Showcase of Undergraduate Scholars (2018)**
Meg Haley, poster presentation.

Reflection

We work well together as a multi-disciplinary team. Brent's expertise in sustainable architectural design helps set the direction of data collection, survey development, and observational studies around clearly defined sustainability design goals. Rebekah's specialty in interior design helps further the team's understanding on social and operational design impacts of the Gatton building. Bruce's passion for teaching is instrumental in successfully integrating the toolkit into existing courses and keeps the team focus on the impact of a sustainable built environment on academic success. Yoonbai's international experience helps extend the project globally to Nazarbayev University in Kazakhstan. Anita's modeling skill helps put together a model linking sustainable design impacts and academic support. All team members contribute to the creation of a set of metrics to measure Gatton's triple bottom line impacts on academic success. Our next steps include the following activities:

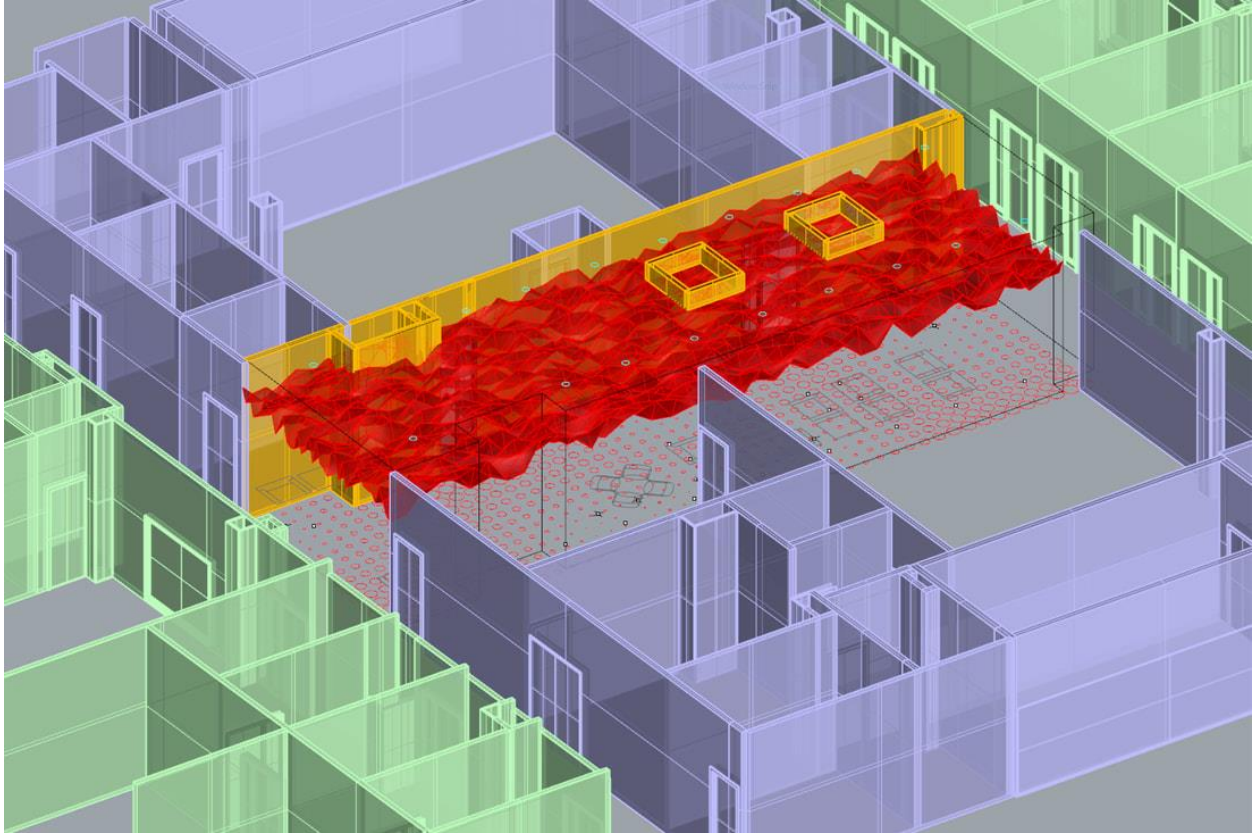
1. Complete a comparative study of students' perception of sustainability of campus buildings between UK and Nazarbayev University,
2. Extend the current model to include student success factors,
3. Validate the extended model linking sustainable design impacts, academic support, and student success,
4. Provide a reliable and valid survey instrument to measure students' perception of the built environment of campus buildings on their academic success,
5. Conduct longitudinal studies of Gatton's triple bottom line impacts on academic success,
6. Conduct comparative studies of campus buildings' triple bottom line impacts on academic success at UK,
7. Present our project findings in professional meetings,

8. Publish our project findings in scholarly journals,
9. Publicize the availability of the toolkit for use by campus stakeholders in future sustainability assessments,
10. Publicize the project website (<http://www.ukymasuringup.org/>) to continue engaging campus stakeholders and the public in the pursuit of a sustainable campus for academic excellence.

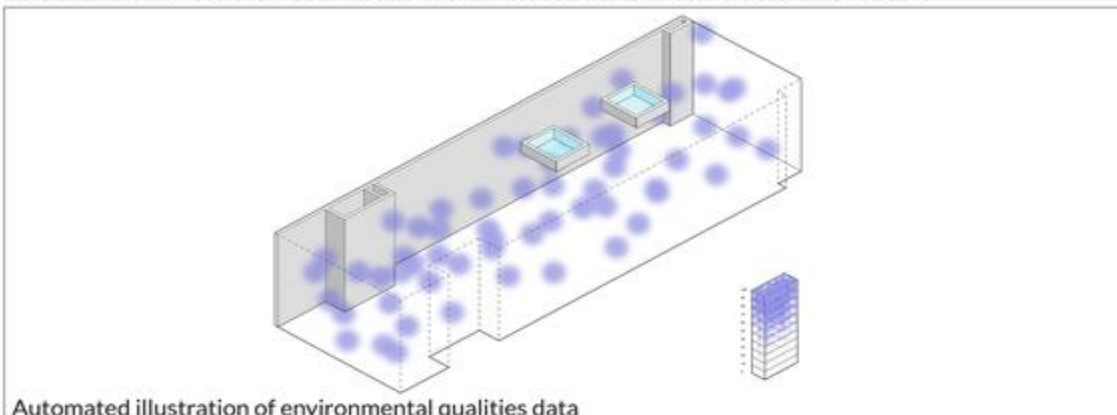
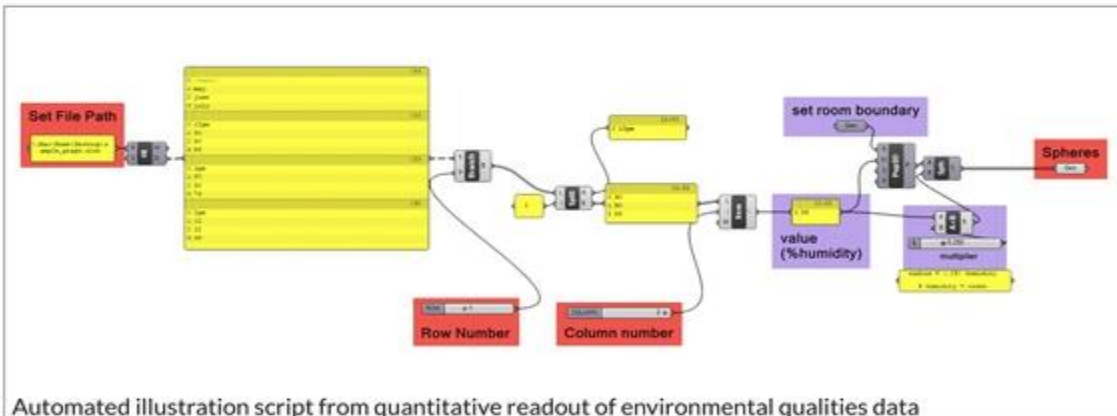
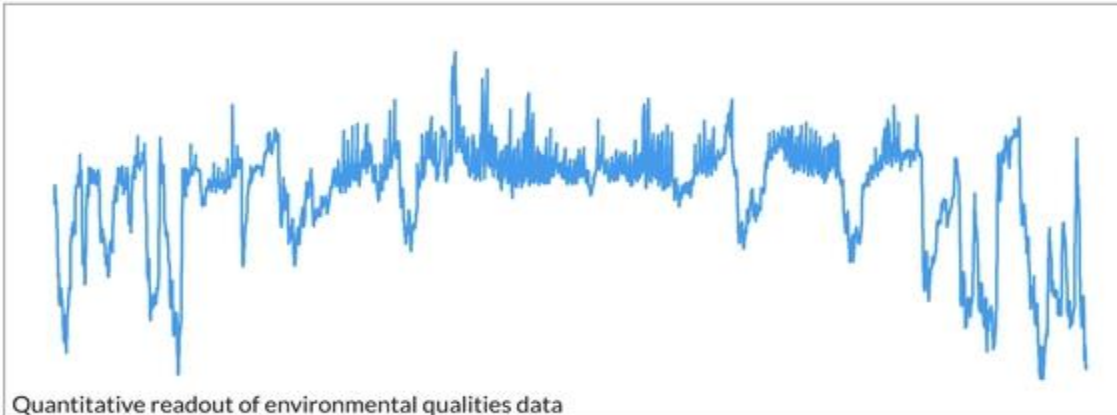
Budget Analysis

Categories	Planned	Actual
Direct consumables	0	0
Travel	0	0
Salaries	\$ 29,900.00	\$ 30,046.84

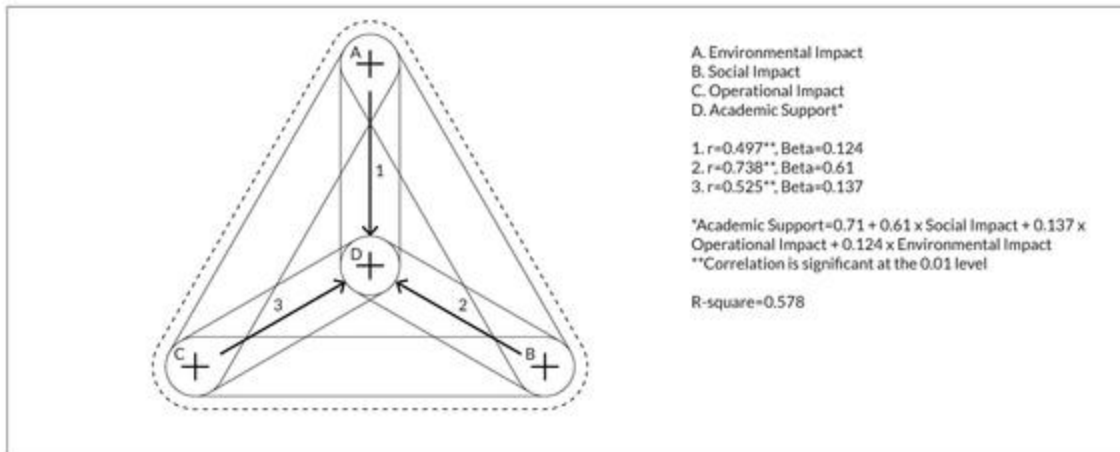
Visuals



Human comfort is a subjective matter, which makes data collection that seeks objectivity a troublesome affair. To address the subjectivity of data concerning human comfort, the Measuring Up team is producing a series of visualizations, distinct from the typical graph format, that help communicate the qualities of this data. Produced using data collected with equipment from the tool library in combination with Grasshopper 3D and Rhinoceros, a sample of the visualizations in progress is shown here.



Produced using data collected with equipment from the tool library in combination with Grasshopper 3D and Rhinoceros, these methods contributed to the sustainability of the research itself. In addition to the reusability of the data collection equipment, the visualization scripts are also reusable. This enables future research to draw on methods developed for this project in ways that lower the threshold of accessibility, thereby establishing a more sustainable approach to design research.



A model that illustrates the relationship between sustainable design and academic support using both qualitative and quantitative factors.



“To better reflect the cutting-edge educational program taught within its walls, the Gatton College of Business and Economics sought to transform its 1963 four-story building into an impressive icon of the College’s cutting-edge programs. The new, technology-rich environment was designed to support a “world ready” business education and support future growth needs. Tiered classrooms feature state-of-the-art projection systems, while smaller break-out rooms offer peer-to-peer learning. An impressive 500-seat auditorium, Executive Education and Conference Center and MBA Center are also included. At the building’s core, a large atrium is the active social heart of the building where students can linger on the expansive social stair, lounge in comfortable furniture or collaborate at the study carrels.” [Ross Tarrant, Gatton design/architect](#)

MEASURING UP: SUSTAINABILITY ASSESSMENT OF CAMPUS BUILDINGS AT THE UNIVERSITY OF KENTUCKY

PROJECT OVERVIEW

Measuring Up is a multidisciplinary project funded by the Sustainability Challenge Grant program at the University of Kentucky. The grant program is administered by the President's Sustainability Advisory Committee, the Tracy Farmer Institute for Sustainability and the Environment, and the Office of Sustainability.

This project seeks to provide campus stakeholders with a toolkit for assessing the sustainability of campus buildings at the University of Kentucky. Consisting of state-of-the-art hardware and software, the toolkit is designed to collect environmental, social, and economic data of the built environment and perform a data-driven assessment of its triple bottom line impacts using a comprehensive set of sustainability metrics.

The pilot case study for this project is the newly renovated Gatton College of Business, certified LEED Gold by the United States Green Building Council. Of the three frameworks regarding the triple bottom line, social sustainability is the least discussed. Social sustainability is a concept that encompasses topics such as social equity, livability, community development, productivity, social support, human rights, placemaking, and well-being.

QUESTION: Does the renovated Gatton Building positively benefit the social sustainability of the structure, UK, and the community?

HYPOTHESIS: The tools provided within the building will enhance the comfort, wellbeing, and productivity of the occupants.

PREDICTION: Students, visitors, staff, and other occupants will respond positively to the new building and utilize its tools and furnishings to benefit their day-to-day activities.

PROJECT GOALS

When evaluating triple bottom line sustainability, the social component of the concept is often overlooked or underlined. Our goal is to provide a comprehensive understanding of social sustainability and its impact on the users, their relationships, academic performance, and the university as a whole.

This study will evaluate the comfort, productivity, and wellbeing of the occupants of the Gatton Building. The collected data from anonymous surveying will be applied to the built environment and how it encourages collaboration, improves work ethic, and the day-to-day lives of students, staff, and visitors.

Depending on how long occupants stay, their preferred task, perceived comfort, and ability to get things done, we can derive a foundation of visitor thought, behavior, and wellbeing. This data will be reinforced by secondary research of previous studies on green building, academic performance, and social sustainability.



PRELIMINARY RESEARCH

A literature review concerning triple bottom line sustainability with a focus through a social scope helped generate an understanding of how research is conducted, analyzed, and presented. The significance between qualitative and quantitative data was determined.

A recent industry survey by PFMResearch (2010) showed how 10% of building tenants saw improvements in productivity in green buildings, 62% found the indoor environment of these buildings to be healthier, and 94% were more satisfied with it than in conventional buildings. Research suggests comfort is a variable condition influenced by behavioral, physiological, and psychological processes.

Adaptive models provide evidence on how people naturally adapt or make adjustments to themselves and their surroundings to reduce discomfort. "To achieve true social sustainability, it is important to accommodate the subjective perception in the best possible way throughout the day for the majority of the building users. Design has an important impact and by achieving environments that are socially sustainable, a considerable improvement can be made to user comfort and performance" (Fiege 2013).



METHODOLOGY

Our methodology consists of IBQ certified questionnaires, interviews, and observation within the Gatton building. By mapping behavior we can determine how participants use the space by recording movement and action, therefore, analyzing how well the building is functioning.

Surveying the students, faculty, and staff will generate insights into the comfort levels, productivity, and well-being of occupants. This survey concerns the topics of access to technology, lighting, acoustics, noise levels, artwork, and circulation. We are also better able to understand user preference and productivity. Participants will be sourced from the location itself and given a voluntary questionnaire on a tablet, their answers recorded anonymously.

By personally addressing participants we are encouraging community involvement within the study, the scope of the Gatton Building, and UK as a whole. Being represented and available allows us to present information transparently. Photographic documentation of the sustainable environment allows us to checkmate furniture placement, spatial conditions, occupancy, and user behaviors. Occupant photographs will remain anonymous and blurred in any imagery.

Analysis of spaces, users, occupancy, acoustics, thermal comfort, user control, integration of technology, and lighting conditions will be documented over a period of time. Asking about furniture choice and location helps us prioritize spaces and are which.

DATA & ANALYSIS



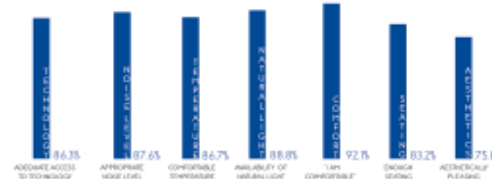
POSITIVELY BENEFITED BY ACADEMIC PERFORMANCE

POSITIVELY IMPACTED BY GENERAL WELLBEING

I FEEL COMFORTABLE

LIKELY TO RETURN

POSITIVELY INFLUENCED BY PRODUCTIVITY



QUOTES

STUDENTS, FACULTY AND VISITORS WERE ASKED WHY THEY CHOSE TO WORK IN GATTON.

SOME RESPONSES INCLUDED: "IT IS A QUIET PLACE TO STUDY", "LIGHTING AND AVAILABLE SEATING", "CONVENIENT", "IT WAS QUIET AND THERE ARE OUTLETS TO MEET WITH MY FRIENDS".

OTHER CONSTRUCTIVE COMMENTS WE RECEIVED INCLUDED: "THE AREA FEELS VERY BEING AND OPEN", "OPENNESS OF SPACE", "LARGE OPEN AREAS BUT NOT ENOUGH PRIVATE SPACES", "THE SPACE FEELS PROFESSIONAL".

By asking what types of furnishings, and where participants are located, we can see which spaces are supporting social sustainability, academic performance, and productivity. We can also analyze spaces with this data to see which spaces are supporting their desired function. Most occupants and survey participants utilized task seating and were focused or collaboratively learning.

While gaining quantitative data is important and credible, we must not underestimate the importance of qualitative contributions. Many students commented on the flexibility the common spaces for studying and the ability to be productive in the building. Most students were working in groups of 4 or 5, collaboratively, and individually. Survey results supported this finding in that 76.0% of students reported the Gatton building positively improved their productivity. 75.0% of students claimed that the new Gatton enhanced their academic performance.

We have found that students, faculty, and staff are using the Gatton Building more often and for longer periods of time since the renovation; the new amenities are having a positive influence on their day-to-day activities, studies, and overall well-being. This is supported by both data collection and interviews.

CONCLUSION

Following data analysis and survey review, it can be concluded that the Gatton Building is playing an active and beneficial role in the lives of its users, students, and other occupants. We draw this conclusion based on evaluations of comfortability, wellbeing, productivity, sociality, and collaboration. High percentages of favorable opinions of the conditions regarding the case study further inform this conclusion.

These conclusions regarding statistics and interviews are applied to an evaluation of social sustainability. The data is applied to sustainable metrics, such as social equity, livability, community development, productivity, social support, human rights, placemaking, and well-being. Straight forward statistics, such as, "indicate to what degree you agree with the following statements." The Gatton Building has positively benefited wellbeing, productivity, or academic performance." On average, over 75% of students agreed with statements such as these.

By benefiting the occupants' productivity, wellbeing, and comfort, and we can create a cycle of social sustainability. From observation, most people worked in groups or were engaged in group activities, facilitating this cycle. We evaluate which areas are utilized most to determine which spaces are functioning appropriately and what sort of resources support this.

CONCLUSION: We can infer that the newly renovated Gatton Building has had a positive influence on the social sustainability of the population and sample.

**Sustainability Challenge Grant
Final Report
Submitted May 31, 2018**

Project Title: Mobilizing Tree Ambassadors

Report Team: Mary Arthur, Lynne Rieske-Kinney, Nic Williamson, and Grace Coy

Reporting Period: January 1, 2017 – April 30, 2018

Project summary:

Since its inception in fall of 2014, the Urban Forest Initiative (UFI) has raised awareness of the urban forest by working collaboratively with UK students and others to engage people on campus, in the community, and in K-12 schools. Through outreach, education and service opportunities, UFI activities have enhanced understanding of the contributions urban trees make to the ecological integrity, economic vitality, and social equity of our communities. The success of UFI is evident in the ‘creation’ of campus Tree Ambassadors, illustrated by service fraternities requesting to collaborate on service events, undergraduate students trained as UFI interns and research fellows to develop different facets of campus and community projects, and successful community tree care workshops and events. Coupled with the creation and nurturing of a collaborative working group of on- and off-campus urban tree professionals, UFI has helped to identify and develop many ‘tree ambassadors.’ With this project we capitalized on this momentum by ‘mobilizing’ tree ambassadors to accomplish three key projects that build strongly on these initial efforts:

- Integrate current campus projects and volunteer events into research.
- Expand a community tree workshop program piloted by a UK undergraduate in 2016 into a Train-the-Trainer program in 2017 to train students to deliver community tree workshops and tree care events on campus, in Lexington, and in other Bluegrass communities.
- Leverage delivery of UFI-developed urban forestry curricula into K-12 and university classrooms through collaborations with existing student-led organizations.

We measured the success of these efforts in research results, direct involvement of UK students in program delivery, and engagement with campus and community members.

Objectives:

The goal of this project was to build on the momentum created with previous Sustainability Challenge Grant funding with which we developed urban tree programming, piloted outreach, and developed curricula with the goal of ‘creating’ Tree Ambassadors. With significant success in these areas, we turned our attentions to ‘mobilizing’ Tree Ambassadors using three new projects, with the following objectives:

- (1) Implementation of a research project to link expanded student service and outreach opportunities, leading to published results supported and conducted by students.
- (2) Delivery of a Train-the-Trainer program for twelve undergraduate students trained in the knowledge and skills necessary to deliver urban tree workshops through community outreach.

- (3) Expansion of an urban forestry curriculum to more diverse K-12 audiences through collaboration with the Lexington Environmental Youth Outreach (LEYO) and the Nerd Squad (STEM program for Lexington youth), as well as other approaches to outreach.

This project aimed to engage students and community members in authentic sustainability research, education and outreach activities focused on the urban forest.

In addition, we continued ongoing efforts for which the campus and Lexington communities depend for urban and community forestry education, including the UFI seminar series, UFI Working Group activities, and ongoing curriculum development and innovation.

Methods and Outcomes:

Objective 1: Campus and community as a living-learning laboratory

Methods:

Building on the growing engagement of UK students and the community with urban forestry service events, we sought to superimpose research onto this framework of volunteerism. The intent of this objective was to integrate campus volunteer projects with research, in the process providing feedback to campus operations, management, and potential cost savings. We anticipated stepping into this objective with a mulching research project, but instead the presence of a heavy infestation of Calico scale on 76 honey locust trees along Limestone shifted our focus to a scale-removal project. Participants were recruited from the APO service fraternity, provided background information on scale insects and impacts on tree health, and instructed on means of scale removal. Pre- and post-questionnaires were developed to evaluate participants' tree knowledge, pest knowledge, and level of engagement and enjoyment.

Specific Outcomes:

- **Student and community engagement:** The Scale Scrub research and volunteer event was hosted through collaboration with the APO service fraternity, reaching 52 student volunteers.
- **Campus as a living laboratory:** This project combined student engagement with the use of campus as a living laboratory. Students from many different majors learned about the threats insects pose to tree health and the research process while volunteering as stewards of campus trees.
- **New collaborations:** This project entailed close collaboration between UFI and APO, and between UFI and PPD, blending operations, engagement and research in one project.
- **Published scholarly products:** Data from scale scrub event, including assessment of lasting impacts to participants completed in March 2018, were analyzed and submitted for publication to the "Education Connection" section of the American Entomologist, published quarterly by the Entomological Society of America: *Rieske*,

Lynne, Stacy Borden, Brianna Damron, Nic Williamson, Mary Arthur, and Adrienne Kinney. *In review. College Campus as a Living Laboratory: Scrubbing scales, saving trees, engaging and enriching students. Submitted to American Entomologist.*

- **Long-term impacts:** The UFI Scale Scrub helped transform our campus into a living laboratory and contributed to suppression of a pest infestation causing decline of some highly visible trees on campus. The Scale Scrub provided a mechanism that allowed students to actively engage in their campus tree canopy, to help develop a long-lasting sense of place that should pay dividends well into the future for both the students and the university.

Objective 2: Student-led community tree trainings

Methods:

We funded an experienced student who had previously been trained by UFI through a Sustainability Fellowship, Grace Coy, to develop and conduct Train-the-Trainer workshops for UK undergraduate students. We subsequently hired two of the workshop students to conduct trainings for community members and younger students during the summer, supervised by Grace Coy, who was then working full time with UFI.

Specific Outcomes:

- **Student and community engagement**
 - We developed and delivered several urban tree workshops (Tree Identification, Tree Health Assessment, and others), and trained 12 students interested in urban forestry in developing presentation and outreach skills targeted at dissemination of urban and community forestry content. Workshop content was delivered in five 4-hour sessions, and students were paid a stipend for completion. *1*
 - Two student interns were hired from the Train-the-Trainer workshops, and subsequently delivered 13 community workshops in Lexington neighborhoods and surrounding counties over the summer.
- **Campus as a living laboratory**
 - UFI partnered with PPD to facilitate the 5th “Mulch Madness” event on campus, resulting in the establishment of several large landscape beds around Memorial Hall and the Engineering Complex. *2*
- **New collaborations:** While not new, these campus projects strengthened our connections to, and collaborations with PPD.
- **Published scholarly products:** None.
- **Long-term impacts:** The Train-the-Trainer workshops acted to strengthen UFI’s relationship to students who are interested in urban forestry. The program enabled the UFI team to put into practice strategies of engagement that were different from many of our usual events. The Train-the-Trainer program was an intensive course on community forestry that strived to build community leadership skills in combination with tree stewardship knowledge. By delivering this type of learning opportunity, the UFI core team has come to better understand students’ interests and motivations for pursuing urban forestry knowledge. Through this program, UFI was also able to guide selected students along urban forestry pathways that may

play a significant role in helping develop career goals of those individuals. In working with the two Train-the-Trainer interns to support delivery of our summer Lexington community workshop program, UFI demonstrated the ability of undergraduate students to connect to and inspire community members interested in developing urban forestry knowledge. Building on this type of community outreach with trained UK students led UFI to continue to develop student-training programs as a core part of our future offerings.

Objective 3: Connecting urban tree curricula to diverse K-12 populations

Methods: To extend the reach of our urban tree curricula to an increasingly diverse population, we partnered with the UK student organization Lexington Environmental Youth Outreach (LEYO), and Nerd Squad, and taught an urban tree component to CAFE students through GEN100.

Specific Outcomes:

- **Student and community engagement**
 - UFI partnered with the UK student organization LEYO (Lexington Environmental Youth Outreach) during the spring semester of 2017 to deliver tree content to students at William Wells Brown elementary. *3*
 - UFI partnered with Nerd Squad and Cagney Coomer (UK PhD candidate and Director of Nerd Squad) during the summer of 2017 to deliver weekly trainings with Nerd Squad youth leaders, reaching 120 children. *4*
 - UFI also partnered with Dr. Ali Rossi and GEN 100 instructors through Nic Williamson providing a component of the Community Engaged Sustainability Education SCG project for First Year GEN100 students in a segment called “Growing Forests in Cities.” Nic worked with four GEN100 instructors and five sections of the course. This work consisted of two class sessions (1) an in-class presentation on urban and community forestry, and (2) a tree planting (2 trees planted per class – 10 total) near the Gluck Equine Center. We had positive feedback from all instructors (including one that said it was the highlight of the semester), and one (Megan Lucy) discussed the successful partnership on the Green Talks podcast.
- **Campus as a living laboratory:** The activities that addressed this objective built on the connections between campus and the community, helping to link UK students with communities of need within Lexington. The GEN 100 project connected new UK students to their campus environment, and the tree campus it embodies.
- **New collaborations:** LEYO, Nerd Squad, GEN 100 instructors through Dr. Ali Rossi and her SCG grant.
- **Published scholarly products:** None.
- **Long-term impacts:** Working with LEYO and Nerd Squad students unveiled the power of classroom culture and the building of trust and reliability in relationships with students. UFI’s experiences in this facet of our programming were critical to our realization that a large part of leading a group of younger students is being open, relatable, and patient with each individual, and that sometimes your approach has to be shifted dramatically depending on the group. While having a structured

lesson plan is essential, it is not the only way to keep students' attention; sometimes, letting students take the lead is the best strategy. Our hope is that a percentage of students with whom members of the UFI team had consistent, direct contact will look back on what they learned for inspiration, particularly when defining their values later in life. Further, we hope that the deep connections with the campus tree canopy that develop for students engaged in these exercises, both on and off campus, will create a stronger sense of place that contributes to their identity to, and stewardship of, urban trees.

Additional accomplishments:

In addition to the activities that are tied directly to our three primary objectives, we have also continued UFI outreach efforts, as follows:

- **Continued collaboration with UK PPD:** UFI and PPD established a new partnership through the joint appointment of Nic Williamson, who contributes approximately half of his working time to PPD and half to UFI. This collaboration has further ignited collaboration among academics, research, and operations components of campus as we work together to improve tree awareness and support for the tree canopy on campus. *5*
- **Continuation of the UFI Seminar Series:** This involved the engaged of the academic and lay communities, including graduate and undergraduate students from UK and other universities, faculty and staff, government agencies, K-12 educators, non-governmental organizations, and the general public. We hosted Dr. Nina Bassuk from Cornell University on April 4-6, 2017, Dr. Susan Day from Virginia Tech on November 16, 2017, and Dr. Daniel Potter from UK on January 31, 2018.
- **Mindfulness audio tree walks:** Brianna Damron, funded by a Sustainability Challenge Grant summer fellowship to conduct a cross-disciplinary project in health and forestry, finalized three audio tree walks and is continuing her mindfulness work on our 2018 SCG project and with a summer sustainability research fellowship. *6*
- **TFISE Intern:** Maxwell Hammer began his Sustainability Internship this August. As part of his work with UFI, Max developed a handbook of common urban tree species in Lexington and the Bluegrass, intended as a resource for students in our Trees to Branches SCG TreeCATs training. Max's departure from the internship led to our hiring Jessica Jensen to move the work forward. *7*
- **UFI high school research student conducted a year-long urban forestry research project:** Sheridan Wagner, senior in The Academy at Henry Clay High School, conducted a research project on Callery pear with support from UFI faculty and staff.
- **UFI Working Group meetings were held 3 times each semester, with participation from ~25-40 people.**

Reflection:

Insights on individual projects:

Overall we were very successful in the work we accomplished with this year of funding from the Sustainability Challenge Grant.

Campus and community as a living-learning laboratory: We committed to conducting two research events but were not successful, first because our idea for a mulching study was thwarted by landscaping design issues, and second because the second Scale Scrub follow-up study scheduled for March/April 2018 had to be cancelled because, unbeknownst to us until recently, the trees were treated with an insecticide following our initial Scale Scrub in April 2017, rendering a second scale scrub irrelevant. Nevertheless, we were able to incorporate an assessment of long-term impacts to volunteer attitudes with a survey in March 2018, the results of which we incorporated in our publication in review at *American Entomologist*. We also intended to hold several campus 'tree assessment blitzes' to collect individual tree information, including health and ecological benefits with the goal of building a database of tree health and function on campus, coupled with our ongoing assessments of the benefits of trees conferred to campus buildings. This work has turned out to be a longer term project than anticipated, but we finalized development of a method for using Collector for ArcGIS for field data collection of trees on campus, in Lexington neighborhoods, and in parks and easements. The data (tree species, size, etc.) can then be integrated into tree reports which present tree species diversity and general health and planting recommendations for the area of interest. We used the extension period of this grant to complete development of this capacity, and are applying it now in our 2018 SCG project.

Community tree trainings: For this objective, the UFI team was responsible for developing a different approach to training, particularly with the student Train-the-Trainer program. Developing a 20-hour, hands-on training program required a greater level of coordination and engagement than the typical two-hour workshop. For this training course, the material was much more focused on developing each student's comfort with public speaking on the topic of urban trees rather than seeking to develop specific skills related to arboriculture. When the training program ended, two interns were selected to help lead tree health and care workshops in Lexington neighborhoods. One thing that the UFI team learned from our experience with our summer interns was the importance of guiding students outside of their comfort zone. While it is important to give a little time for students to become comfortable with the presentation material, we found that our students needed a push to go out and do what was needed. After that, they became much more confident and excited about giving subsequent workshops. For the community audience of this objective, we learned a lot about the specific interests and tree-related concerns of the public. More importantly, we learned that people in different areas place different values on the tree canopy, an understanding and awareness which influences the ways in which we develop programs going forward.

Connecting urban tree curricula to diverse K-12 populations

This objective of our 2017 SCG project was very successful for several reasons. First, partnering with other campus (LEYO) and student-led (Nerd Squad) organizations broadened UFI's reach by enabling UFI to bring urban tree curricula into learning environments we otherwise would not have had access to, allowing us to gain insights

into pathways for more effective urban tree outreach. Second, it was a very positive experience to engage with interested GEN 100 instructors to deliver urban forestry content to students new to campus, including the planting of trees, and the feedback from this effort was strongly positive.

General insights and things we would change:

During this year of funding from the SCG for the Urban Forest Initiative we continued to build on our success in bringing together “tree people” from UK, Lexington, and the region to our joint efforts to enhance the urban forest and appreciation for the urban forest and its myriad impacts to human health and well-being. The energy and excitement generated within the UFI Working Group has continued to extend into other local initiatives, helping to legitimize and support efforts on campus and in Lexington to expand funding and positions for urban tree care and planting. These synergies are especially evident in development of the UFI-sponsored ‘Tree Week’, addressing all things trees and scheduled for Oct 6-14 2018. Funding from the SCG has been pivotal in enabling us to accomplish this work and to continue to lay the groundwork for a more permanent role for the Urban Forest Initiative. *See poster designed by Sara Turner of Cricket Press for Tree Week.* *8*

Our association with TFISE as an official Working Group continues to be important to our success, particularly for the delivery of the seminar series and the UFI Working Group, and now Tree Week, meetings, as well as through support for staff, and in our efforts to secure extramural funding. Support for an undergraduate intern has also been very helpful to our ability to connect effectively with students, many of whom have helped to identify new directions and ideas to pursue. *9*

While we have been most surprised and pleased by the incredible traction that UFI has garnered in the past 3-1/2 years, on campus and throughout the community, we are also increasingly aware of the potential to over-extend ourselves, and are experiencing somewhat predictable challenges associated with that. The challenges we face going forward relate to three key goals or concerns:

First, building a sustainable funding base that will enable UFI to persist continues to be a concern, even as we have had some significant success in fund-raising. Here again, we are challenged to match the generation of new ideas with the capacity our team can reasonably and sustainably support. We have made significant strides in this regard, in the following ways:

(1) Sharing Nic Williamson (and therefore his salary) with UK PPD has simultaneously enabled UFI to build a stronger working relationship with UK operations, and filled in financially where we were projected to fall short. We have a commitment for this relationship to continue through December 2018.

(2) Funds from TFISE have also helped to support Nic’s salary, funding which has gone towards continued support of campus and Lexington community outreach efforts.

(3) In March we received funding from an LFUCG stormwater grant that enables us to provide salary support for personnel to deliver community workshops centered around the role of urban trees in reducing stormwater.

(4) Our larger UFI team was successful in obtaining a USDA Higher Education Challenge Grant to develop a new Urban and Community Forestry undergraduate certificate program. This grant provides some nominal funding for support of the UFI core team.

Second, we are cognizant of the value of the curricular and extra-curricular elements of the UFI presence on the UK campus in raising the level of engagement within the UK community around the tree canopy and don't want to lose that component of our work as we become increasingly successful in capturing extramural funding. Therefore, we also remain focused on finding continued avenues for a base level of UFI funding that supports our work on campus, along with finding avenues to continue to build on the training and educational opportunities that expand efforts to conduct urban forest stewardship.

Finally, we continue to find it necessary to define, and redefine, the purview of our work, and to separate the goals and purpose of the UFI Working Group from that of the UFI core team. This is becoming simultaneously both more important to do and more apparent as both develop with time. For example, at times working group members turn to our UFI core group (L. Rieske-Kinney, M. Arthur, N. Williamson) with suggestions for additional work that we could be doing, rather than seeing the Working Group more accurately as a team of people who share responsibility for various tasks and programming. We tend to see ourselves as an "incubator," developing new tools and ideas that are then shared with other entities to extend more broadly.

Next steps:

Our next steps are three-fold:

- I. To successfully accomplish the goals set out by the current (2018) SCG and the LFUCG Stormwater Grant. Grace Coy, UFI Outreach Coordinator, has decided to leave UFI for a new position at LFUCG, so we are in the midst of determining how best to accomplish the activities for which she was responsible.
- II. We have committed UFI, both the core team and the Working Group, to helping deliver Tree Week to the Lexington community, October 6-14, 2018.
- III. We are working to develop an increasingly sustainable funding base that enables us to continue the work we are doing without overextending our capacity. This is particularly challenging, as competitive funding sources require proposals with new ideas or novel approaches in order to be viewed favorably.

Feedback:

Our experience with the Sustainability Challenge Grant Program has been overwhelmingly positive, once again, and generally mirrors our experience from prior periods. As mentioned above, there are significant pieces of our success that could not have been accomplished without the logistical, intellectual, and monetary support

provided by this funding. Logistical support from TFISE is also critical to our success as a working group. The internship program has also been very fruitful to the development of new work, enabling us to get more done while engaging ideas from students who bring tremendous insight, intelligence and energy to the table, often leading the way for the next idea we seek to fund and work on.

Budget Analysis:

We were awarded \$49,774 through the Sustainability Challenge Grant Program for calendar year 2017. We may minor adjustments to each of the budget categories, as follows:

- (1) We expended an extra \$109 on consumables that budgeted, in part due to the cost of signage used very effectively in guiding people to public UFI events.
- (2) Those funds came from travel, which we underspent by \$436 due to lack of opportunities to attend an out-of-state meeting.
- (3) The remaining funds left over from underspending on travel when to salaries (\$217).

	Projected			Actual		
	Consumables	Travel	Salaries	Consumables	Travel	Salaries
January-March	92	110	423	92	110	423
April-June	81	0	8,251	81	0	8,251
July-September	314	178	17,373	314	178	17,373
October-December	0	598	13,153	0	598	13,153
Extension period: January 1 – April 30, 2018	763	571	7,867	872	245	8,084
TOTAL	\$1,250	\$1,457	\$47,067	\$1,359	\$1,021	\$47,284
	\$49,774			\$49,774		

Photos and Supporting Media for Mobilizing Tree Ambassadors

1 – Urban & Community Forestry Workshop participant Hannah Moore planting trees at Reforest the Bluegrass
2 - UFI and PPD facilitate the 5th Mulch Madness
3 – Students from William Wells Brown Elementary adopt “Branchy” with Nic Williamson
4 – Nerd Squad students applying their urban forestry knowledge to plant some trees in a local park
5 – UFI-PPD partnership and N. Williamson
6 – Final flyer for on-campus audio-guided tree walks
7 – Excerpts from Tree ID book
8 – Tree Week poster art by Cricket Press
9 - UFI team and poster at the 7th annual Sustainability Forum hosted by TFISE

1 - Urban & Community Forestry Workshop participant Hannah Moore planting trees at Reforest the Bluegrass



2 - UFI and PPD facilitate the 5th Mulch Madness



3 – Students from William Wells Brown Elementary adopt “Branchy” with Nic Williamson



4 - Nerd Squad students applying their urban forestry knowledge to plant some trees in a local park



5 - UFI-PPD partnership and N. Williamson





Audio-guided mindfulness tree walks are available for:



WT Young Library
Maxwell Place
Administration Dr.

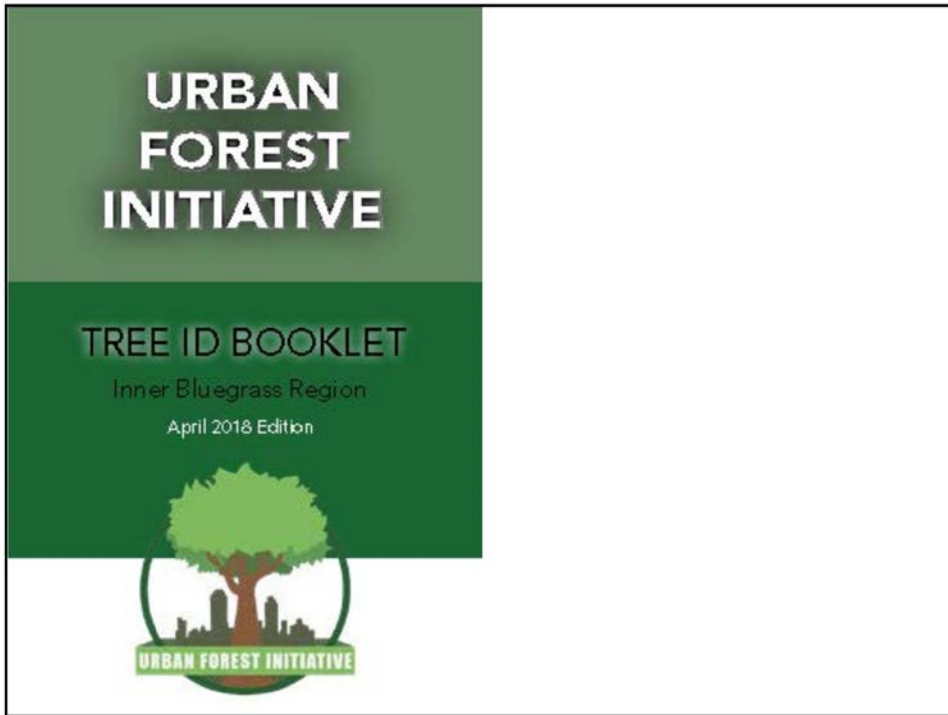


Markey Cancer Center

UFI.CA.UKY.EDU/WALKS

Contact ukntrees@uky.edu for more info!

7 – Excerpts from Tree ID book



Saucer Magnolia

Leaf Arrangement: alternate



Leaf: simple, 3 to 7" long, elliptical, sharply pointed tip, terminal leaf bud is 1/2" long, very silky

Fruit: 4" long aggregate fruit with a knobby surface, reddish-orange seeds emerge from slits


Flower: large, cup-like, white, pink, or purple blossoms

Bark: silver-gray, smooth


Growth Habit: 30' x 30'



Ramartin



Ramsey



Deciduous
Alternate
Simple

Magnolia x soulangeana

SAUCER MAGNOLIA

The image is a page from a tree ID book. On the left side, there is a vertical blue bar. The main text is in a clean, sans-serif font. The title "Saucer Magnolia" is bolded. Below the title are several lines of text describing the tree's characteristics: leaf arrangement, leaf shape and size, fruit description, flower appearance, bark texture, and growth habit. To the right of the text are four photographs: a large cup-like flower, a branch with buds, a branch with small flowers, and a close-up of the tree's bark. At the bottom right, there is a vertical blue bar with the text "SAUCER MAGNOLIA" in white, bold, capital letters. To the left of this bar, the text "MAGNOLIA x soulangeana" is written in a smaller font, and above it, the words "Deciduous", "Alternate", and "Simple" are listed vertically.



9 - UFI team and poster at the 7th annual Sustainability Forum hosted by TFISE



Administrative Regulation 6:8

Sustainability Advisory Committee

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I. Introduction

This *Administrative Regulation* establishes a campus-wide Sustainability Advisory Committee to focus and coordinate the University's activities within a broad meaning of sustainability. Sustainability implies that the activities of the University of Kentucky are ecologically sound, socially just, and economically viable, and that they will continue to be so for future generations.

II. Entities Affected

This regulation applies to all employees, students, and units of the University.

III. Policy

Because of their missions of research, education, and community engagement, institutions of higher education have a crucial role in advancing the goal of a sustainable society. The University of Kentucky strives to be a leader and role model in the application of sustainability principles and practices and to become a sustainable campus, as reflected in the University's [Statement on Sustainability Policy and Principles](#). A sustainability focus encourages the integration of these principles in curricula, research, and outreach. This

principled approach to operational practices and intellectual pursuits prepares students and empowers the campus community to support sustainable development in the Commonwealth and beyond.

IV. Responsibilities

The Sustainability Advisory Committee's responsibilities include:

- A. Promoting the principles outlined in the University's [Statement on Sustainability Policy and Principles](#);
- B. Developing an annual set of committee goals and planned actions designed to further promote and advance an institutional culture of sustainability in the areas of campus business operations, education, research, and community engagement;
- C. Publicizing and communicating current University sustainability initiatives to the University community, in consultation with the Office of Public Relations;
- D. Supporting the work of the Office of Sustainability in developing indicators to measure progress and making recommendations for improvements;
- E. Conducting periodic reviews of the University in terms of sustainability, including an assessment of the completeness and progress of University sustainability efforts as compared to national benchmark institutions;
- F. Sponsoring and promoting campus events, workshops, showcases, exhibits, and symposia focused on enhancing sustainability efforts and practices;
- G. Providing a platform for assisting faculty, staff, and students with sustainability-related initiatives;
- H. Promoting and encouraging sustainable best practices and processes in University facility planning, design, and construction;
- I. Supporting the implementation of the University's Greenhouse Gas Emissions Reduction Commitment; and
- J. Creating and appointing such technical advisory task forces and committees as may be appropriate to advise the Committee and to foster increased opportunities for campus community involvement and input.

IV. Membership

- A. The Committee is appointed by and reports to the President.
- B. The Committee is composed as follows:
 - 1. Two members from University business operations;
 - 2. Three faculty members;
 - 3. Two student members;
 - 4. One member from Student and Academic Life (Provost);
 - 5. One member representing the University research mission (Vice President for Research);
 - 6. One member from Environmental Management;

7. One member from UK Public Relations (non-voting);
8. One member from the Lexington Fayette Urban County Government;
9. One member from the Tracy Farmer Institute for Sustainability and the Environment;
10. Up to four members at large;
11. The Sustainability Coordinator (Ex Officio);
12. The Vice President for Facilities Management or designee (Ex Officio); and
13. The Sustainability Manager for UK Dining (Ex Officio).

C. Members are normally appointed for staggered two-year terms.

D. The Committee must select two (2) co-chairs from the Committee membership.

V. Meetings

The members of the Committee will meet regularly during the academic year. Meeting agendas will be distributed in advance to members and be publicized on campus.

VI. Reporting

The Committee will publish and present to the President an annual report each August on University sustainability activities undertaken during the reporting period. The annual report will also provide information regarding progress in meeting goals in campus business operations, education, research, and community engagement and establish Committee goals and action items for the following year.

VII. References

[Statement on Sustainability Policy and Principles](#)

[Campus Master Plan](#)

[Greenhouse Gas Emissions Reduction Commitment](#)

[UK Sustainability Tracking Assessment and Reporting System Report \(STARS\)](#)

Revision History

5/1/2008, 5/6/2011

For questions, contact: [Office of Legal Counsel](#)



University of Kentucky *STARS REPORT*

Date Submitted: Oct. 16, 2015

Rating: Silver

Score: 45.25

Online Report: [University of Kentucky](#)

STARS Version: 2.0

About STARS

The Sustainability Tracking, Assessment & Rating System (STARS[®]) is a transparent, self-reporting framework for colleges and universities to gauge relative progress toward sustainability. STARS was developed by [AASHE](#) with broad participation from the higher education community.

STARS is designed to:

- Provide a framework for understanding sustainability in all sectors of higher education.
- Enable meaningful comparisons over time and across institutions using a common set of measurements developed with broad participation from the campus sustainability community.
- Create incentives for continual improvement toward sustainability.
- Facilitate information sharing about higher education sustainability practices and performance.
- Build a stronger, more diverse campus sustainability community.

STARS is intended to engage and recognize the full spectrum of colleges and universities—from community colleges to research universities, and from institutions just starting their sustainability programs to long-time campus sustainability leaders. STARS encompasses long-term sustainability goals for already high-achieving institutions as well as entry points of recognition for institutions that are taking first steps toward sustainability.

About AASHE

STARS is a program of AASHE, the [Association for the Advancement of Sustainability in Higher Education](#). AASHE is a [member-driven organization](#) with a mission to empower higher education to lead the sustainability transformation. [Learn more about AASHE](#).

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Summary of Results

Score 45.25

Rating: Silver

Institutional Characteristics

b	Institutional Characteristics	0.00 / 0.00
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Academics

b	Curriculum	15.32 / 40.00
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b	Research	10.99 / 18.00
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Engagement

b	Campus Engagement	10.80 / 20.00
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b	Public Engagement	11.27 / 22.00
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Operations

b	Air & Climate	3.73 / 11.00
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b	Buildings	2.40 / 8.00
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b	Dining Services	1.46 / 7.00
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b	Energy	2.08 / 10.00
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b	Grounds	3.00 / 4.00
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b	Purchasing	2.42 / 6.00
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b	Transportation	3.37 / 7.00
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b	Waste	2.76 / 10.00
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b	Water	3.44 / 7.00
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Planning & Administration

b	Coordination, Planning & Governance	5.33 / 8.00
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b	Diversity & Affordability	7.00 / 10.00
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b	Health, Wellbeing & Work	2.00 / 7.00
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b	Investment	0.00 / 7.00
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Innovation

The information presented in this submission is self-reported and has not been verified by AASHE or a third party. If you believe any of this information is erroneous, please see the [process for inquiring](#) about the information reported by an institution.



October 12, 2015

Association for the Advancement of Sustainability in Higher Education
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Re: The University of Kentucky STARS submission

The University of Kentucky proudly submits this sustainability self-assessment using the Sustainability Tracking, Assessment & Rating System (STARS), administered by the Association for the Advancement of Sustainability in Higher Education (AASHE).

As President of the University of Kentucky, I am pleased to affirm the accuracy of this submission.

Today, at its 150-year anniversary, the University of Kentucky is pioneering new ways to carry out its mission to our students, faculty, staff, alumni and friends, and the people of the Commonwealth of Kentucky. It is the idea that we have been charged to lead as our state's flagship and land-grant institution, through a multi-faceted mission of education, research, service and health care.

Part of that shared vision involves carrying out our work in an environmentally responsible and energy-conscious manner, serving as a model for students and the state. This commitment led to our adoption of sustainability as one of the seven core principles in our Campus Master Plan in the fall of 2012.

We submitted our first STARS report in February of 2012, shortly after I arrived on campus. Much progress has been made during this time, which demonstrates the importance of sustainability on our campus and to our community.

The physical campus of the University is undergoing an unprecedented transformation with more than \$1.8 billion in capital construction projects initiated since our last report. Using the US Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) system, we have targeted silver level certification for almost all of these projects.

When the projects currently under construction are complete, UK will have 24 buildings with a total of more than 3 million gross square feet certified by the USGBC, representing more than 15 percent of our total building space.

Our campus transformation has also brought into focus our campus greenspaces and urban forests. The University recently adopted Campus Landscape Guidelines that include requirements and guidance for designing, developing and maintaining campus landscapes that enhance our sense of place, prioritize ecology and environmental stewardship, and maximize the positive impacts of our financial investments in these spaces. The Tracy Farmer Institute for Sustainability and the Environment, one of the academic units driven by our Vice President for Research, has also formed a diverse working group focused on Urban Forests composed of faculty, staff, students and experts from industry and government agencies.

The University of Kentucky also has been recognized as a Tree Campus USA by the National Arbor Day Foundation for the past four years. The Grounds Department from the Physical Plant Division has partnered with campus organizations including the Department of Forestry, the Forestry Club and the UK Urban Forest Initiative to meet the criteria necessary to maintain this designation and to provide opportunities for our campus community to engage in the care and growth of our campus trees.

Moreover, we have made exciting advances in the transportation options available to our campus, making it easier now than ever before to thrive at the University of Kentucky without a car. This summer, for example, we launched a new partnership with LexTran through which all University of Kentucky students, staff and faculty can use public transit for free just by showing their UK ID. We also installed more than 900 new or upgraded bicycle parking spaces this summer and completed construction on several key facilities that make bicycling to campus safer and easier.

Since our last STARS submission we have more deeply integrated sustainability with our curriculum through the addition of a degree program in Environmental and Sustainability Studies in the College of Arts and Sciences and the creation of The Greenhouse, a sustainability-themed Living Learning Community that is a partnership between the Colleges of Arts and Sciences and Agriculture, Food and the Environment. Students participating in The Greenhouse live together in one of our new, LEED silver residence halls and take connected courses that bring rich learning opportunities to their campus living environment.

We have worked diligently to create meaningful, sustainability-driven engagement opportunities for our campus community. The Campus Sustainability Challenge Grant Program, launched in 2014, has been designed to engage multidisciplinary teams from the University community in the creation and implementation of ideas that will promote sustainability by simultaneously advancing economic vitality, ecological integrity and social equity.

Proposals were received from 22 interdisciplinary teams requesting more than \$450,000 in funding in the first year of the program. Through a very competitive selection process seven projects were awarded a total of \$100,000 to pursue initiatives that engaged students and used the campus as a living laboratory in pursuit of the objectives mentioned above. Based on the success of the first year of the program, four key campus funding partners have joined to double the funds available to the campus for the second year of the program.

The highlights in this letter tell only part of our story to promote sustainability in our community, through our operations, curriculum, research and outreach.

The enclosed STARS submission further details the multitude of initiatives and programs; research centers and outreach services and classrooms; and curricula, that compose our vision for integrating sustainability into a 21st century flagship, land grant research university. This process has helped us identify areas where we can improve, and we look forward to continuing our progress.

Thank you for your continuing dedication to a better, more sustainable, future for higher education and those we serve.

Sincerely,

A handwritten signature in black ink that reads "Eli Zepilonto". The signature is written in a cursive style with a large initial "E".

President