

University of Arkansas
Office for Sustainability

2017



UNIVERSITY OF
ARKANSAS

MISSION

The University of Arkansas Office for Sustainability motivates, facilitates, and coordinates innovation and progress through partnerships with students, faculty and staff across the U of A to create a culture of sustainability.

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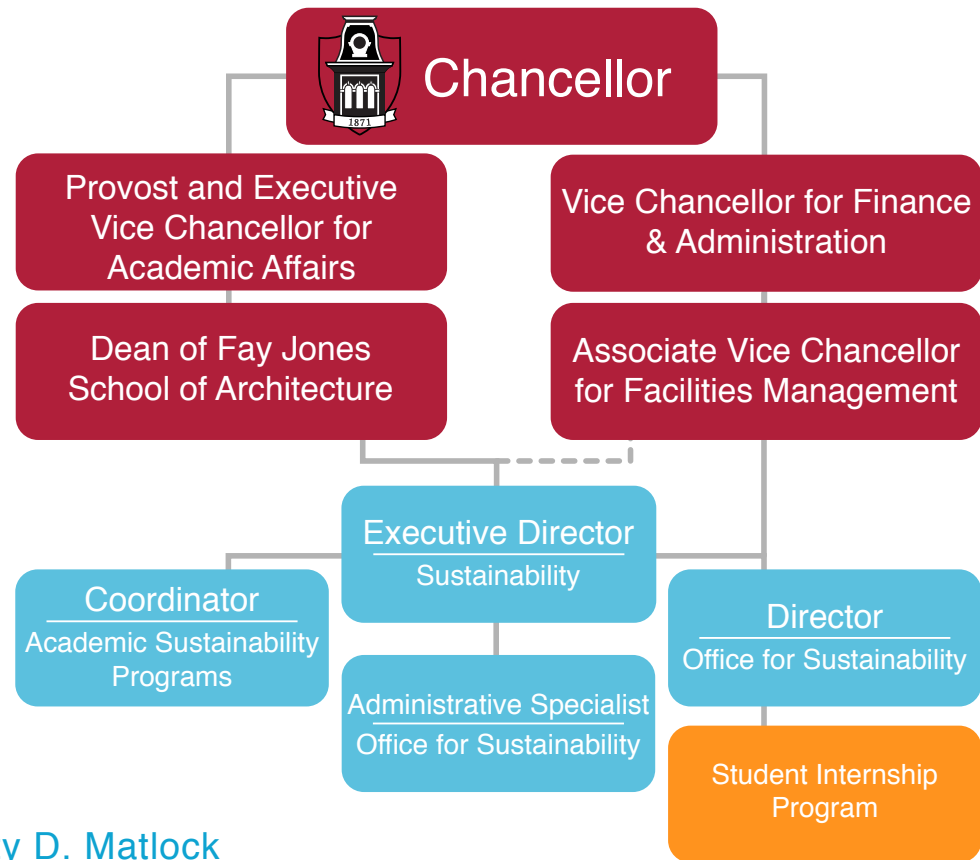
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LEADERSHIP TEAM



Marty D. Matlock

Executive Director

Marty Matlock is executive director of the UofA Office for Sustainability and a professor in the Biological and Agricultural Engineering Department at the University of Arkansas. The focus of Dr. Matlock's research is developing metrics that inform best management practices, ecological services restoration, ecological risk assessment, and life cycle assessment of supply chain systems.

Eric C. Boles

Director

Eric Boles is director of the UofA Office for Sustainability and executive secretary of the UofA Sustainability Council. Eric is the co-founder of Paradigm Sustainability Solutions, which assists organizations with sustainability planning. He takes great pride in helping organizations acknowledge the importance of social, economic, and environmental sustainability.

David Hyatt

Academic Programs Coordinator

David Hyatt is the coordinator of Academic Sustainability Programs and a clinical assistant professor at the University of Arkansas's Sam M. Walton College of Business. Dr. Hyatt's primary research concerns sustainability in global supply chains, and when, how, and why nonprofits and businesses collaborate to solve issues of the natural environment.

INTERNS

GRADUATES

Brandon Wayerski — Business Administration
 Todd Hansen — Architecture

SENIORS

Chandler Buckingham — Environmental Soil and Water Science
 Lillian Hay — Graphic Design and Drawing
 Grant James — Finance, Sustainability Minor
 Brittany Jurgens — Biology
 William Woodward — Mechanical Engineering, Computer Science Minor
 Deanna Mantooth — Geology

JUNIORS

Olivia Morgan — Psychology, Indigenous Studies Minor
 Linden Cheek — Biological Engineering, Sustainability Minor
 Lydia Campbell — Civil Engineering
 Fischer Jones — Finance
 Ryan Clark — Biological Engineering, Sustainability Minor
 Yvonne Ngome — Biology
 Hannah Saunders — Music
 Jack Scaccia — Finance
 Samuel Lahodny — Biological Engineering



ALL OFS INTERNS
 ARE COMPENSATED ON
 A SCALE STARTING AT
\$10/HOUR

FACULTY

More than 40 faculty members are engaged in sustainability research and education at the University of Arkansas. This is not a comprehensive list; in many ways the challenges of sustainability are core to the mission of a land grant university, engaging almost every faculty research and teaching program.

Dale Bumpers College of Food, Agriculture, and Life Sciences

Kristophor Brye, Ph.D. Crop, Soils and Environmental Sciences
Zola Moon, Ph.D. Sustainability Program and Human Environmental Sciences
Lanier Nalley, Ph.D. Agribusiness and Agricultural Economics
Jennie Popp, Ph.D. Agribusiness and Agricultural Economics
Curt Rom, Ph.D. Horticulture
Mary Savin, Ph.D. Crop, Soils and Environmental Sciences
Thad Scott, Ph.D. Crop, Soils and Environmental Sciences
Andrew Sharpley, Ph.D. Crop, Soils and Environmental Sciences
Kate Shoulders, Ph.D. Agricultural Education, Communications and Technology

Fay Jones School of Architecture and Design

Noah Billig, Ph.D. Landscape Architecture
Phoebe Lickwar, M.L.A. M.Ed. Landscape Architecture
Carl Smith, Ph.D. Landscape Architecture
Ken McCown, MS-Arch Landscape Architecture
Steve Luoni, MS-Arch Community Design Center
Peter MacKeith, MS-Arch Architecture
Alison Turner, MS-Arch Architecture

School of Law

Nicole Civita, J.D. School of Law
Uché Ewelukwa, S.J.D. School of Law
Sara Gosman, J.D. School of Law
Janie Hipp, J.D. School of Law
Don Judges, J.D. Ph.D., School of Law
Christopher Kelley, J.D. School of Law
Susan Schneider, J.D. School of Law

J. William Fulbright College of Arts and Sciences

Myria Allen, Ph.D. Communications
Robert Coridan, Ph.D. Chemistry and Biochemistry
Jackson Cothren, Ph.D. Geosciences
Ralph Davis, Ph.D. Geosciences
Sean Dempsey, Ph.D. English
Marlis Douglas, Ph.D. Biological Sciences
Michael Douglas, Ph.D. Biological Sciences
Michelle Evans-White, Ph.D. Biological Sciences
Kevin Fitzpatrick, Ph.D. Sociology and Criminal Justice
Rocio Gomez, Ph.D. Latin American History
Warren Herold, Ph.D. Philosophy
Kusum Naithani, Ph.D. Biological Sciences
David Stahle, Ph.D. Geosciences
J. D. Willson, Ph.D. Biological Sciences

College of Engineering

Andrew Braham, Ph.D. Civil Engineering
Brian Haggard, Ph.D. Biological and Agricultural Engineering
Jamie Hestekin, Ph.D., P.E. Chemical Engineering
Alan Mantooth, Ph.D., M.S.E.E. B.S.E.E. Electrical Engineering
Marty Matlock, Ph.D., P.E., B.C.E.E. Biological and Agricultural Engineering
Darin Nutter, Ph.D., P.E. Mechanical Engineering
Scott Osborn, Ph.D., P.E. Biological and Agricultural Engineering
Benjamin Runkle, Ph.D., P.E. Biological and Agricultural Engineering
Greg Thoma, Ph.D., P.E. Chemical Engineering
Wen Zhang, Ph.D., P.E. Civil Engineering
Jun Zhu, Ph.D., P.E. Biological and Agricultural Engineering

Sam M. Walton College of Business

Amy Farmer, Ph.D. Economics
David Hyatt, Ph.D. Supply Chain Management
Jon Johnson, Ph.D. Management
Gary Peters, Ph.D. Accounting
Mathew Waller, Ph.D. Supply Chain Management

ZERO WASTE

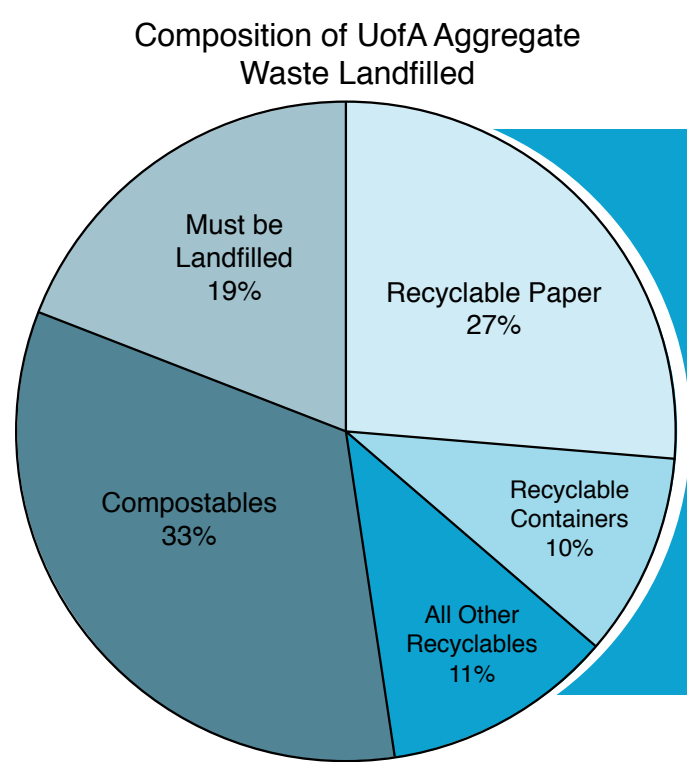
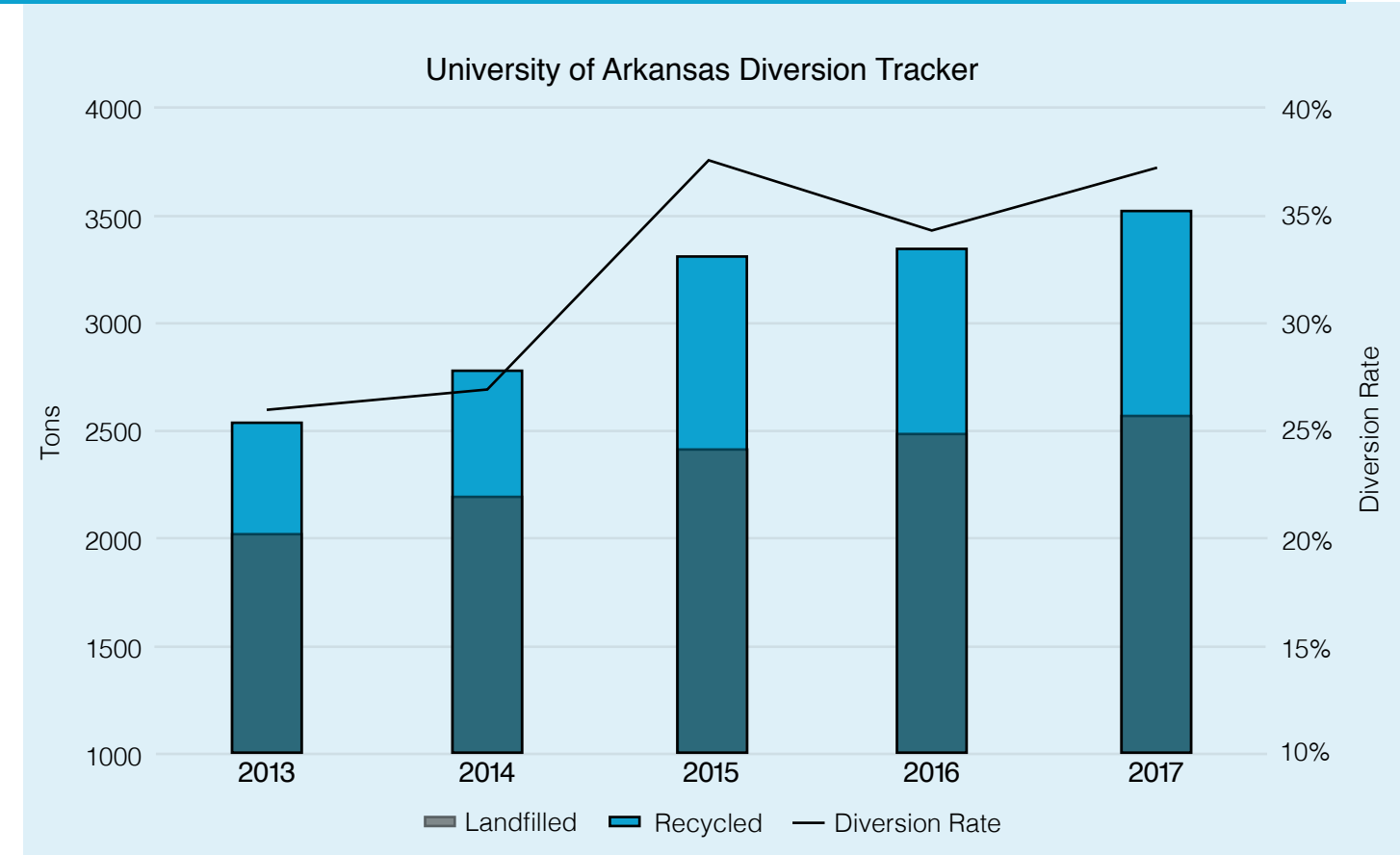
In 2017, the University of Arkansas established a benchmark goal to attain a 50% diversion rate by the year 2021. This is an achievable increase from the current campus diversion rate of approximately 30%, however, achieving the upcoming 2021 goal will require continued innovation and commitment to waste aversion and diversion strategies. Moving forward, these strategies will focus on purchasing items of recyclable and reusable materials for on-campus sale and use, as opposed to disposable materials such as polystyrene. Such efforts could significantly increase our rate of diversion of waste from landfills. Highlights in waste reduction efforts over the past year include the establishment of composting within campus dining halls, the Athletic Program's continued dedication to the Game Day Challenge competition, and the amazing food repurposing efforts of Razorback Food Recovery. The campus diversion rate benchmarks have the support of the UofA community from top to bottom, and are as follows:

2021: 50% diversion from landfill

2027: 70% diversion from landfill

2040: 90% diversion from landfill

ON OUR CAMPUS



the **average** UofA campus user generates **162 lbs** of landfilled waste every year.



Short-Term Goal

50% diversion rate by 2021

Mid-Term Goal

70% diversion rate by 2027, in alignment with the City of Fayetteville's goal

Long-Term Goal

90% diversion rate by 2040, in alignment with the UofA's carbon neutrality goal



100,000

Razorback Food Recovery

Razorback Food Recovery (RFR) has proven itself as a major method of combating both food waste and food insecurity. RFR volunteers work with Chartwells, the UofA's food provider, to recover food from campus restaurants and cafeterias. This food is separated into individual, freezable meals that are then given to community partner agencies who distribute it to the food insecure of our city. This results in free, healthy meals going to people who need them and a lot less good food ending up in the landfill.

This May, RFR announced that they officially recovered 100,000 lb of food – enough to feed 27,750 people with three full meals. Not only has this food been prevented from going to waste, but it has been distributed - free of charge - to those in need. Additionally, the effects of RFR's efforts are expanding far beyond NWA. The RFR team has developed a food recovery model and training program to help other colleges and universities establish their own pantries and food recovery projects. To get involved, go to service.uark.edu.



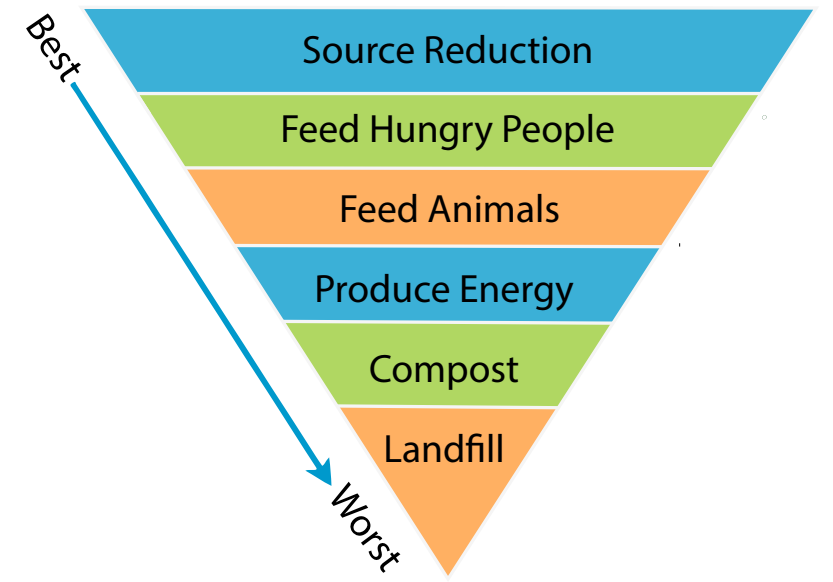
Chartwells Composting Program

In 2017, Chartwells established a permanent composting program to process the food waste from the Fulbright, Pomfret, Union, and Brough cafeterias. This program was based off of the composting pilot conducted in 2016. Currently Chartwells is recovering the food waste from prep and post-consumption waste. This food waste is kept in compost bins until it is collected by the City and taken to the City composting facility. Students and faculty can help this composting program be a success by not placing any contaminating materials into the compost holding bins. The materials that can be composted are shown on an infographic on the their lids.

69 Tons
The UofA recovered 69 tons of food waste as part of their new composting partnership.

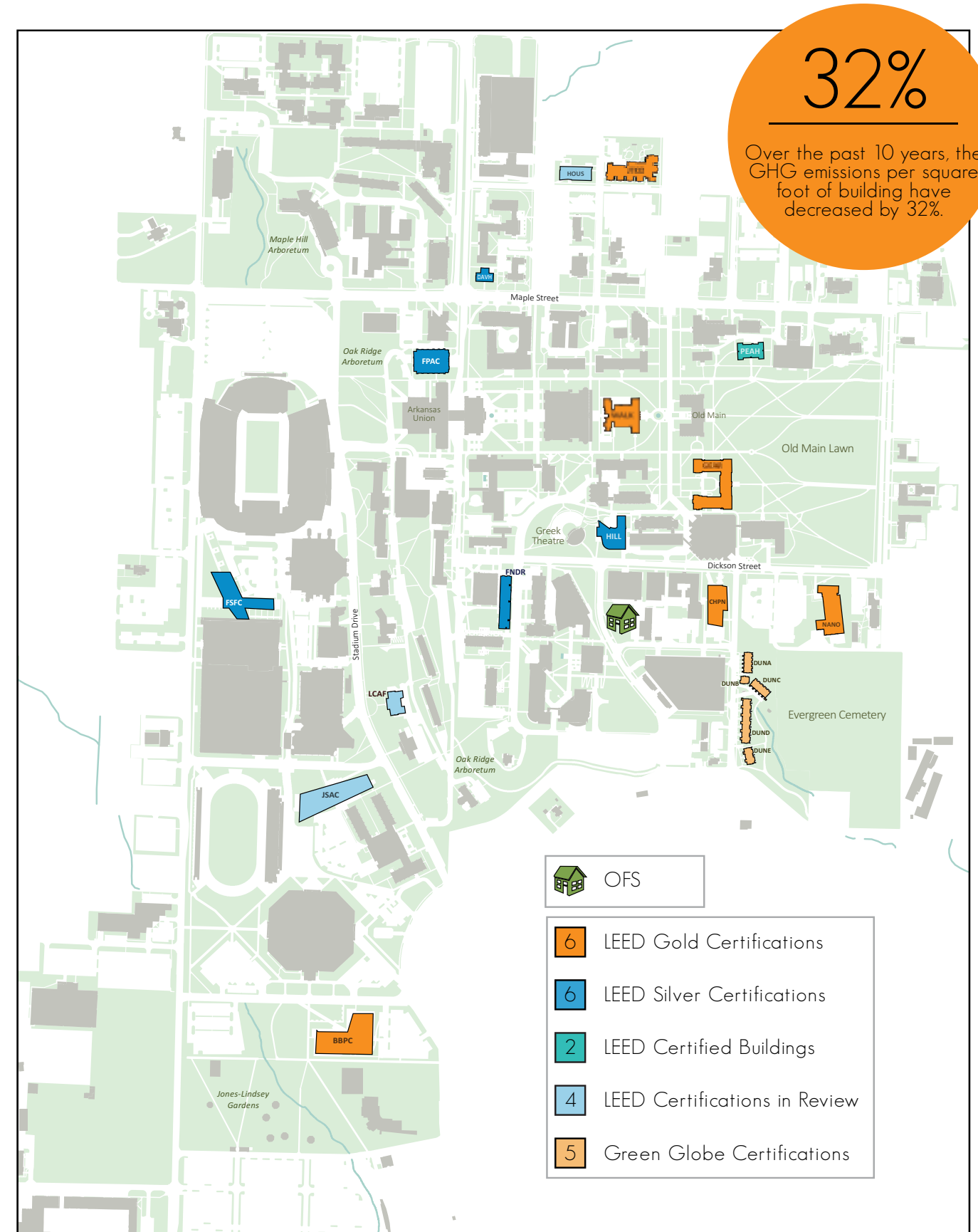
Razorback Food Recovery has recovered and redistributed over 100,000 lbs of food.

Food Recovery Hierarchy



CARBON NEUTRAL

The University's formal path toward carbon neutrality began in February 2007 as the UofA was among the first institutions in the nation to sign the American College & University President's Climate Commitment, a pledge to become Climate Neutral by 2040. The UofA proved its commitment to this pledge by ratifying a Climate Action Plan (CAP) in 2009 and investing over \$50 million in Energy Saving Performance Contracts. In 2014, the UofA successfully achieved the first CAP benchmark by reducing to 1995 levels of emissions. In December 2015, the University of Arkansas took another leap towards sustainability and carbon neutrality by adopting the Second Nature Climate Leadership Commitment, which encompasses both carbon and resiliency goals. Next, the Combined Heat and Power System was completed, reducing campus emissions by 20%. This, in conjunction with campus wide sustainability initiatives, led to the 2017 designation of a Gold rating by AASHE STARS an internationally recognized standard of sustainability. This milestone was accompanied by the impressive achievement of meeting the CAP mid-term goal of reducing to 1990 emission in 2017, four years before the stated 2021 goal. Achieving carbon neutrality at the UofA by 2040 will require continued cooperation and support by students, faculty, and staff as they make wise choices regarding their energy usage, purchasing habits, and transportation choices.



*LEED Silver and LEED Certified buildings at the UA Research Center are not within the map boundaries.

Short Term Goal

Reduce to 1995 levels by 2014; 163,000 metric tons

Mid-Term Goal

Reduce to 1990 levels by 2021; 125,000 metric tons

Long Term Goal

Achieve net zero carbon emissions by the year 2040



Distribution of Emissions by Source

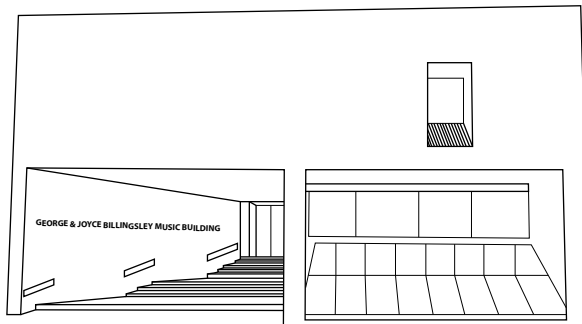
Scope



Green Revolving Fund

The mission of the University of Arkansas Green Revolving Fund (GRF) is to facilitate interdisciplinary collaboration through student-led initiatives that demonstrate economic benefit through environmental leadership. The GRF provides financing for efficient, sustainable, and cost-savings projects. These savings are tracked and used to replenish the fund to help finance additional projects.

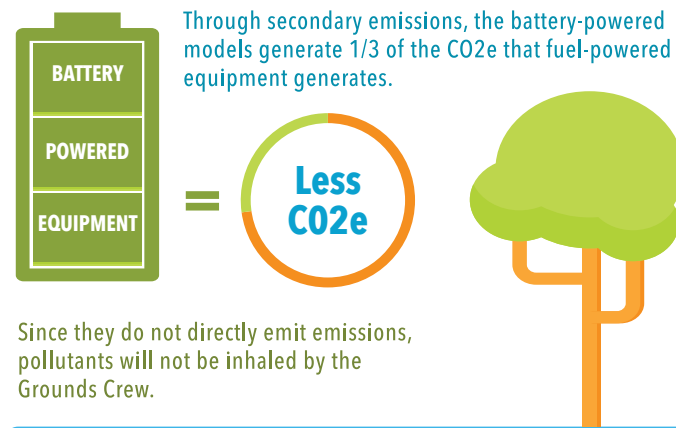
LED Bulb Swap



The Green Revolving Fund recently provided funds for the Billingsley Music Building to be completely illuminated by LED lights. The new lights will reduce both energy consumption and associated expenses by over 60%. The project was proposed by U of A students Brittany Jurgens and Grant James who demonstrated the project's economic viability and environmental responsibility. The materials and labor associated with the installation have a simple payback period of 3.3 years with an annual return on investment of 22%. Over the lifetime of the installation, an estimated 840 metric tons of carbon dioxide will be abated. This project could foreshadow additional transitions of UofA buildings towards high efficiency LED fixtures.

Grounds Crew Goes Green

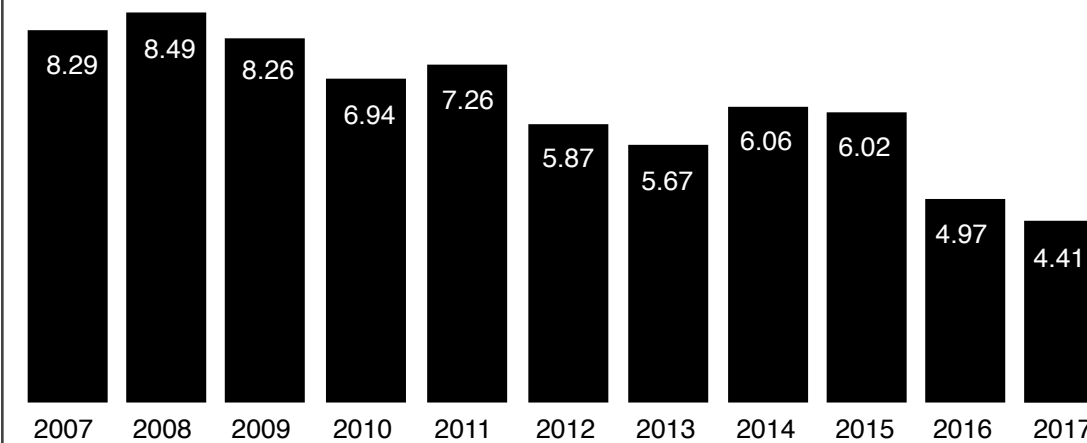
The GRF was used to fund the purchasing of electric leaf blowers to be used by the UofA groundskeepers. The OFS determined that the old gas blowers were emitting dense emissions due to their E10 blend fuel. These emissions have negative health impacts when inhaled by the operators and UofA community. In comparison, the battery powered blowers do not directly emit any CO₂e or pollutants during use. Additionally, the OFS found that the battery powered blowers were more economically and environmentally viable than their gas counterparts. The UofA purchased battery powered blowers in the Fall of 2017 and have established plans to purchase battery powered trimmers in the Spring of 2018.



LESS POLLUTION = CLEANER AIR



Annual Tons of Greenhouse Gasses per University of Arkansas Student



BIKES ON CAMPUS



As part of the effort to improve the quality of life for campus members and reduce scope 3 emissions, the University of Arkansas has been planning and deploying more pedestrian and bicycle friendly infrastructure and programming. In late 2016, the University was awarded as a silver Bicycle Friendly University by the League of American Bicyclists. This was a leap forward from the UofA's 2014 application which only received Honorable Mention. Applications are scored across five "E" categories by a review team comprised of league staff, local cyclists and outside experts. Examples of characteristics for a silver rating include:



ENGINEERING

Campus has made a significant investment in its bicycle facilities and has invested in making the streets around the campus bicycle friendly. Engineering standards meet the currently recognized safety standards.



EDUCATION

Bicycling educational materials are provided to all students, staff, and faculty. Safety classes are offered on a regular basis, and the campus actively promotes safe bicycling. Each fall semester is kicked off with a bike safety block party.



ENCOURAGEMENT

Campus has an on-campus bike shop and a bike-share program. Each spring the Office for Sustainability partners with UREC Outdoors and other bicycle advocacy groups to host a bicycle festival.



ENFORCEMENT

Officers are familiar with laws relating to bicyclists and work with the bicycling community on campus to disseminate safety information to motorists and cyclists. Some officers are patrolling on bikes and provide safety outreach on-bike.



EVALUATION

A significant percentage of students, faculty and staff bike to campus more than twice a week. Goals have been set for campus-wide bike use.



UofA Delegates Study Effective Bicycling Infrastructure

In October of 2017, five representatives from the University of Arkansas traveled to Colorado along with other delegates from northwest Arkansas as participants in BikeNWA's Bicycle Friendly University Study Tour. The tour took place at Colorado State University at Fort Collins and the University of Colorado at Boulder, which are classified as platinum and gold Bicycle Friendly Universities (BFU) respectively by the League of American Bicyclists. During the tour, delegates met with university and city staff to discuss how their vision of a bike-friendly community was made a reality. They also experienced first-hand the thriving cycling cultures in Fort Collins and Boulder through a multitude of bicycle tours. The City of Fayetteville and UofA delegates plan to work in conjunction to develop the biking infrastructure within the city and the university, integrating the two systems to make Fayetteville an eminently bikeable city.



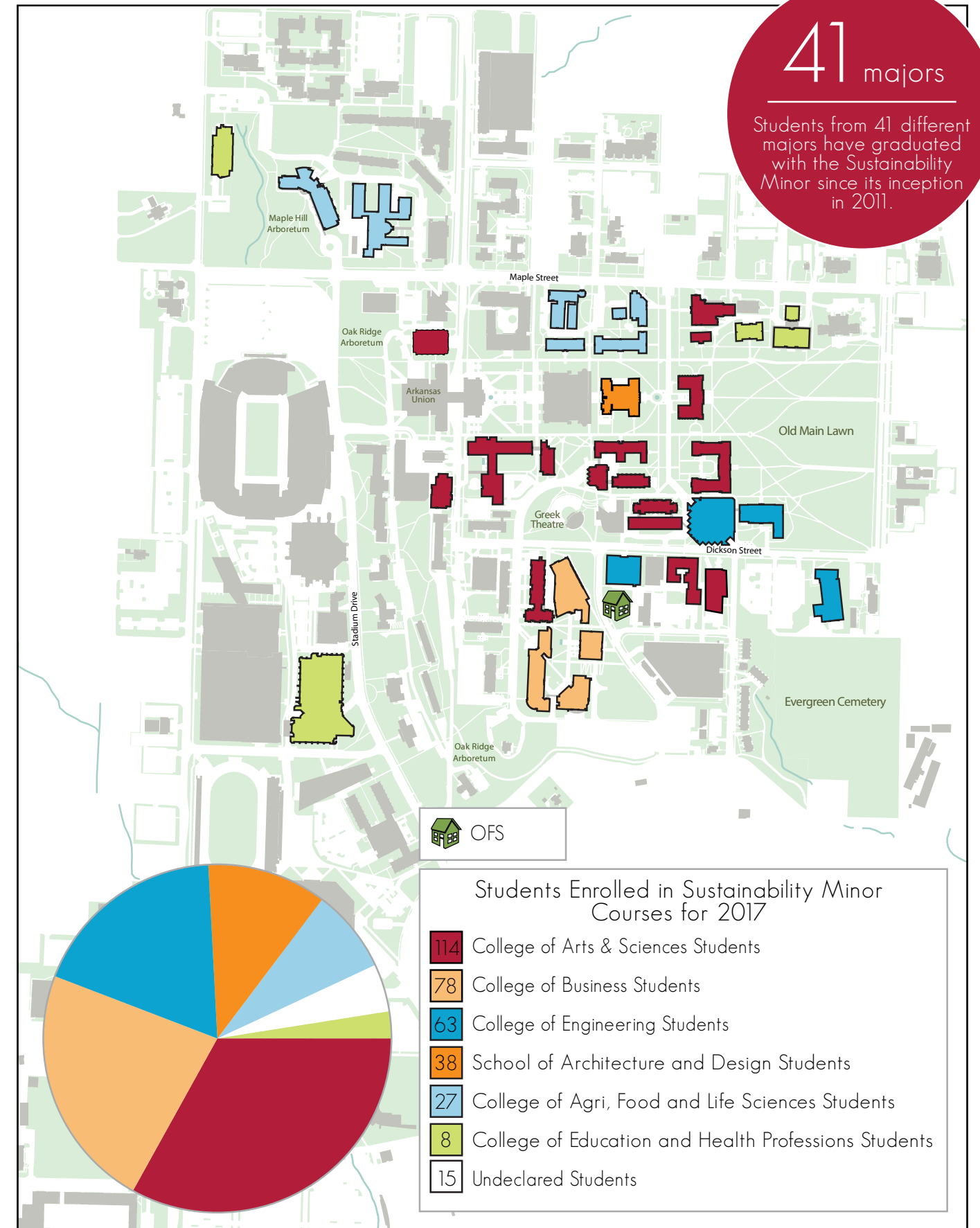
ACADEMIC PROGRAMS

Sustainability academic programs at the University of Arkansas are growing to accommodate the increased interest in sustainability issues across our campus, community, and nation. The goal of the University of Arkansas Sustainability Program is to become a global leader in sustainability education, knowledge generation, and outreach. The last five years have seen progress with the addition of the undergraduate minor, graduate certificate, and a number of successful summer Research Experience for Undergraduate (REU) programs. The sustainability minor has consistently been rated as one of the top 10 undergraduate minors as students from an ever wider collection of majors and disciplines choose to add a focus on sustainability to their academic path.



41 majors

Students from 41 different majors have graduated with the Sustainability Minor since its inception in 2011.



SUSTAINABILITY MINOR

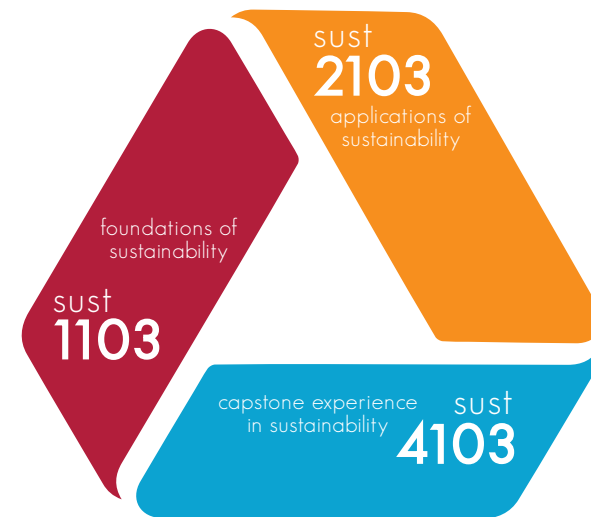
The UofA sustainability minor requires three core courses in addition to three elective courses from a portfolio of almost 100 technical electives from a broad range of disciplines. The core courses, Foundations of Sustainability (SUST 1103), Applications of Sustainability (SUST 2103), and Capstone Experience in Sustainability (SUST 4103), provide a common body of knowledge for students to approach sustainability. The elective courses are designed to be major specific, allowing students to explore how sustainability principles are relevant to their particular career path and field of study. The sustainability minor has consistently ranked among the top 10 most popular minors at the University of Arkansas.

The three required sustainability minor courses are:

SUST 1103
Foundations of Sustainability

SUST 2103
Applications of Sustainability

SUST 4103
Capstone Experience in Sustainability



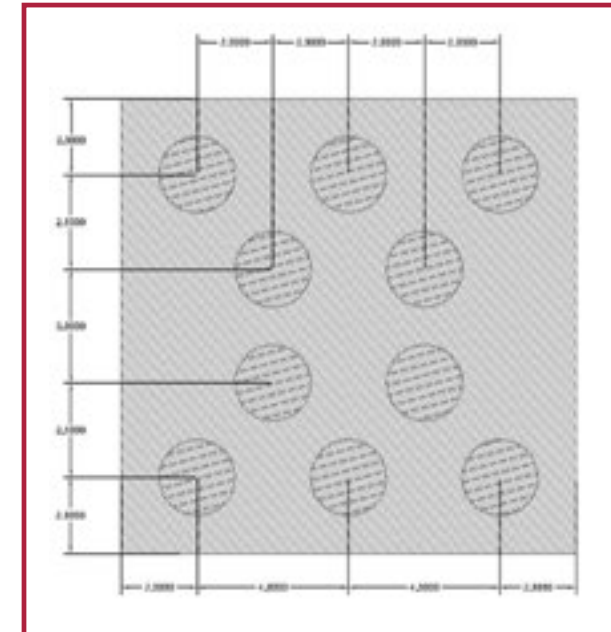
Sustainability Graduate Certificate

The University of Arkansas Graduate Certificate in Sustainability is open to any student admitted to the Graduate School and is achieved by completing one required course and four electives from a variety of disciplines. The graduate certificate was created in 2012 to provide an opportunity for graduate students and working professionals to expand their competency in the science of sustainability.

EcoREU Program

For the past eight years, the UofA has hosted an Ecological Research Experience for Undergraduates (EcoREU) program. The program has two focuses: sustainable agricultural systems funded by the United States Department of Agriculture (USDA) and sustainable management and assessment of ecosystem services funded by the National Science Foundation (NSF). In the summer of 2016, EcoREU undertook a continuing project in partnership with the UofA Community Design Center (UACDC) to meet the Hawaii Department of Agriculture's Agribusiness Development Corporation (ADC)'s request for help in their Whitmore Food Hub. The agricultural facility in Whitmore, Oahu aims to transform a former Dole plantation facility into a high-tech facility designed to support local farmers.

CAPSTONE PROJECTS



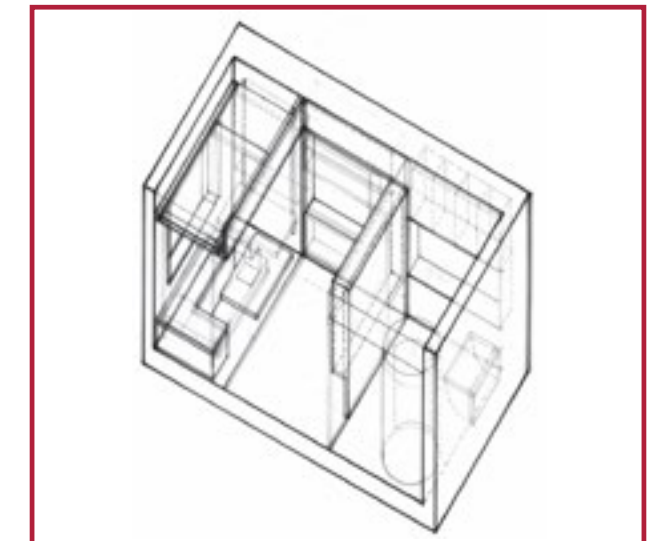
Design of growing medium block for vertical greenwall

Project: Vertical Hydroponics Design for Brightwater Culinary School
Students: McKenna Belcher, Linden Cheek, Ryan Clark
Department: Biological and Agricultural Engineering

Brightwater Culinary School approached the UofA's Office for Sustainability to create a visually appealing, efficient hydroponic system for display within the school. The design was completed by McKenna Belcher, Linden Cheek, and Ryan Clark, a team of biological engineering students. Hydroponic gardens have many assets that make them highly sustainable. Compared to traditional agriculture, hydroponic systems use less water, generate less waste, produce a more reliable crop, and produce a higher yield. The designed wall incorporated additional sustainable components, including LED lights with a low voltage and compostable planting pods. The presence of this hydroponics wall within Brightwater will expose the students, faculty, staff, and visitors to this sustainable model of food production.

Project: Adaptable Micro Housing Unit
Student: Carla Chang Mata
Department: Fay Jones Architecture

Houses have become astonishingly large and expensive resulting in unnecessary material use and an associated carbon footprint increase. To address this, Carla Chang Mata from FJSoA+D designed a prototype 288 ft² living unit with transformable and adaptable components that fulfill all the basic requirements of housing. This unit was designed to be part of a collection of units with shared amenities. Shared amenities encourage a sense of community, an element necessary for a sustainable society. This configuration provides a living unit that challenges the current social paradigm in favor of an alternative that ensures a high quality of life while also being economically and environmentally responsible.



Design of one possible layout of micro housing unit

SUSTAINABILITY EVENTS

A truly sustainable and resilient campus can only be achieved by a united community effort that spans students, faculty, staff and even the surrounding residents of Fayetteville. The Office for Sustainability (OFS) is dedicated to fostering and enhancing these vital connections within the campus and city community and seeks to reinforce them through events hosted on campus. Exploring new ways of thinking about common problems is essential to creating a culture of innovation. As such, the OFS hosts events that bring diverse groups of people together, focusing on integrating social connections with education on the science of sustainability.



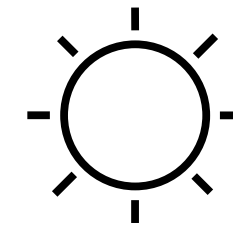
MONTHLY THEMES

JANUARY



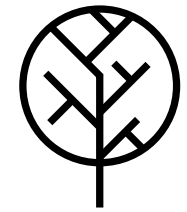
VOLUNTEERING

FEBRUARY



ENERGY

MARCH



ECOLOGY

APRIL



TRANSPORTATION

MAY



WASTE

JUNE



PROCUREMENT

JULY



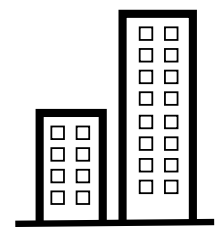
WATER

AUGUST



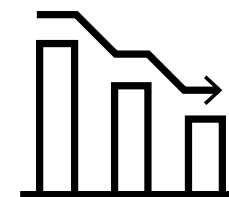
TECHNOLOGY

SEPTEMBER



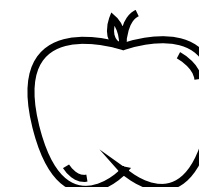
INFRASTRUCTURE

OCTOBER



POLICY

NOVEMBER



FOOD

DECEMBER



GIVING

SPRING

Earth Week

The 2017 Earth Week, from April 18th through the 22nd, was the most extensive sustainability event ever hosted at the University of Arkansas. The celebration was integrated into the entire week with different activities featured on each day. The activities were designed to reach a broad demographic, offering education, service, and entertainment opportunities.

Watermelon Kickoff

OFS and UP teamed up to distribute watermelon slices to students and faculty to raise awareness of Earth Week.

Yoga Session

Students were encouraged stop by the south terrace of the Union for yoga with Fayettechill.

Pitch the Bottle

Students joined ASG to “Pitch the Bottle” as they recycled in the outfield of the Razorback baseball game at Baum Stadium.

Capstone Poster Display

Posters of Student Sustainability Capstone Projects were displayed in the Union during two receptions where students answered questions about their projects.

Film Screening: Before the Flood

Leonardo DiCaprio’s film Before the Flood was screened at the Union Theatre, hosted by ASG and the OFS.

Campus Cleanup

Campus members teamed up with the OFS to walk around campus and pick up trash.

Block Party

The community, campus organizations, and local businesses came together to share a common interest in sustainability with food, live music, good people, and great conversations.

All Week – Project Clean Plate

Volunteers encouraged dining hall patrons to only take as much food as they could eat – and give a “clean plate” back to the dish return.



FALL

Law Symposium

This year’s Arkansas Law Review symposium was titled *Environmental Sustainability and Private Governance*. The symposium featured panel discussions with nationally known experts, including fifteen guest scholars along with University of Arkansas faculty members. Throughout the symposium these experts explored the private standards and initiatives used by businesses, non-profits, and other non-governmental organizations to address environmental issues and promote sustainability. Panel I focused on Governance Themes, Panel II on Energy and Climate Change, Panel III on Retail and Supply Chain Management, and Panel IV on Agriculture and Food. The symposium was free to the public and well attended.



Bike Safety Block Party

In the Fall of 2017, the UofA marked its commitment to a campus biking culture by abolishing the “Walk-Only” zone. However, the UofA also realized that encouraging increased ridership must be partnered with encouraging safe biking behavior. To get that message across – and to celebrate bicycling – the OFS hosted a Bike Safety Block Party on August 31. The party featured free food, games and prizes, and several local bike organizations who performed free bike maintenance and offered valuable bike safety information.

Film Screenings

The OFS hosted film screenings of documentaries focused on communicating sustainable and environmental themes. This included *Food Evolution*, a documentary that provides an evidence-based analysis of the benefits and challenges of genetically-modified foods and examines the controversy surrounding them in the current global context. The OFS also screened *An Inconvenient Sequel*, a film designed as a call to action for the public to support climate conservative policy.

NEXT STEPS

In 2017 major strides were made towards the UofA's sustainability goals. The UofA's commitment to a Bike Friendly Campus, led by the OFS, laid the framework for major improvements in the coming years. Designs for extended and improved infrastructure are in the works, including on-campus mountain bike skill courses, trail extensions, and better campus biking infrastructure. 2018 will also see the hiring of a Bicycle and Pedestrian Coordinator who will work in conjunction with the City of Fayetteville to promote and guide our developing bicycling culture. Additionally, the OFS has begun a targeted outreach to Greek Life with the invention of a Greek Sustainability Scorecard, a metric used to rate campus fraternities and sororities on their sustainability performance. The UofA also has plans to purchase clean energy RECs as a way to vastly diminish our Scope Two emissions, which currently make up 50% of our overall emissions. This investment in clean energy will be a major step towards achieving our campus Carbon Neutrality goals. Finally, the OFS, in conjunction with our waste services provider, is developing an improved recycling system to increase the diversion rate within dormitories and across campus. The University of Arkansas' commitment to continuous improvement encompasses every aspect of campus activities; our approach to sustainability is embedded in this philosophy.

Define

- Define Sustainability for the Campus
- Define Priorities for the Campus
- Define Metrics that support Priorities

Measure

- Benchmark Selected Metrics
- Set Goals for each Priority
- Develop Strategy to Meet Goals

Implement

- Implement the Strategy
- Measure, Assess and Report Results
- Adapt Strategy to Improve

HOW YOU CAN HELP

GO VOTE

public policy has a larger impact than individual efforts

Tips: Voting goes beyond presidential elections. Get involved in midterm elections and local politics. Every purchase you make is a vote for what you care about.

CHECK YOUR THERMOSTAT

reduce heating and cooling emissions and costs

Tips: Turning down the intensity on nights, weekends, and holidays has a measurable impact.

Reduce

avoid unnecessary waste and impacts

Tips: Choose to reduce, repair or reuse rather than replace when possible.

CLEAN YOUR PLATE

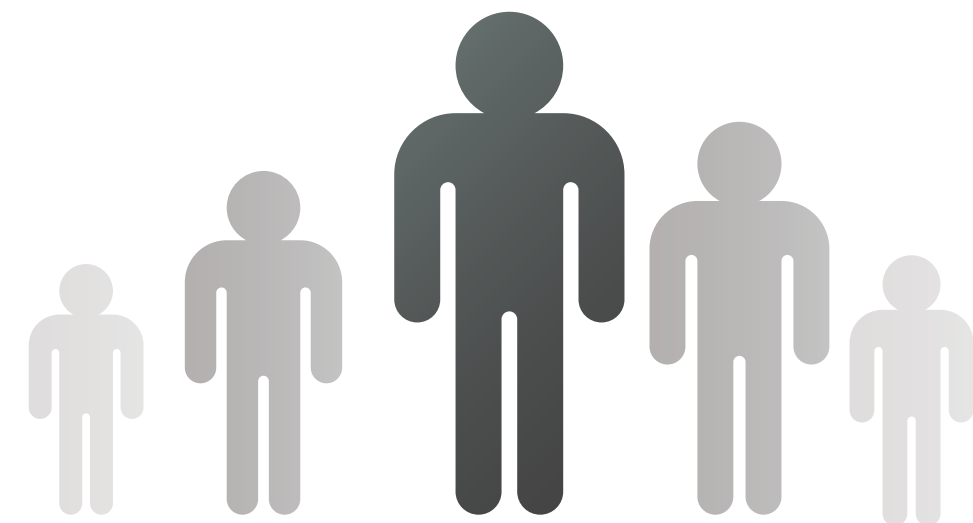
eliminate food waste

Tips: Get less than you think you can eat at the dining hall. You can always go back for more.

HELP OTHERS

volunteering fosters empathy and understanding

Tips: Not everyone has the same opportunities. Lend a helping hand at <https://service.uark.edu>





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