

ILLINOIS CLIMATE ACTION PLAN

2020

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Illinois Climate Action Plan

2020

Thank you to the hundreds of motivated individuals who generously dedicated their time, effort, and ideas to help develop the Illinois Climate Action Plan (iCAP) 2020.

We especially appreciate our passionate students, who have displayed nothing but steadfast conviction throughout the drafting process. One challenge after another was met with energy, enthusiasm, and wisdom. We are not only immeasurably proud of our students, but also honored to witness such an astounding show of what it means to persevere.

Our *Alma Mater* statue is inscribed with the familiar phrase, "To thy happy children of the future, those of the past send greetings." The iCAP 2020 is proof that today's students have taken this kinship in hand and are working toward a sustainable future for the classes of 2050 and beyond.

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Illinois Climate Action Plan | iCAP 2020

Institute for Sustainability, Energy, and Environment | iSEE
 Facilities and Services | F&S
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University of Illinois Urbana-Champaign

Illinois Climate Action Plan 2020 is the strategic framework for meeting our Climate Leadership Commitments to be carbon neutral as soon as possible and no later than 2050 and build resilience with our local communities.

Printed on 100% recycled-content paper.

Thank you to the iCAP 2020 drafting team of Jenna Kurtzweil, Meredith Moore, Morgan White, and iSEE Associate Director Ximing Cai, as well as the iSEE Communications Team under the direction of Tony Mancuso. The document was primarily designed by iSEE Student Intern Donna Dimitrova.

Thank you to University of Illinois Office of Public Affairs for providing some images used in this document.

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Message from the Chancellor

In 2008, the University of Illinois Urbana-Champaign became a signatory of the American College and University Presidents' Climate Commitment, binding our campus to the goal of carbon neutrality as soon as possible. We published our first Illinois Climate Action Plan (iCAP) in 2010, with the second version following in 2015.

In recent years, the university has witnessed significant strides toward curbing our carbon footprint. For example, air travel emissions decreased by 25% from 2014 to 2018 alone. We have also made consistent progress toward expanding our sustainability offerings in the realms of education and community engagement.

Though much has changed in the decade following our seminal strategic plan, it is with the same spirit of ambition and excitement that I present iCAP 2020. Our new climate action plan stands on the shoulders of the two that came before while striving to reach new thresholds of agility and achievement.

With the overarching goal of carbon neutrality acting as our anchor, the objectives included in this document were carefully curated in pursuit of formidable, yet achievable, targets. These include:

- » Using at least 140,000 MWh/year of clean power (about 30% of the annual power demand) by FY25.
- » Reducing net air travel emissions from the FY14 baseline: 50% by FY24; 100% by FY30.
- » Tracking and reporting food waste in at least five new areas by FY22.
- » Reducing potable water consumption to 721,500 kgal/year by FY24, which is a reduction of 45% from the FY08 baseline.

These and other objectives are designed to challenge our collective resourcefulness, resolve, and commitment to ethical environmental decision-making — all tasks we readily accept. It is imperative that this climate crisis be addressed with a bias toward action, and we remain aware of our institution's profound impact should we choose to model proactive behavior.

Our hope is that this spirit of environmental stewardship permeates campus on administrative and individual scales alike. That said, cultural sustainability serves as a cornerstone of this plan. Objectives to this effect include:

- » Establishing a culture of reuse, with two major campuswide zero-waste events using durable

goods and composting in FY22, four in FY23, six in FY24, and eight in FY25.

- » Developing a comprehensive Zero Waste messaging campaign by FY21.
- » Reducing the percentage of staff trips made using single-occupancy vehicles from 60% to 50% by FY25 and 45% by FY30.
- » Developing a collaborative plan for environmental justice that will assess metro area resilience and actively address related issues. The plan will be written and publicized by FY24.

Thousands of Illinois students, staff, and faculty members already put in a daily effort to embrace sustainable lifestyle choices. This year, we were fortunate that many of these enterprising individuals participated directly in the iCAP process — from submitting suggestions online to serving directly on a drafting team. I would like to warmly and personally thank these members of the campus and community who gave generously of their leadership, time, and insight.

Socially and ecologically, our current climate is equal parts extraordinary, uncertain, and charged with potential. Times are certainly challenging — but it is imperative to continue looking ahead, focusing not only on where we have been, but where we are bound. And we must always keep in mind those for whom we are implementing this plan.

As we work hard to carry out the objectives called for in the pages that follow, we must remember these actions will make a better and more sustainable world for the students, staff, and faculty who follow us.

I look forward to seeing our progress in the coming years. And I am confident that all of us at this university will join together with the shared commitment it will take to make the ambitious goals of this plan a real and sustainable future here at Illinois.

Sincerely,



Robert J. Jones
Chancellor, University of Illinois Urbana-Champaign

Message from the Students

In 2018, Illinois students voted 82% in favor of maintaining a self-imposed fee to promote a “Sustainable Campus Environment.” This overwhelming support for investing our own dollars in sustainability demonstrates the resounding commitment and responsibility students feel to give our campus a greener future. As sustainability representatives of the student body, we are glad that students were included so thoroughly during the process, and we earnestly support the iCAP 2020 plan. We are excited to see the University of Illinois take steps to mitigate our carbon footprint and promote environmental resilience through the Illinois Climate Action Plan (iCAP) 2020.

As a student body, we are most enthusiastic about the following goals:

- » Divesting our endowment and all University of Illinois System funds from fossil fuels, reinvesting our financial resources in sustainable and socially responsible funds, and making all investments more transparent (Chapter 9).
- » Decarbonizing our campus thermal energy systems, specifically Abbott Power Plant, and increasing our energy procurement from renewable sources (Chapter 2).
- » Integrating sustainability into student life and culture in the places we live, eat, and play through campus housing, dining, and recreation (Chapter 7).
- » Holistically incorporating environmental justice into our sustainability mission by collaborating with Black, Latinx, Indigenous, LGBTQ+, rural, international, impoverished, and other underserved communities globally, but especially locally in and around Champaign County (Chapter 8).

These goals and the broader iCAP 2020 are fundamental to a responsible trajectory for our university. We, the students of this university, applaud these objectives and the students, faculty, and staff who have committed to help accomplish them.

In 2008, our university committed to carbon neutrality by 2050. While this was and is a lofty goal, the current climate emergency and our collective conscience calls for more. With these increasingly urgent timeframes and the dire consequences of our carbon emissions, we must expedite our goals to reflect the daunting challenge our global climate crisis presents.

It is paramount that the University of Illinois Urbana-Champaign employ a bold and innovative deep decarbonization agenda. We must continue on the path of deep decarbonization and avoid carbon offsets or standalone renewable energy certificate procurement. While we maintain external sustainability standards and initiatives, such as LEED, we should also lead in our own right. As key producers of the technological, agricultural, and environmental research making a sustainable future possible, we have a responsibility to act upon and implement the recommendations this research provides.

The technical solutions in renewable fuels, energy storage, and advanced geothermal systems that our research helped pioneer must be used as an opportunity to display national leadership on this front. A meaningful and legitimate carbon-free future is eminently attainable within the decade if we feel the responsibility and courage to pursue it.

University of Illinois students resoundingly support the investment of university resources in climate leadership and action. The student body consistently demonstrates this support by voting in favor of election referenda, passing Student Government resolutions, and publicly demonstrating and protesting. We are acutely aware of the importance of eliminating our campus carbon emissions as soon as possible.

As we execute the goals of the iCAP 2020, we call on this university to embrace a more aggressive goal in reaching carbon neutrality, ideally no later than 2030.

Sincerely,

Joseph Edwards & Sarah Gediman, Student Sustainability Committee

Alexis Perezchica & Christopher Ackerman-Avila, Student Body President and VP

Joseph Kreiling & Jonah Messinger, Student Sustainability Leadership Council

Cheyenne Wendell, Students for Environmental Concerns

Creen Ahmad, Illinois Student Government Environmental Sustainability Committee

INTRODUCTION

For a century and a half, the University of Illinois has pursued its mission “to enhance the lives of citizens in Illinois, across the nation and around the world.”¹ In this innovative spirit, the Urbana campus has spent the last dozen years actively addressing one of the modern world's most critical issues: sustainability.

In an era that recognizes the gravity of climate change, meeting today’s needs without compromising those of future generations is indispensable. Previous versions of the Illinois Climate Action Plan (iCAP) were published in 2010 and 2015. With this iteration, we further our pursuit of carbon neutrality while striv-

ing for holistic, campuswide sustainability and strengthening community resilience.

Poised at the outset of a new decade, iCAP 2020 represents our continuous commitment to environmental stewardship, to honor the work of the recent past and advance toward a safe and sustainable future.

Overview of Commitments

SCOPE OF iCAP 2020

As the flagship institution of higher education in Illinois and one of the world’s leading research institutes, we acknowledge the university’s expansive scope of impact.

Published under the authority of Chancellor Robert J. Jones, this document pertains to the

contiguous Urbana campus and its facilities, resources, and personnel. For further discussion of on-campus Engagement objectives, see Chapter 7.

Many of our Resilience objectives involve collaborations with local entities in Champaign, Urbana, and Savoy. For further discussion of these objectives, see Chapter 8.

¹ <https://illinois.edu/about/>

CLIMATE LEADERSHIP COMMITMENTS

iCAP 2020 outlines a comprehensive approach to campus sustainability. However, the university’s history of climate commitments began with an acute focus on one significant agent of climate change: greenhouse gas (GHG) emissions. The vices of global climate change include extreme weather events, air pollution and respiratory ailments, food and water insecurity, land and agricultural degradation, and social injustices. In 2020, curtailing campuswide GHG emissions remains the cornerstone of our strategic plan.

On Feb. 22, 2008, Chancellor Richard Herman joined a cohort of higher education colleagues in signing the American College and University Presidents’ Climate Commitment

(ACUPCC). The document was later renamed the Second Nature Carbon Commitment due to its sponsorship by the Boston-based nonprofit Second Nature. Since 2008, we have strengthened our partnership with Second Nature in pursuit of their mission to “[accelerate] climate action in, and through, higher education.”² In total, the document accrued over 600 signatories and formally solidified the university’s dedication to achieving carbon neutrality as soon as possible and no later than 2050.

The Second Nature Carbon Commitment, which underscored the importance of cultivating an environmentally conscious student body, is excerpted below.

Eight years later on Feb. 9, 2016, Interim Chancellor Barbara Wilson signed Second Nature’s Climate Resilience Commitment,

² <https://secondnature.org/mission/>

“We believe colleges and universities must exercise leadership in their communities and throughout society by modeling ways to minimize global warming emissions, and by providing the knowledge and the educated graduates to achieve climate neutrality.”

— Second Nature Carbon Commitment

pledging to work with community partners to evaluate local vulnerabilities to climate change — specifically pertaining to natural resources, land management, and energy production.

The Resilience Commitment and Carbon Commitment combine to form Second Nature's Climate Leadership Commitments, for which Illinois is a Charter Signatory. In fall 2019, University of Illinois President Timothy Killeen reinforced this commitment for all three University of Illinois campuses by signing the Climate Emergency Letter³ as one of more than 200 Global Universities and Colleges for the Climate.

RELATIONSHIP TO OTHER COMMITMENTS

The university's climate commitments are made public through several initiatives in addition to those sponsored by Second Nature.

In 2011, the university joined the Billion Dollar Green Challenge launched in October of the same year. Participating organizations are challenged to invest a cumulative \$1B in energy efficiency projects via self-managed revolving funds. The university's revolving fund is managed by Facilities and Services (F&S) and originally consisted of contributions from the Office of the Chancellor, the President's Office, and the Student Sustainability Committee (SSC).

Projects funded in this manner are cost-effective and energy efficient, and utility cost savings are reabsorbed into the fund to ensure its longevity.⁴

In 2012, Chancellor Phyllis Wise committed the university to become an LED Campus. Wise made this decision to honor Grainger College of Engineering alumnus and Professor Emeritus Nick Holonyak Jr., who is credited with demonstrating the first visible LED. The commitment called for a campuswide prioritization of LED lighting in addition to the following objectives: replacing interior and exterior way-finding fixtures with LED fixtures by 2025; and converting a majority of lighting to LED by 2050.⁵ These targets remain a priority and are discussed further in Chapter 2.

In January 2015, the university became an Environmental Protection Agency (EPA) Green Power Partner. The Green Power Partnership (GPP) initiative is a 19-year-old cohort with the goal to elevate voluntary adoption of green power in the United States.⁶ For further discussion of the university's partnership, see Chapter 2.

In November 2015, Interim Chancellor Barbara Wilson signed the White House American Campuses Act on Climate (ACAC) Pledge,⁷ reiterating Illinois' commitment to carbon neutrality.

The University of Illinois System Presi-

dent's Guiding Principles also include an environmental sustainability component, calling for "sustainable environmental and economic improvements to the human condition."⁸

Additional campus commitments related to specific sustainability topics are described in the related chapters.

EMISSIONS 101

GHG = Greenhouse gas, a gas that traps heat in the Earth's atmosphere when released into the air.

CO₂ = Carbon dioxide. This GHG is released into the air by burning fossil fuels like coal and natural gas.

CO₂e = Carbon dioxide equivalent, used as a standard to express the impact of all GHG emissions in terms of CO₂.

MTCO₂e = Metric tons of carbon dioxide equivalent (see above). 1 MTCO₂e = 2,204 lbs.

Progress to Date

CARBON EMISSIONS INVENTORY

As part of the Climate Leadership Commitments, Illinois publicly submits GHG emissions inventories to Second Nature on an annual basis. The first step in this process was conducting a campuswide carbon emissions inventory in FY08. Those results serve as "baseline" values that anchor the university's progress from FY08 to the present day, and to the target year of FY50.

As an institution that recognizes the value of information, we are committed to publicly acces-

sible GHG reporting. Therefore, it should be noted that GHG emissions are quantified in metric tons of carbon dioxide equivalent (MTCO₂e),⁹ a unit that expresses major GHGs (e.g., methane and nitrous oxide) appropriately adjusted for their climate impacts relative to CO₂.

GHG emissions are categorized into three scopes:

- » **Scope 1** consists of emissions produced either on campus or as a result of on-campus activities over which we

³ <https://www.sdgaccord.org/climateletter>

⁴ <http://greenbillion.org/participant/uiuc/>

⁵ <https://icap.sustainability.illinois.edu/project/led-campus>

⁶ <https://bit.ly/2X8Lomg>

⁷ <https://bit.ly/39FVFvb>

⁸ https://www.uillinois.edu/about/guiding_principles

⁹ <https://bit.ly/3jXaQoA>

Gross FY19 Campus Carbon Emissions

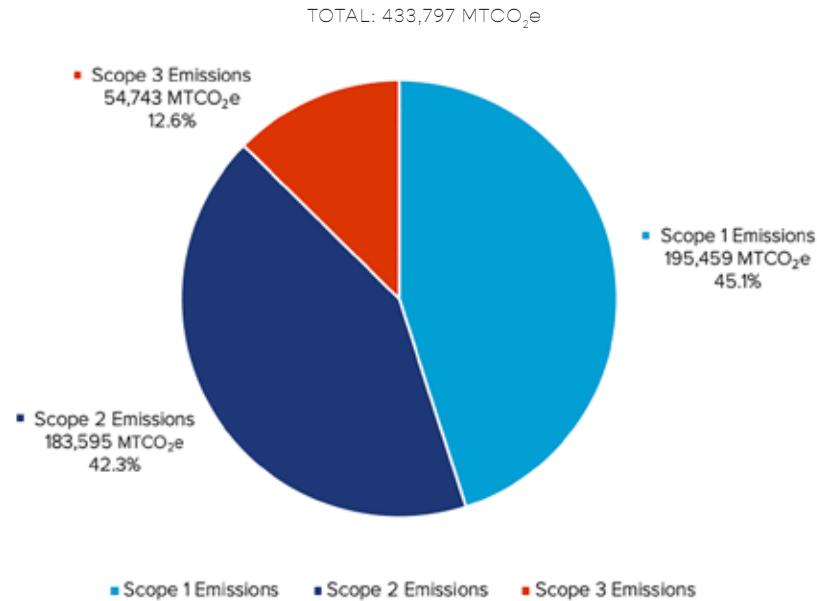


Figure 1: Gross FY19 Campus Carbon Emissions

have direct control. This includes energy generation using fossil fuels at Abbott Power Plant and individual campus buildings, vehicle fuels for the campus fleet, and animal emissions from the College of ACES.

- » **Scope 2** consists of emissions resulting from purchased electricity.
- » **Scope 3** consists of emissions generated off campus as a direct result of university activities (e.g., commuting, air travel, and electricity transmission and distribution loss).

The total campus emissions inventory for

the base year of FY08 was 575,088.1 MTCO₂e. Approximately 85% is a direct result of heating, cooling, and operating campus buildings. Most of the energy used for building operations comes from coal and natural gas combustion at Abbott Power Plant, and the remainder comes from electricity purchased from outside sources. Other on-campus emissions are generated from transportation systems and patterns, agriculture, water use, and solid waste.

As of June 30, 2019, campus's gross GHG emissions total was calculated to be 433,797 MTCO₂e, roughly a 25% decrease from the base year, broken down by scope as follows: 195,459 MTCO₂e for Scope 1; 183,595 MTCO₂e for Scope 2;

and 54,743 MTCO₂e for Scope 3 (Figure 1).

HISTORICAL OVERVIEW

In addition to spurring the first campuswide GHG emissions inventory, Second Nature provided the impetus for the university's inaugural climate action plan; the ACUPCC included a charge to "initiate the development of a comprehensive plan to achieve carbon neutrality as soon as possible." The 2010 iCAP was our first iteration of this plan and the first climate action plan submitted to Second Nature by a university in the Big Ten Academic Alliance.

The 2010 iCAP set aggressive short- and long-term goals for achieving carbon neutrality, with core commitments ranging from energy conservation to planning and follow-through. Soon after, the online iCAP Portal was established to comprehensively track and share updates on campus sustainability progress. In late 2011, the chancellor commenced the Visioning Future Excellence report, which gathered input from more than 3,000 individuals to identify how Illinois could best address society's pressing needs. One theme that emerged from this process was "Energy and Environment." In response, Illinois launched the Institute for Sustainability, Energy, and Environment (iSEE) in December 2013.

Since its conception, iSEE has strengthened its mission:

"To foster actionable, interdisciplinary research to address fundamental

*challenges in sustainability, energy and environment; to provide national and international leadership in these areas through interdisciplinary education and outreach activities; and to develop and implement strategies for a sustainable environment on the University of Illinois' Urbana-Champaign campus and beyond."*¹⁰

This three-pronged approach in the themes of campus sustainability, education and outreach, and research sets us apart from other universities with sustainability institutes, where operational aspects are often separated from research and teaching.

One of iSEE's first steps to integrate academics and operations was to develop a formal process for recommending campus sustainability initiatives. In June 2014, the Procedure for Formulating and Evaluating Campus Sustainability Policies and Initiatives¹¹ was prepared in collaboration with Facilities and Services (F&S), the Office of the Vice Chancellor for Research, and the Office of the Provost, and was approved by the chancellor. At the heart of this procedure was the creation of topical Sustainability Working Advisory Teams (SWATeams), each composed of student, staff, and faculty member representatives. These collaborative, multi-disciplinary teams are charged with proposing sustainability initiatives, partnering with community stakeholders, and advocating for the university's ongoing efforts toward holistic campus sustainability. The SWATeams make

¹⁰ <https://bit.ly/338NIom>

¹¹ <https://bit.ly/3hL2qPg>

recommendations to the iCAP Working Group (iWG) — a cohort of midlevel administrators as well as students, staff, and faculty members — which evaluates and routes them to the appropriate campus unit or to the Sustainability Council for further evaluation and implementation. The SWATeams and iWG are charged annually by the iSEE Baum Family Director (Evan H. DeLucia served in this role until August 2020), who is also the vice chair of the Sustainability Council which is charged and chaired by the chancellor.

Operational campus sustainability efforts are primarily implemented by F&S, currently under the leadership of Executive Director Mohamed Attalla, who is also on the Sustainability Council. As the largest administrative unit on campus, F&S has responsibility for sustainable transportation; resilient grounds and landscapes; waste management and recycling; large-scale renewable energy and energy conservation; rainwater management and green infrastructure; Leadership in Energy and Environmental Design (LEED) certifications for capital construction; building maintenance and services; and more. F&S has been involved with the iCAP since the university signed the ACUPCC in 2008. F&S employees help provide innovative solutions and serve as members of the SWATeams. iSEE Associate Director for Campus Sustainability Ximing Cai co-chairs the iWG alongside F&S Associate Director for Sustainability Morgan White.

Other administrative units with staff involved in iCAP implementation (e.g., through SWATeams or the iWG) include University

Housing, the Illini Union, the Parking Department, Purchasing, and U of I Extension. Student and faculty SWATeam members represent several colleges, academic units, and student associations across campus.

The SWATeams were heavily involved in the formation of the 2015 iCAP, which was drafted during the 2014-15 academic year. The final version was signed by Interim Chancellor Barbara Wilson in October 2015. New SWATeams were formed in FY20 for the development of iCAP 2020. Among these are the Resilience SWATeam (which uniquely includes community representatives), the Education SWATeam, and the Engagement SWATeam (new in August 2020).

ICAP PORTAL

Maintaining transparency regarding sustainability objectives, successes, and challenges is one of the university's highest priorities. In 2012, we launched the iCAP Portal,¹² a real-time online platform for iCAP updates, historical context, metrics, and project lead contact information. To date, the portal hosts nearly 800 projects and 100 different metrics corresponding to iCAP objectives organized into primary themes: Energy, Transportation, Land & Water, Zero Waste, Resilience, Education, Engagement, Reporting Progress, Research Opportunities, and Funding. Encompassing a decade of information, the public site serves as a repository for proposed, canceled, and active projects that are in development, complete, or ongoing. Each

project description includes a brief history, with some information going back as far as 2005. The iCAP Portal has about 17,000 visitors per year and serves as an excellent resource for courses and independent student projects.

RECOGNITION

In recent years, our sustainability efforts have been recognized on a national scale.

In January 2019, the Urbana campus was named the ninth annual winner of the Climate Leadership Award presented by Second Nature and the U.S. Green Building Council.¹³ The University of Illinois was recognized for its comprehensive energy-saving efforts, cross-curricular sustainability programming, and attention to community resilience. This award citation is reflective of collaboration between students, staff, and faculty members to achieve our Climate Leadership Commitments.

In March 2019, the University of Illinois Urbana-Champaign was awarded Gold Level

honors in the Sustainability Tracking, Assessment & Rating System (STARS) for the fourth straight time. This rating was made possible by outstanding energy and resource savings work provided by F&S as well as inclusion of sustainability across academic units. Innovations lauded in the report include the student-written environmental journal *Q Magazine*, the Field to Flame biomass boiler project at the Illinois Energy Farm, and the Student Sustainability Committee-funded Inner Voices Social Issues Theater Project. As of this year's recertification, we received the top STARS score in the Big Ten.

Also in 2019, the Urbana campus ranked No. 20 out of 282 four-year higher education institutions in Sierra Club's "Cool Schools" contest. Campuses participate by completing an extensive questionnaire about their sustainability practices to be evaluated by Sierra Club experts.

Additional accomplishments pertaining to the major iCAP themes are discussed in the following chapters.

Organization of Plan

ICAP 2020 DEVELOPMENT PROCESS

In the spirit of innovation and transformative change, we continuously review and evaluate our approach to campus sustainability and initiate improvements.

In fall 2019, the original six SWATeams were reorganized as follows: Energy; Land & Water; Zero Waste; Transportation; Education and Outreach; and Resilience. In addition

to the standard combination of student, staff, and faculty members, the Resilience SWATeam includes representatives from local government and other pertinent entities. An iSEE intern serves each team as a clerk. More detailed descriptions of the SWATeams are located in their respective chapters.

As in years prior, the development of iCAP 2020 was highly collaborative. The SWATeams

¹² <https://icap.sustainability.illinois.edu/>

¹³ <https://bit.ly/33besxl>

first transmitted draft objectives to the iWG, which is charged with evaluating the objectives, coordinating public input, and guiding iSEE in the drafting of each five-year document. Once the iWG integrated and approved the objectives, iSEE sought public feedback prior to further review by the Sustainability Council. Chancellor Jones gave the document final approval.

Appendix B lists the members of the SWA-Teams, iWG, and Sustainability Council during the period in which this document was formulated.

CAMPUS AND COMMUNITY ENGAGEMENT

Widespread participation was instrumental in drafting iCAP 2020. We strove not only to make the iCAP known to its stakeholders, but also to weave these voices into the document's framework. As such, iWG members collaborated with iSEE staff to redouble outreach efforts and employ new methods to engage as great a diversity of voices as possible. These efforts included:

- » Campus Sustainability Celebration Open Forum: This free, public event took place on Oct. 23, 2019, during Campus Sustainability Week. Posters representing key themes were displayed and attendees were encouraged to contribute ideas. These suggestions were passed to the SWA Teams to assist in early stages of deliberation and strategic planning.

- » Monthly Student Input Sessions: During these sessions — which took place on Nov. 6, 2019, Dec. 6, 2019, Feb. 3, 2020, and March 3, 2020 — undergraduate and graduate students facilitated idea generation and strategy development for the iCAP objectives. They were well attended, with approximately 40 student participants at each event. A comprehensive list of suggested projects and policies is listed in Appendix C: Honorable Mention Objectives. This list is a starting point for discussions on future initiatives.

- » Submission Form: To supplement in-person input sessions, iSEE published an online iCAP Input Questionnaire¹⁴ during the 2019-20 academic year. The survey offered campus and community members the opportunity to submit feedback in a standardized format.

- » Curricular Student Engagement: In spring 2020, iSEE offered NRES 285 as a Student iCAP course co-taught by Campus Sustainability Programs Coordinator Meredith Moore and Academic Program Instructor/Advisor Eric Green. The course engaged students in the development and presentation of the iCAP. After eight weeks of preparation, three student teams presented the proposed iCAP objectives to stakeholder groups, including the iWG;



Monthly Student Input Sessions facilitated idea generation and strategy development for the iCAP objectives. Pictured: November 2019 meeting at Everitt Laboratory.

the written objectives were well-received and incorporated into this document. Additionally, representatives from F&S, iSEE, and the iWG made presentations to undergraduate courses to raise awareness and cultivate interest in the iCAP among the student body, particularly underclassmen.

- » Stakeholder Engagement: iSEE and F&S staff presented the draft iCAP 2020 objectives to the Senate Committee on Campus Operations and the Campus

Research Administrators Working Group (CRAWG) in spring 2020. iSEE Baum Family Director Evan H. DeLucia presented the full text draft at the CRAWG meeting in June 2020. iWG members also circulated drafts to their affiliated groups.

This iCAP was developed on the basis of cogent suggestions and spirited conversation among students, staff, faculty members, and community stakeholders. As of March 2020,

¹⁴ <https://go.illinois.edu/2020iCAPForm>

outreach and engagement efforts pertaining to the iCAP drafting process were shifted to a digital format due to COVID-19 health concerns. All SWATeam, iWG, and stakeholder meetings were conducted virtually, as was the Sustainability Council meeting.

The April iCAP Celebration and Forum was transitioned to an entirely virtual format as well. This event, the sixth of its kind during the 2019-20 academic year, took place during Earth Week on April 23, 2020, through a combination of Zoom and Facebook streaming. While the initial intent was to showcase and celebrate the iCAP draft and solicit feedback, the digital format prevented some aspects from being realized in full. Nevertheless, we received active engagement from campus and community members who tuned in to watch student SWATeam representatives present the iCAP draft objectives.

Following the online presentation, the aforementioned iCAP submission form was adapted to welcome feedback on the draft objectives. The online form remained publicly available throughout spring and summer 2020, during which time submissions on subsequent versions of the iCAP were reviewed by members of the drafting committee.

Despite the inevitable learning curve that accompanies remote work, particularly in circumstances involving large groups, we are pleased that this process was able to continue, albeit unconventionally. The situation was not ideal, and we are grateful for the adaptability and determination shown by all involved.

ICAP 2020 STRUCTURE

The following chapters are organized into three

sections:

1. An introduction including historical information and overarching concepts;
2. Specific objectives with key performance metrics, detailed explanations, and the unit(s) responsible for progress; and
3. A conclusion reiterating key takeaways.

Objectives are the core of the iCAP. They are specific, measurable, achievable, relevant, and time-bound. In collaboration with each objective's responsible unit(s), the Sustainability Council and iWG will measure and report on progress, and work with campus and budgetary authorities to identify funding to implement the objectives in a timely manner. Explanations outline methods and potential issues for campus to consider in helping to achieve the objectives.

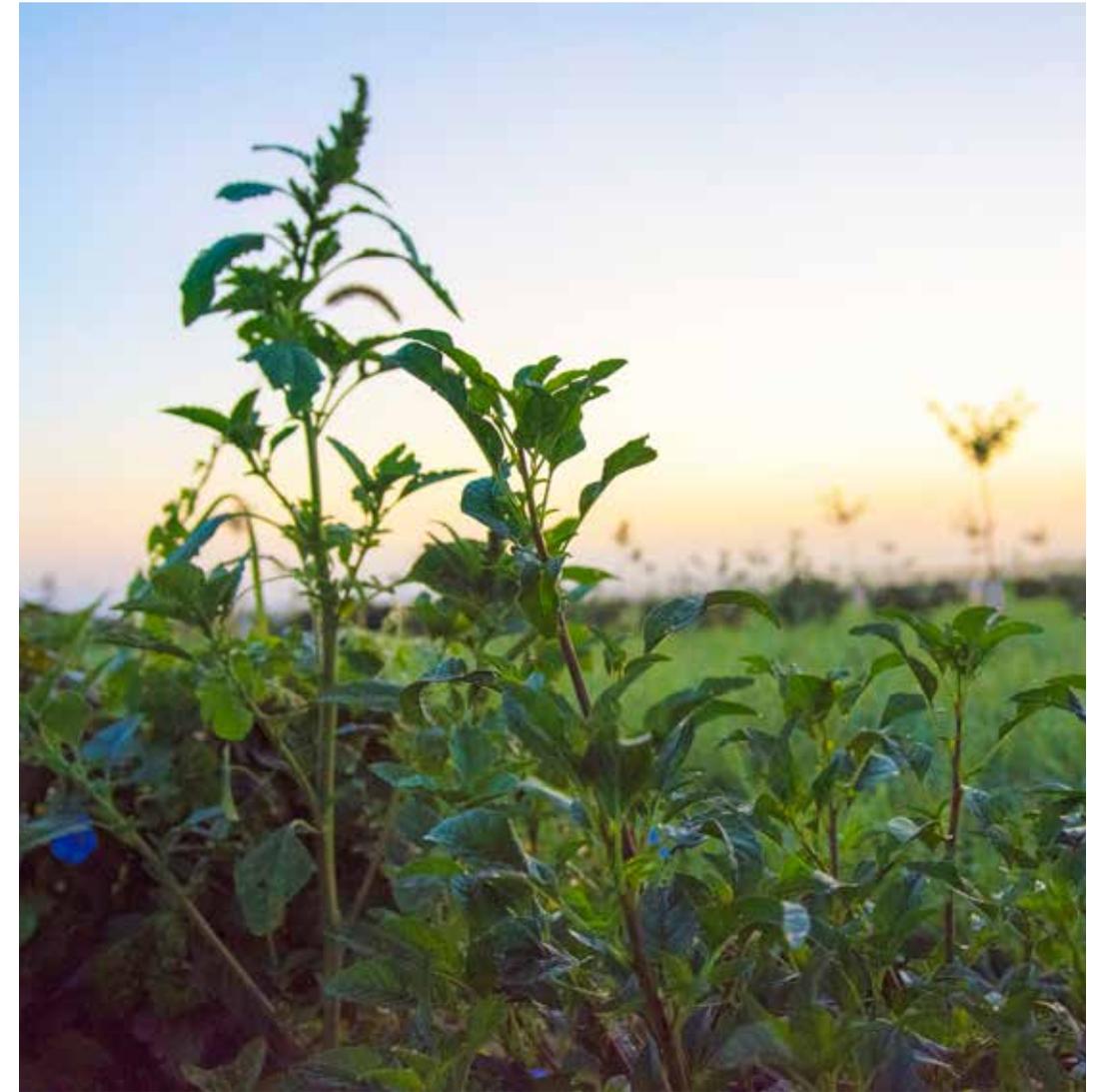
The SWATeams and iWG annually review progress on the iCAP objectives and recommend additional actions for campus units to take. Annual progress reports are shared during the Campus Sustainability Celebration in October. SWATeam recommendations might pull from the strategies described in this document or include new strategies as circumstances evolve.

Chapters 2-9 present objectives for eight topical areas: Energy, Transportation, Land & Water, Zero Waste, Education, Engagement, Resilience, and Implementation. While Engagement was not an officially charged SWATeam in FY20, the importance of targeted outreach efforts warrants a chapter, and an Engagement SWATeam was launched in FY21. Chapter 9 discusses implementation considerations and includes a comprehensive list of funding levels, responsible parties, and difficulty

level for each objective. Chapter 10 offers concluding remarks.

With the approval of this 2020 version of the Illinois Climate Action Plan, we make an

enhanced commitment to environmental sustainability and proudly recognize our leadership role in modeling strategies to ensure a sustainable future.



The Agroforestry for Food (A4F) Project at the Illinois Energy Farm is one of the university's many avenues to pursue secure and sustainable agriculture.

Campus Energy 101

The following definitions of commonly used terms, phrases, and units will provide clarity throughout Chapter 2.

Megawatt (MW) = 1,000,000 Watts

Megawatt-hour (MWh) = one hour of energy production at megawatt scale = 1,000,000 Watt-hours

British Thermal Unit (BTU) = 1,055.06 joules

MMBTU = 1,000,000 BTUs = 1,000 KBTUs

Energy = All forms of energy generated and/or used on campus, the majority of which is provided by the university's combined heat and power (CHP) district energy system. Electricity and steam are cogenerated at Abbott Power Plant and distributed to campus buildings. Chilled water for campus cooling is provided by a network of chiller plants. The chilled water system incorporates a 6.5 million gallon thermal energy storage (TES) tank to facilitate time-of-day management of electricity consumption, which allows for optimized usage of off-peak power and resultant

cost savings. The university is also connected to the regional Ameren grid and is a direct market participant in Midcontinent Independent System Operator (MISO). MISO is an Independent System Operator (ISO) and Regional Transmission Organization (RTO) that operates the real-time energy market for its customers and provides services including monitoring and balancing regional transmission services.¹⁵ Transportation energy use is reported separately in the Transportation chapter.

Energy Use Intensity (EUI) = Total energy used to support the operation of a given space over a period of one year. EUI is expressed in terms of BTU per gross square foot (GSF) and can be applied to a specific room or space type within a building, a building as a whole, or the campus at large. We report on EUI for buildings, colleges, and the whole campus (excluding the National Petascale Computing Facility).

Clean Energy = Energy from sources with net-zero greenhouse gas (GHG) emissions, including renewable energy sources (e.g., solar panels and wind turbines) as well as low-carbon energy sources (e.g., nuclear and biomass). As described in the 2015 iCAP, renewable energy includes conventional power (historically generated from burning fossil fuel hydrocarbons, such as coal or natural gas) that is bundled with an equivalent amount of Renewable Energy Certificates (REC).

Hydrocarbon = An organic chemical compound made up of hydrogen and carbon atoms. Fossil fuels (e.g., coal and natural gas) are made up of hydrocarbons.

Renewable Energy Certificate (REC) = A tracking system that documents renewable energy generation and use. One megawatt-hour of renewable electricity generated and put on the electric grid equates to one REC. Only the owner of the REC may claim usage of renewable energy; for example, as long as we do not

sell the RECs from the university solar arrays, the energy we produce will count toward our renewable energy goals. When we claim the use of clean energy, we retire the associated amount of RECs to make sure they are not counted twice. For more information about RECs, see the 2015 iCAP, Chapter 3.¹⁶

Power Purchase Agreement (PPA) = A contractual power agreement often used for procurement of renewable or clean energy. A physical PPA includes delivery of the purchased power to the campus using the Ameren grid. A virtual PPA (VPPA) is a contract that uses a financial transaction and does not include the physical delivery of power to campus.

¹⁵ <https://www.misoenergy.org/about/>

¹⁶ <https://bit.ly/2CWCCRI>



ENERGY

ACHIEVING ENERGY GENERATION,
EFFICIENCY, AND CONSERVATION GOALS



The University of Illinois Urbana-Champaign main campus includes all university-owned property within the University District and on the South Farms. Last year, campus used approximately 3 trillion BTUs (or 3.2 quadrillion joules), enough to sustain 39,000 U.S. homes.¹⁷

Our university leads the Big Ten in overall energy efficiency, also known as Energy Use Intensity (EUI). We are proud that our energy usage per square foot is lower than average among the Big Ten according to Sightlines, LLC.¹⁸ Nevertheless, our energy consumption remains the greatest contributor to our total GHG emissions. Energy emissions are reflected in Scope 1 and Scope 2 of our GHG inventory. In FY19, energy emissions totaled 381,069 MT-CO₂e, comprising roughly 86% of the campus's total gross emissions.¹⁹

The cost-saving energy efficiency and con-

servation projects included in the 2010 and 2015 iCAPs are cornerstones of our campus sustainability strategy.²⁰ We aim to further reduce energy emissions through a two-pronged approach combining proactive energy efficiency strategies with increased procurement from clean sources.

Improving space utilization is a particular challenge for the Urbana campus. In fall 2019, the university welcomed an unprecedented 50,000 new and returning students. As campus grows and evolves, we must balance the need for new facilities with the obligation to

enhance our energy efficiency. While improving space utilization has historically been a critical campus issue, safety measures implemented in light of the COVID-19 pandemic have renewed interest in building usage. In his letter

to unit executive officers regarding the 2020 Campus Space Survey,²¹ Vice Chancellor for Academic Affairs and Provost Andreas Cangelaris remarked:

“The COVID-19 pandemic has caused a seismic shift in the way our Campus has had to manage our physical and human resources this year in order to safely ensure the continued delivery of our academic mission. As we transition back to campus in fall 2020, there will be many safety guidelines in place to promote social distancing and safe working conditions. In many cases, this may significantly alter how our spaces will need to be utilized in the foreseeable future.”

¹⁷ In 2015, the average American home used 77 million BTUs per year. Source: <https://bit.ly/2P7oSmu>

¹⁸ Sightlines, LLC, is a consultant that provides facility and services data analysis to colleges and universities across the nation, including the Big Ten.

¹⁹ <https://bit.ly/3hNwKZx>

²⁰ These projects are highlighted in the Energy Use Policy: <https://bit.ly/39NClfj>

²¹ <https://bit.ly/2BHmfrw>

We echo the provost's emphasis on health and safety; as we look to use our space in the most sustainable manner possible, we will continue to factor in hygiene and social distancing concerns in light of the current pandemic and as a preventative measure for future scenarios.

University expansion is not the only future scenario to which we must adapt, however. Due to the social and economic consequences of COVID-19, campus must prepare to occupy not only a larger physical space, but also a smaller environmental footprint. Should the state budget for higher education contract, increased campus energy efficiency may provide a welcome avenue for cost savings. We anticipate upcoming changes in campus energy usage, with reductions in energy usage from less people on campus, and increases due to higher heating, ventilation, and air-conditioning (HVAC) demands in the fall to ventilate and circulate clean air. There will also be changes with the Petascale supercomputer energy demands, with a predicted electricity demand reduction of approximately 60,000 MWh/year, though we cannot predict the longer term usage of the supercomputer. The data figures in this chapter are based on known FY19 energy usage, which reflects a total power demand of 457,000 MWh/year.²²

In addition to optimizing space and energy

efficiency, the university is committed to pursuing clean energy and decreasing our dependence on fossil fuels. To that effect, we have been a proud member of the Environmental Protection Agency's Green Power Partnership²³ since January 2015. As a Green Power Partner, Illinois joins more than 1,500 universities, governments, business, and communities in a push toward green power.²⁴ As of FY19, 7.3% of the total electricity used on campus is from solar and wind energy sources (see Objective #2.3.1).²⁵

Notable achievements in energy efficiency and clean energy from 2015 to 2019 include:

- » Solar Farm 1.0 has been operational since Dec. 11, 2015. The 20.8-acre farm is one of the largest university solar arrays in the U.S. and generates 2% of the campus's annual electrical demand. The Solar Farm is operated by Phoenix Solar South Farms, LLC, with whom F&S holds a 10-year power purchase agreement (PPA). All power generated by Solar Farm 1.0 and all associated Renewable Energy Certificates (RECs) are owned and retired by the university.²⁶
- » In November 2016, the university entered into a 10-year PPA with the Illinois-

based Rail Splitter Wind Farm, LLC for approximately 25,000 MWh/year through Prairieland Energy, Inc. Campus purchases the energy and the associated RECs for 8.6% of the wind farm production. We receive the power whenever the wind is blowing, which is not always aligned with the timing of our power demand. Hourly wind purchases through this PPA are reported monthly on the iCAP Portal.²⁷

- » After a 2017 SWATeam recommendation for expanding the solar farm was approved by the Sustainability Council, the Board of Trustees approved construction of Solar Farm 2.0 in fall 2019.²⁸ The 54-acre site will nearly triple the university's on-site solar energy generation, producing 20,000 MWh annually in addition to the 7,000 MWh/year from Solar Farm 1.0. Pollinator-friendly plantings will make Solar Farm 2.0 a demonstration site as a Pollinator-Friendly Solar Array.²⁹
- » In June 2017, a 198 kW biomass boiler was installed at the Illinois Energy Farm. This project successfully demonstrated our ability to use biomass to expand clean thermal energy use on campus.

- » Geothermal energy systems are being installed at various university sites to reduce thermal energy demand from other sources. Shallow, horizontal ground loop systems have been installed at the Woody Perennial Polyculture (WPP) Research Site,³⁰ Allerton Park,³¹ and the Gable Home at the Illinois Energy Farm. Closed-loop geothermal energy systems containing a series of 40 450-foot-deep vertical boreholes are installed at the Grainger College of Engineering Campus Instructional Facility³² as well as at a greenhouse in the University of Illinois Research Park supporting the Realizing Increased Photosynthetic Efficiency (RIPE)³³ project. Drilled shafts constructed for the foundation of the Department of Civil and Environmental Engineering's Ven Te Chow Hydrosystems Laboratory³⁴ are outfitted with a closed-loop geothermal energy system.³⁵
- » Retrocommissioning (RCx) optimizes a building's heating, ventilation, and cooling systems and controls to maximize energy savings while maintaining occupant comfort. Since August 2007, RCx teams have updated systems in over

22 FY19 figures are based on F&S data from the March 2020 "Utility Summary FY.xlsx."

23 <https://bit.ly/2BJSW7H>

24 <https://www.epa.gov/greenpower/what-green-power>

25 The Green Power Partnership reflects power consumption, not total energy. Power on campus is only 38% of the total energy usage. It should be noted that the Green Power Partnership only includes green power purchases specifically obtained for campus, and does not include clean energy from conventional grid-purchased power.

26 <https://bit.ly/2CWD1SW>

27 <https://bit.ly/3hQi2kz>

28 <https://bit.ly/31714rD>

29 <https://bit.ly/3hKyinh>

30 <https://bit.ly/2Xe2KhD>

31 <https://bit.ly/3geGxHZ>

32 <https://bit.ly/2BKxYph>

33 <https://ripe.illinois.edu/>

34 <https://bit.ly/2X8r1V6>

35 <https://go.illinois.edu/CampusLivingLab>

80 campus buildings, reducing energy consumption by an average of 27% and avoiding \$70M in utility costs for more than 10 million GSF of facilities.

- » The Facilities Standards³⁶ exceed minimum state energy performance requirements. We require that “each proposed building construction is to achieve a minimum 25% reduction in its Performance Cost Index (PCI) as compared to its Performance Cost Index target (PCIt), while major renovations are to achieve a minimum 20% reduction.”
- » Centralized energy conservation efforts led by F&S (e.g., Energy Performance Contracting, RCx and Recommissioning teams, and upgraded boilers at Abbott Power Plant) have reduced campus EUI by 38.2% from FY08 to FY19. Each year, the Energy Conservation Incentive Program (ECIP) recognizes buildings with the best energy efficiency improvements.³⁷
- » In November 2019, the Electrical and Computer Engineering (ECE) Building achieved LEED platinum certification. Contributing factors include advances in LED and fluorescent lighting, intelligent systems to optimize energy usage, and excellent space use efficiency. The goal is to ultimately

achieve net-zero energy certification.

In addition to the above achievements, the university increased energy conservation outreach efforts and behavior change campaigns in recent years. These efforts include:

- » Eco-Olympics is a three-week competition that educates and motivates students to reduce residence hall energy usage. In 2019, 350 students across 17 residence halls saved 70,000 kWh of energy.³⁸ The competition began in 2013 and has been running annually since. Energy savings are tracked online and shared publicly during the competition.³⁹
- » Illini Lights Out (ILO)⁴⁰ is a student-run effort to conserve energy by switching off lights in university buildings. ILO began in spring 2016 as a pilot event organized by the Energy SWATeam. In fall 2019 alone, volunteers turned off more than 32,000 lightbulbs, saving over \$8,000 in utility costs and conserving 55,000 kWh of energy.
- » The University of Illinois has competed in the International Laboratory Freezer Challenge⁴¹ since 2017, winning first prize in 2018 and 2019. This challenge encourages research-focused universities to reduce their labs’ environmental impact by optimizing equipment, maximizing

space, and eliminating unnecessary freezers. In 2019, 70 laboratories across 15 buildings were enrolled in the program; overall energy usage decreased by an estimated 438 kWh/day, or a combined annual equivalent of 13.5 homes’ energy use for one year.⁴²

- » Illinois Solar Decathlon (ISD) is an interdisciplinary student organization pursuing environmental sustainability through green building, sustainable engineering, and community outreach. The award-winning Build Team has competed in U.S. Department of Energy-funded international contests for 13 years. In spring 2020, the Illinois Clean Energy Community Foundation (ICECF) awarded ISD \$150K to support the team’s 2020 U.S. Solar Decathlon Build Challenge entry, ADAPTHAUS, a net-zero, solar-powered home.

We are proud of our students, staff, and faculty members for spearheading the programs listed above. At the same time, we acknowledge our campus’s continued need for an increased consciousness of energy efficiency and conservation.

In fall 2017, Assistant Professor of Agricultural and Consumer Economics (ACE) Erica Myers and ACE Ph.D. candidate Mateus Souza studied the impact of detailed energy reports on student energy-saving behaviors.⁴³ The project received funding through the Levenick iSEE Fellows Program, and ultimately determined that although similar experiments had proven effective in standard residential settings, the impact was negligible in residence halls where students do not directly pay for energy. On the other hand, simple nudges sent prior to winter break were effective in promoting the reduction of thermostat setpoints and energy consumption. Results from the study were later published in the *Journal of Environmental Economics and Management*.⁴⁴ Moving forward, we will continue to engage students through a combination of specialized events and behavior change campaigns.

In recent years, campus has made its first strides in the transition to renewable energy sources, such as Solar Farms 1.0 and 2.0 and the Rail Splitter Wind Farm PPA. There is, however, a long road ahead for both our campus and the world, and we plan to do our part by reducing the burning of fossil fuels and significantly expanding our use of clean energy options.

36 <https://bit.ly/3oezPMw>

37 <https://bit.ly/3f9x100>

38 <https://bit.ly/2DhzEaf>

39 <https://ecoolympics.wixsite.com/eco-olympics>

40 <https://go.illinois.edu/lightout>

41 <https://www.freezerchallenge.org/>

42 <https://bit.ly/2PbjJm>

43 <https://bit.ly/3kva6Xe>

44 <https://bit.ly/3jXPqYn>

Energy Objectives

The following Energy objectives were developed by the SWATeams, iCAP Working Group, campus community, and Sustainability Council to guide the university's actions toward improved energy efficiency and clean energy procurement.

- 2.1 Energy Planning Document
- 2.2 Increase Energy Efficiency
 - 2.2.1 Improve Space Utilization
 - 2.2.2 Reduce Building-level Energy
- 2.3 Clean Energy Sources
 - 2.3.1 140,000 MWh/year Clean Power
 - 2.3.2 Clean Thermal Energy



“Powering Change.” Engineering students learn about energy generation through natural gas at Abbott Power Plant. Tour given by Mike Brewer.

Credit: Peter Davis, “This Learning Life” 2019 photo contest Campus Sustainability Category Winner.

2.1 [F&S] By FY24, develop a comprehensive energy planning document that includes a detailed strategy for meeting the FY50 net-zero greenhouse gas (GHG) emissions goal.

Over the last decade, the university’s energy conservation accomplishments were implemented primarily through incrementalism; when opportunities arose, dedicated staff made improvements. However, this step-by-step approach is not systematic and does not guarantee the urgent changes needed at the rate required to meet our Climate Leadership Commitments. The 2015 Utilities Production and Distribution Master Plan⁴⁵ included action items for the production and distribution side of campus energy; however, it relied on carbon offsets to meet the climate commitments and it did not include a deep analysis of the overall energy conservation and efficiency needs for campus facilities. Achieving carbon neutrality for our energy needs requires significant funding, holistic conservation strategies, and clear prioritization of competing needs. We will model our communications after effective strategies implemented during the COVID-19 pandemic; for example, the university-coordinated responses, briefings, and messages through routine Massmails that brought information to the forefront. Our similar strategy will routinely communicate and disseminate sustainability information to the campus community.

F&S published an Energy Management Plan for FY21 to FY25 in summer 2020, and will lead development of a comprehensive energy plan-

ning document to keep campus energy use on track for meeting our FY50 goal. This document will provide a one-stop-shop for transparent and organized baseline statistics (e.g., building-by-building energy consumption, short- and long-term trends, etc.) made readily available to all stakeholders. At any time over the next 30 years, decision-makers can refer to these baseline metrics to gauge the university’s performance and make adjustments, enabling us to avoid duplicating efforts as leaders, employees, working groups, and SWATeam members change. The document will also include comprehensive, realistic estimates for future energy supplies from solar, wind, geothermal, and other low-carbon sources such as nuclear. By performing comprehensive feasibility assessments for potential clean energy sources, the document will propose the most efficient plan to achieve our FY50 goals (e.g., land allocation, balance of energy storage/production, daily/seasonal peak attenuation, etc.).

Because the staged energy infrastructure improvements will include cost estimates allocated for design, permitting, construction, operations, and maintenance for each proposed project, the energy planning document will also serve as a financial plan. University administrators can earmark funds now for projects that will be completed one, five, 10, or 20 years in the future in order to meet our FY50 net-zero emissions goal.

Ultimately, the document will include: life cycle cost analyses to evaluate sustainable energy strategies; interim milestones to anchor progress; realistic goals for conservation, carbon emission reductions, and clean energy im-

plementation; and a detailed funding plan with specific costs and recommendations for each strategy’s anticipated funding sources.

We strive to advance our progress toward carbon neutrality with each iteration of the iCAP. Following the planning document’s completion in FY24, we will use the results to inform the development of more specific iCAP 2025 Energy objectives.

2.2 [F&S] Reduce Energy Use Intensity (EUI) of university facilities from the FY08 baseline by: 45% by FY30, 50% by FY40, and 60% by FY50.

Campus EUI has decreased by 38.2% in the past decade, from 303,649 BTU/GSF in FY08 to 187,656 BTU/GSF in FY19 (Figure 2). These figures are calculated by starting with the total campus energy input (i.e., fuels purchased for Abbott Power Plant and electricity purchased from the regional grid) and subtracting energy for non-campus facilities (e.g., Willard Airport). One noteworthy exception is the National Petascale Computing Facility (Petascale), a unique grant-funded collaboration with the National Science Foundation (NSF) which is removed from the total energy consumption included in the EUI figures. This calculation produces the total campus energy use, which

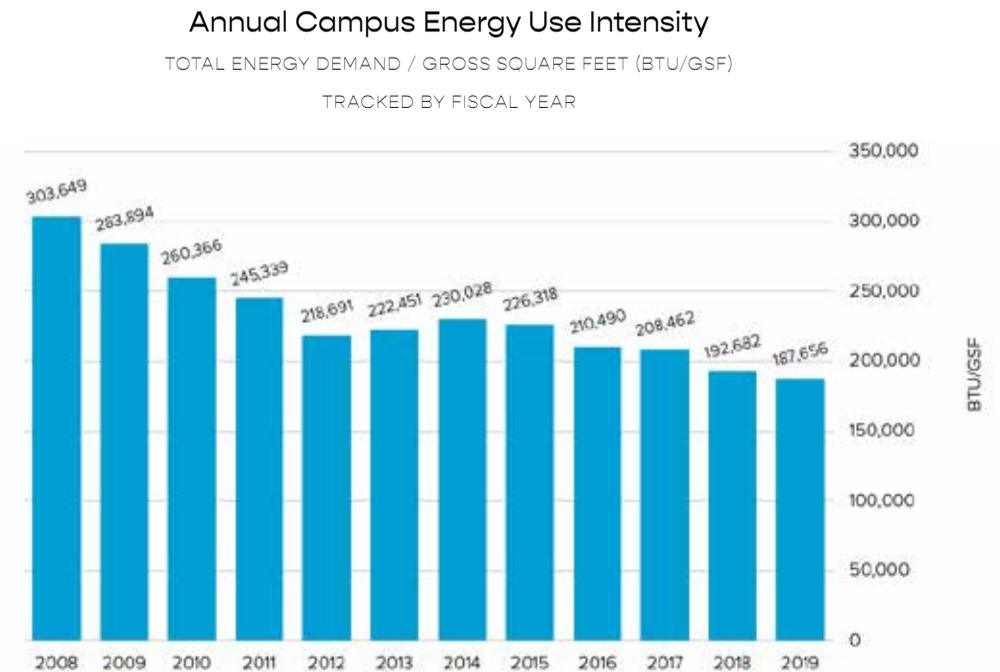


Figure 2: Annual Campus Energy Use Intensity

45 <https://bit.ly/3177arK>

is then normalized against the total campus square footage for the annual EUI.

Objective #2.2 continues our goals for EUI reduction into FY50 (Figure 3). Previous climate action plans targeted a 50% EUI reduction by FY50; this version increases our long-term objective to 60%. Several existing programs to reduce campus EUI are underway, and these must be continued, supported, and expanded. Specifically, we should continue implementing Retro-commissioning (RCx), Recommissioning (ReCx), Energy Performance Contracting, and the LED Campus commitment (see “Relationship to Other Commitments” in the Introduction).

To leverage the full extent of our resources toward EUI reduction, we must strengthen additional centralized energy efficiency programs. Several of these solutions are expanded upon in the following paragraphs.

CONTINUATION OF MAJOR ENERGY CONSERVATION INITIATIVES

F&S manages several successful energy conservation initiatives. These include RCx, ReCx, Energy Performance Contracting, and the LED Campus commitment. These are the most effective means of reducing energy consumption in campus buildings. The following ideas are options for expanding the impact of these major initiatives.

- » Expand RCx efforts in auxiliary buildings including University Housing, Campus Recreation, and Division of Intercollegiate Athletics (DIA) facilities. Budget policies currently limit RCx efforts at F&S

to state-supported facilities; the few auxiliary facilities that have separately funded an RCx project prove that there is great opportunity to improve.

- » Increase funding for deferred maintenance projects and prioritize projects with an energy efficiency component. Insufficient deferred maintenance funding often results in increased reactive maintenance (i.e., temporary fixes) rather than cost-effective, preventive solutions (e.g., systematic renovation and renewal programs to upgrade facilities).
- » Allocate campus funds to directly launch additional Energy Performance Contracts and grow the RCx and ReCx programs. ReCx teams were created to revisit retrocommissioned buildings every five years to ensure that buildings continue to run at top efficiency and that the systems and controls are calibrated appropriately. It is anticipated that six ReCx teams would be able to maintain the energy efficiency of major campus buildings through preventative maintenance on a five-year cycle.

ENERGY CODES AND ENERGY COST BUDGETS

The Facilities Standards⁴⁶ require that new buildings constructed on campus meet strong energy performance standards and are LEED Silver certified at minimum. (Figure 4 provides a yearly overview of LEED-certified

Target Reduction in Campus Energy Use Intensity

TOTAL ENERGY DEMAND / GROSS SQUARE FEET (BTU/GSF)
TRACKED BY FISCAL YEAR

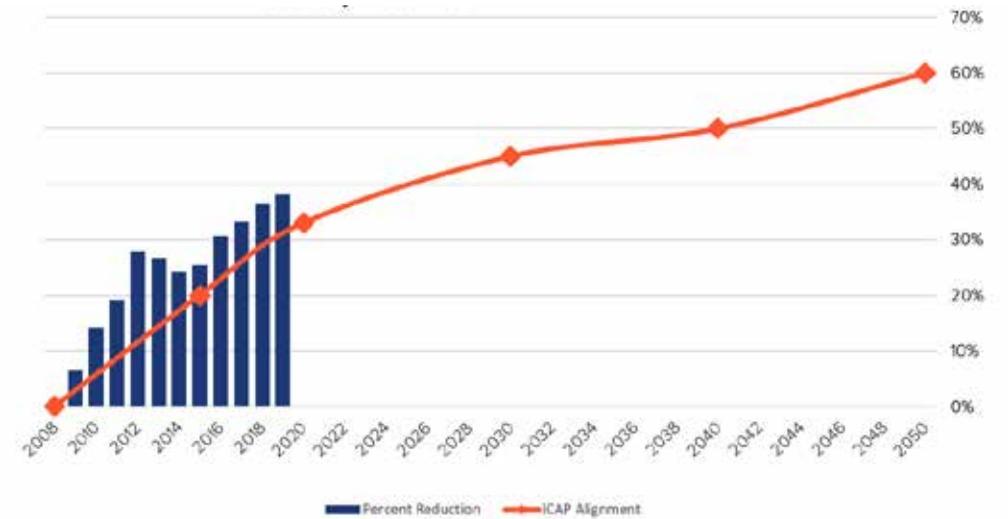


Figure 3: Target Reduction in Campus Energy Use Intensity

campus square footage.) For new campus and auxiliary buildings, major retrofits requiring energy code compliance, and buildings in the design phase, project teams will be required to provide electronic input files for Energy Cost Budget (ECB) and energy performance modeling using conventional programs. F&S holds the Professional Service Consultants (PSC) responsible for meeting the required deliverables, including quality, quantity, and timeliness. To hold the PSCs accountable for meeting energy codes, F&S intends to complete PSC evaluations on all projects, including evaluations of sub-consultants. Ensuring

energy code compliance will necessitate proper staffing levels for the F&S Capital Programs, Design Review, and Commissioning and Inspection departments.

Using information gathered from capital projects, faculty members and researchers can collaborate with F&S to develop a reference database of calibrated energy models for campus buildings. This might be the product of student classroom projects. The campus could then use these models to prioritize building retrofits and determine the preferred level of improvements (i.e., envelope versus mechanicals) for each building.

46 <https://fs.illinois.edu/resources/facilities-standards>

LEED-Certified Campus Square Footage

TRACKED BY FISCAL YEAR

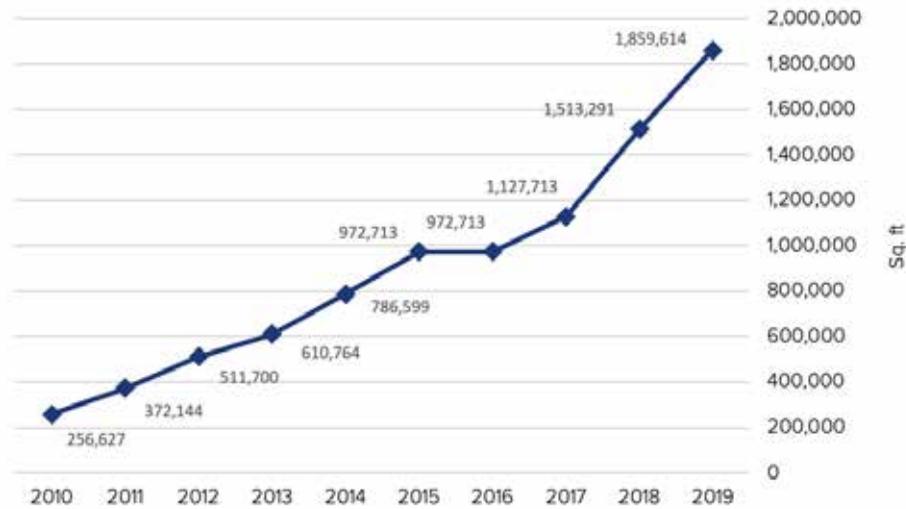


Figure 4: LEED-Certified Campus Square Footage

BUILDING ENVELOPE RETROFITS

Building envelope retrofits should be applied to more campus buildings. While progress in enhancing heating, ventilation, and air conditioning (HVAC) systems is underway, there has been little focus on building envelopes. Actionable steps in this area include developing internal campus expertise in this area and identifying viable funding sources.

F&S staff should consider Building Envelope Commissioning (BEC) and mechanical commissioning (and recommissioning if necessary) for major building projects.

REDUCE PEAK ELECTRICITY CONSUMPTION

A potential pathway toward reducing peak electricity consumption is decreasing peak demand by 20% over the next five years. Electrical demand correlates with a building's daily use, with the peak occurring when the highest volume of students, staff, and faculty members occupies the space; typically, this is roughly the middle of the day. This is illustrated by the Business Instructional Facility's (BIF) energy dashboard (Figure 5).⁴⁷ The figure reflects that on March 12 and

⁴⁷ <https://bit.ly/2XciUIB>

Energy Dashboard Weekly Display from the Business Instructional Facility (BIF)

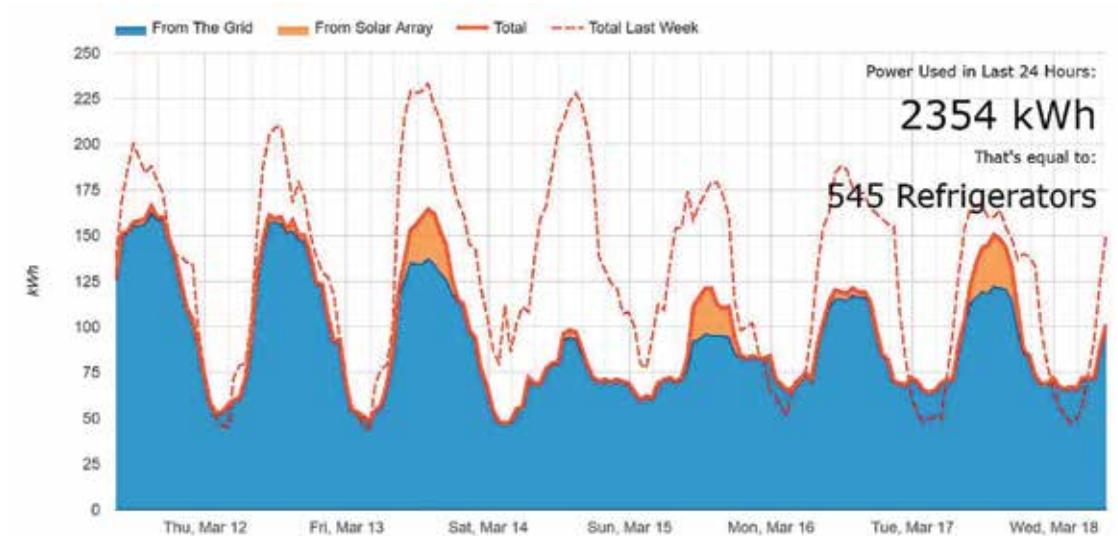


Figure 5: Energy Dashboard Weekly Display from the Business Instructional Facility (BIF)

March 13, 2020, students began leaving campus as a result of the upcoming spring break as well as preliminary course cancellations due to COVID-19. The following Saturday, Sunday, and Monday reported notably reduced electricity usage compared to the previous week (shown as a dotted line on the corresponding days). We plan to monitor how the return to campus will impact energy use to better understand energy usage and to inform long-term changes to decrease our consumption.

In FY19, campus used a total of 457.31 million kWh (457,305 MWh) of electricity (Figure 6). We can reduce the peak demand through a combination of increasing efficiency and ad-

justing campus schedules to flatten the peak throughout the day. COVID-19 safety protocols may require altered schedules in order to reduce building traffic; if so, we will remain mindful of how best to meet the dual demands of public health and sustainability.

2.2.1 [Provost Office] Improve efficiency of space use by minimizing the square footage per person and updating the Space Policy in the Campus Administrative Manual (CAM) by FY23.

Because building space is linked to energy demand, careful stewardship of campus square

Total Campus Electricity Usage (MWh)

TRACKED BY FISCAL YEAR

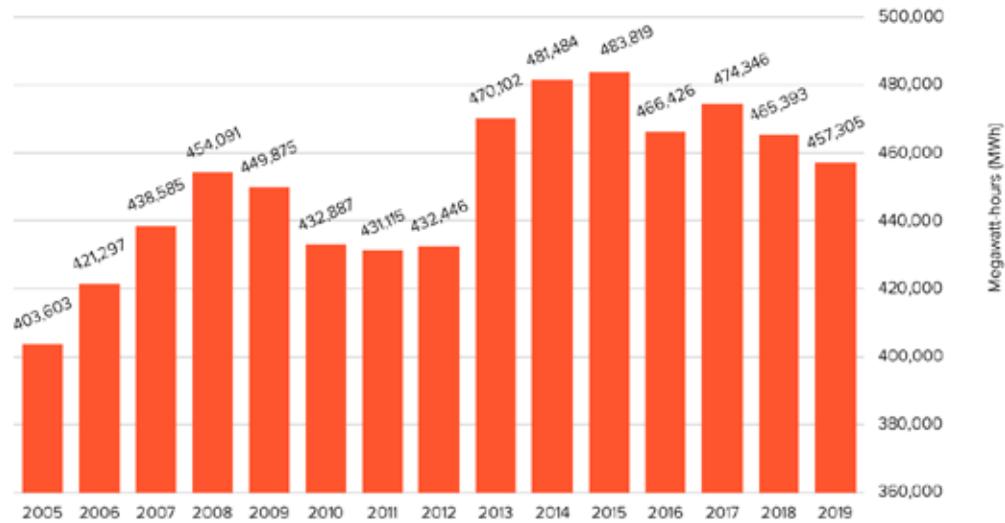


Figure 6: Total Campus Electricity Usage (MWh)

footage is a vital component of our GHG reduction strategy. Likewise, a clear understanding of the anticipated growth or reduction of building square footage is needed for developing an effective energy plan.

As reported by Sightlines, LLC, the Urbana campus has low space use efficiency compared to other universities in the Big Ten.⁴⁸ Figure 7 illustrates our campus density factor (i.e., the square footage of campus divided by the equivalent full-time users) in relation to our Big Ten peers and compared to the average across the higher education institutions Sightlines, LLC

evaluates; clearly, there is room for improvement.

To improve our space use efficiency, we need to increase space utilization rates, remove outdated and unneeded spaces, and actively restrict the growth of total campus GSF.

Increasing space utilization rates can include clarifying appropriate allocation policies for various room categories and implementing innovative solutions like hot-desking (wherein workspaces are used by multiple people on a rotating basis). Removing unneeded spaces can include renovations or demolitions; the 2017

48 Sightlines ROPA+ University of Illinois Urbana-Champaign, FY18

Total Campus Density Factor in Relation to Peers

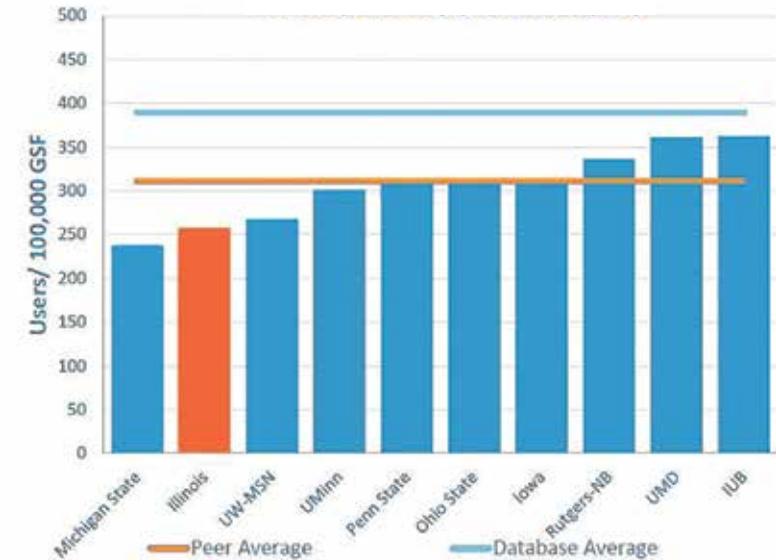


Figure 7: Total Campus Density Factor in Relation to Peers
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Campus Master Plan update identified specific buildings that should be demolished. In light of current COVID-19 concerns and any threats to public health that may arise in the future, we will implement these and other space use efficiency strategies only when they fully align with campus safety protocol.

Efforts to actively restrict the growth of campus GSF began with the 2010 iCAP commitment to enact a “no net increase in space” policy. The Net Zero Space Growth policy in the CAM (FO-44)⁴⁹ was established in June 2015; since its inception, both the 2017 Campus

Master Plan update and the Integrated and Value-Centered Budget (IVCB) reform have been implemented. The Campus Master Plan defined campus plans for the next 10 years, with only a 1.5% GSF increase. Concurrently, the IVCB budgeting system redirects transitioned energy and space costs from the Office of the Provost and F&S to academic colleges and administrative units.

A complete halt to campus expansion cannot be sustained indefinitely. Educating our students and researching grand challenges will, at times, require growth beyond the current GSF.

49 <https://cam.illinois.edu/policies/fo-44/>

Total Energy Consumption for University-owned Buildings in the University District (MMBTU)

TRACKED BY FISCAL YEAR

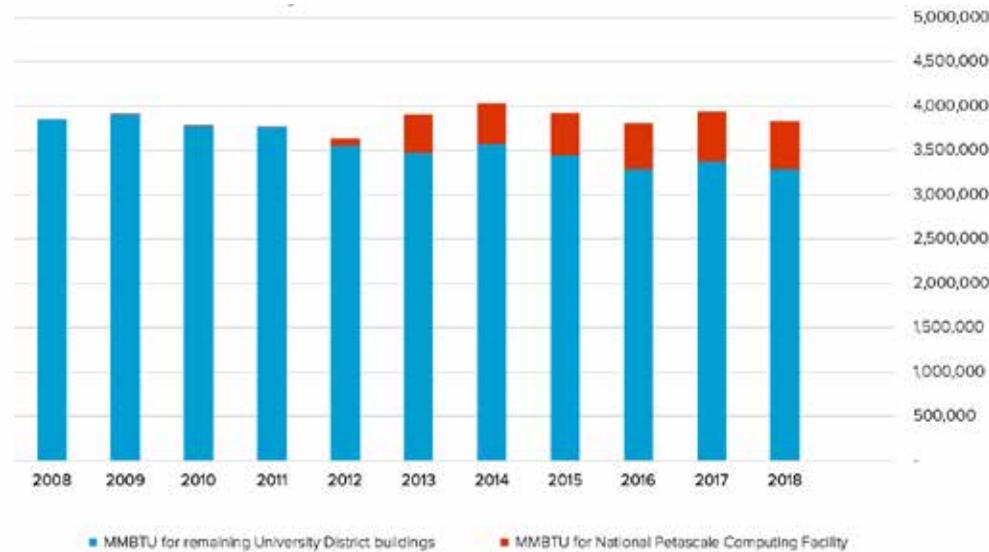


Figure 8: Total Energy Consumption for University-owned Buildings in the University District (MMBTU)

Regarding these likely increases, it is important that we keep an eye on our Climate Leadership Commitments and remain thoughtful stewards of our campus space.

Over the next few years, the Office of the Provost will work to update the CAM space policy, providing insight into how to address the tension between an inherent need to grow as an institution and the need to limit GSF. This will result in a sustainable space stewardship program that holds university administration accountable for maintaining the highest standards of space use efficiency while including a

review and approval process to manage growth and reduce emissions.

2.2.2 [Units w/F&S] Reduce the total annual energy consumption of each college-level unit by at least 20% from an FY15 baseline by FY35.

In 2018, the Energy SWATeam completed an analysis of the total energy consumption of every university-owned building within the University District (north of Windsor Road) using data from the Energy Billing System between FY08 and FY18 (Figure 8).⁵⁰

50 <https://bit.ly/3oc18qw>

Assessment of Square Footage Changes in University-owned Buildings from FY08-FY19

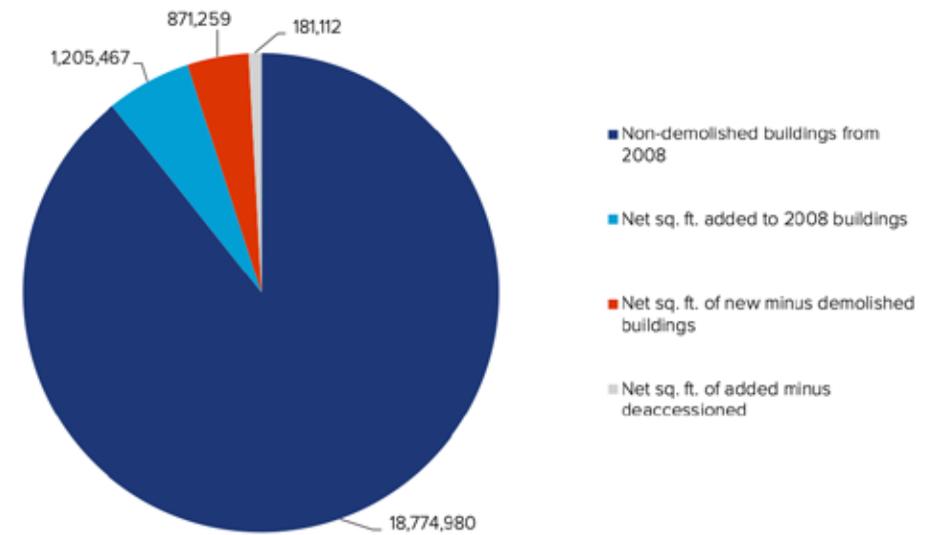


Figure 9: Assessment of Square Footage Changes in University-owned Buildings from FY08-FY19

Unfortunately, total energy consumption (when not normalized by GSF) increased by 2% in this time period. This was influenced by both an 11% increase in University District square footage (Figure 9) and by the addition of Petascale (Figure 10), which used 724,017 MMBTUs in FY19 and did not exist in FY08. According to Energy SWATeam co-chair Bill Rose:

“Energy conservation [efforts] in the last 10 years have been wondrously successful — if left on their own, the conservation goals could be easily met. Without the square footage burden and Petascale burden, it’s been really successful. But when we add the new square footage and Petascale, the total campus load is up, not down.”

F&S employees work hand in hand with facility managers to maintain and improve university-owned buildings. With the FY20 implementation of the Integrated and Value-Centered Budget, colleges are now responsible for space usage and building-level energy costs. This increases college-level incentives to improve energy efficiency in the buildings and spaces they occupy.

To achieve this objective, every university-owned building occupant needs to participate in the iCAP and endeavor to reduce energy consumption. To support this, F&S collaborated with the Illinois Solar Decathlon (ISD) Concept Team in FY20 to create building-level en-

Annual Electrical Consumption for Petascale Facility (MWh/year)

TRACKED BY FISCAL YEAR

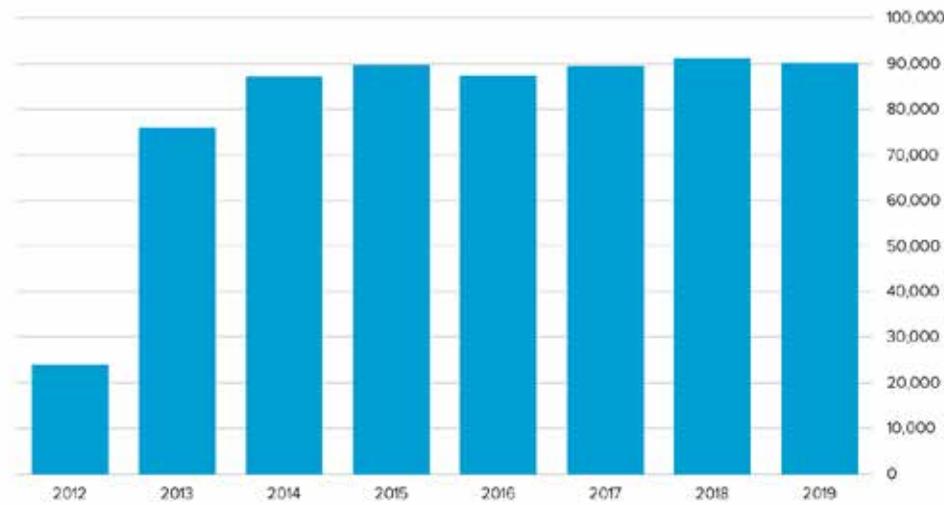


Figure 10: Annual Electrical Consumption for Petascale Facility (MWh/year)

ergy and water report cards. This process pulled available data from the Energy Billing System and evaluated total energy and water reduction since FY08 for the 56 buildings that won the Energy Conservation Incentive Program (ECIP).⁵¹

The next steps include working with building contacts to strategize energy efficiency solutions. F&S will connect with the facility manager, a building-level communications contact, and a related student organization to develop strategies for reducing energy consump-

tion in individual buildings. The student representative for each building will obtain pledges from building occupants in support of energy conservation.

2.3 Use clean energy sources for 15% of total campus energy demand by FY30.

Clean energy sources can include but are not limited to: solar, wind, geothermal, biofuels, biomass, renewable natural gas, and nuclear.

⁵¹ <https://bit.ly/3f9x100>

The university should continue to support and encourage pursuance of grant and research opportunities in these markets as well as other clean energy technologies.

A key concept in the transition to clean energy is the difference between electricity and total energy. In FY19, electricity accounted for just 38% of total campus energy consumption; the district heating and cooling systems and certain buildings with direct natural gas connections accounted for the other 62%. Because the most prevalent clean energy technologies are electricity-generating wind and solar sys-

tems, many discussions about clean energy focus on clean power.

Since the 2010 iCAP, we have made progress to incorporate clean energy for power and thermal energy on campus, with a focus on renewable electrical power. Figure 11 outlines the clean energy used on campus in FY19.

The 32,092 MWh of clean energy represents just 2.8% of total campus energy use in FY19; however, achieving our clean power target of 140,000 MWh/year (see Objective #2.3.1) equates to 12.2%.⁵² This objective's larger goal of 15% clean energy by FY30 can come from

⁵² The denominator is FY19 total energy use.

Clean Energy Source	MWh in FY19	Category
Wind Power Purchase Agreement	24,726	power
Solar Farm 1.0 Power Purchase Agreement	7,026	power
Business Instructional Facility Rooftop Solar	40	power
Wassaja Residence Hall Rooftop Solar	41	power
Building Research Council Ground-mount Solar	21	power
Activities Recreation Center Solar Thermal	3	thermal
Energy Farm Biomass Boiler	235	thermal
Total Clean Energy in FY19	32,092	total

Figure 11: Clean Energy Used on Campus in FY19

any qualifying source, including but not limited to an anaerobic digester, thermal storage, fuel cells, batteries, and nuclear.

With more than 250 campus buildings using steam heat, we cannot focus our efforts exclusively on clean power; we must incorporate clean thermal energy as well. A 198 kW Heizomat biomass boiler was installed at the Illinois Energy Farm in June 2017 under iSEE leadership.⁵³ This project was supported by the Illinois Clean Energy Community Foundation (ICECF) and the Student Sustainability Committee (SSC), with additional funding provided by the University of Illinois Dudley Smith Initiative, the Carbon Credit Sales Fund, and the Revolving Loan Fund. It is a successful demonstration of using cellulosic biomass (i.e., the Miscanthus grown for research at the Illinois Energy Farm) to heat a greenhouse, and the facility can be expanded to provide more clean energy.

The Activities and Recreation Center (ARC) features a solar thermal system which reduces the need to use thermal energy from other sources. This system produces sufficient clean thermal energy to heat the three Olympic-sized swimming pools — and all domestic hot water used — in the facility. While the existing solar thermal array is small-scale, producing only three MWh/year of clean energy, this technology is particularly viable in the central Midwest and should be considered for additional campus locations.

Several campus researchers are actively developing other clean energy solutions. For

example, in collaboration with the Urbana-Champaign Sanitary District (UCSD), studies for converting food scraps to energy using the UCSD anaerobic digester are underway. Another program involves fine-tuning the process of converting used plastic waste to diesel fuel. Energy storage research is also expanding to include the potential to use geothermal technology for storage.

This objective's extended timeline allows us sufficient time to identify clean energy sources and modify Abbott Power Plant operations accordingly.

2.3.1 [F&S] Use at least 140,000 MWh/year of clean power by FY25.

As one component of Objective #2.3, campus will continue transitioning to clean energy sources for power. When calculating our total clean electricity use, we include only power that has associated Renewable Energy Certifications (REC) in our possession. Thus, the changes in the regional electrical grid,⁵⁴ sometimes referred to as “greening of the grid,” do not impact our reporting of clean power consumed. This is consistent with the requirements of the EPA's Green Power Partnership reporting system and the Federal Trade Commission's Green Guides.⁵⁵

Figure 12 illustrates the sources for all electricity used on campus in FY19. As shown, approximately 7.3% of our power was generated directly from clean energy sources. The total of 31,854 MWh/year of clean electricity was

Campus Power Sources for FY19

TOTAL 437,511.529 MWh/YEAR

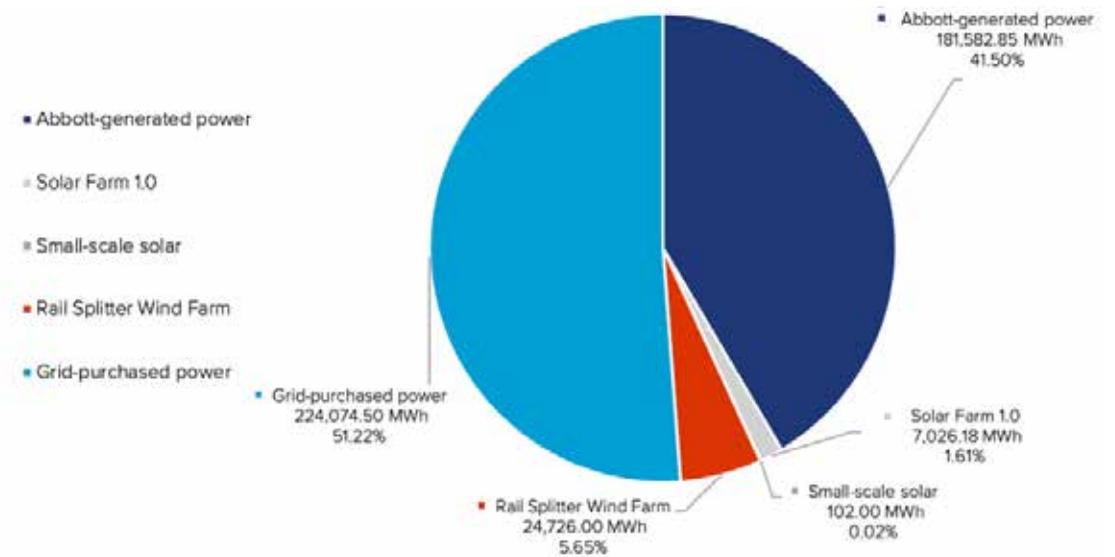


Figure 12: Campus Power Sources for FY19

acquired from both on-campus solar energy (7,128 MWh) and off-campus wind energy (24,726 MWh). Completion of Solar Farm 2.0 will increase campus clean energy usage to more than 50,000 MWh/year, which will surpass 10% of our existing power demand. This is excellent progress.

To continue building on these successes, we have set the goal to use 140,000 MWh/year of electricity from clean power sources (i.e., approximately 35% of our annual power demand) by FY25. This requires purchasing clean energy from off campus, and we have been investigating options to do so. The Energy SWATeam submitted a recommendation in May 2018 to seek an off-campus solar PPA for meeting this objective. We are hopeful that a VPPA for 90,000 MWh/year of solar power will be a vi-

able method for achieving this objective and launching a new solar array off-campus in Illinois with clear additionality.

2.3.2 [F&S] Use at least 150,000 MMBTU/year of clean thermal energy by FY30.

As stated in the Introduction, the university owns a best-in-class combined heat and power plant (Abbott Power Plant), a district steam heating system, a district chilled water cooling system with energy storage (the Campus Chilled Water System), and the campus electrical grid. This comprehensive network of energy processes (Figure 13) has served us well; in fact, many cities and campuses around the world are planning to implement district heating and cooling systems to increase energy efficiency.

⁵³ <https://bit.ly/3ffpqnY>

⁵⁴ Campus is in egrid subregion SRMW = SERC Midwest. See <https://bit.ly/31618rh>

⁵⁵ <https://bit.ly/3fmG31f>

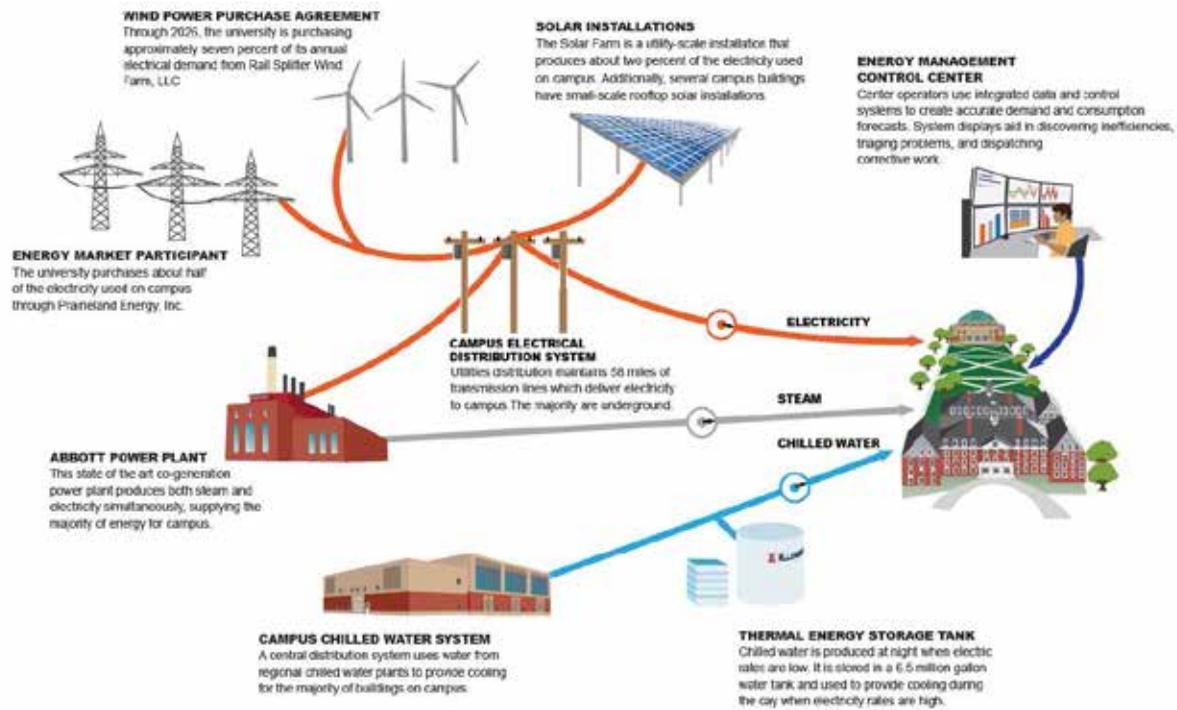


Figure 13: University of Illinois Urbana-Champaign Energy Systems

As shown in Figure 14, Abbott Power Plant generated 80% of the total campus energy in FY19 — this energy produced 41% of the electricity used on campus. Using the best available air pollution control technology, Abbott meets or exceeds all EPA emission standards. Electrostatic precipitators and a flue gas desulfurization unit (scrubber) supported by a Continuous Emission Monitoring System in the stack remove 90% of air pollutants, providing significant environmental benefits. Efficient cogeneration coupled with emission reduction equipment have decreased carbon dioxide emissions by 101,000 tons per year⁵⁶ compared to

conventional electric generation and heat-only systems.

Currently, we burn natural gas and coal to produce the steam needed to heat campus through the district heating system. In keeping with our carbon neutrality goal, F&S has investigated several methods to reduce fossil fuel use at Abbott and subsequently reduce our total emissions. The 2010 iCAP included a plan to “evaluate the potential for: 1) eliminating summer coal use in the near term; 2) eliminating all coal use by 2017; and 3) alternative means of generating and distributing thermal energy (hot water distribution, regeneration,

University of Illinois Urbana-Champaign Energy Sources for FY19

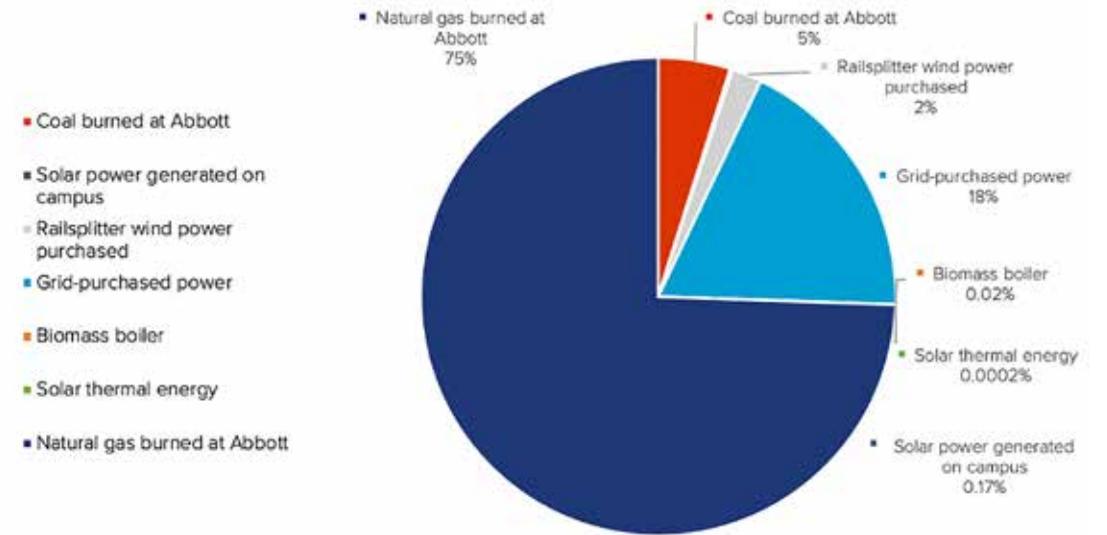


Figure 14: University of Illinois Urbana-Champaign Energy Sources for FY19

geothermal looping) in the long term.”⁵⁷ The resulting study (the Utility Production and Distribution Master Plan⁵⁸) was completed in 2015.

One major change since the FY08 baseline is the university’s shift away from burning coal. The total energy generated as a result of burning coal at Abbott decreased by an impressive 89% from FY08 (1,792,464 MMBTU) to FY19 (203,954 MMBTU). Continued use of coal at Abbott helps meet the campus’s heating demand during the coldest months of the year and supports research on reducing emis-

sions from coal-fired power plants. Illinois is a national leader in the study of carbon capture and carbon storage technology, and F&S is collaborating with researchers at the Illinois Sustainable Technology Center (ISTC) to test carbon capture technology using Abbott as a living lab.⁵⁹ ISTC has also used Abbott flue gas in studies related to algal biomass and biofuels. The ability to use coal during the coldest months of the year has enabled Abbott to become nationally recognized as a living lab for research on second-generation carbon capture. F&S is collaborating with the ISTC and the

56 <https://bit.ly/339SLxN>

57 <https://bit.ly/2XcKdm6>

58 <https://bit.ly/3hQDdCZ>

59 <https://bit.ly/39IWymW>

Illinois State Geological Survey on a range of possible breakthroughs that could lead to effective carbon capture worldwide. As a utility that owns its own grid and generation capacity, campus represents an attractive testbed for cutting-edge efforts to eliminate greenhouse gases at commercial scales.

Other options for reducing emissions at Abbott include using geothermal or solar thermal to preheat water before it travels to existing coal or natural gas boilers. F&S collaborated with Illinois Business Consulting to investigate the potential for mixing woody biomass with the coal, but it was determined to be infeasible.⁶⁰

Perhaps the best option for decarbonizing thermal energy on campus is renewable natural gas (RNG). RNG is a drop-in solution that can be generated from a variety of technologies — most notably from upgrading biogas produced from anaerobic digestion — and used in existing infrastructure such as at Abbott Power Plant. Argonne National Laboratory publishes a database of RNG projects⁶¹ divided into the following categories: farms, food waste, landfills, wastewater treatment, and other waste. The Argonne database shows an increase of 53% from 2017 to 2019, and a total 2019 production capability of about 4.5 million MMBTU. This is a growing opportunity that the university will pursue for clean energy.

Another potential clean energy solution that can be implemented at Abbott is portable Advanced Small Modular Reactors. Faculty research in the Department of Nuclear, Plasma and Radiological Engineering (NPRES) supports

the installation of a microreactor to produce steam at Abbott as an alternative to fossil fuels. The university's high energy demand offers opportunities for interdisciplinary research to reduce campus energy consumption, especially pertaining to steam production. The role of nuclear power in our greater energy system is still uncertain. Illinois faculty members are researching and collaborating with key stakeholders to address potential barriers and strategies to overcome uncertainties. As we work to expand clean energy sources and achieve carbon neutrality, we will continue to study the feasibility of nuclear reactor technology.

In addition to Abbott Power Plant, we are implementing alternative heating and cooling solutions in individual buildings, such as chilled-beams, heat-recovery chillers, energy recovery, and geothermal. The chilled-beam heating and cooling system is incredibly efficient in the Electrical and Computer Engineering Building, and research innovation projects for geothermal energy systems at the Illinois Energy Farm, the Bardeen Quad, and the Ven Te Chow Hydrosystems Laboratory are in progress. In FY20 a building-scale geothermal project was installed at the Campus Instructional Facility, saving 2,839 MMBTU per year.

In addition to the chilled water thermal energy storage tank described earlier, researchers are investigating thermal energy storage, such as advanced battery technologies using geothermal technology.

As clean energy technologies expand and become more viable, we can proactively equip campus buildings to accommodate them. One

way to do this is by converting older buildings from steam heating to hot-water, low-temperature systems. Over 170 campus buildings still utilize steam for heating purposes inside the building.

Since 2010, all new campus buildings have been designed and constructed for hot-water heating systems, which require lower temperatures than steam. Similarly, as existing buildings have undergone refurbishment, steam heating systems have been replaced with hot-water systems. Hot-water systems are not only lower-cost to maintain, but are also easier to control, resulting in increased comfort for building occupants. Moving forward, we will continue to require the use of hot-water heat-

ing systems for all new construction.

Other key initiatives include converting inefficient HVAC systems to types that are compliant with current energy codes and updating the controls to reflect modern technology. These HVAC and control upgrades should be implemented in tandem with conversion to hot-water systems wherever possible in order to amplify efficiency and drive a better return on those investments. Together, these conversions can move campus buildings toward 100% hot-water heat, position us to use all potential clean energy technologies currently in existence, and contribute significantly to the university's goal of carbon neutrality by FY50.

"Energy conservation [efforts] in the last 10 years have been wondrously successful — if left on their own, then the conservation goals could be easily met. Without the square footage burden and Petascale burden, it's been really successful. But when we add the new square footage and Petascale, the total campus load is up, not down."

— Bill Rose

60 <https://bit.ly/3jXZCAr>

61 <https://www.anl.gov/es/reference/renewable-natural-gas-database>

Conclusion

Due to sheer volume and versatility of distribution, energy-based emissions occupy a major portion of the university's efforts toward carbon neutrality. In fact, energy generation and distribution is the leading contributor to campus GHG emissions.⁶² Therefore, curtailing our energy consumption is essential to achieving carbon neutrality by FY50.

Improving the energy efficiency of our 650⁶³ university-owned buildings requires a cooperative effort. Beyond the ongoing energy efficiency work at F&S, we must facilitate a culture of sustainability throughout campus, with particular regard to departmental units and facility coordinators. While encouraging individual energy users to make consistent lifestyle changes is valuable, interacting directly with parties responsible for building-level energy management and further financial investment will substantially increase our impact. Additionally, as we work to balance ongoing safety measures with lasting sustainability practices, collaborating with high-level campus decision-makers is more critical than ever.

In the coming years, we intend to leverage a combination of strategic conservation measures, innovative renewable energy investments, and thorough campus outreach to reduce our carbon footprint as it pertains to energy use. With a concerted all-hands-on-deck effort, we can achieve significant progress.

62 <https://icap.sustainability.illinois.edu/themes/energy>

63 <https://bit.ly/3jV4rKx>



Geothermal loop and fiber optic cable installation on the Bardeen Quad, December 2018.

Credit: Tim Stark, professor of civil and environmental engineering, University of Illinois Urbana-Champaign.

3.



TRANSPORTATION

TRAVELING TOWARD ZERO CARBON



From overseas academic conferences to the daily office commute, members of the Illinois community are always on the move. But constant travel has its consequences. In FY19, approximately 13% of campus greenhouse gas (GHG) emissions were traced to the following three categories of transportation: campus vehicle usage, commuting, and air travel.

The first category, campus vehicle usage, refers to our university-owned fleet. Fleet vehicles are used by campus personnel for purposes such as police transportation, research, maintenance, construction, waste management, and short- and long-term rentals. The Urbana campus owns more than 1,200 vehicles, of which approximately 300 belong to the Facilities and Services (F&S) fleet.

We are dedicated to ensuring that our campus fleet runs as sustainably as possible. In September 2015, F&S received Tier 2 Sustainable Fleet

Accreditation from the National Association of Fleet Administrators (NAFA). We are the first university in the Big Ten — and the first university in the state — to receive this accreditation, which comes as a result of decreased fuel usage, idling time, and GHG emissions.⁶⁴ In August 2020, this certification was renewed for the F&S Truck Pool. Illinois has made significant strides toward mitigating fleet-related GHG emissions since 2015; as of FY19, campus fleet emissions decreased by approximately 25% from the FY08 baseline of 5,688 MTCO₂e as a result of reduced

⁶⁴ <https://bit.ly/39FRT52>

idling time, reduced trip frequency, and increased miles per gallon (mpg) per vehicle.^{65,66} As outlined in Objective #3.1, we will further increase the sustainability of university-owned and -operated vehicles.

The second category of transportation GHG emissions is commuting. We have a great degree of control over our university-owned fleet; carbon neutrality regarding student, staff, and faculty commuters, however, requires behavioral change at the individual level, where factors like ease of travel, convenience, housing options, family considerations, and personal preference have significant environmental repercussions.

Statistics support the impact of individual behavior change. FY19 metrics reveal that 60% of campus employees commute in single-occupancy vehicles (SOV), personal vehicles operated by a single driver with no passengers.⁶⁷ Similarly, 1,834 Student Permits and 328 Student Shuttle Permits (used for lots E-14 and B-22) were distributed in FY19, indicating widespread use of personal vehicles by our student population. While many of our objectives focus on the highest energy users and those whose actions result in high emissions, we also recognize that many individuals in our community have opted out of driving to campus and instead bike, bus, or walk to campus every day. We are proud of these dedicated individuals

⁶⁵ <https://bit.ly/39J1w35>

⁶⁶ <https://bit.ly/39IZ6la>

⁶⁷ <https://bit.ly/2XbHqcJ>

⁶⁸ <https://bike.illinois.edu/>

who live and act sustainably.

The Transportation SWATeam continues to investigate options for implementing shared driving programs for employee commuting; this remains a priority to the extent that health and safety best practices can be observed with respect to the COVID-19 pandemic. These could potentially advance in the next five years and beyond to reduce the number of vehicles on campus. By encouraging active transportation solutions, we can generate environmental, social, and health improvements for our community.

Notable achievements in sustainable transportation from 2015 to 2019 include:

- » In October 2019, the university was promoted from Bronze to Silver designation as a Bicycle Friendly University (BFU) by the League of American Bicyclists. Contributing factors include the 2014 Campus Bicycle Plan; bike path, lane, and route improvements; bike rack parking expansion primarily funded by the SSC (campus now maintains more than 11,600 bike parking spaces); the Bike at Illinois⁶⁸ website launch; and the presence of 500 Veo bikes for sharing on campus since 2018. We also have Zipcar as an

Full-Time Employees for Sustainable Transportation

TRACKED BY FISCAL YEAR



Figure 15: Full-Time Employees for Sustainable Transportation

option for ride-sharing on campus.^{69,70}

» UI Ride, a shuttle service between the University of Illinois Urbana and Chicago campuses, was unveiled in fall 2019. The shuttle’s three daily trips allow employees to commute between campuses and opt out of flights or SOV usage. Passengers can reserve trips online or through a smartphone app.^{71,72} We expect that UI Ride will become more recognized as a viable option for university personnel,

and that individuals will take advantage of this convenient and timely service.

» In FY19, the university was able to staff the full-time equivalent (FTE) of three employees for sustainable transportation efforts, surpassing the target of two FTE employees (Figure 15). These positions include: Transportation Demand Management Coordinator at F&S; Sustainable Transportation Assistant at F&S; and Campus Bike

69 <https://bit.ly/3jVbvHd>

70 <https://bit.ly/315Q4dI>

71 <https://www.uillinois.edu/uiride>

72 <https://apple.co/2DgTgeu>

Center Manager at Campus Recreation.⁷³

As has historically been true, the third category of transportation emissions, air travel, remains a particular challenge for the university. While there are many reasons for campus and community members to utilize air travel, one key factor is the transformative university research that requires international and intercontinental collaboration.⁷⁴ As of July 2019, air travel emissions equaling 31,684.97 MTCO₂e comprised more than half of campus’s Scope 3 emissions and 7.3% of its gross emissions.⁷⁵ From FY14 to FY18, we reduced our total air travel emissions by 25%; while we are proud of this significant decrease, complete mitigation is unreasonable due to the centrality of certain air travel to the campus mission.

Due to COVID-19 travel limitations, the university experienced a drastic decrease in air

travel beginning in spring 2020. Students, staff, and faculty members opted for alternatives including telecommuting, teleconferencing, and traveling by train. As air travel becomes normalized in the near future, we must remain mindful of how we consume non-renewable resources in everyday life as well as in times of crisis. That said, the university continues to explore alternative solutions to decrease our overall emissions while strengthening our preparedness for future public health threats. Objectives #3.4.3 and #3.5 discuss these options in further detail.

iSEE’s online interactive Guide to Purchasing Carbon Offsets⁷⁶ was established in fall 2019 to educate users and encourage purchasing individual carbon offsets to combat unavoidable travel-related emissions. Objective #3.5 includes a discussion of carbon offset possibilities in the Champaign-Urbana community.

73 <https://bit.ly/3fJfuo>

74 iCAP 2010 recommended a 30% decrease in overall transportation emissions from FY08-FY14. However, emissions increased by 30% over this time period. The rise was attributed solely to air travel: emissions in this category increased by 52% from FY08-FY14 and implementation of a sophisticated tracking system likely revealed more accurate — and thus greater — metrics than did previous assessments.

75 <https://bit.ly/2Evmg2B>

76 <https://go.illinois.edu/offsetcarbon>

- 3.1 Fleet Replacement Plans
- 3.2 Increase Pavement Condition Index
- 3.3 Electric Vehicle Task Force
- 3.4 Reduce Driving on Campus
 - 3.4.1 Develop a Commuter Program
 - 3.4.2 Implement Campus Bike Plan
 - 3.4.3 Telecommuting Policies
- 3.5 Offset Air Travel Emissions

Transportation Objectives

The following Transportation objectives were developed by the SWATeams, iCAP Working Group, campus community, and Sustainability Council to guide the university's actions toward achieving carbon neutrality for transportation.



The university holds a Silver designation as a Bicycle Friendly University by the League of American Bicyclists. Our iCAP objectives prioritize safe and sustainable transportation.

Credit: Facilities and Services.

3.1 [Fleet Managers] Establish written replacement plans for at least 80% of campus fleets by FY24 to improve university-owned vehicle fuel efficiency.

In recent years, the university has made great strides in improving the sustainability of our campus-owned fleet. F&S previously implemented a sustainable fleet plan⁷⁷ and achieved green certification with the National Association of Fleet Administrators (NAFA). Moving forward, we plan to not only continually pursue the most effective certification programs, but also expand efforts to “green” campus fleets beyond F&S.

ESTABLISH WRITTEN REPLACEMENT PLANS

While the responsibility to implement this objective rests with all campus fleet managers, the majority of units do not possess a comprehensive strategy for fleet optimization. Development of such plans would provide the structure for a campuswide approach to sustainable vehicle management.

One of the best ways to improve fleet efficiency is implementing vehicle upgrades: transitioning from older to newer models that are optimized for fuel consumption. However, even after upgrading to fuel-efficient or electric vehicles (EV), fleets with more machines than necessary can still expend excess energy, fuel, and funding. A strategy called “right-sizing” incorporates an inventory check to determine

the extent to which university vehicles are being used 1) to complete necessary tasks 2) by designated personnel 3) in a fuel- and cost-efficient manner. Once the inventory is completed, changes can be implemented to optimize each fleet for individual departmental needs.

SUSTAINABLE FUELS

In the past, F&S has explored options for acquiring service vehicles that use alternative fuel sources. These include two E-ride electric service vehicles, eight zero-emission Global Electric Motorcars (GEM) purchased in 2004, and eight gas-powered low-speed vehicles (LSV). None of these vehicles are currently in service at the university due to a combination of reliability concerns, insufficient part supply, vendor availability, and personnel fluctuation. As the alternative fuel industry continues to progress, however, new technologies may emerge and existing technologies may become more viable for campus use.

A current example of an alternative fuel technology that has previously been integrated with the F&S fleet is a product of the Illini Biodiesel Initiative. Using a new facility at the Integrated Bioprocessing Research Laboratory (IBRL), this student-led program converts used vegetable oil from dining halls into 100% biodiesel. Students are working to certify the resulting biodiesel so it can be mixed with the 5% biodiesel mixture that F&S purchases for the fleet; when ready, this product can be integrated with the existing biodiesel purchased on campus to improve the fleet's sustainability.

A promising future technology for the campus is an anaerobic digester that could accompany the construction of a new Dairy Facility. The proposed digester would use organic waste to produce biofertilizer and biogas, which could be upgraded to renewable natural gas (RNG) and processed into renewable compressed natural gas (CNG). The renewable CNG could then be used as fuel for the campus fleet. Another potential source of renewable CNG is a collaboration with the Urbana-Champaign Sanitary District (UCSD), which has an operational anaerobic digester already in use. UCSD has investigated the possibility of biogas upgradation, and the university could contribute toward the Upgradation Unit and pipeline injection and install a CNG conversion station on campus for the university fleet.

3.2 [F&S] Increase the Pavement Condition Index (PCI) for university-owned roads so the average PCI score is at least 65 by FY25 and at least 70 by FY30.

As with the university-owned fleet regulations described in Objective #3.1, we aim to implement best practices for all transportation assets falling under campus jurisdiction. Objective #3.2 addresses our extensive system of university-owned streets.⁷⁸ Optimizing road surfaces should be taken just as seriously as optimizing the efficiency of the vehicles that drive on them. Smooth pavements also encourage the use of bicycles, and provide a more pleasing aesthetic for the campus.

The key metric for this objective is Pavement Condition Index (PCI), “a numerical rating resulting from a pavement condition survey that represents the severity of surface distresses.”⁷⁹ This metric provides a standardized process to quantify road quality. For example: Are there numerous potholes, cracks, or bumps? Do vehicles slip easily? PCI ratings occupy a scale of 0-100; a score of 0-10 results in a “Failed” status, while a score of 86-100 merits “Good” pavement condition. With regular analyses planned every three to five years, we aim to increase our PCI rating in the near future. A 2020 Pavement Management Report for the University of Illinois Urbana-Champaign campus streets, by Applied Pavement Technology, Inc., stated:

“Overall, the 2020 area-weighted PCI of the university-maintained roadways is 65. Condition results from the previous [pavement] projects for the university can be compared to the results of this study to track how the pavement network is performing between PCI inspections. The overall area-weighted PCI was 59 in 2009, and 65 in 2016 and 2020 (excluding brick and gravel). It is interesting to note that the overall PCI remained unchanged from 2016 to 2020, despite annual spending of about \$1.5 Million. ... The percent of pavement above a PCI of 70 has increased to 50 percent (it was 37 percent in 2009), while the percent of pavement with a PCI below 40 has remained near 25 percent for all inspection years. Since the percent of pavement in the mid-range of the PCI scale (40 to 70) has decreased from 39 percent to 25 percent since 2009, it

77 <https://bit.ly/33bgGwQ>

78 <https://bit.ly/2BIAwUI>

79 <https://bit.ly/39LuuiH>

appears most of the major work that has occurred since 2009 has focused on improving pavements in this condition range.”⁸⁰

SUSTAINABLE PAVEMENT MATERIALS

Sustainability and pavement condition go hand in hand; a strategy to improve both aspects of our university-owned road system is to increase the use of sustainable pavements. Implementing permeable pavements and biobinders will not only benefit the roads themselves but will also improve our flood and rainwater management infrastructure.

On a campus where more than 50% of the surface area is occupied by buildings or paved in roadways, walking paths, and parking lots, rainwater management poses a problem. While traditional pavement necessitates extensive gutter and drainage systems to manage water, permeable pavements (e.g., porous asphalt, which was used to pave parking lot C-8 in FY12⁸¹) allow rainwater to flow through the pavement and into a permeable gravel layer below, facilitating built-in water quality treatment and flood control. This process also keeps the pavement itself well-drained and in good condition, resulting in a higher PCI rating. Although installing permeable pavements can be costly, the reduced need for stormwater infrastructure (i.e., curbs, gutters, storm drains) roughly aligns long-term expenses with those of traditional pavement.

Biobinders are a second option for increasing the sustainability of our university-owned roads. In terms of concrete pavement compo-

sition, asphalt and cement are “binders,” the agents that bind rocks, gravel, and sand to form the surfaces used on roads. While useful as bonding agents, asphalt and cement are synthetic materials derived from petroleum (which is itself derived from fossil fuels). As evidenced by the name, biobinders and bio-asphalt varieties are created from biomass materials. For example, research conducted through the Illinois Sustainable Technology Center (ISTC)⁸² explored the practical potential of biobinders or bio-oil made from the pyrolysis of solid feedstock such as Miscanthus (an energy grass) or the hydrothermal liquefaction (HTL) of manure, food waste, algae, and other organic waste.

Moving forward, we will investigate opportunities to integrate additional sustainable materials such as recycled or sustainably produced bricks and pavers, fly ash, and recycled glass into the composition of campus infrastructure.

3.3 [Parking] Establish an Electric Vehicle Task Force to identify key goals for supporting the use of electric vehicles on and off campus by FY22.

Objectives #3.1 and #3.2 focus on vehicles and roadways within the university’s jurisdiction. However, many of our transportation objectives rely on individual decision-making as well as policy; therefore, we strive to make campus conducive to environmentally conscious lifestyle choices. One avenue for individual action concerns electric vehicle (EV) usage.

In 2018, Provost Cangelaris formed an EV



Strategic landscape architecture will create visually beautiful paths and promote walking on campus.

Charging Task Force “to make recommendations on what steps the university should take, both now and in the future, to make EV charging available to commuters.”⁸³

In this region of the electric grid, an EV typically emits less GHGs than a conventional gas-fueled vehicle of similar size.⁸⁴ The Parking Department supports sustainability through implementation of public-use EV charging spaces, with 17 Level 1 charging spaces at five campus locations, and six Level 2 plug-ins at three campus locations.

Other charging stations have been added by individual departments outside of the Parking Department’s efforts. These include Research

Park, the Illini Union, iSEE, and F&S. To develop a holistic strategy for EV charging infrastructure and to identify key goals for supporting the use of EVs both on and off campus, the Parking Department will form a new EV Task Force to identify methods to facilitate the transition to EVs for students, staff, faculty members, and the community at large.

3.4 [F&S] Reduce driving on campus and report the percentage of staff trips made using single-occupancy vehicles from 60% to 50% by FY25 and 45% by FY30.

Reducing automobile traffic in the University

80 <https://bit.ly/33zQgoP>

81 <https://bit.ly/3ggqDfU>

82 <https://bit.ly/39HDDsx>

83 <https://bit.ly/2Xl98Uf>

84 <https://bit.ly/2XbOAO9>

Percent of Staff Trips Made Using Single-Occupancy Vehicles (SOV)

TRACKED BY FISCAL YEAR

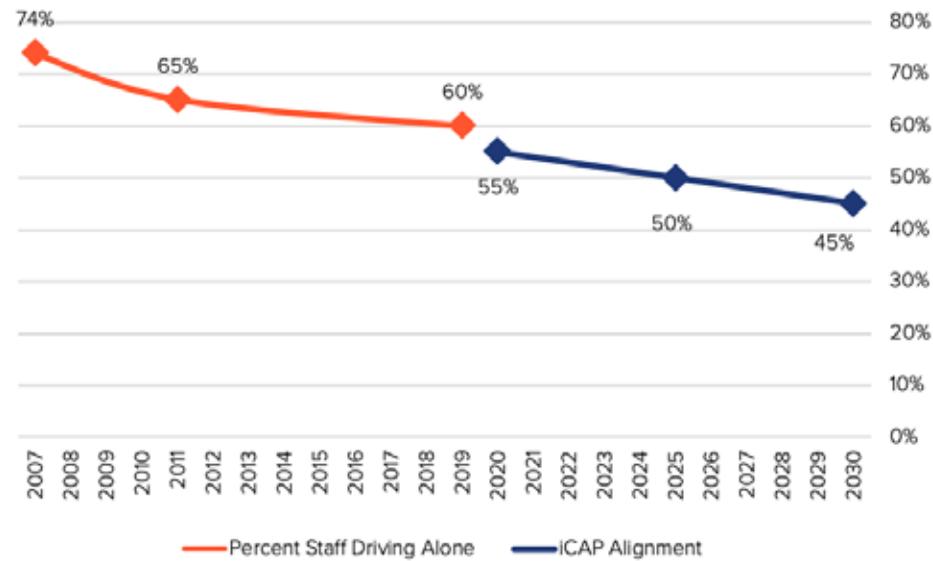


Figure 16: Percent of Staff Trips Made Using Single-Occupancy Vehicles (SOV)

District is a long-term endeavor for this campus as well as our community transportation partners. Efforts in this direction are greatly influenced by the initial work enacted through the Campus Area Transportation Study (CATS) technical and policy advisory committees' cohesive planning.

The core campus has experienced a vehicle traffic reduction since the turn of the century; however, there is a long road ahead. While only 10% of the student population drives alone, this tends not to be the case for staff and faculty members, many of whom commute to campus

in single-occupancy vehicles (SOV).

Outside of the emissions generated from driving to work, high SOV usage has many environmental consequences. For example, while many campus commuters possess a designated parking space, some do not; for these individuals, finding an available space can pose problems. "Parking hunting," or driving for excessive amounts of time in search of a space, expends gas and generates emissions. To remedy this issue, a smartphone application could assist in locating available parking spaces. The app would work in tandem with the parking pay applica-

tion, and could reduce total time spent parking hunting. To better understand and make decisions about parking availability, iSEE funded the Campus as a Living Laboratory (CALL) project "City Traffic as a Reservoir System."⁸⁵

Objective #3.4, which aims to decrease negative fallout from driving both to and around campus, is directly related to choices made by individuals. In the last five years, we have decreased the percentage of staff driving alone from 65% to 60% (Figure 16). We are proud of this achievement and commend our campus and community members for their environmental consciousness.

While our key performance indicator reflects the percentage of staff who regularly travel in SOVs, this objective is centered on behavioral choices and sustainability consciousness. Though our intent is to produce quantifiable results by reducing SOV usage, we acknowledge that the factors influencing personal vehicle choice are complex (e.g., cost-effectiveness drives many students to live off-campus and commute). Moving forward, F&S will strengthen our progress toward lowering SOV usage by fostering conditions supportive for individuals getting where they need to be in a sustainable fashion. The Transportation Demand Management department at F&S will continue to lead this effort for our campus transportation systems, using the established methods of the "five E's" — Engineering, Education, Enforcement, Evaluation, and Encouragement. We will support the transportation strategies outlined in the 2017 Campus Master

Plan, such as closing streets to private vehicles and implementing an autonomous shuttle on a university-owned street. Through our continued commitment to an emphasis on walking, bicycling, and public transit, we expect that more students, staff, and faculty members will shift to sustainable, healthy, and active travel modes.

iSEE will disseminate a travel survey every three years to keep our metrics updated and track our progress as we strive for a 45% SOV use rate by FY30.

3.4.1 [Parking w/F&S] Develop a Commuter Program (Bus, Bike, and Hike) for faculty and staff. Register 100 people by FY24 and 500 people by FY30.

A convenient Commuter Program will incentivize staff and faculty members to leave personal vehicles off campus. Incentives through this program would only be offered to employees who relinquish their annual campus parking permits; as such, all participants will be required to obtain verification through the Parking Department.

Currently, six of the 14 Big Ten schools implement some version of a commuter program for employees and/or students.

As inspired by other institutions' efforts, incentives implemented on the Urbana campus could include:

- » Limited availability of daily parking

85 <https://go.illinois.edu/campuslivinglab>

passes for occasional needs;

- » Access to an emergency ride home program;
- » Direct support for active travel choices made by university employees;
- » Discounted charging for EVs;
- » Discounted bike-sharing opportunities;
- » Discounted UI Ride access;
- » Discounted or credited medical insurance;
- » Campus shower access;
- » Free Zipcar memberships, including a yearly driving credit stipend;
- » Opportunities for eco-conscious travelers to win a gift card or other monetary incentive; and/or
- » Opportunities to receive tax credits.

Our proposed Commuter Program will encourage employees to forgo parking permits in favor of active and shared modes of transportation. The program will also connect employees with convenient solutions such as telecommuting and carpooling programs. Campus as a Living Lab seed funding provided financial support to pursue a survey on driving and carpooling potential.⁸⁶ The survey plans to provide a greater understanding of why people choose their primary mode of transportation in order to develop the most effective solutions to reduce

the number of vehicles on campus.

BUS

As we encourage community members to take advantage of public transportation and the need for mass transit grows, we remain committed to maintaining our strong relationship with the Champaign-Urbana Mass Transit District (MTD). MTD is an excellent example of a sustainable operation, and it is certified by the Illinois Green Business Association (which was started by Illinois students). It is also ISO-14001-certified⁸⁷ since 2013, and has converted 85% of its fleet to hybrid electric buses. Most recently, MTD began using hydrogen-fuel-cell buses.⁸⁸

To increase awareness of the opportunities provided by MTD, F&S will offer at least two “It’s Your MTD, Too”⁸⁹ workshops annually. These workshops are a collaboration between F&S and MTD to encourage students, staff, and faculty members to use MTD’s services.

As with all iCAP 2020 strategies, public health is of the utmost importance. We will be mindful of all efforts to promote the use of public transportation with a view to ensuring sustainability and safety.

BIKE

Bicycling is the most sustainable form of personal transportation, allowing individuals to travel long distances per unit of energy (in this case, the calorie). Several groups have worked

together for many years to improve the user-friendliness of our county’s bicycle infrastructure. In addition to implementing the 2014 Campus Bicycle Master Plan,⁹⁰ we will support and enhance the Bike at Illinois⁹¹ initiative to spread awareness of related programming, safety, rules of the road, and other resources.

HIKE

Walking is an active mode of transportation that is not only good for the environment, but also beneficial to individuals’ mental and physical health. We will encourage awareness of the myriad benefits that walking (to work or class, or simply for enjoyment) has to offer through a training that focuses on “the wellness of walking.”

To make walking on campus as pleasant as possible, we will use strategic landscape architecture to create aesthetically pleasing pathways. We will ensure that campus pathway designs prioritize accessibility and are pedestrian friendly. See the Land & Water chapter for more information.

3.4.2 [F&S] Continue to implement the 2014 Campus Bike Plan.

The 2014 Campus Bicycle Master Plan⁹² focuses primarily on infrastructure improvements to the university’s network of bikeways in order to:

1. Increase safety for all users;
2. Encourage a sustainable mode of transportation;

3. Improve the bicycling experience for all campus cyclists;
4. Identify funding needs and secure funding for bicycle infrastructure and programming improvements; and
5. Improve the university’s standing as a national leader in bicycling.

This objective is intended to continually support and implement the 2014 Campus Bicycle Plan to achieve the goals listed above. The plan lists several high-, medium-, and low-priority bikeway improvement projects as well as safety information and educational opportunities. In addition to providing bicyclists and pedestrians with safety guidelines and rules of the road, we want to take further steps (e.g., improving traffic calming measures in heavily-trafficked streets and intersections) to ensure that the campus itself is safe and conducive to bicycle travel.

BICYCLE FRIENDLY UNIVERSITY (BFU)

Illinois was promoted to Silver BFU status by the League of American Bicyclists (LAB) in October 2019 because of great progress in bicycle engineering, education, enforcement, evaluation, and encouragement. Moving forward, we intend to maintain the qualities that have earned us this designation and continue to improve the campus’s bicycle friendliness. To further elevate our BFU status, the LAB recommends implementing a national bicycle registration program to increase the number of

86 <https://go.illinois.edu/campuslivinglab>

87 <https://bit.ly/3fg1osZ>

88 <https://bit.ly/3hSEslj>

89 <https://bit.ly/3hMZphi>

90 https://go.illinois.edu/BikePlan_2014

91 <https://bike.illinois.edu/>

92 https://go.illinois.edu/BikePlan_2014

bicycles registered on campus. Our current goal is to achieve Gold BFU status by FY27.

LONG-TERM BIKE STORAGE

As part of our efforts to encourage campus bicycling, we want to ease the logistical difficulties that individuals face with the task of keeping a bike at school. This is especially true of students in apartments with limited storage space. We plan to implement long-term bicycle storage (i.e., a garage-like space capable of storing 1,000 or more bicycles) on campus by FY24.

BIKE SHARING AND MAINTENANCE

More departmental bikes (e.g., those owned by iSEE, F&S, and the Sustainability Living Learning Community) will be offered. To ensure that campus-owned bikes are well taken care of, personnel with departmental bicycle access will be encouraged to participate in maintenance courses through Campus Recreation and the Campus Bike Center, or get regular maintenance at local bike shops to prolong the life of the bike. Students will continue to have access to short-term bike rentals through companies such as Veo. Long-term rentals are



BikeFace, a sub-group of Students for Environmental Concerns, hosted "Chancellor Ride" in April 2017 to highlight the campus's need for improved biking infrastructure. Pictured (from left): Chancellor Robert J. Jones, Lorenzo Grego, America Guerra, Lily Wilcock.

Credit: Facilities and Services.

also available in town as well.⁹³ Now and in the future, we will encourage individuals to practice sanitary best practices while operating shared bikes.

3.4.3 [F&S w/IHR] Establish telecommuting policies for the campus by FY24.

COVID-19 shelter-in-place guidelines established telecommuting as not only necessary, but also highly manageable for campus units. We hope to investigate and develop telecommuting options to promote the environmental benefits inherent to this work model.

First, we will discuss potential strategies for employees for whom telecommuting is viable. For remaining employees, we will consider allotting a designated number of days per year to optional telecommuting. Currently, certain organizations in India are considering similar protocols, with 15 days as a suggested starting point. Incentivized solutions (e.g., an encouraged one-day-per-week telecommuting policy) will also be explored.

On May 6, 2020, Chancellor Jones distributed an email message including the following statement: "The timing and the working arrangements of individual employees will not be the same for everyone. This allows our colleges and departments the necessary flexibility to implement their specific plans within parameters outlined by public health officials."⁹⁴

Similarly, we hope to establish guidelines to standardize remote work practices for all employees while allowing for flexibility regarding the specific exercise of these options.

While work-from-home precautions in light of COVID-19 were implemented out of necessity, it is our hope that these practices can continue into the future to meet environmental stewardship goals.

3.5 [iSEE] Reduce net air travel emissions from FY14 baseline: 50% by FY24 and 100% by FY30.

Air travel is the university's largest source of transportation-based emissions. As of FY19, we decreased our air travel emissions by approximately 25% from the updated FY14 baseline. As we continue to augment existing efforts with innovative solutions, we can confidently push to double our existing reduction by FY24. Added mitigation through future carbon offsetting programs makes the target of net-zero air travel emissions by FY30 feasible as well.

BUSINESS TRAVEL SURVEY

The most direct step toward reducing air travel emissions is reducing the frequency of air travel itself. To confidently move forward, we must begin with a thorough knowledge of where we currently stand: from FY22 to FY24, we will conduct an annual business travel

⁹³ <https://www.neutralcycle.com/rental>

⁹⁴ <https://bit.ly/33cOBFk>

survey to obtain this foundational information. By surveying campus personnel regarding the reason, regularity, and urgency with which they travel by plane on university business, we can identify opportunities for alternative methods of transportation such as the UI Ride program and teleconferencing.

A preliminary step for implementing this strategy is to conduct a UI Ride passenger survey. Riders will report where they are coming from, where they are going, whether their travel is related to research, teaching, or administration, and how else (or if) they would have made that particular trip if not with UI Ride. A random sample of riders will receive a card with a QR code for the survey, and responses will be recorded electronically.

We currently report business travel data to Second Nature as part of the annual GHG emissions report; this business travel survey will help streamline this process and ensure that the data is accurate.

CAMPUS TELECONFERENCING AUDIT

While we are committed to curbing university-related air travel, the need for partnerships with other institutions around the world remains urgent. Advancements in teleconferencing technology present a user-friendly compromise that balances the need for collaboration with our responsibility to carbon neutrality.

Remote communication became particularly needed in spring 2020 as COVID-19 health concerns prioritized the virtual workspace.

Adapting to these changing circumstances within a compressed timeframe brought our need for robust telecommunication infrastructure into sharp relief. It also proved our capability for adopting these technologies and integrating them into our daily lives. With a comprehensive strategy, our approach to telecommunication can, and will, become seamless and sophisticated.

The first step of this comprehensive strategy involves an inventory of campus teleconferencing facilities and their accessibility by the end of FY21. SWATeam members will help iSEE develop a standardized form for distribution to campus units and departments. The form will record availability of teleconferencing facilities within campus buildings; specifically, rooms with high-quality teleconferencing capabilities and/or the ability to host group meetings remotely.

In addition to campus facilities, we will continue enabling students, staff, and faculty members to conduct teleconferences and remote work from their individual homes. Telework from personal devices was crucial to maintaining campus operations throughout the COVID-19 pandemic, and we commit to supporting these opportunities in the future. Ultimately, our goal is to take stock of current teleconferencing capabilities and assess the need to invest in a higher quality and/or quantity of digital infrastructure as we move toward air travel alternatives.

In keeping with the university's history of innovation and technological progress, we will

adopt up-and-coming technologies with a view to implementing them to our, and the environment's, advantage.

CARBON OFFSETS PROGRAM

When air travel is unavoidable, purchasing carbon offsets can counteract emissions generated in flight. The iSEE website offers publicly accessible information about purchasing carbon offsets for air travel, as well as a four-step process for how to do so. Currently, these resources are intended for individuals; travelers can calculate the monetary equivalent of their carbon emissions and donate that amount to fund a verified sustainability project.⁹⁵

In addition to informing the community about opportunities to offset carbon emissions, we hope to expand this individual offering into

a concrete program with at least five participating university units by FY24. This option would provide travelers with tangible means of offsetting emissions and encourage local action to increase awareness of global issues.

We would especially like to incorporate creative local offset projects into this program: for example, an initiative to plant trees on designated campus land proportional to the amount of air travel undertaken by staff and faculty members. Those who fly regularly would be encouraged to volunteer their time to help plant trees, with student involvement welcomed as well. Participants would receive information regarding both the negative effects of carbon emissions and the sequestering abilities of trees and native plants.

⁹⁵ <https://go.illinois.edu/offsetcarbon>

Conclusion

Illinois students, staff, and faculty members lead busy lives. By transitioning university-operated vehicles to alternative fuels, integrating sustainable management systems into campus roadways, and incentivizing active and low-emission commuting options, we continue to shrink the portion of our carbon footprint generated from transportation. However, it is imperative that the campus and community become more active participants in our transportation plan.

Transportation solutions come down to

lifestyle choices: commuting by bus instead of SOV; forgoing air travel in favor of teleconferencing; walking or biking rather than driving. Everyone is capable of making a difference, and the sum total of individual action — as well as an increased understanding of what influences decision-making in our community — will enable us to achieve our transportation goals in the coming years. No matter where our community needs to go, we strive to implement safe and sustainable solutions to help them get there.



Community tree planting is an engaging way to offset the university's carbon emissions.

"For the past 10 years, the Illinois Climate Action Plan has provided a rigorous but feasible plan to create an environmentally-friendly campus. I believe student involvement in university decisions is extremely important because our tuition should fund projects that are ethical and focus on intergenerational sustainability. More than ever before, our actions will determine the state of the environment and society's attitudes toward environmental protection in the coming decades."

— Anneli Cers '21



LAND & WATER

PROTECTING OUR RESOURCES
ON CAMPUS AND BEYOND



As a micro-urban hub, robust research institute, agricultural living laboratory, and land-grant university, the Urbana campus is a microcosm for land and water management in the Midwest and globally. On both local and large scales, these resources are indispensable for sustaining growing populations. However, they are increasingly threatened by human development, biodiversity loss, and climate change. As our student body expands, we must be energetic stewards of the environmental resources for which we are responsible.

Our campus has an urgent responsibility to sustainably manage everything from the water we drink to the crops we harvest to the pollinators we rely on for survival. Strategies to address these and other concerns include implementing green infrastructure, designing resilient landscapes, and restoring our ecosystems. As part of the university's carbon neutrality goal, we must also increase the amount of carbon sequestered by our soil and vegetation.

Because our approach to environmental stewardship is linked with sustainable community development, the Land & Water objectives (e.g., rainwater management plans) may

involve the Resilience SWATeam. A particular issue of interest to both the university and community is sustaining Boneyard Creek, the three-mile waterway flowing through campus and draining from Urbana and Champaign. The Boneyard Creek Master Plan⁹⁶ was published in 2008 to strategize planning and maintenance efforts. Every year, Boneyard Creek Community Day unites local residents to clean up litter and promote appreciation for the landmark. Boneyard Creek is also a site for ongoing research into flooding patterns and water quality.

Notable achievements in sustainable land and

96 <https://bit.ly/2XbkcDI>

water management from 2015 to 2019 include:

- » In December 2019, the Resilient Grounds Strategy Advisory Committee, charged by Facilities and Services (F&S) Executive Director Mohamed Attalla and chaired by professor of landscape architecture William Sullivan, completed a strategic vision for improving campus landscape resilience. The Resilient Landscape Strategy identified key challenges (see Objective #4.2) and developed solutions to ensure that campus landscapes are designed and maintained in a fashion commensurate with our global profile.
- » In March 2020, the university earned its fifth annual designation as an official Tree Campus USA⁹⁷ by the Arbor Day Foundation for its commitment to effective urban forestry. The standards for this designation include maintaining a Campus Tree Advisory Committee, establishing a Campus Tree Care Plan,⁹⁸ dedicating annual stewardship, offering student-focused service-learning projects, and performing an Arbor Day observance.
- » An online Tree Campus inventory⁹⁹ was updated to document the campus's 16,493 trees. The database also tracks relevant annual metrics including total greenhouse

gas (GHG) sequestration (3,207,559.17 lbs CO₂), water saved (17,400,271.91 gal), and energy saved (2,023,115.73 kWh). Through efforts to implement iCAP 2015 objectives, the total agroforestry acreage on campus increased to 102.8 acres as of FY19.¹⁰⁰

- » In October 2018, the university became the first in the Big Ten to achieve Bee Campus USA certification.¹⁰¹ The initiative was spearheaded by a group of students in the Sustainability Living Learning Community (SLLC) based in Lincoln Avenue Residence Hall. The students coordinated the extensive development of the Bee Campus USA application, funded by F&S Sustainability, in conjunction with the Department of Entomology, the Department of Natural Resources & Environmental Sciences (NRES), U of I Extension, and F&S. This designation recognizes our myriad efforts to foster a pollinator-friendly campus. Other examples include the citizen-science initiatives I-Pollinate¹⁰² and BeeSpotter,¹⁰³ the Pollinarium,¹⁰⁴ several pollinator-focused classes, and many student organizations related to pollinators.
- » The Integrated Pest Management (IPM) program for the F&S Grounds department was formally established as a policy in

97 <https://www.arborday.org/programs/treecampususa/>

98 <https://bit.ly/CampusTreeCarePlan>

99 <https://illinois.edu.treekeepersoftware.com>

100 <https://bit.ly/33o1bBV>

101 <https://bit.ly/3jOmBh5>

102 <https://ipollinate.illinois.edu/>

103 <https://beespotter.org/>

104 <https://pollinarium.illinois.edu/>

conjunction with the Bee Campus USA application process. IPM for Grounds reduces pesticide use outdoors on campus to reduce weeds and other potential plant issues by identifying acceptable pest levels and incorporating preventive cultural practices, monitoring, mechanical controls, biological controls, and restrictions. The Water Station at F&S also provides certified environmentally friendly IPM in campus buildings to reduce pests indoors. All F&S employees who apply pesticides go through rigorous training and education to become State Licensed Public Pesticide Operators or Applicators.

- » In early 2019, the Student Sustainability Committee (SSC) funded work to begin nitrate-nitrogen monitoring in the Embarras River south of campus. This project aligned with a previous iCAP goal to reduce nitrate fertilizer losses from our farms by 50%. An undergraduate class installed initial monitoring equipment in fall 2019.
- » In summer 2019, ACES farm staff began working to obtain specialized equipment to streamline cover crop seed planting during the fall corn and soybean harvest. Adding a living cover during the winter substantially reduces nitrogen and phosphorus losses.
- » The Red Oak Rain Garden (RORG)¹⁰⁵ has been a treasured installment on campus since 2006. During Campus Sustainability Week 2019, the RORG team unveiled plans for a three-tiered renovation project. Due to COVID-19 delays, Phase 3 (installing a north-south

bridge) is expected to be completed by spring 2021. The campus's oldest rain garden captures and uses stormwater runoff while also serving as an aesthetically pleasing landmark. Recently, the Champaign County Design and Conservation Foundation and U of I Extension received a grant from the Illinois Clean Energy Community Foundation for the RORG.

- » In spring 2020, iSEE began a small-scale composting program in the National Soybean Research Center (NSRC) with funding from the SSC. This project will implement an on-site compost tumbler to collect and sustainably dispose of food waste, coffee grounds, and shredded office paper. The next step is to construct a pollinator garden on the west side of NSRC, which will be fertilized in part by the tumbler. In addition to reducing food waste, this project will serve as an example for other units and provide an educational opportunity for students, staff, and faculty members. The goal is to expand this program across campus and provide increased opportunities for student participation. The SSC previously funded Department of Anthropology Assistant Professor Jessica Brinkworth to begin Bokashi composting and develop a carbon garden for her lab to engage and train undergraduates in carbon reduction measures.

A major Land & Water success story is the reduction in our campuswide potable (i.e., drinkable) water consumption. FY19 metrics

reported a 37% decrease in annual potable water usage from the FY08 baseline.¹⁰⁶ We plan to continue this pattern over the next five years through a combination of innovative technology and water management strategies, minimizing excess potable water consumption both indoors and outdoors — everywhere from bathroom faucets to irrigation systems. (See Objective #4.1 for additional discussion of this target.)

In addition to the potable water consumed on campus, we hope to improve the quality of water flowing downstream, away from campus. Implementing agricultural conservation practices significantly reduces nutrient loss from our landscapes and mitigates environmental consequences. The South Farms water impacts can be greatly improved by implementing best management practices (BMP) for nutrient loss reductions. This includes cover crops as well as other conservation strategies. The statewide Illinois Nutrient Loss Reduction Strategy¹⁰⁷ was developed in collaboration with staff and faculty members to reduce nutrient loss, particularly nitrate-nitrogen, and lower nitrous oxide emissions from our waterways. (See Objective #4.4.)

While we can implement local and statewide

¹⁰⁶ <https://bit.ly/2Xlnfcz>

¹⁰⁷ <https://bit.ly/304UXV0>

"More students should care about sustainability because we are a part of the youth! The Earth we have right now is the one we will always have! In order for us to flourish in our future lives and careers, the Earth needs to flourish as well. I'm most excited to see how the university will work to make their dorm buildings and dining halls more sustainable."

— Samantha Roberson '22

¹⁰⁵ <https://redoakraingarden.org/about/>

Land & Water Objectives

The following Land & Water objectives were developed by the SWATeams, iCAP Working Group, campus community, and Sustainability Council to guide the university's actions toward sustainable land and water management.

- 4.1 Reduce Water Consumption
- 4.2 Implement Resilient Landscape Strategy
 - 4.2.1 Increase Number of Trees
 - 4.2.2 Increase Pollinator-Friendly Areas
 - 4.2.3 Double Green Infrastructure Installations
- 4.3 Cover Crops on South Farms
- 4.4 Monitor Soil Health



The 321-acre Illinois Energy Farm is a living laboratory for agricultural sustainability research.

4.1 [F&S] Reduce potable water consumption to 721,500 kgal/year by FY24, which is a reduction of 45% from the FY08 baseline.

Potable water refers to water that is safe to drink, a scarce commodity in developing regions and an increasingly precious resource worldwide. On campus, we are implementing infrastructure to conserve potable water used for non-drinking purposes (e.g., sinks, faucets,

toilet fixtures, plumbing, cooling, and irrigation). In FY19, campus used 823,049 kgal of water (Figure 17).

As of FY19, we have reduced potable water consumption by 37% from the FY08 baseline (Figure 18).¹⁰⁸ To reduce consumption by another 8% by FY24, we will focus on the two largest sources of excess water usage: campus buildings and agricultural irrigation.

108 <https://bit.ly/2Xlnfcz>

Total Campus Potable Water Use (kgal)
TRACKED BY FISCAL YEAR

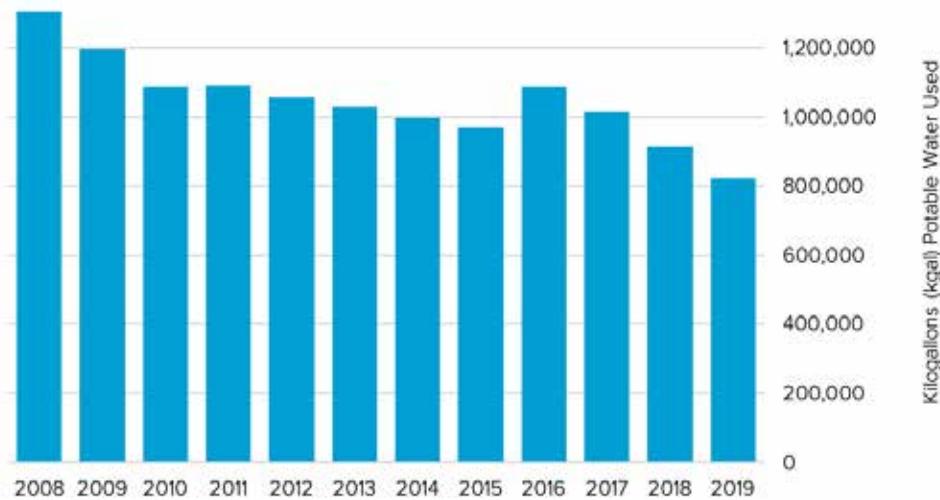


Figure 17: Total Campus Potable Water Use (kgal)

WATER CONSUMPTION IN CAMPUS BUILDINGS

Restrooms in campus facilities are a common source of water inefficiency, as many plumbing fixtures are not up-to-date with current conservation technology. Previous sustainability projects have addressed this by updating campus facilities with low-flow fixtures. As of FY19, there are approximately 1,100 lavatories that must be converted to low-flow, about 500 urinals that use one gallon per flush (GPF) rather than 0.5 GPF or 0.125 GPF, and approxi-

mately 1,100 toilets that use three or more GPF. The most efficient flush rates are as low as one GPF in newer campus facilities. Though retrofitting existing fixtures is difficult, we will continuously research water reuse techniques and require low-flow fixtures for all new construction. The Building Maintenance team at F&S is compiling an inventory of buildings that lack low-flow fixtures in restrooms; upon its completion, we will identify the buildings with the most fixtures to retrofit and seek funding to implement these improvements.

Percent Reduction in Potable Water Consumption
TRACKED BY FISCAL YEAR

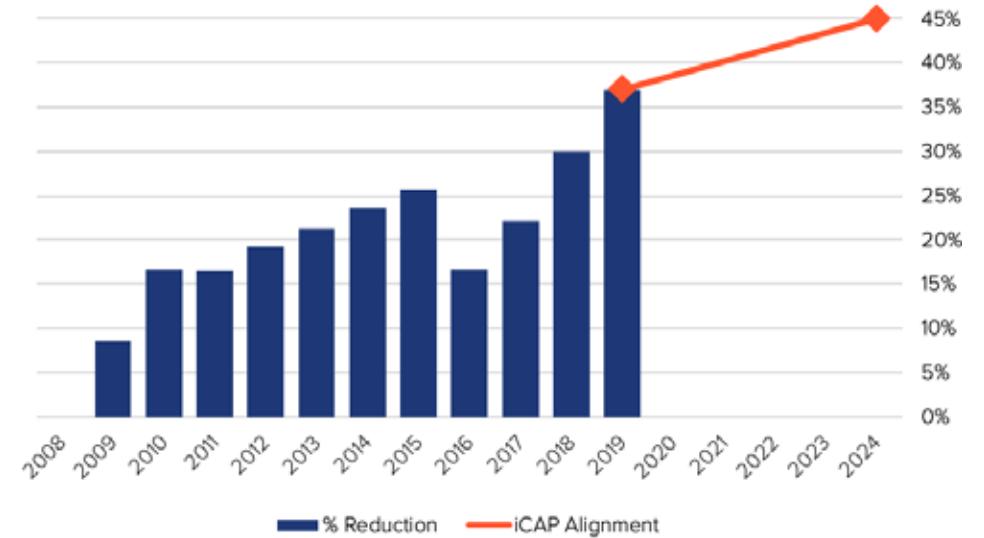


Figure 18: Percent Reduction in Potable Water Consumption

Housing has contributed greatly to water use reduction in dining facilities by transitioning to trayless dining. Simply removing trays in dining halls saves 516 gallons of water per day and 110,940 gallons annually. Their recent adoption of the Grind2Energy system will also contribute to a notable reduction in water consumption.

In research labs, it is not uncommon for equipment to use a “once-through” cooling system — as its name implies, the (often potable) water used for cooling has a brief lifespan, passing through the machines just once before being discharged as wastewater. This process is needlessly wasteful. After identifying which equipment relies on once-through cooling systems, we will explore ways that these processes can be redesigned to incorporate more sustainable practices.

In addition to upgrading our facilities, we will communicate water conservation best practices to building occupants: students, staff, faculty members, and facilities staff. Communicating water consumption will bring awareness to the rate and volume at which campus buildings consume water, and will encourage individuals to make decisions supportive of the iCAP objectives.

AGRICULTURAL WATER USAGE

Agricultural research is central to the university’s mission. Even though a small fraction of the 3,300 acres devoted to crop cultivation requires irrigation, water use volumes are staggering. For example, a 40-acre field irrigated with 10 inches of water over the course of a year will require over 10 million gallons annu-

ally. To achieve a 45% potable water use reduction, irrigated university-owned land must be transitioned from municipal water sources to reclaimed water sources or wells.

4.2 [F&S] Implement the Resilient Landscape Strategy recommendations by FY24.

Campus landscapes are our habitats: the places where we work, relax, and engage with others. Campus landscapes sustain us. They clean our air, beautify our surroundings, sequester carbon, and provide us with motivation and inspiration. Campus landscapes are as essential to our health and well-being as any brick-and-mortar infrastructure, and yet we often act as if the spaces between the buildings don’t matter. With proper design and direction, campus landscapes can become multi-functional spaces that support teaching and research, promote the well-being of our campus community, and contribute to our economic success by drawing new students and donors to our doors.

We have an obligation to steward and maintain our landscapes in sustainable ways, to reflect upon the past and envision a healthier, more resilient future. Our campus landscapes must be future-focused and able to withstand the challenges of tomorrow: climate change, large storm events, and heavy use by tens of thousands of individuals.

The Resilient Landscape Strategy is organized around five key challenges: lack of a landscape master plan, an unclear decision-making structure, lack of resilient rainwater management, an inadequately resourced Grounds Department, and inconsistent funding

for landscape improvements.

Increased visibility of greenery has positive impacts on students’ attention, stress, and mental wellness. The Resilient Landscape Strategy has already begun to address campus landscape health and its ability to motivate and sustain our community. In order for everyone to enjoy nature’s restorative qualities, the university will increase the amount and visibility of natural landscapes so that they can be enjoyed from anywhere on campus. For example: efforts to integrate greenery and natural lighting into existing space could result in construction of an indoor “sunroom,” which would serve as a positive environment for studying, working, reflecting, and hosting mental health workshops. As we add more indoor green rooms on campus, an online inventory of these locations will be made publicly available.

Additionally, identifying a walking path with plants on north and central campus would provide opportunities to self-tour and learn about native species.

LANDSCAPE MASTER PLAN

While the 2017 Campus Master Plan provides an overall vision for a sustainable campus, the plan prioritizes buildings over landscapes. There is no cohesive vision for resilient campus landscapes and limited guidelines for ensuring landscapes’ long-term success. F&S is developing a Landscape Master Plan including a shared vision for the overall campus landscape and specific design guidelines. This will

¹⁰⁹ See page 13 of the Resilient Landscape Strategy, <https://bit.ly/3fiuXdk>

include establishing a steering committee, hiring an external landscape architecture firm, and initiating extensive public and stakeholder engagement. The Landscape Master Plan is scheduled to be completed by fall 2021.

DECISION-MAKING STRUCTURE

The University Landscape Architect’s (ULA) authority over campus landscapes is compromised by an unclear reporting structure and an uninformed appeals process. This often leads to disjointed designs and unsustainable development. F&S is working to establish a Campus Landscapes department, clarify the ULA’s role, and provide appropriate resources for informed decision-making.

In addition, there must be a landscape design appeals process outside of the standard capital programs variance process. Landscape and site projects that the ULA determines do not align with the Landscape Master Plan must adhere to this process to win approval. The landscape design appeals committee will include faculty members, students, administrative staff, and representation from the Native American community in keeping with the campus commitment to collaborate with Native Nations.¹⁰⁹

RAINWATER MANAGEMENT PLAN

Campus rainwater management conditions and standards are out of date, leading to flooding and creating opportunities for pollutants to contaminate local waterways. Rainwater is whisked away instead of being protected and used as a resource.



The October 2019 Campus Sustainability Week featured a student-led Quad Tree Walk, which spread awareness of our trees' diversity and value.

To remedy this, we will require best management practices for rainwater in core campus and agricultural areas and adhere to a comprehensive rainwater management plan.

We will also increase opportunities for education and engagement for Grounds employees, the Illinois community, and students. We will initiate a recurring student competition for resilient landscape designs and fund implementation of winning submissions.

RESOURCES FOR F&S GROUNDS DEPARTMENT

Campus landscapes and open spaces have

been marginalized and simplified, leading to an overall loss of aesthetic value. Staff levels, equipment, and facilities are insufficient to maintain a high degree of resiliency. To improve our landscapes' aesthetic and environmental functionality, we must increase the F&S Grounds staffing complement, including additional Grounds workers; reinstate the Grounds Gardener, Horticulturist, and Tree Assistant positions; and hire an ecologist. We must also train Grounds employees, both at F&S and for all units with Grounds staff, and provide units with appropriate equipment and facilities.

FUNDING FOR LANDSCAPE IMPROVEMENTS

While campus landscape improvements are frequently funded as part of capital building projects, site improvements are often the first to be cut when budgets are tight. We need a way to protect capital project funding for landscape improvements and ensure adequate funding beyond capital projects. Currently, little direct funding and donor support is expressly allocated to landscape improvements. We intend to earmark capital project funding for landscapes, develop a rainwater management fee, secure annual funding for landscape improvements, and prioritize efforts to seek donor funding.

4.2.1 [F&S] Increase the number of trees on campus by 1,500 by FY24 and by 3,000 by FY30.

Campus has 16,493 trees as calculated by our online Tree Campus inventory.¹¹⁰ We aim to increase this number by FY24, planting 1,500 trees in the next five years and another 1,500 by FY30. Additional trees will not only boost aesthetic appeal, but will aid in greenhouse gas sequestration, water management, and financial savings. We also work to maintain the 10-20-30 diversity rule: urban forests should have no more than 10% of any single species, 20% of any single genus, and 30% of any single family. The Morton Arboretum has championed a further reduction to 5:10:15. In the 2019 Campus Tree Care Plan,¹¹¹ inventory analysis showed that the university's tree diver-

¹¹⁰ Statistics collected on June 24, 2020.

¹¹¹ <https://bit.ly/CampusTreeCarePlan>

sity is 8.1:14:19.6. Thus, we currently meet the 10:20:30 rule, and we are committed to the stronger 5:10:15 goal. As of 2019, 187 species, 74 genera, and 38 families are represented on the Illinois campus.

A critical step to increasing trees' abundance and visibility is maintaining annual Tree Campus USA recertification. In addition to anchoring the logistical and financial framework needed to foster a tree-friendly environment, the program's five standards provide a pathway toward increased visibility and public awareness of our arboreal assets. The standards also include key goals for improving our urban forest, such as "[initiating] a service learning project to calculate the tree canopy coverage."

An Adopt-a-Pathway program currently exists but has not been strongly promoted. In the coming five years, we aim to relaunch the program to encourage individuals to spend more time outdoors and enjoy the natural environment. University departments, clubs, and organizations will have the opportunity to "adopt" sections of campus walking paths and take on the responsibilities of litter removal, plant watering and weeding, and maintaining overall aesthetic appeal.

4.2.2 [F&S] Increase the number of ground-level pollinator-friendly landscaping areas on campus by 50% from the FY19 baseline by April 2024.

As of FY19, campus supports 26 ground-level pollinator-friendly landscaping areas. These

are documented on the Pollinator Supportive Landscape Map,¹¹² which is updated each spring prior to Earth Month celebrations.¹¹³ By April 2024, we plan to increase this number by 50%, resulting in at least 39 ground-level pollinator-supportive areas. Green roofs on campus buildings support pollinators as well.

MAINTAIN BEE CAMPUS USA STATUS

By maintaining Bee Campus USA status, we will foster a pollinator-friendly environment (which is not exclusive to bees). These efforts will also support sustainable food production, native plant propagation, awareness of pollinator-friendly best practices, and viable habitat creation for creatures dependent on pollinators for survival — including humans!

ENHANCING LOW-MOW ZONES

In 2010, F&S established low-mow zones¹¹⁴ to support pollinators and decrease maintenance costs. Cutting low-mow zones intermittently lessens seed production from weeds and non-native plants, an essential process for preserving native perennial biodiversity and minimizing invasive species. Currently, we have 81.8 acres of low-mow land and 5.7 acres of prairie plantings on university property. We intend to convert a portion of the low-mow acreage into prairie or meadow with a focus on pollinator

support and native plantings.

STUDENT INVOLVEMENT

Student participation is necessary to increase pollinator-friendly areas on campus. In addition to the students involved with Bee Campus USA, there are several Registered Student Organizations (RSO) dedicated to this effort.

Red Bison is one RSO that works on ecosystem restoration projects. They currently help manage two active restoration sites on campus: the Florida and Orchard Prairie,¹¹⁵ which is a 2.8-acre tallgrass prairie, and the South Arboretum Woods (SAW), which is becoming a mixture of prairie, oak savanna, and oak-hickory woodland. Pollinators, especially migrating monarchs, frequent these sites.

Additionally, From the Ground Up is an RSO that focuses on student-led sustainability projects. In fall 2019, From the Ground Up received approval to work on 3.9 acres of a previously designated low-mow zone near Orchard Downs Housing Facility. The RSO plans to transform this plot into a pollinator-friendly native Illinois flower garden. From the Ground Up also started the Foreign Languages Building Garden Renovation Project in early 2020 with support from the Student Sustainability Committee to plant native wildflowers, pollinator-supportive plants, and possibly bird and bee habitats. This group raises awareness of modern threats to pollinator populations and has recently added an education

component to their mission. Members will teach lessons and facilitate conversations about sustainability and landscape health in Champaign and Urbana public schools.

4.2.3. [F&S] Double the number of on-campus green infrastructure installations from 24 to 48 by FY24.

Green infrastructure refers to “stormwater management practices that protect, restore, or mimic the natural water cycle.”¹¹⁶ These are biologically based treatment areas that clean stormwater and reduce erosion caused by runoff. Campus currently has 24 green infrastructure installations including permeable pavement, green roofs, rain barrels, and bioswales (vegetation-filled trenches for runoff capture and filtration).

In addition to maintaining our current projects’ quality, we aim to double campus green infrastructure areas by FY24. Ideally, new installations will be evenly distributed to double all existing efforts. Below are examples of how we will supplement existing installations.

GREEN ROOFS

Campus currently has nine green roofs on buildings including Krannert Center for the Performing Arts, the Business Instructional Facility, and the Art and Design Building. Green roofs are valuable for reducing runoff and lessening heat’s impact on heating, ventilation, and air-conditioning (HVAC) systems. We could augment these benefits by planting pollinator-supportive native landscapes on green roofs.

Additionally, future buildings and major remodels (e.g., renovations to Illinois Street Residence Hall) will be undertaken with the potential for green roofs in mind.

CISTERNS AND RAIN BARRELS

Many residential properties in our community use rain barrels for rainwater management. Rain barrels act as green infrastructure by seamlessly integrating natural rainfall into small-scale irrigation sites. At the larger scale, campus can increase the use of underground cisterns to collect rainwater which could potentially be used for campus irrigation systems. Increasing the use of rain barrels and cisterns in university-owned spaces (and subsequently phasing out sprinklers) will bolster our water conservation efforts. These systems capture rainwater for reuse, thus reducing the volume of runoff and associated pollution that often follow heavy rain. This will shrink the volume of potable water unnecessarily dispensed for irrigation, allowing for that valuable resource to be conserved.

Smaller-scale rain barrels can be installed at pollinator pockets on campus. Currently, this is being implemented at the Idea Garden and in conjunction with the pollinator gardens near Davenport Hall.

4.3 [ACES] Use cover crops in at least 20% of South Farms acreage by FY24.

South Farms is located south of the Florida Avenue campus border, encompassing approx-

112 <https://bit.ly/PollinatorPocketMap>

113 An interactive version is available through Google Maps: <https://bit.ly/2BH9spo>

114 https://bit.ly/iCAP_LowMow

115 <https://bit.ly/3357oIU>

116 National Green Infrastructure Certification Program (NGICP), <https://bit.ly/2P5Q6go>

imately 3,343 acres operated by departments in the College of ACES. Crop Sciences (which includes the 321-acre Energy Farm) and Animal Sciences are responsible for the largest land areas (roughly 50% and 45% respectively), while the remainder is allocated to Agricultural & Biological Engineering (ABE), the College of Veterinary Medicine, aquaculture research, and forestry.

This large land parcel should be cultivated as efficiently as possible with respect to the environment, the economy, and scientific research. A proven avenue for advancing these goals is planting cover crops, quick-to-cultivate plants (e.g., rye) that reduce soil erosion and add nutrients back into the soil. Currently, all South Farms cover crop use is in service of research projects, totaling less than 20 acres. Moving forward, we plan to increase this total to approximately 668 acres by planting cover crops on 20% of the South Farms. This target represents an ambitious yet achievable goal, balancing the capabilities of South Farms personnel with the benefits of university support. All ACES departments will be encouraged to participate.

This initiative goes hand in hand with ongoing ACES efforts to incorporate agricultural conservation practices (e.g., soil erosion monitoring) on university-operated farmland. In 2018, the Agriculture, Land Use, Food, and Sequestration (ALUFS) SWATeam submitted a recommendation to the iCAP Working Group (iWG) stating that a comprehensive, cooperative management plan for all non-research agricultural land on the

South Farms should be developed to promote sustainable practices and implement best management practices. Efforts to develop this plan will continue over the next five years.

One of the most significant considerations for this objective is obtaining and maintaining the necessary equipment. Several methods can be used to plant cover crops, all of which require either refurbishing old equipment (e.g., grain drills owned by Crop Sciences and Animal Sciences) or buying new equipment. For example, should campus pursue interseeding, a method implemented in late summer wherein cover crops are seeded while primary crops are in mid-growth, we would likely invest in a high-clearance sprayer (i.e., a piece of machinery used for fertilizer and other nutrient application) retrofitted with an air seeder to distribute seeds in tandem with the sprayer.

To best serve our scientists and research faculty members, cover crop use should be coordinated with soil and water health tracking and monitoring.

4.4 [ACES] Monitor soil health by collecting soil analyses for all South Farms land parcels by FY24.

As we take steps like planting cover crops to improve farm sustainability and resiliency, we must take an adaptive approach to soil quality monitoring. This ensures that we are making informed decisions and implementing productive solutions.

As is the case for many iCAP objectives, data analysis begins with data collection. Our key metric is the number of land parcels for which we

are able to obtain soil measurements. Two options for achieving this objective are outlined here:

COLLECT SOIL SAMPLES USING LABCORE

Many university researchers take soil samples from the South Farms on a regular basis. Therefore, the most efficient method for compiling soil data into LabCore — a farm data collection, archiving, and geographic information system (GIS) platform — involves soliciting information from these individuals. If scientists are able to provide georeferenced points for their sample sites, that information can be used to

create comprehensive maps to augment standard USDA Soil Survey data. This also allows the tracking of organic matter in the soil, which is pivotal to carbon sequestration. In addition to providing a real-time aerial overview of soil health across the South Farms, implementing a GIS platform allows geographical tracking of activities that might influence soil health. Over time, novel correlations can be developed to link soil health with carbon reductions.

Equally important to collecting soil samples is creating a publicly accessible information hub where scientists can both contribute and retrieve free, non-proprietary data. Ideally,



In the coming years, we intend to secure annual funding for landscape improvement projects.

a benefit of using LabCore is an expedited process and minimized need for arduous field research to manually obtain soil samples.

TILE DRAINAGE WITH SOIL ANALYTICS CAPABILITIES

A second method for collecting soil health data and conducting subsequent analyses is installing a tile drainage system with a soil analytics component.

Certain Energy Farm plots currently possess such tile systems, which monitor nitrate loss and collect aggregated soil nutrient information. We propose to replicate some of these strategies at diverse South Farms locations (e.g., distributed in conventionally tilled or no-till fields; with or without cover crops; annual or perennial crops, etc.) to compare nutrient loss based on management style. The tiles would be located on the edges of their respective farms, so that nutrient loss out of South Farms boundaries (and into critical waterways)

can be closely monitored. This approach aligns with previous iCAP goals and facilitates quantification of land management changes and the impact of changing rainfall patterns over time.

The strategies implemented to achieve this objective will build a strong foundation for the campus's Nutrient Loss Reduction Strategy, our long-term plan to optimize nutrients regularly applied to crops in order to prevent chemical runoff into U.S. waterways. The interconnectivity of statewide, national, and global land and water systems is proof that public, private, and university-operated agricultural units must act as one to address widespread soil and water health concerns.

As a leader in the development of novel agricultural management and technological approaches, the university is poised to provide a "pilot program" in our nutrient loss reduction efforts and provide a model for sustainable land management that other academic and agricultural communities can apply to their own practices.

Conclusion

Humanity is intimately linked to the land and water that surround us. We are each affected by our access to these resources on a daily basis — strolling through the Main Quad on a sunny day, propping an umbrella open on a rainy walk to class, or sipping water from a drinking fountain. The most effective step toward enacting big-picture land and water management strategies is connecting with individuals on scales as small as the actions listed above, and nurturing curiosity about how land and water factor into the everyday.

As a land-grant university, the Urbana campus is situated on more than 5,000 contiguous acres. While we are fortunate to occupy this

expansive space, we must keep in mind that the land and water we possess is finite.

The university's size and wealth of resources pose unique challenges. For example, given the threat of climate change, assessing flood risks in the campus and community will be prioritized (see the Resilience chapter for further discussion). Challenges also afford exciting opportunities to enact progressive environmental change on both individual and institutional scales. This is a great responsibility, and one we do not take lightly. Through innovative infrastructure, adaptive strategy implementation, and data-driven land use practices, we will strive to become a pillar of ethical land and water management in the coming decades.



We will strive to become a pillar of ethical land and water management in the coming decades.



5.

ZERO WASTE

NO DAMAGE
NO TRACE



The Zero Waste International Alliance (ZWIA) defines “zero waste” as “the conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health.”¹¹⁷

In other words, the goods and services we purchase — and how we interact with them — influences everything from the size of landfills to the release of harmful greenhouse gases (GHG). By investigating a resource’s life cycle (i.e., a “whole system” approach), we can minimize energy usage across all stages, from raw material extraction to transportation to waste disposal.

The university’s first significant step toward reducing landfill waste emissions occurred in 2009. We began sending landfill waste to a site in Danville, Ill., that recovers methane emissions

for electricity generation. The campus had previously sent landfill waste to a non-recovering site in Clinton, Ill. According to the standard GHG calculator, SIMAP,¹¹⁸ this change resulted in a 101% emissions decline from FY08 to FY09. In 2015, Karin Hodgkin Jones, former student member on the Purchasing, Waste, and Recycling (PWR) SWATeam and current lecturer in the School of Art + Design, investigated university landfill emissions using public data from the Environmental Protection Agency. With her data, the GHG emissions from landfill waste were re-

calculated to show 2,314 tons in FY08 and 510 tons in FY14.¹¹⁹ Using this data, we recently modified the carbon footprint to be more accurate; emissions from solid waste were approximately 475 MTCO₂e in FY19.

Notable achievements in zero waste from 2015 to 2019 include:

- » In July 2017, the Purchasing Office began reporting directly to the chancellor instead of the University of Illinois System Office, better equipping the Urbana campus to execute targeted improvements.
- » In FY19, Facilities and Services (F&S) set in motion a phased modernization and upgrade program geared toward meeting campus’s zero waste goal. Projects included: installing 162 standardized indoor recycling stations to increase collection; improving collection routes to build recycling capacity; installing on-truck scales for effective tracking; and providing tours and educational sessions at the Waste Transfer Station to increase engagement. Additionally, in summer 2020, \$310,000 was approved to replace 382 outdoor trash receptacles with 130 strategically placed dual trash and recycling bins.
- » Employing dedicated staff members is critical to ensuring that university waste management policies receive the expert attention they deserve. In 2020, F&S initiated a search to hire a permanent full-time Zero Waste

Coordinator. The key responsibility for this position is transitioning campus to a zero-waste community with an emphasis on operations.

- » University Housing has prioritized food waste reduction with particular success in campus dining halls. Food scraps comprise 17.5%¹²⁰ of landfilled municipal solid waste (MSW) in the state of Illinois, a larger percentage than any other MSW. Because of this, managing food waste in other campus units remains critical.
- » The Department of Food Science & Human Nutrition, the Department of Crop Sciences, and University Housing collaborate on the Illinois Sustainable Food Project (ISFP) which began in 2013. This initiative provides processing of fruits, vegetables, and grains for campus dining halls and units (e.g., Bevier Café) and offers student learning and research opportunities while reducing the amount of food sent to the landfill. For example: excess or visually unappealing tomatoes are processed into sauces; grain left over from the wheat breeding program is milled into flour for baked goods; hot peppers are used for hot and wing sauces; and leafy greens or apple cider are frozen for year-round use. The ISFP allows for larger production of certain items by providing value-added or preservation functions for goods. Through this program, students receive opportunities to learn about

¹¹⁷ Updated December 2018, <http://zwia.org/zero-waste-definition/>

¹¹⁸ <https://unhsimap.org/home>

¹¹⁹ <https://bit.ly/3hT68GQ>

¹²⁰ <https://bit.ly/3oX125n>

Percent Recycled-Content Paper Purchased from OfficeMax

TRACKED BY FISCAL YEAR



Figure 19: Percent Recycled-Content Paper Purchased from OfficeMax

sustainability, food production, and recipe development using local items in classes, student groups, or internships. In 2019, over 100,000 pounds of products from various campus sources were processed.

- » The Sustainable Student Farm (SSF) began in 2009 as a joint project between the Student Sustainability Committee (SSC) and the Department of Crop Sciences with support from University Housing. Their goal is to educate students about the health, economic, and environmental benefits of local food production while providing high-quality, great-tasting produce. The SSF has operated a farm stand on the Main Quad since 2011, opening an online store in 2020 for the community's safety and convenience. By cultivating and selling fresh, minimally packaged fruits and vegetables for on-

campus consumption, the SSF models low-emission, low-waste local food.

- » In April 2020, the SSC approved funding for the university to become a member school of the Post-Landfill Action Network (PLAN). In addition to providing a network with resources to assist in our zero-waste efforts, the PLAN offered a summer 2020 student fellowship opportunity designed to help with benchmarking our waste goals and collaborating with stakeholders to identify how we can improve our waste diversion efforts beyond behavior change campaigns.

Purchasing and procurement standards remain a major challenge at the university, as policies are not always well-known, used, or enforced. As of FY17, campus reported purchasing 19.13% recycled-content paper from OfficeMax as compared with the 2015 target of 50%

Municipal Solid Waste (MSW) Diversion Rate

TRACKED BY FISCAL YEAR

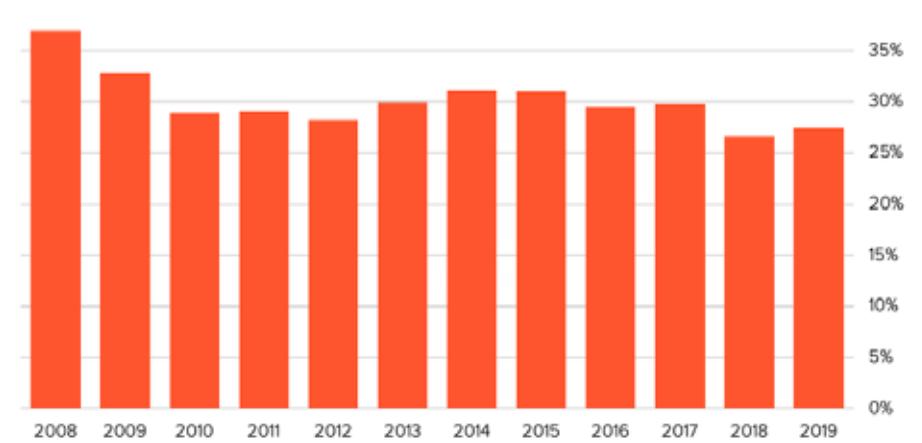


Figure 20: Municipal Solid Waste (MSW) Diversion Rate

by FY20¹²¹ (Figure 19). iCAP 2020 includes objectives to not only implement a transparent procurement reporting program, but also to address the issue at its source by holding high-level business officers accountable for making environmentally conscious purchasing choices.

The 2015 iCAP also set the ambitious goal to increase our municipal solid waste (MSW) diversion rate (i.e., the percentage of everyday garbage kept out of landfills each year) to 45% by FY20. This metric was measured at 27.40% as of FY19 (Figure 20). However, using diversion rate as a key performance indicator complicates tracking true change in landfilled waste due to fluctuations in total waste volume. For example, imagine that campus has dramatically reduced the amount of paper consumption from

printing. This reduces both the total waste volume and the recycled waste volume, resulting in a reduced diversion rate. To avoid this flaw, we are now focusing on the core objective of reducing the total volume of landfilled waste rather than tracking the diversion rate alone.

A comprehensive behavioral shift for students, staff, faculty members, and visitors is integral to mitigating our waste stream. Our vision is to promote a zero-waste campus culture by empowering individuals and units to take responsibility for everything from purchasing to waste reduction. Actionable steps like providing education about “reduce, reuse, and recycle” concepts, clearly communicating best practices, and investing in our facilities (e.g., indoor and outdoor recycling bins) are vital to this process.

¹²¹ <https://bit.ly/3gftGoB>

- 5.1 Sustainable Procurement Reports
- 5.2 Reduce Landfilled Waste
 - 5.2.1 Install Appropriate Infrastructure
- 5.3 Establish a Culture of Reuse
 - 5.3.1 Zero Waste Messaging Campaign
- 5.4 Reduce Food Scraps
- 5.5 Plan for Organic Waste
- 5.6 Use Local Food
 - 5.6.1 Food Literacy Project
- 5.7 Green Cleaning Program

Zero Waste Objectives

The following Zero Waste objectives were developed by the SWATeams, iCAP Working Group, campus community, and Sustainability Council to guide the university's actions toward achieving zero waste and fostering a conscientious consumer culture.



The University of Illinois Urbana-Champaign recycles cardboard collected in specific Dumpsters throughout campus. Recyclables are manually sorted at the Waste Transfer Station.

5.1 [Purchasing] Create sustainable procurement reporting guidelines and increase compliance to 100% of business managers through training and outreach by FY24.

“Procurement” refers to locating and obtaining goods and services from an outside vendor — everything from food products, to printer paper, to public computers in university labs. Procurement is one of the earliest life cycle stages over which we have direct control, and the sources we select for campus purchasing are some of our most powerful sustainability “votes.”

People will usually opt for sustainable sourcing when given the opportunity. However, a core procurement issue at a university of this size is the lack of coordinated communication within the network of professionals making buying decisions. Drafting an annual report to be completed by business managers ensures that information about sustainable procurement is compiled, disseminated, and distributed to those who have the power to cast the most environmentally conscious vote.

SUSTAINABLE PROCUREMENT REPORTING PROGRAM

Working closely with the Business Managers Group, we aim to implement a sustainable procurement reporting program by FY23. By FY24, we plan for all campus business managers to participate. Annual reports will include metrics such as the percentage of environmentally preferred purchases of products like office paper, cleaning products, computers, electronics,

and package delivery services; the percentage of purchases made through iBuy;¹²² and the number of vendor contracts with sustainability requirements.

iBUY

Because all purchasing through iBuy occurs online, increasing the percentage of purchases made through this marketplace will elevate our campus's overall sustainability by decreasing the waste stream typically generated from purchasing.

Purchase Orders (PO) through Banner have historically been printed and mailed to vendors, which generates large quantities of waste from paper, toner, postage, and delivery. From FY17 to FY19, the average annual POs in Banner exceeded 7,500; a conservative estimate of 10 pages per PO calculates over 75,000 sheets of paper used per year. Using iBuy can conserve waste, cut costs, and minimize emissions.

Recently, the Purchasing Office has made focused efforts to shift purchases from Banner to iBuy, with over 2,700 POs completed in iBuy from FY17 to FY19. Functional updates will enable a higher volume of POs to be routed through iBuy in the future. These include:

- » The addition of Contracts Plus. Historically, Banner was the only channel for submitting purchase orders tied to a solicitation or contract. Adding Contracts Plus enables these purchases to be made through iBuy, eventually replacing the Illinois Contract System (ICS) and consolidating contracted

and solicited orders.

- » The ability to process Standing Purchase Orders. Standing POs allow units to order qualifying items on an as-needed basis (e.g., frequently replenished lab supplies). Although iBuy is not yet capable of processing Standing POs, this feature is expected by FY21. In FY19, more than 3,000 Standing POs were processed in Banner. While not all of these will immediately transition to iBuy, a substantial reduction is expected by FY21.
- » The America To Go (ATG) punch out catalog. Punch out catalogs allow buyers to directly access supplier catalogs from within the purchasing platform. Currently, the university spends approximately \$10M per year on restaurant and catering orders from Banner, iBuy, Purchasing Cards (P-Cards), and Travel Cards (T-Cards). The majority of these purchases are from Banner and T-Cards. By streamlining access to ATG (which provides a curated network of restaurant and catering vendors), we can reduce the volume of orders processed through Banner and digitize our ordering practices.

CAMPUS CONTRACTS

Every campus department is involved in procurement; numerous professional positions require thoughtful vendor interactions to negotiate everything from day-to-day office supply purchases to expensive orders including elec-

tronics and catering. Though each department has different requirements, all can incorporate sustainability into their purchasing choices. In addition to a sustainable procurement reporting program, we will advocate to integrate sustainability literacy components into relevant contracts and job descriptions.

The purpose of the reporting program outlined in this objective is to integrate green purchasing into all facets of campus. The reporting itself is a necessary step; the ultimate goal is to foster a culture of environmentally conscious decision-makers. Only through coordinated communication and diligent reporting can we hope to tackle this problem as a campus.

5.2 [F&S] Reduce the total campus waste going to landfills from 5,049 tons in FY19 to 4,544 tons or less in FY24, which is a decrease of at least 10%.

In FY19, the university (including the South Farms) generated 5,049 tons of waste — the combined weight of 1,000 *Alma Mater* statues. With an improved waste collection infrastructure, we plan to cut this amount by 10%, to 4,544 tons per year, by FY24.

Our strategy for this objective is contingent upon determining the largest campus waste-producers and targeting our reduction efforts to those locations. With data from waste collection trucks, we can identify the top five waste-producing buildings and provide “reduce, reuse, and recycle” training to their units.

To incentivize waste reduction, we will explore options for buildings, businesses, com-

122 <https://www.obfs.uillinois.edu/iBuy>

mercial areas, and organizations to compete to produce the least total amount of waste. This objective will also be communicated in the dining halls to encourage consciousness of minimizing food waste.

Additional work will be done to eliminate single-use containers from the dining halls and disposable items (e.g., plastic bags and straws) from campus. Bevier Café currently has a system of reusable containers which allows students to take a to-go container with their food and return it at their next visit. In addition to minimizing waste generated by buildings and their units, we plan to explore innovative, research-based solutions that take advantage of the university's network of expert investigators and its ability to function as a "living lab."

5.2.1 [F&S] Install appropriate waste collection infrastructure throughout the University District, with new indoor bins placed in at least 150 buildings by FY24.

One of the clearest indicators of a unified waste collection infrastructure is the appearance of our indoor and outdoor bins. In addition to performing a vital function, our waste and recycling receptacles embody the time, attention, and resources devoted to campus sustainability.

By renovating and improving our bins' presentation, we can ensure that we are capitalizing on every available opportunity to recycle and that waste that must be disposed of is handled correctly. This will also provide a visible signal to students, staff, faculty members, and visitors that our campus prioritizes sustainability and

is committed to making zero-waste behaviors accessible to all.

To operationalize a formally designed, campuswide waste collection plan, we will develop a Facilities Standard for indoor and outdoor waste management containers.

INDOOR BINS

Our plan to place new indoor bins in at least 150 campus buildings by FY24 will ideally be completed as soon as possible. We will begin with an inventory of existing bins to capture current bin locations, bin quality status, and where additional bins are needed. Based on that data, we will evaluate funding solutions for completing this plan by the target year, focusing on installations for new and retrofitted buildings.

In addition to standard areas (e.g., academic buildings and highly trafficked hubs like the Illini Union), we want to provide waste diversion opportunities in less-trafficked locations like mail rooms, copy rooms, break rooms, and department kitchens.

OUTDOOR BINS

Outdoor bins require high levels of coordination to install. Our anticipated timeline for renovating and updating these bins is outlined below:

- » By FY22, we will complete updates to existing outdoor bins, including labeling and signage improvements.
- » By FY24, we will finalize optimizing bin locations and their collection process.
- » By FY25, we will incorporate drop-off bins specifically for cardboard and

disseminate a list of campus locations.

TAILGATES

Tailgates pose a unique challenge for waste collection. The high volume of individuals, reliance on disposable materials (e.g., single-use food service items), and lack of adequate receptacles over acres of space result in large quantities of landfill waste.

As large gatherings are reconfigured to resume safely, we plan to transition these events to operate more sustainably as well. We propose that blue recycling bags be distributed at all tailgating parties so tailgaters can separate aluminum, cardboard, and plastics from general waste — individually, efficiently, and on-site. Individuals will deposit the blue bags alongside the usual receptacles for the F&S recycling truck to pick up after the event.

SPECIAL RECYCLABLES

In addition to commonly recycled items such as paper, plastic, and cardboard, we want to provide our community with easy-to-understand programs to recycle specialized materials like non-rechargeable batteries, glass, electronics, and industrial waste produced on campus (e.g., vehicle batteries, scrap metal, wires, concrete, and tires). Overwhelmingly, we've found that individuals are willing to take steps to recycle items responsibly when they are presented with the resources to do so.

The Illini Union Bookstore began a plastic bag recycling program in 2019 through its vendor. The store posted signage encouraging patrons to bring their own bags to divert this plastic from the waste stream. Expanding this

“Composting is the perfect solution: it helps the environment in terms of carbon sequestration, aiding reforestation, enhancing water retention in soils, and more, while it is also cost friendly and promotes higher agricultural yields.”

— Emily Dickett '23

program by adding other collection points on campus will help educate our community and reduce plastic waste. Once it is safe to resume use of reusable shopping bags, we plan to investigate plastic bag fees for other on-campus vendors to dissuade customers from using single-use bags.

Additionally, while glass is not an accepted material in our campuswide recycling program, it is collected from catering operations and periodically hauled to a local vendor for recycling.

5.3 [F&S w/Provost Office] Establish a culture of reuse, with two major campuswide zero-waste events using durable goods and composting in FY22, four in FY23, six in FY24, and eight in FY25.

Objective #5.1 focused on purchasing, the origin of the university's waste stream; Objective #5.2 guarantees that any waste we generate can be disposed of using appropriately labeled bins. Building on these strong foundations, Objective #5.3 ensures that items used on campus — particularly at large events — are durable, repairable, and reusable, and that they contribute to our university-wide culture of reuse.

ZERO-WASTE EVENTS

Because of their high-profile nature, university-sponsored events provide the perfect opportunity to cultivate a campuswide culture of reuse. While remaining cognizant of current and future safety concerns like the COVID-19 pandemic that may alter event formats, we have developed strategies for facilitating university

gatherings that are mindful of sustainability concerns.

Student welcome events and Grange Grove tailgates alike are charged with camaraderie and excitement; however, they generate garbage bins full of disposable bottles, single-use plastics, and uneaten food scraps. It is the university's responsibility to ensure that these events (particularly those hosted by the Office of the Chancellor and/or Office of the Provost) are as sustainable as possible. To guide event planners toward environmentally conscious best practices, F&S will draft a guide for hosting zero-waste events.

Catered events are especially prone to waste production, as purchasers often opt for single-use utensils, plates, and serving implements for financial reasons or out of convenience. In response, we will establish incentives and pricing structures to encourage using durable materials for campus events involving food.

We also aim to address events that include tabling, distributing marketing materials, and hosting giveaways. A prime example is Quad Day. This event is quintessential college: the Main Quad filled with music, pathways lined with canvas tents, throngs of students eager to engage with Registered Student Organizations (RSO). While academic and extracurricular tabling events cultivate community, they generate waste from discarded pamphlets, fliers, packaging, and branded items with short life cycles. To reduce disposables associated with these activities and provide sustainable alternatives, we will develop a zero-waste swag document to be referenced by offices, departments, and RSOs.

Our initial goal is that two events practice zero waste by FY22. In light of adjustments made as a result of COVID-19, we hope to generate momentum and encourage widespread adoption of these practices. Starting small allows us to achieve gradual footholds and continue making progress each year.

From athletics to commencement, university events are prestigious traditions. Introducing zero-waste practices to these occasions will allow us to lead by example and encourage all who attend to adopt sustainable habits.

EXCESS ITEMS

Central to our zero-waste philosophy is interdepartmental collaboration. In an effort to encourage reusing items as opposed to buying new, we will ensure that unneeded items (office supplies, electronics, furniture, etc.) are made internally available to university units. To do this, we will establish an intra-campus communication system allowing departments to post, claim, and exchange items. In the event that an item cannot be reused internally, we will seek opportunities to make it available to external recipients (e.g., local nonprofits and state agencies).

All of the above will incorporate feedback from the Surplus Warehouse¹²³ housed under the Office of Business and Financial Services (OBFS) to ensure that transactions are completed through established procedures and are permitted by relevant policies.

INDIVIDUAL CULTURE OF REUSE

In tandem with event policy revisions and

reuse of Surplus items, it is crucial to establish a culture that encourages individuals to take actionable steps. The practices we implement as a campus will make it easier and more intuitive for individuals to make zero-waste choices of their own. For example: by installing refill spouts on drinking fountains, we hope to encourage students, staff, and faculty members to carry reusable rather than single-use water bottles.

5.3.1 [F&S] Develop a comprehensive Zero Waste messaging campaign by FY21 and achieve a cumulative total of 10,000 "Use the Bin" pledges by FY24.

Individual behavioral change is integral to a successful zero-waste program. Therefore, we plan to launch a Zero Waste messaging campaign to ensure that students, staff, and faculty members are aware of and enthusiastic about zero waste. Outreach may include digital channels (e.g., web pages and social media), competitions and contests (e.g., creating art from recyclable materials), reuse workshops, and events coordinated with global and national initiatives like the Earth Day Network and America Recycles Day. As discussed in Objective #5.3, we can also incorporate zero-waste elements into high-profile campus events like Illinois sports (e.g., an annual zero-waste football game).

One theme we will communicate through digital channels is the importance of recycling on the Urbana campus. The improved labeling system will help educate the public on the

123 <https://bit.ly/314mfu5>

nuances of what can and can't be recycled. Additionally, many opportunities exist for waste diversion of personal items including electronics, cell phones, textiles, household goods, appliances, furniture, and other items students bring to campus that are often abandoned and fed into the waste stream. A recycling-focused information campaign might draw particular attention to the Waste Transfer Station, one of our campus's recycling facilities.

Efforts to recycle can be impeded by public health crises like the COVID-19 pandemic; we will navigate these challenges with a focus on equipping individuals to stay informed and do their part.

FIRST-YEAR STUDENT ENGAGEMENT

To ensure that our message hits home with students, we will communicate best practices for zero waste when it counts: at the beginning of their Illinois careers. For example, distributing information about campus recycling during first-semester courses and first-year orientation events can help instill zero-waste practices into students' daily lives.

ETHICS TRAINING

Our zero waste initiatives should directly engage staff and faculty members as well as students. A current project that originated from a SWATeam recommendation is the effort to incorporate zero-waste elements into the annual ethics training, which is approved by the Office of the Executive Inspector General and

taken by all University of Illinois System employees. This training will provide an iCAP overview as well as departmental guidance on zero-waste protocol, specifically regarding recycling. In its first year (2020), it will be presented as an optional module that individuals can visit following the mandatory ethics training. The module will then be re-evaluated to potentially become a mandatory inclusion in the ethics training. The video and survey will be available year-round on the iSEE website and may be shown in various capacities such as intro-level courses, office trainings, or for anyone who wishes to brush up on campus sustainability best practices. Additionally, the training can be expanded in the coming years to highlight other relevant topics (e.g., energy efficiency) and reach wider audiences.

CAMPUSWIDE OUTREACH

One way to strengthen the campus's collective approach to zero waste is through developing a program in which student coordinators collaborate with departmental contacts to increase sustainable practices, with an emphasis on waste reduction. We plan to work with Resident Advisors of campus residence halls to communicate these initiatives.

DUMP & RUN

To bolster campus and community engagement with waste prevention, F&S partnered with the University YMCA to provide resources and leadership to expand the Dump & Run program. This program gathers household goods

(e.g., furniture, kitchenware, small household appliances and electronics, school and office supplies, nearly-new clothing, books, toiletries, lawn and garden items, artwork, vinyl and CDs, musical instruments, and sporting equipment) which find new homes at the annual sale in August during student move-in. University Housing also provides staff and drivers to help move the items. Dump & Run reiterates the notion of a circular economy, whereby materials are reused through their useful life before entering the waste stream.

5.4 [F&S] Promote food scraps reduction on campus through a behavior change campaign, and tracking and recovery of surplus food for donation, with at least five new areas tracking and reporting their food waste by FY22.

Food scraps comprise a significant portion of the university's total landfilled waste. But just how much food is thrown out on campus in a given week, semester, or year?

In 2014, a Baseline Waste Stream Characterization Study¹²⁴ prepared by the Illinois Sustainable Technology Center (ISTC) revealed that organic and compostable

124 bit.ly/IISTC_WasteCharacterizationStudy



Purchasing local food from organizations like the Sustainable Student Farm supports small farmers and decreases emissions associated with food transportation.

Credit: Irina Valenzuela, "This Learning Life" 2019 Photo Contest Participant

materials (including food scraps) ranked consistently as the first- and second-highest waste categories in the buildings examined. The report detailed waste production in the Alice Campbell Alumni Center, Henry Administration Building, Swanlund Administration Building, and Illini Union Bookstore, and found that “food scraps, food soiled paper, paper towels, and other compostable items constituted a significant portion of the waste from these buildings. For these four buildings alone, the organics segment accounts for 17.2 tons annually.”

Currently, University Housing is the only unit on campus independently tracking how food scraps factor into waste production; these efforts have been effective and well-received, and exemplify the impact of metrics on waste reduction. Housing uses a program called Leanpath¹²⁵ to track all pre- and post-consumer food waste in dining units. By using the cloud-based software to digitally weigh food waste and target “problem areas,” dining halls have dramatically reduced pre-consumer food waste (e.g., surplus food, spoiled ingredients, or scraps resulting from food preparation). Housing also uses an extension of this program, Leanpath Spark, to measure post-consumer waste (e.g., leftovers) and educate customers on how they can make a positive impact.

Many facilities responsible for food production and distribution do not have tracking systems in place. As with many of the iCAP objectives, a preliminary step to ensure informed decision-making involves gathering the appropriate data. We will begin tracking food waste

(by weight) from self-operated campus food services that do not already do so (e.g., Beaver Café, campus coffee shops, and in-institute cafés like Beckman Café, Array Café in IGB, and Latté Da! Café in Lincoln Hall).

Units with contracted food services (e.g., Athletics and the Illini Union) are expected to include stipulations for tracking food waste in new or renewed contracts. These stipulations may require modification to conform to grab-and-go dining (e.g., Memorial Stadium concessions).

In addition to introducing waste-tracking policies to self-operated and contracted food distributors, we hope to encourage greater food waste consciousness among campus consumers: the students, faculty members, staff, and visitors who take advantage of these services daily. We plan to launch a creative campaign to spread awareness of food waste issues. The three-pronged campaign will 1) offer relevant statistics about on-campus and global food waste; 2) provide actionable steps by encouraging activities like zero-waste lunches; and 3) motivate participants to make a difference by directing them to a food donation webpage. When people stop for their morning coffee, to-go lunch, or late-night study snack, we hope that they do so thoughtfully and with consideration of their environmental impact.

By FY24, we anticipate a 30% reduction of food scraps in areas that begin tracking food waste. Once the program is running in numerous campus locations, we can partner with local businesses to encourage food waste

“More than ever before, our actions will determine the state of the environment and society’s attitudes toward environmental protection in the coming decades.”

— Anneli Cers ’21

tracking and prevention.

5.5 [F&S] Develop a detailed comprehensive plan including implementation and operational costs/benefits to sustainably dispose of all food scraps and other organics by FY24, and fully implement the plan by FY33.

The existence of excess food on plates, at events, or in dining halls is inevitable — there will always be leftovers, scraps, and uneaten meals that cannot be redistributed. Our goal with Objective #5.5 is to ensure that none of this waste reaches the landfill.

In the “reduce, reuse, and recycle” frame of mind, we want to exercise every available opportunity to productively, sustainably, and completely dispose of campus food waste. Below are several methods for reusing and recycling food waste that we plan to explore and implement.

COMPOSTING

We don’t just want to sustainably dispose of food scraps — we want to put them to work. In conjunction with other iCAP objectives supporting individual and departmental composting efforts, our goal is for composting to become an integral component of campus and community waste operations.

In 2010, a feasibility study evaluated the viability of large-scale composting on campus.¹²⁶ We intend to conduct an up-to-date cost-benefit analysis in the coming years; in addition to financial and logistical considerations, this analysis will examine how local farmers can benefit from buying university compost and identify any legal limitations governing these interactions. Following this analysis, we will proceed with the most reasonable plan. Options for composting are diverse and may include: increasing the number of small-scale composting solutions on campus

125 <https://www.leanpath.com/>

126 <https://bit.ly/3hRwomb>

(e.g., the NSRC composting tumbler as referenced in the Land & Water chapter); increasing community engagement with composting; and investigating opportunities to establish commercial composting facilities for campus and surrounding communities.

By capturing and composting food waste, we will not only divert these materials from our waste stream, but also produce a valuable, nutrient-rich product that benefits our soil. Composting is a particularly apt example of our integrated approach to iCAP 2020. Moving forward, it is important to consider the many ways in which our themes interact with, affect, and enrich one another.

RESOURCE RECOVERY/ ANAEROBIC DIGESTER

Composting is not the only way to divert food scraps from the landfill. University Housing Dining currently operates three anaerobic digesters (Enviropure) and three food waste collection systems (Grind2Energy) for use with the anaerobic digester at the Urbana-Champaign Sanitary District (UCSD). We have diverted approximately 95% of our pre- and post-consumer food waste at university dining halls for the last three years and plan to replace the three remaining aerobic digesters as funding allows.

We are exploring additional technologies capable of recovering resources from university-generated food scraps. A potential opportunity to add an anaerobic digester may be at the future Dairy Facility. The Veterinary Teaching Hospital has straw bedding waste that could be used, and we look forward to optimizing these efforts in collaboration with other campus units. We plan to expand collaboration with

community partners in these efforts with the UCSD, for example.

FOOD WASTE RECYCLING

While the average student might not associate food waste with traditional recycling, there are many options to repurpose common ingredients for alternative functions. For example, we are exploring a way to recycle all used cooking oil for a beneficial use such as biodiesel: a high-quality, high-functioning fuel derived entirely from renewable resources. Researchers received Campus as a Living Lab seed funding and Student Sustainability Committee funds to study the potential to convert biowaste into bioenergy and reduce pollution. Research focuses on testing processing systems to deliver renewable energy, clean water, and organic fertilizers for agriculture.

5.6 [Housing] Increase the use of local food to 35% by FY30.

University Dining is committed to purchasing as much food as possible from local vendors to support small farms and conserve energy associated with long-distance transportation. In FY15, the university committed to surpassing statewide procurement standards in this area and was already sourcing one-quarter of dining hall food expenditures from such locations.¹²⁷ In order to increase the university's use of local food, we must:

1. Define the term "local" and enforce appropriate standards;
2. Identify the most efficient produce items to locally source based on factors like growing season; and



Ground dining hall food waste is emptied into the Grind2Energy holding tank (pictured). The slurry is transported to the Urbana-Champaign Sanitary District's anaerobic digester for electricity production.

¹²⁷ <https://bit.ly/312IAS7>

“An anaerobic digester on campus could be a great solution to issues in several areas. Anaerobic digestion utilizes organic waste to generate useful products such as biogas, which can be used as fuel, and digestate, which can be used as fertilizer. Thus, having a digester on campus can reduce landfill waste, provide renewable energy, decrease greenhouse gas emissions, and more.”

— David Rivera-Kohr '20

3. Measure total energy expended as a result of local purchasing as compared with long-distance transportation and make determinations based on the resulting data.

Speaking to the first of these, the Illinois Local Food, Farms, and Jobs Act¹²⁸ calls for State agencies and facilities to locally purchase 20% of farm and food products by 2020 and defines “local farm or food products” as “products (1) grown in Illinois; or (2) processed and packaged in Illinois, using at least one ingredient grown in Illinois.” Moving forward, we can assign a student to collaborate with campus stakeholders to establish a shared and flexible definition of “local food.”

5.6.1 [Housing] Implement Food Literacy Project by FY24 by tracking carbon, nitrogen, and water footprints for food items in campus dining halls.

The Food Literacy Project is a tagging mechanism to track the water, carbon, and nitrogen footprints of foods used in campus dining halls. The program also identifies food items originating from local sources.

Implementing this objective will promote intentional decision-making in support of sustainable food choices. Generally, sustainable diets tend to have lower energy and water inputs and use fewer resources than their counterparts. Additionally (as stated in Objective #5.6), using local food can decrease the carbon emissions associated with transportation and promote local economies by supporting small farmers.

Information obtained from the Food Liter-

acy Project can be leveraged into suggestions for “green” meals and diets. We also hope to integrate opportunities for collaboration with the Sustainable Student Farm.

With this objective, the university can promote environmentally conscious diets benefiting our students and the environment. Promoting intimate knowledge of and identification with our food sources will increase the sustainable choices made in the dining halls and beyond.

5.7 [F&S] Establish a green cleaning program that meets LEED v.4 requirements by FY24.

F&S staff members consistently ensure that campus operations are performed with minimal exposure of F&S personnel and building occupants to hazards that adversely affect human health, air quality, building finishes and systems, and the environment. One way to reduce such exposure is through procurement and use of green cleaning products and processes. These might include simple steps (e.g., placing floor mats at building entrances to prevent dirt from entering) or in-depth solutions (e.g., transitioning a portion of cleaning chemicals to third-party green certified products).

As F&S implements university-wide sanitation and hygiene protocols in light of COVID-19, we will ensure that all green cleaning strategies continually meet these rigorous standards to keep our campus operating safely and sustainably.

¹²⁸ <https://bit.ly/2Xa3DYz>

Conclusion

With the strategies outlined in this chapter, we will launch a behavior-change campaign to educate and empower students, staff, and faculty members and promote environmental stewardship across campus. Our institution has more than 50,000 students, 11,000 staff and faculty members, five residence dining halls, and seven retail operations serving over 20,000 customers per day during the typical academic year. Therefore, the impact of tracking, analyzing, and reducing our waste stream extends well beyond the bounds of campus.

As individual consumers and Illinois community members, we can divert the campus waste stream at many points along its path. From the initial procurement of a good or service to its reuse or disposal, there exist countless opportunities to intercede with environmentally conscious decision-making.

That said, pursuing a university-wide culture of zero waste requires an investment of resources and time from individuals, units, and campus decision-makers. Ensuring that our targets are conscientiously met requires a dedicated effort at all levels, whether that takes the form of campuswide food waste reduction, one unit reusing furniture found in Surplus, or a student recycling their minifridge because they participated in Dump & Run.



Our institution has more than 50,000 students, 11,000 staff and faculty members, five residence dining halls, and seven retail operations serving over 20,000 customers per day during the typical academic year.



EDUCATION

TEACHING THE POWER OF CLIMATE ACTION



Because sustainability is a major worldwide issue, many campus entities and Illinois faculty are driven to implement a sustainability component into their departments and courses. When iSEE was formed, part of its mission was to enhance sustainability in academic courses and ensure that every student leaves our campus with a cohesive understanding of what it means to be sustainable and how to incorporate this into their personal and professional lives.

The multidisciplinary principles of sustainability should permeate higher education curricula. All fields — from engineering to behavioral sciences, economics to the fine arts — can be brought into the 21st century through synthesis with environmental topics. Here at the University of Illinois, such efforts will enhance student iCAP engagement.

In 2020, it is particularly crucial that the dialogue surrounding environmental sustainability becomes as interdisciplinary as possible. Government, industry, and advocacy organizations are looking to a rising generation of en-

vironmental leaders from diverse backgrounds. Graduates with a worldview that combines a technical knowledge base with social understanding of local and global sustainability concepts are in high demand.

With 250 undergraduate and graduate programs distributed throughout 16 major academic units, the university has the opportunity to instill a culture of sustainability into students of all disciplines. No matter their academic paths, we hope to empower our students to address today's most critical development and environmental challenges.

Following graduation, Illinois students inspire change across the globe — in-state and out-of-state, from Fortune 500 firms to small nonprofits. According to the 2018-19 Illini Success Report, 93% of Illinois 2019 graduates secured a “first destination” (i.e., a volunteering position, internship, or job).¹²⁹ An Illinois education should empower students of all professional trajectories to be recognized as environmental leaders by colleagues, peers, and friends.

Newly formed in 2019, the Education SWA-Team is tasked with suggesting opportunities for students to engage with sustainability, energy, and environmental education offerings and co-curricular opportunities during their time on campus. This team was preceded by the Sustainability Education Task Force. In 2010, this Illinois faculty coalition developed Sustainability Outcomes for Illinois graduates in the three themes of “Sustainability in Day-to-Day Life,” “Sustainability Knowledge and Skills,” and “Sustainability as a Personal Vision.” These Outcomes are defined as follows:

SUSTAINABILITY IN DAY-TO-DAY LIFE

1. Students will learn ways in which natural resources are used to produce what they consume, such as the food they eat, the water they drink, and the energy they use.
2. Students will understand ways in which their lifestyle and well-being are interconnected with those of diverse producers and consumers around the world, including

impoverished communities.

SUSTAINABILITY KNOWLEDGE AND SKILLS

1. Students will learn core concepts of ecology and develop skills relevant to their chosen field to provide a basis for environmental sustainability.
2. Students will learn to think holistically about sustainability using perspectives across multiple disciplines.

SUSTAINABILITY AS A PERSONAL VISION

1. Students will understand relationships between global environmental and economic trends and their impact on diverse cultures and communities.
2. Students will develop an integrated vision for sustainability that embraces their personal lives, professions, local communities, and the world-at-large.

Ten years later, our goal is for curricular and co-curricular sustainability learning to permeate day-to-day student life as well as the overall education experience. Our broad iCAP aim is that graduates integrate these sustainability principles into every aspect of their professional and personal lives.

The university has a significant array of sustainability-related educational course offerings and programs hosted by a range of colleges. Three sets of highlights are noted below.

¹²⁹ <https://news.illinois.edu/view/6367/806931>

iSEE's curricular education programming has grown from 2015 to 2019:

- » The Sustainability, Energy, and Environment Fellows Program¹³⁰ (SEE FP) enrolled 56 students as of spring 2020. This curricular minor originated in response to a "Curricular Education" objective in the 2015 iCAP, which called for transitioning an existing Environmental Fellows program to be housed under iSEE. Students can apply to become a Fellow, and the program requires completion of 16-18 pre-approved course credits. In fall 2019, iSEE hired a full-time Academic Instructor/Advisor to develop the SEE FP and cultivate interdisciplinary student cohorts.
- » Each semester, iSEE refreshes a database of courses related to sustainability. The database identifies courses meeting SEE FP program requirements as well as hundreds of others that incorporate sustainability.¹³¹
- » The Certificate in Environmental Writing (CEW)¹³² launched in fall 2017 marks a collaboration between iSEE, the School of Earth, Society, and Environment (SESE), and the English Department.

The CEW builds students' skills in written and multimedia environmental communication with the value-added goal of publishing their best work in a dedicated journal, *Q Magazine*,¹³³ which debuted online in fall 2018 and in print in summer 2019. Funding from donor Janelle Joseph allows students to regularly travel to research on-location articles. As of spring 2020, we are pleased to announce that this funding will continue for two more years, and that funds have also been allocated to an annual student writing contest.

The 2020-21 school year also marks the second cycle of the Levenick iSEE Teaching Sustainability Fellows Cohort.¹³⁴ This curriculum development fellowship allows Illinois faculty and instructors to apply for funding to either augment an existing course with sustainability content or fashion a new course with a sustainability focus. The result is increased offerings of creative, practical courses that integrate sustainability into a variety of disciplines and encourage students and faculty to explore environmental topics from new angles.

Additionally, iSEE's Campus as a Living Lab (CALL)¹³⁵ program encourages interdisciplinary, faculty-led sustainability research

and links campus goals to broad environmental challenges. Examples of CALL research include studying traffic to reduce idling time, integrating groundwater resources and geothermal energy for water and energy security, and generating electricity through wind turbine integration.

The College of Fine and Applied Arts (FAA) recently launched a B.S. in Sustainable Design.¹³⁶ The program incorporates innovative design thinking strategies "with a focus on building sustainable communities through the intentional design of environmentally sensitive products, buildings, neighborhoods, landscapes and cities." The College of LAS also houses a major in Earth, Society, and Environmental Sustainability (ESES), in which students study the relationship between the environment and economic and social systems with an emphasis on sustainability solutions.

Many campus entities are driven to implement a sustainability component into their departments and courses; that being said, iSEE has taken a leadership role to enhance sustainability in academic courses and ensure that every student leaves our campus with a cohesive understanding of how to incorporate sustainability into their personal and professional lives.

Of particular importance to our educational programming objectives is integrating

sustainability into science, technology, engineering, and mathematics (STEM) curricula. Students in traditional STEM programs often lose sight of the relationship between technical knowledge systems and the societal, political, and economic aspects of sustainable decision-making. Creating paths for cross-pollinating between STEM and sustainability will not only benefit students, but will also encourage faculty members to continue their own intellectual and professional development in interdisciplinary sustainability. We also aim to provide instructors and students with living examples for sustainability case studies. In the past, iCAP objectives have been incorporated into courses as term project topics; additionally, Facilities and Services, iSEE, and other colleges (e.g., the Grainger College of Engineering and the College of ACES) consistently support undergraduate and graduate design projects and research opportunities. Given these strong precedents, incorporating campus sustainability projects into more courses is a feasible target.

One opportunity for students of all majors to participate in sustainability is through the Sustainability Living-Learning Community (SLLC). University Housing offers 11 Living-Learning Communities around specific themes by providing in-hall courses and hands-on programs.

130 <https://bit.ly/2PbdCsd>

131 <https://bit.ly/39FTmsa>

132 <https://sustainability.illinois.edu/education/cew/>

133 <https://q.sustainability.illinois.edu/>

134 <https://bit.ly/2X9eWjB>

135 <http://go.illinois.edu/campuslivinglab>

136 <https://bit.ly/2DiuJ8Q>

Students in the SLLC learn about the diverse topics that stem from sustainability and practice environmentally-conscious living.

At Illinois, we are educating tomorrow's critical thinkers. We hope to extend and diversify our efforts to integrate sustainability into all aspects of students' educational journeys — not simply those taking place in a classroom. Each milestone along the way to commencement, from first-year orientation to a senior-year capstone course, is instrumental in shaping a student's identity, be it as a learner, pre-professional, or well-informed citizen. At each of these stages, we hope to meet students where they are and equip them with the skills to act as informed and active environmental stewards.

Whatever our students' paths, our goal is to make their sustainable decision-making instinctive, well-informed, and practical.



In December 2019, students enrolled in ENV5 492, the Sustainability, Energy, and Environment Fellows Program (SEE FP) capstone course, as well as CEE 398: Project Based Learning, presented their final projects to a faculty panel.

- 6.1 Broaden Sustainability Education
- 6.2 Sustainability Course Catalog
- 6.3 Environmental Leadership Program
- 6.4 Sustainability Internship Program
- 6.5 Sustainability at Career Fairs
- 6.6 Graduate Certificate in Sustainability

Education Objectives

The following Education objectives were developed by the SWATeams, iCAP Working Group, campus community, and Sustainability Council to guide the university's actions in compiling a portfolio of pragmatic sustainability education programs.



iSEE offered NRES 285 in spring 2020 as a Student iCAP course co-instructed by Sustainability Programs Coordinator Meredith Moore and Academic Program Instructor/Advisor Eric Green.

6.1 [iSEE] Broaden the availability of sustainability education across the entire curriculum, beginning with first-year student orientation and continuing through commencement, with at least one of four proposed methods implemented by FY24.

When first-year and transfer students arrive at the university, they are introduced to a range of concepts that guide their approach to college life. These knowledge areas, which are both practical (e.g., MTD bus stop locations) and constructive (e.g., resume-writing best practices), should be augmented with a sustainability toolkit.

To broaden sustainability education for all students, at least one of the following proposed mechanisms is to be implemented by FY24:

1. First-year student sustainability seminar

We aim to develop a required educational program for all incoming students to introduce sustainability as early as possible. This seminar will introduce campus sustainability programs and iCAP projects and can be implemented in collaboration with individual colleges as part of first-year orientation seminars. We will report the total number of student participants each semester.

First-year student engagement is also a strategy outlined in the Zero Waste chapter (see Objective #5.3.1) to effectively communicate campus recycling best practices.

2. Sustainability general education (GenEd) credit

In order to implement a sustainability GenEd requirement, we must identify the appropriate department with whom to collaborate (i.e., General Education Board within the Office of the Provost). The Committee for Environmental Sustainability within Illinois Student Government (ISG) is investigating the prospect of including a sustainability GenEd credit for all students.

3. 100-level courses

Several colleges offer 100-level courses designed to onboard students and ease the transition into college life. By FY24, we aim to integrate a sustainability unit into each of these courses. We will pilot this program through, as an example, sections of the Grainger College of Engineering and the College of LAS. Each course will include a lesson designed to expose students to the iCAP goals and introduce practical applications of sustainability learning. For example, how can students, as members of campus and of society, apply sustainable practices to their education and daily lives?

Because a student studying civil and environmental engineering might encounter sustainability differently than an individual pursuing music performance, units will be allowed flexibility to tailor course content to their respective disciplines. Junior and senior students tasked with teaching these courses will receive appropriate training.

4. Sustainability workshop

Creating a sustainability workshop with a catchy acronym (similar to FYCARE and ACE IT) would be beneficial because the instructors for such a workshop would likely be campus staff and faculty members who are passionate about sustainability efforts.

This workshop, potentially named EARTH (Environmental Action Right This Hour), would be a one- or two-hour-long course focusing on campus sustainability and opportunities for student involvement.

6.2 [iSEE] Establish a comprehensive online repository for courses and academic programs with sustainability content.

A comprehensive listing of sustainability

courses and academic programs must be made easily accessible to students. This includes majors, minors, certificates, and opportunities in various departments (e.g., the iSEE Sustainability, Energy, and Environment Fellows Program and undergraduate Certificate in Environmental Writing, IB ecology minor, courses in NRES, ACES, LAS, ESE, etc.). An improved search filter for sustainability-related courses in the university course catalog will centralize resources for students interested in sustainability offerings for academic credit and increase these programs' visibility during registration periods.

This repository, which may be developed as part of the iSEE website, will assist in data and project updates and thus expand the connectivity of digital sustainability resources.

“It excites me to see a focus on educating students about sustainability efforts on campus. The educational goals will encourage more students to be interested in sustainability, which is exactly what the world needs.”

— Leah Courtney '23

6.3 [iSEE] Launch an undergraduate Environmental Leadership Program (ELP) that includes two week-long residential intensives, pre-professional workshops, visiting speakers, and field trips to Springfield and Washington, D.C.

While we strive to integrate sustainability into curricular courses, we also hope to create opportunities for student engagement with energy and the environment outside the classroom. One example is the proposed Environmental Leadership Program (ELP). The ELP is focused on advanced undergraduate students, and will take the form of two week-long immersive training workshops held on campus (fall) and in Washington, D.C. (spring), in addition to pre-professional seminars and environmental leadership training.

6.4 [iSEE] Develop a sustainability internship program by partnering with businesses, nonprofits, local governments, and cultural institutions in Central Illinois. The total number of internships awarded will be reported each year.

In conjunction with the short-term ELP, we will offer a long-term internship opportunity for students to gain experience incorporating sustainability into the professional sphere.

According to the 2018-19 Illini Success Report,¹³⁷ 90% of graduates reported participating in experiential learning opportunities like internships. With this in mind, providing opportunities for sustainability-focused experiential

learning is an excellent way to integrate sustainability into students' educational pathways while maintaining the university's mission. It is therefore imperative to increase co-curricular sustainability program offerings for students seeking professional development, leadership training, and sustainability education outside of their disciplines.

We plan to collaborate with local governments, businesses, nonprofits, and cultural institutions to achieve this objective. This allows for students to network and cultivate relationships with sustainably-minded organizations in the area.

6.5 [Career Center w/iSEE] Partner with The Career Center and potentially other career offices in FY22 to help students explore and discover career opportunities that are connected to professional interests and goals related to sustainability. Incorporate a sustainability component at a minimum of two events beginning in FY22.

As students search for internship and employment opportunities beyond the university, we aim to encourage them to let organizations' sustainability commitments guide their decision-making.

Career fairs are essential to student exploration of internships, jobs, and professional development both on campus and off. We propose to pilot a sustainability component in existing campus career fairs. Participating organizations may opt to display an "Eco-Friendly" tag to



The inaugural 2019-2020 Levenick Teaching Sustainability Fellows Cohort discusses best practices for interdisciplinary sustainability education, November 2019.

serve as a sustainability designation; alternatively, this objective may include a networking component or career panel to engage students with sustainability-focused opportunities.

Following the initial rollout of this method, a survey will be distributed to student attendees to solicit feedback on questions such as "Did the 'Eco-Friendly' tags influence your decision-making?" and "Are you more likely to pursue opportunities with companies who self-identify as sustainably-oriented?"

6.6 [iSEE] Offer a new graduate certificate in sustainability by FY24.

The University of Illinois Urbana-Champaign educates more than 16,000 graduate students.¹³⁸ While many do not work in fields di-

rectly related to sustainability, it is increasingly true that many care deeply about environmental issues and wish to incorporate sustainability awareness into their research, classrooms, and workplaces.

To integrate sustainability themes into diverse graduate programs, iSEE plans to coordinate a graduate certificate in sustainability. Students will commit to a core course requirement, after which they can pursue one of multiple tracks (e.g., infrastructure and planning, business applications of sustainability, human dimensions, policy, etc.).

Implementation of a new graduate certificate in sustainability can be leveraged with external funding support, such as the graduate NSF Research Traineeship (NRT) program.

137 https://go.illinois.edu/IlliniSuccess_1819AllCampusAnnualReport

138 <https://grad.illinois.edu>

Conclusion

The educational component to our strategic plan was foundational to the American College and University Presidents' Climate Commitment first signed in 2008. This commitment reads:

Campuses that address the climate challenge by reducing global warming emissions and by integrating sustainability into their curriculum will better serve their students and meet their social mandate to help create a thriving, ethical and civil society. These colleges and universities will be providing students with the knowledge and skills needed to address the critical, systemic challenges faced by the world in this new century and enable them to benefit from the economic opportunities that will arise as a result of solutions they develop.¹³⁹

¹³⁹ <https://bit.ly/2X8B4L6>

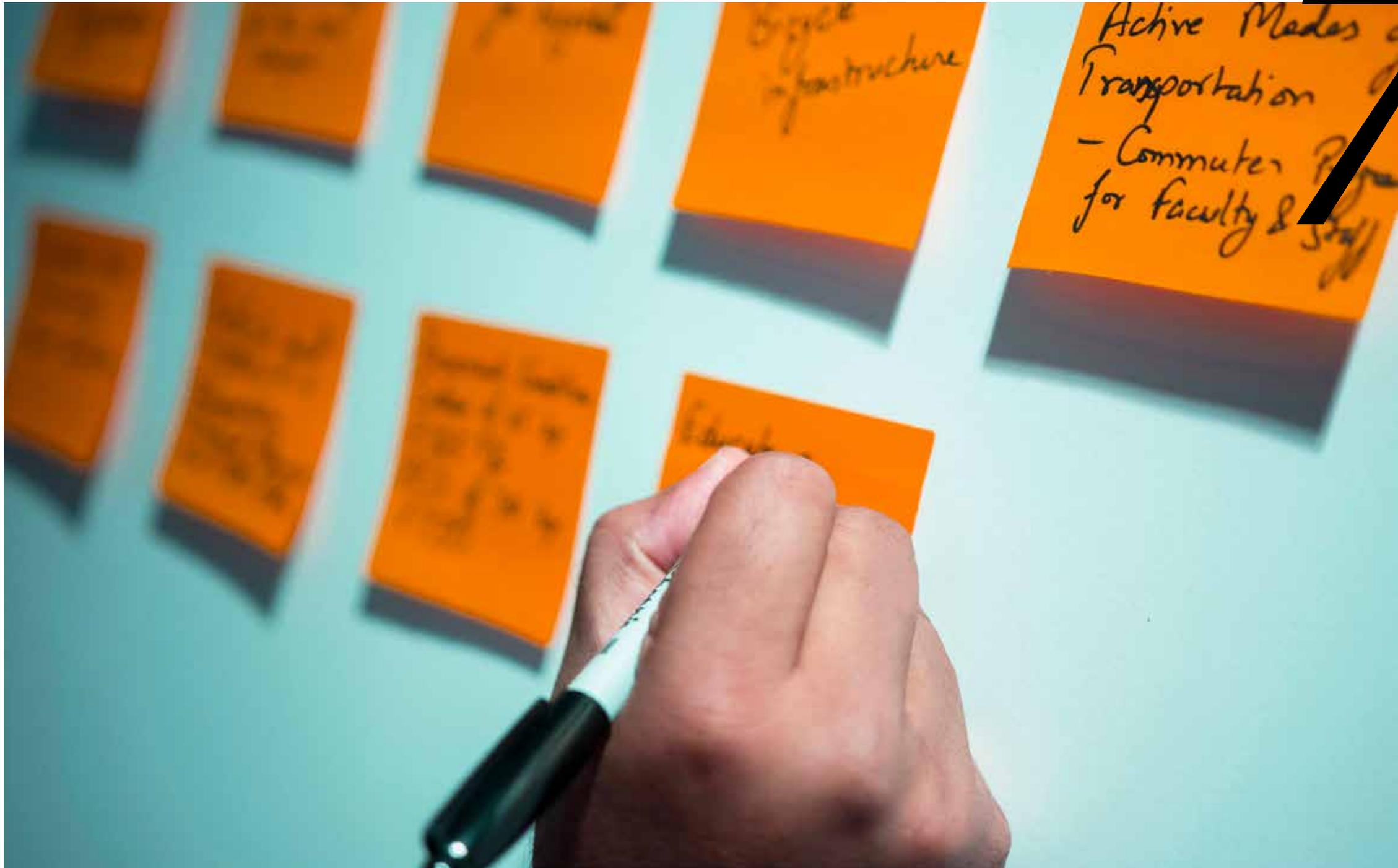
As we pursue climate-consciousness, carbon neutrality, and resilience over the next 30 years, this sentiment remains integral to our success. We are fortunate to have a passionate student body who consistently and increasingly prove their commitment to environmental stewardship. It is our responsibility to educate these students in principles of sustainability, and to impress upon tomorrow's cohort of leaders that their aspirations are not only supported, but achievable.

Our students have diverse identities and therefore diverse paths. They will be researchers, professionals, mentors, artists, athletes, educators, scientists, and storytellers. The multidisciplinary curricular and co-curricular

programming envisioned in this chapter is designed to empower current and future students to make a difference wherever they find themselves post-graduation.

With the sustainability imperative as relevant to incoming freshmen as to final-semester seniors, we believe that a sustainable future for our Illinois graduates begins in classrooms all across our campus, and should likewise permeate every aspect of the Illinois student experience.

Ultimately, the Education objectives will be implemented in conjunction with other iCAP objectives; we will particularly work to promote students' leadership in campus sustainability efforts.



ENGAGEMENT

CREATING AND COMMUNICATING A SUSTAINABILITY CULTURE



Integrating outreach into our iCAP themes is instrumental in establishing a campus sustainability culture. Even the most concerted efforts to implement environmental policy cannot gain traction without support from the entire community — from students, staff, and faculty members to local stakeholders and governing bodies.

Our engagement strategy is two-pronged, providing 1) clear and palatable information; and 2) outlets for response. A key example of the first prong is the iCAP Portal, established in 2012 to communicate progress toward iCAP objectives. The second strategy is exemplified by the iCAP Working Group (iWG); members of the iWG provide consistent opportunities for feedback to their affiliated organizations and departments.

iSEE facilitates numerous public engage-

ment programs. For the past six years, the Institute has collaborated with other campus units to host an annual Congress event. The public conference assembles leading national and international scientists, scholars, and activists to speak on grand sustainability challenges. Most recently, “Congress 2019: Sustainability Justice” addressed social equity and environmental activism.

iSEE also maintains a tabling presence at events of campuswide interest, including

Quad Day, Environmental Quad Day, the All-Employee Expo, and the Humanities Expo.

In spring 2020, iSEE published the latest version of the Certified Green Office Program (CGOP), in which offices and units can choose a sustainability ambassador, take simple steps to reduce emissions and resource use, and earn a certificate for their efforts. Similar programs for campus laboratories, Registered Student Organizations (RSO), and Greek life are also underway. Additionally, iSEE launched a “Campus as a Living Laboratory” (CALL) seed funding program in February 2018. The CALL program links campus sustainability goals with national targets and engages researchers with iCAP objectives by using project sites as research test beds.

Campus and community involvement was

prioritized in this iteration of the iCAP. To further increase iCAP visibility, we must integrate sustainability programming into all departments and units — not just those directly involved in the drafting process. Rather than a mere series of mandates, campus environmental policy should grow into a movement that is embraced, encouraged, and celebrated.

Equally important to increasing engagement is communicating clearly and often. Past iCAP messaging has been concentrated in the months surrounding publication — a short surge every five years followed by a period of silence. Moving forward, we will strengthen our communication efforts to continuously reiterate the iCAP’s presence and remind our community that progress is ongoing.

“We have not only the opportunity, but also the responsibility to make the changes necessary for a sustainable future. The iCAP 2020 is the foundation needed to make these changes and just the beginning of an even bigger sustainable movement.”

— Madalyn Liberman ’21

- 7.1 Green Certifications
- 7.2 Sustainable Events Program
- 7.3 Green Sports Alliance
- 7.4 Local Collaborations
- 7.5 Support Youth Sustainability
- 7.6 iCAP Portal Updates

Engagement Objectives

The following Engagement objectives were developed by the SWATeams, iCAP Working Group, campus community, and Sustainability Council to guide the university's actions toward expanding outreach efforts and strengthening our culture of sustainability.



The University of Illinois is an active and passionate community. In September 2019, students, staff, and faculty members marched in support of environmental issues such as fossil fuel divestment.

7.1 [iSEE] Enhance the overall culture of sustainability on campus, and increase the number of certifications issued through the Certified Greener Campus Program by 20% each year from FY20 to FY24.

In keeping with our overarching iCAP goals, we place great importance on fostering an enduring culture of sustainability among our students, staff, and faculty members.

To date, the biggest proponents of a sustainability culture are the student groups and RSOs focused on environmental topics. Since the 1969 founding of Students for Environmental Concerns (SECS),¹⁴⁰ passionate students have been our vital environmental pulse. Moving forward, we will continue to support and grow our impressive array of sustainability-affiliated organizations; we will bolster existing events, initiatives, and recruitment efforts through lending our voices, resources, and time. We will also work to facilitate opportunities for networking and collaboration between our many RSOs.

One way to quantify and track our progress toward this objective is through iSEE's Certified Green Office Program (CGOP). The CGOP is a guided program for academic offices to implement long-term sustainability solutions. By managing the process from start to finish, participating staff and faculty members receive an active education in best practices for maintaining a green office. We aim to expand this initiative by including options for Green RSOs, Green Greek Chapters, and Green Labs.

The most recent version of the CGOP was

launched in spring 2020. The next step is communicating this opportunity to campus units. We plan to increase awareness through branded videos, digital signage, and other marketing materials. Many campus units have already committed to pursuing Green Office certification, and we are proud of their efforts to implement solutions and spread the word to peers and colleagues. To shine a light on the contributions that individual departments are making as a result of their certification, we will disseminate monthly progress reports emphasizing strategies implemented through the CGOP and linking these efforts to the iCAP objectives.

7.2 [Illini Union] The Illini Union and Illini Union Board commit to 80% of their events qualifying as sustainable by FY24.

The reach of Illini Union events go beyond the event itself; it is the goal that all attendees will be exposed to sustainability efforts and carry this knowledge to incorporate at their own events, offices, and households. A comprehensive sustainable event guide will be developed and standardized, including actions such as serving local food with meatless options, going paperless, eliminating disposable items, providing reusable giveaways, and communicating the priority of sustainability at the event. For this objective, we may partner with the Department of Recreation, Sport & Tourism (RST) to develop and incorporate sustainable practices into a module of the Event Planning course. RST undergraduate and graduate students can work as event consultants for Illini Union Board events.

“I believe student involvement in university decisions is extremely important because our tuition should fund projects that are ethical and focus on intergenerational sustainability. More than ever before, our actions will determine the state of the environment and society’s attitudes toward environmental protection in the coming decades. I am excited for the campus community to become more involved in the implementation of iCAP 2020, as well as other sustainability initiatives!”

— Anneli Cers '21

¹⁴⁰ Then called Students for Environmental Controls.

7.3 [DIA] Increase visibility of campus sustainability efforts by joining the Green Sports Alliance through the Division of Intercollegiate Athletics (DIA) by summer 2021.

An important step to reduce the university’s environmental footprint involves the Division of Intercollegiate Athletics (DIA). The Urbana campus is home to 11 major athletic complexes seating up to 84,000 spectators. Joining the Green Sports Alliance would allow us to share resources, experiences, and best practices through a collaborative network of sports organizations. The Alliance focuses primarily on seven program initiatives: energy, food, procurement, transportation, venues, waste, and water. Joining the Alliance would help promote an eco-friendly environment for our teams, venues, athletes, and fans.

In keeping with our national position as a sustainability leader among land-grant universities, merging our environmental efforts and strong athletic culture is an enormously effective step. Outside of graduation and student welcoming ceremonies, DIA hosts the largest on-campus gatherings each year. Thus, these events provide great opportunities to reach a large, captive audience with sustainability messaging. Joining the Green Sports Alliance reflects our commitment to elevate environmental awareness where it counts. Through a partnership with DIA, we can reduce water and energy consumption, cut down on waste, promote natural resource management, and pursue a complementary Illinois identity of sporting excellences and sustainability leadership.

7.4 [iSEE] Incorporate sustainability-related problem solving in the GivePulse system for public engagement, and track local collaborations for sustainable solutions. Increase local collaborations by 10% per year from FY22 to FY24.

A recurring theme throughout our iCAP objectives is the need for outreach that equips as well as informs. We strive to pair each engagement effort with resource-backed infrastructure to facilitate the transition to independent, stand-alone management. Local collaborations are a perfect example of this, as they rely on cooperation from individuals both in and outside the university.

When considering opportunities for local collaboration, we begin by empowering university members to think critically and creatively about sustainability issues close to home. Fortunately, we have extensive depth and breadth of knowledge right here on campus; for example, faculty members who either possess a working knowledge of local resources or are conducting community-based participatory research.

In addition to university faculty members, we aim to introduce co-curricular sustainability partnerships between students and community groups with an emphasis on developing problem-solving skills and design thinking strategies. These tools are valuable in many situations and are already integrated into undergraduate curricula. We believe that pairing theoretical training with practical, real-world experience strikes the optimal balance

for productive collaboration.

The second component to successful local collaboration is identifying a need for resources and logistical support. For example, an opportunity for collaboration might involve overcoming barriers to community food waste composting in Urbana. Requirements for such a project may include researching EPA regulations for implementing a composting program, organizing forums to gather feedback and gauge public interest, running workshops to provide training, obtaining sufficient funding and equipment, and amassing the entrepreneurial experience to see the project through.

We hope to challenge the mindset of, “we don’t have this resource in our community, so it cannot be done.” Whether the result is a sustainable landscaping solution, green infrastructure installation, or public awareness campaign, we want to expedite and encourage as many diverse local collaborations as possible.

This objective’s key metric is the total number of local collaborative projects. We will track our progress through GivePulse,¹⁴¹ an online platform allowing us to obtain key information regarding which projects are underway, who is participating, and whether each project is successful. In addition to functioning as a database, GivePulse can also match individuals to volunteering opportunities and organizations to interested volunteers, providing many avenues to scale up our impact.

¹⁴¹ <https://www.givepulse.com/about>

¹⁴² <https://bit.ly/3hQE46F>

7.5 [Extension] Support programs to develop love of nature and sustainability among children, with an annual Youth Sustainability Summit led by local teenagers with guidance and mentoring from campus and community sustainability leaders.

In our efforts to reach community members, we must remain vigilant to the crucial role that children, teenagers, and young adults play in shaping our society’s environmental values.

This objective provides local youth with a sustainability “compass.” Embedded within our strategies is another key opportunity: encouraging positive peer mentoring and collaboration between students of all ages — from first grade through high school. The City of Urbana Sustainability Advisory Commission¹⁴² currently facilitates an annual Youth Sustainability Summit. Led by local teenagers under the guidance of campus and community sustainability experts, the summit provides a unique opportunity for students of all academic stages to think critically and decisively about environmental issues.

In addition to independently organized programs like the Summit, we hope to lean on the many opportunities to foster connections between local students and university scholars. During their time on campus, many undergrad and graduate students participate in programs that involve imparting wisdom and life skills to younger generations. Previously, groups such as Illini Mentoring, Eat4Health, and the

Sustainability Living Learning Community have visited local schools to present on sustainability topics. Keeping health and safety precautions in mind, we want to encourage similar programs when it becomes safe to do so and continue to provide opportunities for our students to serve as peer educators in the community.

Educational opportunities outside the classroom are the third key component to achieving this objective. More so than simply providing local youth with information, we will offer rich and interactive educational experiences: for example, a “Composting 101” event, or an interactive workshop on reusing glass bottles as planters. We will support these programs by crafting marketing campaigns, incentivizing participation, and gathering information to measure success and identify areas for improvement.

It has been said that “children are the future,” which rings ever true in the context of sustainability. Ultimately, we hope to guide children toward environmental stewardship by instilling within them lifelong sustainability values: a passion for nature, consciousness of individual action, and the tools to commu-

nicate what they’ve learned.

7.6 [iSEE and F&S] Update the iCAP Portal on a monthly basis to report progress toward iCAP objectives.

Whether they target students, staff, faculty members, or the community, all of our engagement efforts are orchestrated to support the iCAP objectives. Our strategies are multi-faceted and reach virtually all corners of campus, but they remain unified in their connection to our overarching Climate Leadership Commitments.

As we engage campus in our sustainability efforts, we want to constantly remind our Illinois community of why their actions matter in the grand scheme of the university. This objective will take the form of a regularly scheduled update on our progress toward the iCAP objectives, perhaps in the form of a newsletter distributed by upper-level campus administration. Each iteration might focus on a different aspect of campus sustainability, taking care to directly link on-campus action (especially the actions most recognizable by the newsletter’s recipients) to measurable iCAP metrics.

Conclusion

As is the case with environmental issues at large, we are all in this together. The mandates included in this action plan pertain specifically to the Urbana campus, but our efforts to provide informative and engaging outreach should also extend to the community.

Leaning on and collaborating with local interest groups through research, youth engagement, and events is invaluable to our programs’ lasting success. In addition to iCAP-specific outcomes, we hope that our efforts will culti-

vate an intergenerational appreciation for sustainability, energy, and the environment.

The sustainability conversation is not and should not be one-sided. Our efforts to inform must be paired with efforts to engage, empower, and most importantly, encourage constructive feedback. The result will be a community well-equipped with strength, durability, and resolve to continue pushing for environmental progress in the coming years.



iSEE Congress 2019: Sustainability Justice united a diverse panel of experts to speak on climate justice and environmental activism.



RESILIENCE

STRATEGIES TO ADAPT AND PREPARE



As we pursue initiatives to address the consequences of climate change, it is critical to augment our mitigation strategies with innovative resilience measures. These include adaptive actions to strengthen our campus and community against severe weather, extreme temperatures, and other acute effects of atmospheric and climate change.

Newly formed in 2019, the Resilience SWA-Team is preceded by years of groundwork laid by local stakeholders affiliated with the University of Illinois, Urbana, and Champaign. In February 2016, Interim Chancellor Barbara Wilson signed the Second Nature Climate Resilience Commitment, which calls for concrete, actionable resilience strategies to be deployed. This agreement supplemented the 2008 Carbon Commitment. Together, the two documents form the comprehensive Climate Leadership

Commitments. The Climate Resilience Commitment states:

“We have begun to experience the effects of climate change in our communities and we understand that these effects are projected to become more severe and damaging. We recognize that mitigation and adaptation are complementary strategies for reducing the likelihood of unmanageable change, managing the risks, and taking advantage of new opportunities created by our changing climate.”

This agreement spurred the formation of the Champaign County Climate Resilience Task Force (CCCRTF), which includes Illinois experts and representatives from local organizations. Following an in-depth climate resiliency assessment in 2018, the CCCRTF identified three primary goals. One of these entailed signing the Joint Resilience Proclamation in October 2018. This document, cosigned by Chancellor Robert J. Jones and the mayors of Urbana and Champaign at iSEE’s annual Congress, resulted in the formation of the Resilience SWATeam as it operates today.

Resilience measures undertaken from 2015 to 2019 include:

- » The Resilience Commitment was initiated as an iCAP Working Group (iWG) recommendation in 2015. The iWG recommended the Commitment in the following terms:

“We recommend that the Chancellor sign Second Nature’s Climate Commitment, which adds a Resilience Commitment (addressing climate adaptation) to our existing Carbon Commitment (focused on carbon neutrality). This commitment would involve partnering with the local communities to perform a resilience assessment, developing resilience indicators that are appropriate for our campus, and incorporating resilience targets into the iCAP. Additionally, should the campus choose to sign by January 4, 2016, we would be recognized

as a Charter Signatory.”

- » In April 2017, a Joint Task-Force for Resiliency launched to discuss methods and resources for evaluating local vulnerabilities to climate change. Their assessment¹⁴³ was completed in January 2018 and submitted to Second Nature as a key milestone toward our Resilience Commitment.
- » In October 2018, Chancellor Jones, Mayor Diane Marlin (City of Urbana), and Mayor Deborah Frank Feinen (City of Champaign) signed a proclamation affirming their “joint commitment to bolstering our community’s resilience to the impacts of climate change.”
- » In August 2019, the Resilience SWATeam was formed.
- » In fall 2019, the City of Urbana experienced a tornado which caused considerable tree damage. The university helped Urbana clean up upon their request.
- » In spring 2020, the community worked together in an impressive show of local resilience to slow the spread of COVID-19 and support our most vulnerable residents. For example, University of Illinois System UI Ride shuttles provided free, public Wi-Fi hotspots at 10 locations.

As a twin-cities campus, one of the university’s greatest assets is its proximity to strong

¹⁴³ <https://bit.ly/3fhikPP>

communities. Our history of climate resilience proves that time and again, we benefit from mutual support; this has also been true as each community has taken proactive measures to increase resilience to COVID-19. Though Champaign, Urbana, Savoy, and the university are independent entities, we are all immeasurably stronger when functioning as a unit. Our resilience strategies will prove stronger as well; for example, strategies to improve air quality and encourage pollinator-supportive plantings will be exponentially more beneficial should we leverage our combined resources.

The following objectives discuss our desire to include university representatives, government agencies, and key community stakeholders in our implementation strategies. However, we feel passionately that local residents are the heart of their communities, and we are taking steps to cultivate involvement and facilitate opportunities for residents to engage in environmental discussions. One step

in this direction is to promote local sustainability programs with the Champaign County Sustainability Network (CCNet). Additional engagement strategies may include launching more citizen monitoring initiatives to collect vital data and identify problem areas; educating residents on how their individual practices impact the community through best practices training; and continuing to pursue decentralized energy production (e.g., retrofitting private residences for climate resilience, installing solar and geothermal energy systems, etc.).

As we look to our campus's future in 2050 and beyond, the Resilience SWATeam's efforts are a critical complement to the mitigation portfolio outlined in this document.

As we look to the future of our campus in 2050 and beyond, the efforts of the Resilience SWATeam will serve as a critical complement to the mitigation portfolio outlined in this document.

“The university has the opportunity to be a model for the local community, and other institutions across the world.”
— Mallory Mahen '22



Cutting low-mow zones intermittently preserves native perennial biodiversity and minimizes invasive species. The university currently has 81.8 acres of low-mow land.

- 8.1 Urban Biodiversity Master Plan
- 8.2 Coordinated Rainwater Management
- 8.3 Environmental Justice Plan
- 8.4 Local Sustainability Issues
- 8.5 Inventory Green Jobs
- 8.6 Vision Zero
- 8.7 Local Offsets Program

Resilience Objectives

The following Resilience objectives were developed by the SWATeams, iCAP Working Group, campus community, and Sustainability Council to guide the university's actions toward building local climate resilience.



Though Champaign, Urbana, Savoy, and the university are independent entities, we are all stronger when functioning as a unit.

8.1 [Extension w/F&S] Develop a coordinated urban biodiversity master plan by FY24 to make the Champaign, Urbana, Savoy, and campus metro area a model for biodiversity.

Maintaining biological diversity in our plants, animals, and ecosystems is one of the most impactful first steps we can take toward strengthening our communities' overall resilience. Integrating native plants and greenspaces into local urban areas is central to our biodiversity master plan. These efforts include:

- » Leveraging tree canopies and other vegetation to manage stormwater, improve air quality, reduce atmospheric CO₂, and curb the heat island effect often experienced in built communities.
- » Planting species that are likely to adapt well to projected climate changes.
- » Installing native plantings to support pollinator, insect predator, and bird habitats.

In addition to supporting native plants, pollinators, and land and water health, our biodiversity plan supports human health and well-being; for example, minimizing illnesses associated with ticks and mosquitos and reducing the adverse environmental impacts of homeowner landscape and lawn maintenance practices. Urban greenspace and landscape beautification are also proven to reduce levels of anxiety and stress.

In keeping with our Engagement objectives, we want to encourage community members to

become involved with and excited about these biodiversity strategies. Community gardens and food forests (to be included in the master plan) will provide opportunities for residents to engage with the ways biodiversity impacts everything from the ground beneath their feet to the food on their table.

As we implement the above practices, we will develop corresponding monitoring programs to assess effectiveness, making the metro area a "test bed" for informative, innovative biodiversity planning. With this information, we will draft model ordinances to use in our metro area and to share with other communities.

8.2 [F&S w/Extension] Coordinate rainwater management plans for the entire urbanized areas of Champaign, Urbana, Savoy, and the university. Starting in FY21, share the total number of green infrastructure locations on the iCAP Portal on an annual basis.

To complement the comprehensive approach outlined in Objective #8.1, we hope to implement a similar coordinated rainwater management plan for the three urbanized areas surrounding campus. The Champaign County Storm Water Working Group holds a quarterly meeting with representatives from the university and the urbanized areas of the City of Champaign, the City of Urbana, and the Village of Savoy. F&S and U of I Extension will collaborate with this Working Group to coordinate a community-wide rainwater management strategy.

In addition to traditional stormwater sewers and the green infrastructure opportunities described in the Land & Water chapter, other innovative solutions will be explored to complete this objective. One example is a Regenerative Stormwater Conveyance,¹⁴⁴ also known as step-pool conveyance systems, which involves building up a degraded stream (e.g. with sand, mulch, boulders, and trees) to ultimately create pools through which water can flow. This filters the water, reestablishes the original habitat, and results in a beautiful community asset and value-add for neighborhood homes.

Effective rainwater management is crucial to combating urban vulnerabilities to climate change. A specific concern for this region is the projected increased frequency of droughts. In response, our coordinated rainwater management plan will include a drought management plan, considering plant selection options and rainwater harvesting techniques.

8.3 [iSEE] Develop a collaborative plan for environmental justice that will assess metro area resilience and actively address related issues. The plan should be written and publicized by FY24.

Many strategies implemented in pursuit of our coordinated biodiversity, rainwater, and drought management plans will positively impact local communities. For example, there is a proven correlation between increased urban greenspace and mental health benefits. Moreover, sustainability is holistic, demanding attention to the

societal and economic components of a community as well as the purely environmental. It is our goal to address this full triad head-on.

Objective #8.3 focuses on the human component of climate resilience, with an emphasis on communities that have been historically marginalized and underserved, and are therefore disproportionately vulnerable to the impacts of climate change, heat waves, air pollution, and public health crises such as the COVID-19 pandemic.

To develop a thoughtful and comprehensive environmental justice plan, we must identify existing programs within our local communities (which currently operate independently) to recognize common principles and points of contingency. We aim to collaborate with other entities across campus to do so, potentially including the Humanities Research Institute (HRI), the School of Social Work (SSW), and the Office of the Vice Chancellor for Diversity, Equity & Inclusion (OVCDEI).

Following this initial step, students and faculty members will conduct environmental vulnerability assessments of campus and local populations, identifying the communities that are most at risk and assessing opportunities to provide valuable, sustainable solutions.

Finally, we will take the necessary steps to implement economically and environmentally feasible solutions in vulnerable communities, focusing particularly on resources to improve food security (e.g., shuttle systems to grocery stores, food trucks, and community gardens). We will also identify locations where cooling centers are needed for residents, and seek

¹⁴⁴ <https://bit.ly/3k6lDxo>



In spring 2020, University of Illinois System UI Ride shuttles provided free, public Wi-Fi hotspots to Champaign and Urbana residents in need of internet access.

opportunities to incorporate educational components wherever possible.

8.4 [iSEE] Take leadership in addressing the most pressing sustainability challenges in our local communities through collaboration with local governments and related community groups, by forming an advisory panel for coordinating efforts across jurisdictional boundaries. By FY24, select at least three major local sustainability issues to address and identify lead agency and key stakeholders.

As we conduct inventories and form strategies to address sustainability and environmental justice challenges in our local communities, we want to ensure that the issues we seek to

address are treated with integrity.

Above all else, we seek depth and durability in the solutions we implement. We are not aiming for quick fixes, but for long-term environmental and economic sustainability. By pouring our time, effort, and resources into several key issues and collaborating with local stakeholders on the finer points of each, we can ensure that they will be completed to the best of our ability. A particular issue that merits consideration is the 5th and Hill Neighborhood Rights Campaign, centered just two blocks north of University Avenue.

After identifying key issues to focus on, we will take steps to ensure that our solutions are born out of collaboration and supported at the highest possible level. This will involve forming relationships with key stakeholders from the university, Champaign, Urbana, and Savoy.

The Resilience SWATeam will function as an advisory panel for the coordination of projects between the four cooperating entities.

8.5 [iSEE] By FY23, collaborate with colleges and community groups to inventory existing certification opportunities for green jobs and identify gaps.

While we strive for volunteer engagement, integrating sustainability with the job market is a strong foundational step to ensure lasting resilience in any community.

Over the next three years, we will identify existing opportunities to green-certify jobs in the Champaign, Urbana, and Savoy communities, with an emphasis on employing and certifying at-risk youth and adults in resilience roles (e.g., green or renewable energy design and maintenance, food security programs, and other expanding job markets).

We will also explore the National Green Infrastructure Certification Program (NGICP),¹⁴⁵ which provides the skill set needed for entry-level workers to properly construct, inspect, and maintain green stormwater infrastructure. Designed to meet international best practice standards, the NGICP is a tool that can be used to meet a wide range of needs, including professional development for existing green infrastructure professionals. As part of a larger workforce development, the NGICP can provide candidates with the technical skills to enter the green workforce and earn a livable wage.

¹⁴⁵ <https://ngicp.org/about/about-ngicp/>

¹⁴⁶ <https://ccrpc.gitlab.io/lrtp2045/>

¹⁴⁷ <https://fs.illinois.edu/services/more-services/tdm>

8.6 [F&S] Support Vision Zero as a county-wide goal for safe and sustainable transportation.

Vision Zero is a strategy to eliminate traffic fatalities and severe injuries while increasing safe, healthy, equitable mobility for all. First implemented in Sweden in the 1990s, Vision Zero has proved successful across Europe and is now gaining momentum in major American cities. In 2012, Chicago became the first U.S. city to adopt Vision Zero; since then, more than 20 cities across the country have committed to this strategy.

The Champaign-Urbana Urbanized Area Transportation Study (CUUATS), the transportation entity of the Champaign County Regional Planning Commission (CCRPC), is the Metropolitan Planning Organization (MPO) responsible for administering the federally mandated transportation planning process for the Champaign-Urbana-Savoy-Bondville-Tolono urbanized area. In December 2019, CCRPC published the Long Range Transportation Plan (LRTP) 2045¹⁴⁶ for the area, including Vision Zero as an objective. The university is an active partner of CUUATS, and therefore supports the Champaign County LRTP 2045 and commits to the Vision Zero objective.

The Transportation Demand Management (TDM) department¹⁴⁷ at F&S works with regional transportation planning partners to coordinate networks for all campus travel, including walking, bicycling, transit, and motor vehicles. TDM also encourages active

transportation, maintains street signs and pavement markings, manages traffic closures on campus property, prioritizes pavement improvement projects, and emphasizes pedestrian safety and the safety of all on-campus modes of transportation. Furthermore, implementing the Campus Bicycle Network Master Plan and exploring sustainable options for transportation infrastructure and fuels fall under the TDM's purview. In the last five years, the department's efforts and safety measures have resulted in zero transportation-related fatalities on campus streets.

The City of Urbana's Bicycle and Pedestrian Advisory Commission (BPAC) passed a resolution in support of Vision Zero in late fall 2019.¹⁴⁸ In January 2020, the Urbana City Council and Mayor made a commitment to the Vision Zero concept by directing BPAC to bring forward a Council Resolution and Vision Zero plan for approval by the full council.¹⁴⁹

¹⁴⁸ <https://www.urbanaininois.us/BPAC>

¹⁴⁹ <https://bit.ly/3hT7YaI>

8.7 [iSEE] Establish a local offsets program by FY24.

As stated in the Transportation chapter, we are interested in pursuing local carbon offset programs, in part to mitigate greenhouse gases (GHG) generated as a result of university air travel but primarily as a way to educate faculty and staff about air emissions. In collaboration with local communities, we plan to adhere to the following steps in pursuit of a results-driven carbon offsets program:

- » By the end of FY22, inventory available peer institutions and offset programs through a literature review.
- » By the end of FY23, develop a plan with wide stakeholder engagement both on and off campus.
- » During FY24, initiate the finalized plan.

Conclusion

Climate change does not exist in a vacuum; neither does climate resilience. Limiting our resilience scope to campus alone would not only impede our own progress, but also that of surrounding communities.

It is therefore in all of our best interests to address air quality, biodiversity, infrastructure, and rainwater management not as items for individual action, but as coordinated efforts to

maximize all available resources. Given the unprecedented challenges posed by the COVID-19 pandemic, strengthening the resilience of our local communities is more important than ever.

To implement lasting adaptive strategies and enact preparedness measures, we are pleased to begin conducting meaningful work in partnership with Champaign, Urbana, and Savoy.



Chancellor Robert J. Jones, iSEE, and the Sustainability Council continue to work with cities and other local entities to ensure climate resilience.



IMPLEMENTATION

MAKING IT HAPPEN



Ever since the university signed the Climate Leadership Commitments, we have worked to develop robust procedures for evaluating and implementing sustainability projects. Our network of environmental advocates spans the Sustainability Working Advisory Teams (SWATeams) and related groups, and we have strengthened connectivity between entities like the Student Sustainability Committee (SSC), Student Sustainability Leadership Council (SSLC), Illinois Student Government (ISG), Illini Union, and the Senate of the Urbana-Champaign campus.

The iSEE newsletter regularly communicates sustainability-focused efforts to gain broad exposure, and the Champaign County Sustainability Network (CCNet) monthly brown bag meetings unite environmental advocates and professionals from across the county to network and share advancements.

The ambitious targets outlined in iCAP 2020 require continuous evaluation and action from units, organizations, and campus leadership. Unlike our previous climate action plans, each of the iCAP 2020 objectives identifies a responsible party to lead, implement, and monitor activity.

Capacity Development

Staffing for sustainability at the university has evolved from a few isolated positions to a robust, cross-functional team connecting various parts of campus to the overarching movement. Many of these positions now include sustainability components as part of their job responsibilities.

The individuals occupying these roles often serve on SWATeams or the iCAP Working Group (iWG), and/or play a role in other sustainability programs and activities.

Examples of these positions include:

- » Associate Director for Capital Planning (Office of the Provost)
- » Associate Director for Campus Sustainability (iSEE)
- » Associate Director for Sustainability (F&S)
- » Assistant Director of Dining, Facilities and Equipment (University Housing)
- » Associate Director of Transportation

and Automotive Services (F&S)

- » Transportation Demand Management Coordinator (F&S)
- » Sustainability Programs Coordinator (iSEE)
- » Sustainable Transportation Assistant (F&S)
- » Zero Waste Coordinator (F&S)
- » Associate Director of Utilities and Energy Services (F&S)
- » Academic Program Instructor/Advisor (iSEE)
- » Director of Operations (Union)
- » Assistant Director for the Student Sustainability Committee (Student Engagement)

Contributions from these individuals have been instrumental in the formation of iCAP 2020; as sustainability becomes a greater priority on campus, we must increase our staffing capacity to ensure continued success of programs and activities.

Procedures

Our Formal Procedures for Sustainability provide a solid framework for review and evaluation. These procedures are updated every five

years and approved by the chancellor. This allows us to focus on the material benefits and challenges of the ideas brought forth rather

than dwell on time-consuming administrative burdens (e.g., repeatedly identifying the correct individuals to speak with, avenues to obtain approvals, etc.). Following several years of the SWATeam process, we have added feedback loops and increased communication between the sustainability advocates, decision-makers, and responsible units.

The iCAP is rewritten every five years to evaluate progress toward our Climate Leadership Commitments and identify new and/or updated objectives and strategies. The SWATeams, which consist of students, staff, and faculty members, submit initial input and draft objectives to the iWG. The iWG, co-chaired by iSEE and F&S, provides guidance throughout the drafting process by offering stakeholder and public feedback. The iWG is comprised of mid-level administrators, faculty members, and student representatives. The iCAP draft is reviewed by iWG members, their representative units, and key campus stakeholders, and is then forwarded to the Sustainability Council for chancellor approval. Numerous public input opportunities are made available prior to this final step.

The SWATeams are instrumental to the implementation process by recommending specific sustainability projects, activities, and policies to the iWG. The iWG transmits these recommendations to the appropriate campus unit(s), though the recommendations themselves may require approval from a funding authority independent from the responsible unit.

Major units who take charge of the implementation and the recommendations include iSEE, F&S, the Illini Union, and U of I Extension.

Once a recommendation is supported by its designated campus unit, there are often details in need of resolution prior to implementation. The unit in question is responsible for leading implementation efforts and providing regular updates, which are reviewed by the iSEE Sustainability Programs Coordinator and added to the iCAP Portal. The iWG provides support and works with the units to overcome challenges and ensure successful implementation.

Large-scale project recommendations with major impacts on policy and/or budget are discussed at biannual Sustainability Council meetings. The agenda is set by the iSEE Director and chaired by the chancellor. Unlike the SWATeams and iWG, the Sustainability Council has decision-making authority to implement new strategies, programs, and policies. Starting in fall 2020, an update to the Formal Procedures for Sustainability will include an added layer of feedback and evaluation by a task force. This subcommittee of the Sustainability Council is designed to evaluate the assessments and address uncertainties prior to the Council meeting.

These Formal Procedures for Sustainability are designed to prioritize continuous review and may be revised to better focus on the realization of sustainability projects and activities. We will continue working with organizations across campus, such as Illinois

Student Government, Student Affairs, and Campus Auxiliaries, to strengthen our efforts among university administration, faculty members, staff, and the student body.

The university must prioritize these efforts by incorporating them into the 2023 University Strategic Plan update.

Funding

Securing financial support is necessary to implement new projects and maintain existing activities. A variety of financing mechanisms are currently in place to fund sustainability projects and help us achieve our ambitious goals.

CAMPUS UTILITIES BUDGET

Illinois currently spends \$90M per year on campus utilities, which include steam and electricity, campus-owned stormwater sewers, sanitary sewer costs, potable water supply, renewable energy Power Purchase Agreement (PPA) costs, and the campus electrical distribution network. The Campus Utilities Budget is based on the annual utility rates and the projected annual demand for each commodity.

When the actual energy usage in a given year is less than projected, the Office of the Provost typically allocates remaining funds to energy conservation projects, including: additional re-commissioning teams, Energy Conservation Incentive Program (ECIP) financial incentives, and “quick payback” projects (which have less than a two-year timeline).

FACILITIES AND SERVICES (F&S)

Through the dedicated work of their staff and direct allocations from their leadership, F&S has a recurring annual budget that funds many campus sustainability efforts. One component is ongoing funding for energy conservation, which is used for retrocommissioning, direct digital controls, and administrative support for Energy Performance Contracting. Recently, F&S also began supporting academic collaborations, such as geothermal and transportation studies, through a new Academic Collaborations initiative.

ENERGY PERFORMANCE CONTRACTING

As described in Chapter 2, Energy Performance Contracting allows the campus to pursue capital-intensive energy and water efficiency projects that offer a payback of less than 20 years. Cost savings from reduced utility consumption will be used to pay off the initial investment. This does require the campus to assume additional debt, although a stream of utility savings helps to retire that debt. Because

utility efficiency and deferred maintenance are closely linked, the Energy Performance Contracting delivery method also contributes to reducing the deferred maintenance backlog.

DEFERRED MAINTENANCE FUNDING

The Academic Facilities Maintenance Fund Assessment is a student fee dedicated to reducing the backlog of deferred maintenance (work that would have ordinarily been performed in previous years but was not performed due to a lack of funding). Where possible, these funds are preferentially deployed to address deferred maintenance projects that also reduce energy demand.

CAMPUS, COLLEGE, AND DEPARTMENT BUDGETS

The Office of the Provost has made one-time allocations to support campus sustainability initiatives such as LED exit signs and the Campus Bike Center.

Several projects receive direct funding from specific colleges and/or departments. The Integrated and Value-Centered Budget reform increased incentives for colleges to support energy efficiency projects.

INSTITUTE FOR SUSTAINABILITY, ENERGY, AND ENVIRONMENT (ISEE)

In addition to funding iSEE administration and staff, the Institute supports collaborative campus sustainability projects like the Eco-Olympics and Arbor Day. iSEE's educational programs recruit and train future sustainability leaders, commu-

nicators, researchers, and problem-solvers. Additionally, iSEE launched a Living Lab Seed Grant program for research projects that use campus sustainability facilities from the iCAP Portal to support research efforts. This program has funded or supported 11 projects as of spring 2020. Seed funding is provided for proposal development for external funding sources and directly contributes to campus sustainability projects. If a proposal is approved, part of the external funding will also be applied to campus sustainability testbeds.

STUDENT SUSTAINABILITY COMMITTEE (SSC)

The SSC is a student-led committee charged with distributing two student fees: the Sustainable Campus Environment Fee and the Cleaner Energy Technologies Fee. The committee allocates approximately \$1M per year to fund projects that improve campus sustainability in areas ranging from renewable energy to waste reduction and beyond, with a focus on direct student impact.

BICYCLE INFRASTRUCTURE AND PROGRAMMING FEE

In FY17, a \$1-per-student semesterly fee was established to support recurring bicycle infrastructure and programming needs. The budget is proposed by F&S and approved by the Student Fee Advisory Committee annually, with 80% allocated to infrastructure and 20% to programming. Projects funded from this source include the bike.illinois.edu website launched in FY19 and upgraded bike parking areas.

REVOLVING LOAN FUNDS

In 2011, the SSC helped initiate a Revolving Loan Fund (RLF) at the Union with a final value of \$1M. In 2012, a campus-level RLF was established with funding from the SSC, the Office of the Chancellor, and the President's Office as a source for utility conservation projects that pay themselves back through utility savings in less than 10 years. Through additional contributions and a small interest charge, the campus-level RLF has grown to more than \$4M, and the total of both RLFs is now

\$5,131,042 (Figure 21).

EXTERNAL GRANTS

Our campus has successfully applied for grants from the Illinois Department of Commerce and Economic Opportunity (DCEO) and the Illinois Clean Energy Community Foundation (ICECF) to advance our sustainability objectives. Since FY08, the university has been granted more than \$20M for energy-related projects. One of the most notable current grant-funded projects is the \$15.7M federal grant to the Multimodal

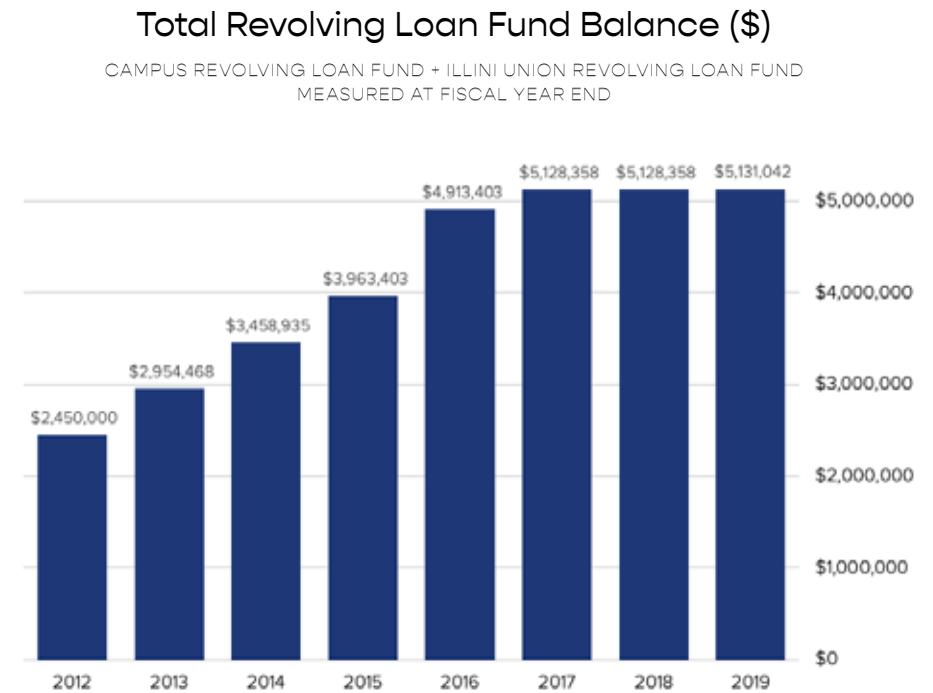


Figure 21: Total Revolving Loan Fund Balance (\$)

Funding Available From Carbon Credit Sales (\$)

MEASURED AT FISCAL YEAR END

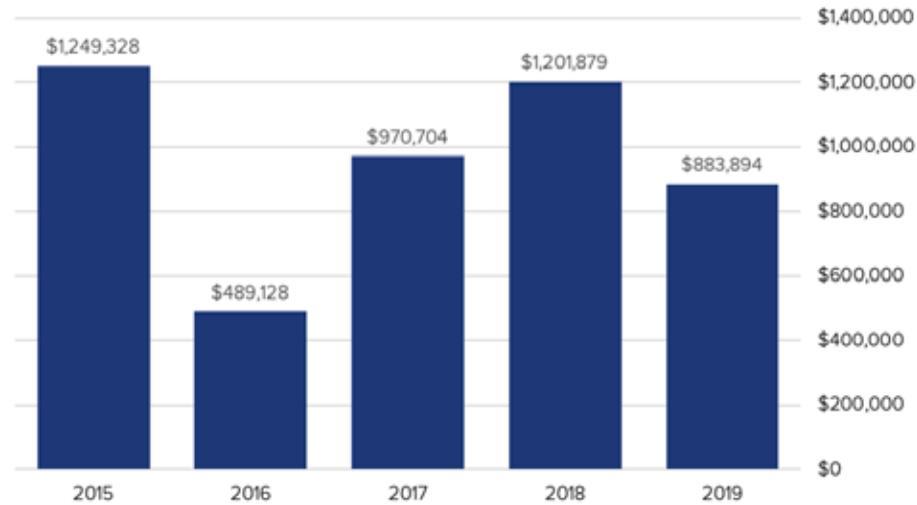


Figure 22: Funding Available From Carbon Credit Sales (\$)

Corridor Enhancement (MCORE) Project¹⁵⁰ in the heart of campus.

CARBON CREDIT SALES FUND

In FY15, the Bonneville Environmental Foundation funded the retirement of the university’s FY12, FY13, and FY14 carbon emission reductions as part of the Chevrolet Campus Clean Energy Campaign. Because those credits were retired on behalf of the planet, we retain credit for these emission reductions in our greenhouse gas (GHG) emissions reporting. In the following years, Second Nature launched a program to continuously monetize

carbon emission reductions; our campus participates in that program through iSEE. The resulting Carbon Credit Sales Fund can be used to support iCAP projects after approval from both iSEE and F&S. At the beginning of FY20, \$883,894.25 was available in this fund (Figure 22).

As the campus strategic plan for achieving carbon neutrality, this document estimates a degree of cost for specific plans but does not include detailed budgetary information pertaining to each of the objectives and strategies. This information will be included in future recommendations from the SWATeams. iSEE,

150 <https://www.mcoreproject.com/about-the-project.html>

F&S, and the SWATeams continue to work with campus entities to discuss funding potential and opportunities.

PRIVATE DONATIONS

A highly visible success story in this category is the installation of an impressive native prairie at Florida Avenue and Orchard Street. We have also received generous donations that support several of our LEED-certified building projects such as the Siebel Center for Design.

There is also potential for collaboration with the University of Illinois Foundation (UIF) to establish a “green fund” through which donors can financially support campus sustainability efforts. A donor fund in support of implementing the Campus Bike Plan was created following publication of the 2010 iCAP.

Given the enthusiasm and vision of our current students and alumni, we expect an increase in private donations for campus sustainability projects.



The Siebel Center for Design will earn LEED certification — and its construction preserved a stand of historic trees from the early days of the university.

- 9.1 Divest from Fossil Fuels
- 9.2 Sustainable Investing Policy
- 9.3 Include iCAP in Strategic Plan
- 9.4 Become STARS Platinum

Implementation Objectives

Achieving all objectives listed in previous chapters and ultimately meeting our Climate Leadership Commitments remains our top priority. In addition to the topic-specific objectives outlined in Chapters 2-7, the following represent overarching campus sustainability needs relevant to our long-term efforts.



The October 2019 Campus Sustainability Celebration provided the first opportunity for public input on iCAP 2020 objectives. Feedback frequently mentioned fossil fuel divestment.

9.1 [Chancellor]: Fully divest from fossil fuel companies by FY25.

Fossil fuel companies are defined as companies that profit from the extraction, transportation, or combustion of coal, petroleum, or natural gas. The production and use of coal contribute to environmental, social, and health issues, leading to irreversible ecological damage. The university currently invests less than 1% of its portfolio in coal utility and mining companies and has already divested its direct holdings in coal. As an institution that prides itself on being "a model of sustainability, energy efficiency, and environmental friendliness for the world to see,"¹⁵¹ it is imperative that the university's values and commitment to combating climate change are reflected in all of our investments. By divesting from fossil fuel companies, the university will reduce its contributions to and association with the negative environmental and social impacts attached to fossil fuel companies.

Trends also suggest that the change in the economic market, especially as a result of COVID-19, supports a positive financial decision to divest. To ensure financial stability and cease contributing to climate change and social injustice, the University of Illinois must enact a plan to replace all of its investments in fossil fuel companies with financially stable and ethical investments as soon as possible, and then reinvest in more sustainable companies.

The university has been discussing fossil fuel divestment since 2009 when students formed a group called "UIUC Beyond Coal."

Since then, the campaign has continued under Students for Environmental Concerns (SECS) as "Fossil Free UIUC." Fossil fuel divestment has been formally recommended by the Joint Advisory Committee on Socially Responsible Licensing and Investment in 2017 and a resolution passed in 2019. In August 2017, students sent a memo to Chancellor Jones "expressing our unanimous position that the university ... should set a date within the next decade for complete divestment from coal utility and coal mining companies." Chancellor Jones' October 2017 reply noted, "this is a complex and interconnected financial network that crosses a number of different governance lines within the University System." He also stated: "I will share your report with President Tim Killeen and with UIF President Jim Moore and initiate conversations with them about the next steps we might take to move ourselves toward a more sustainable footprint while maintaining the financial stability we require as a university." He has verbally supported divestment multiple times since.

The University of Illinois Foundation manages the endowment with an independent board. While neither the chancellor nor the university president can make this decision for the University of Illinois Foundation, they can clearly state their support of fossil fuel divestment and specifically request a change from the decision-making authorities. Through this iCAP objective, we will work with the Office of the Chancellor to draft a letter encouraging divestment. The letter will be from Chancellor

Jones and will be sent to all responsible parties involved in the decision to divest, including the University of Illinois Foundation, the University of Illinois Board of Trustees, President Killeen, and those responsible for the portion of the endowment housed in the president's office. Divesting from fossil fuels is a significant step to turn our environmental commitments into actions.

9.2 [Chancellor]: Commit to a Sustainable Investing Policy by FY24.

As of Jan. 1, 2020, Illinois Gov. J.B. Pritzker signed the Sustainable Investing Act that "pro-

vides that all state and local government entities that hold and manage public funds should integrate material, relevant, and useful sustainability factors into their policies, processes, and decision-making."¹⁵² We aim to formally commit to a Sustainable Investing Policy in order to comply with the state Sustainable Investing Act by making carbon neutral investments. In the letter from the chancellor to those responsible for the university endowment supporting divestment, we plan to include that all current and future funds be invested in compliance with the Sustainable Investing Policy.

¹⁵² <https://bit.ly/3hLDEPo>

"Being committed to sustainability efforts is more than just reducing our footprint, it is a commitment to our Earth. We are saying: we want to be better and we will actively DO better. Students should care because it is our generation that will feel the effects of whether we help our Earth or hurt it. We can be catalysts for change."

— Gwenna Heidkamp '20

¹⁵¹ <https://sustainability.illinois.edu/about/>

9.3 [Chancellor]: Incorporate the iCAP in the next campus Strategic Plan.

According to the current Strategic Plan, “Appropriate, sufficient, and sustainable resources are imperative to our success.”¹⁵³ While sustainability is included in the plan, incorporating the iCAP explicitly in the next campus Strategic Plan is a significant step in recognizing our sustainability goals and projects as a campus priority. This would affirm our commitment to reducing our environmental footprint and achieving carbon neutrality in addition to establishing a more visible culture of sustainability. Sustainable activities, programs, and planning are necessary components of our campus vision. We aim to be proactive in our efforts and continue to be an exemplary model in setting and achieving ambitious goals.

153 <https://strategicplan.illinois.edu/>



Sustainable activities, programs, and planning are necessary components of our campus vision.

9.4 [iSEE]: Achieve STARS Platinum rating from the Association for the Advancement of Sustainability in Higher Education (AASHE) by FY30.

The Sustainable Tracking, Assessment, and Rating System (STARS) is a self-reporting framework that, based on 17 impact areas, ranks and benchmarks our sustainability initiatives. We are currently ranked gold and strive to achieve platinum status. Aiming for platinum status provides the opportunity to continuously evaluate both our short- and long-term goals. Our goal is to lead by example and continue to be a model for other institutions to establish feasible goals and implement impactful projects and policies.

Challenges

We have set bold and ambitious sustainability goals for this campus, and we will strive to hold responsible parties accountable. However, we continue to face financial and institutional barriers that we must work to overcome. The possibility remains that sufficient resources might not be available to carry out our sustainability efforts; for example, many budgets have been restricted due to the COVID-19 pandemic.

Despite the overlap between proposed projects and existing plans, we nevertheless face funding challenges to maintain and grow sustainability activities. Additionally, the collaborative nature of these objectives, while vital to their success, presents the challenge of coordinating multiple entities with view to a common goal.

Beyond funding and personnel, an added technical challenge is monitoring the progress of our objectives. While we attempt to ac-

curately measure the success of all activities, quantifying the impact of certain programs (e.g., our behavior change campaigns) poses a particular challenge.

As we work to expand our reach, a final challenge is communicating our efforts to all individuals on campus and in the community (see the Engagement chapter for further discussion). We hope to ensure that every person is aware of our goals as well as what actions can be taken to contribute to our programs' success. Our goal is that students, staff, faculty members, and administration recognize sustainability as a priority.

Our Illinois campus community has committed to improving sustainability efforts and reaching carbon neutrality. We have set aggressive goals and a high sustainability standard, and we can all work together to achieve this shared vision.

Comprehensive List of Objectives

#	OBJECTIVE SHORT NAME	DRAFT OBJECTIVE DESCRIPTION	RESPONSIBLE PARTIES	IMPLEMENTATION DIFFICULTY	FUNDING LEVEL	#	OBJECTIVE SHORT NAME	DRAFT OBJECTIVE DESCRIPTION	RESPONSIBLE PARTIES	IMPLEMENTATION DIFFICULTY	FUNDING LEVEL
1.0	Carbon and Resilience Commitments	Meet the Climate Leadership Commitments.	Chancellor	HIGH	HIGH	3.1	Fleet Replacement Plans	Establish written replacement plans for at least 80% of campus fleets by FY24 to improve university-owned vehicle fuel efficiency.	Fleet Managers w/F&S	MED	LOW
2.1	Energy Planning Document	By FY24, develop a comprehensive energy planning document that includes a detailed strategy for meeting the FY50 net-zero greenhouse gas (GHG) emissions goal.	F&S	HIGH	HIGH	3.2	Increase Pavement Condition Index	Increase the Pavement Condition Index (PCI) for university-owned roads so the average PCI score is at least 65 by FY25 and at least 70 by FY30.	F&S	MED	HIGH
2.2	Increase Energy Efficiency	Reduce Energy Use Intensity (EUI) of university facilities from the FY08 baseline by: 45% by FY30, 50% by FY40, and 60% by FY50.	F&S	MED	HIGH	3.3	Electric Vehicle Task Force	Establish an Electric Vehicle Task Force to identify key goals for supporting the use of electric vehicles on and off campus by FY22.	Parking	LOW	LOW
2.2.1	Improve Space Utilization	Improve efficiency of space use by minimizing the square footage per person and updating the Space Policy in the Campus Administrative Manual (CAM) by FY23.	Provost	LOW	LOW	3.4	Reduce Driving on Campus	Reduce driving on campus and report the percentage of staff trips made using single-occupancy vehicles from 60% to 50% by FY25 and 45% by FY30.	F&S	HIGH	MED
2.2.2	Reduce Building-level Energy	Reduce the total annual energy consumption of each college-level unit by at least 20% from an FY15 baseline by FY35.	Units w/ F&S	MED	HIGH	3.4.1	Develop a Commuter Program	Develop a Commuter Program (Bus, Bike, and Hike) for faculty and staff. Register 100 people by FY24 and 500 people by FY30.	Parking w/F&S	MED	MED
2.3	Clean Energy Sources	Use clean energy sources for 15% of total campus energy demand by FY30.	F&S	HIGH	HIGH	3.4.2	Implement Campus Bike Plan	Continue to implement the 2014 Campus Bike Plan.	F&S	MED	HIGH
2.3.1	140,000 MWh/year Clean Power	Use at least 140,000 MWh/year of clean power by FY25.	F&S	MED	HIGH	3.4.3	Telecommuting Policies	Establish telecommuting policies for the campus by FY24.	F&S w/IHR	MED	LOW
2.3.2	Clean Thermal Energy	Use at least 150,000 MMBTU/year of clean thermal energy by FY30.	F&S	HIGH	HIGH	3.5	Offset Air Travel Emissions	Reduce net air travel emissions from FY14 baseline by: 50% by FY24 and 100% by FY30.	ISEE	LOW	LOW

#	OBJECTIVE SHORT NAME	DRAFT OBJECTIVE DESCRIPTION	RESPONSIBLE PARTIES	IMPLEMENTATION DIFFICULTY	FUNDING LEVEL	#	OBJECTIVE SHORT NAME	DRAFT OBJECTIVE DESCRIPTION	RESPONSIBLE PARTIES	IMPLEMENTATION DIFFICULTY	FUNDING LEVEL
4.1	Reduce Water Consumption	Reduce potable water consumption to 721,500 kgal/year by FY24, which is a reduction of 45% from the FY08 baseline.	F&S	MED	MED	5.2.1	Install Appropriate Infrastructure	Install appropriate waste collection infrastructure throughout the University District, with new indoor bins placed in at least 150 buildings by FY24.	F&S	HIGH	HIGH
4.2	Implement Resilient Landscape Strategy	Implement the Resilient Landscape Strategy recommendations by FY24.	F&S	MED	HIGH	5.3	Establish a Culture of Reuse	Establish a culture of reuse, with two major campuswide zero-waste events using durable goods and composting in FY22, four in FY23, six in FY24, and eight in FY25.	F&S w/Provost	MED	MED
4.2.1	Increase Number of Trees	Increase the number of trees on campus by 1,500 by FY24 and by 3,000 by FY30.	F&S	MED	HIGH	5.3.1	Zero Waste Messaging Campaign	Develop a comprehensive Zero Waste messaging campaign by FY21 and achieve a cumulative total of 10,000 "Use the Bin" pledges by FY24.	F&S	MED	MED
4.2.2	Increase Pollinator-Friendly Areas	Increase the number of on-the-ground pollinator-friendly landscaping areas on campus by 50% from the FY19 baseline by April 2024.	F&S	MED	MED	5.4	Reduce Food Scraps	Promote food scraps reduction on campus through a behavior change campaign, and tracking and recovery of surplus food for donation, with at least five new areas tracking and reporting their food waste by FY22.	F&S	MED	MED
4.2.3	Double Green Infrastructure Installations	Double the number of on-campus green infrastructure installations from 24 to 48 by FY24.	F&S	MED	HIGH	5.5	Plan for Organic Waste	Develop a detailed comprehensive plan including implementation and operational costs/benefits to sustainably dispose of all food scraps and other organics by FY24, and fully implement the plan by FY33.	F&S	HIGH	HIGH
4.3	Cover Crops on South Farms	Use cover crops in at least 20% of South Farms acreage by FY24.	ACES	HIGH	HIGH	5.6	Use Local Food	Increase the use of local food to 35% by FY30.	Housing	MED	MED
4.4	Monitor Soil Health	Monitor soil health by collecting soil analyses for all South Farms land parcels by FY24.	ACES	HIGH	LOW	5.6.1	Food Literacy Project	Implement Food Literacy Project by FY24 by tracking carbon, nitrogen, and water footprints for food items in campus dining halls.	Housing	HIGH	MED
5.1	Sustainable Procurement Reports	Create sustainable procurement reporting guidelines and increase compliance to 100% of business managers through training and outreach by FY24.	Purchasing	HIGH	LOW	5.7	Green Cleaning Program	Establish a green cleaning program that meets LEED v.4 requirements by FY24.	F&S	MED	MED
5.2	Reduce Landfilled Waste	Reduce the total campus waste going to landfills from 5,049 tons in FY19 to 4,544 tons or less in FY24, which is a decrease of at least 10%.	F&S	HIGH	HIGH						

#	OBJECTIVE SHORT NAME	DRAFT OBJECTIVE DESCRIPTION	RESPONSIBLE PARTIES	IMPLEMENTATION DIFFICULTY	FUNDING LEVEL	#	OBJECTIVE SHORT NAME	DRAFT OBJECTIVE DESCRIPTION	RESPONSIBLE PARTIES	IMPLEMENTATION DIFFICULTY	FUNDING LEVEL
6.1	Broaden Sustainability Education	Broaden the availability of sustainability education across the entire curriculum, beginning with first-year student orientation and continuing through commencement, with at least one of four proposed methods implemented by FY24.	ISEE	MED	MED	7.1	Green Certifications	Enhance the overall culture of sustainability on campus, and increase the number of certifications issued through the Certified Greener Campus Program by 20% each year from FY20 to FY24.	ISEE	LOW	LOW
6.2	Sustainability Course Catalog	Establish a comprehensive online repository for courses and academic programs with sustainability content.	ISEE	MED	LOW	7.2	Sustainable Events Program	The Illini Union and Illini Union Board commit to 80% of their events qualifying as sustainable by FY24.	Illini Union	MED	LOW
6.3	Environmental Leadership Program	Launch an undergraduate Environmental Leadership Program (ELP) that includes two week-long residential intensives, pre-professional workshops, visiting speakers, and field trips to Springfield and Washington, D.C.	ISEE	LOW	MED	7.3	Green Sports Alliance	Increase visibility of campus sustainability efforts by joining the Green Sports Alliance through the Division of Intercollegiate Athletics (DIA) by summer 2021.	DIA	LOW	LOW
6.4	Sustainability Internship Program	Develop a sustainability internship program through partnering with businesses, nonprofits, local government, and cultural institutions in Central Illinois. The total number of internships awarded will be reported each year.	ISEE	MED	LOW	7.4	Local Collaborations	Incorporate sustainability-related problem solving in the GivePulse system for public engagement, and track local collaborations for sustainable solutions. Increase local collaborations by 10% per year from FY22 to FY24.	ISEE	MED	MED
6.5	Sustainability at Career Fairs	Partner with The Career Center and potentially other career offices in FY22 to help students explore and discover career opportunities that are connected to professional interests and goals related to sustainability. Incorporate a sustainability component at a minimum of two events beginning in FY22.	Career Center w/ISEE	LOW	LOW	7.5	Support Youth Sustainability	Support programs to develop love of nature and sustainability among children, with an annual Youth Sustainability Summit led by local teenagers with guidance and mentoring from campus and community sustainability leaders.	Extension	MED	LOW
6.6	Graduate Certificate in Sustainability	Offer a new graduate certificate in sustainability by FY24.	ISEE	MED	LOW	7.6	iCAP Portal Updates	Update the iCAP Portal on a monthly basis to report progress toward iCAP objectives.	ISEE	LOW	LOW

#	OBJECTIVE SHORT NAME	DRAFT OBJECTIVE DESCRIPTION	RESPONSIBLE PARTIES	IMPLEMENTATION DIFFICULTY	FUNDING LEVEL	#	OBJECTIVE SHORT NAME	DRAFT OBJECTIVE DESCRIPTION	RESPONSIBLE PARTIES	IMPLEMENTATION DIFFICULTY	FUNDING LEVEL
8.1	Urban Biodiversity Master Plan	Develop a coordinated urban biodiversity master plan by FY24 to make the Champaign, Urbana, Savoy, and campus metro area a model for biodiversity.	Extension w/F&S	HIGH	MED	8.6	Vision Zero	Support Vision Zero as a county-wide goal for safe and sustainable transportation.	F&S	LOW	MED
8.2	Coordinated Rainwater Management	Coordinate rainwater management plans for the entire urbanized areas of Champaign, Urbana, Savoy, and the university. Starting in FY21, share the total number of green infrastructure locations on the iCAP Portal on an annual basis.	F&S w/Extension	HIGH	HIGH	8.7	Local Offsets Program	Establish a local offsets program by FY24.	ISEE	HIGH	HIGH
8.3	Environmental Justice Plan	Develop a collaborative plan for environmental justice that will assess metro area resilience and actively address related issues. The plan will be written and publicized by FY24.	ISEE	HIGH	HIGH	9.1	Divest from Fossil Fuels	Fully divest from fossil fuel companies by FY25.	Chancellor	HIGH	MED
8.4	Local Sustainability Issues	Take leadership in addressing the most pressing sustainability challenges in our local communities through collaboration with local governments and related community groups, by forming an advisory panel for coordinating efforts across jurisdictional boundaries. By FY24, select at least three major local sustainability issues to address and identify lead agency and key stakeholders.	ISEE	HIGH	MED	9.2	Sustainable Investing Policy	Commit to a Sustainable Investing Policy by FY24.	Chancellor	HIGH	LOW
8.5	Inventory Green Jobs	By FY23, collaborate with colleges and community groups to inventory existing certification opportunities for green jobs and identify gaps.	ISEE	MED	LOW	9.3	Include iCAP in Strategic Plan	Incorporate the iCAP in the next campus Strategic Plan.	Chancellor	LOW	LOW
						9.4	Become STARS Platinum	Achieve STARS Platinum rating from the Association for the Advancement of Sustainability in Higher Education (AASHE) by FY30.	ISEE	HIGH	HIGH

Conclusion: Reaffirming Our Commitment

In 2008, the University of Illinois Urbana-Champaign formally committed to achieving carbon neutrality as soon as possible. As evidenced by the preceding chapters, we have no shortage of innovative ideas to realize this ambitious goal, and no shortage of determined individuals to see our strategies through. With the approval of iCAP 2020, we reaffirm our pursuit of this commitment and look forward to accelerating our environmental stewardship efforts in the coming years.

To conclude, we'd like to reiterate a concept that surfaces throughout this document: neither climate change nor resilience strategies exist in a vacuum. The ways in which we as a society interpret, acknowledge, and address environmental issues is deeply interwoven with our approaches to other grand challenges of global scope and scale. Most recently, we have seen these parallels play out in an unprecedented way in response to the worldwide COVID-19 pandemic.

In March 2020, Ming Kuo, director of the University of Illinois' Landscape and Human Health Lab, provided powerful insight into the connections between the human response to the recent COVID-19 pandemic and the disruptive social and behavioral changes needed

to address a very different, but no less momentous, crisis: climate change.

Kuo, a 2018 Heinz Award winner in the environment category¹⁵⁴ and the university's first faculty member to be invited to speak at the World Economic Forum, commented on the dissonance between expert and lay assessments of COVID-19. She called for science-backed action as the best form of resolution for medical, and ecological, catastrophe. Her comments are excerpted below:

It's like this. There are a whole lot of people who study tidal waves. They work full-time — 50 to 60 hours per week — measuring things, studying tidal waves under different conditions, over different surfaces, different temperature waters, reading and making sense of historical records of tidal waves, looking at the ocean from space.... (A scientist is, above all, an obsessive person.)

If a lot of people do this, working for their entire careers, each helping to figure out different aspects of tidal wave behavior, then that scientific community can get to be pretty good at predicting tidal waves. They're not going to be able to tell you every last thing about any given tidal wave, but they can tell you when the conditions are right. And when one

is forming some staggering distance away, they can tell you there's one coming here — even when, here, the sea is calm, the sky is bright, and the day looks like any other.

That's science. By studying and understanding the way the world works, science helps us see into the future.

When the COVID-19 wave hits, and passes, please consider that the tidal wavologists might also be right about climate disruption. And that, to prevent an even bigger wave of deaths, we can act, and should willingly make hugely disruptive changes.

Because that wave is coming, too.

Moving forward, we hope that the urgency of these and other global issues prompts society at large to take a disruptive approach to seeking out solutions. Large-scale policy, behavior change, and collaborative efforts, all of which have a localized presence in the iCAP, have proven to be transformative when backed by science and pursued with spirit and commitment.

In short, if we embrace substantial change in pursuit of an ultimately sustainable future, our options for enacting meaningful change are endless.

Whether positive change originates on a campus, in a community, or at the state, national, and global scales, we dedicate ourselves, through this document, to the power of disruptive decision-making, robust behavior change, and long-lasting climate action.

154 <http://www.heinzawards.net/recipients/ming-kuo>

Appendix A: Acronyms

AASHE: Association for the Advancement of Sustainability in Higher Education
ABE: Agricultural and Biological Engineering
ACE: Agricultural and Consumer Economics
ACE IT: Alcohol Culture Explored Interactive Theater
ACES: Agriculture, Consumer, and Environmental Sciences
ACUPCC: American College and University Presidents' Climate Commitment
ALUFS: Agriculture, Land Use, Food, and Sequestration
ARC: Activities and Recreation Center
ATG: America To Go
BEC: building envelope commissioning
BFU: Bicycle Friendly University
BIF: Business Instructional Facility
BPAC: Bicycle and Pedestrian Advisory Commission
BSW: Building Service Worker
BTU: British Thermal Unit
CALL: Campus as a Living Laboratory
CAM: Campus Administrative Manual
CATS: Campus Area Transportation Study
CCGRTF: Champaign County Climate Resilience Task Force
CCNet: Champaign County Sustainability Network
CGRPC: Champaign County Regional Planning Commission
CCWS: Campus Chilled Water System
CEW: Certificate in Environmental Writing
CGOP: Certified Green Office Program
CHP: combined heat and power
CNG: compressed natural gas
CO₂e: carbon dioxide equivalent
CRAWG: Campus Research Administrators Working Group
CUUATS: Champaign-Urbana Urbanized Area Transportation Study
DCEO: Illinois Department of Commerce and Economic Opportunity
DIA: Division of Intercollegiate Athletics
EARTH: Environmental Action Right This Hour

ECB: energy cost budget
ECIP: Energy Conservation Incentive Program
ELP: Environmental Leadership Program
EPA: Environmental Protection Agency
ESE: Earth, Society, and Environment
ESES: Earth, Society, and Environmental Sustainability
EUI: energy use intensity
EV: electric vehicle
F&S: Facilities and Services
FAA: Fine and Applied Arts
FLB: Foreign Languages Building
FTE: full time equivalent
FY: fiscal year
FYCARE: First Year Campus Acquaintance Rape Education
GEM: Global Electric Motorcars
GenEd: general education
GHG: greenhouse gas
GPF: gallon per flush
GPP: Green Power Partnership
GSF: gross square foot
HRI: Humanities Research Institute
HTL: hydrothermal liquefaction
HVAC: heating, ventilation, and air-conditioning
IB: Integrative Biology
IBRL: Integrated Bioprocessing Research Laboratory
iCAP: Illinois Climate Action Plan
ICECF: Illinois Clean Energy Community Foundation
iCS: Illinois Contract System
ILO: Illini Lights Out
IPM: Integrated Pest Management
ISD: Illinois Solar Decathlon
iSEE: Institute for Sustainability, Energy, and Environment

ISG: Illinois Student Government
ISO: Independent System Operator
ISTC: Illinois Sustainable Technology Center
IUB: Illini Union Bookstore
IVCB: Integrated and Value-Centered Budget
iWG: iCAP Working Group
LAB: League of American Bicyclists
LAS: Liberal Arts and Sciences
LED: Light-emitting diode
LEED: Leadership in Energy and Environmental Design
LRTP: Long Range Transportation Plan
LSV: low-speed vehicle
MCORE: Multimodal Corridor Enhancement
MISO: Midcontinent Independent System Operator
MPO: Metropolitan Planning Organization
MSW: municipal solid waste
MTCO_{2e}: metric tons of carbon dioxide equivalent
MTD: Mass Transit District
MW: megawatt
MWh: megawatt-hour
NAFA: National Association of Fleet Administrators
NGICP: National Green Infrastructure Certification Program
NPRE: Nuclear, Plasma and Radiological Engineering
NRES: Natural Resources and Environmental Sciences
NRT: NSF Research Traineeship
NSF: National Science Foundation
NSRC: National Soybean Research Center
OBFS: Office of Business and Financial Service
OVCDEI: Office of the Vice Chancellor for Diversity, Equity & Inclusion
P-Cards: Purchasing Cards
PCI: Pavement Condition Index
PLAN: Post-Landfill Action Network
PO: Purchase Order
PPA: power purchase agreement

PSC: professional service consultant
PWR: Purchasing, Waste, and Recycling
RA: resident advisor
RCx: retrocommissioning
REC: Renewable Energy Certificate
RIPE: Realizing Increased Photosynthetic Efficiency
RLF: revolving loan fund
RNG: renewable natural gas
RORG: Red Oak Rain Garden
RSO: Registered Student Organization
RST: Recreation, Sport, and Tourism
RTO: Regional Transmission Organization
SAW: South Arboretum Woods
SEE FP: Sustainability, Energy, and Environment Fellows Program
SESE: School of Earth, Society, and Environment
SECS: Students for Environmental Concerns
SLLC: Sustainable Living Learning Community
SOV: single-occupancy vehicle
SSC: Student Sustainability Committee
SSF: Sustainable Student Farm
SSLC: Student Sustainability Leadership Council
SSW: School of Social Work
STARS: Sustainability Tracking, Assessment & Rating System
STEM: science, technology, engineering, and mathematics
SWATeams: Sustainability Working Advisory Teams
T-Cards: Travel Cards
TDM: Transportation Demand Management
TES: thermal energy storage
UCSD: Urbana-Champaign Sanitary District
UIF: University of Illinois Foundation
ULA: University Landscape Architect
USDA: United States Department of Agriculture
VPPA: virtual power purchase agreement
WPP: Woody Perennial Polyculture
ZWIA: Zero Waste International Alliance

Appendix B: Contributors

2019-2020 SUSTAINABILITY COUNCIL

Chair: Robert J. Jones, Chancellor, University of Illinois Urbana-Champaign

Vice Chair: Evan H. DeLucia, Baum Family Director of iSEE

Andreas Cangelaris, Vice Chancellor for Academic Affairs and Provost

Barry Benson, Vice Chancellor for Advancement, Illinois Foundation Senior Vice President

Danita Young, Vice Chancellor for Student Affairs

Susan Martinis, Vice Chancellor for Research and Innovation

James Dean Anderson, Dean, College of Education

Rashid Bashir, Dean, Grainger College of Engineering

Kim Kidwell, Dean, College of Agricultural, Consumer, and Environmental Sciences

Feng Sheng Hu, Dean, College of Liberal Arts & Sciences

Mohamed Attalla, Executive Director, Facilities and Services

Robin Kar, Chair, Senate Executive Committee

Connor Josellis, President, Illinois Student Government

Joe Edwards, Graduate Student, Chair of the Student Sustainability Committee

Sarah Gediman, Undergraduate Student, Vice Chair of the Student Sustainability Committee

Joey Kreiling, Undergraduate Student, President of the Student Sustainability Leadership Council

Jonah Messinger, Undergraduate Student, Vice President of the Student Sustainability Leadership Council

Non-voting attendees: Ximing Cai, iSEE Associate Director for Campus Sustainability and Co-Chair of the iCAP Working Group; Morgan White, Associate Director of Facilities and Services, Sustainability, and Co-Chair of the iCAP Working Group

Secretary: Jenny Kokini, iSEE Managing Director

2019-2020 ICAP WORKING GROUP

Ximing Cai (Co-Chair), Associate Director for Campus Sustainability, representing iSEE

Morgan White (Co-Chair), Associate Director of Facilities and Services, Sustainability

Alma Sealine, University Housing Director, representing Student Affairs

Matthew Tomaszewski, Executive Associate Provost for Capital Planning, representing the Office of the Provost

John Dallesasse, Chair of Senate Committee on Campus Operations, representing the Academic Senate

Bugra Sahin, Undergraduate Student in Civil Engineering, Illinois Student Government Environmental Sustainability Committee Chair

Joe Edwards, Graduate Student, Chair of the Student Sustainability Committee

Sarah Gediman, Undergraduate Student, Vice Chair of the Student Sustainability Committee

Joey Kreiling, Undergraduate Student, President of the Student Sustainability Leadership Council

Jonah Messinger, Undergraduate Student, Vice President of the Student Sustainability Leadership Council

S. Renee Wiley, Grainger College of Engineering, representing the community of college-level facility managers

Sandy Yoo, Architect & Assistant Director, Capital Programs Administration, representing the Office of Business and Financial Services

Meredith Moore (Secretary), iSEE Sustainability Programs Coordinator

2019-2020 ENERGY SWATEAM

Bill Rose (Faculty Co-Chair), Senior Research Architect, Applied Research Institute

Andrew Stumpf (Faculty Co-Chair), Geologist at Illinois State Geological Survey, Prairie Research Institute

Tugce Baser (Faculty), Assistant Professor of Civil & Environmental Engineering

Yun Kyu Yi (Faculty), Assistant Professor of Architecture

David Boehm (Staff), Facilities and Services Associate Director of Operations, Maintenance and Alterations

Karl Helmink (Staff), Facilities and Services Associate Director of Energy Conservation and Retrocommissioning

Mike Larson (Staff), Facilities and Services Director of Utility Operations

Tim Mies (Staff), Energy Farm Operations Director

Jayce Carlson (Student), Undergraduate in Natural Resources and Environmental Sciences

Keunhyuk “K.J.” Jang (Student), Ph.D. Candidate in Architecture

Mike Reiter (Student), Ph.D. Candidate in Civil & Environmental Engineering

David Antonio Rivera-Kohr (Student), Undergraduate in Biochemistry

Sowmiya Raju (Student Clerk), Undergraduate in Global Studies

2019-2020 LAND & WATER SWATEAM

Reid Christianson (Faculty Co-Chair), Research Assistant Professor of Crop Sciences

Art Schmidt (Faculty Co-Chair), Research Assistant Professor of Civil and Environmental Engineering

Rabin Bhattarai (Faculty), Assistant Professor of Agricultural and Biological Engineering

Bruce Branham (Faculty), Professor of Crop Sciences

Eliana Brown (Staff), Water Quality Outreach Specialist, U of I Extension

Jamie Ellis (Staff), Natural Areas Coordinator, Illinois Natural History Survey

Brent Lewis (Staff), Facilities and Services Campus Landscape Architect

Allen Parrish (Staff), Crop Sciences Research and Education Centers Director

Ella Liskiewicz (Student), Undergraduate in Public Policy and Law

Vikram Sudhan Muthuvel (Student), Undergraduate in Earth, Society, and Environmental Sustainability

Claire Samojedny (Student), Undergraduate in Civil Engineering

Mallory Mahen (Student Clerk), Undergraduate in Technical Systems Management

Valerie Ramirez (Student Clerk, retired), Undergraduate in Natural Resources & Environmental Sciences

2019-2020 ZERO WASTE SWATEAM

Timothy Stark (Faculty Chair), Professor of Geotechnical Engineering

Leon Liebenberg (Faculty), Teaching Associate Professor in Mechanical Science & Engineering

Robert McKim (Faculty), Professor of Religion

Thurman Etchison (Staff), University Housing Food Service Administrator

Aaron Finder (Staff), Office of Business and Financial Services Assistant Director of Purchasing

Shantanu Pai (Staff), Facilities and Services Zero Waste Coordinator

Marya Ryan (Staff, retired), Facilities and Services Waste Management Academic Hourly

Madalyn Liberman (Student), Undergraduate in Natural Resources and Environmental Sciences

Emily Recupido (Student), Undergraduate in Civil Engineering

Manying Zhang (Student), Undergraduate in Civil Engineering

Julija Sakutyte (Student Clerk), Undergraduate in Molecular and Cellular Biology

2019-2020 TRANSPORTATION SWATEAM

Julie Cidell (Faculty Chair), Associate Professor of Geography and Geographic Information Science

Yanfeng Ouyang (Faculty), Professor of Civil and Environmental Engineering

Lindsay Braun (Faculty), Assistant Professor of Urban & Regional Planning

Sarthak Prasad (Staff), Facilities and Services Sustainability Specialist

Paul Slezak (Staff), Facilities Manager, Parking Department

Peter Varney (Staff), Facilities and Services Director of Transportation & Automotive Services

Zhuo Chen (Student), Ph.D. Candidate in Geography

Trevor Gresham (Student), Undergraduate in Civil Engineering

Marie Hubbard (Student), Undeclared Undergraduate

Julija Sakutyte (Student Clerk), Undergraduate in Molecular and Cellular Biology

2019-2020 EDUCATION SWATEAM

Gillen D'Arcy Wood (Faculty Chair), Professor of English

Ann-Perry Witmer (Faculty), Instructor, Civil & Environmental Engineering

Julie Cidell (Faculty), Associate Professor of Geography and Geographic Information Science

Sharlene Denos (Staff), Associate Director of Outreach & Inclusivity, Department of Physics

Stacy Gloss (Staff), Research Specialist, Applied Research Institute

Dave Guth (Staff), Assistant Director for Facilities, Illini Union

Fina Healy (Student), Undergraduate in Agricultural & Biological Engineering

Alexa Smith (Student), Undergraduate in Natural Resources & Environmental Sciences

Carolyn Cai (Student), Undergraduate in Agricultural and Consumer Economics

Mallory Mahen (Student Clerk), Undergraduate in Technical Systems Management

Regina Cassidy (Student Clerk, retired), Graduate Assistant at Institute for Sustainability, Energy, and Environment

2019-2020 RESILIENCE SWATEAM

Ximing Cai (Faculty Chair), Professor of Civil & Environmental Engineering and Associate Director, iSEE

Warren Lavey (Faculty), Adjunct Professor of Natural Resources and Environmental Sciences, School of Earth, Society, and Environment

Sally McConkey (Faculty), Senior Professional Scientist at Illinois State Water Survey

Lisa Merrifield (Staff), Extension Specialist in Community Economic Development, U of I Extension

Meredith Moore (Staff), iSEE Sustainability Programs Coordinator

Morgan White (Staff), Associate Director of Facilities and Services, Sustainability

Dennis Donaldson (Community), Village of Savoy Treasurer

Rita Morocoima-Black (Community), Planning and Development Director at Champaign County Regional Planning Commission

Lacey Rains Lowe (Community), City of Champaign Sustainability Planner

Scott Tess (Community), City of Urbana Environmental Sustainability Manager

Kimmy Chuang (Student), Undergraduate in Natural Resources and Environmental Sciences and Political Science

Joshua Lim (Student, retired), Undergraduate in Engineering Physics

Sowmiya Raju (Student Clerk), Undergraduate in Global Studies

Regina Cassidy (Student Clerk, retired), Graduate Assistant at Institute for Sustainability, Energy, and Environment

Appendix C: Honorable Mention Objectives

EXPLANATION

The iCAP 2020 objectives were formulated, drafted, and finalized as a result of hard work on the part of countless individuals. Integral to this process are the undergraduate and graduate students who consistently contributed their evenings to participate in our monthly Student Input Sessions. We were impressed and humbled by the ingenuity and respect that became characteristic of these discussions. The meetings never failed to exceed their allotted time slots, and we could count on departing with pages of creative suggestions in hand.

Many of the objectives included in this document originated from these student suggestions. With added insight from the SWATeams, iWG, and stakeholder groups, we turned these promising ideas into actionable, measurable targets that the university will be held accountable to adopt. We feel strongly that each of our published objectives is handled with integrity and seen through from beginning to end. That said, while only a portion of the suggestions fielded in the Student Input Sessions could be adapted into concrete objectives, we want to formally acknowledge additional ideas here, and show our appreciation for the dedicated individuals who contributed to the conversation. This list is a starting point for discussion of future objectives, projects, and policies.

These “honorable mentions” are included below, and are organized according to iCAP 2020 themes. Additional categories are identified as needed.

Energy

- » By FY30, install motion sensors or timed lights in all campus buildings to eliminate excess energy usage. Consider photonically-sensitive lights, which adjust in intensity based on lighting conditions.
- » Instead of lighting an entire room with a single switch, install multiple switches to control smaller sections. This will be especially effective in large rooms, where full lighting is not always necessary.
- » Until motion detectors are installed, post stickers (e.g., “Turn Off Lights!”) throughout campus.
- » Post signage throughout campus about “de-lightfulness” tips and negative effects of unnecessarily expended electricity.
- » Post signage throughout campus promoting the benefits of natural light.
- » Strategically construct new buildings to utilize natural light.
- » Include university staff and faculty in educational communication regarding turning lights off and Illini Lights Out (ILO) events.
- » Rather than advocating for a decrease in total energy use, incentivize keeping lights turned off completely.
- » Educate students from all disciplines about carbon credits and their significance at the university.
- » Promote clean energy sources rather than retroactive carbon credit purchasing.
- » Illinois-initiated projects must produce an equivalent amount of renewable energy to match each carbon credit purchased.
- » Decentralize the university steam pump system to make each building’s temperature individually adjustable.
- » Introduce small-scale rooftop solar electrical grids to 10 campus buildings by FY35; fund a feasibility study to determine the best candidates for this project by FY22.
- » Demand university accountability for net-zero emissions.

Transportation

- » Collect and publish data on the amount of energy used per building to incentivize energy reduction.
- » Change the energy source for leaf blowers and lawnmowers used on campus, as they do not currently include filters on their exhausts.
- » Implement retrocommissioning standards to improve energy efficiency of existing campus facilities.
- » Install white tiles on rooftops of university structures to reflect heat in the summer and reduce cooling needs.
- » Employ an electricity cap in residence halls. Total energy usage can be measured with meters installed in each room. Low energy usage might be incentivized with prizes, while excessive energy usage could potentially result in a fine.
- » Improve window technology used in older campus buildings to decrease heating and cooling needs (e.g., passive solar design).
- » New buildings must include infrastructure that allows for rooftop gardens. These will promote native plants and assist with rainwater management.
- » Utilize agricultural waste and/or bioproducts for sustainable fuel production.
- » Dining halls should invest in fewer high-energy production foods and support local farms.
- » Exercise frugality with screens and devices in classrooms.
- » Install infrastructure so that stationary bikes and ellipticals in the ARC and CRCE produce electricity.
- » All new buildings must meet STARS standards.
- » Provide more bike racks on campus.
- » Implement a bike-sharing program similar to Veo that requires iCard registry and mandatory return stations.
- » Transition all buses to run on electricity rather than gas. Advertise buses that currently run on electricity.
- » Introduce affordable, sustainable busing options from Urbana-Champaign to the Chicagoland area.
- » Install solar panels on MTD buses.
- » Ban all driving on campus.
- » Require a permit to drive on roads within the university district.
- » Increase parking fees to discourage nonessential driving.
- » Implement time-based restrictions to limit driving on certain streets.
- » Implement the use of airplane pools to maximize the efficiency of necessary air travel.
- » Require that the university pay 50% of carbon offset costs for university-related travel.
- » Better communicate air travel emissions statistics to Illinois students, staff, and faculty to increase awareness of the issue.
- » Launch a “Clear the Air” Challenge, where students can log points for choosing options such as carpooling, walking, biking, or other sustainable modes of transportation. This can be presented as a competition, with an associated website (i.e., cleartheairchallenge.org), and could evolve into an Urbana-Champaign or regional endeavor.
- » Encourage instructors to offer extra credit to students who complete the University of Illinois transportation survey. Alternatively, consider other methods of incentivizing the survey to increase student participation.
- » Reserve highly trafficked areas like Green Street (from Wright to Fourth) for pedestrians only (e.g., “superblocks”).

Land & Water

- » Reduce pollution in Boneyard Creek.
- » Document areas prone to frequent flooding, such as the area surrounding the Foreign Language Building (FLB).
- » Conduct and publicize a campus water audit to identify the best opportunities to conserve water.
- » Upgrade old water fountains around campus.
- » Implement dual systems for septic waste in new buildings.
- » Map all potential areas on and around campus for native plantings by 2022.
- » At least 50% of all new plantings on campus must be native by 2022, and this figure must increase by 5% annually.
- » Offer educational opportunities for students via local Master Naturalists and Master Gardeners.
- » Reduce use of herbicides and fertilizers on campus and document where/when they are used.
- » Identify places of heavy erosion, such as channel buffers and farms.
- » Encourage the recycling center to accept more materials, such as glass.
- » Empower interested students to seek out land & water research opportunities with relevant faculty.
- » Incorporate land & water discussions, projects, and opportunities into relevant courses.
- » Encourage no-till farming and precision fertilizer application.
- » Promote polyculture on university-owned farms to promote biodiversity and sustainable agriculture.
- » Replace turf-grass with drought-resistant mow-less grass to promote natural landscapes and decrease water usage.

Zero Waste

- » Invest in TerraCycle to recycle food wrappers, toothpaste bottles, cosmetic cases & other hard-to-recycle items, especially in residence halls.
- » Create a system to recycle plastic bags, with centralized drop-off locations such as the Union and IUB.
- » Work with Champaign-Urbana and Savoy to provide campus drop-off locations to recycle glass.
- » Require RSOs to use water pitchers/coolers (rather than plastic water bottles) at Quad Day and other events.
- » Require student groups that host events to separate waste into different bins (e.g., recycling and eventually compost).
- » Devise a plan for recycling solar panels on campus, and require they be kept out of landfills.
- » Fund a research study to determine the most effective waste reduction methods.
- » Switch to bamboo or reusable cutlery and containers and add receptacles for compostable bowls in dining halls and the Illini Union.
- » Create a sustainable meals committee.
- » Use locally sourced/sustainable food and ingredients like rice, which sequesters carbon as it grows.
- » Expand on initiatives like Project 4 Less, an RSO that sends excess food from Ikenberry Commons to Wesley Food Pantry. Establish an office as a local distribution center for food pantries.
- » Repurpose unused meal swipes to food-insecure students: “Swipe Out Hunger.”
- » Incentivize businesses on campus to use similar sustainable practices.
- » Locate outside funding for an anaerobic digester for food waste and use the gas produced.
- » By 2025, have dining halls set up “hauler” teams to take food waste to area composting centers.
- » Research opportunities to hire a commercial hauling company to set up a composting program for campus and surrounding communities.
- » Transition university bathrooms to hand-dryers only, or install composting system for paper towels.

Education & Outreach

- » Support research efforts into natural remedies and environmentally relevant topics, especially if defunded by corporate powers.
- » Implement mandatory workshops for freshmen which demonstrate sustainable practices on campus and facilitate discussion. These discussions will be led by individuals with a background in campus sustainability.
- » Implement additional forms of sustainability reporting, such as a carbon disclosure project.
- » Conduct resident advisor (RA) training on sustainability topics relevant to residence halls, such as dining hall food waste, so that RAs can better educate their floors.
- » Increase advertisement for the Sustainability, Energy, and Environment Fellows Program (SEE FP).
- » Provide sustainability peer mentoring to underclassmen by upperclassmen.
- » Make University emissions data publicly accessible, and draw attention to where it can be accessed.
- » Provide monthly reports on relevant sustainability data from the chancellor or other high-level administration.
- » Implement sustainability tabs on each academic major's website.
- » Host a yearly event in which reliable sustainable companies and professionals are invited to present seminars on sustainability in their industries.
- » Construct a website or media campaign to centralize all environmental majors, minors, certificates, and programs on campus.
- » Dedicate a bulletin board in the Illini Union to promote sustainability-related events and information.
- » Provide training for advisors to increase their familiarity with sustainability-relevant courses.

Resilience

- » By 2021, draft an alliance agreement between Champaign, Urbana, and the university to pledge environmental resiliency and implementation of iCAP objectives.
- » Provide sustainability training for university Building Service Workers (BSW).
- » Initiate a program that matches community projects with undergraduate student projects.
- » Start a community on campus dedicated to sharing sustainable knowledge, resources, companies, and services.
- » Allow environmental RSOs access to MassMail to share relevant information and events.
- » Hold seminars on topics including: 5th and Hill Neighborhood Rights Campaign and Middle Fork Ash Ponds.
- » Provide sustainable education and training for University Grounds.
- » Create and implement a curbside food and lawn waste pickup program for the Urbana-Champaign community to decrease per-household garbage volume.
- » Introduce composting to Campus Dining Services, including waste carts to separate waste on-site for catering.
- » Introduce an "Adopt a Bike Path" program for the Urbana-Champaign community.
- » Promote "off-brand" recycling options for items such as computers and clothes.
- » Send student volunteers for composting endeavors to nearby areas.
- » Leverage the help of student volunteers to implement composting in campus-adjacent neighborhoods and localities.
- » Start a community garden and community food forest to be maintained and enjoyed by the community.
- » Promote "Meatless Mondays" in dining halls and encourage plant-based diet options.
- » Draft an agreement between Champaign, Urbana, and the university to reduce mowing by at least 10% by 2022 to increase natural areas.
- » Starting in FY20, all new building construction and renovation must include at least one of the following: solar panels, rooftop or building-adjacent greenspace, a native plant garden, or permeable parking and paving space.
- » Replace grass and mulch patches (excluding the Quad) with native prairie patches and/or sustainable crops. Food and resources generated as a result of this project can be used on campus or to feed community populations.

Fossil Fuel Divestment

- » By the end of FY20, fully divest University of Illinois system endowment from all companies involved in extraction, manufacturing, production, and transportation of fossil fuels.
- » Commit to remaining fully divested for 24 months following the initial declaration.
- » Create a publicly accessible University of Illinois system green investment portfolio, looking to other universities that have divested (such as the University of California and Stanford) for reference. Negatively screen out fossil fuel companies from this portfolio.

Implementation

- » Increase accountability for investing in long-term sustainable programs.
- » Allocate funding from donors to sustainability efforts (eg: donors will be offered the opportunity to donate to the university “green fund”).

Appendix D: Formal Procedures

BACKGROUND

With the formation of the Institute for Sustainability, Energy, and Environment (iSEE), the campus made comprehensive plans for how it will meet the Climate Leadership Commitments and the objectives established in the Illinois Climate Action Plan (iCAP). In the short term, we must determine what actions are needed to meet the incremental iCAP objectives and take those actions; in the longer term, plans are needed to meet future targets and ultimately reach our goal of being carbon neutral and building resilience within our local community. This procedure — approved by Chancellor Robert J. Jones on Oct. 7, 2020 — provides a framework for developing and evaluating new policies and initiatives for campus sustainability.

OVERVIEW

Recommended policies and initiatives will be developed by topical Sustainability Working Advisory Teams (SWATeams), convened by iSEE and consisting of faculty, staff, and students. With the new Resilience Commitment, signed in 2016, there is also a Resilience SWA-Team, which includes off-campus community representatives. The recommendations made by SWATeams for campus improvements and actions are transmitted to the co-chairs of the iCAP Working Group (iWG) comprised of mid-level administrators and faculty and student representatives. These recommendations are classified into small-, mid-, and large-scale according to the policy and/or financial implications and authority needed for implementation.

- » Small-scale recommendations will be transmitted by the iWG chairs directly to impacted units.
- » Mid-scale recommendations are evaluated by the iWG and the iWG assessments are transmitted as formal recommendations to the appropriate campus units.
- » Large-scale recommendations (with major policy and/or financial implications or impacting multiple units) are evaluated by the iWG and then reviewed by the Sustainability Council’s task force. This task force is responsible for evaluating the large-scale recommendation assessments and addressing uncertainties before

forwarding the recommendation to the full Sustainability Council for approval. The Sustainability Council will

approve the recommendation, modify it, reject it, or request further study.

These groups will also be responsible for the five-year updates to the iCAP. Initial inputs for updated iCAP objectives will be submitted by SWATeams to the iWG. The iWG will provide guidance to iSEE for seeking public input to the draft iCAP objectives, and the iWG will adjust and integrate the collected information for review and approval. This is often managed by a small drafting team representing iSEE, F&S, students, and the iWG. The draft iCAP will be reviewed by iWG members, the units they represent, and key campus stakeholders, then forwarded to the Sustainability Council for approval by the Chancellor. An overview of this process is shown below in Figure 23.

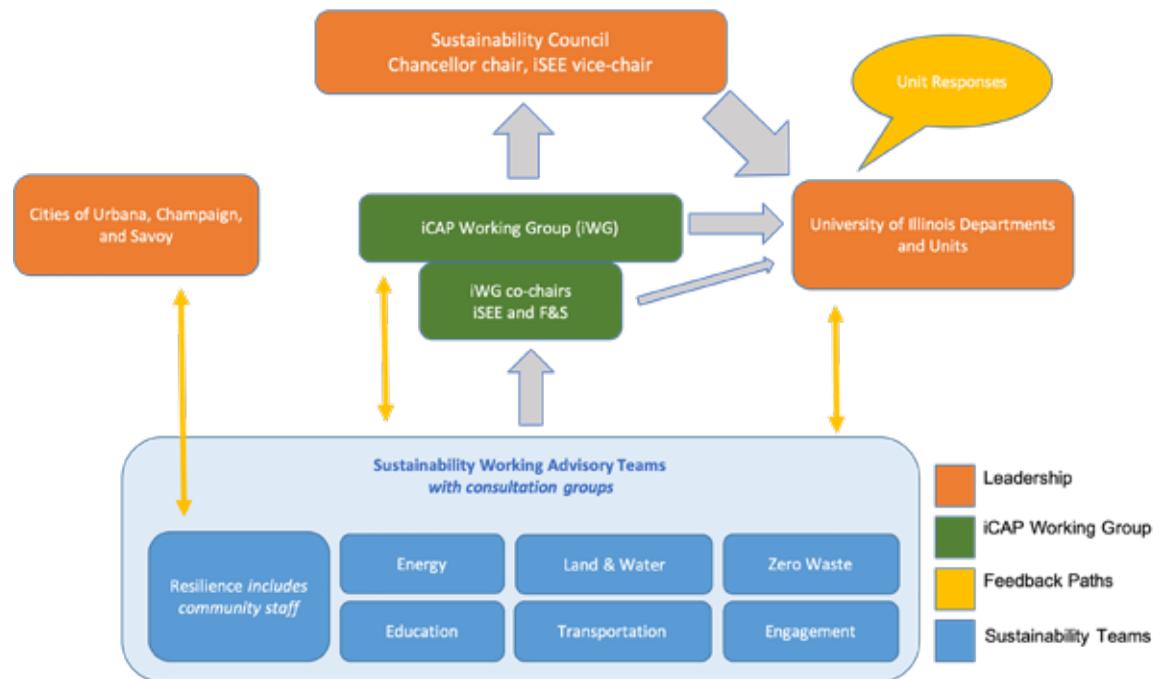


Figure 23: iCAP SWATeam Process Flowchart

Sustainability Working Advisory Teams (SWATeams)

TEAMS & TOPICS

iSEE, in consultation with the iWG, will identify the SWATeams and their topics. Starting in FY21, the teams will be named for Energy, Land & Water, Zero Waste, Transportation, Education, Engagement, and Resilience topics.

STRUCTURE & COMPOSITION

The SWATeams will require (a) focused and detailed study and analysis to formulate recommendations, (b) consultation with subject matter experts across campus, and (c) input and advice from the broader community. Each team has faculty members, staff members, and students. The Resilience SWATeam also includes members from local government and other pertinent entities. SWATeam members will gather information, synthesize data, and formulate recommendations in support of achieving the goals and objectives in iCAP. The SWATeam members will be identified by the iWG co-chairs and iSEE, in consultation with other stakeholders, and the teams will be formally charged by the Director of iSEE.

Each SWATeam will select a chair or co-chairs to preside over its meetings. Generally, the chairs will be faculty members, and the charge letter will be copied to their respective deans, to recognize their efforts for this important campus service.

Each SWATeam will also be provided with an iSEE intern as a clerk to help schedule meetings and prepare minutes and related reports, which will be made publicly available on the iCAP Portal. The interns are selected and supervised by the iSEE Sustainability Programs Coordinator. Each SWATeam is also expected to call upon larger consultation groups for input, consisting of faculty, researchers, staff, students, and community members with expertise in areas encompassed by the SWATeam's topic. The SWATeam recommendations will be finalized by each SWATeam voting member making a formal comment on the recommendation form and submitting it to the iWG co-chairs via email for iWG review.

CHARGE

Each SWATeam is expected to:

- » Perform an annual evaluation of the campus's progress in meeting iCAP objectives in the SWATeam's topical area. These annual evaluations should be prepared after the end of the fiscal year, and a report should be provided to the iWG by Sept. 30. The iWG will review these reports to ensure consistency and accuracy, and iSEE will work with the SWATeams to prepare visuals reflecting the progress reports to be presented to the public during Campus Sustainability Week each October.
- » Develop recommendations for specific actions or studies the campus should initiate to meet iCAP objectives. On an ongoing basis, the SWATeam should submit recommendations to the iCAP Working Group (iWG). The SWATeam should also assist the iWG with identifying units, groups, or individuals who might be well positioned to undertake those projects or guide the studies. Formal recommendations should be submitted to the iWG chairs using the Recommendation Template.¹⁵⁴
- » Every five years starting in 2014, re-assess the current sustainability targets, develop strategies that can be realistically used to reach those targets, and prepare recommendations for the revisions to the iCAP. This should include the development of a recommended long-range pathway for meeting the 2050 iCAP goals. This process should begin in the spring, with a full draft of each SWATeam's suggested objectives transmitted to the iCAP Working Group on the schedule provided by the iWG.

TERM

SWATeam members are appointed for a term of one academic year, and they may be reappointed.

¹⁵⁴ <https://icap.sustainability.illinois.edu/project/sustainability-working-advisory-teams-swateams>

MEETINGS

At a minimum, the SWATeams will meet for at least one hour as a whole team once per month in September, October, and November each fall and in February, March, and April each spring. SWATeams may elect to hold additional meetings on a more frequent basis, to work on a specific recommendation, but it is not expected that all team members be available at the interim meetings. The iWG co-chairs and iSEE Sustainability Programs Coordinator will attend the monthly full committee meetings whenever possible, to provide support and guidance, and the meeting scheduling will be managed by the iSEE interns assigned to each team.

SWATeams will consult with consultation groups in formal meetings and/or informally as they deem appropriate. The consultation group participants can be invited to SWATeam meetings as non-voting members and/or added to the SWATeam email list, at the discretion of the SWATeam and/or the iWG co-chairs. They will also participate in or coordinate public input meetings at least once per year.

iCAP Working Group (iWG)

COMPOSITION

The iWG is co-chaired by the iSEE Associate Director for Campus Sustainability and the F&S Associate Director for Sustainability. The other members of the iWG include at least a representative from the Office of the Provost, the chair of the Senate Committee on Campus Operations, the chair of the Illinois Student Government's Committee on Environmental Sustainability, the chair of the Student Sustainability Committee or designee, a representative from the Office of Business and Financial Services (identified by the Special Advisor to the President and Deputy Comptroller), a college-level facility manager (identified by the Executive Director of Facilities & Services), and a representative from Student Affairs/Auxiliaries (identified by the Associate Vice Chancellor for Auxiliary, Health & Wellbeing). Additional students, faculty, or staff may also be invited by iSEE as voting members. All iWG members should attend the meetings, or send a proxy if they have an unavoidable conflict.

This is intended to be a small working group comprised mainly of mid-level administrators and representing various stakeholders on campus. No members of the iWG can concurrently be a voting member on a SWATeam, with the exception of the Resilience SWATeam. The iWG will also call upon experts from across campus for input, in a manner analogous to the consultation groups for the SWATeams.

The iSEE Sustainability Programs Coordinator will serve as an ex-officio member, to schedule the iWG meetings and prepare minutes and related reports, which will be made publicly available on the iCAP Portal.

HANDLING SWATEAM RECOMMENDATIONS

The iWG does not have authority to make policy changes. It is intended to make recommendations to campus units and the Sustainability Council and to support the implementation of those recommendations. It receives recommendations from the SWATeams, evaluates and synthesizes them, and handles them as follows:

- » For small-scale recommendations with minimal policy or budget impacts, the iWG co-chairs will evaluate and transmit them directly to impacted units, to enable these recommendations to be considered quickly and efficiently. A hypothetical example of a small-scale recommendation is to add a link to a campus website. The iWG co-chairs will report to the full iWG about such recommendations at their regularly scheduled meetings, and this report will be incorporated into the iWG minutes.
 - » SWATeam recommendations with moderate-to-large impacts on budget and/or policy will be considered by the full iWG. If the iWG feels that more detailed study is needed (for example, a formal feasibility study through F&S, or a detailed academic study by faculty and/or students), the iWG will transmit a request for such a study to the appropriate units and then reconsider the recommendations once the study is complete.
 - » The iWG will assess each mid- or large-scale SWATeam recommendation and determine the routing direction. The recommendation may be returned to the SWATeam for further clarification, denied by the iWG, transmitted to the related unit(s), or forwarded to the Sustainability Council if large-scale. An example of a large-scale recommendation is the Solar Farm
- 2.o. The iWG may invite members of the SWATeam to iWG meetings when that SWATeam has a new recommendation to assess. The iWG will complete a written assessment of each supported SWATeam recommendation to accompany the original recommendation. The iWG co-chairs and the iSEE Sustainability Programs Coordinator will communicate the iWG decisions to the SWATeams and related units.
- » When forwarding a large-scale recommendation to the Sustainability Council, the iWG will complete the assessment and identify iWG members to participate in related discussions. The Sustainability Council task force will meet with the selected iWG representatives to review and clarify the large-scale recommendations before the biannual Sustainability Council meeting. The iWG co-chairs will facilitate the implementation of the Sustainability Council's decisions (e.g., transmit the recommendation to the appropriate units, initiate more detailed studies, coordinate revision of the recommendation for re-evaluation by the Sustainability Council, etc.). Occasionally a SWATeam member may be invited to the Sustainability Council meetings to provide background information about major recommendations, at the discretion of the Council's vice-chair.

All recommendations are shared on the iCAP Portal, and feedback is given to the originating SWA-Team(s). After the iWG discusses a recommendation, the SWA-Team which submitted the original recommendation will be informed about the status of the recommendation. When a recommendation is transmitted to a campus unit, the SWA-Team will also be given further updates about the implementation of the recommendation. All these will include reasons and explanations.

The iSEE Sustainability Programs Coordinator will track progress on each SWA-Team recommendation, update the iCAP Portal, share feedback with the SWA-Teams, and work with the iWG and related units to facilitate the implementation of the successful recommendations. This may include coordinating task forces, following up when there has been no action on a recommendation, and sharing status updates with the iWG co-chairs. This position is dedicated entirely to supporting the implementation of the iCAP and facilitating the implementation of the SWA-Team recommendations.

iCAP REVISIONS

Every five years starting in 2014, the iWG will initiate a process for a revision to the iCAP. For each year ending in 4 or 9, the following typical timeline will be followed. Individual SWA-Teams will evaluate the sections relevant to their topic during the spring semester and send comments to the iWG by May. In September, the SWA-Teams will recommend new or revised iCAP objectives for their topic, and send them to the iWG. iSEE will hold public input sessions on the draft objectives during Campus Sustainability Week in October, and the iWG will synthesize the SWA-Team recommendations and the public input into a complete iCAP revision in the fall. Monthly student input sessions will be held to incorporate the student perspective in the drafting process. The revised iCAP will be transmitted to the Sustainability Council before the end of the academic year for its evaluation. The Sustainability Council will review the draft iCAP update in the spring, and after any necessary revisions, the new iCAP draft will be submitted for Chancellor approval by October of years divisible by 5.

Sustainability Council

CONTEXT

The Sustainability Council was established in 2008 as part of our campus's implementation of the American College and University Presidents' Climate Commitment, and it was intended to lead sustainability efforts on campus and provide strategic direction and oversight of the iCAP. The present policy does not attempt to define the entirety of the Sustainability Council's role, but merely to formalize its composition and its relationship with the iCAP.

COMPOSITION

The Sustainability Council is composed of campus decision-makers at the highest level. It is chaired by the Chancellor, but its activities are coordinated by its vice-chair, the Director of iSEE. Its members include the Vice Chancellor for Academic Affairs and Provost; the Vice Chancellor for Research and Innovation; the Vice Chancellor for Student Affairs; the Vice Chancellor for Institutional Advancement; the Senior Associate Chancellor for Administration and Operations; the Executive Director of Facilities & Services; the Deans of the three largest colleges (currently ACES, Engineering, and LAS); the Dean of a smaller college (this position rotates annually in alphabetical order); the Chair of the Senate Executive Committee; the Executive Associate Provost for Capital Planning; the Associate Vice Chancellor for Auxiliary, Health & Wellbeing; the President of the Illinois Student Government; the Chair of the Student Sustainability Committee; and the Chair of the Student Sustainability Leadership Council. The iWG co-chairs will participate as non-voting members to provide perspective on the iWG's recommendations. The iSEE Sustainability Programs Coordinator will help coordinate the Sustainability Council meetings and help prepare agendas and minutes, which will be made publicly available on the iCAP Portal.

Large-scale SWA-Team recommendations that are forwarded to the Sustainability Council will first be discussed and clarified by a task force, which is a sub-committee of the Council. The task force will also discuss and make decisions on some mid-scale recommendations that need the coordination of multiple campus units and/or are subject to funding issues that cannot be resolved by corresponding unit(s). This task force will be led by the Senior Associate Chancellor for Administration and Operations. It will always include the iSEE Director, the F&S

Executive Director, the Executive Associate Provost for Capital Planning, the Associate Vice Chancellor for Auxiliary, Health & Wellbeing, and the iWG co-chairs (standing members). Additional Sustainability Council members, iWG members, or other subject matter experts may be invited to participate as needed, depending on the recommendations to be discussed. The iSEE Sustainability Programs Coordinator will provide administrative support for the task force. It is anticipated that this task force will provide a forum to discuss more difficult sustainability challenges for campus.

iCAP ROLE

The Sustainability Council evaluates recommendations in the area of campus sustainability with major impacts on budget and/or policy, and bears the ultimate responsibility for ensuring that the campus meets its iCAP targets.

Every five years, the iWG provides the Sustainability Council with a proposed revision to the iCAP, based on suggestions from the SWATeams. The Sustainability Council has the option to either endorse the revised iCAP as written, or to suggest that the iWG examine modifications and report back to the Sustainability Council with a new revision for endorsement. Once the revised iCAP is endorsed by the Sustainability Council, it will be forwarded to the Office of the Chancellor for formal approval and adoption.

MEETINGS

The full Sustainability Council meets at least once per semester, typically in November and April. All Council members should attend these biannual meetings, or send a proxy if they have an unavoidable conflict. The Council agendas will be set by the iSEE Director. Agendas include any recommendations forwarded by the iWG, iCAP revision updates every five years, and general overviews of campus sustainability strategies and challenges.

The Sustainability Council task force is expected to meet at least once per semester. In the fall, the task force will generally meet in early October to review the prior fiscal year's progress. In spring semesters, the task force will generally meet in early March to discuss major challenges and large-scale SWATeam recommendations.

DECISIONS

Unlike the SWATeams and the iWG, the Sustainability Council and its task force have decision-making authority. After evaluating a recommendation brought forward from the iWG, the Sustainability Council may take one of the following actions:

- » The recommendation can be accepted, in which case the iWG co-chairs will transmit the approved recommendation to the appropriate units and will assist them with implementation as appropriate.
- » The recommendation can be accepted with minor revisions, in which case the iWG co-chairs will transmit the revised recommendation to the appropriate units and will assist them with implementation as appropriate.
- » The recommendation can be sent back to the iWG with a request for further information or for substantial modifications, in which case the iWG co-chairs will report back to the Sustainability Council with the requested information and/or a modified recommendation.
- » The recommendation can be rejected. In such cases the Sustainability Council will provide the iWG with directions on alternative approaches that should be investigated to achieve the sustainability goals in question.

The Role and Responsibility of Campus Units for Campus Sustainability

CONTEXT

Several units throughout campus have contributed directly to the iCAP objectives, including iSEE, F&S, colleges and auxiliaries. As our iCAP efforts advance, more direct engagement is needed throughout campus. This section provides an overview of the role and responsibility of campus units, as it pertains to these procedures.

RECEIVING SWATEAM RECOMMENDATIONS

When a campus unit receives a SWATeam recommendation, the leader of this unit is expected to support the approval of the recommendation or provide an explanation of why the recommendation is not being approved. This response should be sent in writing to the iWG co-chairs, and it will be posted on the iCAP Portal. Responses should describe any issues and forces related to the recommendation and identify a single point of contact who will be responsible for coordinating the implementation.

It is expected that responses to SWATeam recommendations will be sent back to the iWG co-chairs within two weeks of the transmittal to the unit. The iWG co-chairs will send two reminders within three months if no response occurs. After that the iWG co-chairs may bring the recommendation to the attention of the Sustainability Council's task force.

IMPLEMENTING SWATEAM RECOMMENDATIONS

When a SWATeam recommendation is supported by the unit leadership, there are often issues that need to be resolved for the recommendation to be successfully implemented. The campus unit is responsible for managing the implementation of the recommendation and providing regular updates. The updates will be requested at least twice per year by the iSEE Sustainability Programs Coordinator, and they will be shared on the iCAP Portal. iSEE and the iWG will provide support and work with the campus unit to resolve the identified issues.

ABOUT THIS DOCUMENT

THE ILLINOIS CLIMATE ACTION PLAN (iCAP) IS THE STRATEGIC PLAN FOR THE UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN TO ADVANCE SUSTAINABILITY GOALS AND ACHIEVE CARBON NEUTRALITY BY 2050 AT THE LATEST.

We are extremely proud of this plan, which reflects the vital work of students, faculty members, staff, and the community to advance our sustainability goals. It is our hope that every campus visitor recognizes that we can all commit to reducing emissions and advocating for the environment. Collaboration is essential to pursuing environmental justice and tackling the challenges of global climate change.

Together, we are part of the solution.



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