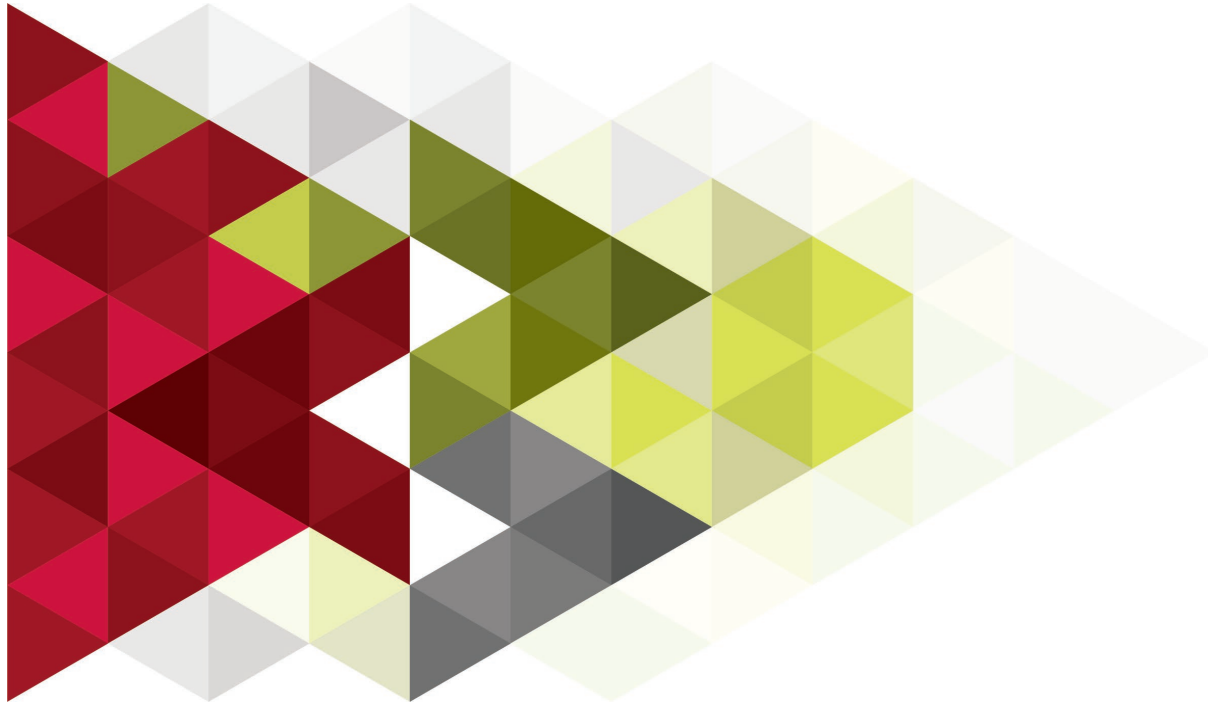THE OHIO STATE UNIVERSITY

Strategic Plan

Sustainability Institute

The Ohio State University

January 7, 2019

THE OHIO STATE UNIVERSITY

OHIO STATE'S ASPIRATION: A LEADING NATIONAL FLAGSHIP PUBLIC RESEARCH UNIVERSITY

To make the next bold leap in Ohio State's land-grant history of excellence and impact, we aspire to be a leading national flagship public research university.

This aspiration requires a focus on uplifting the well-being of the state, the nation and the global community through the dissemination of knowledge. It necessitates celebrating all that makes us distinctive and making decisions that build on our unique assets and strengths. Finally, it means being recognized consistently as one of the top public research universities in the nation.

To reach our goals, Ohio State's strategic plan sets forth five pillars of focus:

I TEACHING AND LEARNING
Ohio State will be an exemplar of the best teaching, demonstrating leadership by adopting innovative, at-scale approaches to teaching and learning to improve student outcomes.

II ACCESS, AFFORDABILITY AND EXCELLENCE
Ohio State will further our position as a leading public university offering an excellent, affordable education and promoting economic diversity.

III RESEARCH AND CREATIVE EXPRESSION
Ohio State will enhance our position among the top national and international public universities in research and creative expression, both across the institution and in targeted fields — driving significant advances for critical societal challenges.

IV ACADEMIC HEALTH CARE
The Ohio State University Wexner Medical Center will continue our ascent as a leading academic medical center, pioneering breakthrough health care solutions and improving people's lives.

V OPERATIONAL EXCELLENCE AND RESOURCE STEWARDSHIP
Ohio State will be an exemplar of best practices in resource stewardship, operational effectiveness, and efficiency and innovation.

Table of Contents

Appendices

A: Ohio State Sustainability Goals

B: SELC – Sustainability Faculty Working Group Goals

C: SI DT Core Faculty Portfolio

Introduction Letter

In 2015, Ohio State's leaders adopted strategic sustainability goals that encompassed and aligned with Ohio State's core goals of teaching, research, outreach and engagement, and resource stewardship. Since then Ohio State's commitment to sustainability has grown and deepened. The energy partnership with ENGIE-Axium is a singular, transformative example of innovation and investment in sustainability. Scores of other initiatives are underway to reach our goals and the lessons we have learned from our efforts have greatly informed this proposal.

Given the urgent challenges faced by communities and societies around the world, sustainability is an integral pillar of 21st-century public, land grant, research and community-engaged institutions. Sustainability is an inherently interdisciplinary topic that transcends any single academic unit, discipline or sector. The societal challenges of sustainability underscore the need for interdisciplinary sustainability education, research and engagement efforts that generate and integrate knowledge from multiple disciplines and that apply this knowledge through partnerships with local, state, national and global stakeholders to solve the real-world challenges of sustainability. The complexity of these challenges requires deep integration across a breadth of disciplines, including natural and physical sciences, social and behavioral sciences, engineering, public health, business, law, planning, policy, arts and humanities.

Our proposal to create the Sustainability Institute (SI) through a merger of the Sustainable and Resilient Economy (SRE) Discovery Theme Program and the Office of Energy and Environment (OEE) was approved by the University Senate on November 29, 2018. A formal launch of SI is planned for January 2019. SI provides an unprecedented opportunity for integration of sustainability and resilience scholarship and activities across the breadth of the university mission. Doing so will generate synergies that will establish Ohio State as a leading public institution of sustainability at which interdisciplinary collaboration and partnerships drive education, research, engagement and solutions. By providing an integrated, purposeful and inclusive approach to the university sustainability goals, the Sustainability Institute will:

- Expand opportunities for sustainability education, including better coordination of existing curricular programs and creation of new learning programs that are responsive to current and emerging workforce needs
- Elevate the sustainability research that many faculty are pursuing and grow external resources, including support for graduate students and postdoctoral researchers
- Facilitate the convergence of basic and applied interdisciplinary research and community engagement, so that the research questions are inspired by critical societal challenges and support the application of new knowledge to real-world innovations
- Create synergies through better alignment of academic and operational goals, including m opportunities for campuses as living labs and greater integration of faculty expertise into operational sustainability challenges and ambitions for energy, water, food, waste and climate impacts

- Accelerate progress toward greater efficiencies and resource capture enabled by Ohio State's substantial investment in SRE and OEE and the merger of these two entities
- Meet the expectations of prospective students and critical stakeholders of a meaningful investment in sustainability
- Provide a "front door" for potential partners and collaborators interested in engaging with Ohio State on sustainability issues
- Allow Ohio State to make its mark as a leader among other universities with well- publicized sustainability initiatives
- Engage a diversity of people, ideas and disciplines to foster an inclusive community of students, faculty and staff involved in sustainability and resilience topics

This strategic plan has been developed concomitant with the SI proposal that emerged over the course of 18 months through dialogue with over 177 faculty and staff at Ohio State. This plan lays out the goals, objectives and strategies that SI will pursue over the next five years to significantly enhance Ohio State's contributions to the transformative societal changes needed to make our communities, enterprises and world more sustainable and resilient.

Elena Irwin
Faculty Director
Sustainability Institute

Kate Bartter
Executive Director
Sustainability Institute

Overview

As a comprehensive land-grant research university with hundreds of faculty in sustainability, thousands of passionate students, an enduring land-grant mission, and a strong commitment to sustainability in its campus operations, Ohio State University is dedicated to leveraging its knowledge to enable more sustainable and resilient communities, including our state, nation and the global community. Over 500 faculty are engaged in sustainability research; we teach over 1,000 courses that support sustainability learning; and we are engaged in Ohio communities and around the world to improve social, economic and environmental conditions. This commitment to sustainability extends beyond our academic and outreach missions to the business and support units on campus. We have institutional commitments to reduce energy, water and carbon emissions, serve more local and sustainable food on our campus and engage our community partners at all levels. Despite these investments and many successes, Ohio State lacks the organizational structure and established leadership to support the kinds of interdisciplinary collaboration and partnerships that are needed to address the complex challenges of sustainability in bold and transformational ways.

The Sustainability Institute (SI) will provide the strategic leadership, coordination and support needed to integrate and catalyze sustainability education, research, engagement and partnerships across all units of the university (**See Figure 1***, Principal Functions of the Sustainability Institute*). In so doing, SI will enable a more purposeful, coordinated and inclusive approach to sustainability that facilitates interdisciplinary collaboration, campus stewardship and applied solutions.

Vision. Ohio State is recognized as a world leader in developing durable solutions to the pressing challenges of sustainability and in evolving a culture of sustainability through collaborative teaching, pioneering research, comprehensive outreach, and innovative operations, practices and policies.

Mission. The Sustainability Institute integrates, supports and leads sustainability across the university enterprise in ways that

- Promote sustainability and resilience teaching and learning integrated across colleges and inclusive of various disciplines and ideas
- Catalyze interdisciplinary research that drives discovery and innovations in sustainable and resilient systems, technologies, policies and actions
- Engage public and private sector partners in Ohio, the nation and around the world to develop and apply sustainable solutions that improve well-being and equity

- Integrate sustainability scholarship with campus activities, including opportunities for students from diverse backgrounds and disciplines to engage in research and experiential learning using the campus as a living laboratory and test bed
- Provide a competitive advantage in attracting exceptional new talent, students, partnerships and resource investments to the university

Goals. The Sustainability Institute (SI) is pursuing the following strategic goals in support of this mission:

1. Establish Ohio State as a leading public institution of sustainability research and applications that engages with community partners to develop sustainability solutions to local, regional and global challenges
2. Educate and empower Ohio State students to become leaders, professionals and engaged citizens in solving societal issues related to environment, sustainability and resilience
3. Accelerate campus sustainability progress and living lab opportunities through greater integration of Ohio State faculty and students with campus operations
4. Grow the resources available to support sustainability and resilience research, teaching, engagement, and outreach across the university
5. Catalyze a culture of sustainability by spreading an inclusive ethic of sustainability across the university enterprise, engaging with partners and bringing a greater diversity of people and knowledge to Ohio State and our region

In pursuing these goals, SI provides a transformative approach to achieving Ohio State's sustainability goals *(**See Appendix A, *Ohio State Sustainability Goals*)** and a unique opportunity for Ohio State to demonstrate a new model of interdisciplinary scholarship for large public research institutions. By integrating sustainability across the university mission, this model will foster a diversity of people engaged in new collaborations, linked through common questions and motivation, and inclusive of a wide range of disciplines, including natural and physical sciences, social and behavioral sciences, engineering, public health, business, law, planning, policy, arts and humanities. By integrating both the academic and practical aspects of sustainability, this model creates new possibilities and opportunities for students, faculty and staff to engage in actionable research and project-based learning by developing, testing and scaling innovative solutions and partnering with communities to address the most pressing issues of our time.
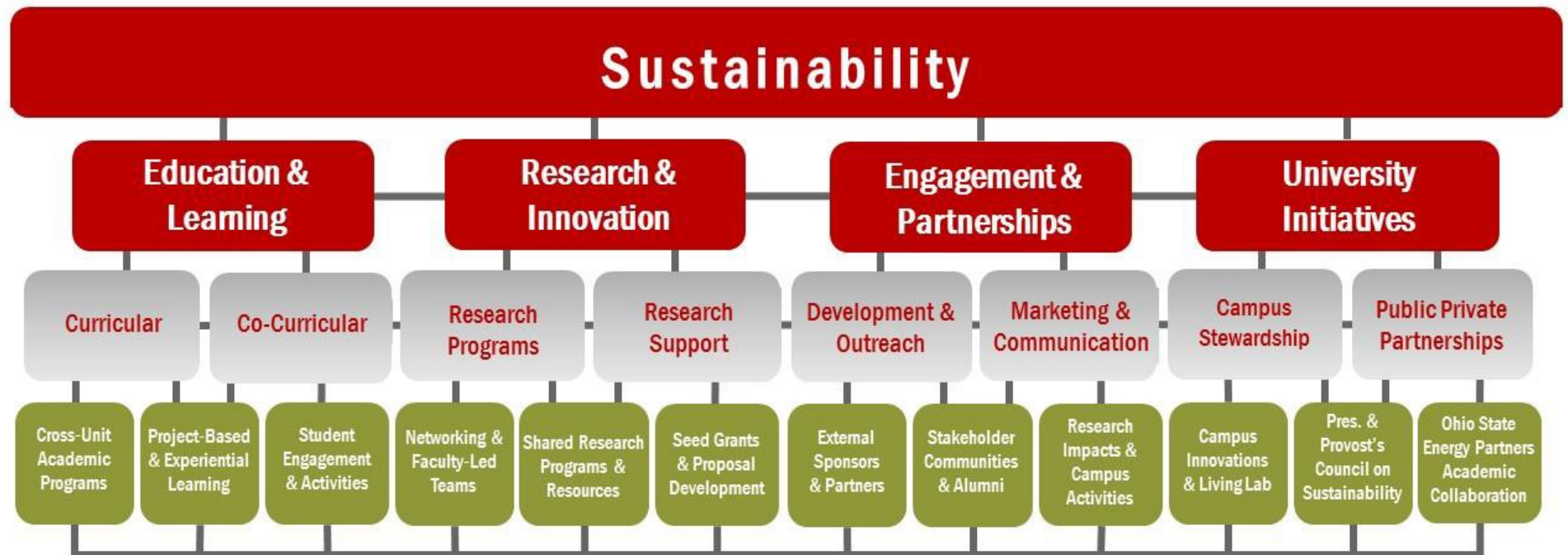
Figure 1: Principal Functions of the Sustainability Institute

Alignment with University Mission

Building on its land-grant history of excellence and impact, the University aspires to be a leading national flagship public research university guided by its founding promise to elevate the quality of life of our fellow citizens. Through its mission, the university is committed to creating and discovering knowledge that improves well-being; educating students and preparing them to be leaders and engaged citizens; fostering a culture of engagement and service; and weaving diversity and inclusion into all that we do in striving for excellence.

The goal of sustainability—to improve societal well-being while protecting earth's life support systems (**See Figure 2, *What is sustainability?***)—provides a powerful organizing principle for advancing this mission. Sustainability requires both deep integration of knowledge across disciplines *and* application of this knowledge in practical ways to create innovative and durable solutions. It doesn't focus on the environment in isolation, but instead on interactions among human, engineered and environmental systems and the implications of these for the well-being of communities and people. By integrating sustainability across all units of the university and strengthening partnerships with our many private and public stakeholders who are engaged in real-world sustainability, Ohio State can be a model of how a 21st-century, public research, community-engaged institution uses its sustainability goals to advance its mission and generate transformational change and impact.

Ohio State's strategic plan sets forth the aspiration, goals, targets and type of initiatives envisioned for the five pillars of our university: teaching and learning; access, affordability and excellence; research and creative expression; academic health care; and operational excellence and resource stewardship. The mission, goals and proposed activities of SI are in strong alignment with the university's mission and strategic goals and provide a transformational approach to achieving the university's sustainability goals.

Teaching and learning: Ohio State seeks to be an exemplar of the best teaching and learning to improve student outcomes. In terms of sustainability goals, the university seeks to (1) deliver a curriculum that provides Ohio State students at all stages of instruction with opportunities to understand sustainability holistically, framed by the environment, science, technology, society, the economy, history, culture, and politics; and (2) address the complexities of sustainability through a variety of learning formats, strategies and occasions. Through the Sustainability Education and Learning Committee (**See Appendix B, *SELC – Sustainability Faculty Working Group Goals***), SI provides the needed leadership, support and persistence to develop and implement an interdisciplinary framework for teaching and learning that is inclusive of natural and physical sciences, social and behavioral sciences, engineering, public health, business, law, planning, policy and humanities. In addition, SI is improving experiential learning opportunities, including much greater coordination and use of campus as a living lab that will engage students and faculty with facility and campus operational managers. By supporting the interactions of a diversity of people,

ideas, disciplines and backgrounds, this approach will create new possibilities and opportunities for teaching and shared learning and will advance the university's strategic goals by making Ohio State an exemplar of interdisciplinary teaching and learning that also promotes a diversity of people and ideas through sustainability education.

Access, affordability and excellence: SI will support the university's goal of access, affordability and excellence by nurturing the substantial investments in scholarships enabled by our partnership with ENGIE-Axium to attract talented low- and moderate-income students who have a passion for sustainability. SI's goals of providing students with access to experiential learning and connections to faculty, staff and other students will help meet the larger university mission. SI-funded opportunities in support of students allow them to engage in opportunities they may not otherwise be able to afford, such as subsidized event fees, buying data/software in support of research projects, supporting projects for campus as a living laboratory, etc. In addition, greater engagement of faculty and staff in developing more sustainable campus operations will reduce long-term costs while also creating more synergies with our academic mission.

Research and creative expression: The university strategic plan lays out goals, targets and initiatives for Ohio State to enhance its position among the top public research universities and to drive significant advances for critical societal challenges. This reinforces the university's mission to create and discover knowledge to improve the well-being of our state, regional, national and global communities. In addition, as articulated by the university's sustainability goals, the university seeks to advance sustainability research by (1) rewarding sustainability scholarship, including the scholarship of engagement, and (2) magnifying sustainability scholarly output and impact to create new knowledge and solve real-world problems. By building a stronger bridge between basic research and practical solutions that advance

---

What is sustainability?

Sustainability is the improvement of the well-being of people and communities in ways that protect the earth's life support systems by reducing environmental impacts, enhancing resource efficiency and ensuring economic prosperity for all. It is motivated by the fundamental dependence of humans on the natural environment and the desire to foster life on Earth now and in the future.

Sustainability also depends on the **resilience** of natural and human systems, such as those providing energy and food, and the ability of communities to recover, adapt and flourish in the face of changing environmental, economic and social conditions.

Achieving a sustainable and resilient society requires a thoughtful transition away from fossil fuels and nonrenewable inputs to **sustainable energy systems and resources**. Sustainability also requires a substantial reduction in pollution and its adverse impacts on **ecosystems** and **human health**. **Sustainable technologies** that improve resource efficiency, ease demand for scarce resources and reduce environmental impacts are essential.

However, technological advances alone are insufficient. Sustainable solutions also depend on **human decision-making**, including policies, behavior and social norms, as well as the **values** that individuals and communities hold, their perceptions and beliefs, and the ethical judgments they make. In short, sustainability requires a holistic **systems approach** that accounts for interdependencies across human and natural systems and assesses the benefits, costs and risks of technological, social and environmental changes.

Figure 2

sustainability, SI provides a conduit for driving toward the university's research mission and goal of actionable science and impact. By strengthening relationships with external stakeholders, SI is facilitating the convergence of interdisciplinary research and community engagement so that the research questions are linked to critical societal needs and support the application of new knowledge to real-world innovations in sustainable technologies, policies and actions. In addition to supporting approximately 30 SI DT faculty (**See Appendix C,** *SI DT Core Faculty Portfolio*) and engaging a substantial number of additional faculty working in key areas of sustainability research across a diversity of disciplines, SI supports a diverse group of faculty leaders and cultivates interdisciplinary teams of researchers. The investments that SI has made in professional staff, including a director of partnerships and proposal development specialist, are key aspects of SI's strategy to support interdisciplinary teams and faculty leaders in research development, including partnerships and external resources. SI is building the research capacity and adding value for faculty engaged at the forefront of sustainability research, thus helping to recruit and retain leading scholars.

Academic health care: SI will partner with the many emerging sustainability initiatives underway at the Wexner Medical Center. We will support and integrate the efforts to conserve resources and increase the quality of life for patients, staff and faculty.

Operational excellence and resource stewardship: One of the core tenets of sustainability is a focus on resource efficiency. While sustainable practices may necessitate additional up-front investments, the key is to make those investments with a plan for long-term savings. SI is a strong partner in Ohio State's commitment to operational excellence and resource stewardship. SI supports and facilitates the $150 million academic collaboration components of the Comprehensive Energy Management Project. The plans for the Energy Innovation Center on campus, combined with the modernization of campus infrastructure, will create a unique living laboratory and test bed for sustainable energy innovation that can save dollars and reduce Ohio State's environmental footprint. SI will nurture additional programs and projects that engage faculty in contributing to responsible resource stewardship while simultaneously creating opportunities for teaching, research and engagement.

Diversity: The university strategic plan emphasizes the essential role that diversity and inclusion play in all these pursuits. Solving sustainability challenges requires input from people who bring different perspectives, ideas, disciplines and approaches. In addition, social equity is a core pillar of sustainability scholarship. For these reasons, recruiting and engaging a diversity of faculty, staff and students and promoting a culture of diversity, inclusion and equity are of fundamental importance for SI. SI will go beyond individual practices of diversity and inclusion to a set of strategies that will instill and grow a culture of diversity, inclusion and equity that infuses our programs, leadership, and partnerships. We seek to place diversity and inclusion principles and practices at the core of SI, so that these are not separate activities, but become woven into the SI fabric.

Strategic Scan

"We are resolved to free the human race from the tyranny of poverty and want and to heal and secure our planet. We are determined to take the bold and transformative steps which are urgently needed to shift the world onto a sustainable and resilient path."

Transforming our world: the 2030 Agenda for Sustainable Development
Resolution 70/1 adopted by the UN General Assembly on 25 September 2015

GLOBAL CHALLENGES. The U.S. and other countries are grappling with the enormous challenges of sustaining economic development, quality of life and environmental integrity in the 21st century. Technological innovations have greatly enhanced production efficiencies that have spurred unprecedented economic growth and development and lifted millions out of poverty in many parts of the world. However, population growth, urbanization and increasing household wealth have led to rapid increases in resource consumption, waste generation and environmental degradation. Currently in the U.S., 81% of energy is derived from fossil fuels,[1] and fossil fuels comprise a large proportion of the raw material inputs used in plastics, pharmaceuticals, synthetic rubber and textiles. Given resource scarcities and the limited capacity of the earth to absorb carbon and other pollutants, these current trends are unsustainable. Scientists predict global temperature increases of 2°C by mid-century, leading to irreversible losses of forests, soils, wetlands, freshwater supplies and other critical **ecosystem services** and greater variability in global and regional climate systems, including increased frequency of **catastrophic weather events**.

Sustainability is motivated by the fundamental dependence of humans on the natural environment, including air, water and land resources, and the constraints imposed by a finite planet. At its core, sustainability is concerned with improving the well-being of people and communities now and into the future by protecting the earth's life support systems, reducing adverse environmental impacts, and enhancing resource efficiency. The National Research Council defines sustainability as "improving society's capacity to use the earth in ways that simultaneously meet future needs, sustain the life support systems of the planet, and substantially reduce poverty." [2]

Achieving a more sustainable society requires a transition away from fossil fuels and nonrenewable inputs to **sustainable energy systems and resources** for industrial feedstocks in which greenhouse gas emissions are minimized and renewable resources comprise a much larger share of the energy and materials inputs. Sustainability implies a substantial reduction in pollution and its adverse impacts on **ecosystems** and **human health** and also depends on a **circular economy**, in which innovations in material production and consumption lead to residual materials being recovered and reused or released safely into the environment.

---

[1] Energy Information Administration, Monthly Energy Review, March 2016,
http://www.eia.gov/totalenergy/data/monthly/pdf/sec1_3.pdf
[2] National Research Council 1999, Sustainability Concepts for Decision Making. National Academy of Sciences Press. Washington, DC.

Because future shocks and disruptions are inevitable, sustainability also depends on the **resilience** of natural and human systems and the ability of our communities to recover, adapt and flourish in the face of changing conditions. In a world with increasing variability and uncertainty in global and regional environmental systems, communities must become better prepared to recover from the public safety and health emergencies, social impacts and economic losses associated with the increasing frequency and severity of natural disasters and to rebuild with resilient infrastructure and implement policies and strategies that mitigate the risks and lead to more **resilient communities**. Tightly-coupled supply chains and global markets make companies and governments vulnerable to natural disasters around the world, emphasizing the need for **resilient supply chains**.

Sustainable technologies that improve resource efficiency, ease demand for scarce resources, reduce environmental impacts and pollution, and improve human health and well-being are essential for achieving a more sustainable and resilient world. However, technological advances alone are insufficient. For example, smart technologies can improve urban mobility but do not necessarily make communities more livable, sustainable or socially just. Improving the sustainability and resilience of communities and enterprises requires a **systems approach** that accounts for interdependencies across human and natural systems and assesses the expected benefits, costs and risks of technological, social and environmental change. This will enable industry and government decision-makers to consider the full impacts of innovations in technologies or policies.

Achieving more sustainable and resilient solutions depends not only on technology but also on **human decision-making**, including policies, behavior and social norms, which determine the adoption and ultimate success of any new technology. Human decisions also generate unintended consequences, such as rebound effects that can offset the effectiveness of the technological improvement. For example, cost-saving technology improvements that require less resources to produce the same amount of energy services result in lower prices. This can generate an offsetting *increase* in energy demand by consumers, meaning that the actual resource savings from the new technology is lower due to this counterbalancing market effect. Finally, the many interdependencies that arise in our production and consumption systems can also lead to unintended consequences. Intensification of agriculture to address food insecurity, for example, may result in increased water withdrawals and more sedimentation and water pollution from nutrient runoff. This underscores the need for a **nexus approach** to food, energy, water, materials, waste and ecosystem services in which the interdependencies among these systems is explicitly accounted for in policy and management.

OPPORTUNITY FOR OHIO STATE. These societal challenges underscore the need for interdisciplinary **sustainability education**, **research, engagement and solutions** that integrate knowledge from multiple disciplines, including natural and physical sciences, social and behavioral sciences, engineering, public health, business, law, planning, policy and humanities, to understand the dependencies among human and natural systems and develop innovative solutions that achieve a more sustainable, resilient and inclusive society. Given the urgent challenges faced by communities and societies around the world, sustainability research and education is an integral pillar of 21st-century land grant universities.

Ohio State researchers are internationally recognized in many areas of sustainability. Ohio State centers and institutes have partnered with industry and public agencies to pursue research on energy, environmental, agricultural and industrial systems, including innovative technologies, policies and business practices. In addition, Ohio State has created many opportunities for students, faculty and staff to engage in sustainability-related activities. OEE has been a major catalyst for these broader university-wide efforts by supporting research, outreach, student life and campus sustainability activities and curating the university's sustainability goals. However, traditional college and department structures do not provide an adequate organizational platform to support the kind of multidisciplinary collaboration envisioned in the university strategic plan.

In spite of its many strengths, Ohio State lags behind its peers, both in the Big Ten and across the nation, in terms of visibility and external resources with regard to sustainability. SRE's competitive benchmarking analysis identified a growing number of leading U.S. universities that have positioned themselves to become leaders in sustainability by forming new collaborative centers or institutes, often supported by major gifts. In contrast to these aggregative efforts, sustainability at Ohio State has been fragmented and diffuse, and the university lacks a cohesive framework that can be articulated to both internal and external stakeholders.

While these challenges have played a historical role in limiting the university's potential, Ohio State now has key comparative advantages that distinguish it and provide a unique opportunity to leapfrog other institutions in becoming a global leader in sustainability. First, Ohio State is a leader among its peers in key areas of expertise that are foundational to sustainability, including materials and energy technology innovation, environmental health sciences, climate science, behavioral science, environmental economics, integrated systems, resilient infrastructure and sustainability assessment. Second, a comprehensive approach to sustainability is only possible at an institution as large as Ohio State. Ohio State's size affords a breadth and depth in the many areas of sustainability that presents a tremendous potential for transformation. Third, the bold investments of the DT Initiative have advanced change toward greater coordination and collaboration. By realigning incentives and resources, the DTs have tilted the scholarly playing field for faculty and academic units in the direction of cross-unit, interdisciplinary collaboration. Fourth, a coalition of the willing is emerging and strengthening as a result of these investments. This coalition brings together interdisciplinary networks of faculty, academic units and research centers from across the university with university programs, professional staff and support units engaged in transforming the Ohio State community and campus. Finally, Ohio State's success in building strong partnerships with companies, government, foundations and others continues to evolve and present new opportunities. Examples of efforts in which OEE or SRE are playing a pivotal role are the Ohio State Energy Partners collaboration with ENGIE-Axium, the partnership with Schmidt Futures through the Alliance for the American Dream, collaborative research with Ford Motor Company on electric vehicle demand, and support for interdisciplinary research on land-water systems, the latter totaling over $3.5 million in federal agency competitive grants in FY18-19.

These recent developments provide an unprecedented opportunity for integration of sustainability and resilience scholarship and activities across the university mission. **By leveraging assets, aligning**

incentives and continuing to build a coalition of willing partners, Ohio State has a unique opportunity to become a leading public institution of sustainability at which interdisciplinary collaboration drives sustainability education, research, engagement, and solutions and transforms the ways in which students, faculty and staff engage with stakeholders and become global citizens and leaders. This enables a purposeful approach to achieving Ohio State's sustainability goals. No other land grant institution has achieved this level of integration or interdisciplinarity that is now within reach for Ohio State and that is essential for attracting large-scale investments and achieving the transformative societal changes that are needed to make our communities, enterprises and world more sustainable and resilient.

Succeeding in Our Strategic Focus Areas

SI will pursue the following strategic goals in support of its overall mission to improve the well-being of our campus, state, regional, national and global communities:

1. Establish Ohio State as a leading public institution of sustainability research and applications that engages with community partners to develop sustainability solutions to local, regional and global challenges
2. Educate and empower Ohio State students to become leaders, professionals and engaged citizens in solving societal issues related to environment, sustainability and resilience
3. Accelerate campus sustainability progress and living lab opportunities through greater integration of Ohio State faculty and students with campus operations
4. Grow the resources available to support sustainability and resilience research, teaching, engagement, and outreach across the university
5. Catalyze a culture of sustainability by spreading an inclusive ethic of sustainability across the university enterprise, engaging with partners and bringing a greater diversity of people and knowledge to Ohio State and our region

The rationale and corresponding objectives and strategies for each of these goals are provided below. In addition, we have developed 5-year metrics and targets for each objective (see Performance Metrics Section).

GOAL 1: Establish Ohio State as a leading public institution of sustainability research and applications that engages with community partners to develop sustainability solutions to local, regional and global challenges

Rationale: In spite of its many strengths, sustainability research and practice at Ohio State has been fragmented and diffuse. We lag behind peer institutions in terms of visibility and external funding. Ohio State now has key comparative advantages to distinguish itself and leapfrog other institutions to become a global leader in sustainability research on human-natural systems and applied policy and technology solutions. Our breadth and depth enables us to strengthen sustainability research through a convergence science lens, fostering both the generation of new science and methods

through integration across disciplines as well as the co-production of knowledge with external stakeholders including industry, government and community organizations and representatives.

1.1 Catalyze greater excellence in interdisciplinary research on sustainability and resilience

A. Cultivate a strong distributed faculty leadership system across colleges and the university

B. Develop and execute research development strategies for priority research program areas **(See Figure 3, *SI Research Program Areas*)** within which to build convergent, interdisciplinary research capacity to deliver sustainability solutions

C. Collaborate with other Ohio State entities to fill strategic gaps in research personnel, infrastructure and tools

Figure 3: SI Research Program Areas

1.2 Build the capacity of research teams, faculty, staff, students, and academic units engaged in interdisciplinary sustainability research

A. Support SI Discovery Themes faculty to achieve a high level of interdisciplinary scholarship and synergy with their academic department

B. Support faculty thriving as sustainability researchers

C. Facilitate networking to engage a diversity of researchers and build interdisciplinary collaborations among all sustainability faculty, research scientists, postdoctoral researchers, students

D. Practice what we preach: evaluate and improve our strategies for interdisciplinary team science

E. Align incentives to reward convergent, interdisciplinary research

1.3 Increase engagement of external partners in research and broader impacts of research

A. Increase effectiveness of relationships with research funders

B. Increase meaningful research interactions with external partners who have needs and knowledge of sustainability problems to increase opportunities for co-production of research with stakeholders

C. Increase meaningful research interactions involving underserved minority communities

---

GOAL 2: Educate and empower Ohio State students to become leaders, professionals and engaged citizens in solving societal issues related to environment, sustainability and resilience

---

Rationale: To attract the best and brightest students, Ohio State needs to provide opportunities for learning in ways that build knowledge and lead to real-world engagement. External engagement efforts have shown that many of Ohio State's external partners (government, business and nonprofits) are primarily interested in accessing student talent. Expanded learning and outreach programs in sustainability and resilience that also provide opportunities to be engaged in campus- and community-based solutions are essential for Ohio State to fulfill its education mission. A comprehensive array of programs, from professional and technical education programs to general education courses and project-based learning opportunities, will prepare students to be leaders and engaged citizens and will foster a culture of engagement and service.

2.1 Coordinate and enhance curricular programs in sustainability and resilience studies

A. Facilitate report and recommendations for undergraduate sustainability learning programs to OAA as part of the Sustainability Education and Learning Committee

B. Facilitate future work of the Sustainability Education and Learning Committee, including recommendations for interdisciplinary graduate education and training in sustainability

C. Work with the Sustainability Education and Learning Committee to identify strategies for recruiting and supporting students from underrepresented groups with an interest in sustainability

2.2 Coordinate and enhance co-curricular programs and opportunities related to sustainability

A. Develop more opportunities for project-based and experiential learning that engage students in sustainability through partnerships with industry, public agencies and communities

B. Develop more opportunities for project-based and experiential learning that engage students in sustainability through partnerships with stakeholders from underrepresented groups and underserved minority communities

GOAL 3: Accelerate campus sustainability progress and living lab opportunities through greater integration of Ohio State faculty and students with campus operations

Rationale: Ohio State has established aspirational resource stewardship goals ranging from carbon neutrality to a transition to more sustainable use of food, energy, vehicles, food, water and other products to meet campus needs. Efforts to increase the sustainability of Ohio State's resource utilization create unique opportunities to teach students, faculty, staff, alumni and visitors about sustainability and to leverage faculty and staff expertise to create innovative solutions, starting with the university's main and regional campuses and expanding to state, regional, national and global communities. While Ohio State has made a concerted effort to integrate faculty and students into these operational goals, the university community has only just begun to understand the enormous opportunity of taking a holistic approach to transforming the campus into an exemplar sustainable community.

3.1 Support operational sustainability

A. Establish and ensure effective implementation of Operational Goal Strategic Plans, including the campus Climate Action Plan, ENGIE EUI plan for building energy reduction, water use reduction program, Ecosystems Panel Report, Fleet Assessment Plan, Zero Waste Phased Plan, and the Food Sustainability Report

B. Foster academic and operational collaborations

C. Provide support to other Ohio State units in growing their sustainability partnerships and programs

3.2 Establish and grow a campus as living lab program

A. Work with campus sustainability partners, faculty and SI colleagues to form and implement a plan for a formal campus as a living lab program

GOAL 4: Grow the resources available to support sustainability and resilience research, teaching, engagement, and outreach across the university

Rationale: In the sustainability realm, Ohio State needs a more purposeful and cohesive framework to leverage resources, attract investment, enhance communications and achieve synergies across units, disciplines and the multiple missions of the university. Strategic leadership in this area would promote development of collaborations among academic units, centers, programs and offices to leverage existing resources, reduce duplication of efforts and attract additional investments to generate sustained support for sustainability across research, teaching, outreach and campus stewardship activities.

4.1 Build partnerships with external stakeholders, including private companies, public agencies, communities and non-profit organizations

A. Strengthen partnerships with City of Columbus, MORPC, and other local and community-based organizations to develop opportunities to advance sustainable development at local and regional levels

B. Strategically increase partnerships between Ohio State and public officials to inform decision-making at state and federal levels

C. Strengthen partnerships and develop new collaborations to increase Ohio State's engagement in national and international sustainable development practices and solutions.

4.2 Secure external investments to support interdisciplinary work on sustainability or resilience topics

A. Develop and execute business development plan

B. Secure external funds for other Ohio State units related to sustainability

C. Secure external funds for growth in SI operations

GOAL 5: Catalyze a culture of sustainability by spreading an inclusive ethic of sustainability across the university enterprise, engaging with partners and bringing a greater diversity of people and knowledge to Ohio State and our region

---

Rationale: For Ohio State to emerge as the next transformative leader of sustainability among its national peers, sustainability must be a central thread woven throughout the tapestry of our campus and in our partnerships with stakeholders and communities across the state of Ohio and around the world. This underscores the need for a central entity to serve as a portal to communicate the wide array of sustainability-related scholarship and campus activities at Ohio State and to cultivate the purposeful engagement of organizations and communities in sustainable solutions. Solving sustainability challenges requires input from people who bring different perspectives, ideas, disciplines and approaches. In addition, social equity is a core pillar of sustainability scholarship. For these reasons, recruiting and engaging a diversity of faculty, staff and students and promoting a culture of diversity, inclusion and equity are of fundamental importance for SI. We seek to place diversity and inclusion principles and practices at the core of SI, so that these are not separate activities, but become woven into the SI fabric.

5.1 Raise Ohio State's visibility as a leader in sustainability scholarship and campus activities

A. Develop a system to track and report progress toward meeting the broader university sustainability goals and specific SI goals

B. Communicate Ohio State's accomplishments across all areas of sustainability research, teaching, outreach and campus stewardship as successes are achieved

C. Promote sustainability awareness to educate internal and external stakeholders on sustainability issues, actions, opportunities and events

5.2 Provide leadership and support for sustainability related programs, projects and activities

A. Facilitate the President and Provost's Council on Sustainability as the key advisory body on Ohio State's approach to enterprise-wide sustainability

B. Oversee the Ohio State Sustainability Fund project selection processes in support of the University's sustainability goals

C. Provide leadership and facilitation of the academic collaboration component of the Comprehensive Energy Management Project and other key committees and sustainability related panels

D. Coordinate the integration of Ohio State faculty, staff and students into key external opportunities such as Smart Columbus and the University Climate Coalition

5.3 Ensure success of strategies to increase the diversity of people and inclusion of underrepresented groups engaged in sustainability and resilience work

A. Increase female and other underrepresented minorities engaged in sustainability and resilience research, teaching, engagement and outreach at Ohio State

B. Increase focus on diversity, inclusion and social justice aspects of sustainability and resilience research and teaching

C. Increase engagement related to diversity, including social justice issues

Administrative Overview

Our proposed structure recognizes that many Ohio State faculty, academic units, centers, programs and support units address specific topics related to sustainability. Rather than duplicating efforts, SI will complement and strengthen these efforts by being a university-wide platform for sustainability that supports, connects and integrates people, activities and knowledge from across all units of the university (**See Figure 1,** *Principal Functions of the Sustainability Institute*).

SI will build this university-wide platform by providing support services and expertise that complement the services provided by existing units in ways that increase the university's overall efficiency and effectiveness. For example, SI communications staff have well-established relationships with all of the college communication units and regularly collaborate with these units in ways that augment their capacity to promote the sustainability efforts of faculty, staff and students. In addition, SI has an established role as a strategic partner with Administration and Planning, Business and Finance, and Student Life's many efforts to meet our sustainability goals around reducing resource consumption and waste. SI will pursue an analogous approach to supporting, catalyzing and promoting sustainability across the university enterprise, including in curriculum coordination and development, student co-curricular activities, research and proposal development, campus stewardship, community outreach and relationship building, and communications and marketing. In all cases, SI staff will work in partnership with the appropriate faculty, staff and students that are already engaged in units across the university to add value and multiply impact.

This is a highly networked model of organization that relies on continual communication, relationship building and collaboration. SI's organizational structure (**See Figure 4,** *Current and Planned Staffing for the Sustainability Institute*) is designed to support this through a highly effective and collaborative professional staff that collectively provides needed expertise in key areas. In addition, we will adopt a model in which staff are largely incentivized to bring resources and recognition not to SI, but instead to our partnering units and to the university as a whole. This will enable SI to achieve its essential strategy of adding value in ways that complement and augment existing efforts.
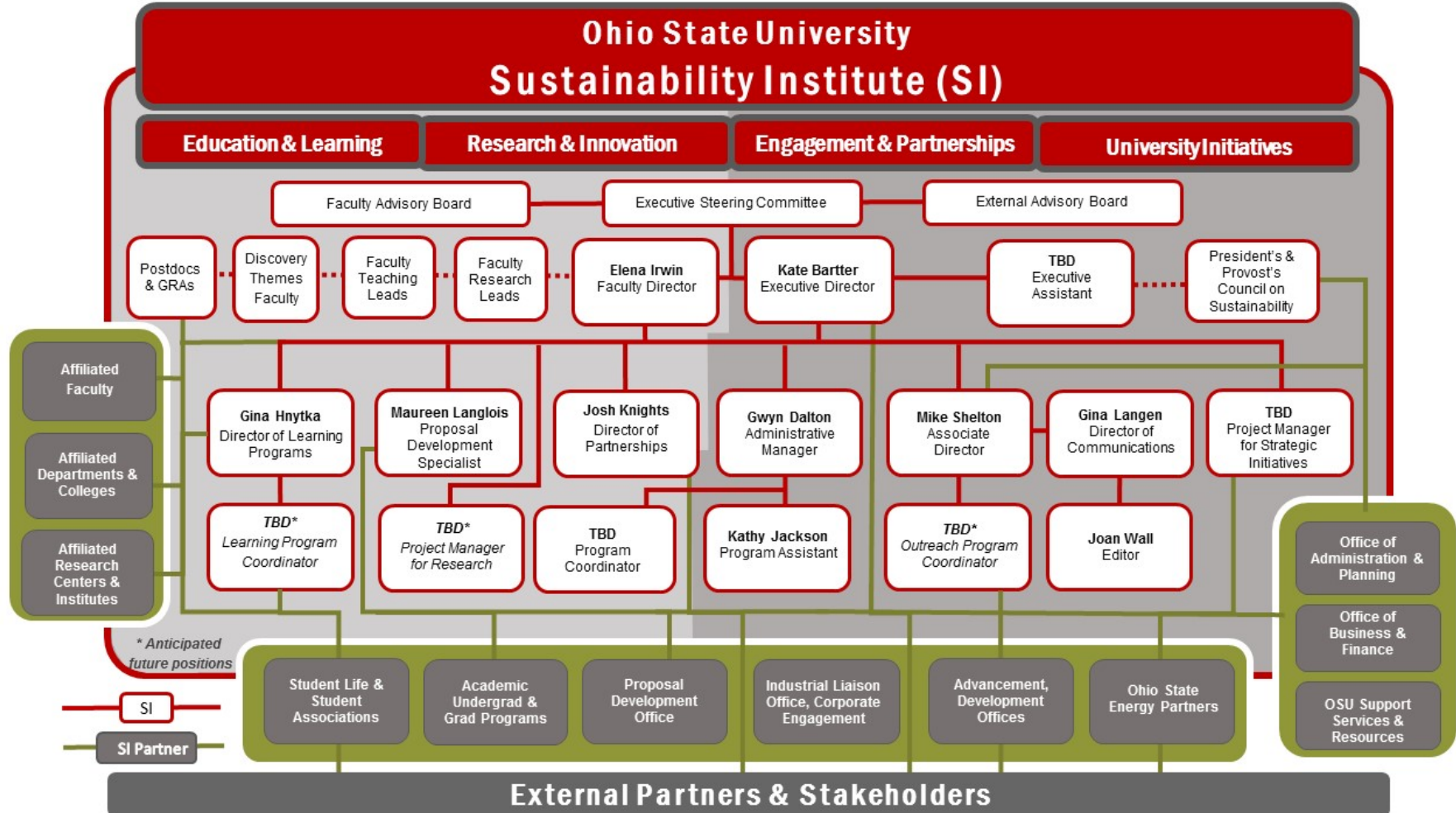
Figure 4: Current and Planned Staffing for the Sustainability Institute

Executive Director and Faculty Director

SI is co-directed by a faculty director and executive director. SRE Discovery Theme Program Faculty Director Elena Irwin has transitioned into the SI Faculty Director role and OEE Director Kate Bartter has become the SI Executive Director. SI leadership will also be shared across a larger group of lead faculty and faculty in residence.

The Executive Director (ED) and Faculty Director (FD) are jointly responsible for developing the strategic priorities and metrics of success for SI. Each co-lead has clearly defined roles and responsibilities within the organization. Each will back up the other in all areas.

The ED will manage university sustainability initiatives, such as the academic collaboration component of the Comprehensive Energy Management Project, and will have primary responsibility over building effective external sustainability partnerships. In addition, the ED will represent OAA on key sustainability commitments such as the Energy Academic Collaboration Council and President and Provost's Council on Sustainability. The ED also will coordinate with other senior non-academic leaders in departments such as Corporate Engagement, Industry Liaison Office, Administration and Planning, Business and Finance and Student Life on university sustainability initiatives and partnerships as appropriate, including retaining her service on Ohio State's government affairs team. The ED will have primary management of non-faculty SI staff and will provide leadership and support to staff engaged in sustainability in non-SI units at Ohio State.

The FD will have primary responsibility for developing and nurturing SI's academic activities including interdisciplinary research programs, curriculum development and other scholarly activities. The FD will be the primary point of contact for SI faculty research and teaching leads and will work with them to build cross-college interdisciplinary teams and programs and pursue external funding to support SI programs and activities. The FD will be a compelling advocate and energetic spokesperson for SI and sustainability at Ohio State. The FD will partner with academic units and college leaders to recruit, retain and mentor Discovery Themes faculty and will be responsible for providing written evaluative feedback regarding the annual reviews and promotion and tenure of these faculty.

Institute Staff

A key distinguishing feature enabling SI to serve as a platform of support for faculty, students and staff will be its professional staff to support research and business development, education and learning programs, university initiatives, community engagement and communications. Over the next five years, SI is expected to add 3.5 FTE program staff for a total of 14.5 FTEs to support growth in Ohio State's sustainability research, teaching, outreach and campus operational efforts. Additional staff will be the result of growth or development of initiatives led by the Sustainability Institute.

Faculty Involvement

Lead faculty will have primary responsibility for developing the overall direction, goals and strategies for the research and education programs that are led or facilitated by the Sustainability Institute. They will work with the SI directors and staff to develop these programs in collaboration with academic units, centers, offices and external partners to grow and sustain these programs. Lead faculty will represent either significant research or teaching efforts affiliated with SI, specifically:

- **Research lead faculty** will work with the SI faculty director and research development staff to identify funding opportunities, engage external partners, cultivate highly effective interdisciplinary research teams, develop proposals and manage research;

- **Teaching lead faculty** will work with the SI directors and staff to pursue interdisciplinary sustainability curriculum efforts, such as enhancing the coordination of existing curriculum and identifying and developing opportunities for new curricular programs and project-based learning, including campus as a living laboratory and test bed.

Faculty leaders will be selected by the Sustainability Institute directors and the Sustainability Faculty Advisory Board (SFAB) on the basis of their established leadership and scholarship in the program area and their willingness and ability to build capacity, networks and relationships in support of the program area. The responsibilities and compensation of each faculty leader will be agreed upon by the Sustainability Institute directors, the home department and the faculty member. Together, this group represents a core part of the faculty leadership of the Institute with a diversity of backgrounds, disciplines and knowledge. Initially we anticipate having 8 faculty leaders: 2 each for 3 research programs and for 1 teaching program. The SFAB will also include several additional members who are not program leaders but who provide leadership to sustainability in other ways, including their role in helping to mentor and evaluate SI core faculty.

Core faculty are SRE Discovery Themes faculty who were jointly hired by their home department and SRE and continue to be partially supported through the SRE/OAA Discovery Themes funds. With the merger of SRE with OEE and the transition to the Sustainability Institute, these joint appointments will be with their home department and the Sustainability Institute. The promotion and tenure expectations of these faculty are detailed in their Letter of Offer (LOO) and the MOU between SRE/OAA and the home department and remain the same with the transition to the Sustainability Institute. Likewise, the responsibilities that the Sustainability Institute has for supporting these faculty through mentoring, goal setting and other support services, including research and proposal development, remains the same. We anticipate growing the number of regular faculty to 29 next year and that we will reach a maximum of about 32 within the next several years.

Affiliated faculty are faculty who are engaged in sustainability research, teaching, engagement or campus stewardship activities and who are interested in pursuing interdisciplinary collaboration, research networking, student or community engagement, or related activities that will comprise the core benefits for an affiliated faculty member. Affiliated members will contribute to the mission of the Institute without a formal agreement or compensation. Through their involvement in SI, e.g., as a research team member or a member of an SI-led committee, they will be able to access SI support services as appropriate, e.g., business or proposal development support for interdisciplinary teams or research capacity building through networking events, ideation workshops or communities of practice that meet regularly to discuss research, applications for research seed grant funding, and involvement in developing sustainability teaching and learning programs. Affiliated faculty membership will be determined through an application process. Criteria will include relevance of the research or teaching area to sustainability; alignment with SI's mission and vision, including its interdisciplinary and collaborative approach; and willingness and availability to engage in one or more programs, activities or teams that are led or supported by SI. We currently have 235 engaged faculty, all or some of who could become affiliated faculty. We plan to invite applications from the current set of engaged faculty once SI is established and to launch an open invitation to faculty to submit an online application within the first year. In addition, we plan to develop a faculty database with keywords that will help us to identify additional faculty who may have an interest. We anticipate that many faculty who are not currently part of the SRE/OEE network will become affiliated faculty and that our total number of affiliated faculty will grow to roughly 15-20% of the total number of faculty at the university (given there are roughly 3,000 faculty, this translates into about 450-600 engaged faculty).

Faculty in residence are faculty who provide thought leadership through varied means, including identifying cutting-edge research areas, developing a research program that includes recruiting a team of interdisciplinary researchers, and contributing compelling research questions to proposal development. Faculty in residence may also facilitate research networks, serve as part of red team reviews, mentor junior faculty, and communicate research findings. These faculty may be tenure-track, clinical or emeritus faculty. The responsibilities and compensation of each faculty leader will be agreed upon by the Sustainability Institute directors, the home department and the faculty member. We anticipate maintaining one faculty in residence in the first several years of SI with the possibility of expanding in the future.

Informed faculty are faculty who are broadly interested in sustainability and who wish to be kept informed of sustainability news, including regular updates on sustainability research accomplishments and campus activities. Informed faculty are welcome to attend open events or programs hosted by the Sustainability Institute but aren't expected to be actively engaged in SI programs. We currently have 236 faculty who only receive OEE or SRE communications and are not engaged. We plan to pursue a comprehensive communications strategy and to use our

faculty database with keywords to communicate to a larger and broader set of faculty. We anticipate that we may double the number of informed faculty to over 500.

Internal and External Collaboration

By pursuing a highly networked organizational model, SI will serve as Ohio State's sustainability hub. It will connect and collaborate with other academic programs, centers and institutions that have a central or partial mission focused on sustainability and with other campus support units focused on sustainability ranging from Energy Management and Sustainability in Student Life to Energy Services and Sustainability in Facilities, Operation and Development. It will also serve as a connector for external stakeholders and organizations engaged in sustainability and interested in collaborating with Ohio State.

Reporting Lines and Oversight

SI will be a unit reporting to the Office of Academic Affairs. This structure largely maintains the current reporting relationship of both OEE and SRE. The Executive Vice President and Provost and Senior Vice President of Research will designate responsible parties to provide day-to-day support and supervisory functions to SI. The Faculty Director will have a dual report to the designee identified by the Senior Vice President for the Office of Research.

Given the operational reality that issues of sustainability weave throughout the enterprise of Ohio State, four groups will provide oversight and advice and ensure effective, efficient collaboration on this topic within the university:

Sustainability Executive Steering Committee

A Sustainability Executive Steering Committee (SESC) will provide strategic advice to the Provost and Executive Vice President on the overall mission and strategies for SI. The SESC shall meet at least twice a year. Initial membership of the SESC will be as follows:

- Vice Provost for Strategic Planning and Implementation, Chair
- Senior Vice President for Research
- Dean, College of Engineering
- Vice President for Agricultural Administration and Dean, College of Food, Agriculture and Environmental Sciences
- Executive Dean, College of Arts and Science, or his/her Divisional Dean designee
- Dean at large (rotating from College of Business, Public Health, Public Affairs, Law or a regional campus), chosen by the Provost
- Senior Vice President for Administration and Planning
- Vice President for Advancement or his/her designee
- Senior Vice President for Student Life

Sustainability Faculty Advisory Board

The SI Faculty Director will chair a Sustainability Faculty Advisory Board (SFAB) composed of approximately 12 faculty representing a diversity of colleges and disciplines that are relevant to sustainability. The overall purpose of the SFAB is to advise on the goals, strategies and implementation of SI's academic mission, including interdisciplinary research program areas, faculty recruitment, curriculum development and student learning programs and to advise on the successful integration of academic and non-academic activities, e.g. faculty and student research with operational sustainability goals. Members of the SFAB will include one of the faculty leads from each of the SI program areas. Additional faculty will be selected to complement these faculty leads in terms of their backgrounds, disciplines and subject matter expertise. These faculty will provide leadership in other ways, including providing assistance to the Faculty Director in mentoring and evaluating the SI core faculty. Initially these additional faculty members will be selected from among the faculty currently serving on the SRE Leadership Team. In the future, potential members will be invited to apply or may be nominated. At least 1-2 of these faculty should be regular faculty of SI that hold joint appointments with academic units and SI. The Faculty Director will seek input on the selection of members from the existing SFAB and the ED and will recommend members to the Sustainability Executive Steering Committee for their approval. The SFAB will meet at least once each semester. Appointments will be made on the basis of a three-year term such that every year a quarter of the SFAB is rotating off and new members are rotating on.

President and Provost's Council on Sustainability

The SI Executive Director will chair the President and Provost's Council on Sustainability (PPCS) and an important function of SI will be to manage the Ohio State Sustainability Fund.

Sustainability External Advisory Board (SEAB)

Finally, recognizing Ohio State's existing commitment to partner with external entities in the achievement of the University Sustainability Goals, the Faculty Director and Executive Director will develop a Sustainability External Advisory Board (SEAB). The SEAB will meet once a year and be chaired by the Executive Director. Membership of the SEAB will be developed with input and engagement from the SESC and SFAB and will draw from a wide array of private and public sector organizations, including local, state and national industry partners, government agencies and non-profit organizations.

Pattern of Administration

This Administration section of the Institute proposal contains much of the structure and roles for faculty as well as staff. A formal POA will be developed and submitted for approval within a year of being designated a university-level institute.

Financial Plan

Since 2012, Ohio State has invested over $10 million in OEE and over $11 million in SRE. By bringing these two foundational programs together, we send a signal both externally and internally that Ohio State is committed to sustainability and the smart, efficient use of our valuable resources.

The budget proposed for SI builds on three foundational elements:

- The $1.5 million per year that Ohio State has invested in the Office of Energy and Environment since 2012
- The $1.75 million per year investment in new DT faculty salaries, along with $5.9 million in one-time cash for new faculty start up, and a total of $2.5 million in program budget to support SRE programs and staff in the first five years
- The need to increase research and programmatic capacity to the Ohio State community of faculty, staff and students engaged in sustainability if we are going to effectively nurture the significant number of new faculty hires in sustainability (over 50) enabled by the Discovery Theme program and leverage the substantial expertise among existing faculty (over 500) working in this space to meet our aspirations to be a global leader in higher education with a truly holistic approach to sustainability.

The 5-year budget proposed for SI would fund the following areas/activities:

- Current combined OEE and SRE staff (11 FTEs) and add 3.5 new FTEs to SI in targeted areas. These additional staff are phased in over a five-year period.
- Provide support and appropriate oversight for approximately 30 SRE faculty hires (now SI core faculty)
- Provide yearly stipends and seed funding to faculty research leaders to support research clusters in five targeted areas over five years (phased in over five years)
- Continue to manage the Ohio State Sustainability Fund (including the new OSEP-funded $15 million sustainability endowment)
- Share annual costs of post docs to support interdisciplinary research in key sustainability knowledge domains that can be leveraged across focus areas (e.g., in integrated systems modeling, behavioral science)
- Provide $100,000 annually in targeted investments for research or teaching, such as engaging researchers in programs that support campus as a living lab
- Manage a $125,000 annual seed grant program to support the breadth of interdisciplinary sustainability research by supporting projects outside of the research focus areas
- Increase investment in student learning (curricular and co-curricular) from the current $95,000 per year to over $350,000 annually in Year 5

*SUSTAINABILITY INSTITUTE
The Ohio State University
5 - Year Budget Projection

	FY2019	FY2020	FY2021	FY2022	FY2023
Beginning Equity	384,261	874,119	51,104	(1,068,575)	(2,369,338)
Sources:					
OAA Allocation	778,000	778,000	778,000	778,000	778,000
SRE Allocation	500,000	500,000	500,000	500,000	500,000
DIR Allocation	213,120	219,514	226,099	232,882	239,868
Research Investment	658,131	-	-	-	-
Sustainability Fund	643,000	668,720	695,469	723,288	752,219
Curriculum Endwmnt Fund	211,478	215,334	220,372	224,165	226,416
MOU FY18: OEE/COAS	169,243	-	-	-	-
Total Sources	3,172,972	2,381,568	2,419,940	2,458,335	2,496,503
Uses:					
Administration Costs:	1,540,114	1,784,963	2,077,823	2,133,894	2,159,466
Personnel: Salary & Fringe	1,310,114	1,534,963	1,677,823	1,833,894	1,859,466
Operations*	100,000	100,000	250,000	150,000	150,000
Marketing/Communications	50,000	50,000	50,000	50,000	50,000
Outreach/Engagment	70,000	80,000	80,000	80,000	80,000
Business Development	10,000	20,000	20,000	20,000	20,000
Teaching & Learning	85,000	110,900	121,827	147,782	148,765
Student Programming	30,000	30,000	40,000	40,000	40,000
New Course Development	25,000	50,000	50,000	75,000	75,000
Faculty Teaching Leads	30,000	30,900	31,827	32,782	33,765
Research Investment	415,000	640,000	644,500	754,135	863,909
Seed Grants	125,000	125,000	125,000	125,000	125,000
Targeted Investments	50,000	75,000	75,000	100,000	125,000
Post Doctoral Rschrs	75,000	150,000	154,500	159,135	163,909
Focus Area Investments	50,000	150,000	150,000	200,000	250,000
Faculty Co-Leads	90,000	90,000	90,000	120,000	150,000
Student Research	25,000	50,000	50,000	50,000	50,000
Ohio State Sustainability Fund	643,000	668,720	695,469	723,288	752,219
Supported Projects	643,000	668,720	695,469	723,288	752,219
Total Uses	2,683,114	3,204,583	3,539,619	3,759,098	3,924,359
Margin	489,858	(823,015)	(1,119,678)	(1,300,763)	(1,427,856)
Ending Equity	874,119	51,104	(1,068,575)	(2,369,338)	(3,797,194)

	FY2019	FY2020	FY2021	FY2022	FY2023
Projected Ending Equity without additional funding	874,119	925,223	356,648	(1,262,690)	(3,559,884)
Estimated Funding Needs per Fiscal Year	-	500,000	750,000	1,500,000	4,000,000
Projected Ending Equity with additional funding per Fiscal Year	874,119	1,425,223	1,106,648	237,310	440,116

* includes facilities, supplies, services, equipment, etc., assumes new space in FY21

Additional Budget Highlights

Resourcing SI

Given the many academic and support units engaged in sustainability, a central hub that can build and maintain networks of communication and coordination and facilitate ways to integrate and leverage these distributed resources is necessary. For this reason, it makes administrative sense to fund SI centrally. The Provost and Executive Vice President plays a unique role in crossing academic and support units. Hence, we expect SI to be funded primarily by the Office of Academic Affairs, with the Office of Research providing some additional funding to support SI's research mission. Over time, we expect to supplant central funding support with an increasing share of external funding. However, we also anticipate that a substantial portion of the external resources that SI will generate will flow to other units in support of our shared sustainability mission.

Indirect Costs

With 27 faculty hires to date, SRE has nearly exhausted the faculty hiring resources provided through the Discovery Themes Initiative. Per the Discovery Themes Administrative Guidelines (April 2015) we expect that OAA will use a share of IDC generated by these faculty to offset the OAA investment in SI. We also acknowledge that there are ongoing conversations about the financial model that OAA will follow to sustain the Discovery Theme investments, and that the use of the IDC generated by these faculty will be determined by these discussions.

External Funding

In July of 2018, OEE and SRE partnered to hire a professional staff person focused on securing external resources. It is important to note, however, that the primary responsibilities for our Director of Business and Development and Partnerships is to bring in external resources for the entire community of faculty, staff and students working on sustainability at Ohio State, not for the SI unit. However, a secondary priority will be to work with Ohio State Advancement to cultivate a major named gift for the Institute.

One-time costs

The only major one-time cost we have projected is that associated with a needed redesign of our current office space. This is necessary to accommodate adequate office space for the combined current OEE and SRE staff along with the projected 3.5 new FTEs.

Recurring costs

OAA has committed to cover the recurring costs of $1.4 million for the SI core faculty. The 6 colleges and 16 departments that have partnered with SRE/SI to date are providing a match of the recurring funding for salary and benefits of these faculty hires. Other recurring costs for professional staff have been noted above.

Equipment, Space and Facilities

The SI office is located in Smith Laboratory in space controlled by the Office of Academic Affairs. We are committed to a collaborative, open environment and are currently developing plans to accommodate all SI staff in this existing space. However, we are very limited in space in which the many other contributors to sustainability at Ohio State can collaborate. We are actively seeking opportunities to create space for SI programs and team collaborations in either the Interdisciplinary Research Building or the Energy Advancement and Innovation Center being planned through our partnership with ENGIE-Axium. However, such an opportunity is not likely to avail itself within the first three years.

Performance Metrics

Corresponding to the objectives articulated above, the following table provides our 5-year targets for each objective and the metrics that we will track on an annual basis to measure our progress. We plan to refine these metrics and targets as we are given feedback from internal and external stakeholders.

Goal 1: Establish Ohio State as a leading public institution of sustainability research and applications that engages with community partners to develop sustainability solutions to local, regional and global challenges

Objective 1.1 Catalyze greater excellence in interdisciplinary research on sustainability and resilience

Alignment with University Goals	SI Metrics*	5 year Targets (End FY23)
Research and Creative Expression Ohio State will enhance our position among the top national and international public universities in research and creative expression, both across the institution and in targeted fields — driving significant advances for critical societal challenges **University Sustainability Goals** #3 Reward Sustainability Scholarship and Engagement #4 Magnify Sustainability Scholarly Output and Impact	• No. of submitted proposals and total funds requested by funder type (e.g., federal, state, industry, foundation, internal, other) • No. of funded proposals and total amount by funder type (e.g., federal, state, industry, foundation, internal, other) *(also appears in Obj. 4.2)* • No. of peer-reviewed publications in disciplinary and interdisciplinary journals • No. interdisciplinary collaborations involving humanities and arts scholars • External recognition for sustainability research (including publication and journal awards, association awards, citations of work in high-profile publications, national or international reports, mass media)	• Multiple large ($5M+), transdisciplinary center or infrastructure-level proposals submitted to both federal and non-federal funders, catalyzed and supported by SI *(also appears in Obj. 4.2)* • Substantial increase in external research funding in targeted program areas *(also appears in Obj. 4.2)* • Increased impact of interdisciplinary research through publication in high-impact sustainability or general science journal publications • Increased integration of humanities and arts scholarship with other sustainability disciplines • External recognition for interdisciplinary research in targeted program areas

*Calculated for all SI-supported research teams and SI core faculty

Objective 1.2 Build the capacity of research teams, faculty, staff, students, and academic units engaged in interdisciplinary research on sustainability and resilience

Alignment with University Goals	SI Metrics	5 year Targets (End FY23)
Research and Creative Expression **University Sustainability Goals** #3 Reward Sustainability Scholarship and Engagement #4 Magnify Sustainability Scholarly Output and Impact	• No. of core and affiliated faculty in research leadership positions • No. and amount of SI seed grants and targeted investments • No. and types of proposals supported through PDO and other SI staff or services • No. of post-award project management services delivered • No. and types of interdisciplinary network connections among researchers for each program area • No. and types of collaborations with internal partners, including centers, academic units, DT programs • No. and interdisciplinary networks of mentor teams for untenured core SI faculty • Internal incentives and recognitions for interdisciplinary research accomplishments	• DT core faculty in key SI leadership positions (program leaders, research teams leaders, FAB) • Increased diversity of SI leadership, core & affiliated faculty across rank, discipline, academic unit, expertise, gender, ethnicity *(also appears in Obj. 5.3)* • 25% increase in affiliated faculty actively engaged in SI-supported research • Substantial increase in no. of interdisciplinary research proposals and projects supported by SI • Increased connectivity of interdisciplinary research networks in targeted program areas • High degree of diversity in people, discipline, academic unit among the 90+ faculty engaged as mentors of untenured core SI faculty *(also appears in Obj. 5.3)* • Greater incentives and recognition for Ohio State faculty contributions to interdisciplinary research and collaborations

Objective 1.3 Increase engagement of external partners in research and broader impacts of research

Alignment with University Goals	SI Metrics*	5 year Targets (End FY23)
Research and Creative Expression **Engagement and Service** Fostering a culture of engagement and service **Diversity and Inclusion** Essential components of our excellence **University Sustainability Goals** #3 Reward Sustainability Scholarship and Engagement #4 Magnify Sustainability Scholarly Output and Impact #6 Encourage Local and Global Sustainability Partnerships	• No. of external stakeholders engaged in research • No. of funded research projects with stakeholder involvement (participatory research team, external stakeholders as PI or co-PIs, stakeholder advisory team) • No. and type of research outputs co-produced with external partners (including scholarly articles, technical reports, websites, public communications, datasets, technologies, models) • Innovation or application of research in public sector (e.g., used in community planning, policy design, resource or sustainability management) or education (e.g., K-12 outreach, public awareness) • Innovation or application of research in private sector (e.g., new products, start-ups or other commercialization) • No. and type of partnerships with underserved communities or stakeholders *(also appears in Obj. 5.3)* • Awards and recognitions for community-engaged research and applications of research for developing sustainability solutions	• External stakeholders as PIs or co-PIs on research projects in each program area • Multiple successes in developing sustainability solutions with external partners • Research on social justice and engagement of underserved communities incorporated into each SI program area *(also appears in Obj. 5.3)* • Greater incentives and recognition for research applications by Ohio State faculty that generate societal value

*Calculated for all SI-supported research teams and SI core faculty

GOAL 2: Educate and empower Ohio State students to become leaders, professionals and engaged citizens in solving societal issues related to environment, sustainability and resilience

Objective 2.1 Coordinate and enhance interdisciplinary curricular programs in sustainability and resilience studies

Alignment with University Goals	SI Metrics	5 year Targets (End FY23)
Teaching and Learning Ohio State will be an exemplar of the best teaching, demonstrating leadership by adopting innovative, at-scale approaches to teaching and learning to improve student outcomes. **Access, Affordability and Excellence** Ohio State will further our position as a leading public university offering an excellent, affordable education and promoting economic diversity **Diversity and Inclusion** **University Sustainability Goals** #1 Deliver a Sustainability Curriculum Throughout the University	• No. of visits to Ohio State sustainability education central website (once established) • No. of shared events, services, courses and other activities among core sustainability programs • No. & type of interdisciplinary sustainability programs and courses by academic unit • No. of team-taught sustainability courses • No. & diversity of undergraduate & graduate students enrolled in core sustainability programs and courses • No. of graduates from core sustainability programs • No. of graduates from core sustainability programs in sustainability-related jobs • External recognition and awards for sustainability education	• Improved coordination and communications of core sustainability programs across colleges • SELC reports completed that include recommendations for improving and expanding undergraduate and graduate sustainability education • Multiple SELC recommendations implemented in collaboration with academic units, leading to expanded or new interdisciplinary sustainability curricular programs at undergraduate and graduate levels • Increased no. of sustainability courses team-taught by instructors from different disciplines or that integrate across two or more distinct areas of sustainability (categorized using SELC 6-circle framework) • Increased no. of courses that provide real-world opportunities, (e.g., project-based learning, field work) • Increased no. & diversity of undergraduate students who have completed at least one sustainability course (identified using SELC 6-circle framework) *(also appears in Obj. 5.3)* • Increased no. of graduates from core sustainability programs who are in a sustainability-related job 1 year after graduation • Increase in no. of underrepresented minority students pursuing a sustainability major, minor or graduate program *(also appears in Obj. 5.3)* • National recognition for sustainability education programs *(also appears in Obj. 5.1)*

Objective 2.2 Coordinate and enhance co-curricular programs and opportunities related to sustainability

Alignment with University Goals	SI Metrics	5 year Targets (End FY23)
Teaching and Learning **Engagement and Service** **Diversity and Inclusion** **University Sustainability Goals** #2 Teach Sustainability in Innovative Ways in and Out of the Classroom #5 Foster Sustainability Culture On and Off Campus #6 Encourage Local and Global Sustainability Partnerships #7 Reduce Energy and Resource Use, Neutralize Carbon Emissions and Minimize Waste	• No. and types of co-curricular activities and programs supported or facilitated by SI • No. of students engaged in sustainability research, campus or community-based sustainability projects that are supported or facilitated by SI • No. of living lab projects *(also appears in Obj. 3.2)* • No. of classes and programs with living lab component *(also appears in Obj. 3.2)* • No. of community-based experiential learning projects *(also appears in Obj. 3.2)* • No. of classes and programs with community-based project component that focus on underserved communities or stakeholders *(also appears in Obj. 3.2)* • No. of internal and external awards and recognitions for students engaged in sustainability-related activities or programs	• Increased engagement opportunities for students through campus programs, community partnerships and interactions with alumni working in sustainability areas • Increased opportunities for students to engage with campus as living lab and community-based projects through a centralized online database *(also appears in Obj. 3.2)* • Increased no. of community-based projects in underserved communities *(also appears in Obj. 3.2)* • Increased no. of community-based experiential learning projects with underserved communities or stakeholders *(also appears in Obj. 3.2, 5.3)* • Greater incentives and recognition for students who generate meaningful research outputs, campus improvements, or community benefits through their co-curricular work

GOAL 3: Accelerate campus sustainability progress and living lab opportunities through greater integration of Ohio State faculty and students with campus operations

Objective 3.1 Provide leadership and support to the broad array of campus units focused on operational sustainability challenges and opportunities

Alignment with University Goals	SI Metrics	5 year Targets (End FY23)

Teaching and Learning
 	
Research and Creative Expression
 	
Operational Excellence and Resource Stewardship
 	
Ohio State will be an exemplar of best practices in resource stewardship, operational effectiveness, and efficiency and innovation
 	
University Sustainability Goals
 	
#2 Teach Sustainability in Innovative Ways in and Out of the Classroom
 	
#4 Magnify Sustainability Scholarly Output and Impact
 	
#5 Foster Sustainability Culture On and Off Campus
 	
#6 Encourage Local and Global Sustainability Partnerships
 	
#7 Reduce Energy and Resource Use, Neutralize Carbon Emissions and Minimize Waste
	• Progress on meeting university resource stewardship sustainability goals:
	    ○ Purchasing, including local and sustainable food
	    ○ Transportation
	    ○ Water use
	    ○ Energy use
	    ○ Land management
	    ○ Waste reduction
	• No. of new sustainability partnerships and programs developed in other Ohio State units, such as A&P, B&F and Student Life
	• Ohio State ranking in national sustainability scorecards (AASHE Stars, Cool Schools, etc.) *(also appears in Obj. 5.1)*
		• 50 new academic & operational collaborations that advance sustainability knowledge and/or university operations
		• Established individual operational goal strategic plans: Climate Action Plan, ENGIE EUI Plan, Expand Water Use Assessment Pilot, Ecosystem Services Panel Report, Fleet Plan Assessment, Zero Waste Phased Plan, Sustainable Food Panel Report
		• Nearing attainment for all 2025 University resource stewardship goals
		• Top 10 program based on national sustainability scorecards *(also appears in Obj. 5.1)*

Objective 3.2 Establish and grow a campus as living lab program

Alignment with University Goals	SI Metrics	5 year Targets (End FY23)
Teaching and Learning **Research and Creative Expression** **Operational Excellence and Resource Stewardship** **Engagement and Service** **Diversity and Inclusion** **University Sustainability Goals** #1 Deliver a Sustainability Curriculum Throughout the University #2 Teach Sustainability in Innovative Ways in and Out of the Classroom #4 Magnify Sustainability Scholarly Output and Impact #5 Foster Sustainability Culture On and Off Campus #6 Encourage Local and Global Sustainability Partnerships #7 Reduce Energy and Resource Use, Neutralize Carbon Emissions and Minimize Waste	• No. of living lab projects *(also appears in Obj. 2.2)* • No. of classes and programs with living lab component *(also appears in Obj. 2.2)* • No. of community-based experiential learning projects *(also appears in Obj. 2.2)* • No. of classes and programs with community-based project component that focus on underserved communities or stakeholders *(also appears in Obj. 2.2)* • Amount and types of campus sustainability or other data available for research or teaching purposes	• Institutionalized living lab program actively matching research capability and student interests with operational needs • Online portal for real-time, disaggregate data on resource consumption, mobility flows, etc. for research and teaching purposes • Increased opportunities for students to engage with campus as living lab and community-based projects through a centralized online database *(also appears in Obj. 2.2)* • Increased no. of community-based projects in underserved communities *(also appears in Obj. 2.2, 5.3)*

GOAL 4: Grow the resources available to support sustainability and resilience research, teaching, engagement, and outreach across the university

Objective 4.1 Build partnerships with external stakeholders, including private companies, public agencies, communities and non-profit organizations

Alignment with University Goals	SI Metrics	5 year Targets (End FY23)
Teaching and Learning **Research and Creative Expression** **Operational Excellence and Resource Stewardship** **Engagement and Service** **Diversity and Inclusion** **University Sustainability Goals** #2 Teach Sustainability in Innovative Ways in and Out of the Classroom #4 Magnify Sustainability Scholarly Output and Impact #5 Foster Sustainability Culture On and Off Campus #6 Encourage Local and Global Sustainability Partnerships	• No. and types of partnerships by targeted program area and by sector (private, public, NGO) • No. of affiliated faculty and staff engaged with national and international sustainability organizations • No. of affiliated faculty and staff serving in significant roles with external partners (e.g., as member of advisory board, providing technical assistance, member of grants panel review) • No. of faculty-led policy briefings for state and federal legislators	• 1-2 new partnerships in each of the targeted program areas • External advisory board with high degree of diversity and representatives of underserved sectors or communities *(also appears in Obj. 5.3)* • Increased partnerships to support opportunities for research and teaching activities with underserved communities and stakeholders *(also appears in Obj. 5.3)* • Increased no. of affiliated faculty and staff engaged in active leadership with highly visible national and international sustainability organizations • Increased no. of affiliated faculty and staff providing significant service to external partners at local or state levels • 3 faculty-led policy briefings held for legislators by 2023

Objective 4.2 Secure external investments to support interdisciplinary work on sustainability or resilience topics

Alignment with University Goals	SI Metrics	5 year Targets (End FY23)
Teaching and Learning **Research and Creative Expression** **Engagement and Service** **Operational Excellence and Resource Stewardship** **University Sustainability Goals** #1 Deliver a Sustainability Curriculum Throughout the University #2 Teach Sustainability in Innovative Ways in and Out of the Classroom #4 Magnify Sustainability Scholarly Output and Impact #5 Foster Sustainability Culture On and Off Campus #6 Encourage Local and Global Sustainability Partnerships #7 Reduce Energy and Resource Use, Neutralize Carbon Emissions and Minimize Waste	• No. of interactions by SI-supported teams with corporations, foundations, and other prospects • No. of funded proposals and total amount by funder type (e.g., federal, state, industry, foundation, internal, other) and by university recipient *(also appears in Obj. 1.1)* • Amount of external funds secured by intended purpose: research, learning, outreach	• Contributed to $10M in new private funding for SI program areas • At least one big idea included in the 2019 university campaign • Sufficient external funding secured to grow SI operations and programs • Multiple large ($5M+), transdisciplinary center or infrastructure-level proposals submitted to both federal and non-federal funders, catalyzed and supported by SI *(also appears in Obj. 1.1)* • Substantial increase in external research funding in targeted program areas *(also appears in Obj. 1.1)*

GOAL 5: Catalyze a culture of sustainability by spreading an inclusive ethic of sustainability across the university enterprise, engaging with partners and bringing a greater diversity of people and knowledge to Ohio State and our region

Objective 5.1 Raise Ohio State's visibility as a leader in sustainability scholarship and campus activities

Alignment with University Goals	SI Metrics	5 year Targets (End FY23)
Engagement and Service **Diversity and Inclusion** **University Sustainability Goals** #4 Magnify Sustainability Scholarly Output and Impact #5 Foster Sustainability Culture On and Off Campus #6 Encourage Local and Global Sustainability Partnerships	• No. of targeted communication pieces that generate local, state, national, international stories • No. and type of sustainability awareness events organized and no. and diversity of attendees *(also appears in Obj. 5.3)* • Measurable annual progress of sustainability awareness/literacy by faculty, staff and students • Ohio State ranking in national sustainability scorecards (AASHE Stars, Cool Schools, etc.) *(also appears in Obj. 3.1)* • External recognition of research or teaching excellence in sustainability *(also appears in Obj. 1.3 and 2.1)* • No. and prestige of scholarly recognitions & awards for faculty, students, staff working in sustainability research areas	• Online tracking system of university sustainability goals • 20 national media stories about sustainability at Ohio State • 12 sustainability events organized and/or supported by SI including a presence at marquee University events • Integration of sustainability messaging into at least 3 high profile university events • 20% increase in @OhioStSustain social media following • Increased sustainability awareness by faculty staff and students as measured by survey data • Top 10 program based on national sustainability scorecards *(also appears in Obj. 3.1)* • Increased national recognition for sustainability research and education programs *(also appears in Obj. 1.3 and 2.1)* • Increase in diversity of faculty, staff, students engaged in sustainability research projects, learning programs, and campus activities *(also appears in Obj. 5.3)*

Objective 5.2 Provide leadership and support for sustainability related programs, projects and activities

Alignment with University Goals	SI Metrics	5 year Targets (End FY23)

Teaching and Learning
 	
Research and Creative Expression
 	
Operational Excellence and Resource Stewardship
 	
Engagement and Service
 	
Diversity and Inclusion
 	
University Sustainability Goals
 	
#1 Deliver a Sustainability Curriculum Throughout the University
 	
#2 Teach Sustainability in Innovative Ways in and Out of the Classroom
 	
#4 Magnify Sustainability Scholarly Output and Impact
 	
#5 Foster Sustainability Culture On and Off Campus
 	
#6 Encourage Local and Global Sustainability Partnerships
 	
#7 Reduce Energy and Resource Use, Neutralize Carbon Emissions and Minimize Waste
	• No. & diversity of faculty and staff, including senior leaders, actively engaged with university level sustainability efforts, including the President and Provost's Council on Sustainability
	
	• Diversity of campus units and measurable success of sustainability projects funded by the Ohio State Sustainability Fund
	
	• Effectiveness and leverage of the academic collaboration component of the Comprehensive Energy Management Project (CEMP)
	  o No. of satisfied student interns
	  o Productivity of new faculty hires
	  o No. of scholarships and quality of new students rewarded
	  o No. of new external partnerships leveraged by ENGIE-Axium partnership
	  o Impact of philanthropic contributions
	  o Development of new energy innovation center on campus
	
	• No. of partnerships and activities leveraged by Ohio State's participation in national sustainability related coalitions
		• Increased satisfaction reported by members of PPCS
		
		• Measureable progress on how the Ohio State Sustainability Fund has helped reach our university sustainability goals
		
		• Demonstrate that projects funded by the OSSF exceed a combined financial and non-financial (e.g., value of environmental benefits) ROI greater than $1 million per year
		
		• 50 student interns hired by ENGIE-Axium with a satisfaction rate > 80%
		
		• Five ENGIE-Axium faculty endowed chairs filled and creating synergies that otherwise would not have been possible
		
		• 50 ENGIE-Axium undergraduate student scholarship recipients
		
		• Report issued on effectiveness of graduate and professional scholarships in recruiting and retaining top students
		
		• Report on the impact of $4 million in philanthropic funding from ENGIE-Axium
		
		• Groundbreaking for new energy innovation center on campus
		
		• Assessment of impact of Ohio State's participation in University Climate Coalition and UN Sustainability Network

Objective 5.3 Ensure success of strategies to increase the diversity of people and inclusion of underrepresented groups engaged in sustainability and resilience work

Alignment with University Goals	SI Metrics	5 year Targets (End FY23)
Teaching and Learning **Research and Creative Expression** **Engagement and Service** **Diversity and Inclusion** **University Sustainability Goals** #1 Deliver a Sustainability Curriculum Throughout the University #2 Teach Sustainability in Innovative Ways in and Out of the Classroom #4 Magnify Sustainability Scholarly Output and Impact #5 Foster Sustainability Culture On and Off Campus #6 Encourage Local and Global Sustainability Partnerships	• Diversity of SI leadership, staff, advisory boards, core and affiliated faculty, faculty mentors • No. of underrepresented minority undergraduate and graduate students engaged in sustainability research • No. and type of partnerships with underserved communities or stakeholders *(also appears in Obj. 1.3)* • No. of underrepresented minority undergraduate and graduate students enrolled in a sustainability academic program (major, minor, etc) *(also appears in Obj. 2.1)* • No. of underrepresented minority attendees at campus sustainability events *(also appears in Obj. 5.1)* • No. of underrepresented minority external stakeholders engaged in sustainability research and teaching • No. of sustainability research projects, learning programs and courses that incorporate social justice and ethical issues	• 40% of SI core faculty are ethnically, racially or gender diverse • High degree of diversity in people, discipline, academic unit among the 90+ faculty engaged as mentors of untenured core SI faculty *(also appears in Obj. 1.2)* • Increased diversity of SI leadership, core & affiliated faculty across rank, discipline, academic unit, expertise, gender, ethnicity *(also appears in Obj. 1.2)* • Increased focus of research and teaching on social justice and engagement of underserved communities *(also appears in Obj. 1.3)* • Increase in sustainability innovations or research applications that benefit underserved communities or stakeholders *(also appears in Obj. 1.3)* • Increase in no. underrepresented minority students pursuing a sustainability major, minor or graduate program *(also appears in Obj. 2.1)* • Increased no. & diversity of undergraduate students who have completed at least one sustainability course *(also appears in Obj. 2.1)* • Increased no. of community-based projects in underserved communities *(also appears in Obj. 2.2, 3.2)* • External advisory board with high degree of diversity and representatives of underserved sectors or communities *(also appears in Obj. 4.1)* • Increased partnerships to support opportunities for research and teaching activities with underserved communities and stakeholders *(also appears in Obj. 4.1)* • 50% increase in no. of affiliated faculty and staff serving in significant roles with underserved communities or stakeholders *((also appears in Obj. 4.1)* • Increase in diversity of faculty, staff, students engaged in sustainability research projects, learning programs, and campus activities *(also appears in Obj. 5.1)*

OHIO STATE SUSTAINABILITY GOALS

Strategic Vision

Ohio State is a recognized leader in developing durable solutions to the pressing challenges of sustainability and in evolving a culture of sustainability through collaborative teaching, pioneering research, comprehensive outreach, and innovative operations, practices, and policies.

As progress is made toward realizing institutional sustainability aspirations, four overarching, foundational principles of the university must take hold to ensure that accountability and a culture of sustainability becomes pervasive throughout Ohio State's culture, practices and programs:

• Ensure a transformational approach by establishing a generational timeline to consider the impacts and trade-offs of decisions and economic, environmental, and social outcomes over many years and decades, instead of only the perspective of short-term economic returns.

• Utilize a council of internal and external stakeholders (i.e., students, staff, faculty, alumni/ae, companies, non-governmental organizations, agencies) to serve in an advisory capacity for the ongoing formulation, development, implementation, and assessment of goals, initiatives, and outcomes.

• Conduct research on our progress by developing and/or adapting research methodology to review and assess operational goals, and evaluate and publish the results with the aim of developing best practices and innovation for sustainability measurement.

• Incorporate relevant elements of sustainability into all college and support units' strategic plans, physical plans, and other university guiding documents.

Teaching and Learning

1. Deliver a Curriculum that provides Ohio State students at all stages of instruction – from General Education to professional and technical programs – with opportunities to understand sustainability holistically, framed by the environment, science, technology, society, the economy, history, culture, and politics.

2. Address the Complexities of Sustainability through a variety of learning formats, strategies, and occasions.

Research and Innovation

3. Reward Sustainability Scholarship, including the scholarship of engagement, by providing incentives for students, faculty and staff to make discoveries and stimulate creative efforts that promote and achieve sustainability.

4. Magnify Sustainability Scholarly Output and Impact to create new knowledge, solve real world problems, including for our own operations, and increase Ohio State's national/international reputation as a sustainability research leader.

Outreach and Engagement

5. Foster Campus-to-Community, Students-to-Alumni Culture of sustainability-oriented practices and educational and research experiences that students and alumni transfer into local and global communities.

6. Catalyze Engagement, Ownership, and Buy-In to Sustainability via engaged and inclusive partnerships, on and off campus, that support the long-term economic, social and environmental welfare of the campus, surrounding neighborhoods and the global community.

Resource Stewardship

7. Implement specific, "world-leading" university-wide operational goals to reduce resource consumption, neutralize carbon emissions and minimize waste, including:

a. Achieve carbon neutrality by 2050 per American College and University Presidents Climate Commitment;

b. Reduce total campus building energy consumption by 25% by 2025;

c. Reduce potable water consumption by 5% per capita every five years, resetting baseline every five years;

d. Double the acreage that provides at least two ecosystem services, by 2025;

e. Reduce carbon footprint of university fleet by 25% by 2025;

f. Achieve zero waste by 2025 by diverting 90% of waste away from landfills;

g. Increase production and purchase of locally and sustainably sourced food to 40% by 2025; and

h. Develop university-wide standards for targeted environmentally preferred products and fully implement preferable products and services by 2025.

Appendix B: SELC – Sustainability Faculty Working Group Goals

Sustainability Faculty Working Group Goals

In December 2017, the Sustainable and Resilient Economy (SRE) Discovery Themes program led the development of a framing document for furthering sustainability education at Ohio State coauthored by faculty from six different colleges at Ohio State. This document provides the vision and rationale for a comprehensive approach to environmental and sustainability education at Ohio State. It lays out high-level goals, centered on better coordination and communication of existing programs, enhancements of existing degree programs, e.g., through certificate programs, specializations or minors, and strategic opportunities to build new programs in key interdisciplinary areas. The document proposes the formation of a faculty working group to further develop these ideas. This document was shared with the curricular deans at Ohio State and other key leaders and has received broad support.

As a next step, SRE proposes to work with the Office of Academic Affairs to convene a sustainability faculty working group that will provide recommendations regarding the specific strategies and structures that Ohio State should implement for delivering innovative, interdisciplinary sustainability education with the outcomes described in the framing document. We propose the following work plan:

Objectives:

1. Assess the current landscape of sustainability academic programs related to the environment, earth resources, and human-environmental systems.

    - Identify current academic programs at Ohio State and their strengths.
    - Engage employers from the private and public sectors to provide feedback regarding workforce development and training needs in the areas of environmental, sustainability, and resilience management, engineering, planning, policy, etc. and including applications to energy, water, food, air and other natural resources.
    - Benchmark Ohio State relative to peer institutions to identify exemplar programs and strategic opportunities.
    - Gather input from key stakeholder groups, including current and potential students, to assess their demand for new or expanded programs in specific areas related sustainability.

2. Identify ways to improve coordination, messaging, and communication of existing programs.

    - Articulate specific strategies, including a central portal for students to learn about the multiple possible programs of study and to be tracked into a specific program of study and support services that need to be coordinated and made available to students to meet their educational and professional development goals.

3. Identify opportunities for new cross-college sustainability science programs that can complement existing programs, including "degree enhancements" such as certificates and minors (undergraduate) and specializations (graduate) and project-based learning.

    - Identify core themes and courses that align with these themes, including earth and environmental systems and human dependence and impacts on these systems; the role of technology, policy, economy, society, culture, and institutions; innovations in engineering, science, policy, management, governance systems to improve the sustainability, resilience, and well-being of local communities, nations, and global society.
    - Identify key application areas and courses that align with these, including: energy, food, water, climate, communities.
    - Describe the ways in which knowledge will be integrated from across multiple disciplines and courses; the ways in which students may customize the program to fit their major; options for focusing on a key application area, e.g., energy, water, food, climate, communities.

- Identify mechanisms and incentives for collaboration across units, including incentives for faculty to develop interdisciplinary and team-taught courses.
- Provide guidance regarding co-curricular sustainability learning programs, including student engagement in sustainability initiatives on campus, campus as a living lab, community service projects, internships, education abroad programs, and other experiential learning opportunities. Describe mechanisms and incentives for project-based learning, including capstone courses, and other impactful learning activities related to sustainability.

4. Provide recommendations for new GE sustainability theme guidelines and implementation.

5. Provide feedback regarding STARS feedback collection and metrics for academic program and course offerings in the area of sustainability.

SELC members are listed below for reference.

Name	Email Address	Title	Affiliation
Elliot Bendoly	Bendoly.2@osu.edu	Distinguished Professor and Associate Dean of Undergraduate Students and Programs	Management Sciences, Fisher College of Business
Michael Bisesi	Bisesi.12@osu.edu	Professor and Interim Chair; Senior Associate Dean of Academic Affairs	Environmental Health Sciences, College of Public Health
Nicholas Breyfogle	Breyfogle.1@osu.edu	Associate Professor	History, Arts and Sciences College (ASC)
Cinnamon Carlarne	Carlarne.1@osu.edu	Professor	Moritz College of Law
Jill Clark	Clark.1099@osu.edu	Assistant Professor	John Glenn College of Public Affairs
David Cole	Cole.618@osu.edu	Professor, Ohio Research Scholar	School of Earth Sciences, ASC
Maria Manta Conroy	Conroy.36@osu.edu	Associate Professor and Interim Section Chair	City and Regional Planning, Knowlton School of Architecture, College of Engineering
Kip Curtis	Curtis.457@osu.edu	Assistant Professor, OSU Mansfield	History
Gina Hnytka	Hnytka.4@osu.edu	Program Director, Sustainability Learning and Education	Sustainable and Resilient Economy (SRE)
Greg Hitzhusen	Hitzhusen.3@osu.edu	Assistant Professor of Professional Practice, SRE Faculty Lead for Teaching	School of Environment and Natural Resources, FAES
Elena Irwin	Irwin.78@osu.edu	Faculty Director (SRE) Professor (AEDE)	Sustainable and Resilient Economy Discovery Theme (SRE) and Agricultural, Environmental, and Development Economics, College of Food, Agriculture and Environmental Sciences (FAES)

Lawrence Krissek	Krissek.1@osu.edu	Faculty Emeritus, School of Earth Sciences	Office of Academic Affairs (OAA)
Roman Lanno	Lanno.1@osu.edu	Associate Professor	Evolution, Ecology, and Organismal Biology, ASC
Allison MacKay	Mackay.49@osu.edu	Professor and Department Chair	Civil, Environmental, and Geodetic Engineering, College of Engineering
Becky Mansfield	Mansfield.32@osu.edu	Professor	Geography, ASC
Agustin Munoz-Garcia	Munozgarcia.1@osu.edu	Assistant Professor, OSU Mansfield	Anatomy/Evolution, Ecology, and Organismal Biology
Jeff Sharp	Sharp.123@osu.edu	Director and Professor	School of Environment and Natural Resources, FAES

Appendix C: SI DT Core Faculty Portfolio

(As Of September 2018)

New Faculty	Email	Research Areas	Position	Lead College	Lead TIU	Partnering Units	Rank	Start Semester
Yongyang Cai	cai.619@osu.edu	Research focuses on dynamic and stochastic integration of climate and economics. Areas include global economic modeling, integrated assessment modeling, incorporating risk and uncertainty into global models.	Global Economic Modeling	Food, Agricultural, and Environmental Sciences	Agricultural, Environmental, and Development Economics		Assoc	Fall 2016
Chen Chen	chen.8018@osu.edu	Research focuses on design and implementation of optimization methods for polynomial optimization and mixed integer nonlinear programming problems. Application includes optimal power flow, as well as related power systems problems.	Complex Systems Modeling	Engineering	Integrated Systems Engineering		Assist	Fall 2017
Zhenhua Chen	chen.7172@osu.edu	Research includes infrastructur planning and policy, regional science, risk and resilience, and big data analytics.He has a strong background in regional computable general equilibrium (CGE) assessment.	Risk and Resilience in Urban Regions	Engineering	City and Regional Planning		Assist	Fall 2016
Jordan Clark	clark.1217@osu.edu	Research explores the science of sustainable buildings; energy efficiency in buildings and healthy indoor environments; leveraging advancements in sensor technology and data science to allow for better prediction of indoor environments and smarter ventilation, including natural ventilation.	Engineering/ Public Health	Engineering	Civil, Environmental and Geodetic Engineering	Food, Agricultural, and Biological Engineering	Assist	Winter 2018
Santina Contreras	contreras.78@osu.edu	Research involves the intersection of natural hazards, urban planning, and international development; with an exploration of how participatory processes unfold in complex settings.	Disaster Planning and Resilience	Engineering	City and Regional Planning		Assist	Winter 2018
Karen Dannemiller	dannemiller.70@osu.edu	Research studies indoor exposures to chemicals and microorganisms, their sources, and their impact on human health.	Environmental Health Sciences	Engineering	Civil, Environmental and Geodetic Engineering	Environmental Health Sciences	Assist	Winter 2016
Scott Demyan	demyan.4@osu.edu	Research interests include soil organic matter and mineral stabilization mechanics, inorganic carbon dynamics, and ex situ mineral carbonation as a sequestration method.	Soil Mineralogy	Food, Agricultural, and Environmental Sciences	School of Environment and Natural Resources		Assist	Winter 2017
Grant Donnelly	donnelly.177@osu.edu	Designs interventions to increase consumer well-being in three central domains: financial, physical, and (pro)social.	Sustainability Marketing & Communication	Fisher College of Business	Marketing and Logistics		Assist	Fall 2018

SI DT Core Faculty Portfolio

New Faculty	Email	Research Areas	Position	Lead College	Lead TIU	Partnering Units	Rank	Start Semester
Sean Downey	downey.205@osu.edu	Research explores the social and environmental dynamics of farming and foraging societies, past and present. His work is guided by a focus on human cultural and biological variability, which provides important insights into contemporary societies and the environmental sustainability.	Culture, Institutions & Sustainability	Arts and Sciences	Anthropology		Assoc	Fall 2017
Jennifer Eaglin	eaglin.5@osu.edu	Research focuses on alternative energy in Brazil, involving the ethanol industry, energy development, state intervention and private industrial development, and environmental history.	Environmental History and Sustainability	Arts and Sciences	History		Assist	Fall 2016
Bartow Elmore	elmore.83@osu.edu	Research informs transnational environmental histories of capitalism and environmental history with considerations of technology and science.	Environmental History and Sustainability	Arts and Sciences	History		Assist	Fall 2016
Jonathan Fresnedo-Ramirez	fresnedoramirez.1@osu.edu	Research areas include crop domestication, germplasm improvement, genetic improvement for biomaterials production, applied bioinformatics, plant genomics, and plant genetic resources.	Crop Domestication	Food, Agricultural, and Environmental Sciences	Horticulture and Crop Science		Assist	Fall 2016
Matthew Hamilton	hamilton.1323@osu.edu	Research focuses on how people work together to solve environmental problems; analysis of patterns of interactions among individuals, organizations, and institutions involved in the stewardship of natural resources and ecosystem services.	Sustainability Policy and Governance	Food, Agricultural, and Environmental Sciences	School of Environment and Natural Resources		Assist	Fall 2018
John Horack	horack.1@osu.edu	Research informs aerospace engineering, international collaboration in spaceflight, aerospace policy and innovation/entrepreneurship, earth observation, earth-science data applications and assessment of environmental impacts.	Armstrong Chair For Aerospace	Engineering	Mechanical and Aerospace Engineering	John Glenn College of Public Affairs, Materials & Manufacturing for Sustainability	Full	Summer 2016
Natalie Hull	hull.305@osu.edu	Research applies emerging molecular biology tools, novel sensors, big data analyses, and optimized treatment technologies to better understand and control water microbiomes for sustainable protection of public and environmental health.	Environmental Microbiology	Engineering	Civil, Environmental and Geodetic Engineering		Assist	Fall 2018
Eden Lin	lin.2659@osu.edu	Research areas of expertise include ethics, well being, theories of welfare, and desire satisfaction.	Well being and Ethics	Arts and Sciences	Philosphy		Assist	Fall 2016

SI DT Core Faculty Portfolio

New Faculty	Email	Research Areas	Position	Lead College	Lead TIU	Partnering Units	Rank	Start Semester
Daniela Miteva	miteva.2@osu.edu	Research focuses on the spatial-temporal interactions between economic activities and the natural envrionment in the context of biodiversity conservation in devloping countries.	Sustainable Development and Economy	Food, Agricultural, and Environmental Sciences	Agricultural, Environmental, and Development Economics		Assist	Fall 2016
Joel Paulson	joelpaulson@berkeley.edu	Research aims to improve the quality, efficiency, and sustainability of engineered products and processes through the development and application of advanced decision-making strategies in the presence of uncertainty. My work specializes in formulating these strategies in terms of robust (or stochastic) mathematical optimization problems, which can then be applied to a broad range of applications, with a particular emphasis on complex (bio)chemical systems.	Sustainable Manufacturing	Engineering	Chemical and Biomolecular Engineering		Assist	Fall 2019
Judit Puskas	juditevapuskas@gmail.com	Research interests include green polymer chemistry, biomimetic processes and biomaterials, living/controlled polymerizations, polymerization mechanisms and kinetics, thermoplastic elastomers and polymer structure/property relationships, and probing the polymer-bio interface.	Biomaterials/ Biopolymer Engineering	Food, Agricultural and Environmental Sciences	Food, Agricultural and Biological Engineering		Full	Fall 2019
Christopher Rea	rea.115@osu.edu	Research interests include environment, politics, markets, regulations, institutional emergence, organizational change, science and technology, health politics and policy.	Regulation and Public Policy	John Glenn College of Public Affairs			Assist	Fall 2019
Christo Sevov	sevov.1@osu.edu	Research is developing strategies at the interface of homogeneous catalysis and electrochemistry for the sustainable application of electrical energy to organic synthesis, energy storage, and recycling of wastes.	Polymer/Organic Catalysis	Arts and Sciences	Chemistry and Biochemistry		Assist	Fall 2017
Nicole Sintov	sintov.2@osu.edu	Research studies behavior change, decision making, processes of change, smart grid, power systems, human-computer interaction, technology adoption, wildlife security, wildlife crime, poaching, and household consumption behavior.	Behavior Decision Making and Sustainability	Food, Agricultural, and Environmental Sciences	School of Environment and Natural Resources		Assoc	Winter 2017
Christine Thomas	thomas.3877@osu.edu	Research within the Thomas laboratory is exploring cooperation between different components of bifunctional catalysts. The research team is developing new transition metal complexes as catalysts for greener and more sustainable chemical transformations.	Catalysis and Synthesis	Arts and Sciences	Chemistry and Biochemistry		Full	Winter 2018

SI DT Core Faculty Portfolio

New Faculty	Email	Research Areas	Position	Lead College	Lead TIU	Partnering Units	Rank	Start Semester
Xiaoguang (William) Wang	williamwang@seas.harvard.edu	Research objective is to utilize novel material synthesis, molecular and colloidal self-assembly, characterization, and microfabrication to create dynamic and anisotropic material systems that exhibits elementary sensors, actuators, and electronics in response to external cues via the reconfiguration of its shape, optical and physicochemical properties.	Sustainable Reaction Engineering and Energy	Engineering	Chemical and Biomolecular Engineering		Assist	Winter 2019
Xiaoxue Wang	wxx@mit.edu	Research interest is to develop flexible and stretchable electronics and optoelectronics with advanced soft materials, as well as to design new materials using computational methods. The target applications include flexible display, soft robotics, "point-of-care" biosensing devices and biocompatible optogenetics devices. Chemical vapor deposition (CVD) will be used as a unique tool for material synthesis, molecular engineering and device fabrication of soft materials.	Sustainable Reaction Engineering and Energy	Engineering	Chemical and Biomolecular Engineering		Assist	Fall 2019
Mark Weir	weir.95@osu.edu	Research interests include water systems engineering, sustainable water infrastructure, risk assessment, complex systems modeling and analytics, and health effect optimization through environmental and engineering controls.	Environmental Health Sciences	Public Health	Environmental Health Sciences		Assist	Fall 2016
Ryan Winston	winston.201@osu.edu	Research interests focus on the management of stormwater runoff and its impacts on stream and lake ecosystems, as well as community level impacts like flooding and extending the useful life of infrastructure. We conduct field studies to understand watershed, sewer, and stream processes and stormwater treatment system function, and use these data to create and calibrate models for practical use.	Sustainable Water Engineering	Food, Agricultural, and Environmental Sciences	Food, Agricultural and Biological Engineering	Civil, Environmental and Geodetic Engineering	Assist	Fall 2018

SI DT Core Faculty Portfolio

September 2018

Application Areas ←→

Knowledge Domains ↕

Legend:
- SRE DT Faculty On Campus (solid red circle)
- SRE DT Faculty Hired (dashed red circle)
- Current Search (black circle)
- OSU Center or DT program (green filled)

Application Areas

- Sustainable energy & resources
- Healthy land, water & ecosystems
- Smart & resilient communities

Knowledge Domains

- Humanities & societal well-being
- Policy, governance & management
- Socioeconomic systems & social/behavioral sciences
- Engineering & technology
- Biogeophysical systems & natural sciences

Faculty and Centers

Jennifer Eaglin History — Env. History & Sustain

Bart Elmore History — Env. History & Sustain

Eden Lin Philosophy — Well-Being & Ethics

Sean Downy Anthropology — Culture & Institutions

Center for Ethics & Human Values

Chris Rea Glenn Pub Affairs — Regulation & Policy

Santina Contreras City Reg Planning — Disaster Plan & Resilience

Zhenhua Chen City Reg Planning — Risk & Econ Resilience

Risk Institute

Initiative for Food and AgriCultural Transformation (InFACT)

Environ & Social Sustainability Laboratory

Grant Donnelly Fisher Bus ML — Sustainability Marketing

Matthew Hamilton Env & Natl Resources — Sustain Policy

Center for Urban & Regional Analysis

Nicole Sintov Env & Natl Resources — Behavioral Science

Yongyang Cai AED Econ — Global Econ Modeling

Daniella Miteva AED Econ — Sustainable Econ & Dev

Urban Sustain Systems (Geog)

Translational Data Analytics Institute

Energy Innovation Center

Resilient Energy Systems (Engie chair)

Xaoguang (William) Wang Chem Bio Eng — Reaction Eng

Joel Paulson Chem Bio Eng — Sustainab. Manufactur.

Global Water Institute

Chen Chen Int Sys Eng — Complex System Modeling

John Horack Mech Aero Eng & Glenn Pub Affairs — Aerospace & Policy

Mark Weir Env Health Sci — Risk & Exposure Modeling

Karen Dannenmiller Env Health Sci & CEG Eng — Health & Exposure

Jordan Clark CEG Eng & FAB Eng — Sustain Buildings

Xiaoxue Wang Chem Bio Eng — Reaction Eng

Materials & Manufacturing for Sustain (M&MS)

Judit Puskas FAB Eng — Biopolymer Eng

Jonathan Fresnendo Hort Crop Sci — Plant Sci

Subsurface Energy Research Center

Natalie Hull CEG Eng — Environ. Microbiology

Ryan Winston FAB Eng & CEG Eng — Sustain Water Eng

Resilient Infrastructure Modeling (CEGE & ISE)

Center for Automotive Research

Christo Sevov Chem Biochem — Catalysis

Christina Thomas Chem Biochem — Catalysis

Scott Denyam Env & Natl Resources — Soil Mineralogy

Byrd Polar & Climate Research Center