THE OHIO STATE UNIVERSITY
SUSTAINABILITY INSTITUTE

Ohio State Sustainability Fund

FY 2019 ANNUAL REPORT

Overview

The Ohio State Sustainability Fund was established to support improvement of the sustainability profile of the university – through efforts that improve campus operations and lead to increased learning and innovation or more sustainable behaviors in the university community.

The Sustainability Institute (SI) manages the Ohio State Sustainability Fund (OSSF). Since 2010, the OSSF has invested over $9 million in a variety of project types. In FY 2019, the OSSF provided nearly $1.1 million in project support, which included projects that extended beyond the fiscal year calendar. All projects are presented to the President and Provost's Council on Sustainability (PPCS) for discussion prior to any final funding decisions.

The OSSF committed funds for 10 projects in FY 2019, ranging from $8,500 to update the university's online sustainability project map, to $308,117 to establish a permanent living lab on campus to test behavioral drivers of energy conservation actions.

As in the past, many of the OSSF investments are expected to result in quantifiable operational cost savings for the university. Since many of the projects are still underway, a full cost savings accounting is not available for the timing of this annual report. However, early indications are that, combined, the ten projects will save the university at least $173,000 annually.

Including those early cost savings estimates, investments of the OSSF have generated a cumulative annual cost savings in excess of $1.6 million. This well exceeds the annual OSSF funding amount and returns a financial net positive result to Ohio State.

FY 2019 was the tenth year of the Fund, and marked a significant transition for the program. With the implementation of the university's historic partnership and academic collaboration with Ohio State Energy Partners (OSEP), the OSSF funding source moved from university general funds to the dedicated ENGIE-Axium project endowment. This change places the OSSF into a predictable, secure funding mechanism, though the annual funding disbursement amount will be lower than previous annual general fund investment amounts.

Appropriately, the first OSSF approved project that included ENGIE-Axium endowment funding was the Wexner Medical Center's data center battery bank conversion. Among other benefits, described later, this project will further reduce the data center's energy use as the new battery bank will require less air temperature cooling to maintain a safe operating environment.

Project Funding Guidelines

Guidelines for the eligibility and selection of projects the OSSF supports are summarized below. Proposals are reviewed and considered individually and in light of all other funded projects and pending proposals. Proposed projects must address the eligibility criteria below. The individual projects that best meet the eligibility criteria are then evaluated for funding support in consideration and comparison to all previously funded projects and pending proposals.

Eligibility guidelines: Individually, does the proposed project meet the following criteria:

- ***Contribute to sustainability –*** Projects improve the sustainability of campus operations and/or improve the sustainability awareness of campus populations.
- ***Campus impact –*** Projects are restricted to Ohio State campuses and must be led by a staff or faculty member.
- ***Existing university operating budget –*** Projects that are covered by an existing university operating budget are not eligible. Projects and project funding are not intended to be an alternative path to the normal annual budgeting process.
- ***Partial funding support –*** The Sustainability Fund should be used to seed, catalyze, or gap-fill funding on projects rather than be the sole funding source. The fund may be used to support the launch of a program but not for regular year-over-year programmatic funding.

Selection Evaluation Guidelines: Relative to previous projects and all other pending project proposals:

- ***Feasibility –*** Is the project likely to succeed? Has the project accounted for contingencies and major obstacles?
- ***Sustainability Impact –*** Does the project measurably improve or accelerate the sustainability of Ohio State's campuses or the realization of Ohio State's Sustainability Goals and priorities?
- ***University Population Impact –*** Does the project lead to increased understanding, greater engagement, or sustainable behavior change in the university community?
- ***Economic Impact –*** What are the financial benefits? What are the cost-savings, return on investment, or payback over time? Positive return on investment is strongly encouraged.
- ***Innovation –*** Does the project exhibit innovative technology, processes, or application of knowledge?
- ***Institutionalization/Scalability –*** Can the project become embedded in the University's routine operation? Does it need only start-up funding to then sustain itself over time? Can it be expanded to other campus locations if successful?

Project Selection

SI receives and seeks project proposals from across the university including colleges, student groups, regional campuses, research centers, Student Life, Facilities Operations and Development, Wexner Medical Center, and Athletics. SI continually reviews projects throughout each fiscal year.

Following a review by SI, recommended projects are presented to the President and Provost's Council on Sustainability (PPCS) for further review and consideration. Projects receiving a concurrence from the PPCS are then awarded funding.

FY19 Funded Projects

ZERO WASTE HAND DRYER PHASE II

$400,000 (over two years)

Surprisingly, used paper towels represent almost 9% of the university's total landfill waste stream. During a pilot project to reduce paper towel waste, Facilities, Operations and Development (FOD) transitioned restrooms in 11 Columbus campus buildings to hand dryer use.

The pilot proved successful, saving operational costs and reducing the amount of waste generated by 161 tons.

To expand the effort, FOD identified 31 additional high priority building opportunities to convert restroom paper towel dispensers to hand dryer units. This second phase of implementation will reduce the university's overall landfill waste generation by about 5%, with an annual cost savings of $145,000 from decreased product purchase and disposal fees. This amount of savings will generate a five and a half year return on investment for this phase of work.

The project also provides the university with a beneficial sustainability communications tool in an unexpected location, as the hand dryers are branded with sustainability zero waste messaging.

This project represented the most significant OSSF commitment of FY19. However, for cash flow purposes, the grant award was structured in two equal disbursements spread over the FY19 and FY20 fiscal years. The flexibility to commit future funding to larger projects in this manner is another benefit of the Fund moving to a predictable endowed funding source.

SUSTAINABILITY GOALS ADVANCED BY PROJECT

- Teach sustainability in innovative ways in and out of the classroom
- Foster sustainability culture on and off campus
- Achieve zero waste by 2025 by diverting 90% of waste away from landfills

INNOVATING ORGANIC WASTE SOLUTIONS

$169,280

An interdisciplinary team across university academic units, operational units, on-campus partners (including ENGIE), and external experts, led by Dr. Brian Roe within the College of Food, Agricultural, and Environmental Sciences, was awarded funding to determine if two separate technologies can be married together to beneficially utilize the organic waste generated on the Columbus campus (including food waste).

The approach being explored through this grant award would enable new academic research and circular economy by-product innovation, advancing the university's sustainability research and zero waste goals.

WEXNER MEDICAL CENTER DATA CENTER BATTERY BANK

$80,000

Recognizing the amount of its energy use and waste generation, the Wexner Medical Center staff seek to continuously improve the footprint of its data center. For example, over the past three years, the data center management team has reduced annual electricity consumption by 59% at the center, representing over four million kilowatt hours saved on an annual basis, through a variety of operational measures.

Through this OSSF grant, the Medical Center will continue that effort by replacing the existing lead-acid battery bank with a lithium ion battery bank. Compared to lead-acid batteries, lithium ion batteries last longer, can withstand higher air temperatures, and have a lower failure rate. As a result, converting to lithium ion batteries will reduce the data center's annual energy use and hazardous waste generation, resulting in over $10,000 annual cost savings. In addition, this change will improve the safety of the battery bank for surrounding equipment and staff personnel.

As noted earlier in this report, this was the first OSSF project to include funding through the ENGIE-Axium endowment funding.

SUSTAINABILITY GOALS ADVANCED BY PROJECT

- Achieve carbon neutrality by 2050
- Reduce total campus building energy consumption by 25% by 2025
- Achieve zero waste by 2025 by diverting 90% of waste away from landfills

The team will assess the use of organic waste for two intertwined outcomes:

- Provide a food source for black soldier fly larvae, to both reduce the volume of bulk organic waste and grow the larvae into a supplemental protein source for human and animal nutrition (which could offset more carbon intensive protein sources), and
- Provide feedstock for a biodigester to supply alternative energy to the black soldier fly larvae growing facility.

SUSTAINABILITY GOALS ADVANCED BY PROJECT

- Teach sustainability in innovative ways in and out of the classroom
- Reward sustainability scholarship and engagement
- Encourage new sustainability knowledge and solutions
- Achieve zero waste by 2025 by diverting 90% of waste away from landfills

Sustainability Fund Projects
FY 2015-2019

2015

	Funding	Savings/Year
Clean Fuels Ohio - Compressed Natural Gas Station	$10,000	NA
Mendenhall Lab - Energy conservation measures	$191,108	$118,754
Hagerty Hall - Energy conservation measures	$20,184	$62,915
Hitchcock Hall - Energy conservation measures	$26,600	$22,810
Caldwell Lab - Energy conservation measures	$63,147	$40,529
Drinko Hall - Energy conservation measures	$150,877	$71,670
Ohio State Bicycle Sharing System	$200,000	$28,125
New Recycling Panels for Recycling Bins	$26,000	NA
FY 2015 Totals	**$687,916**	**$344,803**

2016

	Funding	Savings/Year
LED lighting for B. Davis, J. Owens, and Buckeye Field Stadiums	$150,000	$8,367.24
Recycling Infrastructure Expansion and Standardization	$150,000	NA
University Organics Hauling Vehicle	$345,260	TBD
CNG Filling Station – Construction Budget Support	$500,000	TBD
Center for Ethics and Human Values – Sustainability Project	$144,000	NA
Collaborative to Reduce and Redirect Consumer Food Waste	$27,500	NA
Reusable Hot/Cold Beverage Cup Program	$200,000	NA
AASHE STARS – Carbon Footprints for Regional Campuses	$18,000	NA
Ohio State-Lima Campus Hybrid Electric Car	$17,000	$250
Hot Water Pipe Upgrades	$171,000	TBD
FY 2016 Totals	**$1,722,760**	**TBD**

2017

	Funding	Savings/Year
Zero Waste Goals	$53,000	TBD
Water Bottle Refilling Stations	$93,200	NA
Mansfield Campus Micro-Farm	$100,000	TBD
Marion Campus Solar Energy Installation	$62,450	TBD
Electronic Landscape Irrigation Control	$25,000	TBD
FY 2017 Totals	**$333,650**	**TBD**

2018

	Funding	Savings/Year
Alternative Fuel Vehicle Incentive	$500,000	TBD
Fleet EV Charging Infrastructure	$375,000	TBD
Ultra-Cold Freezer Pilot	$263,728	TBD
BioSciences Greenhouse Energy Curtains	$190,000	TBD
Student Farm: Sustainable Food & Farming Systems	$94,741	TBD
Once Through Water Usage	$73,203	$131,123
Climate Action Plan	$71,153	NA
Food & Organic Waste Inventory & Demonstration Project	$64,596	TBD
Lower Olentangy Sustainability Plan	$60,000	NA
Grounds For All	$43,000	$8,500
Campus Sustainability Signage	$25,000	NA
EvoBin Research	$21,000	TBD
Artificial Floating Island Test Garden	$15,000	NA
FY 2018 Totals	**$1,769,421**	**TBD**

2019

	Funding	Savings/Year
Stormwater Management Plan	$20,950	NA
Grounds for All Supplemental	$12,000	NA
Sustainability Online Map	$8,500	NA
Mansfield Campus Exterior LED Light Conversion	$81,464	$8,900
Sustainability in Anesthesia Clinical Practice	$30,000	TBD
WMC Data Center Battery Bank	$80,000	$10,700
Behavioral Energy Conservation Living Lab	$308,117	TBD
Innovating Organic Waste Solutions	$169,280	TBD
Columbus Campus Urban Heat Island	$149,905	NA
Zero Waste Hand Dryer Phase II (first installment)	$200,000	$145,000
FY 2019 Totals	**$1,060,216**	**TBD**

Fiscal Years 2010–2019 Summary	Total Investment	Annual Cost Savings*
102 funded projects	**$9.3 million**	**$1.6 million**

*** NOTE:**
Efforts to quantify the cost savings for 2016-2019 projects are ongoing and will be reported as it becomes available.

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