THE OHIO STATE UNIVERSITY
SUSTAINABILITY INSTITUTE

Ohio State Sustainability Fund

FY2020 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 $10 million in a variety of project types. In FY 2020, the OSSF provided more than $800,000 in project support, which included projects that extended beyond the fiscal year calendar. Funding requests were 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 2020, ranging from $29,200 to create a new virtual reality learning and planning tool for campus ecosystem services, to $200,000 to continue to reduce paper towel waste in university buildings through the expansion of hand dryer availability.

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 $145,000 annually.

Including those early cost savings estimates, investments of the OSSF have generated a cumulative annual cost savings in excess of $1.7 million. This well exceeds the annual OSSF funding amount and returns a financial net positive result to Ohio State.

In addition, the OSSF investment in these 10 projects leveraged an additional $676,995 in matching funds for these efforts, for a total of nearly $1.5 million to advance sustainability at Ohio State through this funding program.

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.

Featured FY20 Funded Projects

Energy Storage as a Service: $89,814

On campus events generate a considerable amount of greenhouse gas emissions. Using data from Ohio State's Department of Transportation and Traffic Management, observational analysis, and the U.S. Energy Information Administration, a student project team within the Center for Automotive Research (CAR) estimates that diesel generators used by event tailgaters generate nearly 56 metric tons of carbon dioxide during each Ohio State home football game. That equates to nearly 400 metric tons over the course of a full season, in addition to similar emissions related to other sporting events, concerts, and other events on campus.

Looking at this challenge as an opportunity, the CAR team partnered with the Smart Campus Organization and Society of Women Engineers student groups to develop and pilot an alternative energy option to tailgaters to reduce on campus event-oriented emissions.

Through this grant funding, the project partners are developing a small fleet of rechargeable battery packs for reservation or on-demand ordering for use at campus events in lieu of traditional diesel generators.

Ordering the rechargeable battery packs will be conducted through a new product reservation mobile app, that will allow the user to customize their order to appropriately power the appliances they intend to use. This will also provide a new avenue for communicating to a new audience about energy use and energy sources in a personally relevant manner.

While the COVID-19 pandemic has slowed rollout of the pilot testing, as in-person campus events have been cancelled and delayed, the team's prototype product and mobile app development have progressed. In addition, the team has formed a new company to continue to scale its future efforts.

SUSTAINABILITY GOALS ADVANCED BY PROJECT

- Teach sustainability in innovative ways in and out of the classroom
- Foster sustainability culture on and off campus
- Encourage local and global sustainability partnership

Multidisciplinary Capstone Projects--Active Window and PV Building Integration: $30,000

The Multidisciplinary Engineering Capstone Design Program is partnering with the Manhatten 2 organization over three years to create, build and test designs of two separate infrastructure solutions to reduce carbon emissions associated with operating a building. Beyond creating and testing the infrastructure prototypes, the capstone students will continuously improve their designs and develop associated operating standards for the equipment.

Specifically, the student capstone teams will design and test active window development and the integration of rollable photovoltaic film into a building's operation. An "active window" enables a window, sometimes a source of heating energy loss within a building, to mechanically convert into the thermal equivalent of a wall under certain conditions. Rollable photovoltaic film, while currently available in some forms, could be more widely used to harness solar energy if made more adaptable to customized building shapes and landscape conditions.

The capstone team innovations will be tested at campus sites, with the intention to bring the findings to a wider national and global audience through the Manhattan 2 partnership.

Cannon Preserve Supplemental Tree Planting: $129,351

In order to protect the Columbus campus from future floods, and to support future campus growth, the university is relocating and elevating Cannon Drive. The first phase of this work has created approximately 18 acres of new green space along the Olentangy River, west of the relocated Cannon Drive. Previously, this acreage was primarily used as large surface parking lots.

While the original plan for the new green space included planting 31 new trees, a deeper assessment by the university's Planning, Architecture and Real Estate and Landscape Services departments determined that an additional 279 native trees could be planted at the site while still allowing for a new wetland area adjacent to the River and increased multi-use trail connectivity from the Olentangy Trail to the Cannon Road sidewalk to enhance non-motorized access to that portion of campus.

The Sustainability Fund grant amount was matched by the Office of Administration and Planning as well as the Cannon Drive Relocation construction project's contingency funding in order to obtain, plant, and care for the additional 279 trees. As these trees and additional vegetation at the site mature, future plantings will be considered to maximize ecosystem benefits and community enjoyment of the new green space.

SUSTAINABILITY GOALS ADVANCED BY PROJECT

- Foster sustainability culture on and off campus
- Increase campus ecosystem services

SUSTAINABILITY GOALS ADVANCED BY PROJECT

- Deliver a sustainability curriculum throughout the university
- Teach sustainability in innovative ways in and out of the classroom
- Encourage new sustainability knowledge and solutions
- Encourage local and global sustainability partnerships
- Achieve carbon neutrality by 2050
- Increase building energy efficiency by 25% by 2025

Sustainability Fund Projects FY 2015-2020

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

2018 (continued)	Funding	Savings/Year
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**

2020	Funding	Savings/Year
Enhancing Campus Soil-Ecosystem Services	$66,131	NA
Zero Waste Hand Dryer Installations–Phase II (second installment)	$200,000	$145,000
Watermann Walks	$15,000	NA
Cannon Preserve Supplemental Tree Planting	$129,351	NA
ARTrees	$29,200	NA
Classroom of Tomorrow	$90,000	NA
Sustainability Research Seed Grants	$125,000	NA
Water Reclamation Study	$43,600	TBD
Energy Storage as a Service	$89,814	NA
Multidisciplinary Capstone Projects: Active Window & PV Building Integration	$30,000	NA
FY 2020 Totals	**$818,096**	**TBD**

Fiscal Years 2010–2020 Summary	Total Investment	Annual Cost Savings*
112 funded projects	**$10.1 million**	**$1.7 million**

* **NOTE:** Efforts to quantify the cost savings for 2016-2020 projects are ongoing and will be reported as it becomes available.

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