



Meeting Summary
October 5, 2017

Council Members Present:

Carlo Colella, Vice President for Administration and Finance (Chair)
Linda Clement, Vice President for Student Affairs
Steve Fetter, Associate Provost
Maureen Kotlas, Executive Director, Environmental Safety, Sustainability & Risk
Scott Lupin, Assoc. Dir., Environmental Safety, Sustainability & Risk, and Director, Office of Sustainability
David Cooper, Assistant Director of Operations, Division of IT
Mary-Ann Ibeziako, Director, Department of Engineering and Energy
Jelena Srebric, Professor, Mechanical Engineering
Joseph Sullivan, Professor, Plant Science and Landscape Architecture
Jane VanderGoot, Assistant Professor, Architecture
Logan Kline, Undergraduate Student, Environmental Science and Policy
Ayana Jones, Graduate Student, Public Health

Meeting start time: 12:00pm

Meeting Highlights

Welcome and Review of May 8, 2017 Meeting Minutes

Carlo Colella welcomed the Council members and called the meeting to order. Meeting summary from May 8, 2017 was approved.

2017 Sustainability Progress Report

Sally DeLeon from the Office of Sustainability presented highlights from the 2017 Sustainability Progress Report. A copy of the presentation can be viewed as Appendix A.

University Sustainability Fund Update

Mark Stewart from the Office of Sustainability provided the Council with an update on 2016 Sustainability Fund projects and a snapshot of available funds for 2017. A copy of the presentation can be viewed as Appendix B.

Carbon Neutral Air Travel Initiative Update

Scott Lupin provided an update about the Carbon Neutral Air Travel Initiative. A copy of the presentation can be viewed as Appendix C.

Open discussion items

- President Loh announced [Climate Action Plan 2.0](#) on Monday, October 2.
- The Office of Sustainability will host a [SustainableUMD 10-Year Celebration](#) event on Monday, November 6, 3:00pm at the Prince George's Room in The Stamp.
- Items for potential future discussion: increase of electric vehicles on campus, getting rid of plastic water bottle vending machines on campus, inviting Transportation Services or Office of Solid Waste & Recycling to a future meeting.

Adjourn 2:00



This Year's Highlights

2017 Campus Sustainability Progress Report Highlights

"Sustainability has become a way of life for our campus, as students, faculty and staff commit to the future of our planet. Faculty and students are at the forefront of climate research. We made a promise and commitment to carbon neutrality. We're keeping it." - President Wallace Loh

UMD joined the **"We Are Still In"** coalition of over **1,000** leaders, including mayors, governors, businesses, and investors who have pledged to forge ahead on climate action to meet the Paris Agreement.



In 2017, the University Senate approved UMD's updated **Climate Action Plan 2.0** which builds on the progress that has been made since the university committed to carbon neutrality ten years ago, including a **28%** reduction in campus greenhouse gas emissions, the rise of a new Sustainability Studies minor, an **83%** improvement in campus-wide recycling, and engagement across a suite of sustainability programs.

The Maryland Energy Innovation Institute — launched in 2017 with **\$7.5 million** in state funding — aims to catalyze breakthrough research at academic institutions across the state and attract private investment in clean energy innovation and commercialization. The institute will expand on research of more than **100** UMD faculty in clean energy technologies like solar, wind, energy efficiency, and battery and fuel cell technology and is directed by Dr. Eric Wachsman of the University of Maryland Energy Research Center.



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2017 SUSTAINABILITY REPORT



By collaborating to install **solar panel canopies** on the Regents Drive, Terrapin Trail, and Mowatt Lane parking garages, the Department of Engineering & Energy in Facilities Management and the Department of Transportation Services helped increase campus solar energy production capacity by around 200% to reach almost **3 megawatts**. The project supports the President's Purchased Power Initiative to ensure **100%** of purchased power comes from renewable sources by 2020.

Dining Services' new **Anytime Dining** program dramatically improved the sustainability of food service on campus by increasing local and ethically sourced food from 19% to **26%**, reducing red meat purchasing by 28%, and removing **6.3 million disposable items** from the campus waste stream. The program also ensures that all dining hall food waste is composted and improves collaboration with Food Recovery Network so a greater amount of leftover food is delivered to local organizations in need.



Campus compost collection at UMD is rapidly expanding with more than **25 collection sites** now in operation including 12 residence halls, McKeldin Library, Edward St. John Learning and Teaching Center, Maryland Stadium on game days, and Stamp Student Union.

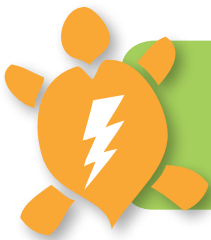
The Office of Sustainability, along with partners in the Department of Resident Life and the Department of Fraternity and Sorority Life, developed and launched two pilot programs that engage residential students in personal sustainability action: **Green Terp**, for residential students, and **Green Chapter**,

for Greek Life students. During the Spring 2017 launch, the programs exceeded their goals of reaching **25% of the student population** in 2 residence halls and 4 chapter houses.



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2017 SUSTAINABILITY REPORT



Progress Summary

The following table presents a snapshot of the indicators that were used to create this report. The column farthest to the right provides a quick view of how each indicator trended over the past four years.

- = progressing toward sustainability
- = no significant progress
- = trending in the wrong direction

UNIVERSITY OF MARYLAND SUSTAINABILITY METRICS

Indicator	Units	2013-2014	2014-2015	2015-2016	2016-2017	FY/CY	Trend
CARBON NEUTRALITY							
Campus-wide Greenhouse Gas Emissions	MT-CO2e	277,869	255,117	245,027	244,213	CY	
Greenhouse Gas Emissions per Capita	MT-CO2e/FTE person	6.5	5.9	5.6	5.4	CY	
Greenhouse Gas Emissions per Area	MT-CO2e/1000 sq. ft.	19.1	17.3	16.6	16.5	CY	
Overall Greenhouse Gas Emissions Reduction	% since 2005	-19%	-25%	-28%	-28%	CY	
Power Greenhouse Gas Emissions Reduction	% since 2005	-11%	-20%	-28%	-32%	CY	
Air Travel Greenhouse Gas Emissions Increase	% since 2005	47%	43%	52%	67%	CY	
Commuting Greenhouse Gas Emissions Reduction	% since 2008	-27%	-29%	-23%	-26%	CY	
Steam Production	MLbs	759,450	758,581	757,724	729,569	CY	
Electricity Consumption	MWh	267,313	272,400	276,044	281,149	CY	
FM Energy Conservation Projects	MWh annual savings	21,846	23,694	24,912	26,427	FY	
Renewable Energy Purchased	MWh	25,450	65,081	87,164	96,919	CY	
Student Commuter Parking Purchases	percent of students	22.4%	21.3%	23.3%	22.1%	CY	
Faculty and Staff Commuter Parking Purchases	percent of employees	75.5%	67.0%	65.3%	64.7%	CY	
EDUCATION FOR SUSTAINABILITY							
First Year Sustainability Education	percent of students	54%	43%	60%	61%	FY	
Sustainability Studies Minor Students	count of students	252	286	321	302	FY	
Chesapeake Project Impact and Participation	count of faculty	151	164	185	185	FY	
LEAF Outreach Team Impact	students reached	1,186	3,443	1,122	1,592	FY	
LOCAL AND GLOBAL IMPACT							
Office Paper Purchasing	reams	109,194	110,932	92,982	95,662	FY	
Green Cleaning Product Purchasing	percent of budget	N/A	76%	77%	75%	FY	
Sustainable Food in Dining Halls	percent of budget	15%	20%	19%	26%	FY	
Partnership for Action Learning in Sustainability (PALS)	count of courses	N/A	29	30	25	FY	
Sustainable Maryland Certified Municipalities	count	12	22	30	35	FY	
SMART GROWTH							
Shuttle-UM Ridership	million rides	3,432,895	3,304,212	3,494,518	3,414,672	FY	
Bike Parking Spaces on Campus	count	N/A	4,652	4,634	4,722	FY	
Bikeshare Members	count	0	0	433	600	FY	
On Campus Beds for Students	count	13,227	13,636	13,412	13,623	FY	
Local Off Campus Beds for Students	count	N/A	4,772	5,568	7,068	FY	
UMD-affiliated Apartments for Graduate Students	count	N/A	476	476	476	FY	
Undergraduate Students Living on and Near Campus	percent of students	45%	50%	49%	48%	FY	
Certified Green Offices	count	37	63	82	96	FY	
SUSTAINABLE WATER USE							
Campus-wide Water Consumption	kgal	475,302	540,537	519,473	548,688	CY	
Water Consumption per capita	kgal/FTE person	11.1	12.4	11.8	12.1	CY	
Stormwater Management Facilities	count	N/A	129	110	113	FY	
WASTE MINIMIZATION							
Institutional Diversion Rate	percent of solid waste	78%	89%	83%	84%	CY	
Individual Recycling Rate	percent of solid waste	55%	56%	47%	51%	CY	
Solid Waste Landfilled	tons	3,927	3,770	4,174	5,267	CY	
Solid Waste Generation *	tons	10,149	11,502	8,137	8,984	CY	
Composted Food Waste	tons	647	704	452	755	CY	
Disposable Water Bottle Savings from Filling Stations	count of bottles	507,638	1,737,426	2,933,087	1,791,966	FY	

** Not including construction & demolition waste that was recycled or sod and soil that was composted.



University Sustainability Fund Annual Report: FY2017

Fiscal year 2017 (July 2016–June 2017) was the seventh year of the University Sustainability Fund, which is administered by the Office of Sustainability with oversight and funding authority by the University Sustainability Council. All revenue comes from undergraduate students in the form of a Student Sustainability Fee, which was \$12 per fulltime student per year in FY17 and has been fixed at that rate since FY14. A student-majority Sustainability Fund Review Committee reviews proposals and recommends grant awards to the Sustainability Council. University of Maryland students, faculty, and staff can submit proposals by October 15 (priority deadline) or January 15 (final deadline).

The Student Government Association's Sustainability Committee administered the Sustainability Mini-Grant program for its third year in FY17. The Mini-Grant program is funded by the Sustainability Fund and offers smaller grants (up to \$2,000 in FY17) on a shorter timeline than the Sustainability Fund can offer. A summary of Mini-Grant activities is included at the end of this report.

Summary of Sustainability Fund Activities in FY17

Revenue:	\$491,954 (\$322,527 new revenue; \$169,427 FY16 carry-forward)
Number of proposals received:	31
Total funding requested:	\$1,017,141
Number of grants awarded:	16
Total funding awarded:	\$366,833
Average award:	\$22,927
Carry-forward to FY17:	\$125,120

Summary of Sustainability Fund Activities since Year 1 (FY11-FY17)

Revenue:	\$2,269,263
Number of proposals received:	243
Total funding requested:	\$6,954,389
Number of grants awarded:	109
Total funding awarded:	\$1,826,653
Average award:	\$16,758
Project activity (as of Sept '17)	29 in progress, 78 completed, 2 failed to launch

Sustainability Fund Grant Recipients in FY17

Master's Degree in Sustainability

RECIPIENT: Cluster for Sustainability in the Built Environment (CITY@UMD)

AMOUNT: \$90,000

The University of Maryland's Climate Action Plan identifies an interest in the establishment of a New Sustainability Graduate Degree and Certificate Programs. The new Master Degree in Sustainability will initially target students in four different schools/colleges with future campus-wide offerings. University of Maryland already offers many courses relevant to the proposed Master Degree in Sustainability. However, the courses are scattered, not regularly offered, and missing interdisciplinary interactions required for a graduate who would be practicing in the field of Sustainability. This project will develop and implement two interdisciplinary courses: Sustainability Methods and the Sustainability Capstone Project.

Terps Heart the Tap, Part 3

RECIPIENT: Office of Sustainability

AMOUNT: \$67,250

Through the first two Terps Heart the Tap projects, 102 filtered water filling stations were installed on campus, encouraging Terps to reuse and refill, instead of consuming single-use bottled water. In the three years since these stations were first installed, the fountains prevented 3,000,000 plastic single use bottles from being used and disposed of on campus! In Terps Heart the Tap III, the Office of Sustainability will purchase 85 Halsey Taylor brand water coolers, retrofit kit equipment, filters for 1 year, and a \$300 per unit contribution toward installation. In the first two Terps Heart the Tap projects, awareness and engagement efforts included the creation of signage for each filling station, a filling station location map, water bottle stickers, and a website. The Office of Sustainability's website and the annual Sustainability Progress Report highlighted the success of the Terps Heart the Tap Program. Stories about the project were featured in both the 2014 and 2016 SustainableUMD magazines.

Solar Decathlon 2017

RECIPIENT: UMD Solar Decathlon Team

AMOUNT: \$60,000

The U.S. Department of Energy Solar Decathlon challenges collegiate teams to design, build and operate solar-powered houses that are cost-effective, energy-efficient and attractive. The 2017 Solar Decathlon Competition challenges teams to demonstrate the best blend of affordability, consumer appeal, and design excellence with optimal energy production and maximum efficiency. The University of Maryland's 2017 entry features innovative engineering and design elements. The goal is to develop technologies and diverse design concepts and prototypes that empower people to live more independent lifestyles while promoting comfort, awareness, and beauty. The UMD Team is also working with two indigenous

communities in Bylas, Arizona, and in northern Minnesota, who are committed to creating new sustainable communities of several hundred homes. The UMD Team's design will therefore accommodate modifications for climate, local building materials, and other cultural variations.

Student Leadership in Community Sustainability and Resiliency

RECIPIENT: National Center for Smart Growth and College of Information Studies

AMOUNT: \$50,000

Student Leadership (SL) in Greater College Park Community Sustainability and Resiliency is a project that will accelerate undergraduate and graduate student leadership in the development and implementation of sustainability and resiliency projects on campus and in the communities surrounding the University. Engaged students will help design trans-disciplinary project strategies that respond to needs of incorporated and unincorporated communities of Prince George's County. The projects will self-identify areas of interest in resiliency, economic, environmental, and social wellbeing associated with the Connected Campus Community pilot project. SL represents a significant expansion of the National Center for Smart Growth's work in sustainability and will allow the Center to respond to a broad spectrum of community needs.

Sustainable Technologies Project at UMD

RECIPIENT: Design Cultures & Creativity Program

AMOUNT: \$33,645

The Design Cultures & Creativity (DCC) Program in the Honors College will develop a series of "repair and maintenance" workshops for students, faculty, and staff that will guide them through repairing their technologies as a way to intervene in e-waste and encourage participants to hold on to their devices for a longer period of time. DCC will initially offer a set of workshops on mobile phone and tablet repair that will address simple fixes like repairing a broken screen to more complex repairs like soldering a new headphone jack or cellular/WiFi antenna. We will then turn to updating old laptops by showing people how to replace optical hard drives with solid state drives. DCC will work with participants across campus to provide the needed repairs and replacement parts, free of charge, in order to incentivize involvement with this initiative. These workshop initiatives will keep mobile phones, laptops, and other digital technologies out of the waste stream, giving them renewed longevity. These workshops will also give participants a sense of the importance in holding on to technologies for a longer period, while also fostering a sense agency in working with broken technologies, giving them the skill sets and confidence to repair technologies rather than discard them.

LED Light Controls in Ritchie Coliseum

RECIPIENT: University Recreation & Wellness

AMOUNT: \$11,078

This project is a pilot of a Building Management System manufactured by Daintree for the lighting of the gym area of Ritchie Coliseum as University Recreation & Wellness (RecWell) transitions the space to LED lighting. Additionally, the system would allow RecWell to track the actual consumption of energy within the lighting system. Students working on academic projects often contact RecWell or the Department of Facilities Management regarding Ritchie Coliseum utility consumption to evaluate consumption and assess if opportunities for reduction exist. The anticipated outcome of this system is a reduction in energy consumption (estimated 23,000-KWh annually), which subsequently reduces the heat of the building. This installment also reduces the load on the HVAC system, which further decreases energy consumption and extends the life of the HVAC system.

Adaptive Reuse of Existing Buildings

RECIPIENT: School of Architecture, Planning and Preservation

AMOUNT: \$9,490

This project will generate three renovation and adaptive-reuse strategies for three worst performed buildings on campus. The environmental impact reduction benefit of adaptive reuse will be quantified and used as a benchmark for any future projects. A comprehensive building performance improvement plan will be proposed for each building with the aim to improve the energy efficiency, materials conservation, carbon emission reduction, and occupancy wellbeing. The proposed improvements will enable the existing building to meet Gold certification for LEED v4 for Building Operations and Maintenance. A thorough building life cycle analysis will be conducted to create a more accurate assessment of environmental impact of the proposed renovated buildings and the assessment could be used as a benchmark for other renovation projects.

Recycling Receptacles for RecWell

RECIPIENT: University Recreation & Wellness

AMOUNT: \$7,800

The Eppley Recreation Center alone services on average 4,500 students, faculty, staff, and alumni every day. Additionally, both Eppley and Ritchie Coliseum are estimated to touch the lives of 70% of the student body. Additionally, outdoor spaces have 600-1,200 scheduled participants daily, not including the informal participants who also use those locations. Each person will produce waste while using the areas. University Recreation & Wellness (RecWell) plans to repurpose trash receptacles in an effort to sustainably reduce the amount of waste being produced. Current RecWell recycling bins are outdated and do not reflect the campus' commitment to single-stream recycling. By replacing the outdated containers with the re-purposed trash receptacles they will reinforce the University's commitment to single-stream recycling.

Voices of Social Change Spring Speaker

RECIPIENT: Voices of Social Change in the Leadership and Community Service Learning Office

AMOUNT: \$7,000

The Voices of Social Change spring 2017 lecture served as a launch-pad to invigorate student curiosity and individual research into the intersections between the environment and environmental activism. The Jean-Michel Cousteau Voices program on April 18, 2017 addressed how students could use their voice and vote in powerful ways exercising their civic duty to best represent their individual positions on the salient issue of climate change. In addition, Mr. Cousteau guided students to avenues on how to get involved politically in effective ways: writing letters and meeting with their congressional representatives and lobbying campus administration to divest away from non-environmentally friendly practices.

Erosion Control for Pollinator Habitat Wall

RECIPIENT: Entomology Department

AMOUNT: \$5,700

The Entomology Department's pollinator habitat wall located near the Arboretum Outreach Center and Byrd Stadium provides ample nesting substrate for Maryland's 430+ species of wild bees. The majority of local bee species build tunnels below ground or in vertical clay surfaces such as the habitat wall. Because of this practice, the wall is in need of extensive erosion control to continue the environmental and education benefits of maintaining the habitat. Designed to initiate dialogue about biodiversity and pollinator health, the wall successfully serves as an interactive educational tool for the community. Please visit their blog to read more about specific objectives of the pollinator habitat wall.

Carbon Management Course

RECIPIENT: Department of Environmental Science and Technology

AMOUNT: \$5,000

This project will create a new course, ENST 499X: Carbon Management. The University of Maryland does not currently offer a course that introduces students to greenhouse gas reduction strategies and opportunities to work in the field of carbon management. The proposed course would introduce students to the full range of carbon mitigation techniques including energy conservation, renewable energy generation, carbon capture and sequestration, etc. Students would also conduct fieldwork to quantify the carbon benefits of projects that can produce carbon offset credits including methane capture and destruction, afforestation, and wetland restoration. Through these experiences, students may become more competitive for employment in the burgeoning field of carbon management.

Gemstone Team BACTERIA

RECIPIENT: Gemstone Honors Program

AMOUNT: \$5,000

This project will look at the use of three enzymes in preventing the clumping of hydrocarbons called asphaltenes during the oil refinement process when heavy crude oil needs to be transported through

pipelines. Enzymes are easier to standardize experimentally, and potentially, easier to add in an in-situ application. This biological refinement of crude oil is also potentially more sustainable and can reduce the need for harsh chemical and heat treatments that result in tailings waste. Based on current literature related to this project, the research team hypothesizes that a combination of enzymes will be the most effective at degrading clumping known as “cholesterol of pipelines.”

Gemstone Team OYSTERS

RECIPIENT: Gemstone Honors Program

AMOUNT: \$4,034

YEAR: 2016-2017 Recipients

The current population of the Chesapeake Bay’s eastern oyster is rapidly declining, endangering the ecology of the bay and posing great economic risks for relevant stakeholders. Team Oysters will research a promising method known as electrolysis mineral accretion in generating artificial reef structures for oyster restoration. Undergoing a multi-stage process, the team will test oyster recruitment and growth rates and observe the ecological effects of artificial reef placement in the Chesapeake Bay. The goal of the research is to create ecologically beneficial, cost-efficient, and more successful methods for future oyster restoration efforts.

Whole Earth Exhibition

RECIPIENT: College of Computer, Math & Natural Sciences

AMOUNT: \$4,000

This project brings the “Whole Earth” exhibition to the University of Maryland. As part of the Hard Rain project, the exhibition was launched in 2015 in the UK and Scandinavia by photographers Mark Edwards and Lloyd Timberline, and based on Bob Dylan’s poetic song “A Hard Rain’s A-Gonna Fall.” The exhibit highlights our planet’s environmental problems and potential solutions. The exhibit will spur a dialogue on sustainable issues and touch the heart of students by not only showing the problems that we face, but also that we have solutions, and that there is hope. Students, faculty, and staff will be invited to view the outdoor exhibit in Fall 2017, along with workshops and talks on sustainability.

Recycling Receptacles in Old Town

RECIPIENT: Department of Fraternity and Sorority Life

AMOUNT: \$3,415

This project seeks to enhance recycling behavior for University of Maryland students by installing recycling receptacles at five locations: Knox Road, Yale Avenue, Princeton Avenue, College Avenue, and around Old Town. Recycling receptacles at these locations will establish a much needed recycling infrastructure for over 5,000 students who walk these highly populated intersections of Old Town. Surrounding these intersections in Old Town are 12 sorority chapter houses and around 30 fraternity chapter and satellite houses that generate heavy traffic up and down the areas of focus. These recycling

bins will redirect waste and cut down on litter produced by the area's residents and the greater UMD student population that traverses this area.

Gemstone Team MELTS

RECIPIENT: Gemstone Honors College

AMOUNT: \$1,440

Road salts are used wholesale to make roadways safer during the onset of winter storms. While sodium chloride in staple road salt is cheap, effective, and readily available, its use is associated with negative impacts on both the surrounding environment and infrastructure. As awareness of these issues continues to increase, the past few decades have seen a shift in perception, inspiring conscious efforts to decrease the amount of road salts applied. Team MELTS seeks to further reduce the usage of road salts by developing a new formula for an applied anti-icer that will be a viable alternative to sodium chloride. Using a set of tests to evaluate the properties of known and marketed substances, the team hopes to produce a more favorable mixture of compounds.

Sustainability Mini-Grant Recipients in FY17

Number of Grants Awarded:	14
Total Funds Awarded:	\$13,237.26
Carry Forward to FY18:	\$6,762.74

UMD Bat Acoustic Traveling Study

Organization/Individual: Shannon Pederson and Dr. Jennifer Murrow

Grant: \$1,980

This grant helped to cover transportation costs for students traveling to help with Dr. Murrow's Bat Acoustics Study. Bats in North America provide a valuable ecosystem service of limiting insect populations, which wreak havoc on agricultural crops and spread disease. Bats are estimated to provide \$3.7 billion per year in agricultural economic benefits in the U.S. alone. Unfortunately, bats in the United States and Canada are threatened by disease. White Nose Syndrome (WNS), caused by the fungus *Pseudogymnoascus destructans*, has decimated populations since 2006. This study investigates the role of landscape effects in the growth of this problematic fungus.

Cooling Tower Treatment

Organization/Individual: University of Maryland Recreation and Wellness

Grant: \$1,562.60

In Cooling Towers, chemical treatment and water dumping exist to stave off critical issues like corrosion and scale. Previous industrial application case studies have shown that with the use of ProMoss treatment, which incorporates the use of Sphagnum Moss to filter the Eppley Recreation Center's water, the water was clear and there was no foaming, which support a reduction in water consumption and chemical usage. Additionally, when equipment is maintained it operates more effectively and efficiently, thus lowering the cost of capital replacement projects; with this said, the better the equipment runs the more energy is saved, thus lower associated costs passed throughout the University as a whole. The unit should be able to lessen its reliance on hazardous chemicals and cleaning products for the unit if the water quality is better at the beginning, if it operates as advertised.

Recyclify

Organization/Individual: Ardy Djourabtchi and Dan Wray

Grant: \$1,387.50

This project aimed to eliminate contamination of recycling and compost bins at Stamp Dining Hall. The applicants want to create a system that incentivizes students to dispose their items correctly. This initiative will use an app platform that tracks each student's recycling behavior and rewards him or her with points that will be redeemable for discounts on products at Stamp. The goal is to eventually have a reward system that gives discounts on a variety of products and services on and around campus. Furthermore, the app will provide clear and specific instructions to students on how to dispose the items they are currently holding. Finally, each student will have a "Green Score," which will amount to a series of metrics that demonstrate the impact they have on the environment every time they recycle. For example, each student will know the number of trees they have saved each month, the number of plastic bottles they have taken out of landfills, and etc.

Flexi Fountain

Organization/Individual: UMD Challenge Course Program

Grant: \$1,091

The purpose of this grant was to provide the University Climbing Wall and Challenge Course Programs with a portable "Flexi Fountain" water fountain that they can use to keep their clients hydrated and safe. Prior to this grant, the Course relied on water coolers and paper cups, sometimes having to refill multiple times on days where they were operating in temperatures exceeding 95 degrees Fahrenheit. This grant allows the Courses to cut back on waste while providing safe, fun, and educational programming on campus.

Creating an Environmental Art Space: Revitalizing a Community Art Space in a Sustainable Way

Organization/Individual: The Art and Learning Center at UMD

Grant: \$1,000

In the midst of revitalizing the Art and Learning Center (ALC) at UMD, the applicants worked with the Office of Sustainability to create a three step plan that recognized the relationship between art and ecology and sustainability. The first was to adjust the facilities to cut down on waste via the Green Office Program and institutionalize a sustainably conscious procurement process via the UMD preferred policy. The second was to instill good habits that will make the community as a whole a role model for other art communities via training and institutionalizing sustainable daily practices. The third was to integrate ecological ethics into the programming content via thematic free workshop offerings, semester long courses that focus on art and nature or that include a component within a larger course and via an eco-oriented orientation for all ALC community members.

TurbinD

Organization/Individual: UMD Mechanical Engineering Department

Grant: \$1,000

This grant funds an outdoor wind-powered cell phone charging station. This would be used to solve the problem of a lack of outdoor power stations while concurrently raising sustainability awareness on campus. Omnidirectional wind would spin a vertical-axis wind turbine attached to generator to produce electricity. This electricity would then be stored in batteries and can be accessed by the users via a female USB connection attached to the turbine pole. Since the turbine design is attention grabbing, the applicants also want users to approach our product and interact with it. They plan on achieving this by incorporating a QR-code that will re-direct users to our website where they can learn more about sustainable energy.

Wooded Hillock Trail

Organization/Individual: Environment, Technology, Economy Scholars

Grant: \$850

This was a proposed plan to create a scenic walkway on campus at the University of Maryland. In short, the plan was to construct a small trail on the UMD campus in the Wooded Hillock area near the Xfinity Center and Terrapin Trail Garage. The trail will not only serve as an extension of the trails that service UMD's campus, but will also educate students and visitors about the Wooded Hillock, its inhabitants, and the research being done in that area. This plan will call attention to the sustainable, eco-friendly efforts of the campus. The project group has walked and planned a trail that is about one half of a mile. In order to preserve the natural beauty of this area, the group plans to keep the trail as natural as possible. Without the use of gravel and other nonexistent materials in the Wooded Hillock, the project team will simply clear any obstructions to the trail and use these obstructions to help delineate the trail.

GreenFest 2017

Organization/Individual: University of Maryland Department of Residential Life

Grant: \$795

GreenFest 2017 is an annual sustainability festival that is open to all University of Maryland students. The event is educational, interactive, and exciting. Sustainability-oriented student and community organizations host information booths about their mission and initiatives. This grant secured reusable bags that were used as promotional items before and during GreenFest 2017. They were passed out prior to the event to inform students about GreenFest 2017, and they were awarded to students who visited all of the informative booths during the event.

ENERGYSTAR Certified Refrigerators

Organization/Individual: University of Maryland College of Information Studies

Grant: \$744

This grant assisted assist with upgrading 2 refrigerators that are located in the students lounge in the College of Information Studies (INFO). The old refrigerators were more than 10 years old and were not energy efficient. Most of the graduate students in the INFO programs are Students who work 20 hours per week within the College and attend evening classes. They are in the building for almost 8 hours each weekday. These students are heavily reliant on the 2 refrigerators that are located student lounge. By funding this project, the College was able to invest in one ENERGYSTAR certified refrigerator, which curbs electricity usage and improves the social and educational environment within the College.

Analysis of Polychlorinated Biphenyls in Effluent Discharged from a Wastewater Treatment Plant during Dry and Wet Weather Periods

Organization/Individual: Ran Jing and Dr. Birthe Veno Kjellerup

Grant: \$702.16

This grant funded a research project that aimed to study dechlorination of polychlorinated biphenyl (PCBs) by *Dehalobium chlorocoercia* DF1 bacteria cultivated on activated carbon and other materials. Theoretically, PCBs could be released into the air by incineration of PCB-containing waste (e.g. electrical equipment). Though PCBs have a low solubility (0.0027-0.42 ng/L) in water due to their hydrophobic properties, they can be released into municipal or industrial wastewater. PCBs generated from a variety of human activities (e.g. solid waste incineration) exist in influent and effluent of wastewater and can bioaccumulate and be biomagnified. This causes retention in human tissues, blood, and breast milk. Therefore, it is a big environmental concern, because PCBs are toxic and can cause several health risks such as lymphoma, skin lesions, stomach cancer, biochemical liver-test abnormalities, elevated blood lipids, immune system defects and neurological effects.

CCJS Energy Efficiency

Organization/Individual: UMD Department of Criminology and Criminal Justice

Grant: \$700

The applicants noticed that the lights in the kitchen and copy room in their Department are left on frequently throughout the entire day and night. These two rooms were in frequent use but their staff and faculty rarely spent longer than three minutes in either room, often only to grab a print out or to heat up their lunch. As part of the University's Green Office Initiative, they believed that having motion sensor light switches in these rooms would be extremely beneficial for energy and electricity conservation. The grant was used to install these motion sensor switches in conjunction with the University's Facilities Management Office.

Student Mushroom Garden

Organization/Individual: UMD Arboretum

Grant: \$675

This grant funds an outdoor area is created where students can learn to cultivate edible mushrooms. Students will learn useful gardening methods that require knowledge of tools, as well a plant and fungal anatomy. By growing edible mushrooms, students will be learning about an organic, sustainable gardening method. The materials to grow edible mushrooms can be relatively simple once one knows what they are doing. From a low-cost source, an individual can produce healthy, nutrient rich products. Specifically, this grant paid for planting materials and drills that the Arboretum needed to start the garden.

Rechargeable Batteries at the Clarice

Organization/Individual: Clarice Smith Performing Arts Center

Grant: \$500

Prior to this grant, the Technology Shop at the Clarice Smith Performing Arts Center used approximately 800- 1000 AA batteries a year in various pieces of equipment; microphones, remote controls, etc. They sought a grant to purchase rechargeable batteries and chargers which would allow them to operate their devices more sustainably for one year. Applicants estimated that this grant prevented 2000 to 3000 batteries from entering the waste cycle.

World Climate Negotiation

Organization/Individual: UMD Department of Communication

Grant: \$250

The World Climate Negotiation was a mock negotiation based on the COP21 climate conference that was held in December 2015 in Paris. Every individual who registered to participate was assigned to represent a region or country bloc and will be tasked with problem solving with other country blocs to produce a global agreement to reduce CO2 emissions enough to limit global warming to 2°C by 2100. The grant provided funds for food, photocopying, paper supplies, and other miscellaneous costs for the event, which went smoothly.

CARBON NEUTRAL AIR TRAVEL INITIATIVE

Implementation Plan Summary

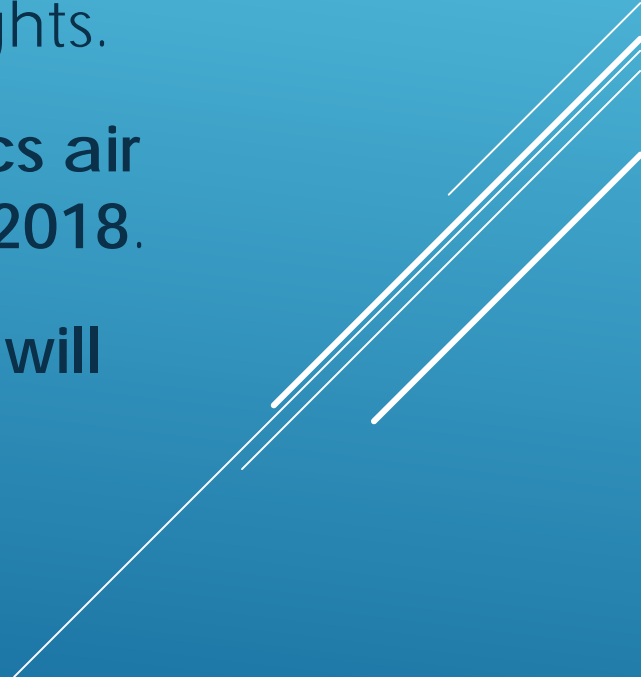
APPLICABILITY

This initiative applies to the greenhouse gas emissions associated with **all forms of university air travel** including business, research, athletic, and study abroad travel.

Research travel includes sponsored and unsponsored flights.

Emissions associated with **business, research, and athletics air travel will be offset for flights departing on or after Jan 1, 2018.**

Emissions associated with **student study abroad air travel will be offset for flights departing on or after May 1, 2018.**

Three white lines of varying lengths and slopes are positioned in the bottom right corner of the slide, extending from the right edge towards the center.

CARBON SURCHARGE RATE

A carbon surcharge of **\$0.0027/mile** will be assessed on all university air travel.

The rate is calculated using the following assumptions:

- Offset price of \$4.20¹
- 1,749 air miles per MTCO₂e (or 0.000572 MTCO₂e/air mile)
- Estimated 60,000 MTCO₂e to be offset annually in 2018-2020²

¹ Based on the 2016 global average price

² Based on 2016 actual air miles traveled

SAMPLE CARBON SURCHARGE COSTS FOR ROUNTRIP FLIGHTS

Destination	Roundtrip Flight	Roundtrip Miles	Carbon Surcharge
Boston	BWI > BOS	736	\$ 1.99
Orlando	IAD > ORL	1,504	\$ 4.06
Denver	BWI > DEN	2,900	\$ 7.83
San Francisco	BWI > SFO	4,900	\$ 13.23
London, UK	IAD > LHR	7,340	\$ 19.82
Paris, France	IAD > CDG	7,700	\$ 20.79
Sao Paulo, Brazil	IAD > GRU	9,500	\$ 25.65
Honolulu	IAD > HNL	9,620	\$ 25.97
Tel Aviv, Israel	IAD > TLV	11,780	\$ 31.81
Beijing, China	IAD > PEK	13,840	\$ 37.37
Dubai, UAE	IAD > DXB	14,100	\$ 38.07
Addis Ababa, Ethiopia	IAD > ADD	14,360	\$ 38.77
Delhi, India	IAD > DEL	14,980	\$ 40.45
Sydney, Australia	IAD > SYD	19,480	\$ 52.60

~80% of trips
are domestic

Avg. international
trip is ~9,000 miles

IMPLEMENTATION

Office of Sustainability will calculate the total annual carbon surcharge for the units listed below (due April 1).

Office of the Comptroller will annually collect the total carbon surcharge (completed during April billing period).

Sponsored Research Trips – The total annual carbon surcharge on sponsored research air travel will be collected from the Designated Research Initiative Funds (DRIF).

Non-Sponsored Trips – The total annual carbon surcharge on all university air travel by faculty, staff, and students with the exception of sponsored research travel and student travel for study abroad, will be collected from each Division including the Division of Academic Affairs, Division of Student Affairs, Division of Administration & Finance, Division of Information Technology, Division of Research, Division of University Relations, and the Office of the President.

Office of International Affairs (OIA) – The total annual carbon surcharge on all student study abroad air travel will be collected from OIA. Education Abroad may incorporate the carbon surcharge rate into its program fees as it deems appropriate.

Intercollegiate Athletics (ICA) – The total annual carbon surcharge on all athletic air travel will be collected from ICA. The surcharge will be based on all flights recorded by TAR and chartered flights not recorded by TAR.

ESTIMATED TOTAL CARBON SURCHARGE COSTS BASED ON CY 2016 TRAVEL

Sponsored Travel (paid from DRIF)	\$66,000
Division of Academic Affairs	\$66,000
Student Education Abroad	\$61,000
Intercollegiate Athletics	\$33,000
Division of Student Affairs	\$2,000
Division of Research	\$1,200
Division of Information Technology	\$1,200
Division of University Relations	\$1,100
Office of the President (excluding ICA)	\$900
Division of Administration & Finance	\$600
Total	\$233,000

CARBON OFFSET SELECTION AND PURCHASING

- The Office of Sustainability will establish and manage a Greenhouse Gas Reduction Fund. All carbon surcharge funds will transfer into this Fund and will be used to purchase verified carbon offsets.
- The University Sustainability Council will establish a Carbon Offset Committee to establish procurement criteria and select carbon offset projects for university investment.
- The university, with oversight by the University Sustainability Council and the Vice President for Administration & Finance, will purchase third-party verified carbon offsets to neutralize emissions associated with university air travel.
- An annual report of purchasing activities including details about carbon offset projects supported by this initiative will be prepared by the Office of Sustainability and made available to the campus community.