Sustainable GW

THE GEORGE WASHINGTON UNIVERSITY

WASHINGTON, DC

GW SUSTAINABILITY PROGRESS REPORT 2018

GW BY THE NUMBERS

11,000+
undergraduate students

10
schools

134
buildings

15,000+
graduate students

781
courses with sustainability content

8.6 million
gross square feet of building space

5,547
faculty and staff[1]

3
campuses

[1] Full-time equivalent.

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EXECUTIVE SUMMARY

THE UNIQUE OPPORTUNITY OF AN INSTITUTION OF HIGHER LEARNING

Put our heads together

George Washington University (GW) is one of a handful of organizations exploring how an institution can enhance ecosystem services. The university recognizes the connection between people and nature and the need to protect and, if possible, regenerate the services nature provides on campus, in the community, in the surrounding watershed and globally. This is a rich opportunity to bring together the energy and dedication of our students, the ingenuity of faculty researchers and the expertise of staff to use the platform a university provides for sharing insights and increasing the impact on and off campus.

Practice what we teach

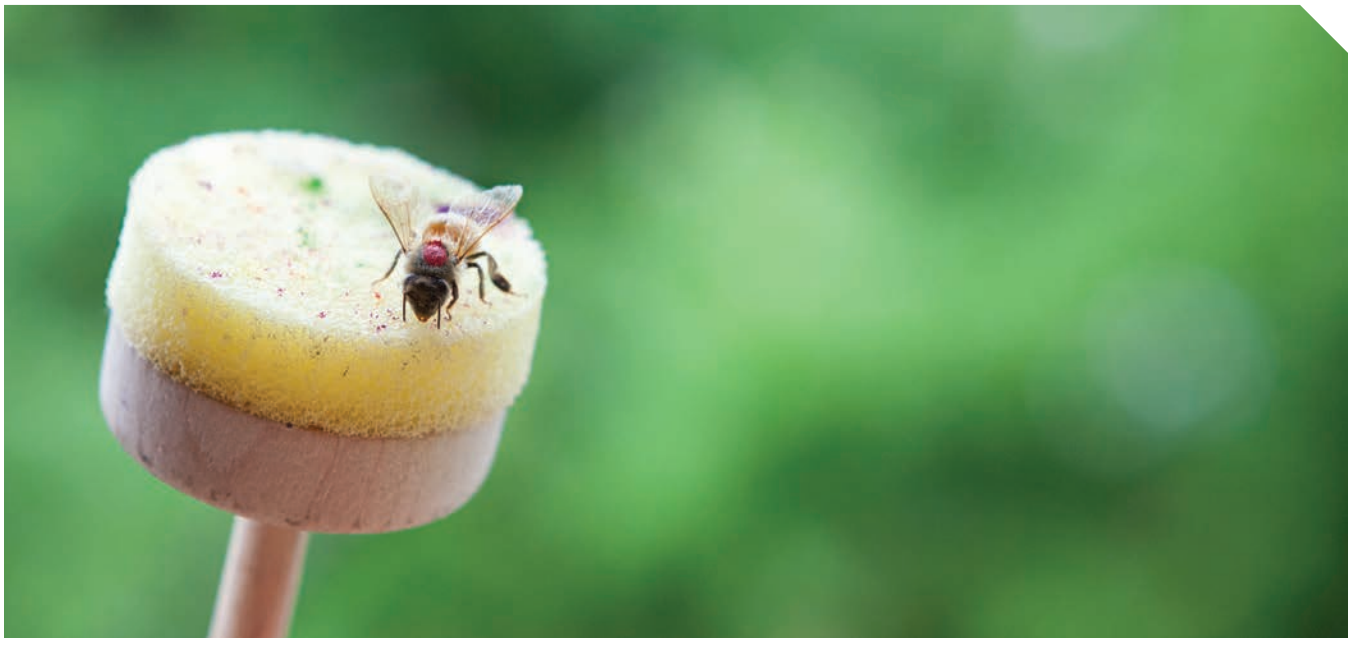
Our campuses provide living laboratories for exploring approaches to sustainability challenges that many public and private institutions have in common. By setting ambitious goals and targets, testing ways to meet them and reporting on our progress, we can help advance urban sustainability and resilience and position the university for financial savings.

Run on student energy

Students provide ideas, passion and influence on sustainability issues across our campuses. They drove our initial sustainability initiatives and remain engaged in many ways: for instance, through student groups on campus, academic work and living labs and our Eco-Equity Challenge. They also participate as Eco-Reps and sustainability interns.

Starring our faculty

GW faculty and the programs and institutes they lead continue to be the sustainability stars on GW's campus. Through our faculty's provocative research and challenging courses, they provide insight and knowledge to both students and local and global partners, in and out of the classroom. This report only touches on the accomplishments of GW faculty researchers and instructors. Their work is deep and vast, and it is impacting areas ranging from urban sustainability to energy law and from engineering to public health to corporate responsibility.



TRACKING PROGRESS

This GW Sustainability Progress Report uses the *Ecosystems Enhancement Strategy's* goals and targets as the foundation for reporting progress (see Goals and Progress section). Below is a summary of several key data trends.

	BASELINE YEAR	PERCENTAGE CHANGE FROM GW BASELINE YEAR			
		FY14	FY15	FY16	FY17
Goal 1 - Permeable Land[i]	FY11	+12%	+12%	+12%	+12%
Goal 2 - Greenhouse Gas Emissions	FY08	+9%	+2%	-28%	-22%
Goal 3 - Water Consumption	FY08	0%	-4%	-9%	-11%
Goal 4 - Real Food Expenditure[ii]	FY14		+8%	+4%	
Goal 5 - Waste Diversion[iii]	FY12	+3%	+23%	+36%	+77%
Goal 6 - Eco-Reps	FY14		-25%	+50%	+135%
Goal 7 - Sustainable Investment	FY14		-1%	+29%	+36%

[i] Permeable Land includes all green spaces such as grassy areas, unmaintained green space, maintained landscape areas, campus parks and green roofs; it does not include stormwater management systems such as land with cisterns, tanks and barrels.
[ii] Real Food is defined by the Real Food Challenge as local, fair, ecologically sound and humane food; baseline expenditure is measured as a percentage, so changes from baseline year are percentage point changes.
[iii] Waste diversion is equal to tons of waste diverted from landfill or incineration through recycling, composting and reuse.

GREENHOUSE GAS EMISSIONS

2008 Baseline
128,200 MTCDE[2]

2017 Status
22% Reduction

2025 Target
40% Reduction

2040 Target
100% Reduction
Carbon Neutral

LOW-CARBON TECHNOLOGY GENERATION

2011 Baseline
0% Generation

2040 Target
10% Generation

2017 Status
20% Generation

WATER CONSUMPTION

2008 Baseline
286,000 Kilogallons

2017 Status
11% Reduction

2018 Target
25% Reduction

ZERO WASTE

2012 Baseline
24% Diversion Rate

2020 Target
40% Diversion Rate

2017 Status
43% Diversion Rate

[2] MTCDE = Metric Tons of Carbon Dioxide Equivalent

LOOKING AHEAD

As an anchor institution in Washington, D.C., GW has a steadfast commitment to sustainability. The results presented here reflect nearly a decade of GW's progress, including the adoption of new standard practices such as green buildings, Zero Waste and sustainable food. Most noteworthy have been the establishment of the student-led GroW Garden and Sustainable Investment Fund, the groundbreaking Capital Partners Solar Project (CPSP) and the Sustainability Minor for undergraduates in all the GW schools. The university will continue to update its strategy, goals and targets to drive further improvements.

Looking ahead, the university will dive deeper into how it uses fresh water, identify additional reduction opportunities and modify related targets, if needed. The campus will continue to provide a living lab for students and faculty alike, and we will expand sustainable purchasing and enhance the biodiversity of GW's urban landscapes. The university will also develop an adaptation plan to prepare for the weather, infrastructure and health impacts of a changing climate. And in light of significant changes to GW's dining programs, we will evaluate and implement new approaches to sustainable food that will increase awareness and transparency around the choices available.

GW's biggest impacts arguably result from the work of its students and alumni on and off campus. GW will continue to invest in its students and their efforts as change agents for sustainability, and we will enhance alumni engagement on sustainability at the local and global level.

WELCOME

Welcome to the George Washington University's (GW) first sustainability progress report.

For nearly a decade, GW has been building a comprehensive sustainability strategy to address its footprint, which includes a commitment to carbon neutrality and resilience in the face of climate change. This report provides an overview of GW's strategy and key accomplishments, as well as a detailed review of progress toward the goals and targets defined in our *Ecosystems Enhancement Strategy*. Bolstered by student involvement and leadership, the university has undertaken numerous initiatives that together put GW on track to meet its goals around habitat and natural space, climate and air quality, fresh water availability, sustainable food, Zero Waste, engagement with natural ecosystems and sustainable investments.

The report discusses the progress the university has made to incorporate sustainability into its operations, management decisions and community impact, and it also outlines the connection sustainability has to the academic mission of the university.

GEORGE WASHINGTON UNIVERSITY SUSTAINABILITY

Vision: The university envisions a future with healthy and thriving resource systems for all.

Mission: In an effort to enhance its campus, the nation's capital and the world at large, GW is building a greener campus, providing research and intellectual discourse on policies and technologies for sustainable systems and equipping students with the skills and knowledge to contribute to a sustainable future.

SUSTAINABILITY AT GW: A DECADE OF PROGRESS

2007	Campus Plan commits to green building
2008	GW Presidential Task Force on Sustainability
2008	First living roof installed
2009	GW Office of Sustainability established
2009	GroW Community Garden established
2009	Planet Forward launched
2010	First LEED-certified building
2010	Hosted first GreenGov Symposium with White House
2012	Minor in Sustainability established
2013	Zero Waste Team established
2014	Capital Partners Solar Project launched
2014	Duke Energy Innovation Fund established
2015	First student Eco-Equity Challenge
2015	GW joined the higher education commitment to the Paris Climate Agreement
2017	GW joined the We Are Still In coalition to reaffirm its commitment to the Paris Climate Agreement
2018	First student start-up funded from D.C. Climathon at GW
2018	GW Sustainable Investment Fund created

LETTER FROM GW PRESIDENT THOMAS LEBLANC

November 2018

To the George Washington University Community:

Since joining GW, I have been impressed by our community's dedication to sustainability. It is shown clearly through the university's priorities, and during the past decade, it has translated into tangible accomplishments: leading academic programs, award-winning green campuses and a significant investment in an innovative solar power partnership.

GW will continue to play a leadership role in addressing global sustainability challenges during my presidency. I am committed to supporting our university's approach to providing the knowledge, research, practical solutions and informed graduates that create a positive and sustainable future.

I have already seen firsthand how passionate our students are about sustainability. Earlier this year, their advocacy led to the creation of the Sustainable Investment Fund, which will allocate money from the university endowment toward responsible investment vehicles. This type of leadership is precisely what I expect from GW students. At the same time, I have seen from our faculty a commitment to teaching and conducting research on sustainability issues and, from our staff and students, a concerted effort to implement programs on our campuses that help reduce energy, waste and water use. Our work is making a difference.

GW's sustainability strategy comprises ambitious goals and targets, including many that allow us to showcase what sustainability solutions look like in an urban environment. We remain among a select group of universities that has pledged to fulfill the principles of the Paris Agreement on climate change as part of the We Are Still In coalition. We also have made a climate leadership commitment to design and manage our campuses, procurement and transportation options to ultimately become carbon neutral and to adapt to the impacts of climate change. These guidelines are critical to thoughtfully targeting and tackling big challenges.

So, too, is checking in on our progress. This report is our first complete accounting of our work to achieve our sustainability goals. We welcome your feedback and participation as we seek to create a more sustainable GW and world. I hope that you will remain actively engaged in our efforts.

Sincerely,

Thomas J. LeBlanc
President of the George Washington University

LETTER FROM MEGHAN CHAPPLE
SENIOR ADVISOR ON UNIVERSITY SUSTAINABILITY INITIATIVES
DIRECTOR, OFFICE OF SUSTAINABILITY

November 2018

Dear Sustainability Community,

Welcome to GW's first full sustainability report. This report was developed by the Office of Sustainability, which is committed to creating a GW that is an institutional leader in environmental, social and economic sustainability in the classroom with academic partners, on campus and in the community.

The Office of Sustainability addresses the university's impact on the planet and its inhabitants by working closely with students, faculty and staff across the institution. We collaborate with academic partners to advance the impact of sustainability on and off campus, leveraging the campus as a living laboratory to create opportunities for research and learning by students and faculty. Additionally, sustainability has become an integral part of our endowment, employee benefits and procurement practices for areas such as food, energy and technology.

About a decade ago, GW formalized its commitment and embarked on a number of ambitious sustainability initiatives. Since that time, GW has advanced in various university sustainability assessments. Currently, GW places in the top tier of these sustainability rankings and ratings. The university consistently strives for excellence to enhance its institutional impact on urban sustainability at the university and in the broader local and global community.

Much of the credit for this improvement is due to our passionate, engaged students. Indeed, GW's sustainability efforts started with student leadership. To this day, students are key drivers of our sustainability agenda, supported by faculty and staff. Some of the most impressive initiatives featured in this report, including the GroW Community Garden, Sustainable Investment Fund and the ChargedUp design competition, were initiated by students and reflect their ideas, ingenuity and hard work. The Eco-Equity Challenge and DC Climathon are additional programs that enable students to develop and fund their ideas for sustainability on the campus and in the community.

We also take inspiration from the complex sustainability challenges of urban environments. Cities are the engines of economic growth around the world. As their populations swell, they must contend with ever-changing and expanding infrastructure and transportation needs while also grappling with the challenge of sustaining the vital ecosystem services that nature provides and humans need.

That's why our sustainability strategy is built on an ecosystems enhancement approach. We have examined the ecosystem services we collectively depend upon and have targeted improvements ranging from engineering systems that capture stormwater to providing indoor and outdoor green spaces to recharge the human spirit. And we are approaching these efforts with commitments to achieve cost savings, efficiency and employee engagement.

This report serves several important purposes. It provides transparency by reviewing the university's progress on the seven goals and 67 targets we set in 2012. We established the goals and targets to develop our capabilities, stretch our ambitions and make us reach for a more positive impact on the environment, social equity and financial viability of the institution. The goals and targets also provided a roadmap of practical steps to put into action. The process of preparing this report has given us an opportunity to take a close look at how we are doing and to review the targets and indicators to make sure they are pointing us in the right direction.

Pursuing our goals has required integrating sustainability into the fabric of the university. No single function or department can accomplish all that we set out to do. In fact, around 40 different university departments have partnered with the office to contribute actions and the accompanying data captured in this report.

So how are we doing? The university has had some major successes, including developing a pioneering power purchase agreement that now provides half of GW's electricity from an off-site solar farm. We exceeded our target to divert 40 percent of the university's waste from landfill early by increasing waste reuse, recycling and composting. And in the spring of 2018, a student-led effort resulted in the establishment of a Sustainable Investment Fund for a portion of the university's endowment. We've also identified areas where we need to refocus our attention, including building energy-efficiency projects and rainwater capture and reuse.

Assessing our progress also gives us a chance to step back and look at the big picture. We live in a time of great change. Are we doing enough to address global challenges? How can we each do more in our day-to-day work? Interrelated issues from climate change to water quality and availability to loss of biodiversity – and the equity issues associated with each of the challenges – demand greater resilience. Without leadership at the federal level, it is essential for sub-national actors to continue to address these problems. When higher education, municipalities and the private sector work together, we can make a real impact. This is one of the reasons GW joined the We Are Still In coalition and acts as an anchor in the community on sustainability issues.

Our initial step in planning for resilience in the face of climate change has been to establish a working group that includes members from both the GW community and the broader D.C. community. GW's own climate resilience planning will converge with local community plans in order to leverage each other's expertise and capacity.

We hope you find this report useful as a way to monitor GW's performance, and we welcome your feedback. We are grateful to everyone in the GW community who has contributed to this work, including students, staff and faculty leaders. And much more remains to be done. We invite you to continue to be involved or to get involved.

Sincerely,

Meghan Chapple
Senior Advisor on University Sustainability Initiatives
Director, Office of Sustainability

LETTER FROM TARA SCULLY
DIRECTOR OF THE SUSTAINABILITY MINOR PROGRAM

November 2018

Dear GW Sustainability Community,

I am excited to take on the role of Director of the Sustainability Minor Program. The program has grown rapidly since 2012, thanks to the dedicated faculty and staff that have nurtured it from an innovative idea to a thriving minor that now enrolls more than 230 students. As the program continues to attract a wide variety of students, we will look for additional opportunities to provide innovative classroom and experiential learning, drawing on our faculty and staff's sustainability leadership within academia and the local and global communities.

As sustainability issues become more numerous, complex and consequential, academic institutions have an important role to play in identifying and testing solutions and preparing future leaders to tackle them effectively. I believe our interdisciplinary model offers a powerful demonstration of the kind of contributions institutions such as ours can make. Keep your eyes open, and watch our sustainability graduates as they go out and change the world! I look forward to working with all of our stakeholders as we sustain sustainability at GW.

Sincerely,

Tara A. Scully, Ph.D.
Director of the Sustainability Minor Program
Assistant Professor of Biology

LETTER FROM ROBERT ORTTUNG
RESEARCH DIRECTOR, SUSTAINABLE GW

November 2018

Dear GW Sustainability Community,

Through interdisciplinary collaboration, Sustainable GW is facilitating intellectual discourse and research to promote more sustainable systems locally, regionally and globally. Building on the mission of the Sustainability Institute, first founded in 2009, I am pleased to contribute to the ongoing development of interdisciplinary research teams across the university that are publishing peer-reviewed studies in the areas of law, science, communications, business, public health, engineering and policy with a focus on how those areas intersect with sustainability concerns, such as water, energy, climate, food and sustainable cities.

Since 2016, Sustainable GW has helped foster a number of multi-disciplinary teams seeking research funding around the topics of urban sustainability, climate impact in the Arctic, the food-energy-water nexus and improving K-12 educational outcomes through digital storytelling and exposure to authentic science practices. We are currently developing new areas of research that address the complex problems of sustainability while simultaneously supporting GW's leading faculty researchers in their own endeavors. Key examples of our work include the annual Duke Energy Innovation Fund competitions and the new Sustainability Scholars Award for GW students. Both provide opportunities for students and faculty to collaborate on results-oriented projects.

I look forward to participating in the work ahead and the positive impact it will have on the planet.

Sincerely,

Robert W. Orttung

Robert W. Orttung
Research Director, Sustainable GW
Research Professor of International Affairs

COMMITMENTS, AWARDS AND RECOGNITION

To demonstrate its commitment to sustainability, in 2009, GW signed the Presidents' Climate Leadership Commitment, which promotes carbon neutrality and resilience efforts and requires signatories to develop a climate action plan and evaluate progress annually.

As a result of GW's involvement with Second Nature's Climate Leadership Network, GW earned several Marks of Distinction based on FY16 accomplishments. The Marks of Distinction recognize exemplary performance among a select group of higher education institutions. In spring 2018, GW was recognized for these achievements:

- *Aggregated Renewable Energy Purchase*
- *Carbon Reduction - 25%*[3]
- *Renewable Energy Purchaser - 25%*[4]
- We Are Still In participant.

In 2017, GW reaffirmed its commitment to the Paris Agreement on climate change and joined the We Are Still In coalition.

In addition, the university took the District of Columbia Mayor's College and University Sustainability Pledge in 2012. The pledge unites eight D.C. area universities with the mayor's office in efforts to advance environmental, social and economic progress through specific actions in areas such as energy-efficient buildings, water use, sustainability-related research and education, community development, responsible purchasing and more.

Since 2014, GW has held a Gold STARS Rating by the Association for the Advancement of Sustainability in Higher Education (AASHE). The Sustainability Tracking, Assessment & Rating System™ (STARS®) is a transparent, self-reporting framework for colleges and universities.

GW participates in Sierra Club's Cool Schools ranking, which serves as a guide for prospective students, current students, administrators and alumni to compare colleges' commitments to environmentalism. It also spurs healthy competition among schools, raises environmental standards on campuses and publicly rewards institutions that work to protect the planet. In 2017, a record 227 schools participated, and GW was ranked eighteenth.

GW has been included in The Princeton Review Guide to Green Schools each year from 2011 to 2017. In 2017, The Princeton Review selected 375 colleges for the list after reviewing more than 2,000.

In 2018, the U.S. Environmental Protection Agency (EPA) recognized GW as an EPA Green Power Partner National Top 100 for our efforts to reduce the negative health impacts of air emissions through the use of renewable energy.

The Green Power Partnership National Top 100 list represents the largest green power users within the Green Power Partnership. The combined green power usage of these Top 100 Partners amounts to more than 41 billion kilowatt-hours annually, which represents approximately 85 percent of the green power commitments made by all EPA Green Power Partners.

[3] In FY16, GW reduced its carbon footprint by 28 percent compared to the FY08 baseline.
[4] In FY16, GW met 42 percent of its electricity demand with renewable energy.

FROM THE CAMPUS TO THE WORLD: THINKING STRATEGICALLY

From climate change to natural resource depletion to the loss of biodiversity, living sustainably on earth has become one of the central challenges of our time. While these trends pose risks to institutions, countries and the planet, they also provide opportunities for innovation in emerging fields and effective financial policies that truly account for the value of natural resources.

As an institution of higher education in the heart of the nation's capital, GW has a unique contribution to make to address these challenges. GW is committed to developing, piloting and demonstrating models for urban sustainability and resilience. The university provides a test bed, a safe space for learning and inquiry and opportunities to amplify what we learn and accomplish.

The university takes a comprehensive, strategic approach to sustainability that encompasses its physical footprint and financial resources, as well as academics and research; sets ambitious goals and targets; and seeks to extend our influence beyond GW's campuses to mitigate risk and seize opportunities for innovations that will benefit the university, society and the planet.

HOW WE WORK

The progress GW has made in sustainability is due to the tireless efforts of students, faculty and staff across the university who make it part of their day-to-day plans, projects and budgets. As a small office in an institution rich with intellectual resources, the Office of Sustainability provides direction and support to various functions and partners across the university, working with stakeholders to set university-wide goals and to manage efforts to reach measurable targets. The Office of Sustainability works closely with academic and research leadership for sustainability in the Provost's office. The Office of Sustainability provides a strategic home for sustainability initiatives on campus and focuses primarily on integrating sustainability into the fabric of the university. The office leads the university in its commitment to being a model of urban sustainability and resilience by building greener campuses, creating a culture of sustainability and addressing the university's impact on the planet and its inhabitants.

The Office of the Provost manages sustainability research and academics at GW. The Office of Sustainability works closely with the Provost's office to develop and enhance the resources available for faculty teaching and research on sustainability issues. Additionally, the Office of Sustainability partners directly with key faculty, departments and schools across the university to work on sustainability living labs, operational programming such as the Green Office Network, and student community programming such as the Eco-Equity Challenge.

In addition, key leaders in GW's sustainability progress sit in offices and departments across the university, including but not limited to the following:

SCHOOLS, INSTITUTES AND DEGREE PROGRAMS:

- College of Professional Studies
  - Sustainable Landscapes Program
  - Sustainable Urban Planning Program
  - Strategic Public Relations Program
- Columbian College of Arts and Sciences
  - Department of Biological Sciences
  - Department of Chemistry
  - Department of Geography
  - Environmental Natural Resources Program
  - Environmental Studies Program
  - Human Services & Social Justice Program
  - Planet Forward at the School of Media and Public Affairs
- Elliot School of International Affairs
  - Partnerships for International Strategies in Asia
  - Institute for International Economic Policy
  - International Development Studies Program
- Graduate School of Education and Human Development
  - Curriculum & Pedagogy Program
  - Human & Organizational Learning Program
- School of Business
  - Institute for Corporate Responsibility
  - Center for Real Estate and Urban Analysis
- School of Medicine and Health Sciences
  - The Rodham Institute
- Milken Institute School of Public Health
  - Department of Environmental and Occupational Health
  - Food Policy Institute
  - Antibiotic Resistance Action Center
- School of Engineering and Applied Science
  - Faculty who developed the Capital Partners Solar Project (CPSP) Living Lab
  - Department of Civil & Environmental Engineering
  - Department of Engineering Management & Systems Engineering
  - Department of Computer Science
  - GW Innovation Center and Incubator
  - Environmental and Energy Management Institute
- School of Law
  - Environmental Law Program

ADMINISTRATIVE OFFICES:

- Academic Affairs
- Academic Technologies
- Animal Research Facility
- Athletics Department
- Center for Student Engagement
- Colonial Inauguration
- Compliance Office
- Division of Development and Alumni Relations
- Division of External Relations
- Division of Information Technology
- Division of Operations
- Executive Vice President's Office
- Finance Office
- Health and Emergency Management Services
- Honey W. Nashman Center for Civic Engagement and Public Service
- Human Resources
- Office for Study Abroad
- Office of Diversity, Equity and Community Engagement
- Office of General Counsel
- Office of Innovation and Entrepreneurship
- Office of Institutional Research and Planning
- Office of International Programs
- Office of Risk Management and Insurance
- Office of the Vice President for Research
- Office of the Provost
- Office of the President
- Sustainability Collaborative
- The George Washington University Museum and The Textile Museum

STUDENT GROUPS:

- Campaign GW
- Food Recovery Network
- Fossil Free GW
- Green GW
- GroW Community
- GW Student Association
- Net Impact, GW Chapter
- TRAiLS (Teaching Recreation and Adventure incorporating Leadership and Service)

KEY EXTERNAL STAKEHOLDERS:[5]

- 100 Resilient Cities
- AASHE (Association for the Advancement of Sustainability in Higher Education)
- American University
- Casey Trees

[5] The Office of Sustainability forms partnerships with external stakeholders to support university efforts. GW faculty also cultivate important sustainability relationships that are not captured in this report.

- Climate-KIC
- D.C. Department of Energy & Environment
- Duke Energy Renewables
- eLuminate
- Gensler
- Groundwork DC
- GW University Hospital
- Higher Achievement
- in3DC
- Innovators Box
- Intentional Endowments Institute
- Little Friends for Peace
- Miriam's Kitchen
- Rock Creek Conservancy
- Rocky Mountain Institute Business Renewables Center
- Second Nature
- Siemens Building Technologies
- Solid Waste Association of North America
- Waste Connections
- World Wildlife Fund – Earth Hour

EMBEDDING SUSTAINABILITY IN OUR ACADEMIC PROGRAMS

Interdisciplinary problem solving is the key to finding solutions for sustainability challenges. GW's commitment to enhancing and promoting sustainability research and curricular programs is embodied in the academic endeavors of the university. In 2012, the Office of the Provost took leadership on sustainability in academics, signaling that at GW, sustainability belongs to the entire university: all schools, students, faculty and staff. The Office of the Provost works closely with the Office of Sustainability to achieve GW's sustainability mission.

GW embraces, facilitates and strengthens the sustainability studies, research and activities taking place across the schools, providing support for further impact. For instance, faculty members and departments across the university conduct important research on issues ranging from melting ice in the Arctic to environmental law to protection of the Chesapeake Bay Watershed. Students take what they learn in hundreds of sustainability-related courses and apply it to their internships, research and service projects throughout the community and all over the world. The university also engages the public through outlets like Planet Forward, the premier online platform for environmental storytelling, and with the many symposiums, events and programs run through the university.

Groundbreaking Minor in Sustainability

The undergraduate academic Minor in Sustainability is a flagship program of the university – GW's first interdisciplinary minor, which boasts approximately 230 students enrolled at the time of publication. The program challenges students to explore pressing sustainability issues and to think about how to develop solutions at the local, regional and global level. Team-taught by faculty from five different schools within the university, the minor introduces students to the concepts, principles and issues that inform the sustainability paradigm. It integrates classroom instruction, community-based learning and research to prepare students to apply a sustainability perspective to their future endeavors and to make meaningful contributions as they enter the professional world.

The university also offers a suite of four sustainability courses. More than 1,000 students have taken the interdisciplinary, team-taught course Introduction to Sustainability since it was first offered in 2012. In total, students can choose from 781 sustainability-related courses throughout the university at the undergraduate and graduate levels.

Fostering interdisciplinary research

Many of the 200+ GW faculty pursuing sustainability research are affiliated with one or more of the university's 11 institutes and centers engaged in sustainability-related inquiry. Each of these institutes and centers provides the architecture for faculty to collaborate in a particular area, from battling antibiotic resistance to engaging in corporate responsibility, energy management and issues of social equity, among others. With the launch of the Capital Partners Solar Project in 2014, GW expanded its partnership with the solar developer Duke Energy Renewables to create a fund to promote and encourage interdisciplinary research on energy innovations. With support from the fund, faculty from law, engineering, business and the sciences are collaborating on projects addressing renewable energy, the future of the grid and greenhouse gas capture. The Provost's office also helps faculty across the university develop and submit proposals to additional funders for interdisciplinary sustainability research.

OUR ECOSYSTEMS ENHANCEMENT STRATEGY: WHAT ARE ECOSYSTEMS SERVICES AND WHY DOES OUR STRATEGY FOCUS ON THEM?

Ecosystems services are the benefits people obtain from nature – things like the capacity of plants to absorb carbon dioxide and generate oxygen, of soil to cleanse stormwater and return it to ground or surface water and of the atmosphere to protect life from dangerous radiation. Though we may think of cities as concrete jungles, nature is hard at work providing these services in even the most urban environments.

Ecosystems span environmental and social issues, such as climate change, water scarcity and human access to natural resources. GW's *Ecosystems Enhancement Strategy* builds on its *Climate Action Plan* and *GWater Plan*, mapping a route to meet sustainability commitments. The strategy rests on GW's recognition of the connection between people and nature and the need to protect and, if possible, regenerate ecosystem services. It analyzes impacts and opportunities locally, regionally and globally and sets goals and targets for incorporating sustainability into our operations and business decisions.

THINKING AND ACTING AT THREE SCALES[6]		
Locally	**Regionally**	**Globally**
At our three campuses, GW's operations and business decisions directly impact and depend on the ecosystem services provided by natural resources, plants and food provided by gardens and urban pollinators, healthy air and human-made infrastructure.	GW's operations and business indirectly impact and depend on the ecosystem services provided in the Chesapeake Bay Watershed, including stormwater management, nutrient cycling, food provision and waste decomposition.	Based on the reach of its supply chain, investment portfolio, travel and influence through research findings and teaching, GW has indirect impacts, dependence and opportunities to enhance ecosystem services across other regions of the globe.

The strategy is also intended to build institutional understanding of and commitment to sustainability at GW, engage GW's external stakeholders and outline potential connections with the academic mission of the university. GW is committed to adopting practices viable for the institution that also nurture ecosystem services and provide these benefits:

GOAL 1	Strengthen habitat and optimize natural space
GOAL 2	Promote healthy air and climate
GOAL 3	Foster clean and abundant fresh water
GOAL 4	Support sustainable food production systems
GOAL 5	Optimize waste decomposition and treatment
GOAL 6	Encourage a connection to the natural environment
GOAL 7	Develop sustainable investment strategies.

[6] In the *GW Ecosystems Enhancement Strategy,* we referred to these geographic circles of influence as "scopes." In order to avoid confusion with common terminology for reporting of greenhouse gas emissions (Scope 1, Scope 2 and Scope 3), we have adjusted the term we use for these geographic areas to refer to them as "scales" instead.

LOOKING AHEAD

As an anchor institution in Washington, D.C., GW remains strongly committed to sustainability. GW created the scorecard on the following pages to take stock of its performance in meeting its sustainability goals and to provide an accounting to the many stakeholders who have contributed to our progress. The results reflect nearly a decade of GW's focus on sustainability and have helped us identify where we are doing well – even better than expected – and where we need to redouble our efforts.

Some of our key successes include meeting half our electricity needs through the landmark Capital Partners Solar Project (CPSP), beating our target for diverting waste from landfill disposal, and raising awareness and expanding opportunities for sustainability engagement by students, faculty and staff. GW is proud to host 12 LEED (Leadership in Energy and Environmental Design) buildings, the student-run GroW Community Garden and a combined heat and power plant in the densely designed urban campus. Most recently, President LeBlanc announced the formation of a Sustainable Investment Fund in response to student efforts.

Looking ahead, the university will dive deeper into how it uses fresh water, identify additional reduction opportunities and modify related targets, if needed. With the recent completion of the *Sustainable Landscape Guidelines*, GW will have an opportunity to enhance the campus grounds with more natural urban green spaces that promote pollinators and provide enjoyment for the GW community. The university will seek to accelerate progress in implementing building energy-efficiency measures. And in light of significant changes to GW's dining programs, we will evaluate and implement new approaches to sustainable food that will increase awareness and transparency around the choices available. Another focus will be continuously expanding sustainable purchasing in the GW supply chain. And most notably, the university will develop a climate adaptation plan to ensure the university is resilient in the face of the weather, infrastructure and health impacts of a changing climate.

GW's positive impacts result in large part from the work of its students and alumni on and off campus. GW faculty and staff in the Office of Sustainability, the Sustainability Minor and in departments and programs around the university will continue to support and mentor student ideas. The Eco-Equity Challenge and DC Climathon are programs that enable students to develop and fund their ideas for sustainability on the campus and in the community. GW remains committed to investing in its students and alumni as change agents for sustainability at the local and global level.

The university will continue to update its strategy, goals and targets to drive further improvements. We hope this report is useful and welcome feedback on it through sustainGW@gwu.edu or these social media:

- "Like Us" on Facebook
- Follow @SustainableGW on Twitter
- Follow @SustainableGW on Instagram.

GET INVOLVED

Making the GW campuses, the surrounding community and the world more sustainable through the university's actions and the passion of its students, staff and faculty is an ambitious aim. We invite all stakeholders to join the university on its sustainability journey and offer the following opportunities to get involved.

Student pledge

The Sustainable Student Pledge is a program that encourages students to make a conscious decision to live more sustainably in their daily lives. Students who take the pledge receive bi-weekly email updates from the Office of Sustainability with resources for putting sustainability into practice. As part of their introduction to GW and in an effort to establish good habits early on, first-year students are specifically invited to the program. In fall 2017, more than 200 students took the pledge and now receive regular outreach from the Office of Sustainability.

Student organizations

Several GW student organizations have missions related to sustainability:

- The Environmental and Energy Law Association brings together law students to provide educational, career and networking opportunities.
- The Food Recovery Network aims to tackle both food waste and hunger by collecting food that would otherwise be thrown away from restaurants and catered events.
- Fossil Free GW calls for the university to divest from the fossil fuel industry.
- Green GW works to make the university more eco-friendly and spread awareness of environmental issues to the student body.
- The Humanitarian Mapping Society brings together those who seek to render aid and improve the world through humanitarian Geographic Information Systems (GIS) projects.
- GW's Net Impact chapter in the School of Business mobilizes next-generation leaders to use their skills and careers to make a positive impact on the world.
- GW Student Association Vice President for Sustainability advocates on behalf of student sustainability interests and campus-wide initiatives.

Other opportunities for students

DC Climathon: Climathon is a 24-hour global hackathon that engages young innovators to develop creative local solutions to climate change and sustainable development.

Eco Challenge: Students living in residence halls, with the help of GW Eco-Reps, compete to see which residence hall has been most successful at conserving water and energy and increasing recycling.

Eco-Equity Challenge: The Office of Sustainability and the Honey W. Nashman Center for Civic Engagement and Public Service provide an opportunity to support GW students in their social entrepreneurial efforts to address environmental and social justice issues in Washington, D.C.

Eco-Reps: Through the Eco-Reps Program, students serve as green leaders in their residence halls and across campus.

GroW Community Garden: GW hosts a block-length plot of land on campus where produce is grown to support the work of Miriam's Kitchen, a nonprofit organization that aims to end chronic homelessness in Washington, D.C. The garden is supported by GW and maintained by student managers, as well as a strong volunteer base.

Innovation Center: This collaborative and interdisciplinary space encourages creative thinking and supports sustainable innovation through direct learning experiences and real-world social engagements.

Minor in Sustainability: The undergraduate Minor in Sustainability is open to all undergraduate students to explore how to develop solutions to pressing issues at the local, regional and global scale. Students participate in integrated classroom and community-based learning and research to prepare them to apply the sustainability perspective to their future endeavors. Students are encouraged to take classes outside of their own school.

New Venture Competition: Students, faculty, staff and alumni participate in this real-world educational experience to develop, test and launch their own startup ventures, which may include sustainability-related concepts.

Planet Forward: A project of the Center for Innovative Media at the George Washington University School of Media and Public Affairs, Planet Forward teaches, celebrates and rewards environmental storytelling by college students.

Opportunities for faculty and staff

Duke Energy Innovation Fund: The Duke Energy Innovation Fund is a partnership between GW and Duke Energy Renewables. Building on the landmark 2014 solar power purchase agreement, the two organizations extended their partnership to advance research in sustainability. Each year, interdisciplinary teams of GW faculty have an opportunity to compete for funds that support their work and enhance their impact on sustainability.

Faculty Sustainability Network: Faculty from many disciplines across the university can be involved in sustainability, both in the classroom and beyond. Their work informs decision-makers and educates future leaders. Faculty researchers bring expertise on a wide range of topics including, but not limited to urban sustainability, biodiversity, the future of energy, sustainable food, environmental health and policy, social justice and corporate responsibility. GW seeks to connect faculty from across the schools with colleagues at the university and with partners from the public, private and nonprofit sectors. Our goal is to help promote faculty expertise and research, to support programs that enhance the student experience and to accelerate the impact of faculty research on campus and in the community.

Flexible Work Arrangement Policies: GW offers programs that allow eligible faculty and staff to telecommute or work a compressed weekly schedule to reduce time spent traveling and decrease the university's carbon footprint.

Green Office Network: Offices throughout the university can join the Green Office Network by integrating sustainable practices into their daily routines, from turning off unused electronics to printing double-sided to stocking office kitchens with reusable dishware. Members are updated with the latest news, resources and programs in sustainability on campus. The vision is that Green Office Network members will not only help to reduce waste, decrease the university's carbon footprint and more, but will also serve as messengers of our vision for a sustainable campus community.

Living Lab: GW faculty partner with the Office of Sustainability to provide "living lab" experiences for their students using campus sustainability projects as tools for research and learning. Here are some examples:

- The Sustainable Landscapes Program in the College of Professional Studies authored the *Sustainable Landscape Guidelines* for the university.
- Researchers from the School of Engineering and Applied Science created a course for students to study the impact of GW's landmark solar purchase in North Carolina, the Capital Partners Solar Project (CPSP).
- A course on the economics of sustainability was turned into a living lab for the study of students' electricity use and recycling habits in residence halls.

Sustainable Transportation Options: For many staff, telecommuting and flexible work schedules may not be feasible. GW faculty and staff are eligible for discounts on sustainable transportation like Capital Bikeshare and pre-tax options on Metrorail.

GOALS AND PROGRESS

GW has established seven overarching sustainability goals through its *Ecosystems Enhancement Strategy*.

For each goal, the university developed several targets that help it meet the unique challenges of an urban setting. Some of these targets look out many years, while others are short-term objectives that support incremental progress toward longer-term aims. The targets also range in scope from activities focused directly on GW's campuses to those that enable positive impact on the broader region in which the university operates (the Chesapeake Bay Watershed) and globally.

As GW developed and refined its sustainability strategy, it worked to connect the dots between different sustainability issues and ecosystem services and to set ambitious targets. The university is pleased with its performance on many of the targets, less so on others.

GW has learned a lot and is modifying its approach – and in some cases the targets or measurement indicators – as it evaluates its progress so far and maps a path forward.

The following pages provide an overview of each goal, why it's important to GW and the university's approach to meeting it. Also included are examples of activities related to each goal and a detailed scorecard that outlines the university's progress and performance for each target. Any updates to the goals, targets or indicators are noted in Appendix D.

GOAL 01

STRENGTHEN HABITAT AND OPTIMIZE NATURAL SPACE

"As a large landholder in downtown Washington, D.C., GW has a unique opportunity to become a major link in a connected network of biodiversity in our city. Working with students, faculty and staff, we are embarking on an exciting era of collaboration that will transform our campus landscapes into living laboratories for our classes, enhanced ecosystems for pollinators and engaging, healthy outdoor spaces for our students to study and enjoy."

– ADELE ASHKAR, FASLA
ASSOCIATE DEAN FOR ACADEMIC EXCELLENCE, GW COLLEGE OF PROFESSIONAL STUDIES
DIRECTOR, SUSTAINABLE LANDSCAPES PROGRAM

People don't often associate nature with cities. However, the more urban a location becomes, the more important it is to establish and maintain natural spaces. In urban environments, green spaces provide important ecosystem services, including a natural habitat for indigenous species of plants and animals and regulation of local microclimate, water, pests and pollination, while also providing cultural value and places for recreation.[7] To find green roofs, gardens and other open spaces, please see the GW campus map. GW is committed to adopting practices and nurturing ecosystems services that strengthen habitat and optimize natural space on its campuses, in the Chesapeake region and across its global footprint.

In modern cities, green space can easily give way to impermeable areas, such as parking lots, buildings, roads and sidewalks. This can lead to fragmented habitats as green space disappears and non-native plants are introduced. GW thinks about both aesthetic beauty and biodiversity as it plans its landscaping, using its *Sustainable Landscape Guidelines* to reverse ecosystem degradation and ultimately create environments that generate greater health and resilience for the natural world and for the campus community.

The university also considers the impact that cities have on the night sky, knowing that light pollution can have a negative effect on plants, animals and humans. GW is taking steps to reduce lighting where safe to do so, capturing the energy-efficiency benefits and reducing its contribution to light pollution in the urban nightscape.

[7] Piracha, A. L., & Marcotullio, P. J. (2003). Urban Ecosystem Analysis: Identifying Tools and Methods. Tokyo: United Nations University/Institute of Advanced Studies.

SPOTLIGHTS

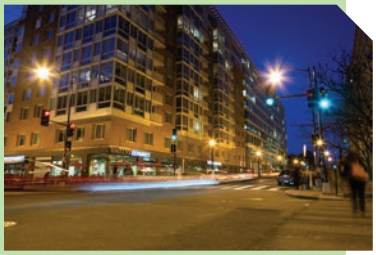
GW creates framework for sustainable grounds

Published in 2017, GW's *Sustainable Landscape Guidelines* help the university manage its green space as a regenerative landscape that draws from the self-healing and self-organizing capacity of natural plant communities. The guidelines provide guidance for each city square or block the campus occupies – including recommendations for the tree canopy, diverse plantings, turf, soil, urban agriculture and edible landscaping, aesthetics and low-impact development options such as rain gardens and pervious paving. Developing these guidelines was a positive step toward meeting GW's targets to increase green space and enhance the biological richness and diversity on its campuses. The report is the result of a partnership between the university, faculty and students in the College of Professional Studies' Sustainable Landscapes Program, with significant contributions from the local D.C. organization Casey Trees.

GW published its* Sustainable Landscape Guidelines *in 2017.

Minimizing nighttime light pollution with energy-efficient technology

Excessive nighttime light (light pollution) can disrupt the natural rhythms of plants and animals and have negative impacts on the psychological well-being and sleep cycles of people. By minimizing unnecessary exterior lighting, using motion and occupancy sensors and installing fixtures that direct exterior light downward, GW reduces energy use and light pollution while maintaining campus safety.



GW reduces energy use and light pollution while maintaining campus safety.

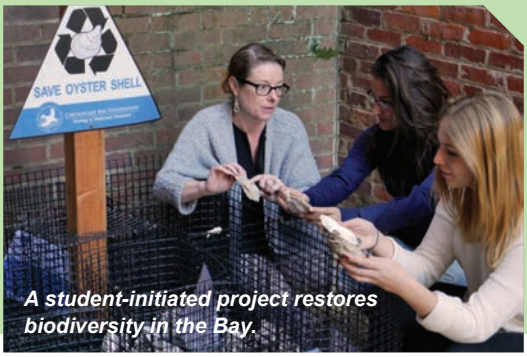
GW uses beneficial insects to manage pests and keep plants healthy.

Campus is swarming with beneficial insects

GW has been insecticide-free since 2014, using beneficial insects – instead of harsh chemicals – to manage pests and keep plants on its campuses healthy and vibrant. Choosing plants that are insect- and disease-resistant also helps to limit the need for pesticides and fungicides. GW adds to the beautification and the biodiversity of its campuses by planting native wildflowers, which attract birds and butterflies. These and other native plants tend to require less long-term maintenance and use less water, creating a more sustainable landscape.

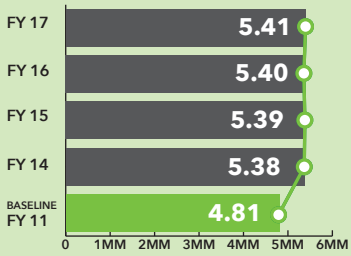
Saving the bay, one oyster at a time

With only one percent of their original population remaining, the Chesapeake Bay's oysters need all the help they can get. A student-initiated project to collect oyster shells is one of several led by biology professor Tara Scully that focus on restoring biodiversity in the Bay. Through the oyster shell recovery program, student volunteers collect oyster shells from area restaurants and community members. After the shells are cleaned and dried, they are returned to the Bay to help rebuild the population by providing homes for baby oysters. Students are also raising oysters and measuring the effects of herbicides and pesticides on the Bay's marine life – all aimed at improving the health of the Bay.



A student-initiated project restores biodiversity in the Bay.

GOAL 01: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 1.1: Increase green space	We work to steadily increase permeable green space on campus by establishing gardens, parks and green roofs. Here are some examples: • "Square 80" – a parking lot transformed into a park, which has been certified as a "Sustainable Site" by the Sustainable SITES Initiative's SITES Rating System • Five interior green walls • Seven green roofs • The GroW Community Garden on our campus in downtown Washington, D.C.	**SQUARE FEET (SF) OF PERMEABLE SPACE ON CAMPUS *(in millions)***  Notes: • While the permeable sf reflects a 12% gain over FY11, the overall size of the campus grew, so permeable sf as a percentage of campus area stayed relatively constant at 63%. • The percentage of permeable space varies widely between campuses, from about 20% at the urban Foggy Bottom Campus to about 80% at the suburban Virginia Science and Technology Campus. • GW tracks progress in providing green space in terms of permeable area – a proxy to distinguish natural from built spaces in an urban environment.	Creating and maintaining green spaces to provide multiple benefits for humans and nature is important work but can be challenging in urban environments like GW's flagship Foggy Bottom Campus. By adding green roofs to buildings and converting impermeable space to green space, the university expanded the Foggy Bottom Campus permeable area by nearly 17% between FY11 and FY17. GW will continue working to add and enhance green spaces in D.C. with the aid of local partnerships and government incentives and across all its campuses through innovations in building and site design.
Short-term target: Design guidelines around outdoor space that are habitat friendly and promote non-invasive plants Note: This short-term target also pertains to target 1.2.	GW met this short-term target by publishing its *Sustainable Landscape Guidelines* in 2017.		

Achieved: GW has achieved the target. | **Not achieved:** GW did not achieve the target as defined. | **In progress:** GW is working toward a target that has a defined end (i.e., an end date, a percentage change, etc.). | **Ongoing:** GW is working toward a target that does not have a defined end.

Local impact | **Regional impact** | **Global impact**

GOAL 01: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 1.2: Enhance the biological richness/ diversity of campus	GW plants site-appropriate, native, noninvasive plants whenever possible and increases biodiversity by offering natural habitats for indigenous plants and wildlife. • Insecticide-free since 2014 • 667,000 beneficial insects (such as ladybugs and green lacewings) released annually to help manage pests • Native plants used to enhance pollinator habitat and bee populations	**PERCENTAGE OF UNIVERSITY LANDSCAPING BUDGET SPENT ON NONINVASIVE AND/OR NATIVE PLANTS** Data not available at time of publication.	Landscaping with native and noninvasive plants offers multiple benefits by reducing the need to water and control pests in our landscapes, increasing habitat for native species and offering educational opportunities. Development of GW's *Sustainable Landscape Guidelines* has been an important step toward meeting this target. GW has shifted its purchasing significantly toward native/noninvasive plants. Moving ahead, the university will develop new indicators to measure progress and support biodiversity on campus. These might include one or more indicators based on campus wildlife surveys.
Target 1.3: Reduce interior and exterior light pollution from university-owned and operated facilities	In fall 2016, GW conducted audits with a safety consultant and a lighting consultant, which gave the university varying perspectives on nighttime lighting. Based on the audits, the university updated its building design standards to be as efficient as possible and took steps to identify unnecessary exterior lighting. For example, the university specifies exterior "wall packs" – currently installed on more than 10 buildings – that only direct light downwards and use a light sensor to minimize unnecessary energy use.	**PERCENTAGE OF NEW CONSTRUCTION AND MAJOR RENOVATION PROJECTS THAT TAKE INTO CONSIDERATION THE GUIDELINES FOR LIGHT POLLUTION FOUND IN THE GW BUILDING DESIGN STANDARDS** One new construction project met Leadership in Energy and Environmental Design (LEED) lighting requirements.	The LEED lighting requirements have informed our approach but are not a perfect fit for an institution with multiple facilities that operate around the clock and are located in an urban environment where safety is a fundamental concern. Lighting audits helped GW identify an approach that prioritizes both efficiency and safety when determining the best nighttime lighting options for our campuses. As a result, we have met the intent of the long-term target but did not achieve the short-term target, which specifically focuses on the LEED lighting guidelines. GW is currently modifying its building design standards to incorporate light pollution in its guidelines for new construction. We have revised the indicator for this target and set a new short-term target.
Short-term target: 40% of new construction and major renovation projects meet LEED light pollution reduction requirements by 2017	The Milken Institute School of Public Health received LEED Platinum designation in 2014 and included credit for light pollution reduction.		

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

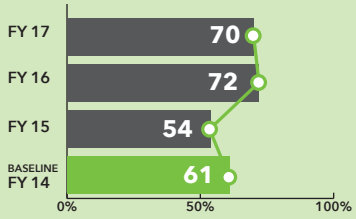
GOAL 01: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Short-term target: By 2019, 100% of new construction and major renovation projects take into consideration the guidelines for light pollution found in the GW building design standards			
Target 1.4: Research biodiversity in the Chesapeake Bay Watershed and work with local conservation/ preservation organizations	Dozens of biodiversity-related service learning and action research projects are underway. For example, Keryn Gedan, an assistant professor of biology, studies the areas of the Eastern Shore of the Chesapeake Bay where rising sea level is displacing salt marsh plant communities and has caused farmers to abandon land affected by saltwater intrusion. In addition, GW works with community partners to increase biodiversity. Projects range from restoring the oyster population and underwater grasses in the Chesapeake Bay to cleaning up streams in the watershed and planting gardens in our community.	**AMOUNT OF RESEARCH FUNDING FOR BIODIVERSITY-RELATED PROJECTS** Since 2012, GW raised approximately $792,000 in grants to fund local biodiversity research within the Chesapeake Bay Watershed.	Given GW's location in the Chesapeake Bay Watershed, researchers across the university find ample opportunities to study biodiversity impacts and bring their students into the projects. Pursuit of such funding is not required, but it is certainly recognized as a positive accomplishment by stakeholders on campus and in the community.
Target 1.5: Reduce light pollution in D.C. metropolitan area	GW regularly participates in Earth Hour – a global event that encourages people and organizations to turn off their lights for an hour and raises awareness about climate change. GW annually invites other universities in the Washington, D.C. area to take part as well.	**NUMBER OF PARTNERS** One partner	GW's focus has been to reduce light pollution on its campuses and to join World Wildlife Fund's annual Earth Hour event. The month-long preparation and outreach for Earth Hour brings significant attention to the issue of outdoor lighting on GW's campuses and increases engagement with students, faculty and staff. The university has yet to connect with additional partners to scale more broadly in the region.
Short-term target: Conduct on-site light pollution study with partner organization by 2015	We met our short-term target to conduct on-campus light pollution studies, although we accomplished it a year later than planned. • Conducted two audits in fall 2016, working with partners, to understand the effects of GW lighting		

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

GOAL 01: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 1.6: Increase sourcing of products that minimize impact on biodiversity and natural space Note: Targets 1.6, 2.7, 3.6 and 5.4 and their corresponding short-term targets are interrelated and support a comprehensive approach to sustainable procurement.	GW has formal purchasing strategies that include the categories mentioned below. The strategies and other purchasing practices help to reduce impacts on biodiversity and natural space. Examples follow: • Paper: GW's policy specifies a minimum of 30% recycled content for paper purchased through our major office supplies provider. Using recycled content helps to avoid the need to harvest trees and disturb forest ecosystems. • Construction: GW's Design Standards support our sustainability efforts and the creation of high-performance buildings. The standards include elements that contribute to the achievement of the LEED targets of sustainable sites, water efficiency, energy efficiency, materials and resource management and indoor environmental quality.	**PERCENTAGE OF NEW CONTRACT ACTIONS SOURCING LOW-IMPACT PRODUCT ALTERNATIVES** *Paper purchases containing 30% or more recycled content (in percentage of purchases based on dollars spent)* 	As a step toward the long-term target, GW met its short-term target to create sustainable procurement strategies in several categories. Moving forward, the university will continue to source low-impact alternatives and will consider additional targets for purchasing strategies. We will also revisit the indicators related to our sourcing targets to ensure they are meaningful and practical, for example, by tracking data from the Procurement department about LEED-related purchasing. Paper purchasing data shows widespread use of recycled content, but also there is room for improvement to purchase more paper that has a higher portion of recycled content. In FY16 and going forward, GW refined its paper purchasing analysis. Prior to FY16, only copy paper was reported. Going forward, GW analysis includes a greater variety of paper, including but not limited to envelopes, cardstock, pads and GW stationary such as letterhead and business cards. This change in methodology results in more accurate data. However, previous years' data may not be directly comparable.
Short-term target: Draft a sustainable procurement strategy for three major purchase categories (e.g., paper, electronics, water, furniture, food, vehicles, textiles) by 2015 Note: This short-term target also applies to targets 2.7, 3.6 and 5.4 but is not repeated in the scorecard.	GW has developed and implemented purchasing strategies that cover the following: • Paper • Construction • Bottled water • Electricity.		

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

GOAL 02

PROMOTE HEALTHY AIR AND CLIMATE

"Large-scale renewable energy, like GW's solar farm with Duke Energy Renewables, improves our energy future. Large institutions, such as universities and corporations, are using their amazing purchasing power to signal to the market that there is demand for renewable energy."

– LILY DONGE
PRINCIPAL, BUSINESS RENEWABLES CENTER, ROCKY MOUNTAIN INSTITUTE

Globally as well as locally, mitigating and adapting to climate change is one of the central challenges of our time. GW was the first university in Washington, D.C., to join the American College and University Presidents' Climate Commitment (ACUPCC) in 2008. In 2010, the university published its *Climate Action Plan* in which it committed to becoming carbon neutral across all three scopes of greenhouse gas (GHG) emissions by 2040. As part of its efforts to address climate change, in 2015 GW committed to develop, in partnership with the community, a plan to prepare the university to adapt to environmental, health and business disruptions resulting from climate change. Most recently, through Second Nature's Climate Leadership Network, GW joined the We Are Still In (commitment with other U.S. universities, cities and states in pledging to meet the goals of the Paris Agreement independent of the federal government's participation). Collectively the partners are moving the needle at a scale that none could do individually.

Carbon neutrality for GW will be achieved by reducing university emissions by at least 80 percent through efficiencies and cleaner energy sources and by using credible, local offsets to negate the remaining emissions. GW actively encourages the use of low-carbon options for travel and commuting and partners to reduce the overall dependence of our region on carbon-intensive energy. Many GW buildings are LEED-certified, with energy- and water-efficient equipment, green roofs and rainwater reuse systems among other sustainable features. GW's Eco-Building Program, established in FY2012, prioritizes improving building energy efficiency and enhancing information technology systems to reduce energy use. GW has also installed building dashboards and kiosks to encourage behavior change and engage the campus community in energy reduction efforts.

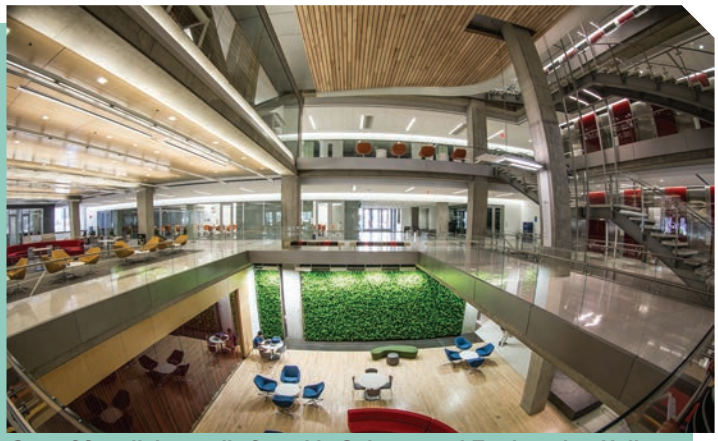
GW's ecosystem, like that of other urban areas, includes a wide variety of local microclimates because of the varying landscapes it contains. As built infrastructure replaces natural space, surfaces become impermeable

and dry, and urban regions tend to retain more heat than their rural surroundings, resulting in a phenomenon called the "urban heat island effect."[8] In addition, in recent years, scientists have concluded that the air within homes and buildings can be more polluted than the outdoor air in even the largest and most industrialized cities. Research indicates that people spend approximately 90 percent of their time within buildings, making indoor air pollution one of the greatest risks to human health in the urban environment.[9] The university aims to improve air quality with interior green spaces, the use of low-emitting interior finishes and building flush-out. Maintaining the tree canopy and green cover across GW's campuses also contributes to improved air quality and increases permeable space in an effort to combat the urban heat island effect around the university's campuses.

SPOTLIGHTS

Green walls provide more than just a burst of color

Living walls, like this one in the Science and Engineering Hall, help to increase indoor air filtration in addition to providing a green space inside buildings that the GW campus community can enjoy. As of the end of FY17, the university had five living walls on its campuses.



One of four living walls found in Science and Engineering Hall.

Four solar thermal systems on GW rooftops

Although GW lacks the space to install extensive solar arrays on its urban campuses, the university does its best with the space it has. One example is on the Virginia Science and Technology Campus, which has a small solar photovoltaic array. The installation includes several walkable panels (dubbed "Solar Walk"). The panels generate electricity through kinetic energy when people step on them, providing an interactive – as well as instructive – way to understand renewable electricity. GW also hosts several solar thermal systems that heat water in residence halls on the Foggy Bottom Campus. The university has plans to expand its portfolio to include solar photovoltaics as well. The campus is truly a test bed for renewable energy technologies.

A rooftop solar thermal system in the heart of Washington, D.C.

GW working collaboratively on resilience in the District of Columbia

In fall 2017, GW partnered with University of the District of Columbia and American University to join with the D.C. government to launch an initiative for higher education around climate adaptation and resilience. Several higher learning institutions in Washington, D.C., pledged to develop climate resilience plans, and the District of Columbia was named one of the 100 Resilient Cities.

This initiative has brought these institutions together to create an effective network that has attracted additional universities and national organizations to the effort to build climate resilience at the local level in our nation's capital. The network formed a unique partnership with Second Nature and The Nature Conservancy to create a framework and process for universities and colleges in Washington, D.C., to plan for climate resilience, as well as resources such as a risk matrix for evaluating local impacts. GW is using the tool in the process of creating its own climate resilience plan.

[8] U.S. EPA. (n.d.). Basic Information | Heat Island | U.S. EPA. Retrieved July 2012, from United States Environmental Protection Agency: http://www.epa.gov/hiri/about/index.htm (as viewed in 2012).

[9] U.S. EPA. (n.d.). The Inside Story | Indoor Air: A Guide to Indoor Air Quality. Retrieved January 2012, from United States Environmental Protection Agency: http://www.epa.gov/iaq/pubs/insidestory.html#Intro (as viewed in 2012).

CASE STUDY

SOLAR POWERS INNOVATIVE PARTNERSHIP

In 2017, GW celebrated its first full year of receiving half its electricity from three solar farms in North Carolina. At the time the project was announced in June of 2014, this solar contract was the largest ever signed by a U.S. institution and one that provided a groundbreaking new business model for other institutions seeking to expand their renewable energy options.

The story of this remarkable achievement is a textbook example of how a university can provide a test bed and proving ground for innovative solutions to major global issues.

The university's *Climate Action Plan*, completed by GW's Office of Sustainability in 2010, set a long-term target for carbon neutrality by 2040 and an interim target of a 40 percent emissions reduction by 2025. The plan spells out a preference for the tangible benefits of energy efficiency and renewable energy development over the more abstract purchase of Renewable Energy Credits (RECs). GW quickly discovered that in its close urban quarters, the university lacks the roof space and land to make a meaningful dent in its electricity consumption by using on-site solar, so it had to look elsewhere for reliable, cost-effective, large-scale renewable energy.

With unwavering support from the administration and operational functions, the office forged partnerships with other large energy users to leverage our combined purchasing power. GW worked with Customer First Renewables to manage a bidding process to identify the winning solution – solar photovoltaic power supplied by Duke Energy Renewables using panels located at three sites in North Carolina. Together with the George Washington University Hospital and American University (AU) – the members of the Capital Partners Solar Project (CPSP) – we purchase 100 percent of the output from the 53.5-megawatt solar photovoltaic arrays, cutting our collective carbon footprints by the equivalent of nearly 18,000 cars. As the anchor buyer, GW purchases about 70 percent of the project output, while George Washington University Hospital and AU buy the remainder.

The project is innovative in several ways:

- Purchasing partnerships are unusual among not-for-profit institutions, but aggregating the purchasing power of the participants was key to opening up economies of scale. The final cost to the university is projected to be less than what it would expect to pay if it used solely conventional electricity over the life of the 20-year term of the purchase agreement.

The Capital Partners Solar Project is a utility-scale solar farm in North Carolina.

CASE STUDY

CASE STUDY CONTINUED FROM PREVIOUS PAGE

- The agreement was structured to take advantage of the fact that high solar production – often driven by activities such as air conditioning use, which increases on hot sunny days – can help to displace high-cost conventional electricity.
- The solar power generated in North Carolina is fed into the same regional electricity grid to which all project partners are connected. Since electrons are fungible, the power purchased from North Carolina will displace electrons on our regional grid that otherwise would need to be produced by more carbon-intensive generation sources, thereby increasing the share of renewable generation in the regional power supply mix.
- Built on agricultural land, the project provides a reliable stream of income to farmers who are often buffeted by swings in weather and commodity prices, helping to enhance the resilience of the farmers and their communities.

Under the agreement, GW is purchasing 68 percent of the output of the solar project, AU receives 24 percent, and the George Washington University Hospital receives 8 percent. This electricity is equivalent to about half the electricity needs of GW and AU and about 30 percent of the electricity needs of the hospital. The approach pioneered by the CPSP has since been replicated by other large retail buyers, including higher education institutions such as Massachusetts Institute of Technology and Georgetown University. GW is looking ahead to additional steps we need to take toward carbon neutrality.

Capital Partners Solar Project by the numbers[10]

- 53.5 megawatts (MW) of new solar capacity on GW's regional electric grid
- 243,000 solar panels at three sites in North Carolina generate 121 million kilowatt-hours (kWh) of emissions-free electricity each year, taking normal photovoltaic panel degradation into account.
- 84,900 metric tons of carbon dioxide equivalent (MTCDE) abated annually
- Equivalent to taking 17,900 cars off the road

The partnership with Duke Energy Renewables also resulted in the creation of the Duke Energy Innovation Fund, which supports GW faculty and student research into clean energy. For example, the fund supported a living laboratory to study solar farms – a project that intertwined research and education by delivering a case study of Duke Energy Renewable solar farms' technical, financial and environmental facets and integrating real-world energy applications into graduate and undergraduate courses. In 2016 and 2017, the fund contributed $225,000 to GW research efforts.

"GW's leadership through the Capital Partners Solar Project is critical to creating a cleaner, more reliable grid and addressing climate change."

– LILY DONGE
PRINCIPAL, ROCKY MOUNTAIN INSTITUTE

GW was also instrumental in forming a partnership with Second Nature and the Rocky Mountain Institute (RMI) to provide higher education institution signatories of the Climate Leadership Commitment with complimentary access to RMI's Business Renewables Center in order to streamline and facilitate renewable energy procurement. The center provides a network of like-minded institutions and transparency into renewable energy markets.

[10] These data are for the total CPSP project. GW's portion of the project is 68.4 percent.

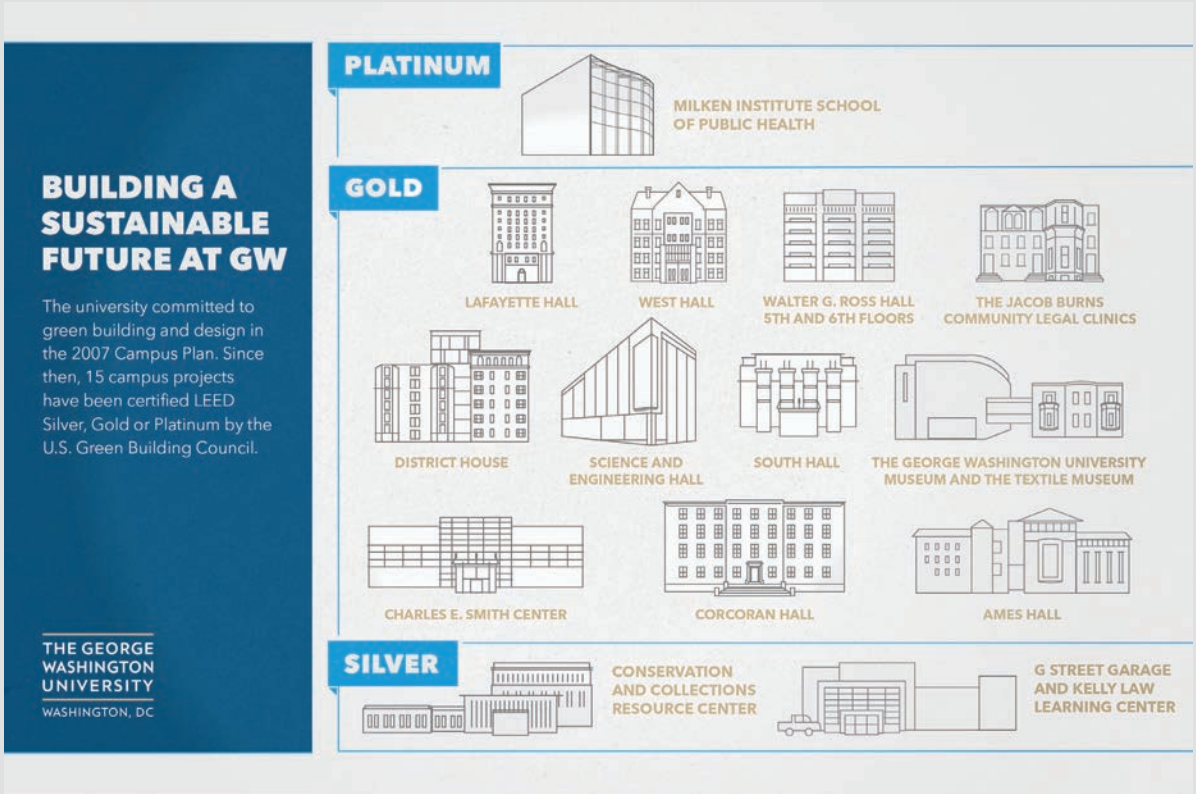
CASE STUDY

LEED-ING THE WAY TO MORE SUSTAINABLE BUILDINGS

Where would you expect to find an innovative take on how to cool a building? How about in GW's Science and Engineering Hall (SEH)? The approximately 500,000 square foot building, completed in 2015, meets the Leadership in Energy and Environmental Design (LEED) Gold standard. Rather than a conventional cooling system, chilled water is circulated through ceiling beams – an ingeniously simple solution that is more efficient than standard approaches. SEH is the largest academic building dedicated to science and engineering in the nation's capital and meets the needs of the university's growing research portfolio, providing a hub for discovery and new opportunities for cross-disciplinary collaboration.

It's also a prime example of how, by viewing a building as an ecosystem in itself, GW's green building strategy has helped to both reduce the use of natural resources and enhance ecosystem services, contributing to progress on multiple sustainability targets. The building incorporates numerous energy-efficiency features. It is powered by a cogeneration system, which combines electricity and heat production, located in nearby Ross Hall. This reduced the SEH carbon footprint by 8,100 metric tons per year – the equivalent of eliminating 1,500 vehicles or planting 1,875 acres of forest – compared with conventional energy sources. The SEH also

CASE STUDY CONTINUES ON NEXT PAGE



CASE STUDY

CASE STUDY CONTINUED FROM PREVIOUS PAGE

includes a high-albedo, or "cool," roof that reflects sunlight and saves energy. The chilled beams in the SEH improve cooling efficiency, as well as energy recovery wheels, which recover energy from the air and push it back throughout the building. The four-floor parking garage, built below the building to maximize space, includes electric car charging stations.

To building users, the most visible green features are attractive indoor spaces that provide natural light for people and plants, incorporating a living wall and other features to enhance indoor air quality and the well-being of the building's users. In addition, 10,000 square feet of the roof is vegetated. To cut water use and manage stormwater, rainwater is collected and used to flush the building's toilets.

GW's focus on sustainable buildings began in 2007 when the university pledged that all new buildings would meet the LEED Silver standard or better. Ten years later, GW has made good on the commitment: There are 12 LEED-certified buildings and three LEED-certified interiors on its campuses, including 12 Gold and one Platinum level. Like the SEH, these projects incorporate energy- and water-efficient equipment, green roofs and rainwater reuse systems, among other sustainable features.

According to Nancy Giammatteo, former director of facilities planning and design review in the Division of Operations, the green building strategy has become integral to university practices. "Now, we start thinking about sustainability from day one of design for each project. We are able to save a lot of energy and a lot of water and help the university's bottom line." These savings include these improvements:

GW achieved its first LEED Platinum certification for the Milken Institute School of Public Health.

- An average 20–35 percent improvement in energy performance, compared to the 10 percent required by LEED
- An average 30–40 percent improvement in water efficiency, compared to the 20 percent minimum required by LEED.

Giving older buildings their due

In some ways, improving the efficiency of existing buildings is even more difficult than designing efficiency in from the start. Yet the vast majority of GW's energy and water use occurs in existing buildings rather than new construction. Inspired in part by student interest, the faculty and staff from around the university who served on a GW Innovation Task Force took up the challenge and established a fund to finance sustainability improvements within existing buildings, which evolved into the Eco-Building Program. In its first six years, the program invested more than $25 million to address 62 buildings, representing over 70 percent of GW's square footage. Projects included retrofitting tens of thousands of lights, upgrading HVAC (heating, ventilation and air conditioning) systems, fixing or replacing more than 2,100 toilets, 1,700 showerheads and 3,100 aerators – with plans to continue these efforts for another four years.

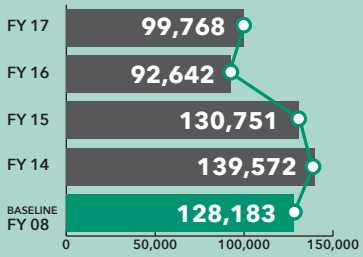
GOAL 02: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 2.1: Enhance tree canopy and green cover to help increase sequestration potential and outdoor air filtration capacity	GW's *Sustainable Landscape Guidelines* provide direction for maintaining and enriching the tree canopy on the university's Foggy Bottom Campus. The GroW Community Garden and seven green roofs also help provide green cover for GW's Foggy Bottom Campus.	**NO NET LOSS OF EXISTING TREE CANOPY AND GREEN COVER** **264** trees planted	GW has planted hundreds of trees, working with local partners. Tracking progress against the no net loss indicator, however, has proved challenging because of the difficulty of consistently tracking trees the university must remove due to disease, damage or other causes. Moving forward, GW will explore updating the university's tree inventory to gain insight into trends in tree canopy and green cover.
Short-term target: Offset square foot loss of existing tree canopy and green cover from natural causes or development with new planting	Since 2007, we have partnered with Casey Trees to improve the tree canopy on our Foggy Bottom and Mount Vernon campuses, planting a total of 264 trees in 10 years. In an effort not to lose green cover, GW has been developing new plantings and renovating declining ones at a rate of about 12 per year, with about half of those occurring on the Foggy Bottom Campus.		
Target 2.2: Enhance livability of indoor space and increase indoor air filtration capacity	We aim to improve air quality by using low-emitting interior finishes and conducting building flush-outs prior to occupancy. We strive to increase air filtration with interior green spaces, such as living walls, potted plants and other greenery. We have five living walls on campus.	**PLANTINGS IN INDOOR SPACES** Data not available at time of publication.	Many GW buildings include indoor plantings ranging from living walls to potted plants. Occupants of these buildings report that the plants enhance their well-being and improve indoor air quality. Indoor plantings are installed and maintained by each building's management and/or occupants, and central records of the number and type of plantings have not been available. Moving forward, GW housekeeping will conduct an annual inventory of indoor plantings.

Achieved: GW has achieved the target. | **Not achieved:** GW did not achieve the target as defined. | **In progress:** GW is working toward a target that has a defined end (i.e., an end date, a percentage change, etc.). | **Ongoing:** GW is working toward a target that does not have a defined end.

Local impact | **Regional impact** | **Global impact**

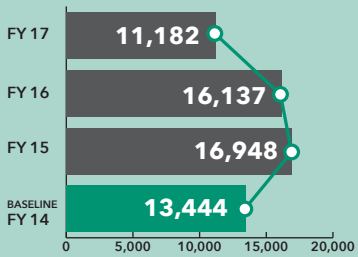
GOAL 02: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 2.3: Reduce GW's total carbon footprint by 80% by 2040	GW has reduced its overall carbon footprint significantly with more efficient buildings and through the use of renewable energy. The Capital Partners Solar Project (CPSP) is designed to generate 50% of GW's electricity from solar energy. As part of the Eco-Building Program, GW prioritized improving building energy efficiency and enhancing information technology systems to reduce energy use. GW installed building dashboards and kiosks to encourage behavior change and engage the campus community in energy reduction efforts.	**TOTAL NET METRIC TONS OF CARBON DIOXIDE EQUIVALENT (MTCDE) EMITTED BY GW**  Note: For FY17 and going forward, GW used the University of New Hampshire's updated carbon calculation methodology called SIMAP. As a result, portions of previous years' data may not be directly comparable. However, applying the new methodology indicates a continued downward trend in emissions, with an increase in Scope 1 emissions due to on-site cogeneration coming online and a larger decrease in Scope 2 emissions due to greater production from the CPSP.	By 2040, we plan to reduce university emissions by at least 80% through energy-efficiency measures and by using cleaner energy sources. We will use credible, local offsets to negate the remaining emissions. We have revised the indicator to better match the target's focus on GW's total carbon footprint. Building energy use is an important component of GW's greenhouse gas (GHG) footprint, and the university continues to make investments in energy-efficiency projects through the Eco-Building Program. At the same time, the purchase of solar power through the CPSP has become an important way to reduce GHG emissions. GW's trend of declining emissions and 22% reduction over the baseline as of the end of FY17 puts the university on track to meet its 2025 short-term target. If GW continues to make shifts in its energy purchases and continues to improve energy efficiency in buildings, we expect to reach the 2040 goal. Fleet emissions and shuttle emissions, though a minor component, are included in the indicator calculations for Targets 2.3 and 2.4.
Short-term target: By 2025, reduce campus GHG emissions by 54,000 metric tons of carbon dioxide equivalent (MTCDE) through building energy efficiency and conservation measures	Between FY08 and FY17, GW reduced energy usage in its buildings through energy-efficiency measures. This resulted in a reduction of GHG emissions by 13,217 MTCDE, or 13%.		

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

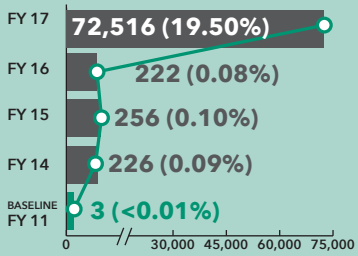
GOAL 02: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 2.4: Increase proportion of commuters using low-carbon commuting options vs. single-occupancy vehicles	Taking advantage of our location in an urban environment, GW faculty, staff and students frequently walk, bike and use public and shared transportation, and the university encourages use of the existing multi-modal transportation infrastructure. In addition, GW supplements publicly available modes with these options: • Hosting car sharing services (the first college campus to do so) • Installing electric vehicle charging stations • Providing nearly 500 bike rack spaces, with another 284 planned • Offering a map that highlights low-carbon transportation options • Incentivizing carpooling.	**MTCDE EMITTED DUE TO STUDENT, FACULTY AND STAFF COMMUTING**  Note: For FY17 and going forward, GW used the University of New Hampshire's updated carbon calculation methodology called SIMAP. The updated methodology focuses on full-time equivalent faculty, staff and students (rather than total population), and these changes likely account for much of the decrease in calculated emissions.  	GW is fortunate to be located in an area with abundant options for getting around without using single-occupancy vehicles. The university has found that encouraging creative use of and supplementing existing options works better than developing new, centralized ones. In FY15, GW refined its transportation survey methodology, resulting in more accurate data. This is one reason there is a rise in the estimated emissions associated with commuting for FY15 and FY16, while the FY17 decrease is likely due to changes in the calculation methodology.
Short-term target: Establish staff telecommuting policies for offices on each GW campus	We do not have specific policies for each campus, though we do have a telecommuting guide that applies to all employees. Telecommuting varies by location and department, with limited central tracking.		

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

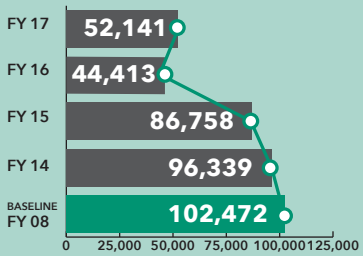
GOAL 02: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 2.5: Generate 10% of energy demand through on-site low-carbon technologies by 2040	In addition to some small-scale, on-site solar power (see short-term target below), we have also installed a combined heat and power plant to serve some of the electric and/or heating loads in five buildings. GW anticipates the system will generate between 10% and 15% of GW's total energy consumed and, by combining heat and power production, will be more efficient overall than conventional heat production.	**MEGAWATT-HOUR (MWh) OUTPUT FROM ON-SITE LOW-CARBON ENERGY GENERATION** ***(in MWh and percentage of total energy demand)*** 	GW has made use of its limited roof space to install solar thermal systems and is exploring expanding the use of solar photovoltaics. However, the vast majority of the university's renewable energy will continue to come from the off-site Capital Partners Solar Project (CPSP), which produces power at a much greater scale. GW's on-site cogeneration system became fully operational and produced heat and electricity during FY17, which is reflected in the large increase in on-site low-carbon energy generation for the year. As a result, the university has significantly overachieved on its target for on-site low-carbon generation. The indicator for this target has been revised to better measure progress by including power from the cogeneration plant along with on-site solar thermal and photovoltaics.
Short-term target: Complete a number of new installations of small-scale, on-site low-carbon technologies by 2015	The Virginia Science and Technology Campus has a small solar photovoltaic array. The installation includes several walkable panels that generate electricity from the kinetic energy created when people step on them. GW also has four solar (thermal) hot water systems on the rooftops of residence halls on its Foggy Bottom Campus and has installed a cogeneration plant. The university is planning more on-campus solar installations.		

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

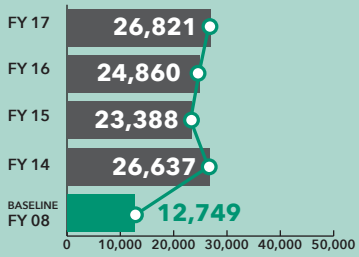
GOAL 02: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 2.6: Decrease the carbon intensity of the region's electricity fuel mix and create a system for credible, local carbon offsets	GW partnered with American University and the George Washington University Hospital to purchase electricity from three solar farms in North Carolina. Half the university's electricity now comes from these solar arrays, and the project helps decrease the overall dependence of the region on carbon-intensive energy. The project also succeeded in one of its aims, which was to demonstrate how large retail buyers of electricity can take action to change their own fuel mix to reduce carbon emissions.	**MTCDE EMITTED THROUGH BUILDING ENERGY USE**  Notes: • Indicator (MTCDE emitted through building energy use) reflects the portion of GW's GHG footprint that draws on the regional grid. • Emissions data reflect reductions due to offsets related to the CPSP in FY15 and FY16. • Data include energy consumed from natural gas and diesel (Scope 1 stationary combustion), as well as energy consumed from electricity and steam (Scope 2). • For FY17 and going forward, GW used the University of New Hampshire's updated carbon calculation methodology called SIMAP. As a result, previous years' data may not be directly comparable.	In addition to the solar power GW is now purchasing with its partners, the region's electricity fuel mix has changed, primarily due to a shift from coal to natural gas by regional utilities. While the university cannot unilaterally change the regional fuel mix, it will continue to promote its Capital Partners Solar Project (CPSP) as a model for other large buyers to consider. In this way, GW encourages development of further utility-scale renewable energy on the grid. GW will continue to explore partnering with start-ups focused on local carbon offsets.
Target 2.7: Increase sourcing of low-carbon footprint products Targets 1.6, 2.7, 3.6 and 5.4 and their corresponding short-term targets are interrelated and support a comprehensive approach to sustainable procurement.	GW has the opportunity to source low-carbon footprint products in its fleets, vehicles, appliances and technology and building equipment. Thus far, GW has addressed low-carbon purchasing through its electricity procurement process, which informed the formation of the Capital Partners Solar Project (CPSP) and the terms of its power purchase agreement.	**PERCENTAGE OF NEW CONTRACT ACTIONS SOURCING LOW-CARBON ALTERNATIVES** Data not available at time of publication.	GW is integrating options for low-carbon energy into its purchasing strategies going forward. As a step toward the long-term target, GW met its short-term target to create sustainable procurement strategies in several categories (see short term target 1.6). Moving forward, the university will continue to source low-impact alternatives and will consider additional targets for purchasing strategies. We will also revisit the indicators related to our sourcing targets to ensure they are meaningful and practical to track.

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

GOAL 02: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 2.8: Mitigate air travel mileage of GW staff and faculty	Travel by air is an important element of faculty members' academic contributions, student study abroad, fundraising efforts and staff training. GW does not seek to reduce travel but rather to mitigate emissions associated with it.	**MTCDE EMITTED VIA AIR TRAVEL**  Note: Data include air travel procured by the university for all individuals, which may include student travel if paid for by GW.	GW aims to mitigate 100% of emissions related to staff and faculty air travel by 2040. The university is exploring offset programs that may help address this significant portion of the carbon footprint. To date, GW has prioritized carbon reductions in its energy usage in buildings, commuting, grounds, procurement and other on-site related emissions, which are anticipated to achieve an 80% reduction in GW's overall GHG emissions.
Short-term target: Implement carbon measuring and reporting mechanism for staff and faculty air travel	GW has established a process to measure and report this indicator by tracking the amount spent on air travel and converting to emissions.		

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

GOAL 03

FOSTER CLEAN AND ABUNDANT FRESH WATER

"As the climate changes and there is increased likelihood of major storm events, the District needs leading institutions to help address flooding. GW is doing its part to capture stormwater runoff through green infrastructure on campus."

– KATE JOHNSON
CHIEF OF GREEN BUILDING AND CLIMATE BRANCH, D.C. DEPARTMENT OF ENERGY & ENVIRONMENT

Water is a precious natural resource that healthy ecosystems manage effectively – providing us with purified, fresh water and regulating water flow related to runoff and flooding. These ecosystems services can be interrupted in an urban environment due to impermeable surfaces that cause rainwater to collect as surface runoff rather than returning to the ground. With the onset of climate change, flooding and water quality will be an increasing challenge in the Washington, D.C. area and Chesapeake Bay Watershed. As outlined in the *GWater Plan*, released in 2010, GW is committed to reducing its water consumption, increasing rainwater retention, enhancing water quality and reducing the use of bottled water. The university anticipates that this will support the resilience of GW and the region in the face of a warming planet.

Like many older cities, Washington, D.C.'s infrastructure includes combined sewage and stormwater sewers, or CSOs. During significant rain events, runoff that contains both stormwater and sewage contaminates local water bodies, including the Potomac and Anacostia rivers and Rock Creek, all of which feed into Chesapeake Bay. In addition to the water quality impacts, the contamination leads to a need for further energy-intensive treatment at the city's water treatment system.

The university works to increase the permeable space on our campus and capture stormwater, so it can be reused for irrigation and other purposes on GW's campuses – returning that water back to the ground where soil will filter it and release it to ground and surface water, rather than letting it run off to be returned by storm sewers to local bodies of water. Reducing and slowing runoff also helps to avoid overwhelming the city's antiquated infrastructure during rain events.

In addition, given the energy and resource intensity of processing fresh water, GW takes steps to reduce its overall consumption of potable water. The university has retrofitted a growing number of its buildings to use low-flow water fixtures and aerators to help reduce water consumption indoors. GW also uses a number of techniques to reduce water consumption related to landscaping, lessening the need for irrigation and

making use of smart irrigation technologies where supplemental water is necessary to maintain a healthy landscape.

Finally, the increased use of disposable bottled water is an unsustainable trend that has an impact on our region and globally as it results in vast quantities of solid waste, removes drinking water from elsewhere in the world in unsustainable ways, is costly for consumers and is associated with a large carbon footprint related to the manufacture, transport and disposal of the bottles. Plastic bottles that are not properly recycled or disposed of have the potential to wind up in storm sewers and eventually the ocean. As a result, sand, sea salt and sea life are contaminated with microplastics as the waste breaks down into smaller, nondegradable particles over time. To help curb the use of bottled water on campus, GW has installed water bottle filling stations to encourage the university community to drink filtered tap water instead of bottled water.

SPOTLIGHTS

Conserving water in GW buildings

GW has made significant investments since the summer of 2015 to reduce potable water consumption through the Eco-Building Program. The university has repaired or replaced toilets, replaced showerheads and installed aerators in more than 40 buildings, improving the water usage of approximately 2,100 toilets, 3,100 faucets, 1,700 showerheads and 180 urinals. In buildings where at least one year of post-retrofit data are available, water consumption during the most recent fiscal year was 29 percent lower than the historic average.

Low-flow water fixtures reduce GW's water consumption by nearly 30 percent.

Drought tolerant landscaping can be found on campus.

Landscaping with water in mind

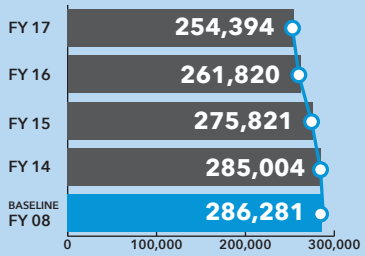
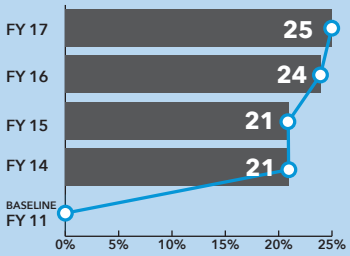
The university reduces potable water use in its landscaping by using native plants to reduce the need for irrigation, using smart irrigation systems with soil moisture sensors to determine when plants need water and harvesting rainwater for reuse where feasible. GW has eight campus locations that retain and reuse stormwater for everything from irrigating plants to providing water for toilets and decorative fountains.

Parking lot transformed into green and open space

In 2010, GW transformed a parking lot into a water reclamation park ("Square 80") that offers a respite from the busy urban activity that surrounds it. In addition to reclaiming green space, this park features pervious paving, biofiltration planters, rain gardens, bioswales and roofwater collection. The stormwater captured can be reused on campus, and the park includes educational signs to explain the various features and their significance.

Square 80 features pervious paving along with other technology to manage and reclaim rainwater.

GOAL 03: TARGETS

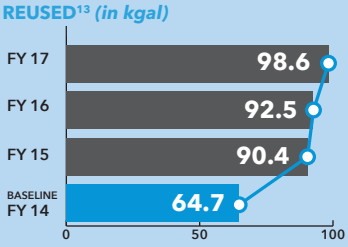
TARGET	PROGRESS	INDICATOR	REFLECTION
Target 3.1 25% absolute reduction in potable water consumption over 10 years from FY08 baseline	In addition to the low-flow water fixtures installed throughout the university, GW also reduces the need for potable water in its landscaping by using native plants that require less irrigation, using moisture sensors to determine when plants need water and harvesting rainwater for reuse (see Target 3.3).	**TOTAL ANNUAL WATER[11] CONSUMPTION (*in kgal*[12])**  	Currently, GW is not on track to meet this target. Cooling towers, which help to regulate the temperature of campus buildings, account for a large portion of the university's potable water use. As such, GW upgrades cooling towers as a part of ongoing maintenance and prioritizes water efficiency in the design of new buildings. The university has completed a number of new construction projects that avoid the need for cooling towers by incorporating chilled beams into the infrastructure of the buildings. In addition, water efficiency in plumbing fixtures, such as sinks, showers and toilets, will be an ongoing priority for modernization projects through the GW's Eco-Building Program. Looking ahead, the university will further evaluate how it uses fresh water, benchmark its goals against those of other universities, continue to identify reduction opportunities and modify related targets as needed. As GW works toward its climate adaptation plan, it will also take a closer look at climate-change risks related to reliance on local water infrastructure.
Target 3.2: Retrofit 10% of unmanaged impermeable square footage (sf) by 2022 compared with an FY11 baseline	GW works to steadily increase its permeable space and better manage stormwater. To this end, the university has established gardens, water reclamation parks, green roofs and a network of cisterns and rain barrels to capture rainwater. For example, in 2010, GW transformed a parking lot ("Square 80") into a green space that reclaims water.	**PERCENTAGE CHANGE OF IMPERMEABLE SQUARE FOOTAGE COMPARED WITH FY11**  Note: Over time, GW has increased the permeable square footage on its campuses by converting impermeable space to permeable space. The data shows the percentage increase of permeable square footage over FY11 due to that conversion.	This target differs from Target 1.1 due to the inclusion of stormwater management systems. Since we first set this target, the D.C. Department of Energy and Environment (DOEE) has released stormwater regulations that provide language and metrics for managing impermeable space. In response, we have updated this target and indicator to more closely align with those regulations. A review of GW's progress against this new target shows that we are making progress due to the university's acquisition on the Virginia Science and Technology Campus and to low-impact development on the Foggy Bottom Campus. GW will continue to incorporate stormwater capture technologies into new construction across our campuses.

[11] Data graph depicts potable water consumption.
[12] kgal = kilogallon or 1,000 gallons

Achieved: GW has achieved the target. | **Not achieved:** GW did not achieve the target as defined. | **In progress:** GW is working toward a target that has a defined end (i.e., an end date, a percentage change, etc.). | **Ongoing:** GW is working toward a target that does not have a defined end.

Local impact | **Regional impact** | **Global impact**

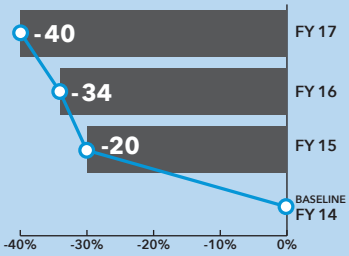
GOAL 03: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 3.3: By 2021, reuse all retained stormwater for greywater systems, cooling towers and irrigation	There are eight locations on campus outfitted to collect stormwater for reuse, with a retention capacity of approximately 99,000 gallons. In addition, the university has a 16,500-gallon capacity cistern for stormwater detention. The water captured in this cistern is not reused, but the cistern helps to manage stormwater runoff by capturing it and releasing it over time, mitigating flooding and the water quality impact of heavy precipitation falling on impervious surfaces such as the roads and sidewalks around the campus.	**TOTAL RETAINED STORMWATER REUSED[13] *(in kgal)*** 	When it comes to water management, stormwater retention is a major priority in the Chesapeake Bay region, surpassing even potable water use in its importance. GW uses multiple methods to capture and use stormwater and to slow runoff. Measuring the capacity GW has to store rainwater in barrels and cisterns is easily achieved. However, tracking how much the university actually captures and then reuses is more difficult. In the future GW plans to add meters that will measure rainwater reuse, thereby improving reporting for this target. In the meantime, the data available reflect the retention capacity of the university's rainwater capture systems that allow for reuse. The data do not include the capacity of the cistern we use to capture stormwater and slowly release it into the municipal sewer. GW has updated the related indicator to more specifically measure the reuse of retained stormwater rather than the total reclaimed.
Target 3.4: Encourage replenishment of the Chesapeake Bay Watershed through projects on GW's campus that qualify for water quality trading schemes	Infrastructure projects that reduce stormwater runoff with best management practices (such as green roofs and rainwater harvesting systems) and that have retention volumes in excess of regulatory requirements can earn Stormwater Retention Credits (SRCs) from the D.C. DOEE. The SRC program targets the Potomac and Anacostia watersheds, which, in turn, replenish the Chesapeake Bay Watershed. To earn SRCs, projects must pass post-construction and ongoing maintenance inspections. Most recently, GW developed maintenance requirements for the systems it believes qualify for SRCs.	**NUMBER OF PROJECTS AND/OR CREDITS ACHIEVED** Data not available at time of publication.	In the near term, GW is completing the SRC application process. We will apply earned credits to projects with stormwater improvement features.

[13] Due to data availability, GW is reporting the growth of stormwater retention capacity over time, rather than the amount retained and reused over time. The university is taking steps to effectively measure stormwater reuse in the future. Data reflect a change in methodology between FY15 and FY16 due to refinements in how GW measures stormwater retention capacity

Achieved | Not achieved | In progress | Ongoing | Local impact | Regional impact | Global impact

GOAL 03: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 3.5: 50% reduction in university expenditure on bottled water over five years from FY14 baseline	Since this target was established, 67 water bottle filling stations have been installed in buildings across GW's three primary campuses, encouraging people to drink more filtered tap water instead of bottled water. Not all the fountains have counters, but many do. Based on those counters, at least 1,380,000 bottles had been filled as of the end of FY17.	**UNIVERSITY EXPENDITURE FROM THE PROCUREMENT DEPARTMENT ON BOTTLED WATER** *Reduction in GW expenditure for bottled water (%)*  Notes: • Data does not include bottled water purchases made by staff and faculty outside of the centralized procurement process. • Data does not include fuel surcharge for delivery.	This target originally had a baseline of FY11. However, because we're not able to gather relevant data earlier than FY14, we have adjusted the baseline. Although we are making progress in this area, there is still more work to be done – for instance, by installing more drinking water filtration units on our campuses. We will also begin monitoring the fuel surcharge associated with the delivery of bottled water.
Target 3.6: Increase sourcing of low-water footprint products Targets 1.6, 2.7, 3.6 and 5.4 and their corresponding short-term targets are interrelated and support a comprehensive approach to sustainable procurement.	GW has established a policy to decrease the purchase of bottled water in favor of filtered water systems, and building design standards include requirements for low-flow, efficient water fixtures.	**PERCENTAGE OF NEW CONTRACT ACTIONS SOURCING LOW-WATER ALTERNATIVES** Data not available at time of publication.	As a step toward the long-term target, GW met its short-term target to create sustainable procurement strategies in several categories. Moving forward, the university will continue to source low-impact alternatives and will consider additional targets for purchasing strategies. We will also revisit the indicators related to our sourcing targets to ensure they are meaningful and practical to track.

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

GOAL 04

SUPPORT SUSTAINABLE FOOD PRODUCTION SYSTEMS

"Our partnership with the GroW Garden has a significant impact for those participating in Miriam's Kitchen's Permanent Supportive Housing program. We are now able to provide fresh vegetables from the GroW Garden to residents all over the city who can't afford them or don't have access. It's a great pairing with our prepared meals program, and the feedback has been all positive!"

– CHERYL BELL
EXECUTIVE CHEF, MIRIAM'S KITCHEN

Urban centers are highly dependent on rural farm communities near and far for their supply of food. By encouraging local food production, when possible, cities can reduce the distance needed to transport food, lower food prices, better manage water resources, increase local green space and ensure a better and more diverse diet for their citizens.

GW strives to provide sustainable – local/community-based, fair, ecologically sound and humane – food options for the campus community. As of June 2018, SAGE Dining Services operates Pelham Commons, the institutional dining venue on the Mount Vernon Campus. SAGE focuses on providing healthy, fresh, balanced menu options; supports local and regional distributors; and prioritizes environmentally responsible practices from the way food is prepared and served to how food scraps are disposed. In addition, "Dining Cash" (GW's student dining cards) allows students to eat at a variety of neighborhood restaurants on GW's campuses and across Washington, D.C. Dining Cash is also accepted at the local farmers market and with community-supported agriculture (CSA), which provides local produce by subscription. In addition, the university helps to provide sustainable food options to the broader community by donating food harvested from the GroW Community Garden on the Foggy Bottom Campus to Miriam's Kitchen, a local organization that supports individuals experiencing homelessness.

At the urging of students, in April 2014, GW joined the Real Food Challenge – a national, student-led movement with a goal of providing "real food" (defined as local/community-based, fair, ecologically sound and humane) to college students. At the time, the university's on-campus institutional dining venues provided 9.6 percent real food, as defined by the Challenge. GW committed to increase that to 20 percent by 2020, making it the first D.C.-based higher education institution to do so. In May of 2016, just before the university's main dining facility closed, GW certified 14 percent of its institutional dining in the Real Food Challenge.

Being part of the Real Food Challenge has helped GW focus its efforts on this issue and identify what is important to students when it comes to food offerings. However, in recent years, dining options for students have shifted to primarily retail vendors rather than traditional dining halls. Only 2.5 percent of the dollars students spend through the GW dining program is spent at institutional dining venues on the Mount Vernon Campus. As a result, GW can no longer effectively report against the Real Food Challenge, though we continue to support its principles. Looking ahead, GW is considering different metrics or certifications that align with the university's current dining program/offerings and that will help it achieve its objectives to educate students, impact the supply chain and provide sustainable options.

SPOTLIGHTS

GroW Garden offers a lesson in sustainability

In 2009, GW students proposed and led the development of the GroW Community Garden on the Foggy Bottom Campus in downtown Washington, D.C. The students who maintain this organic, urban garden seek out local vendors who can provide them with pesticide-free soil, mulch and compost and use water from a 400-gallon rainwater harvesting system. To encourage the use of local food and further benefit GW students and the wider community, the GroW Garden team collaborates with the local Farmers' Market to promote the garden and the benefits of urban gardening, donates hundreds of pounds of food annually to Miriam's Kitchen (a local organization that aims to end chronic homelessness) and facilitates Community Supported Agriculture (CSA) shares for students.

The student-managed GroW Community Garden was established in 2009.

GW pledges a healthier campus

Not that long ago, food was a personal, not a policy, issue. Over the past several years, multiple initiatives at GW have helped to contribute to a sea change in awareness of the interconnections of food, sustainability and social justice both at the university and in the broader community.

GW raises awareness about environmentally friendly farming and eating practices through courses, community outreach and campus gardens.

In 2011, GW hosted State of the Plate D.C., the first local conference of its kind, to discuss sustainable farming, animal product preparation, the myths and realities of food chain labeling and supply chain management. Since 2013, Planet Forward has hosted more than 15 salons and summits on feeding the planet in a sustainable way. Other events have included a Food Tank Summit, hosted by the university since 2016, which develops solutions and environmentally sustainable ways of alleviating hunger, obesity and poverty. And in partnership with the USDA Agricultural Marketing Services, GW co-hosted a Local Food Impacts conference in 2017. In addition to these events on campus, GW has raised awareness about environmentally friendly farming and eating practices in the classroom and in the community through new and existing courses, community outreach and campus gardens.

SPOTLIGHTS

Food institute to sprout on GW's city streets

In September 2015, the university established the GW Food Institute – a home for students and faculty engaged in research about things related to food, from sustainable agriculture to the way diet and meals shape society. Now called the Food Policy Institute, the effort is housed in the Milken Institute School of Public Health. Research projects focus on everything from food worker safety to school meal reform to sustainable diets and more. The institute is also a hub for student resources, including food-related courses, volunteer opportunities and various events. GW faculty collaborate with José Andrés, an internationally recognized chef and innovator, to offer several courses on food studies and food sciences. To date, the courses have included two events for the public to join GW students while learning about sustainability opportunities in restaurants, as well as the impact of culture on food choice.

The GW Food Institute was established in 2015.

Urban apiaries serve as research tool

GW research teams tend honeybee hives as part of GW's apiary installation on the Foggy Bottom Campus, one of the largest in Washington, D.C. This apiary is used to conduct research on diseases and behavior of honeybees, as well as to study pollination and honey production. GW researchers also study the positive effect GW's honeybees have had on vegetable food production on campus. The presence of honeybees on GW's Foggy Bottom Campus has shed new light on the need to enhance its biological diversity by planting increasingly more pollinator-friendly and native plants, supporting a wide variety of pollinators.

Apiaries installed for research purposes resulted in more pollinator-friendly and native plants on campus.

GOAL 04: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 4.1: Produce food on campus	The GroW Community Garden on the Foggy Bottom Campus contributes food to a local organization that provides meals to individuals experiencing homelessness.	**POUNDS OF FOOD PRODUCED ON CAMPUS** **500 lbs** of food produced on campus during FY17[14]	GW's original intent was to feature the food grown on campus in on-campus dining venues. In exploring this idea, the university found that the harvest from the local growing season does not coincide with the time when students are on campus. As a result, GW is no longer aiming to sell food grown on campus in campus venues but instead focuses on how it can best share that food through donations. In addition, Dining Cash works at the local farmer's market and for subscriptions to a food share from a local Community Supported Agriculture (CSA) farm program.
Short-term target: Provide food grown on campus to the GW community	GW has increased edible plantings across campus. Depending on the time of year and the location, planting beds might contain chili peppers, tomatoes, carrots, basil and rhubarb, among other edibles. When the plants are ready for harvest, GW sends out notices inviting students, faculty and staff to take some of the food free of charge.		
Target 4.2: Engage with GW dining program venues and catering vendors to encourage them to provide sustainable food and use sustainable practices	In 2014, GW joined the Real Food Challenge, indicating its intent to provide local/community-based, fair, ecologically sound and humane food in institutional campus dining venues (e.g., dining halls). We committed to procuring 20% "real food" by 2020. In FY17, GW established a dining model whereby GW students purchase primarily from retail dining partners, limiting our ability to fulfill the Real Food Challenge commitment.	**NUMBER OF DINING PROGRAM VENUES AND CATERING PROVIDERS WITH SUSTAINABLE FOOD AND SUSTAINABLE PRACTICES** GW does not currently engage in any sustainable food programs with dining program venues.	During FY16, GW recorded 14% "real food" served in its institutional dining venues on campus. Sustainable food is an important issue to GW and its students. The university will not be reporting against the Real Food Challenge moving forward because it is no longer an accurate measure of the sustainability of the food that the majority of GW students eat most of the time due to the change in the open dining plan. However, the university continues to support the premise of the Real Food Challenge and works to enact its principles where possible and to encourage and disclose sustainable food options. GW has revised the indicator and targets to better reflect the shift in its dining program. Moving forward, the university will evaluate sustainable food metrics and certifications that align with its programs and will help it meet its objectives.

[14] GW estimates the GroW Community Garden produced 500 pounds of food in FY17. This number varies from year to year with the changes in the harvest. The university will monitor the amount of food more closely in future years.

Achieved: GW has achieved the target. | **Not achieved:** GW did not achieve the target as defined. | **In progress:** GW is working toward a target that has a defined end (i.e., an end date, a percentage change, etc.). | **Ongoing:** GW is working toward a target that does not have a defined end.

Local impact | **Regional impact** | **Global impact**

GOAL 04: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Short-term target: Pilot a program with three to five vendors by 2018 to provide students with greater transparency and information about sustainable food choices	GW is evaluating options for further transparency and disclosure related to options for sustainable food and practices.		
Target 4.3: Source food from regional sources	The vendor running the dining hall on GW's Mount Vernon Campus through mid-2018 worked with local farmers to provide fresh, seasonal food. In June 2018, GW transitioned to SAGE Dining Services, an organization that supports local and regional distributors and grows herbs and vegetables in on-site gardens.	**PERCENTAGE OF UNIVERSITY EXPENDITURE ON "REAL FOOD" (LOCAL, FAIR, ECOLOGICALLY SOUND AND HUMANE)** 10% FY14 18% FY15 14% FY16 Note: Data generated using Real Food Challenge calculator.	As part of the Real Food Challenge, which includes local/community-based food as one of its focus areas, GW tracked the source and producer origin of the food served in its institutional dining venues (e.g., dining halls). FY16 was the final year GW had a Real Food Challenge-certified dining venue. Going forward, this target will be retired. Local sourcing will be considered as part of the efforts to achieve Target 4.2.
Short-term target: Highlight all food in GW run venues with its producer origin	GW tracked the producer origin for food served in our Mount Vernon dining hall through FY16.		
Target 4.4: Raise awareness about environmentally friendly farming and eating practices	Over the past several years, GW has invested in programs, including the Office of Sustainability, Urban Food Task Force, Planet Forward, the Sustainability Collaborative, and the GW Food Institute, that work on several fronts to raise awareness in this area.	**ENGAGED IN AWARENESS CAMPAIGNS** FY14 ✓ FY15 ✓ FY16 ✓ FY17 ✓	As the university evaluates sustainable food metrics and certifications moving forward, it will reach out to and communicate with students about sustainable options through media and engagement programs. This target previously also addressed nutrition awareness. Moving forward, nutrition will be covered in separate programming. This target was created at a time when there was little awareness on campus and in the broader community about sustainable food issues, but sustainable food is now part of GW culture and has many supporting initiatives. Given the progress on campus, going forward this target will focus on engagement around sustainable options in GW's dining program.

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

GOAL 04: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 4.5: Increase transparency of food served on campus	GW's participation in the Real Food Challenge increased transparency related to food served in the university's institutional dining venues. In addition, the vendor operating the dining hall at the Mount Vernon Campus through mid-2018 identified options that are part of its wellness program, which has guidelines for calorie counts.	**NUMBER OF THIRD-PARTY CERTIFICATIONS USED** *Participation in the Real Food Challenge* FY14 ✓ FY15 ✓ FY16 ✓	The Real Food Challenge applies to fewer on-campus dining venues as GW has shifted to a dining model focused on retail establishments. As such, GW will no longer participate in the Real Food Challenge. The university will continue exploring ways of sharing information about the sustainability of student dining.
Short-term target: Conduct "GW Food Footprint" for some products in 2013	The Real Food Challenge emphasizes local/community-based, fair, ecologically sound and humane food. Participating universities, including GW through 2016, disclose information related to these focus areas, which students can access on the Real Food Challenge website.		
Target 4.6: Integrate food studies into curriculum and research initiatives at the university	In 2012, a student task force raised the issues of food studies and food sciences as important areas of focus, and the university began its commitment to integrating the study of sustainable food into its curriculum and other initiatives. In 2015, GW launched the Food Institute, now called the Food Policy Institute, which extends and amplifies these efforts through faculty research, courses and other resources for students. The Sustainable Plate is an interdisciplinary course that focuses on the connection between dietary choices and sustainability. This course is open to any student at the university and is gaining in popularity.	**NUMBER OF COURSES OFFERED/ DOLLARS COMMITTED TO RESEARCH ABOUT FOOD STUDIES** **36** **classes related to food studies** 	When GW originally established this target, it intended to measure progress through the growth in the number of food-related courses and in financial investment in research about food studies. The establishment of the Food Policy Institute represents a significant commitment in this area and provides a permanent home where the university can grow its expertise in food studies. Therefore, measuring investment in individual research projects is no longer the best indicator of progress toward this target and we have not reported on it.

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

GOAL 05

OPTIMIZE WASTE DECOMPOSITION AND TREATMENT

"The GW community has the potential to play a significant role in the textile portion of the Zero Waste efforts at GW and in the greater Washington community. Through rescuing, repairing or reusing clothes, students can reduce the amount of clothing they buy and have a positive impact on the social and environmental costs of fast fashion. The Textile Museum is a resource for students to see how people, across time and geographical regions, have been actively engaged in creative textile reuse."

– CAMILLE ANN BREWER, MFA, MLIS
FORMER CURATOR OF CONTEMPORARY TEXTILE ART, THE GEORGE WASHINGTON UNIVERSITY MUSEUM AND THE TEXTILE MUSEUM

In nature, one organism's waste is another's resource, resulting in endless cycling of nutrients, water and other necessities of life. In human-made environments, however, wastes accumulate faster than they can break down or be used, creating the potential for land and water pollution if the wastes are not properly managed. For example, trash on urban streets quickly enters waterways. Scientists estimate that more than 8 million metric tons of plastic enter the ocean every year.[15] And each item that's discarded represents a waste of the energy, materials and other resources used to create it, with corresponding impacts on the climate and natural environment.

In response to this challenge, GW has adopted a Zero Waste approach – reducing the amount of waste sent to landfills while increasing recycling, reuse and composting. The university hired experts and formed a cross-functional team to address this effort and is seeing results with a decrease in waste to landfill and an increase in recycling. The Zero Waste approach mimics the way waste is treated in nature by thinking of used materials, garbage and discards as potential resources for others to use. The university has made significant progress in developing initiatives for reduction, reuse and recycling. For example, the university recycles about a ton of electronic waste each week. It has also instituted composting programs for its catering services, the dining hall at the Mount Vernon Campus and for several of the food vendors on its campuses.

Although GW faces many significant challenges as an open campus situated in an urban environment, it is working diligently to accomplish the aims laid out in the *GW Roadmap to Zero Waste*, which was published in fall 2016.

[15] https://oceanconservancy.org/trash-free-seas/ accessed December 31, 2017.

WHAT IS ZERO WASTE?

The internationally accepted, peer-reviewed definition adopted by the Zero Waste International Alliance states: "Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.

Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.

Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health."[16]

In practice, achieving Zero Waste means 90 percent diversion of municipal solid waste from landfill or waste-to-energy disposal.

MANAGING WASTE AT GW

GW is committed to managing waste responsibly in collaboration with the efforts of our faculty, students and staff. The university categorizes solid waste as follows and then manages it through a transfer station, waste-to-energy facility or via proper reuse and recycling channels:

- Solid waste (trash)
- Single-stream recyclables (mixed paper, cardboard, clean and empty glass, metal and plastic containers)
- Ferrous metals
- Document shredding
- Electronic waste
- Hazardous waste
- Clothing and household goods
- Furniture, laboratory and classroom equipment and office supplies
- Yard waste
- Food waste
- Cooking oil

[16] http://www.grrn.org/page/zero-waste accessed January 1, 2017.

SPOTLIGHTS

New sustainability plans focus on waste diversion

The university released the *GW Roadmap to Zero Waste* in 2016, which outlines its approach to Zero Waste: reducing overall consumption, returning material goods for reuse, composting applicable organic matter to promote new growth and recycling goods and materials at the end of their lifecycle.[17] Publication of the roadmap was a significant step, helping to set the direction and dedicate the resources needed to move along the path to Zero Waste.

GW creates new degree for green chemistry

In 2018, GW celebrated the first graduating class from its new Master of Science in Environmental and Green Chemistry. The coursework for this program is unique to GW, with a proactive approach to addressing toxicity and learning how to apply state-of-the-art processes and technologies to evaluate environmental impact. A capstone project gives students an opportunity to work with organizations such as the Environmental Working Group and the U.S. Environmental Protection Agency (EPA).

In 2018, GW celebrated the first graduating class from its new Master of Science in Environmental and Green Chemistry.

Campaign to Save a Million Pages

Student representatives from the GW Student Association kicked off a campaign to save one million sheets of paper by encouraging students, faculty and staff to print double-sided and minimize their printing whenever possible. The campaign was inspired by a change in printing prices, which provides a discount for students when they print double-sided. If the campaign is successful, along with saving one million sheets of paper, estimates show the GW community will also save 125 trees, 95,000 gallons of water and 56,000 kilowatts of energy. The Campaign to Save a Million is not only about saving paper: It is also about asking the university community to come together on an issue that impacts the environment.

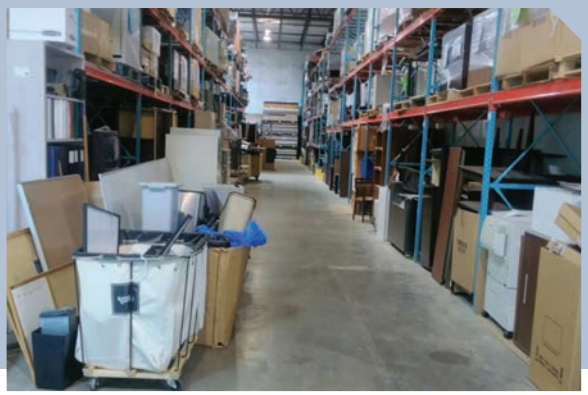
Since FY14, nearly 75 tons of student items, such as clothing and linens, have been donated during Green Move-Out.

A green good-bye

Each May, students have the opportunity to donate, rather than dispose of, items they no longer need. Green Move-Out makes the residence hall move-out process more environmentally- and community-friendly through a multifaceted donation drive. During move-out, students drop items, such as bedding and linens, nonperishable food items, clothing and books, in boxes in residence halls labeled with a Green Move-Out sticker. These items are then bagged and donated to local charity partners. Between FY14 and FY17, nearly 75 tons of usable items were donated through the program, which is made possible through an unprecedented partnership of students, staff and faculty volunteers and sponsors.

Furniture finds second homes at local nonprofits

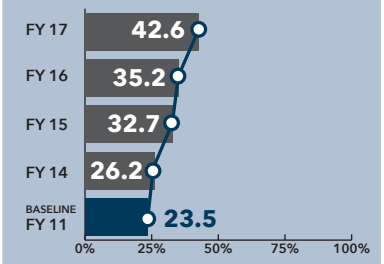
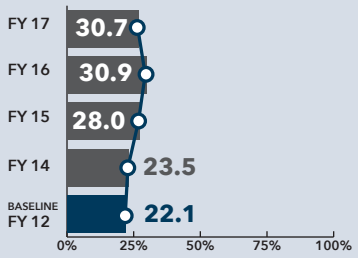
Throughout the year, GW's ReUSE Program prevents furniture and other reusable items from becoming waste, giving them a second life where they can serve the university and the community. More than 100 GW departments and 50 nonprofit and charity organizations have benefited. For example, the nonprofit Oxford House provides stable, peer-supported environments for people in recovery from drugs and alcohol. Oxford House residences in the Washington, D.C. area have received hundreds of donated beds, dressers, nightstands and cabinets from GW's ReUSE Program. All told, more than 800 tons of items have been diverted for donation since FY14.



Since FY14, more than 800 tons of university items, such as furniture, have been donated through the GW ReUSE Program.

[17] Grass Roots Recycling Network http://www.grrn.org/page/zero-waste.

GOAL 05: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 5.1: Zero Waste on GW campuses	The university hired experts and formed a team to address this effort and is making progress, with a 23% decrease in the tons of waste sent to landfill since FY06 and an increase in recycling. With the introduction of the Zero Waste Plan, GW has established a target to achieve a 40% diversion rate for all waste by 2020.	**WASTE DIVERSION RATE (%)[18]** 	Waste diversion at GW includes recycling, reuse and composting. As an open campus in an urban environment, GW experiences challenges for each of these efforts. It's difficult to maintain quality collection of recyclable materials due to the amount of foot traffic on our campus. And the tight space of an urban setting means the university doesn't have a lot of room for composting equipment or warehouses to store used items intended for redistribution. Despite these challenges, GW is proud to have exceeded its 2020 target and continues to make progress toward Zero Waste.
Short-term target: Increase recycling rate to 50% by 2017	The university's recycling rate has increased from 22.1% in FY12 to 30.7% in FY17.	**RECYCLING RATE (%)[19]** 	
Short-term target: Introduce front-of-house composting on the Mount Vernon Campus by fall 2012 and Foggy Bottom Campus by fall 2013	Front-of-house composting has been implemented at the Mount Vernon Campus. GW no longer has institutional dining venues (e.g., traditional dining halls) at its Foggy Bottom Campus. However, in 2016 and 2017, the university worked to implement back-of-house composting at six retail dining venues. In early 2018, GW began piloting a student-led program that enables GW students, faculty and staff to drop off food waste that is then sorted for composting. We will use this program to evaluate the feasibility of a long-term composting drop-off program on campus.		

[18] Broadly speaking, recycling includes waste materials, such as paper, metals and plastics, that are processed for use in another product. Composting refers to the breakdown of organic wastes into fertilizer. Diversion includes recycling, composting, reuse and other steps that prevent waste from going to landfill or waste-to-energy facilities.

[19] The recycling rate is calculated by dividing total recycling (tons) by total waste generated, including compostables and recyclables (tons).

Achieved: GW has achieved the target. | **Not achieved:** GW did not achieve the target as defined. | **In progress:** GW is working toward a target that has a defined end (i.e., an end date, a percentage change, etc.). | **Ongoing:** GW is working toward a target that does not have a defined end.

Local impact | **Regional impact** | **Global impact**

GOAL 05: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Short-term target: Launch ReUSE Program website by 2013	GW has not established a formal ReUSE Program website. However, the university is working on an alternative online solution with GovDeals. In addition, more than 70 tons of usable items have been donated through GW's Green Move-Out since 2014.		
Target 5.2: Zero Waste in our region	GW has partnered with businesses and nonprofit organizations in the region to implement reuse, composting and other projects that help the university achieve a high rate of waste diversion and continue to work towards Zero Waste. As a result, the indicator for this target is GW's own diversion rate, the same as for Target 5.1.	**WASTE DIVERSION RATE** See Target 5.1 for data.	GW has made progress in setting up partnerships for reuse and composting (see second short-term target below).
Short-term target: Create regional reuse partnerships	The GW ReUSE Program has partnered with charities, nonprofit groups and schools to provide supplies, furniture and equipment not needed by the university.		
Short-term target: Establish regional composting partnerships	GW partners with local compost vendors, including Veterans Compost and Maryland Environmental Service, to provide composting for food and yard waste. On our Mount Vernon Campus, we work with an off-site vendor to collect and compost food waste. In addition, as new retail dining venues are established on our Foggy Bottom Campus, we will work with them to establish back-of-house food and coffee waste diversion practices.		
Short-term target: Reduce litter on campus that would end up polluting the Chesapeake Bay Watershed	GW has audited litter on its campuses each year, but no definitive pattern has emerged to demonstrate significant improvement.		

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

GOAL 05: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 5.3: Zero Water Pollution	The *GWater Plan* outlines the university's intent to reduce the impact of its wastewater on the local watershed. This includes litter that collects with stormwater runoff, residue from cleaning products and contaminants from chemicals used in labs, among other things. The university's goal is to reduce the amount of contaminants going into the wastewater system with a target of zero pollution. GW has worked to reduce litter entering storm drains through ongoing maintenance and by installing guards on drains in select locations on university property. GW also has policies that forbid pouring chemicals down drains. Neutralization tanks are installed just in case chemicals enter the drain so they are treated before entering the wastewater system.	**NO INDICATOR**	GW has revised this target to clarify its intent to more specifically focus on the university's impact on the local watershed. The GW Master of Science in Environmental and Green Chemistry is an important step toward achieving this target. However, the university must continue to explore its overall contribution to water pollution and what impact we can have to reduce pollution in our region. As part of that work, we'll evaluate what indicator we should use as an effective measure of progress in this area.
Short-term target: Pilot green chemistry in one lab by 2015	GW has established a Master of Science in Environmental and Green Chemistry and is anticipating the first graduating class in spring of 2018. This demonstrates GW's commitment to build capacity in this area. However, the university has not yet established a green chemistry lab, which will require a redesign of lab techniques, curriculum and equipment.		
Target 5.4: Encourage sustainable practices in our sourced products that reduce waste Targets 1.6, 2.7, 3.6 and 5.4 and their corresponding short-term targets are interrelated and support a comprehensive approach to sustainable procurement.	To comply with Washington, D.C. law, the university's suppliers no longer offer foam (polystyrene) products, such as food containers, drinking cups, plates and bowls, which dramatically reduce their use on the Foggy Bottom Campus. These products are only present if they have been brought in from areas where they are still permitted.	**PERCENTAGE OF NEW CONTRACT ACTIONS SOURCING LOW-WASTE ALTERNATIVES** Data not available at time of publication.	As a step toward the long-term target, GW met its short-term target to create sustainable procurement strategies in several categories (see short-term target 1.6). Moving forward, the university will continue to source low-impact alternatives and will consider additional targets for purchasing strategies. We will also revisit the indicators related to our sourcing targets to ensure they are meaningful and practical to track.

Achieved | Not achieved | In progress | Ongoing

Local impact | Regional impact | Global impact

GOAL 06

ENCOURAGE A CONNECTION TO THE NATURAL ENVIRONMENT THAT HELPS ENHANCE PHYSICAL, MENTAL AND SOCIAL WELL-BEING AND HELPS BUILD A CULTURE OF SUSTAINABILITY AT GW

"The GW students I engaged through the Climathon event were eager to learn how to best serve the local communities in the District of Columbia. They recognized their 'outsider' status and wanted to think through ways to ensure they could be received, trusted and accountable to the project impacts in the community. As a community engagement specialist, I was happy to be a part of the process to guide the students through some of the tough questions they had to ask themselves about their ideas for solutions."

– RONDA CHAPMAN
EXECUTIVE DIRECTOR, GROUNDWORK DC

For more than a decade, GW has been building a strategic sustainability platform to address its own footprint and contribute to solutions to important issues at the regional and global levels. We are fortunate to have a tremendous resource in the GW community. With the community already intellectually engaged with the great challenges of the day, the university recognized the opportunity to build on this and foster an enduring sustainability culture that raises awareness of our individual and collective impacts and provides opportunities for action.

To create that sustainability culture, the university has encouraged students, faculty and staff to experience natural areas both on campus (see Goal 1) and in the region. This direct experience helps nurture appreciation of nature and has direct personal benefits: Even small green areas can increase the physical and psychological well-being of urban citizens.[20]

To provide outlets for GW community members to act on their awareness, GW has created a broad suite of opportunities for action and inquiry. These include our Eco-Rep (student) and Green Office (faculty and staff) programs that aim to reduce the footprints of GW residence halls and offices. The university also does extensive outreach to promote green commuting options and encourage students to volunteer for Eco Challenges and in the campus garden. We seek to connect the classroom and campus through "Living Lab" programs that focus on projects such as our Capital Partners Solar Project (CPSP) and the Sustainable Landscapes.

[20] Niemelä, J., Saarela, S.-R., Söderman, T., Kopperoinen, L., Yli-Pelkonen, V., Väre, S., et al. (2010). Using the ecosystem services approach for better planning and conservation of urban green spaces: a Finland case study. Biodiversity and Conservation, 3225-3243.

At the local level, GW concentrates on its campuses and Washington, D.C. Regionally, the focus is on the Chesapeake Bay Watershed, particularly the Washington, D.C., Maryland and Virginia portions. On a global scale, we support engagement with the natural world by encouraging student projects and volunteer efforts in other regions within the United States and around the world. These programs help people feel part of something bigger and encourage action toward other goals, such as reducing one's personal carbon footprint and the university's footprint.

For these reasons, we have expanded this goal to recognize the importance of consciously creating a sustainability culture at GW to connect our people and foster synergies between their efforts. This culture will be even more important going forward given the university's growing focus on planning for resilience in the face of a changing climate.

SPOTLIGHTS

Students raise awareness about renewable energy through solar design

To raise the visibility of GW's commitment to renewable energy and to provide a permanent, tangible way for students to engage with solar energy, GW created the ChargedUp Solar Design Competition. Student innovators were invited to participate in a design competition for a campus solar-charging station sponsored by the university. The winning solar ChargedUp design, a bench and table structure accompanied by a metal sculpture holding a solar panel, showcases the creativity and ingenuity of students. Weaving together science, art and culture, the team designed the structure around the concept of bringing people together with renewable energy. The charging station is accompanied by a display that highlights the university's on-campus solar installations and the large-scale, off-site solar farm. Placed centrally on campus, the completed charging station successfully provides an opportunity for students to engage with renewable energy, firsthand, as they use it to charge their personal devices.

The first charging station was completed in fall 2017 and unveiled in a public event during Colonials Weekend, when parents are invited to visit campus for programs and events. The runner-up design is located on the Mount Vernon Campus.

The winning ChargedUp design was unveiled in fall 2017.

Students in the Eco-Rep Program serve as green leaders in their residence halls and across campus.

Eco-Reps lead a conservation challenge

Through the Eco-Rep Program, students serve as green leaders in their residence halls and across campus. Eco-Reps provide a link to the student body, helping to organize and encourage participation in initiatives ranging from the Eco-Challenge to Recyclemania, Green Move-Out, e-cycling on campus, Earth Hour and Earth Month. Eco-Reps impact is significant as evidenced by Eco-Challenge, a competition between students in residence halls to reduce energy and water usage that is driven by Eco Reps. The program has saved millions of kilowatts of electricity and millions of gallons of water.

Students hack their way to solutions for climate resilience

The DC Climathon is an annual event that brings students together during a 24-hour hackathon to develop innovative solutions to climate change. Teams then work with local experts to refine their ideas, create feasibility analyses and develop final pitches for presentation to a panel of judges. Resilience was the theme for the 2017 DC Climathon, and teams explored ideas ranging from community gardens to communication networks. The winning team proposed a solution that reduces energy demand and increases climate resiliency while at the same time providing skills training in underserved communities to support the workforce of energy service companies.

SPOTLIGHTS

University offices can earn certification for going green

Faculty and staff participants in the Green Office Network help reduce GW's environmental footprint.

Faculty and staff help reduce GW's environmental footprint through the Green Office Network. Dozens of functions and departments participate, receiving training and support for their efforts to implement green practices. (See Appendix B for list of participating offices.) Green Leaders are the sustainability champions for their teams, helping to promote sustainability year-round by planning events, educating staff and faculty, acting as a point of contact for inter-department networking and helping achieve campus-wide sustainability objectives. The offices can earn points toward four levels of green office certification by completing a list of sustainability actions such as using double-sided printing; turning off all lights, computers and monitors at night; and using public transportation, walking or biking to work. According to one Green Leader, "Having our department participate in the Green Office Network helps to build morale and a sense of belonging and being part of something bigger and more meaningful."

Planet Forward summit looks to the next generation of sustainability storytellers

Planet Forward is a platform for students who employ storytelling as a way to engage with sustainability. Launched in 2009 and based at the GW Center for Innovative Media, Planet Forward supports students and faculty, as well as others across the country and the world. The 2017 Planet Forward Summit focused on how students, scientists, communicators, innovators, policymakers and citizens of the earth communicate to inspire action. The summit brought these participants together to share inspiring stories, feature the best storytellers, collaborate to learn what makes an effective environmental story and celebrate and reward the best environmental storytelling by college students with an expedition to the Amazon rainforest.

Through the GW Alternative Breaks Program, students explore organic farming in Puerto Rico.

Students volunteer, work on organic farm during Alternative Breaks

The GW Alternative Breaks Program provides students with the chance to contribute to communities outside the GW region, either domestically or internationally. Many of the trips offer opportunities to connect with natural ecosystems in either urban or rural settings as students use their skills to advance sustainability, education or community development. Students have installed eco-stoves in homes in Costa Rica and explored sustainable construction in Guatemala, organic farming in Puerto Rico and urban farming in Chicago.

Planet Forward was launched in 2009 as a platform for students to engage with sustainability.

CASE STUDY

ECO-EQUITY CHALLENGE LINKS STUDENTS TO THE COMMUNITY

With a campus located four blocks from the White House and adjacent to the World Bank and International Monetary Fund, it would be easy for GW students to continually think on a national and international scale, forgetting that there are communities right next door experiencing their share of urban, social and environmental challenges. Our Eco-Equity Challenge Program aims to help undergraduate and graduate students connect with underserved residents of Washington, D.C., to share their skills and find solutions to environmental and social justice issues.

In 2015, GW's Honey W. Nashman Center for Civic Engagement and Public Service and the Office of Sustainability partnered with Siemens Industry, Inc. Building Technologies Division to launch the program. Applicants must develop their projects in collaboration with one or more community partners and have faculty support. GW student entrepreneurs receive funds, training and mentoring from the Office of Sustainability and the Nashman Center to implement their projects. To qualify, projects must also raise awareness within the GW community about environmental or climate justice. The program links students to the broader community, helping build their understanding of challenges in an urban environment – and how to solve them – and sharing what they learn with others at the university.

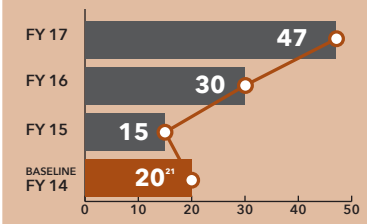
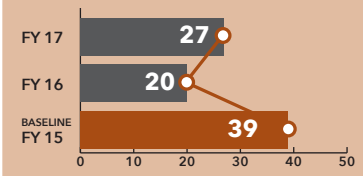
The most recent project, led by GW student participant Logan Malik, aimed to address the impacts of climate change in Washington, D.C., by expanding an existing greenhouse gas monitoring project into underserved communities in the District. Logan worked with high school students to build and install rooftop carbon dioxide sensors that monitor greenhouse gas emissions. He then developed curriculum to educate the students on climate change and its impact on communities like theirs. By engaging the students in the construction of the sensors and showing them a practical use of engineering, computer science and chemistry, Logan helped to bridge the gap between scientific research and local community members.

An educational peace garden is installed at a local elementary school.

In 2015, during the first round of the Eco-Equity Challenge, several students partnered with Higher Achievement, a nonprofit organization providing middle-school enrichment programs, to develop a year-long program of community-based mapping and geography education for middle schoolers in an underserved neighborhood of D.C. "The students were keen to work with Legos, maps, paint and other mediums to help them learn about the physical world through more tactile activities. We hope to introduce the students to concepts like climate change, gentrification, food security, environmental degradation, global cultures and many others through the use of novel and innovative new approaches to geographic education," said Arzoo Malhotra, a GW student participant.

Another project involved teaching local students to use mapping technology to spotlight green spaces and other natural features in their own neighborhoods. Ellie Davis was a GW Eco-Equity Challenge student participant. She has since graduated and was able to apply the experience to her University of South Carolina Geography PhD program. Ellie reflected, "The Eco-Equity Challenge provided my team with an opportunity to bolster environmental education and communication, a critical first step to ensuring a clean, safe and healthy world for current and future generations."

GOAL 06: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 6.1: Increase sustainability programming to build awareness of the natural world and to enhance access to local natural spaces for the GW community	GW has expanded the number and accessibility of natural spaces on its campuses (see Goal 1). The university has also developed and promoted a wide variety of opportunities to engage with the natural world. Here are some examples: • A green campus walking tour itinerary is available on the sustainability website. • Students and other members of the GW community are encouraged to volunteer in the GroW Community Garden. • Some Freshman Day of Service events take place in Rock Creek Park, a large natural area in the middle of D.C. In addition, GW participates in Earth Hour each year, which kicks off GW's Earth Month, a series of environmentally focused programs on campus.	**NUMBER OF STUDENT ECO-REPS**  **NUMBER OF ACTIVE, CERTIFIED OFFICES PARTICIPATING IN THE GREEN OFFICE NETWORK**  	In the years following the publication of our *Ecosystems Enhancement Strategy*, GW has recognized the importance of building a sustainability-focused culture alongside its strategy and programs. As a result, GW has expanded Goal 6 to clarify a focus on connecting people to the natural environment as a critical component of building a culture of sustainability at GW. Target 6.1 has also been revised to more clearly address the updated goal. The GW campus provides ample opportunities for students, faculty and staff to take an active role in managing their environmental footprints. More students are participating in the Eco-Rep Program, which enhances GW's sustainable culture with students living on campus. Promoting these opportunities raises awareness of sustainability issues and helps the GW community forge stronger connections to nature in the city. We have focused the indicators for this target on the most relevant programs for which we have data. Moving ahead, we plan to reinvigorate and better track the Student Pledge Program, through which thousands of students have committed to sustainability actions.
Target 6.2: Increase GW community's awareness of and engagement with regional natural areas	GW works with partners in the local community to provide opportunities for people to connect with natural ecosystems and green spaces. Projects range from restoring the oyster population and underwater grasses in Chesapeake Bay to cleaning up streams in the watershed and planting gardens in our community.	**NUMBER OF PROJECTS/TOTAL VOLUNTEER HOURS/NUMBER OF PARTNERS** FY17: 20 sites, 707 volunteers, 4,276 hours FY16: 23 sites, 888 volunteers, 5,100 hours FY15: 23 sites, 1,092 volunteers, 7,140 hours Notes: Data includes engagement with local, regional and global natural areas. Data for Targets 6.2 and 6.3 combined due to data availability	GW has developed several ongoing programs, such as the Eco-Equity Challenge, to promote student engagement with regional sustainability issues, including several related to the Chesapeake Bay. We anticipate continued participation in these programs, which will require additional effort on the university's part.
Target 6.3: Increase GW community's awareness of and engagement with global natural areas	Students can get connected through the Alternative Breaks Program with projects and service opportunities, some of which involve natural areas and benefit communities around the world.	See Target 6.2.	GW students have had remarkable opportunities to develop and use sustainability skills around the world. We anticipate further growth in these programs, which will require additional effort on the university's part.

[21] Estimated

Achieved: GW has achieved the target. | **Not achieved:** GW did not achieve the target as defined. | **In progress:** GW is working toward a target that has a defined end (i.e., an end date, a percentage change, etc.). | **Ongoing:** GW is working toward a target that does not have a defined end.

Local impact | Regional impact | Global impact

GOAL 07

DEVELOP SUSTAINABLE INVESTMENT STRATEGIES

"As a responsible investment fund created out of the existing endowment, we are excited about the impact the Sustainable Investment Fund will have on the GW community and the significant role of student voices in guiding our university's commitment to sustainability."

– PEAK SEN CHUA
PRESIDENT OF THE GW STUDENT ASSOCIATION, 2017-18 ACADEMIC YEAR

GW is committed to developing a framework that will help it consider sustainability trends and issues as it evaluates the risks and opportunities of the university's strategic investments. Since 2015, Strategic Investment Group (Strategic) – a signatory to the United Nations Principles for Responsible Investment (PRI) – has managed the university's endowment assets on our behalf. Strategic believes that responsible investing is a central pillar of a sound investment process and manages GW's endowment assets in a comprehensive way that incorporates responsible investing perspectives as a way of complementing and enhancing the traditional view of risk and return.

A portion of GW's $1.5 billion endowment is invested in private equity funds that own companies engaged in sustainable farming; renewable energy engineering, construction and generation; carbon offsets; energy efficiency and clean energy solutions; environmental remediation; battery recycling; and the reduction of emissions from coal-fired power generation facilities. In early 2018, in response to student interest, GW established a $2 million sustainable investment fund for a portion of its endowment (see case study on next page).

Separate from these investments related to our endowment, GW also has approximately $270,000 invested in local community development financial institutions.

CASE STUDY

STUDENT ENGAGEMENT LEADS TO SUSTAINABLE INVESTMENT FUND

In early 2018, the Student Association, in conjunction with university leaders, announced the creation of a new Sustainable Investment Fund (SIF). The Student Association-driven initiative allocates money from the university endowment toward responsible investment vehicles. As part of a larger responsible investment approach, the fund promotes and produces innovation in sustainable practices and seeks to avoid investments in the top coal, oil and gas companies.

The George Washington University Board of Trustees' Subcommittee for Endowment and Investments approved the establishment of the SIF with an initial $2 million from the university endowment. The fund is managed by Strategic Investment Group.

The SIF was created in response to strong student support for sustainable investing. The SIF aims to identify and invest in strategies that generate and sustain long-term environmental, social and governance (ESG) value, as well as economic value. By adhering to ESG principles in the investment strategy, the SIF will not only mitigate negative ESG impacts but also will support solutions to complex problems in these areas.

The fund provides a platform for socially conscious giving and will have the potential to grow through fundraising and donor contributions. The payout from the fund is designated toward the university's student financial aid budget.

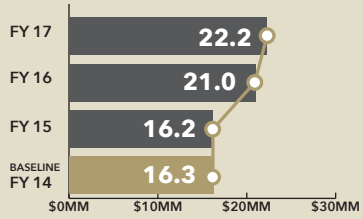
Peak Sen Chua, Student Association President during the 2017–18 academic year, said, "Sustainability is front and center of student advocacy at GW." This commitment to sustainability supports student voices and provides a new avenue to invest in GW's future.

Peak Sen Chua, former president of the GW Student Association, addresses the Board of Trustees.

"The creation of the Sustainable Investment Fund is the result of months of Student Association advocacy and years of student activism guiding our university's commitment to sustainability," Mr. Chua said. Student Association leaders proposed a fund created out of the existing endowment to GW President Thomas LeBlanc in the fall of 2017.

"Our students made clear to me early in my presidency the importance of sustainable investments, and I am grateful to the Student Association for bringing me the SIF proposal," Dr. LeBlanc said. "This type of leadership is precisely what I expect from GW students. I would also like to thank university staff members and the Board of Trustees for supporting this student initiative and its continued success."

GOAL 07: TARGETS

TARGET	PROGRESS	INDICATOR	REFLECTION
Target 7.1: Develop a framework for considering sustainability trends and issues as part of the evaluation of strategic investment opportunities and risks	Strategic Investment Group (Strategic) manages GW's endowment assets in a comprehensive way that incorporates a responsible investing perspective; $22 million of the university's endowment is invested in sustainable industries. In early 2018, in response to student interest, the university committed to creating a $2 million sustainable investment fund to direct a portion of the endowment to investments meeting environmental, social and governance (ESG) criteria. GW also invests in local community development financial institutions and a sustainable investment fund set up by the graduating class of 2007 that supports sustainable projects on campus.	**PERCENTAGE OF INVESTMENTS THAT ARE SUSTAINABLE** *Portion of endowment invested in sustainable projects and initiatives (in $ millions)*  Note: This data does not include the portion of endowment invested by the newly formed Sustainable Investment Fund (SIF).	Outsourcing the Chief Investment Office to Strategic has helped GW focus a portion of its investments on sustainable activity. For several years, GW has seen strong student support for sustainable investing, including a focus on divesting the university's endowment from fossil fuels. While the university has decided not to divest, Student Association leaders engaged with senior leaders on formulating a proposal to implement sustainable investing for a portion of the endowment, which in 2018 resulted in the SIF. The SIF offers a test bed for approaches to sustainable investing.
Short-term target: Develop a process for reviewing proxy votes on sustainability-related issues by 2014	GW did develop a process for reviewing proxy votes. However, in 2015, the university outsourced its Chief Investment Office. As a result, proxy voting is no longer a relevant approach to sustainable investment.		

SPOTLIGHT

The gift of green: Seniors create environmentally friendly class gift

A green investment fund – established by the graduating class of 2007 – supports initiatives for energy conservation and a more environmentally friendly campus. GW's Division of Operations' Facilities team uses this fund for projects, such as installing rain barrels, soil moisture sensors and compost bins, among others.

A green investment fund was established by the graduating class of 2007.

Achieved: GW has achieved the target. | **Not achieved:** GW did not achieve the target as defined. | **In progress:** GW is working toward a target that has a defined end (i.e., an end date, a percentage change, etc.). | **Ongoing:** GW is working toward a target that does not have a defined end.

Local impact | **Regional impact** | **Global impact**

APPENDICES

APPENDIX A: ACKNOWLEDGEMENTS

The GW Office of Sustainability would like to thank the following people who generously contributed their time and talent to preparing this report:

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Amy Cohen	Honey W. Nashman Center for Civic Engagement and Public Service
Andy Ludwig	Division of Operations – Facilities
Ann McCorvey	Finance Division
Anya Hughes	Division of Operations – Campus Support Services
Ariel Kagan*	Sustainability Collaborative
Arthur Bean	Division of Operations – Campus Development
Baxter Goodly	Division of Operations – Facilities
Bob Oakley	Division of Operations – Facilities
Bobbie Ballard	Division of Operations – Facilities
Byron Lawrence	Finance Division – Risk Management and Insurance
Charles Cevallos	Division of Operations – Office of Sustainability
Chris Bracey	Office of the Provost – Faculty Affairs
Dan Reed	Planet Forward
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Hannah Dale	Planet Forward
Janet Monaco	Human Resources – Benefits
Janine Helwig	Division of Operations – Facilities
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Kelly Mannes	Office for Study Abroad
Kendra Scott	Colonial Inauguration
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Wendy Martino	Division of Operations
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* Former GW employee.

APPENDIX B: GREEN OFFICE NETWORK PARTICIPANTS[22]

CERTIFIED GREENOFFICE Level 4

Department of Biological Sciences

Department of Environmental & Occupational Health

Department of Global Health

Department of Health Policy and Management

Department of Music

Department of Theatre & Dance

Division of Development and Alumni Relations

Division of Operations Support Building

Elliott School Office of Graduate Admissions

F. David Fowler Career Center

Finance Division

Office of the Executive Vice President and Chief Financial Officer

School of Business Undergraduate Programs and Advising Center

CERTIFIED GREENOFFICE Level 3

Athletics & Recreation

Center for the Advanced Study of Human Paleobiology

Department of Anthropology

Department of Biomedical Engineering

Department of Computer Science

Department of Electrical & Computer Engineering

Department of Engineering Management & Systems Engineering

Department of Epidemiology & Biostatistics

Department of Exercise and Nutrition Sciences

Department of Geography

Department of Mechanical & Aerospace Engineering

Department of Prevention & Community Health

GW Housing

Honey W. Nashman Center for Civic Engagement and Public Service

Human Resource Management & Development

Office of Alumni Relations

Office of the Dean of the School of Business

School of Business Office of Graduate Admissions

School of Engineering & Applied Science (SEAS) Computing Facility

School of Nursing – Foggy Bottom Campus

Women's, Gender, and Sexuality Studies Program

[22] Bold text indicates that certification has been issued in the past twelve months.

CERTIFIED GREENOFFICE Level 2

Biostatistics Center

Center for Student Engagement

Center for Undergraduate Fellowships and Research

Colonials Sports Marketing

Department of Biochemistry & Molecular Medicine

Department of Chemistry

Office of Academic Planning and Assessment

Office of the Dean of the School of Engineering & Applied Sciences (SEAS)

World Executive Master of Business Administration (MBA) Program

CERTIFIED GREENOFFICE Level 1

Department of Religion

Graduate School of Education & Human Development

Office of the Dean of the Milken Institute School of Public Health

School of Business Office of Development & Alumni Relations

APPENDIX C: DATA SUMMARY

	FY14	FY15	FY16	FY17
Target 1.1 - Square feet (SF) of permeable space on campus	5,378,166	5,386,046	5,396,196	5,408,744
Target 1.1 - Permeable space on campus as a percentage of owned land	63%	63%	63%	63%
Target 1.1 - Permeable space on campus per enrolled student (SF/Student)	255	252	245	237
Target 1.1 - Permeable space relative to FY11	11.74%	11.90%	12.12%	12.38%
Target 1.1 - Permeable space as a percentage of campus area	63.10%	63.20%	63.32%	63.46%
Target 1.1 - Foggy Bottom campus permeable area relative to FY11	10.60%	10.60%	13.39%	16.84%
Target 1.5 - Number of partners in an effort to reduce light pollution			1	1
Target 1.6 - Paper purchases containing 30% or more recycled content	61%	54%	72%	70%
Target 2.3 - Net metric tons of carbon dioxide equivalent (MTCDE) emitted by GW	139,572	130,751	92,642	99,768
Target 2.3 - Net MTCDE emitted per 1000 square feet (MTCDE/1000 SF)	18	15	11	12
Target 2.3 - Net MTCDE emitted per enrolled student (MTCDE/Student)	7	6	4	4
Short Term Target 2.3 - Greenhouse gas (GHG) emissions as a percentage compared to FY08, normalized for square footage	6.3%	-10.1%	-36.6%	-30.4%
Target 2.4 - MTCDE emitted due to student, faculty and staff commuting	13,444	16,948	16,137	11,182
Target 2.5 - Kilowatt-hour (kWh) output from on-site low-carbon energy generation	226,034	255,620	221,662	72,516,003
Target 2.5 - kWh output from on-site low-carbon energy generation - percentage of total energy demand	0.09%	0.10%	0.08%	19.50%
Target 2.6 - MTCDE emitted through building energy use	96,339	86,758	44,413	52,141
Target 2.6 - MTCDE emitted through building energy use per 1000 square feet (MTCDE/1000 SF)	12	10	5	6
Target 2.6 - MTCDE emitted through building energy use per enrolled student (MTCDE/Student)	5	4	2	2
Target 2.6 - MTCDE emitted through building energy use - percentage reduced relative to FY08	5.99%	15.33%	56.66%	49.12%
Target 2.8 - MTCDE from air travel	26,637	23,388	24,860	26,821
Goal 3 - Eco-Building Program - Number of buildings with water consumption improvements since FY12 (progam launch)			25	40
Goal 3 - Eco-Building Program - Toilets upgraded since FY12			1,800	2,100
Goal 3 - Eco-Building Program - Faucets upgraded since FY12			2,900	3,100
Goal 3 - Eco-Building Program - Showerheads upgraded since FY12			1,600	1,700
Goal 3 - Eco-Building Program - Urinals upgraded since FY12			170	180
Goal 3 - Eco-Building - Water consumption reduction compared to historic average			26%	29%
Target 3.1 - Water consumption (in kilogallons)	285,004	275,821	261,820	254,394
Target 3.1 - Water consumption per 1000 square feet (kgal/1000 SF)	36	32	30	30
Target 3.1 - Water consumption (kgal) per enrolled student (kgal/Student)	13	13	12	11
Target 3.2 - Conversion of impermeable square footage to permeable	21%	21%	24%	25%
Target 3.3 - Water retention capacity for reuse (kgal)	64.7	90.4	92.5	98.6
Target 3.3 - Number of locations outfitted to collect stormwater for reuse	5	5	6	8
Target 3.3 - Detention capacity (kgal)	16.5	16.5	16.5	16.5
Target 3.5 - Bottled water expenditure compared to FY14 (%)		-20%	-34%	-40%
Target 3.5 - Bottles filled by water filtration units (cumulative)			780,000	1,380,000
Target 3.5 - Water-bottle filling stations			67	67
Target 4.1 - Pounds of food produced on campus			1,000	500
Target 4.3 - Percentage of university expenditure on "real food" (local, fair, ecologically sound and/or humane)	10%	18%	14%	
Target 4.4 - Engaged in awareness campaigns	YES	YES	YES	YES
Target 4.5 - Participation in the Real Food Challenge	NO	YES	YES	NO
Target 4.6 - Number of courses offered that integrate food studies			36	36

	FY14	FY15	FY16	FY17
Goal 5 - Tons of items diverted for donation since FY14	75.00	168.14	303.97	806.63
Target 5.1 and 5.2 - Waste diversion rate	26.2%	32.7%	35.2%	42.6%
Target 5.1 and 5.2 - Waste diversion rate per 1000 square feet (Tons Diverted/1000 SF)	0.13	0.14	0.16	0.21
Target 5.1 and 5.2 - Waste diversion rate per enrolled student (Tons Diverted/Student)	0.05	0.06	0.06	0.08
Target 5.1 - Reduction in tons of waste sent to landfill			19.0%	23.0%
Short Term Target 5.1A - Recycling and composting rate	23.9%	29.6%	31.3%	30.0%
Short Term Target 5.1A - Recycling rate	23.5%	28.0%	30.8%	30.7%
Short Term Target 5.1C - Green Move-Out donation (tons, cumulative)			70	74.4
Short Term Target 5.2C - On-campus litter (pieces of litter)		16,090	12,906	16,911
Target 6.1 - Number of student Eco-Reps	20	15	30	47
Target 6.1 - Number of student Eco-Reps per 1000 enrolled students (Eco Rep/1000 Students)	0.9	0.7	1.4	2.1
Target 6.1 - Number of active, certified offices participating in the Green Office Program		39	20	27
Target 6.2 and 6.3 - Number of volunteer sites		23	23	20
Target 6.2 and 6.3 - Number of volunteer participants		1,092	888	707
Target 6.2 and 6.3 - Number of volunteer hours		7,140	5,100	4,276
Goal 7 - Local community development financial institutions investment		$159,024.00	$269,501.43	$270,021.14
Target 7.1 - Portion of endowment invested in sustainable projects and initiatives ($)	$16,300,000	$16,200,000	$21,000,000	$22,200,000
Target 7.1 - Sustainable investment per enrolled student ($/Student)	$771	$757	$953	$970
Target 7.1 - Portion of endowment invested in sustainable projects and initiatives (%)	1.0%	1.0%	1.3%	1.3%

APPENDIX D: REVISED TARGETS AND INDICATORS

Changes from the GW *Ecosystems Enhancement Strategy* are highlighted.

Ecosystems Enhancement Strategy (EES) Goals	EES Targets - ORIGINAL	EES Targets - REVISED AS OF FY17	EES Indicators - ORIGINAL	EES Indicators - REVISED AS OF FY17
Goal 1: Strengthen habitat and optimize natural space	Target 1.3: Reduce interior and exterior light pollution from university owned and operated facilities	No Change	Percentage or number of new construction or major renovation projects meeting LEED light pollution reduction requirements	Percentage of new construction and major renovation projects that take into consideration the guidelines for light pollution found in the GW building design standards
	Short-Term Target 1.3B: N/A	By 2019, 100% of new construction and major renovation projects take into consideration the guidelines for light pollution found in the GW building design standards	N/A	N/A
Goal 2: Promote healthy air and climate	Target 2.3: Reduce GW's total carbon footprint by 80% by 2040	No Change	MtCO2e emitted due to on-site building energy consumption	Total net MTCDE emitted by GW
	Target 2.4: Increase proportion of commuters using lower carbon commuting options vs. single occupancy vehicles	Target 2.4: Increase proportion of commuters using low-carbon commuting options vs. single occupancy vehicles	MtCO2e emitted due to student, faculty and staff commuting	No Change
	Target 2.5: Generate 10% of energy demand through on-site low-carbon technologies by 2040	No Change	kWh output from on-campus renewable generation	kWh output from on-site, low-carbon generation
	Target 2.6: Decrease the carbon intensity of the region's electricity fuel mix and create a system for credible, local carbon offsets	No Change	MtCO2e emitted through electricity and natural gas (heating) consumption	MTCDE emitted through building energy use
	Target 2.7: Increase sourcing of lower carbon footprint products	Target 2.7: Increase sourcing of low-carbon footprint products	Percentage of new contract actions sourcing low-carbon alternatives	No Change
Goal 3: Use practices and create ecosystem services that promote clean and abundant fresh water	Target 3.2: 10% absolute increase in permeable space over 10 years from FY11 baseline	Retrofit 10% of unmanaged impermeable square footage (SF) by 2022 compared with an FY11 baseline	Total Permeable Campus Area (in SF)	Percentage change of impermeable SF compared to FY11
	Target 3.3: By 2021, reuse all retained stormwater for greywater systems, cooling towers and irrigation	No Change	Total stormwater reclaimed (in kgal)	Total retained stormwater reused (in kgal)
Goal 4: Support sustainable food production systems	Short-Term Target 4.1A: Sell food grown on campus in on-campus venues	Provide food grown on campus to the GW community	N/A	N/A
	Target 4.2: Engage with on-campus food vendors to encourage sustainable practices	Engage with GW dining program venues and catering vendors to encourage them to provide sustainable food and use sustainable practices	Number of certified restaurants	Number of dining program venues and catering providers with sustainable food and sustainable practices
	Short-Term Target 4.2A: Certify university's 3 to 5 vendors on campus in 2013	Pilot a program with 3 to 5 vendors by 2018 to provide students with greater transparency and information about sustainable food choices	N/A	N/A
	Target 4.3: Source food from regional sources	No Change	Percentage of university expenditure on local food	Percentage of university expenditure on "real food" (local, fair, ecologically sound, and/or humane)
	Target 4.4: Raise awareness about nutrition and environmentally-friendly farming and eating practices	Raise awareness about environmentally-friendly farming and eating practices	Number of awareness campaigns	Engaged in awareness campaigns (Yes/No)

Ecosystems Enhancement Strategy (EES) Goals	EES Targets - ORIGINAL	EES Targets - REVISED AS OF FY17	EES Indicators - ORIGINAL	EES Indicators - REVISED AS OF FY17
Goal 5: Optimize waste decomposition and treatment	Target 5.1: Zero Waste	Zero Waste on GW campuses	Waste Diversion Rate	No Change
	Target 5.3: Zero Pollution	Zero Water Pollution	N/A	N/A
Goal 6: Encourage a connection to the natural environment that helps enhance physical, mental and social well-being	Target 6.1: Increased campus sustainability programming/awareness and increased access to local natural spaces for the GW community	Increase sustainability programming to build awareness of the natural world and to enhance access to local natural spaces for the GW community	Number of events, Green Grad Pledgees, Campus Survey, Number of Eco-Reps, Number of offices participating in the Green Office Program	Number of student Eco-Reps Number of offices participating in the Green Office Network
Goal 7: Investment and finance	Target 7.1: Develop a framework for considering sustainability trends and issues as part of the evaluation of strategic investment opportunities and risks	Target 7.0 changed to Target 7.1 to be consistent with all other goals.	Percentage of investments that is sustainable	No Change
	Short-Term Target 7.1A: Develop a process for reviewing proxy votes on sustainability-related issues by 2014	Short-Term Target 7.0A changed to 7.1A to match all other goals.	N/A	N/A

LEARN MORE

GW hopes this report has been a useful review of our sustainability progress and next steps. The university reports annually on our sustainability performance through Sustainability Tracking, Assessment & Rating System™ (STARS®), a transparent self-reporting framework for colleges and universities. Please also visit our sustainability website for more information about GW's initiatives and to learn about ways to get involved. Your input, inspirations and feedback are always welcome at sustainGW@gwu.edu or these social media:

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SUSTAINABILITY AT GW

KEY

TRANSPORTATION
- Metrorail Station
- Electric Car Charging
- Bike Racks
- University Shuttles
- Capital Bikeshare
- Carshare
- Employee Shower Pass
- Transportation Kiosk

GREEN BUILDINGS
- LEED Building
- Eco-Building Program Enhancements

WATER
- Water Bottle Filler
- Storm Water Capture
- Green Roof
- Rain Barrels

WASTE
- Composting
- E-cycling
- Clothing Bins

Recycling centers are located at all facilities

ENERGY
- Solar Thermal Hot Water Systems
- Eco-Building Kiosk
- Capital Partners Solar Project
- Solar Charging Station

FOOD
- Farmers Market
- Community Garden