

A central horizontal band with a light green background is filled with a dense pattern of white line-art icons representing various sustainability concepts such as wind turbines, bicycles, recycling symbols, light bulbs, trees, and water drops. The background of the entire page is split vertically into a light green left half and a grey right half.

HOPKINS SUSTAINABILITY

Johns Hopkins University **Annual Sustainability Report 2020**

A Message from our Director

Dear Students, Faculty, Staff, Alumni, and Friends,

As I reflect on the past year since joining Johns Hopkins, I can hardly believe all that has happened during that time. In April 2019, during my first days on campus, I heard from countless members of the Johns Hopkins community of their personal interest in sustainability fields, as well as their ambition and aspirations to grow the university's efforts. It was clear to me then—and remains crystallized now—just how great our collective potential is and where the bar is set in terms of the expectations of our exceptional students, faculty, staff, and alumni. From teaching and research, to operations, to civic engagement and advocacy, the Johns Hopkins community cares deeply about the fragility of our planet and the need for bold action now and in the years ahead.

As we assess our potential as an institution and ask pressing questions about the roles we want to play in supporting necessary steps towards climate action, environmental justice, and sustainability research and education, I cannot help but reflect on some of the key accomplishments of this past year. Those include the signing of one of the largest renewable energy agreements in higher education, an agreement that will procure 250,000 megawatt-hours of solar power annually and reduce the university's greenhouse gas emissions by two-thirds of our overall electricity purchases, as well as the chartering of a new Sustainability Leadership Council reporting to Provost Kumar.

Yet, regardless of these accomplishments and the remarkable pace at which our shared efforts are moving, despite the enormous day-to-day disruptions of COVID-19, it is unmistakable that we still have a great deal to achieve. This challenge is in fact one of my favorite things about being a member of the Johns Hopkins community—that no one within our university is satisfied by the status quo, and everyone recognizes our potential for significant global change. This passion and devotion is what keeps many of us going each day, as we work together for a brighter, cleaner, and more equitable future.

With this in mind, I am pleased to share the Office of Sustainability's annual report, which highlights sustainability engagement programs, performance metrics, and personal stories from across Johns Hopkins. I ask you to reflect on this report, share with your networks, and continue to challenge the university to become the strongest leaders we can be in environmental stewardship and resilience. Thank you for helping us pursue a more sustainable Johns Hopkins, and we look forward to building on our collective efforts in the year to come.

Julian Goresko





Students

Student engagement is a core component of the Office of Sustainability’s mission to help motivate students towards environmental action and learning throughout their time at Johns Hopkins. Following the university’s initial Task Force Report on Climate Change in 2008, students have arrived each year more aware of issues related to sustainability and climate change and looking for ways to help advance these efforts. To help support and strengthen student interest, the Office of Sustainability works to expose students to a diverse array of sustainability issues to support learning and co-curricular education while providing professional internships and community involvement.

Eco Pre-O is a preorientation program for first-year students welcoming them to Johns Hopkins and introducing them to sustainability concepts and organizations throughout Baltimore. During this program, participating students are exposed to sustainability projects on Johns Hopkins’ campuses, such as solar installations and rain gardens, as well as Baltimore organizations involved in projects related to sustainability and equity, from those working on healthy food access to reducing litter at the Inner Harbor. The program offers students a network of peers who share a deep passion for sustainability and helps students build social connections and future leadership opportunities. At right is a picture of the Class of 2022, exploring East Baltimore from a bird’s eye view with Glenn Ross, a Baltimore community member and environmental activist who leads students in a discussion of environmental justice issues affecting Baltimore residents.



Green Lead is a semester-long leadership development program designed for first-year students. The program helps mold student leaders, so they can go on to assist in sustainability organizations at Johns Hopkins or as interns in the Office of Sustainability. Teaching critical concepts around sustainability and behavior change principles, students are asked to develop solutions to address current challenges at JHU. On the following page, the FY19 Green Lead students explore a green roof and are introduced to technologies that help reduce JHU’s stormwater runoff.

Sustainability Interns help coordinate projects on the behalf of the Office of Sustainability during the summer and throughout the academic year. In FY19, the Office of Sustainability’s interns, Bela Garces (Class of ’20), Alex Walinskas (Class of ’20), and Cara Valencia (Class of ’21), were

Engagement



responsible for helping plan and market events during Campus Sustainability Month and Earth Week, conducted research on sustainability reporting frameworks, and assisted with a variety of daily office tasks. While playing important roles in the Office of Sustainability's work, interns receive hands-on mentorship and professional guidance, which builds skills that help them in their subsequent careers.

Eco-Reps are responsible for peer-to-peer engagement on the Homewood campus and implement a variety of educational efforts to influence students' social norms. The FY19 Eco-Reps cohort included Clarissa Chen (Class of '19), Charlie Gulian (Class of '19), Cassidy Quiros (Class of '20), Jonah Kasdan (Class of '20), Sumi Kim (Class of '21), Molly Radwell (Class of '21), and Sam Mollin (Class of '21). Through collaboration and group projects, this cohort hosted a variety of events that focused on waste reduction and diversion, environmentally-conscious consumer habits, climate-friendly diets, and access to nature in Baltimore.



FY19 Green Lead students explore a green roof and are introduced to technologies that help reduce JHU's stormwater runoff.

Spotlight: Krittika Negandhi

"My participation in various Office of Sustainability programs has encouraged me to become more conscious of environmental sustainability on both an individual and societal level. I started my freshman year with Eco Pre-O and had a great time learning about environmental initiatives at the Homewood campus and in Baltimore. Through the Green Lead program, I learned about

project development and practical leadership skills. Now, as an Eco-Rep, I am able to use these insights in order to be an environmental representative on campus. I am grateful to the Office of Sustainability for providing me with the opportunity to connect with like-minded peers and help improve the culture of sustainability at Hopkins."
Krittika Negandhi,
Class of 2022





Faculty and Staff

The Office of Sustainability and its campus partners have worked collaboratively since 2008 to develop holistic engagement programs aimed at promoting sustainability behaviors and knowledge to faculty and staff across the university. JHU employees play a vital role in developing shared norms and values that have a sizable impact on the day-to-day environmental footprint of the university. Two programs that have helped advance these efforts are the Green Office Certification program and Green Teams initiative.

The JHU Green Teams initiative builds a motivated network of faculty and staff sustainability ambassadors throughout their respective workplaces. These employees form action-based groups who work to foster behavior change and environmentally-conscious social norms in their respective offices. Members also volunteer as part of sustainability initiatives within the surrounding community, such as spending a day assisting at Whitelock Community Farm in Baltimore's Reservoir Hill neighborhood (seen at right). In all, over 600 JHU employees are currently registered in the Green Team network and form a dynamic community of motivated individuals.



**215 Total "Feathers"
Awarded to Green Offices**

Since 2012, we have certified 64 Green Offices. Seven offices, for a total of 25 feathers, were awarded in 2019.

The Green Office Certification program provides staff and faculty with a framework for embedding sustainability actions in their workplace. By participating in the program, offices can earn points

depending on the number of actions they implement and the Office of Sustainability offers hands-on feedback to assist in these efforts. Since the program began in 2012, more than 70 offices have been certified, with six new offices receiving a certification in the previous academic year including the:

- Center for Educational Resources, Sheridan Libraries: *4 feathers*
- Center for Language Education, Krieger School of Arts and Sciences: *3 feathers*
- Donor and Volunteer Engagement, Development and Alumni Relations, *4 feathers*
- Journal Customer Service, JHU Press: *3 feathers*
- Journals Marketing, JHU Press: *3 feathers*
- Journals Productions, JHU Press: *4 feathers*

More information regarding the Green Office Certification program and Green Teams initiative can be found on the Office of Sustainability's [website](#).

Green Blue Jay Awards



Every spring, the Office of Sustainability hosts the Green Blue Jay Awards, recognizing students, faculty, and staff champions from across Johns Hopkins for going above and beyond to make the university more sustainable and serving as a role model to others. This event is an opportunity to celebrate and recognize the achievements of some of the most committed individuals in the Johns Hopkins community to advancing sustainability efforts. In April of FY19, these JHU members below received the following awards:

- **Anne Haskins**, Associate Director of Development, Regional Programs received the *Change from Within* award for her continued leadership with the San Martin Center Green Team, which has organized several internal events to engage and educate San Martin staff on sustainable behaviors in the workplace.
- **Clarissa Chen**, a Class of 2019 Public Health major with minors in Global Environmental Change and Sustainability and Social Policy, received one of the *Senior of the Year* awards for her commitment to sustainability throughout her time at Hopkins by serving as a member of several sustainability student groups and working as an Office of Sustainability Eco-Rep during her senior year.
- **David Ashwood**, Senior Director of Plant Operations, was recognized as the *Sustaining Champion* for his consistent support of the Office of Sustainability, acting as a supervisor for the Office's employees for several years while the Director of Sustainability position was vacant.
- **Luise Lampe**, Assistant Director of Donor and Volunteer Engagement, was awarded *Spirit of Sustainability*, serving as a San Martin Center Green Team member for several years and led the Donor and Volunteer Engagement Office to become Green Office Certified for the first time.
- **Dr. Megan Latshaw**, Assistant Scientist in Environmental Health and Engineering at the Bloomberg School of Public Health, received the *By the Book* award for incorporating sustainability into her lesson plans and serving as the Chair of the American Public Health Association's Environmental Challenges working group.



Green Blue Jay Awards



■ **Naadiya Hutchinson**, a Class of 2019 Public Health student, also received the *Senior of the Year* award for her leadership of Johns Hopkins' student-run community garden, Blue Jay's Perch.

■ **The Office of Multicultural Affairs** was awarded *Partner of the Year* for their continued collaboration with the Office of Sustainability to host events and to launch the student-run food pantry that is now supported by the Maryland Food Bank.

■ **Peter Winch**, a professor in International Health at the Bloomberg School of Public Health, received the *Above and Beyond* award for his work integrating sustainability into his course curriculum and coordinating the development of the Sustainability Leadership Council.

■ **Roderick Bowlby**, a Class of 2019 Political Science major with minors in Global

Environmental Change and Sustainability and Film and Media Production, received a *Senior of the Year* award for his work with the Homewood Recycling Office to render a new vision for the Hop Reuse Hub showroom and develop educational and promotional videos.

■ **Scott Klein**, Event Manager at the Bloomberg School of Public Health, was awarded *Change from Within* for his commitment to educate his team on strategies to reduce the environmental impact of events at the School of Public Health.

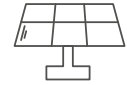
■ **Sustainable Hopkins Innovative Projects (SHIP)**, Hopkins' oldest sustainability student group, was recognized as the *Student Group of the Year* for its efforts to coordinate the Sustainability Coalition, a group platform that fosters collaboration amongst all of the university's sustainability student groups.

Spotlight: Clarissa Chen

One of the 2019 seniors of the Year, **Clarissa Chen** was engaged with the Office of Sustainability and in student groups throughout her years at JHU as a student sustainability leader for Real Food and as an Eco-Rep. Since graduation, she's continued to work with sustainability issues in Baltimore by becoming a Baltimore Corp member placed with Bikemore

to support equitable access to a vibrant transportation network in Baltimore City. Clarissa can be seen at right (center) with Jessica Bast (left) and Julian Goresko (right) of the Office of Sustainability, receiving her award.





Greenhouse Gas Emissions

In 2008, the President’s Task Force on Climate Change planned the ambitious goal for Johns Hopkins University to reduce its scope 1 and 2 emissions 51% by 2025. In establishing that goal, Task Force members examined energy use across buildings, fleet, and assets—totaling a footprint of 298,212 metric tons of carbon dioxide equivalent. Taking input from international science-based targets, JHU created a strategy and roadmap to achieve this reduction goal, and since 2008, the university has invested more than \$85 million in energy conservation measures and the implementation of combined heat and power technologies. During this time, the regional electricity grid has also become less carbon-intensive as a result of a nationwide shift from coal to natural gas. With these changes and implementation measures, JHU has seen a reduction of 23% in its carbon footprint to date.

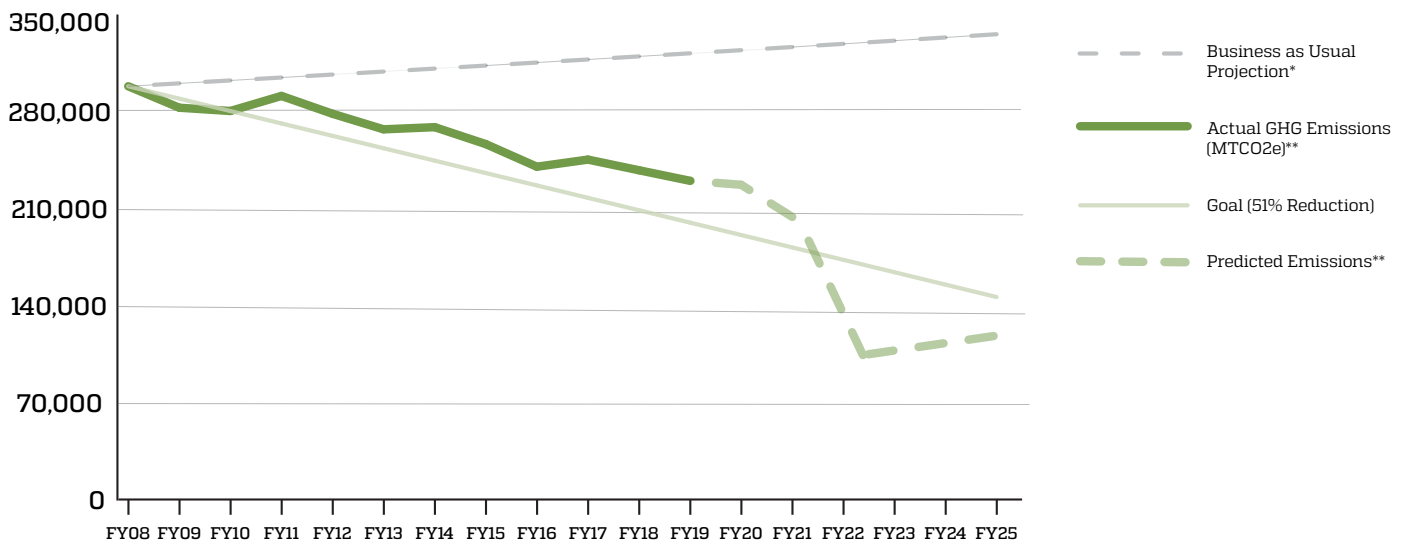
FY08: 298,212 MTCO₂e

FY19: 229,973 MTCO₂e

From 2008 to 2019, emissions have dropped by 68,239 metric tons of carbon dioxide equivalent, nearly 23%.

In order to help accelerate the university’s climate mitigation efforts, in FY19 JHU signed a large power purchase agreement to procure 250,000 megawatt-hours annually of solar power beginning in summer of 2021. This agreement lasts for fifteen years and will help the university meet its climate action goal four years ahead of schedule. Graph 1 below highlights the university’s greenhouse gas reductions as well as projections through 2025. The following pages will further explain the university’s emissions factors and other sustainability metrics.

Graph 1. Overall Emissions Reductions (MTCO₂e)



*The 2008 baseline is 298,212 MTCO₂e, however the Business as Usual projection is from the 2008 Task Force Report on Climate Change, assuming 0.7% annual growth.
 **Our Emissions are calculated adhering to the Climate Registry’s Operational Control Methodology and audited by Affiliated Engineers. Grid coefficients are calculated from eGRID, except CO₂ is from PJM. For any questions related to the calculations, or access to the data, please contact sustainability@jhu.edu.
 ***Actual Emissions from FY08 to FY19, with predicted emissions through FY25. Predicted emissions include effects of both growth and the solar power purchase agreement.

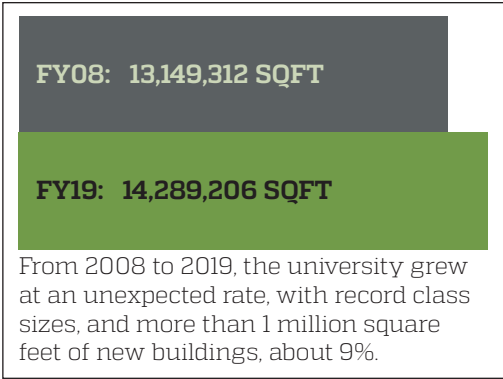
Performance Areas



Actual vs. Projected Growth

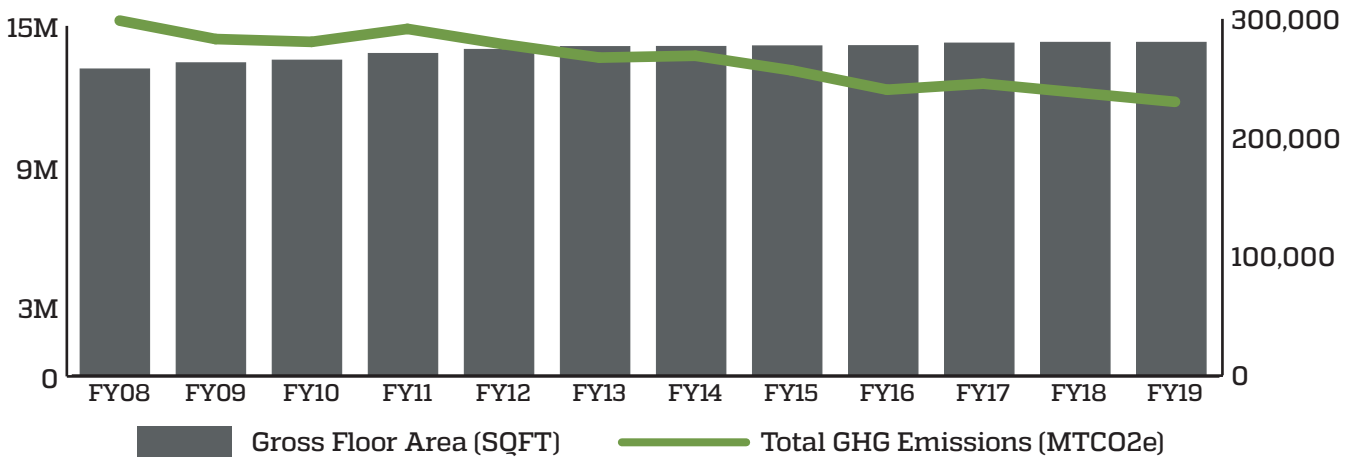
Greenhouse gas emissions are a direct factor of energy use—either combusted fuel or purchased electricity from the regional grid. 98.5% of JHU’s emissions are from the built environment, and a primary factor affecting the university’s emissions trajectory is physical growth, both in population density as students, faculty, and staff increase, and in the new construction of buildings. The university’s 2008 goal was written during a recession, with a prediction of 4% growth in total square feet from 2008 to 2025. However, JHU has grown at a much faster rate, and is projected to grow by at least 15% by 2025, a sizable difference from initial projections that speaks to the ambition of the university’s educational efforts.

Due to the fact that many new facilities are high-performance buildings with increased efficiency, emissions are still decreasing despite



significant growth. Sustainable building highlights include Malone, a state-of-the-art, LEED Gold, computer science facility, as well as the Undergraduate Teaching Labs, a LEED Platinum building, and the LEED Gold Building 200 at the Applied Physics Lab.

Graph 2. Emissions (MTCO2e) v. Growth (Gross Floor Area - SQFT)





Performance Areas

Energy Consumption

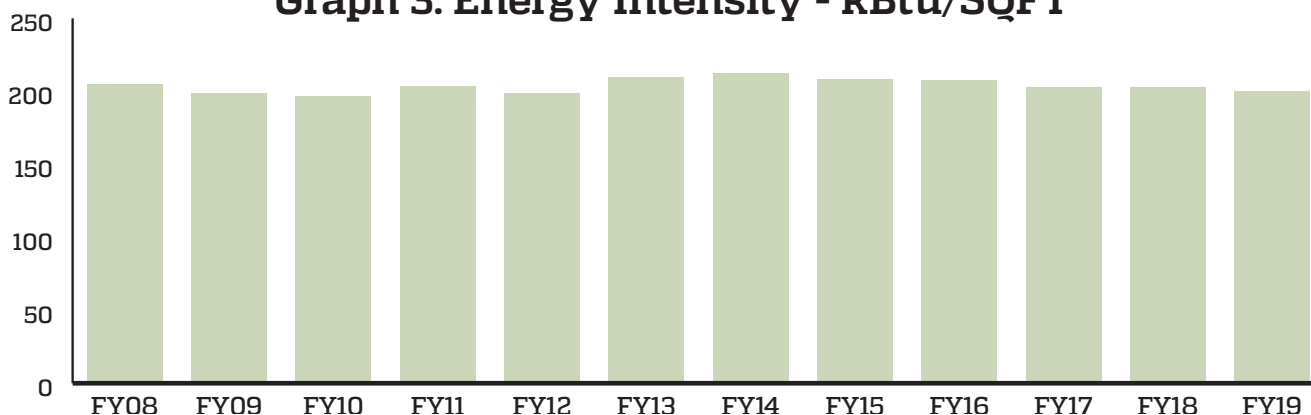
Despite 9% growth in gross building square footage from 2008 to 2019, energy use has not increased as a result of improved efficiencies. When looking at energy use intensity (energy use per square foot) performance can be normalized over time across the university. As a result of both energy conservation measures and a LEED Silver minimum design standard for new construction projects, the university’s energy use intensity has decreased from 200 kBtu/sqft to 195 kBtu/ sqft between 2008 to 2019.

FY08: 2,724,770 MMBTU

FY19: 2,901,737 MMBTU

Despite 8.7% square footage growth from 2008, total energy use has grown at a slower rate of 6.5%.

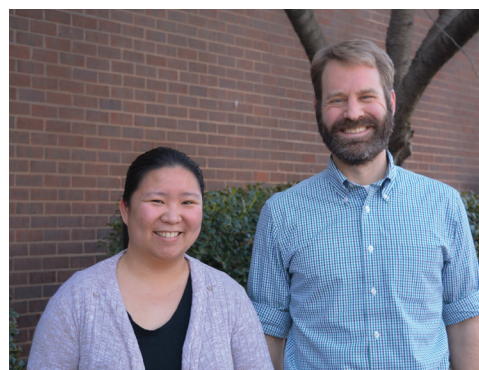
Graph 3. Energy Intensity - kBtu/SQFT



Spotlight: Bena Zeng and Mark Baumgartner

Looking to energy, we want to see reductions, but one of the most exciting changes of 2019, was the addition of two engineers, **Bena Zeng** an energy engineer, and **Mark Baumgartner**, the associate director of plant operations. They bring expertise around smart energy use and

have led projects and pilots for energy savings, including lighting upgrades and ventilation control measures. Additionally, Bena has started including a carbon price in cost evaluations of future projects.



Performance Areas

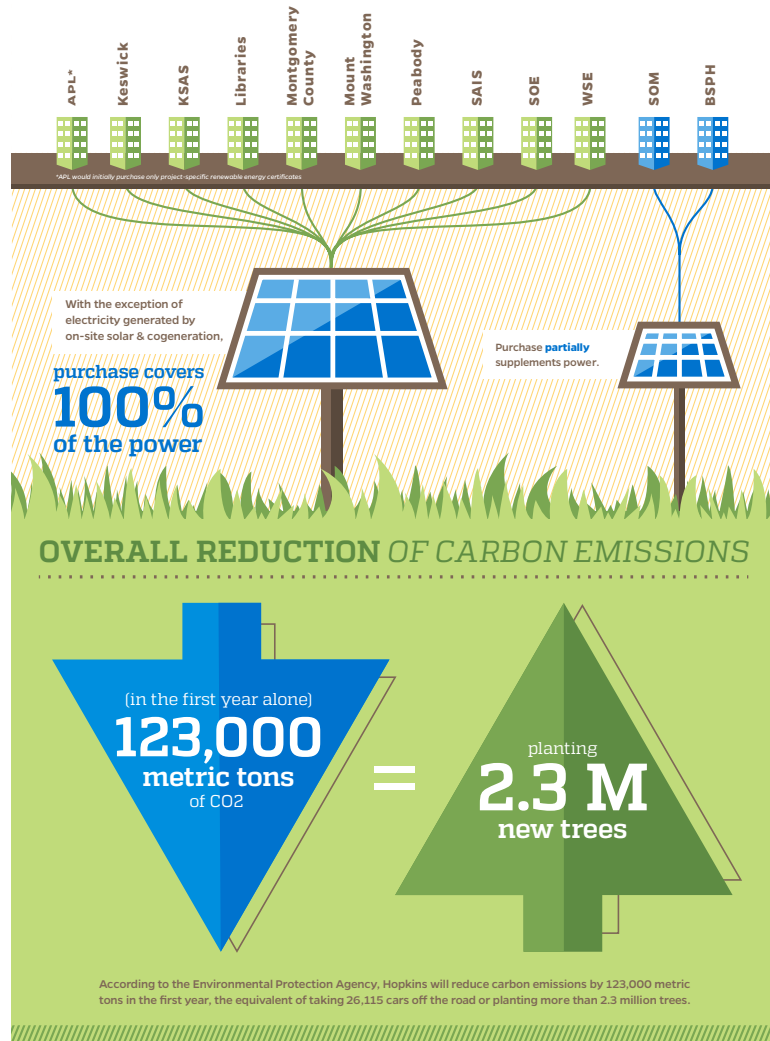


Renewable Energy

The procurement of solar power has been a component of JHU's greenhouse gas reduction plan since the university's first power purchase agreement for on-site power generation in 2011. Although a visible image of JHU's commitment to sustainability around many campuses, on-site panels generate less than 1% of the university's electric supply, though cover almost all viable rooftops and parking lots.

On Earth Day 2019, President Daniels announced the university's agreement to an off-site solar power

purchase agreement (PPA) with Constellation. Once the solar installation is built and active in the summer of 2021, solar panels will supply JHU's campuses with approximately 250,000 megawatt-hours of power annually, equal to nearly two-thirds of the university's overall electricity needs. With this significant step—one of the largest renewable energy agreements in higher education—the university's emissions will be drastically reduced to help JHU meet its greenhouse gas reduction goal several years before 2025.

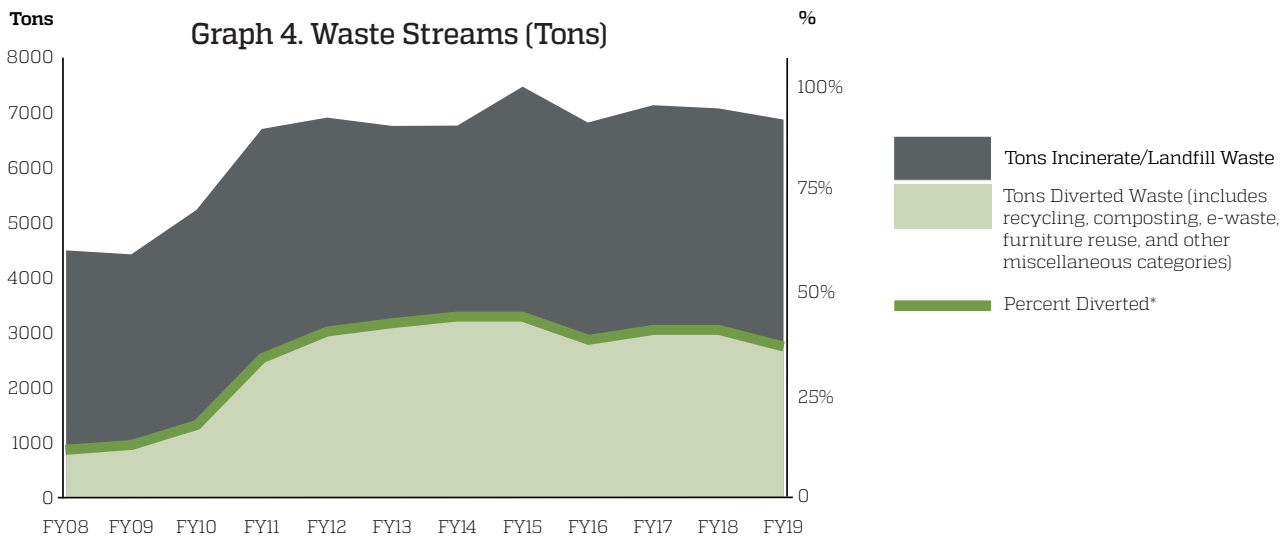




Waste

Johns Hopkins is committed to responsibly minimizing waste throughout the materials lifecycle of sourcing to disposal. While reducing consumption and reusing products are the most impactful waste behaviors, recycling and composting are valuable steps to divert waste entering incinerators and landfills. 2019 saw significant changes in global recycling markets driven by receivers of U.S. materials, resulting in stricter limits on contamination and more materials being sent to landfills, such as #3-5 plastics

and glass. In response, the Office of Sustainability worked with Johns Hopkins operational partners to update signage, expand access to recycling and composting, and enhance educational offerings to drive changes in social norms. As a result, while many organizations are seeing large decrease in their waste diversion metrics, JHU has maintained a steady diversion rate of 40%, up from 21% in FY08. Graph 4 highlights that diversion rate by showing total tonnage entering landfills/incineration versus composting and recycling.



*Highlights the percent diverted (tons disposed of through recycling, composting, e-waste, or other streams that avoid landfilling or incineration). FY20 Diversion was 40%.

Spotlight: GreenHacks

GreenHacks is Johns Hopkins' first sustainability hackathon, which was launched in spring 2019 by several undergraduate students. The hackathon brings together students, faculty, and local businesses to spark sustainability-focused innovative thinking and provide a platform to design and pitch green tech-

nologies, business proposals, and initiatives. Affiliates came together to think about tough problems and developed a variety of solutions, such as incentivizing plant-based catering, finding ways to include sustainability in new construction, and publicizing energy use data and real time metering to the JHU community.



Performance Areas



Water

Reducing water use is an important component of JHU’s resource stewardship, as the university uses about 3.5 million gallons per year. To reduce the institution’s water consumption, a variety of conservation upgrades have been completed, as well as the standardization of low-flow fixtures and sensed faucets. Water billing, however, has been inconsistent since Baltimore City upgraded to digital metering, and accurate reporting is not yet available.

Green roofs and rain gardens have also become standards across the university to reduce storm-water runoff into the Chesapeake Bay watershed and provide space for native and adaptive plants and vegetation, while mitigating urban heat island effect.



Spotlight: Lana Weidgenant

“I see a lot of promise for sustainability at Johns Hopkins, especially with all the interest students are showing in environment and sustainability and the new initiatives the university has created. One of those—the Sustainability Leadership Council— I’ve had the honor to be a member of, and to work alongside faculty, staff, and alums.

As a student, I take environmental science classes and lead a plant-based student group, and I have had opportunities to engage with climate justice in and out of Hopkins, from joining a student group on climate-friendly investing to speaking on climate at the United Nations!”

Lana Weidgenant,
Class of 2021



