

UNIVERSITY OF PENNSYLVANIA

2017 SUSTAINABILITY REPORT

Progress in achieving the goals of the 2014 Climate Action Plan 2.0.



Penn
Sustainability



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“The environmental challenges facing our University and our planet are bringing out our best, reflecting Penn’s passion to impact our community, country and planet through our commitment and shared expertise.”

DR. AMY GUTMANN, UNIVERSITY PRESIDENT
OCTOBER 28, 2014 THE LAUNCH OF *CLIMATE ACTION PLAN 2.0*

A DECADE OF SUSTAINABILITY

'07

JUNE

President Gutmann signs the American College and University Presidents Climate Commitment (ACUPCC).

'09

SEPTEMBER

Penn launches its first *Climate Action Plan* defining its University-wide sustainability goals for 2014.

'12

MARCH

Penn issues *Century Bonds*, with \$200 million earmarked for projects that combine deep energy retrofits, deferred maintenance, and sustainability.

'14

OCTOBER

Penn launches its *Climate Action Plan 2.0*, reporting on five years of accomplishments and establishing goals through 2019.

'17

JUNE

Penn joins eleven Ivy Plus universities in reaffirming commitment to climate change mitigation after U.S. withdrawal from the Paris Agreement.

Progress Summary

Throughout this report we use the following symbols to denote progress:

✓	We are achieving our goal.
↔	We have mixed success.
↻	We are not meeting our goal and will reevaluate.



This annual report highlights 2017 progress on the *Climate Action Plan 2.0 (CAP2.0)*, Penn's guiding document for reduced emissions, expanded engagement with students, staff, and faculty, and enhanced sustainability scholarship. Opening with a summary of academic programs, the report provides metrics on the status of the seven initiatives of CAP 2.0 - initiatives designed to transform campus planning, design, and operations, as well as how the campus is used by the Penn community.

Highlights of 2017 include:

Academics	Progress ✓	The <i>Penn Sustainable Course Inventory</i> expanded from 124 to 298, a 140% increase. Sustainability-related research continues to flourish, as exemplified by the multi-million dollar Mellon Foundation grant to Penn Program in Environmental Humanities and the Kleinman Center's research on fuel economy, utility resilience, and the sustainability of the urban traffic sector.
Utilities and Operations	Mixed Success ↔	Carbon emissions decreased by over 13 percent. Buildings are operating more efficiently as shown by sub-metered energy use; however, building energy use increased due to operational needs of the campus, related to new central chiller plant equipment testing.
Physical Environment	Progress ✓	Penn's main campus was designated as an arboretum, and joins a select group of urban campuses recognized for exceptional tree collections, maintenance, and landscape stewardship. In addition, Penn continues to build and renovate to LEED standards, with over 20 main campus buildings and major renovations certified (5 pending).
Waste Minimization and Recycling	Mixed Success ↔	Waste sent to the landfill has decreased by nearly 5 percent; however the recycling rate is below the goal of 30 percent.
Purchasing Practices	Progress ✓	Penn Purchasing Services won the 2017 SPLC Leadership Award for Supplier Engagement, and continues to be a leader in sustainability both on campus and in industry.
Transportation	Progress ✓	Sustainable transit options have greatly expanded with nearly half of faculty and staff now relying on sustainable transportation options when commuting.
Outreach and Engagement	Progress ✓	Outreach and Engagement programs have been revamped and expanded, most notably the Student Eco-Reps, which now focuses on in-depth, year-long sustainability projects.

As the University community looks ahead to the drafting of the next campus sustainability plan in 2019, this annual report provides an opportunity for Penn to reflect on current progress and address areas of concern in the remaining years of the *CAP 2.0*. As a reflection of how sustainability has evolved on the Penn campus, the Green Campus Partnership brand will be changing to Penn Sustainability in the coming months to better reflect our mission and campus collaboration.

Please send any comments or questions to sustainability@upenn.edu. For more information, please visit sustainability.upenn.edu

Academics

- ✓ We are achieving our goal.
- ↔ We have mixed success.
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CAP 2.0 Mission

EXPAND OPPORTUNITIES FOR TEACHING, LEARNING, AND RESEARCHING SUSTAINABILITY AMONG STUDENTS, STAFF, AND FACULTY.

CAP 2.0 GOAL

✓ Promote existing and new sustainability programs and classes to Penn's undergraduate and graduate student body while continuing to enhance and promote Penn's signature collaborative programs.

PROGRESS SINCE FY14 BASELINE

Penn's sustainability-related course offerings continue to expand. **Integrating Sustainability Across the Curriculum** has supported **48 professors** since its launch in 2012, introducing sustainability into new and existing courses. *Ben Franklin Scholars Course Development Grants* have been used to create **three new sustainability-themed undergraduate seminars**.

1.1% ▲ Increase in students graduating with a sustainability major or minor since 2014

140% ▲ Expansion of the Sustainability Course Inventory since 2014. Increasing from 124 to 298 courses

The first *Climate Action Plan (CAP 1.0)*, launched in 2009, set a goal to make classes on climate change and sustainability an integral part of the curriculum and available to all Penn students. Signature academic programs now include the Vagelos Integrated Program in Energy Research, Initiative for Global Environmental Leadership, Kleinman Center for Energy Policy, Master of Environmental Studies, Master of Environmental Building Design, and MBA Major in Environmental and Risk Management, among others.

✓ Support faculty interest in researching and teaching sustainability.

The Penn Program in Environmental Humanities, founded in 2014 with support from the Penn Sustainability Office, is bringing new voices to interdisciplinary scholarship at Penn.

20 PPEH fellows funded since 2014

✓ Provide internships for graduate and undergraduate students through partnerships with the Philadelphia School District, the City of Philadelphia, and regional non-profits.

In 2017, the Penn Sustainability Office supported student fellowships with non-government organizations and government agencies across the region. For example, with the Graduate School of Education, Penn students partnered with 9 local middle schools to implement a new urban watershed curriculum in some of the city's most disadvantaged neighborhoods.

34 Research internships funded since 2014

Academic Programs for Sustainability

Expanding opportunities for scholarship and sustainability careers

Penn's *Environmental Sustainability Advisory Committee* has strengthened Penn's approach to sustainability scholarship by expanding the [Definition of Sustainability in Academics](#) to include economic activity and social equity. In 2017, by signing the [American Campuses Act on Climate Change Pledge](#), Penn President Amy Gutmann recommitted Penn to addressing climate change mitigation and joined with 11 peer universities to support the Paris Climate Accords.

The Penn Sustainability Office has helped expand Penn's research, teaching, and student fellowships by partnering with academic departments and centers. Its *Integrating Sustainability Across the Curriculum* program, *Climate Action Plan Grants*, *Penn Undergraduate Research Mentorships* research grants, and targeted internships with sustainability non-profits and city agencies provide students a broad range of opportunities to participate in paid research projects over the summer.

In keeping with CAP2.0 goals, Penn has developed a broad array of undergraduate, graduate, and professional courses focused on sustainability. Expansion of these programs since 2014 includes the dual degree VIPER program, a SEAS Minor in Energy and Sustainability, and a number of energy and sustainability master's programs.

▶ PENN PROGRAM IN ENVIRONMENTAL HUMANITIES (PPEH)

The Penn Sustainability Office has supported research fellowships for PPEH undergrad and grad students since 2014, helping PPEH garner international attention as a center of research, artistic expression, and community engagement. Notable events in 2017 included lectures by NASA scientist Dr. James Hanson and writer Rebecca Solnit, as well as several well-attended multi-day symposia. In July, PPEH was awarded a grant of \$1.5 million over four years from the Andrew W. Mellon Foundation to support further development in this critical area of scholarship.

▶ INTEGRATING SUSTAINABILITY ACROSS THE CURRICULUM (ISAC)

Twelve faculty were recruited to participate in the 2017 ISAC program, including representatives from Anthropology, Communications, Environmental Studies, Environmental Science, Electrical and Systems Engineering, History and Sociology of Science, and Design. These faculty partners work with undergrad and grad research assistants to incorporate sustainability into new and existing courses. Since its initiation in 2012, ISAC has assisted interested faculty in incorporating sustainability into 12 new and 29 existing courses.

▶ PENN UNDERGRADUATE RESEARCH MENTORSHIP (PURM) PROGRAM FUNDED BY THE POWER DOWN CHALLENGE

As part of an energy conservation incentive tied to the 2017 Power Down Challenge, the Penn facilities department awarded \$11,400 in summer student research funding to the Penn Undergraduate Research Mentorship program. Students working for Professor Alain Plante studied the agricultural qualities of tropical soils, and student assistants to Professor Michael Wiesberg conducted research on scientific and ecological literacy among residents of the Galapagos Islands.

Utilities & Operations

- ✓ We are achieving our goal.
- ➔ We have mixed success.
- 🔄 We are not meeting our goal and will reevaluate.



CAP 2.0 Mission

PROMOTE AND ADOPT BEST PRACTICES IN ENERGY MANAGEMENT, DESIGN, AND MAINTENANCE TO IMPROVE EFFICIENCY AND REDUCE PENN'S CARBON FOOTPRINT.

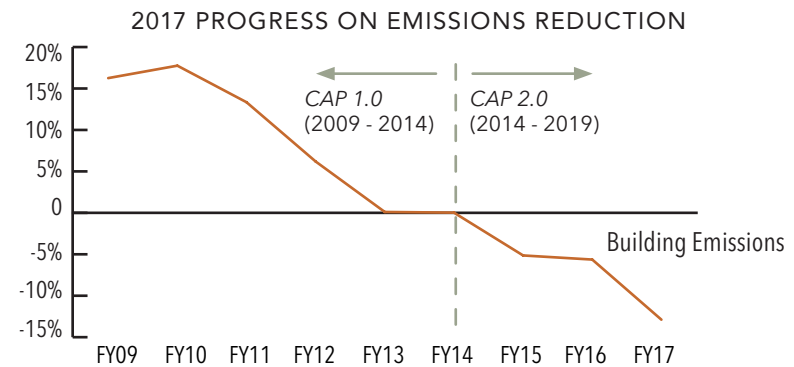
CAP 2.0 GOAL

- ✓ Emissions from campus buildings: 7% reduction by 2019 and 18% reduction by 2042, both of absolute emissions.
- 🔄 Energy (campus electricity and steam) used by buildings: 10% reduction by 2019 and 27% reduction by 2042, both of absolute energy use.
- ✓ Deep energy retrofits: Target the 20% of buildings with highest energy use for deep energy retrofits by 2042. This is approximately 45 buildings, and includes nine *Century Bond* projects.
- ✓ Recommission the 20% of buildings with the highest energy use every five years, and the remaining 80% on a ten-year basis.

PROGRESS SINCE FY14 BASELINE¹

Building emissions have **decreased by 13%** since FY14, and 25% when compared to 2009.

Total electricity and steam used by campus buildings **increased by 4%**, due in part to the energy required for testing and verification of new steam chillers installed in FY17. Energy used at the building level decreased by 4%.²



As of 2017, the six completed *Century Bond*³ projects are meeting their anticipated energy reduction goals; five more projects are in construction. The *Century Bond* projects, in total, represent approximately \$200M applied to building HVAC system replacements and lighting upgrades. For a complete description of projects, visit [Penn Connects](#).

\$171.6M Invested in approved *Century Bond*³ projects since initiation in 2012 **7,400 MTCDE³** Estimated annual *Century Bond* electricity savings

Recommissioning of the **45 highest energy-using buildings** is complete. In 2018, the first group of the 10-year cycle buildings will be recommissioned for a second time. **17 to 19 buildings** are currently recommissioned every year.

¹ For more detailed information on metrics, please see our [STARS report](#). All metrics in the STARS report refer to Penn's main, West Philadelphia campus, unless otherwise noted. For more information please refer to [CAP 2.0](#).

² See page 9 for more information on the impact of the steam chilling system on campus energy use.

³ \$200M for projects that combine deep energy retrofits, deferred maintenance, and sustainability.

⁴ Metric Tons of Carbon Dioxide Equivalent.

Greenhouse Gas Emissions

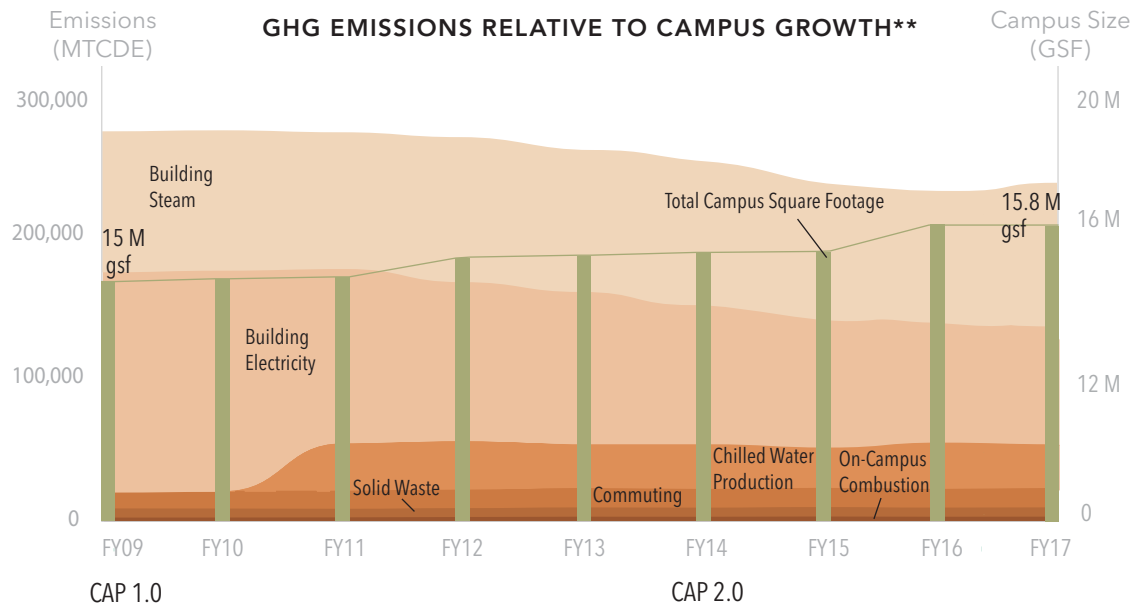
Carbon reductions despite growth

Penn ascribes to the *World Resources Institute* characterization of carbon emissions as Scope 1 (direct emissions from on-campus combustion), Scope 2 (emissions from off-campus utilities and RECs*), and Scope 3 (emissions from commuting, waste disposal, and university-related air travel). Because 80% of Penn's emissions are Scope 2 – energy used for conditioning and lighting buildings – the focus of our emissions reduction strategy is to improve building performance.

Programs include the *Century Bond* renovations, LEED certification of new buildings and major renovations, re-commissioning of existing building systems, and improved user efficiency through education and engagement. While not part of the emissions reduction goals, Scope 3 emissions are tracked by Penn and addressed through outreach, engagement, education, transportation, and waste minimization.

Penn's conservation measures, coupled with an increasingly cleaner electric grid and improved efficiency in the local district steam system, have resulted in a **13% reduction** in building GHG emissions.

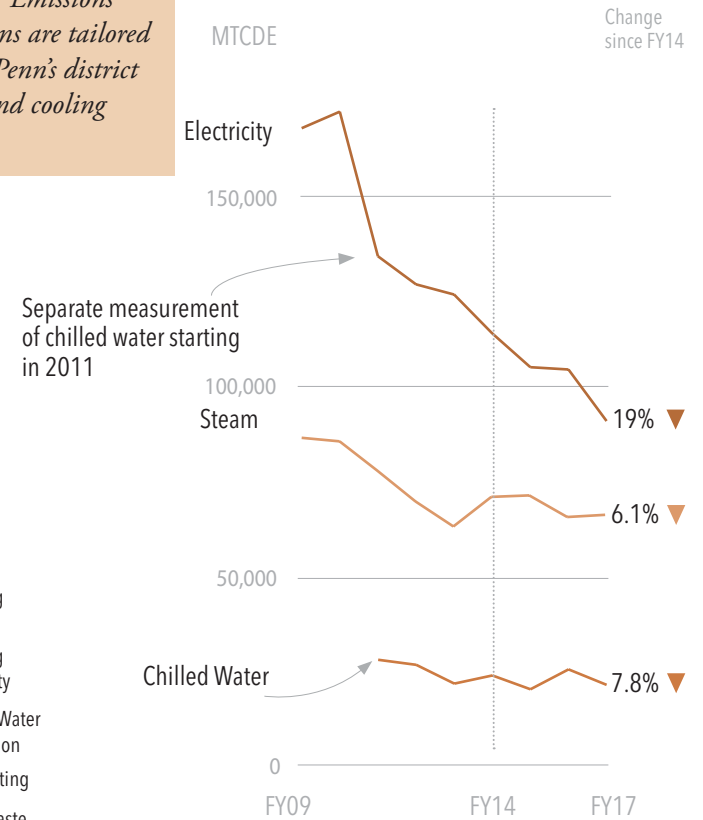
*For information on Penn's REC purchases visit the Penn Sustainability [website](#).



UTILITIES & OPERATIONS

Penn's greenhouse gas emissions are calculated by the Center for Environmental Building + Design in Penn's School of Design. Emissions calculations are tailored to reflect Penn's district heating and cooling systems.

CHANGE IN GHG EMISSIONS BY SOURCE



▲ Change in GHG emissions by source between CAP implementation years and 2017, shown with absolute tonnage on the vertical axis.

◀ GHG emission, by source, are shown relative to campus growth. Total campus area is shown by the vertical green bars.

**Emissions from Penn sponsored air travel, estimated to be 66,185 MTCDE in FY17, was omitted from the emissions graph because complete historical data is unavailable.

Campus Energy Consumption

Ongoing efforts toward reductions

Campus energy use is dominated by building heating, cooling, lighting, and equipment. District steam and electricity account for over 90% of total campus energy use, while fleet, campus maintenance, and commuting make up remaining portions. Additionally, 2017 saw abnormal chiller plant operations necessary for the purposes of testing and verification of two newly installed 5,000 ton steam chillers. As a result, substantial non-building related energy usage was incurred.

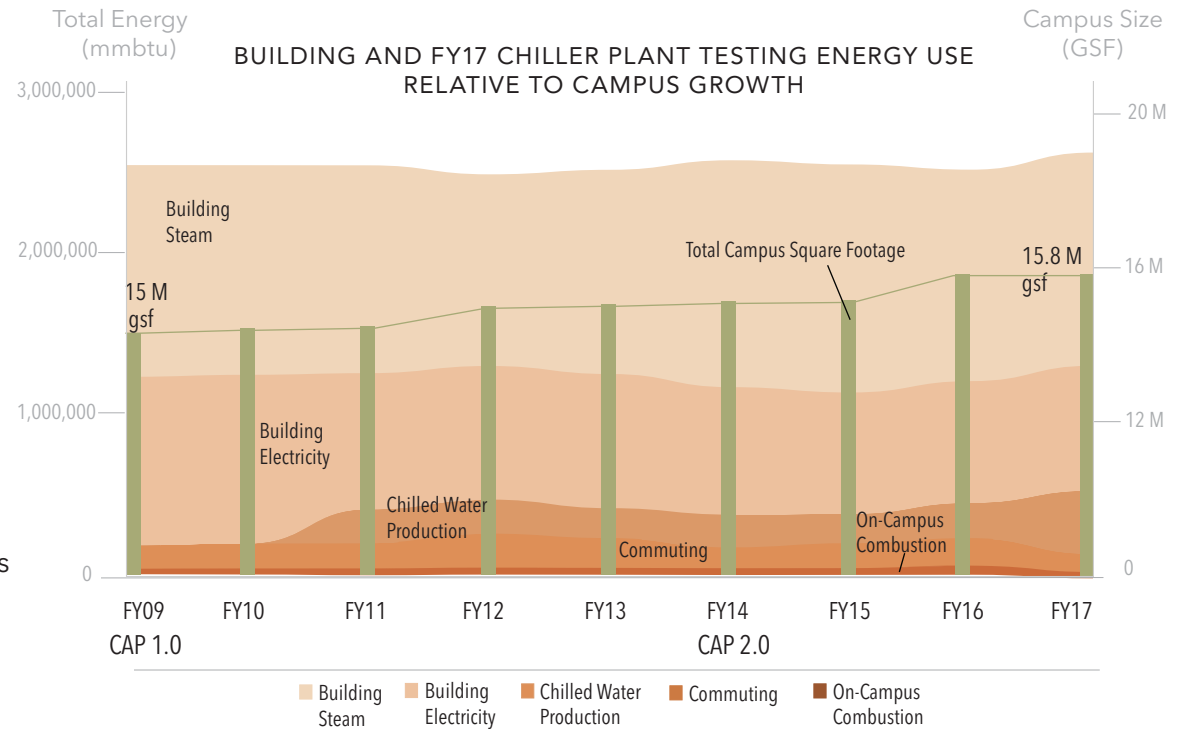
As part of the *PennConnects 2.0* masterplan, Penn has added over a half-million square feet to the main campus since 2009, expanding the campus built area by nearly 4.5%. Since the launch of *CAP 2.0* in 2014, building energy use has trended down, resulting in a 4% reduction in energy use as measured at the buildings in 2017 compared to 2014. However, due to testing and verification requirements of the newly installed steam chillers* at the central chilled water plant, overall energy use on Penn's campus increased 4% in 2017. This temporary anomaly has also increased the overall campus energy use per square foot by 1% since 2014.

*To learn more about steam chillers visit [Penn Sustainability](#) online.

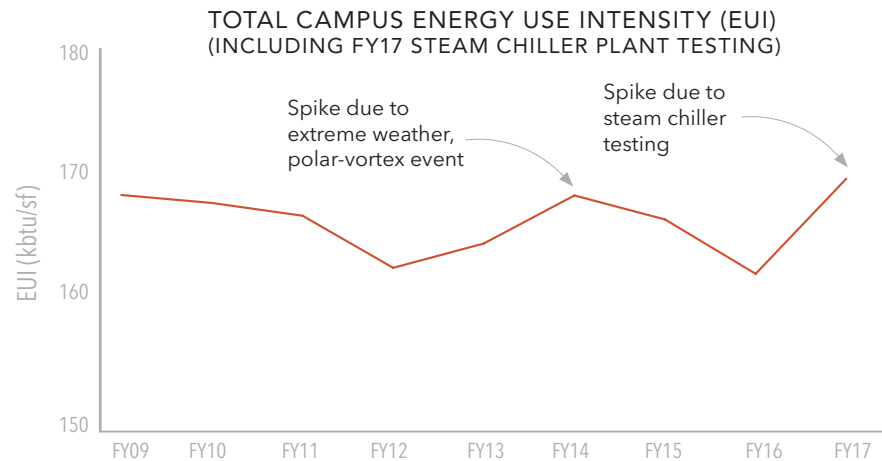
Building energy use divided by total core campus square footage (kBtu/sf), gives a representation of EUI for all main campus buildings.

Steam and chilled water meters were installed in 2010 and 2013 to better understand and track building energy usage. Meters allow a shift from estimated to real-time, meter-based billing. Ongoing metering and data management provides Penn's 12 Schools with additional incentives to conserve energy and improve building efficiency.

UTILITIES & OPERATIONS



▲ Energy consumption, by source, is shown relative to campus growth. Total campus area is shown by the vertical green bars. Penn began separately measuring chilled water, used for cooling across campus, in 2011.



Physical Environment

- ✓ We are achieving our goal.
- ➔ We have mixed success.
- 🔄 We are not meeting our goal and will reevaluate.



CAP 2.0 Mission

CREATE AND MAINTAIN A SUSTAINABLE CAMPUS BY INCREASING GREEN SPACE, DECREASING BUILDING ENERGY CONSUMPTION, AND INCREASING EDUCATION AND AWARENESS OF SUSTAINABLE DESIGN.

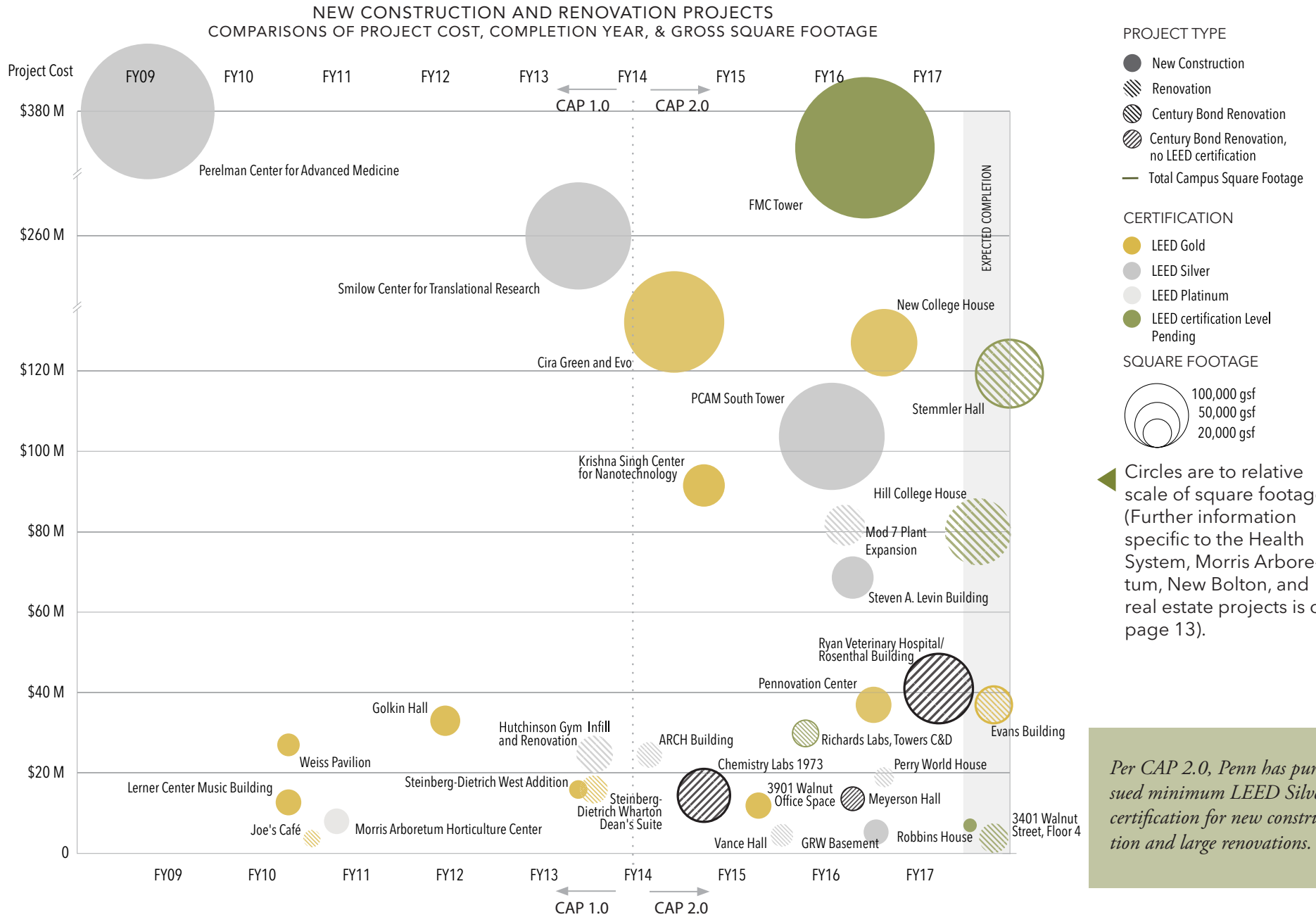
CAP 2.0 GOAL

PROGRESS SINCE FY14 BASELINE

<ul style="list-style-type: none"> ✓ Continue to pursue LEED Silver certification for all new construction and major renovations. 	<p>Penn added six LEED projects in 2016 and will complete four more by the end of 2017, bringing the total to over 20 buildings. New College House and Pennovation achieved Gold certification and six have earned Silver certification.</p>	<p>CAMPUS BUILDING PROFILE BY AREA</p>
<ul style="list-style-type: none"> ✓ Complete carbon inventories of the Hospital of the University of Pennsylvania (HUP), the Morris Arboretum, and New Bolton Center (NBC). Build on and institutionalize sustainability goals for Penn's real estate portfolio. 	<p>Three new carbon inventories were completed in 2016. Action plans are being developed and are in varying phases of implementation in collaboration with staff at HUP, the Morris Arboretum, and NBC. Penn's real estate team continues to build on best practices.</p>	
<ul style="list-style-type: none"> ✓ Develop and implement an <i>Ecological Landscape Stewardship Plan (ELSP)</i>. 	<p>The <i>ELSP</i> will articulate improved ecological design and management of landscape and open space across campus. The plan is due for completion early in 2018.</p>	
<ul style="list-style-type: none"> ✓ Promote a biodiverse and ecological campus by protecting existing trees, promoting plant diversity through design, improving habitats for native flora and fauna, implementing bird-friendly glazing. 	<p>Penn's Landscape Architect and Urban Parks team work to ensure a healthy and diverse ecosystem. Bird-friendly glazing is considered for all projects.</p> <p> Penn's main campus received Level 1 Arboretum Status in 2017 through the ArbNet certification process.</p>	<p>4,086 Trees in Penn's main campus urban forest → 35 Tons of CO₂ sequestered annually</p> <p> Penn earned recognition as a Tree Campus USA® for the eighth consecutive year in 2017.</p>

Sustainable Development and Renovation

PHYSICAL ENVIRONMENT



Sustainability Across the University

Extending our commitment

Carbon inventories of the Morris Arboretum, the New Bolton Center, and the Hospital of the University of Pennsylvania (HUP) were completed in 2015 as part of CAP 2.0. Penn Sustainability met with leaders from each organization to document progress and identify strategies to improve environmental performance. Penn Sustainability will assist in completing a carbon inventory of real estate holdings by 2019.

Penn's real estate management team continues to track energy use in ENERGY STAR® Portfolio Manager for buildings over 50,000 sf, as well as the garden-style apartments in the West Philadelphia portfolio. As older HVAC equipment is retired, it is replaced with high efficiency alternatives. New real estate projects in Penn's portfolio meet LEED Silver minimum certification.

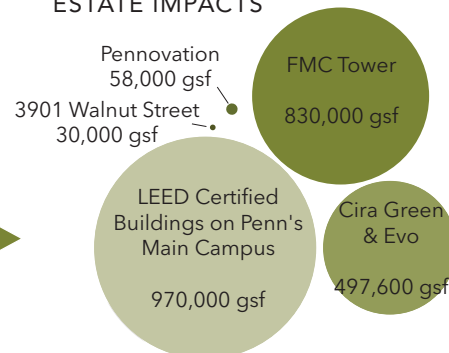
In 2017, the Morris Arboretum performed 11 HVAC replacement projects and 7 lighting upgrades. The Morris has the only LEED Platinum building in the Penn system, the Horticulture Center, completed in 2010.

To reduce the largest portion of its carbon footprint – electricity use—New Bolton Center has identified conservation strategies across its campus, such as equipment replacements, lighting upgrades, and adjustments to animal feeding schedules.

Penn Sustainability will work with HUP to develop additional emissions reduction strategies, drawing on the knowledge gained through completion of the Carbon Inventory.

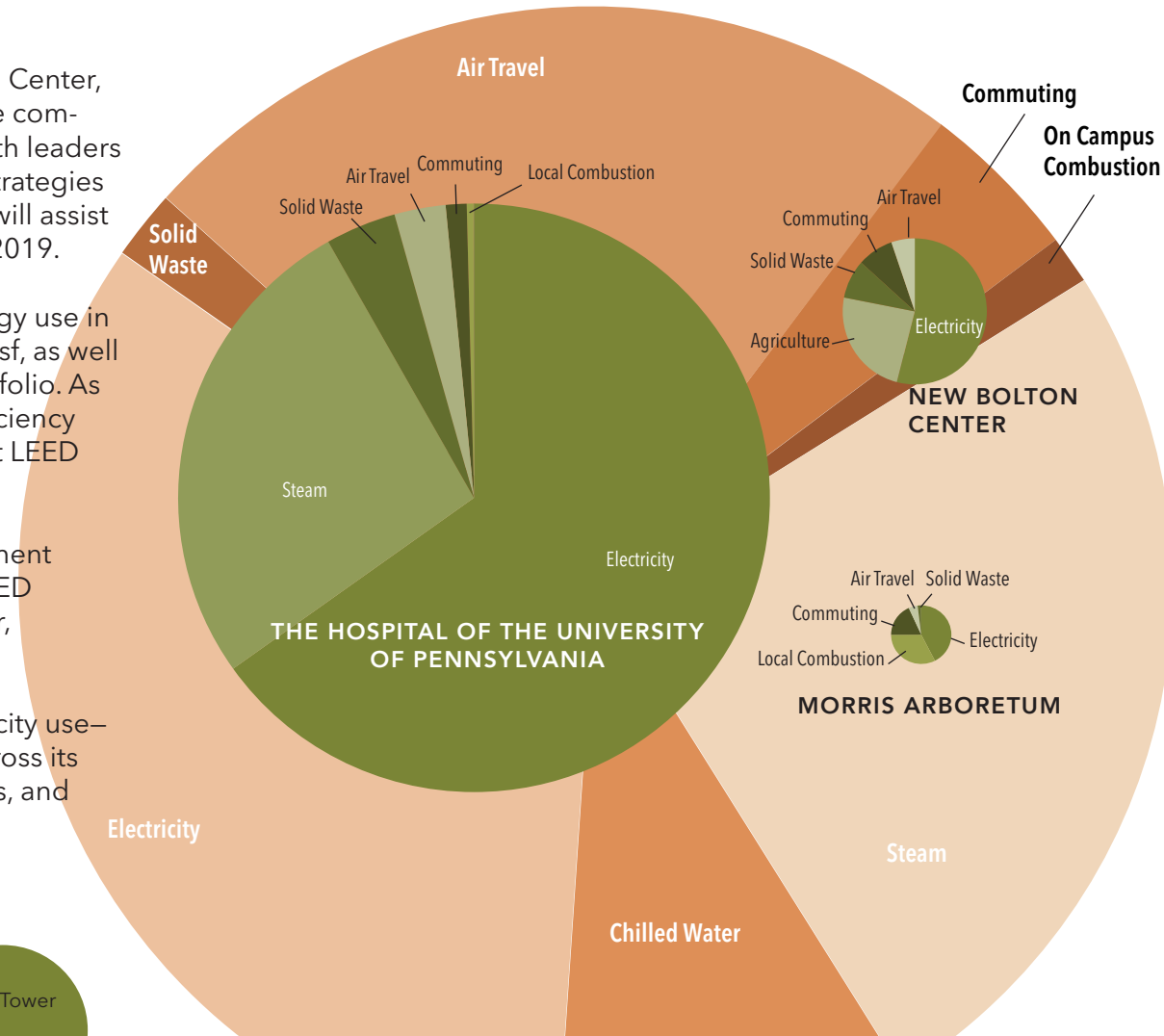
Penn's most recent LEED real estate projects compared to all campus LEED buildings by area, shown here to indicate environmental impact.

SCALE OF GREEN REAL ESTATE IMPACTS



PHYSICAL ENVIRONMENT

CARBON INVENTORIES OF THE HOSPITAL, NEW BOLTON, AND THE MORRIS ARBORETUM COMPARED TO THE MAIN CAMPUS



The largest carbon inventory shown above represents the emissions breakdown of Penn's West Philly academic campus. The relative size of the inventories for HUP, the New Bolton Center, and the Morris Arboretum show the potential impact of further emissions reductions in the greater Penn system.

Waste Minimization & Recycling

- ✓ We are achieving our goal.
- ↪ We have mixed success.
- ⊞ We are not meeting our goal and will reevaluate.



CAP 2.0 Mission

IMPROVE PENN'S ENVIRONMENTAL PERFORMANCE BY MINIMIZING SOLID WASTE THROUGH COMMUNITY EDUCATION, APPROPRIATE INFRASTRUCTURE, AND PROPER DISPOSAL.

CAP 2.0 GOAL

PROGRESS SINCE FY14 BASELINE

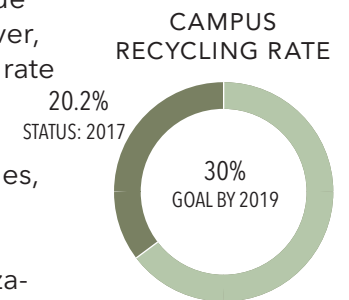
✓ Continue to reduce overall landfill waste.

In 2017, total **landfill waste decreased by approximately 5%** compared to 2014.

⊞ Increase recycling rate to 30% by 2019. (Recycling rate is measured by weight.)

On average, the recycling rate has increased since 2009 in part due to the wide adoption across campus of deskside recycling; however, the **recycling rate decreased by 7%**, leading to a 20.2% recycling rate in 2017 when compared to 2009.

This decrease is in part due to the diminishing weight of recyclables, industry trends toward lighter packaging, and the efforts of Penn Purchasing to greatly reduce the amount (and cost) of recyclable packaging brought to campus. Penn's waste and material minimization efforts have resulted in a **13% reduction in the total amount of material being removed from campus.**



✓ Improve and expand composting operations on campus.

Pre-consumer (kitchen) composting at Penn Dining Cafés and local restaurants serviced by Penn **diverted over 15 tons per month** from landfills in 2017. For the 2017/2018 academic year, Penn initiated the use of reusable plates, bowls, and mugs in New College House, reducing total waste from dining operations even further. A pilot of post-consumer composting is being tested at Williams Café.

↪ Expand recycling and reporting of construction and demolition waste (C&D) for all construction and renovation projects across campus.

C&D removal is recorded at Penn for new construction and large renovations, including LEED-certified projects; however, C&D fluctuates yearly based on campus construction schedules. Reported C&D has ranged from 100 to 500 tons per year. The Solid Waste Management Working Group is working to ensure that all projects, regardless of size, contract with approved C&D vendors to divert this waste from landfills and report associated metrics to the Penn Sustainability Office.

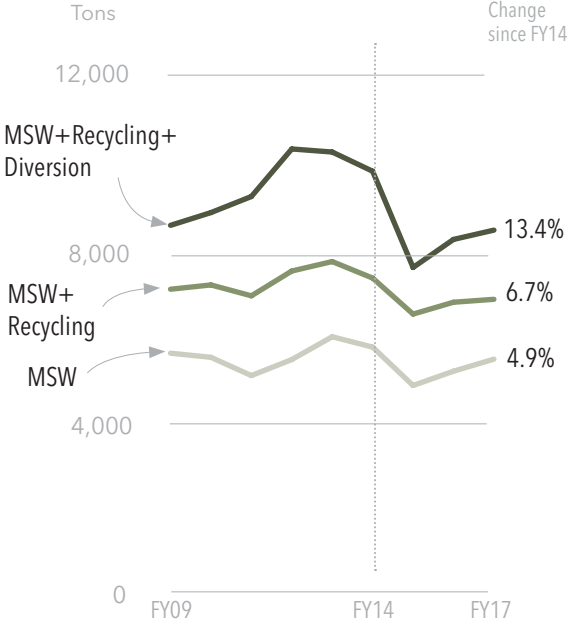
Waste Flows and Distribution

A closer look at the waste streams

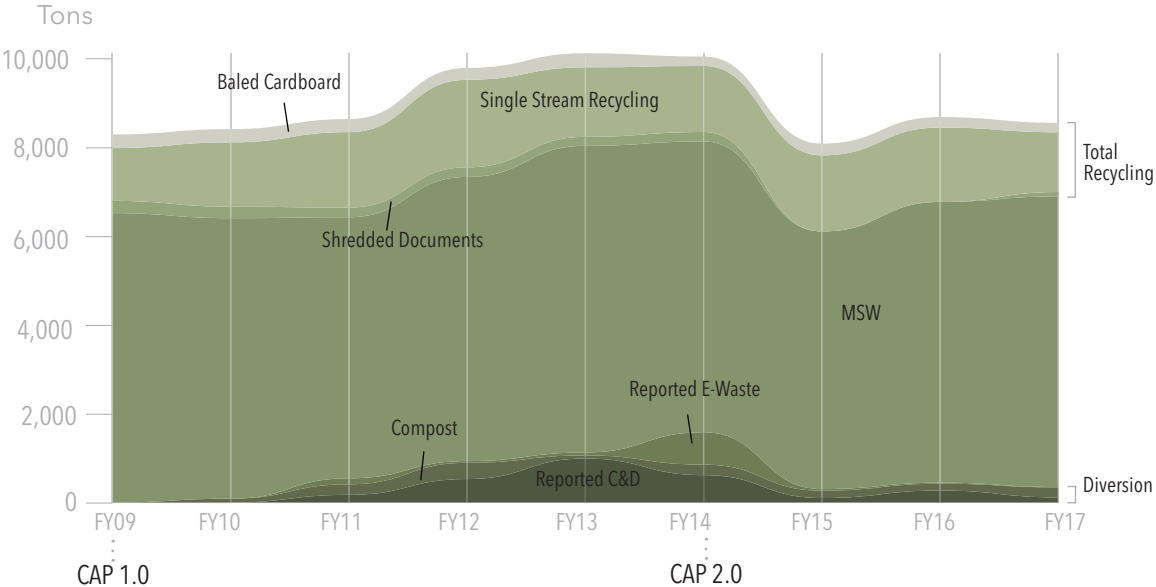
Waste on campus is tracked in three categories: landfill waste (also known as municipal solid waste or MSW), recycling, and diversion. MSW is composed of non-recyclable materials sent to landfill or waste-to-energy incineration. Penn's single-stream recycling includes plastics, paper, metal, and glass, as well as baled cardboard and shredded documents. Diversion entails materials not included in single-stream recycling, but that are repurposed, such as e-waste, compostable food and yard waste, and construction and demolition waste (C&D).

Industry trends in shipping and packaging, as well as consumer choices, have resulted in greatly reduced weights of waste products, changing the proportions of waste, recycling, and diversion on campus. For example, many beverages are now purchased in lightweight plastic as opposed to glass, reducing the weight of recycled bottles, if not the number. At the same time, Penn has initiated sweeping changes in purchasing and delivery practices to reduce the amount of packaging on campus. Combined with aggressive outreach and education to Penn consumers and purchasers, these efforts have contributed to modest reductions in MSW despite campus growth. In addition, significant improvements in recycling and diversion efficiencies, as well as increased data collection, have allowed greater transparency and improved measurement of materials being removed from campus.

DECREASES IN CAMPUS WASTE FLOWS



DISTRIBUTION OF WASTE, RECYCLING, AND DIVERSION



▲ Changes in waste streams between 2009 and 2017, shown with absolute weight on the vertical axis. Diversion includes recycling, e-waste, and compost. C&D is excluded as it fluctuates greatly year to year, depending on campus construction schedules.

◀ Composition and weight of recycling, waste, and diversion since 2009. The increase in recycling rate (weight of recyclables compared to MSW) has slowed as the weight of recycled materials has diminished.

Purchasing Practices

- ✓ We are achieving our goal.
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CAP 2.0 Mission

CONTRIBUTE TO PENN'S OVERALL ENVIRONMENTAL PERFORMANCE AND WASTE MINIMIZATION EFFORTS THROUGH STRATEGIC PURCHASING DECISIONS.

CAP 2.0 GOAL

PROGRESS SINCE FY14 BASELINE

✓ Deliver Green Purchasing solutions.

Penn has eliminated cardboard packaging for office supplies deliveries, switching all deliveries to reusable plastic totes. Recycled-content copy paper and printer toner are now the campus default, among other preferred "green" office supplies.

✓ Recognize Green Purchasing champions for their efforts.

In 2015, Penn introduced *Green Purchasing Awards* to recognize individuals and teams that advance sustainable purchasing practices, and to celebrate projects that contribute to a more sustainable future. See the next page for Green Purchasing Award recipients.

✓ Modernize supplier contracts.

Penn Purchasing is incorporating sustainability into new contract language and works with the Office of the General Counsel to promote sustainability with vendors and suppliers. Penn Purchasing will be working to put in place standardized language across the University and consider certain category-specific language for target categories.

✓ Connect with industry leaders in sustainable purchasing.

Penn Purchasing is an active member of the Sustainable Purchasing Leadership Council (SPLC). At the April 2017 SPLC conference, Penn was recognized for partnering with *Wash Cycle Laundry*, a local and minority-owned business that sustainably processes and delivers much of Penn's laundry services.



Penn and Wash Cycle Laundry received the **2017 SPLC Leadership Award for Supplier Engagement**, a national award

Purchasing Practices

PURCHASING PRACTICES

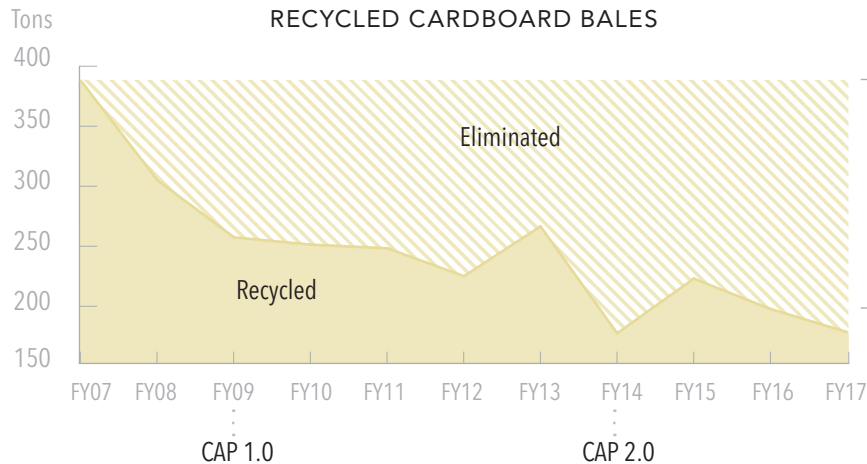
Spending sustainably

Penn Purchasing Services launched Managed Print Services (MPS) in 2013, greatly reducing the number of desk-side printers and paper use across campus, while still maintaining high quality office printing services. Participating offices have seen a 25% decline in total printing costs, have reduced electricity charges, and have cut paper use dramatically.

In addition to MPS, Penn Purchasing identifies environmentally friendly online options to help staff choose sustainable office materials. For example, the Penn Purchasing website automatically defaults to 30% recycled, 70% FSC-certified copy paper.

Remanufactured (recycled) printer toner is another "default" option. The Penn purchasing marketplace prompts buyers to select sustainable alternatives for office supplies and equipment when available.

To reduce the waste associated with end-of-year student move-out, Purchasing Services helps manage on-campus donation services for students' unwanted household goods, clothes, and non-perishable food items. In 2017, over 20 tons of goods were donated to local charities.



1,500+ tons of cardboard eliminated from Penn waste stream since 2007.

The drop in volume of cardboard bales is indicative of strong purchasing practices. Penn eliminated the use of cardboard delivery boxes and switched to reusable plastic totes.

The Green Purchasing Champions award honors the actions of individuals or teams that advance sustainable purchasing at Penn, reducing waste, creating efficiencies, or providing energy conservation through best purchasing practices.

GREEN PURCHASING CHAMPIONS 2017

GREENEST Office Product Purchase Percent (2017)

The award for the highest percentage of green office supplies went to the bio-engineering department office. This office was Penn's #1 purchaser from the "dark green" supply category - products that are 90-100% post-consumer recycled.

Wharton Zero Waste Events Policy (2017)

The Wharton Zero Waste Events Policy established a new standard for large events at Wharton. Implemented during graduation week of 2017, the policy led to 21 zero-waste commencement events, and significant reduction in event waste.

Transportation

- ✓ We are achieving our goal.
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CAP 2.0 Mission

EMPHASIZE AND PLAN A QUALITY PEDESTRIAN CAMPUS ENVIRONMENT, ENCOURAGE THE USE OF BICYCLING AND PUBLIC TRANSPORTATION FOR COMMUTING, & PROVIDE SAFE, EFFICIENT, LOCAL TRANSPORTATION SERVICES.

CAP 2.0 GOAL

- ✓ Continue to support an efficient, pedestrian oriented campus by implementing sustainable transportation initiatives.

PROGRESS SINCE FY14 BASELINE

CAP 2.0 continues Penn's long-standing commuter benefit programs. Faculty and staff are now eligible for pre-tax discounted transit passes, van and car pool parking, and bicycle commuting benefits. Occasional Parking offers 10 discounted, guaranteed parking passes for commuters who infrequently drive; the Emergency Ride Home program gives registered commuters a ride in emergency situations. Students are eligible for a discounted SEPTA Pass.

Over **48% of employees** commute sustainably by using public transportation, car/van pooling, or shuttles (walkers and cyclists currently not tracked). Among drivers, over **475 employees** participate in the Occasional Parking Program, as compared to 180 participants in 2014.



Penn was awarded the Clean Air Council's **2017 Clean Commute Award** for exemplary sustainability in commuting and transit.



Penn received the Delaware Valley Regional Planning Commission's **2017 Air Quality Partnership Excellence Award** for transit-related efforts to improve air quality.

To promote bicycle commuting, the Division of Business Services offers a Bicycle Commuter Expense Reimbursement Program, up to \$240 a year, to faculty and staff who commute to work by bike more than half of a given month.

- ✓ Expand bicycle commuting, continue to install new bike racks, upgrade older racks, increase the number of bike repair stations, and complete the University Bike Policy.

The Penn campus has over **60 bicycle rack locations**, with over 6,200 bike parking spots, an **increase of 700 spaces** since 2014. New racks were recently installed at Shoemaker Green, the Penn Museum, and the 3400 block of Walnut Street. Additionally, a **third public bicycle repair station** was also added at the Law Lot at 34th and Chestnut. The city of Philadelphia's Indego Bike Share continues to expand on Penn's campus; a new **fourth location** was added in summer 2017. An updated Bike Policy was completed in 2014.

Outreach & Engagement

- ✓ We are achieving our goal.
- ➔ We have mixed success.
- ↻ We are not meeting our goal and will reevaluate.



CAP 2.0 Mission

BUILD A CULTURE OF SUSTAINABILITY THAT INFORMS ALL CAMPUS CONSTITUENCIES

CAP 2.0 GOAL

PROGRESS SINCE FY14 BASELINE

✓ Foster a student culture of sustainability by maintaining a vibrant Student Eco-Reps program and by collaborating with the Student Sustainability Association at Penn (SSAP).

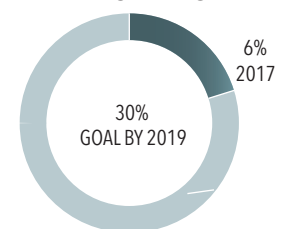
The Student Eco-Reps program was revamped in 2016 to be a cohort of 15-20 students focused on year-long, in-depth sustainability projects. Since 2016, they have completed 12 projects. 2017 projects included: Campus Ecology Tours, Residential Compost, Outdoor Recycling & Waste Signage, Community Garden Expansion, Educational Sustainability Workshops, and Drying Racks in Residential Laundry Rooms.

The Penn Sustainability Office meets with SSAP regularly to discuss initiatives and collaborate on programming.

➔ Expand the Green Office Certification program to a goal of 30% of Penn staff working in certified offices by 2019.

Currently, **751 staff and faculty** work in **83** Certified Green offices, **45%** of which have attained at least a Level 2 certification. This is an increase from the 12 offices certified in 2014.

GREEN OFFICE PARTICIPATION



✓ Maintain a dynamic Staff & Faculty Eco-Reps program.

The program has maintained membership since 2014, growing from **92 to 99 members**. In 2015, a volunteer steering committee was created to share leadership responsibilities and enhance campus engagement.

✓ Work with School leadership to expand Sustainability Coordinator roles to all Schools at Penn.

Sustainability Coordinators have been established at **9 of Penn's 12 Schools**, as well as at University Life, Athletics, Morris Arboretum, New Bolton, and Business Services. The Coordinators meet monthly to align their work with CAP 2.0 goals.

✓ Restructure the Green Fund with direction from the Green Fund Review Board.

The Green Fund review board was restructured in 2017; it is now comprised of **7 Sustainability Coordinators**. Applications are reviewed on a rolling basis; the committee reaches out to members of the University administration (including the Office of the Provost) when specific expertise is required.

\$1.2M

Awarded to 59 projects, since 2009

PENN SUSTAINABILITY

sustainability.upenn.edu

