FAST FACTS:

- The total amount of electricity used on campus decreased by 6.1 percent (p. 2).
- The four solar arrays collectively avoided 490 metric tons of CO2 emissions (p. 6).
- Landscape irrigation has been reduced by tracking soil moisture and weather.
- Homewood completed distribution and installation of the new 3 bin system across campus (p. 8).
- The campus collectively purchased 513 fewer cases of paper in FY2013 than in FY2012 (p. 8).

YEAR IN REVIEW

Five years after setting our greenhouse gas reduction goal for the university, operational and outreach effort continue to support conservation, efficiency and innovation. Renovations and new buildings have presented some challenges when trying to lower energy consumption and Greenhouse Gas emissions. However, more and more the stakeholders throughout facilities continue to raise the bar on innovative building design, as showcased with the new Undergraduate Teaching Lab, where efficiency was the primary goal.

FACULTY, STAFF, & STUDENT ENGAGEMENT

Many shapes and shades of change are taking root at Homewood Campus. There is a vibrant community of student groups working to improve campus infrastructure, encourage sustainable behaviors, and advocate for institutional change, such as Students for Environmental Action, Real Food Hopkins, Take Back the Tap, Sustainable Hopkins Infrastructure Program (SHIP), Greeks Getting Greener, and a sustainability task force within Student Government. Staff can join the Office of Sustainability’s network of Green Teams, get their offices Green Certified, and take advantage of sustainability consulting for areas of opportunity in engaging their colleagues. Additionally, administrators are working hard to not only reduce the impact of events iconic to the JHU experience, such as Orientation, Spring Fair, athletic games, and Commencement, but are also working to ensure these events are educational and experiential moments that instill sustainable values in Hopkins’ students. Our faculty continual work to facilitate ways to engage students in sustainability topics in scholastic and hands on ways through Senior Design and other capstone projects, as well as special lectures and seminars showcasing internal and external research, that are coordinated by the Environment, Energy, Sustainability and Health Institute (E2SHI).
In 2013, Homewood energy use increased by 3% over FY12. This increase is partially due to the more traditional winter than Maryland had during FY12. The addition of a half megawatt data center and the increase in building footprint. In FY13, Homewood added the Cordish Lacrosse Center and the Brody Learning Commons.

While Homewood used 7% more natural gas, this was offset by 6% less purchased electricity. Gasoline and diesel fuels also increased slightly during this period.
ENERGY CONTINUED

HOMEWOOD ENERGY PROJECTS

Homewood is piloting a continuous commissioning (building tune-ups) project on six buildings. Most of the campus pole lights have been changed to LED reducing electricity use by 70%. The Undergrad Teaching Labs came on line at the end of FY13. This is our most energy efficient research space to date.

Recent roof replacement projects improved the R-value of the old roof dramatically and two sky-light replacement projects (Levering and Olin) allowing improved levels of natural light to interior spaces. Energy and water use dashboards were installed on the Residence halls. Solar PV was installed on the roofs of the Mattin Center and the Athletics and Recreation Center.

The Combined Heat and Power (CHP) unit came on line and started displacing some of our purchased grid electricity with lower carbon and higher efficiency natural gas produced electricity.

Utility Rebates

Homewood has received over $700,000 in BGE rebates toward electricity reduction improvements. To qualify, a project or retrofit has to reduce energy use better than the minimum allowable alternative.
University Overview

- University Annual GHG Emissions
  - Energy use increased by only 3% since 2008, but has decreased by 19% compared to business as usual (BAU) projections.
  - This has saved the University an estimated $50 million in energy costs over the last five years.
  - GHG emissions have declined 23% since 2008 and by 35% compared to BAU projections.
  - A total of 456,000 Tons of Carbon eliminated.

- University Energy Consumption
  - The University’s building energy density has dropped from 204 to 195 (KBTU/GSF/Year).
  - The GHG density has dropped from .033 to .023 (MTCO2e/GSF/Year). This progress despite a growth of building GSF of 8.5% since 2008.

University GHG Reduction Goal

Johns Hopkins University continues to strive to reach their 2025 greenhouse gas goal to reduce emissions 51 percent from 2008 levels by 2025.
In FY2013, Homewood saw a decrease of 1.3% in total emissions due to a reduction in purchased electricity. Electricity emissions decreased by 5.9 percent but the natural gas emissions increased by 7.2 percent. Natural gas does not have as high a carbon content as electricity. Transportation fuels impact is minimal.
Overview

FY2013 marked the first full year of solar contribution to the Mattin Center, the Recreation and Athletic Centers, and at Eastern for the Homewood. The solar arrays contributed over 699,000 KWH to the buildings. By using carbon free power, Homewood avoided approximately 490 metric tonnes of carbon emissions.

The graph shows the electricity generated since the systems were installed, 1,032,113 KWH. In the coming years, the campus is exploring opportunities for the second phase of solar, including PV and Solar hot water systems.
WATER

WATER USAGE

Water consumption for FY13:
- 82 million gallons total
- 4.5 million gallons for irrigation
- 30 million gallons for cooling towers

Irrigation water use has dropped by nearly 50% since incorporating soil moisture sensors and weather monitoring.

Any time rest rooms are renovated, low flow fixtures are replacing older fixtures, reducing unnecessary water use by 60-70%.

When discovered, equipment cooled with city water is being changed over to closed loop water systems.

FIGURE 10: Take Back the Tap Student Outreach Efforts

BOTTLED WATER

Over the past couple of years, the Office of Sustainability has been encouraging the different JHU divisions to find alternatives to disposable plastic bottle usage at their respective campuses. Some of the alternatives include installation of a Quench system, which filters tap water in an office setting, and the other is retrofitting a traditional water fountain with a goose neck or a bottle filling station. In FY2013, the Homewood campus…

In FY2014, Homewood plans to update some existing fountains with goosenecks and replace fountains with bottle filling stations.
CHANGING BEHAVIORS

Recycling

Recycling Highlights

Concluding FY2013, the Homewood campus remained consistent with the FY2012 recycling rate at 26 percent. Over the year, the campus completed distribution of the new 3 bin system with signage. This system allows for consistency across campus to help improve the overall recycling rate. Homewood has also been very active in promoting and conducting zero waste events.

In FY2014, Homewood should see an increase in the overall recycling rate due to the new dining vendor, the new bin system, and the shift from trash dumpsters to more recycling and compost dumpsters.

Copy Paper

Paper Highlights

FY2013 represents the fourth year of paper collection data from our supplier. As we continue to collect information on paper purchasing, the data improves. The Office of Sustainability strives to encourage faculty and staff throughout the University to purchase recycled content copy paper and to find alternatives to printing but if needed to do so double sided.

The Homewood Campus continued to improve their paper purchasing habits in 2013. Of the paper purchased, 83 percent contained recycled content. This is relatively consistent with FY2012 purchasing totals. Homewood also purchased 513 fewer cases than they did in the year before. Figure 12 summarizes the data for the year and compares to past trends.