University Perspective

In 2007, JHU committed to reduce its greenhouse gas emissions (GHGs) by 51% by 2025. Data was baselined at 2008. This includes emissions derived from electricity, natural gas, heating oil, and gasoline and diesel fuels consumed by university owned properties and vehicles. In addition to carbon dioxide: methane (CH4), nitrogen dioxide (N2O), and refrigerants are measured and normalized based on their global warming potentials as metric tons of carbon dioxide equivalent (MTCO2e). Grid purchased energy, electricity and natural gas, uses the local PJM emissions factors. PJM is the interconnection manager and wholesale energy market for the Northeast and North-central USA.

Total Energy:
JHU is growing. This is seen in the building footprint, up 11% since FY08, and the total energy consumption, measured in MMBTU, up 4%. Total energy consumption is on a downward trend, dropping 3% since FY15.

Energy Density:
Given this considerable growth - by nearly 1.3M square feet - energy use per square foot tells an important story, normalizing energy consumption with growth. This highlights that JHU’s buildings are becoming more efficient, though still above the average EUI for colleges, 131 kBtu/sq ft.

Greenhouse Gas Emissions:
Even with increasing energy use, GHG emissions have been steadily decreasing, down 6.4% from FY15 and 35% from the FY08 baseline. While showing progress, when comparing effects attributed to internal efforts as opposed to grid improvements, this uncovers a need for a more robust analysis and implementation plan.

Raising the Profile.
The presence of “Hopkins Eco-Smart,” the umbrella of environmental sustainability efforts at Johns Hopkins University, is growing. More and more, sustainability is ingrained into processes and initiatives across the University. For the first time, the Idea Lab included a sustainability challenge alongside community and diversity. Not only is the emblematic Acorn appearing more frequently at JHU, it’s a visible seed of change in the community. In October, Johns Hopkins was a sponsor for the annual Association for the Advancement of Sustainability in Higher Education (AASHE) conference that was held in Baltimore. From workshops, panel presentations, keynotes, tabling, tours and social outings, JHU connected and empowered sustainability officers from peer institutions across the country.

Social Cost of Emissions:
The social cost of emissions is the estimated economic cost of damages caused by climate change, such as decreased agricultural productivity, diminished human health, and property damage. Early estimates from the EPA show expected costs at $40/MTCO2e, in 2016 dollars, which is the figure we used. However, more recent studies, such as by Stanford, value carbon much higher. Stanford calculated $220/MTCO2e. This values our FY16 carbon footprint at $62,685,480.
**Total Energy Consumption**

Through energy conservation measures, Peabody has been able to decrease energy consumption by 5.6% below the FY08 baseline in spite of a small increase between FY08 and FY15. Peabody consumed 45,921 MMBTU in FY08 and 46,061 MMBTU in FY15, compared with 43,462 MMBTU in FY16.

**Energy Density**

Peabody’s building area has remained the same since FY08, but its energy consumption has fallen, which has led to an improvement in energy density. In FY16, Peabody consumed 95 kBTU/sq ft, down from 100 kBTU/sq ft in FY15 and 101 kBTU/sq ft in FY08. For comparison purposes, ENERGYSTAR provides benchmarking data for energy density. The U.S. national median for colleges and universities is 130.7 kBTu/sq ft.

**Greenhouse Gas Emissions**

Peabody’s emissions have dropped by 35% since FY08, from 6,836 MTCO2e to 4,437 MTCO2e, and by 13% from FY15. This is equivalent to the carbon captured by 1,651 acres of forest, or more than 10 Homewood campuses.

**Waste Diversion**

For smaller campuses such as Peabody, only estimates are available for waste and recycling collection. Since FY08, Peabody has had an estimated diversion rate between 15% and 18%. By comparison, the average rate was 43% for the entire university.

**Domestic Water Consumption**

Domestic water consumption was approximately 6,173,500 gallons in FY16, which is about the same as previous years. Peabody was the first to receive the new Baltimore water meters, and should have more accurate readings moving forward. The university consumed an estimated 316,500,000 gallons in all of its owned buildings.

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**by the numbers:**

- $177K: economic cost of Peabody’s FY16 carbon footprint. Using Stanford’s economic costs for emissions this would be $976K
- 13: Quench water filling stations encouraging reuse & waste reduction
- 75%: of copy paper contains at least 30% recycled content, up 7% from FY15

**Saving Resources**

The only thing better than recycled paper is not using paper at all. By making course catalogs available online, and printed copies by available by request only for students, Peabody has reduced its paper usage by 17.5%, not to mention the ink. Sustainability works best when it saves money, makes things easier to use, and preserves resources.