University Perspective

In 2007, JHU committed to reduce its greenhouse gas emissions (GHGs) by 51% by 2025. Data was baseline 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.

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.

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.

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.
by the numbers:

- **91%** of Copy Paper contains at least 30% recycled content
- **$88K** economic cost of DC’s FY16 carbon footprint. Using Stanford’s economic costs for emissions this would be $486K
- **19** reusable to-go containers sold in the JHU in DC cafeteria - students, faculty, and staff may purchase these in the cafeteria in place of disposable containers

**Total Energy Consumption**
Due to energy conservation measures and favorable weather, JHU in Washington DC has reduced its overall energy consumption significantly in recent years. It’s reduced energy use 5% each of the past two years. In FY08, it consumed 26,220 MMBTU, and in FY16 it consumed 18,400 MMBTU—a **30% decrease**.

**Energy Density**
In FY16, JHU in Washington DC consumed **67 kBTU/sq ft**, down from 96 kBTU/sq ft in FY08, and from 70 in FY15. For comparison purposes, ENERGY STAR provides energy density benchmarking data for U.S. facilities. The annual median for colleges and universities is 130.7 kBTU/sq ft, and for offices is 67.3 kBTU/sq ft.

**Greenhouse Gas Emissions**
The JHU in Washington DC’s emissions have dropped by **50%** since FY08, from 4,411 MTCO2e to 2,209 MTCO2e. The JHU in Washington DC leads the university in percentage emissions reduction. This is equivalent to the carbon captured by 7,402 acres of forest, an area slightly larger than Manhattan.

**Waste Diversion**
JHU in Washington DC had an estimated diversion rate of **20.3%** in FY16, excluding any compost collection. This was a slight increase from prior years and included for the first time paper shredding that went to recycling. By comparison, the average rate was 43% for the entire university.

**Domestic Water Consumption**
Domestic water consumption was approximately **4,056,000 gallons** in FY16, 22% more than in FY15. This is the highest use on record. The university consumed an estimated 316,500,000 gallons in all of its owned buildings in FY16.

**Fiscal Year 2016**
- **Economic cost of DC’s FY16 carbon footprint** using Stanford’s economic costs for emissions would be **$486K**.
- **19** reusable to-go containers sold in the JHU in DC cafeteria - students, faculty, and staff may purchase these in the cafeteria in place of disposable containers.