University Perspective

In 2007, JHU committed to reduce its greenhouse gas emissions (GHG) by 51% by 2025. This includes emissions derived from electricity, natural gas, distillate oil, and gasoline 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. While Johns Hopkins University continues to grow in size, the rate at which energy consumption increases is at a much slower pace as a result of energy conservation measures that have been implemented.

Total Energy:
University energy consumption is tracked in MMBTU, which combines kWh of electricity, therms of natural gas, and the energy content of liquid fuels for transportation and buildings. Since FY08, total energy consumption has increased by 4.6%.

Building Footprint:
As the university often has less ability to implement conservation measures in leased spaces, only properties owned by Hopkins are tracked. In FY15, university-owned buildings increased by almost 25,000 square feet. Since FY08, the university has grown by 9.3%.

Greenhouse Gas Reduction:
In FY15, the university emitted 304,490 metric tons CO2-equivalent (MTCO2e), a 30% reduction since FY08. Much of the change is attributed to the regional electric grid, which has been consuming proportionally more natural gas and renewable sources, while reducing its reliance on coal.

Energy Density:
New construction and vacating of existing buildings can drastically affect the university’s total energy consumption, and therefore make it difficult to see the benefits of energy conservation measures. An energy density calculation—energy per gross square foot—is a useful metric that normalizes energy use with the size of facilities. In FY15, university-owned properties averaged 203 kBTu/sq ft, almost a 5% reduction since FY08. This reduction in energy, and ultimately GHGs, can be attributed to a number of initiatives including lighting retrofits and the implementation of high performance building guidelines for new construction and major renovations.
by the numbers:

- **$2M** in Utility Rebates for energy conservation measures since 2008
- **55%** of Copy Paper contains at least 30% recycled content
- **151 MWh** of Electricity generated from solar panels in FY15
- **3** Green Office Certifications since 2014

**Total Energy Consumption**
Without proper maintenance and improvements, buildings will become less efficient over time. SoM has been able to maintain a relatively consistent level of energy consumption over the last several years, even with changes in plug-loads and the number of employees. In FY08, SoM consumed 1,004,772 MMBTU, compared with 1,031,105 MMBTU in FY15.

**Energy Density**
In FY15, SoM consumed 384 kBTU/sq ft, compared with 380 kBTU/sq ft in FY08. For comparison purposes, ENERGYSTAR provides benchmarking data for annual energy density. The U.S. national median for colleges and universities is 130.7 kBTU/sq ft and the median for offices is 67.3 kBTU/sq ft. Biological and chemical laboratory facilities are typically between 200 and 400 kBTU/sq ft.

**Greenhouse Gas Emissions**
SoM’s emissions have dropped by 30% since FY08, from 128,887 MTCO2e to 90,128 MTCO2e. This is equivalent to taking 8,100 passenger vehicles off the road or saving 89,500 barrels of oil each year.

**Waste Diversion**
In FY15, SoM achieved a 52% diversion rate. SoM has consistently had one of the highest rates among all JHU campuses, in part from the diversity of materials it is able to separate out from the waste stream. This includes wood pallets, electronics, pipette tip holders, and compostable materials, among others. By comparison, the average diversion rate for the entire university was 44%.

**Domestic Water Consumption**
The school’s domestic water consumption was approximately 125,000,000 gallons in FY15, which was about a third of the university’s total consumption. JHU used an estimated 360,000,000 gallons in all of its owned buildings over the course of the year.