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.

**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.
Total Energy Consumption

Through energy conservation measures, MCC has reduced its overall consumption in recent years. In FY08, it consumed 17,085 MMBTU, and in FY16 it consumed 15,935 MMBTU—a 7% decrease.

Energy Density

MCC’s building area has remained the same, but its energy consumption has fallen, which has led to further improvement in energy use per square foot. In FY16, MCC consumed 149 kBtu/sq ft in its owned facilities, down from 160 kBtu/sq ft in FY08 and 154 in FY15. 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 and for offices is 67.3 kBtu/sq ft.

Greenhouse Gas Emissions

MCC’s emissions have dropped by 31% since FY08, from 3,213 MTCO2e to 2,225 MTCO2e, down 8% from FY15. This is equivalent to the carbon captured by 936 acres of forest, an area six times the size of the National Mall in Washington D.C.

Waste Diversion

MCC’s had an estimated diversion rate of 17% in FY15, the same as in FY15. This is achieved through recycling alone as there is no composting on-site.

Domestic Water Consumption

Domestic water consumption is estimated to be almost 969,844 gallons, which was slightly lower than in previous years. The university consumed an estimated 316,500,000 gallons in all of its owned buildings in FY16.

by the numbers:

Shining a Light

Through a comprehensive LED lighting project, the campus is anticipating a reduction of 500,000 kilowatts of electricity use annually, equating to a reduction of 288 metric tons of carbon dioxide equivalent, about one-third of MCC’s total reduction. The change-out of roughly 2,000 fluorescent fixtures for light-emitting diode lamps—more efficient and longer lasting units that emit less heat when in use—will also help achieve energy and labor cost savings through improved conditions for mechanical systems, like HVAC, and reduced maintenance.

Montgomery County Campus

fiscal year 2016

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$89K economic cost of MCC’s FY16 carbon footprint

Using Stanford’s economic costs for emissions, this would be $490K

$89K