

Greenhouse Gas Inventory for the College of William and Mary: Summary
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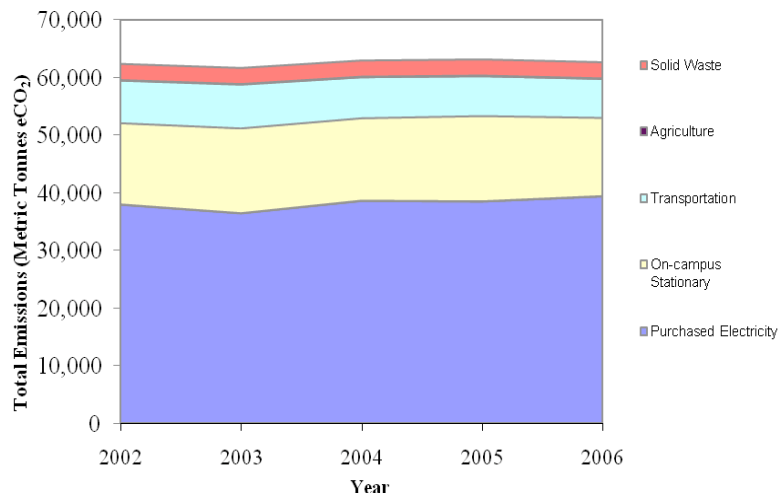
Since the International Panel on Climate Change announced in its 2007 report with virtual certainty that global warming is both occurring and is caused by human activity, colleges and universities across the United States are taking the initiative to combat climate change by decreasing their emissions of greenhouse gases. More than 350 institutions have committed since the beginning of 2007 to moving towards zero net carbon emissions in the near future. As a leader among institutions of higher education, it is incumbent upon the College of William and Mary to address its own contribution to this global problem. In order to do so, however, we must first know what our contribution is.

The College and University Presidents Climate Commitment (PCC) requires that signatories “complete a comprehensive inventory of all greenhouse gas emissions (including emissions from electricity, heating, commuting, and air travel) and update the inventory every other year thereafter.” This report summarizes the findings of a research project conducted during the summer of 2007 to estimate current and past greenhouse gas emissions of the College of William and Mary. The study is consistent with UN guidelines for greenhouse gas inventories, accepted campus emission inventory methodologies, and with the expectations of the PCC.

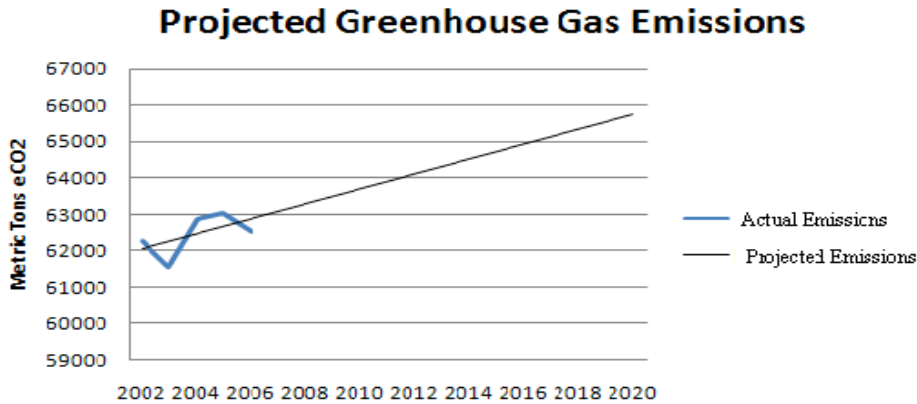
In 2006, William and Mary emitted more than 62,560 metric tons (137,919,776 pounds) of carbon dioxide equivalents from all sectors. This corresponds to an average annual release of approximately 8 tons of carbon dioxide for each of the College’s 7,500 students. By comparison, the University of New Hampshire, which completed a Greenhouse Gas Inventory in 2004, emits only 60,300 metric tons of carbon dioxide equivalents, with a student population of more than 12,000. Moreover, according to statistics gathered from the United Nations Framework Convention on Climate Change, the College emits more than some nations in the developing world with much larger times populations such as the Pacific island nation of Kiribati, whose very existence is threatened by sea level rise.

The largest contributing sector in this study was purchased electricity, corresponding to more than half of all annual greenhouse gas emissions. Emissions from on-campus energy generation ranked second and, together, energy consumption accounted for approximately 85% of all greenhouse gas emissions. Other sources of interest included methane released from the decomposition of land-filled solid waste; carbon dioxide from university-operated and commuter vehicle fuel use; and nitrous oxide originating from chemical fertilizers applied to grounds and gardens (agriculture). Figure 1 below summarizes emissions by sector since 2002, the earliest year for which data was available.

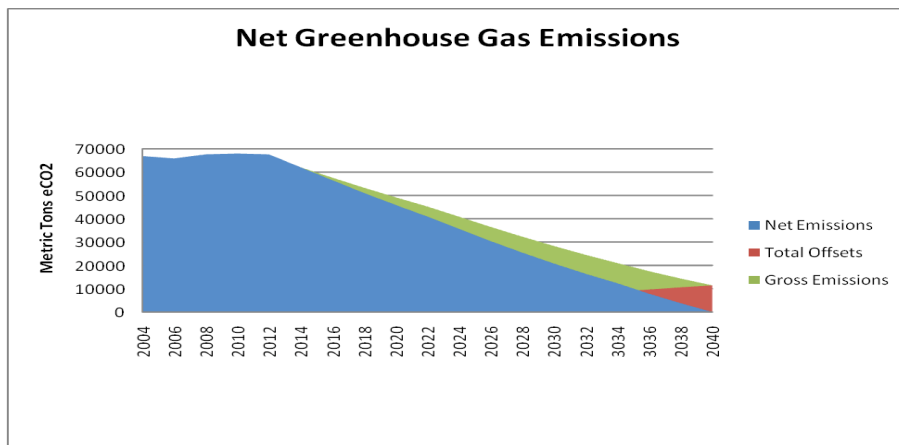
Greenhouse Gas Emissions by Source



Total emissions since 2002 have remained relatively constant, but exhibit a statistically significant upward trend even over this small time scale. Figure 2 projects average future emissions under a “business as usual” approach wherein no effort is made to address greenhouse gas emissions. Although it is clear that actual emissions vary from year to year, this forecast estimates annual emissions of around 65,800 metric tons of carbon dioxide equivalents by 2020.



By making relatively small changes in its daily operations over time, the College can greatly reduce its energy consumption and thus impact on climate change. Figure 3 shows the projected net greenhouse gas emissions through 2020 under a scenario of concerted reduction such as the one outlined by the President’s Climate Commitment. In this projection, the College reduces its total energy consumption by 2.5% each year starting in 2008. Some (conservative) assumptions are made about the increasing availability of electricity from renewable sources in Virginia over time. In addition, emissions from transportation are reduced as the College finds alternatives to its fossil-fuel dependent fleet. Carbon offsets in the form of sequestration and investments in renewables are purchased to compensate for emissions which cannot be eliminated. Under this example, the College achieves “carbon neutrality,” or no net greenhouse gas emissions, by the year 2040.



Currently, there are no feasible options for the purchase of electricity generated by renewable sources in Virginia. While this may change in future years as infrastructure is built, the current focus of an energy policy at William and Mary should be energy efficiency, conservation, and, where possible, the creation of on-campus renewable energy generation. As examples from other institutions demonstrate, the monetary savings from reduced energy consumption can be used to partially or fully fund additional improvements with higher up-front costs.