



Energy usage and greenhouse gas emissions report for Chestertown Government, 2010
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Background

In 2010, the Center for Environment & Society (CES) at Washington College received funding from the Town Creek Foundation to continue its work with the town governments of Chestertown and Betterton in helping them assess their greenhouse gas emissions (ghges) through examinations of their energy usage. In addition, CES offered to assist the Kent County government in a similar endeavor. This report gives details of Chestertown government's energy usage and greenhouse gas emissions for its operations and facilities, for calendar year 2010, and also presents a comparison of the energy usage from 2007 through 2010.

Working with staff of the Chestertown government, CES has produced ghge inventories for the past four years, which have helped it make decisions related to reducing emissions, which has also led to a decrease in energy usage. Over time, these reductions will also lead to significant avoidance of energy related expenses.

It is widely known that both natural as well as human-made greenhouse gases (ghgs) exist in Earth's upper atmosphere. The natural gases prevent some solar radiation from reflecting off the earth's surface and into space, thereby retaining heat and allowing the surface of the planet to stay warm enough for fauna and flora to thrive. But, by adding gases made by humans (most of which are directly related to the burning of fossil fuels) into the atmosphere, more heat is trapped and retained, warming the earth. We have reached a point where human made greenhouse gas emissions have upset the balance and threaten to dramatically increase temperatures, with far-reaching impacts upon global ecosystems. If a way to reduce human-kind's production of ghges is to be found, then a baseline of how much we produce over a period of time must first be established, which can then help determine the appropriate steps needed to neutralize them.

A recent report by the Intergovernmental Panel on Climate Change (IPCC) published calculations using conservative, medium and extreme glaciological assumptions for sea rise expected from melting of ice sheets of Greenland and Antarctica, as well as of the world's smaller glaciers and ice caps, due to global warming (http://www.ipcc.ch/publications_and_data/ar4/syr/en/mains3-2-1.html). It factored in thermal expansion due to warming waters and concluded the most plausible scenario of a total sea level rise of between 0.18 and 0.59 meters (.6 and 1.6 feet) by 2100. This report, and many others produced by recognized scientific organizations, makes a case that Chestertown, situated hard by the Chester River and especially vulnerable to sea level rise, must help lead the way toward mitigation of global warming by acting as a model municipality in reducing its greenhouse gas emissions.

Data Collection

Data for electricity usage, fuel usage and employee commute have been factored into this report. Information was gleaned from numerous sources, including invoices at the Town office, Delmarva Power Company and Integrys Energy Services, and Infinity Recycling.

Emissions report

Once all of the data was collected, information was entered into an emissions calculator that is readily available to the public from Clean Air-Cool Planet, called the Small Town Carbon Calculator. An Excel spreadsheet format automatically converts the various units of energy into greenhouse gas emissions figures.

Electricity

Delmarva Power Company distributes all of the electricity used by the Chestertown government. A good portion of the electricity supply comes through Integrys Energy Services, which purchases the supply in bulk. In 2010, Delmarva Power distributed 2,303,996 kilowatt hours (kWhs) of electricity to the Town, of which 1,115,684 kWhs were supplied by Integrys. The total amount represents a decrease of 59,055 kWhs from 2009 (or 2.5%), which resulted in a cost avoidance of \$33,483.74 (or 10%). Compared to 2008, the Town performed very well in these areas, using 272,935 fewer kWhs (or 10%), and paying \$105,108.77 less (or 27%) for that energy.

Fuel

According to figures supplied by the Town's office, the Town purchased 3,671 gallons of diesel fuel, which is 2,222 fewer gallons (or 37%) than in 2009; and paid \$10,309.69 for the fuel, which is \$2,907.7 less (or 22%) than in 2009. The Town purchased 7,190.1 gallons of propane, which is 5,796.9 fewer gallons (or 44%) than 2009; and paid \$13,395.07 for it, which is \$4,642.93 less (or 25%). The Town purchased 14,962.94 gallons of regular gasoline, which is 610.33 fewer gallons than 2009 (or 4%); but, it paid \$50,957.97 for that fuel, which is \$14,710.31 more (or 40%) than 2009 (thanks to higher prices).

Employee Commute

Using only the zip codes of the Town government's employees, commuting distances were figured from the center of Chestertown. It was assumed that 38 full-time employees drove to and from work on 240 weekdays, getting approximately 25 miles per gallon, resulting in total usage of roughly 5,376 gallons of gasoline for the year. These figures do not account for employees who carpool to work, so they are probably a bit high; they also do not account for part-time employees. That said, the number of gallons used is down from the previous year by 2,271 gallons (almost 30%).

Solid Waste and Recycling

Figures for solid waste have also been tracked since 2007, but 2010 was the first year that Chestertown was responsible for picking up recycling as well. Last year, the Town collected 1,273.66 tons of solid waste, an increase of 2.95 tons from 2009; and it paid \$72,062.41 in tipping fees, and \$110,304 in hauling fees, an increase of \$2,677.36 from 2009 (or 1.5%). Infinity Recycling reports that it collected 102 tons of recyclable materials, and charged the Town \$23,826 to do so for a little more than 1,000 residences. In doing so, the Town avoided paying \$5,916 in tipping fees.

Emissions figures

According to the Small Town Carbon Calculator, Chestertown government's facilities and operations produced 2,205 tons of greenhouse gas emissions for 2010, down 126 tons (or 5%) from 2009, and down 245 tons (or 10%) from 2008. Electricity usage accounted for 1,558 tons (or 70.6%); gasoline usage accounted for 147 tons (6.8%); diesel was 41 tons (1.9%); propane was 46 tons (2%); employee commute was 53 tons (2.4%); and solid waste was 360 tons (16.3%).

As is the case in most organizations, consumption of "brown-power" electricity accounts for the largest piece of the Town's emissions inventory. About 50% of the electricity produced comes from the burning of coal and oil, 11% from burning natural gas, and 35% from nuclear sources. Only about 4% comes from renewable sources, such as wind, solar, hydro power or bio mass.

How do these figures compare with other municipalities? On the city of Alexandria, Virginia's, web site (see <http://alexandriava.gov/Eco-City>), a report was found that gives details of that city's greenhouse gas emissions. For 2005, that city government's operations and facilities produced 79,820 tons of ghges. With a population of roughly 141,000 at the time, the amount of ghges per capita was about 0.56 tons. In 2010, the Chestertown government's operations and facilities produced 2,205 tons of ghges. With a population of about 5,000, the amount of ghges per capita was roughly 0.44 tons.

Notes

It should be noted that the more than 650 trees have been planted around town during the past three years. This effort will greatly assist in the management of stormwater runoff and will also help reduce greenhouse gas emissions by sequestering carbon from the atmosphere. Once the trees mature, they will also help in cooling some of the buildings, thereby reducing air conditioning requirements. Further, there are plans in the works to plant more trees at the Rolling Road park, and the Horsey Lane project, which will push the Town's tree canopy closer to the desired goal of 40%.

Recommendations

The most effective and immediate method for reducing consumption (and expense) of electricity and fuels is through conservation; this method has been clearly demonstrated at the Kent County Public Schools (KCPS), where the Energy Management campaign has resulted in a significant decrease in energy consumption that has avoided more than \$1 million in energy expenses over the past three years. Several other simple measures that the town government can undertake in order to reduce energy consumption include: adopting a no-idling policy for town vehicles; instituting an Energy Star purchasing policy for the Town's facilities; requesting all employees to fully turn off computers, lights, and heating or air conditioning systems when leaving for the day; and, compressing the work week to four days during the summer (to reduce the air conditioning load). In addition, investing in renewable energy systems, such as photovoltaic solar, could greatly reduce the Town's reliance on traditional "brown power" for electricity, thereby reducing its greenhouse gas emissions.