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## Energy, Global Warming, and Student Behavior

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# Energy, Global Warming, and Student Behavior

Earth Sciences

**By Marcus M. Key, Jr.**  
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Since 1991, I have taught 181 students from across the academic divisions in my Energy Resources class (ERSC 202). I have noticed some positive changes in how we explore for energy, how we as a college acquire/convert that energy, as well as some disturbing intransigence in how we as individuals use that energy. As part of the class, we do a personal energy audit for one week. We estimate our own personal contribution to global climate change on how much electricity, hot water, and gasoline we consume. Below, I outline two interesting temporal trends I have noticed.

One promising trend is a 60% decrease in energy consumption through hot water use. This is good news considering the high heat capacity of water. Unfortu-

nately, this gain has been more than offset by a statistically more significant increase in my students' percent of energy consumption from electricity use. Electricity replaced hot water as their main use of energy in 2001. This was a function of switching to low flow showerheads in the residence halls combined with increasing electrical appliance use. Back in 1991, my students did not all have smartphones and personal computers. Now that is the norm, and those devices mostly run on the most inefficient form of energy: batteries. While their electricity consumption is increasing, the percentage of that energy coming from greenhouse gas-emitting fossil fuels has increased from 65 to 68% and renewable sources have stagnated at 12% (Energy Information Agency's Annual Energy Outlook 2014). That means my students' contribution to global warming has increased during my tenure at Dickinson. Have I failed as a professor?

Presumably, students have become better informed about the correlation between both agricultural deforestation combined with fossil fuel use and increasing greenhouse gas emissions. Since 1991, the science of

anthropogenic global warming has matured. I would think that my students now are more aware of the connection between their energy use and global warming than in 1991. But their behavior has not changed. In fact, it has gotten worse. Divestiture is a much more popular (and easier?) topic of discussion among my students than inward-looking behavior modification. Reducing personal energy consumption is the most effective way to reduce anthropogenic global warming. But my experience is that this is not easy. We seem to want a technological solution to the problems created by our unsustainable energy-intensive lifestyle so we don't have to change our behavior. But all technological fixes have unintended consequences. For example, agriculture and coal-fired steam engines got us into this global warming mess, and smartphones and computers are keeping us here. New technological fixes will also have unintended consequences. What to do? Sorry, but I don't have time to answer that. My kids just called, and I have to drive them to their Sky Zone session that they just booked online.

## BY THE NUMBERS

Percentage of energy coming from greenhouse gas emitting fossils fuels has **increased** from

**65 to 68%**

from 1990 to 2012

Renewable sources (Hydropower, wind, biomass, and solar) has **stagnated** at

**12%**

from 1990 to 2012

Energy consumption through hot water use has **decreased** by

**60%**

in the past 23 years

Energy Information Agency's Annual Energy Outlook 2014