At 8:30 last Saturday evening, many Londoners joined others across Canada and participated in Earth Hour by turning off lights and unnecessary appliances. While this was promoted as an opportunity for us all to do something positive about climate change, a closer look at what happened during this hour shows, ironically, that it likely did just the opposite.

To understand why, it is important to realize that most lights, even compact fluorescents, are not terribly efficient in that they produce more heat than light. Heat is a very valuable resource, and most Canadians spend a significant portion of their incomes purchasing it; typically in the form of either natural gas or oil for our home furnaces. Both incandescent and compact fluorescent lights generate more heat than light (92 % and 75% respectively). With indoor light fixtures, this heat, along with the heat from our TV, fridge, computer and other indoor electrical appliances, contributes to heating our houses. In almost all Ontario homes this would be insufficient to meet all heating needs in the winter months, so a fossil fuel furnace supplies the rest. This means that turning off the lights or any other electrical appliances will slightly increase the amount of fossil fuel our furnace burns to maintain a set temperature.

Based on data from IESO (Ontario's Independent Electricity System Operator), during Earth Hour Ontario's demand for electricity was 14,791 Megawatt hours; of which a whopping 93% came from carbon-free sources. It was relatively windy during Earth Hour and Ontario's wind farms were able to generate 3.2% of Ontario's electricity needs, while coal provided only a miniscule 0.7%, and natural gas 7.0%. The vast majority of Ontario's electricity during Earth Hour (65%) came from carbon-free nuclear generation, and the rest from hydroelectric sources. As a result, Ontario's electricity created only 49 grams of CO2 per kilowatt hour during Earth Hour. Yet, to create the same amount of heat, a natural gas furnace would have generated about 250 grams of CO2.

IESO reported that Ontario's power demand was 920MWh less than normal during Earth Hour. If just half of this reduction was from residential homes heated with fossil fuels, the lost heat from the lights and other electric devices had to be made up by furnaces, as it was a cool evening. Because, as we have seen, fossil fuel furnaces created about five times the CO2 as electricity for the same amount of heat, Earth Hour will have resulted in an extra 90 tons of CO2 in Ontario's atmosphere: clearly not the intended outcome.

Earth Hour was conceived in Australia and scheduled in the peak of their hot summer. It is entirely reasonable in that location; as excess heat from lights in the summer just adds to the burden of air conditioners. As well,Australia's electricity is 90% generated by fossil fuel thanks to their moratorium on everything nuclear sincethe 1980's. With Ontario's relatively clean electricity and cold climate, focussing on electricity consumption sends the wrong message. As Ontario's electrical energy becomes cleaner, we should be encouraging a shift from using fossil fuels to using cleaner electricity where possible. As reported on CBC TV'sThe National a few weeks ago, recent studies have shown campaigns against incandescent light bulbs are another example of a short-sighted approach to environmentalism that is far more likely to harm our environment than help it.

As unfortunate as this conclusion is in terms of CO2, the more harmful effect of Earth Hour is the impression it promotes of doing something small but symbolically meaningful by making a sacrifice. Even the potential value of this as a symbolic act is lost once those who participated realize they were sitting in the dark thinking they were doing a good thing, while the unintended consequences of this sacrifice was actually adding to atmospheric carbon dioxide.

Of course, a simple solution would be to move Earth Hour 2010 to the middle of the summer in northern climates: this would reduce our collective carbon footprints for one hour. A much better solution would be for Canadians and our politicians to keep the lights on and use that hour to become more aware of the carbon intensity factors associated with different energy sources, so that we can make rational and environmentally sound decisions about energy policy for the other 8,759 hours of the year.

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