

Energy-saving devices work—if you use them correctly

June 8 2016, by Layne Cameron



People living in green dwellings who don't maximize their technology can lose half of the energy savings available to them. Credit: Kurt Stepnitz

A well-insulated home with a high-efficiency air conditioner and programmable thermostat are only as effective as the person using it.

A new study led by Michigan State University and published in the current issue of *Procedia Engineering* shows that people living in green dwellings who don't maximize their technology can lose half of the [energy savings](#) available to them.

"Technological advances in building and equipment account for only 43 percent of [energy consumption](#)," said Dong Zhao, assistant professor in MSU's School of Planning, Design and Construction. "That means that you could buy the greenest house on the market, yet your personal habits could waste more than 50 percent of your [energy](#) savings."

As summer heats up and air conditioners kick on, this could be a concern for individual homeowners as well as commercial property owners managing business and residential occupants.

Residential buildings account for a significant proportion of energy consumption, comprising 21 percent of the total national energy use and emitting more than one billion metric tons of carbon dioxide.

Zhao and his team of researchers collected data from 320 certified green residential units. They surveyed preferred temperature settings in summer and winter, how often windows were kept open, use of fans and space heaters, humidity settings, length of showers, dishwasher and washer and dryer use, and residents' knowledge of building systems.

"If an air conditioner achieves its highest efficiency at 72 degrees, but the resident likes it set at 68 degrees, there will be a lost value of energy savings," Zhao said.

There's hope, though, for people who want to maximize the full potential of their green building technologies. The study suggests that building scientists and mechanical engineers should consider residents' behaviors while designing technology to reach maximum efficiency.

The study also shows that education could have the biggest impact on improving [energy efficiency](#). In California, for example, utility rates vary throughout the day. So what time you charge your electric car or run your dryer can affect the savings recouped from committing to a green lifestyle, Zhao said.

"Incorporating an orientation for apartment dwellers on all of the energy savings available to them would benefit the residents and the property managers," he said. "The education component is the key to achieving higher levels of energy and financial savings. The next phase of our research will focus on what types of education work best and how educators can effectively deliver the information to residents."

Provided by Michigan State University

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