

Energy Matters: Building Envelopes

Chet Reynolds, New London Energy Committee

As we focus on the myriad ways we can conserve energy, it is always surprising to me to find that the largest allocation of energy consumption is not transportation nor industry, but rather buildings. Buildings use 48 percent of the country's energy consumption, and even more surprising is that 30 to 50 percent of that is wasted. This offers an enormous opportunity to affect enormous savings if we can improve the efficiency of our buildings or modify our concepts expending energy in the first place.

As an example of this, in February 2008 the New London Energy Committee conducted a "Lights Out Pledge" to douse non-essential lights for an hour and a half. Not much, you say, but multiplied by 2000 homes it is a significant inroad to saving electricity generated. Electricity utilized in homes constitutes a large portion of that 48% of building energy consumption.

Another approach to reducing energy spent in building use is to evaluate the "building envelope." This is the term given to the enclosure of a building that defines the living space. The elements of this envelope include insulation, water and heat barriers, windows, walls and roofs. The purpose of the envelope is to keep the heat of winter, cool air of summer, moisture, and clean air in while keeping the elements out. The envelope is designed to maintain temperature of air in its proper place at the appropriate seasonal ideal. If this barrier is damaged, heat escapes out in winter and in in the summer. By evaluating the integrity of this great "barrier" envelope adjustments can be made to improve the efficiency of the oil, propane, or electricity used for heating. This saves money while reducing the contribution to greenhouse gases.

Sometimes, the flaws in the envelope are obvious -- no insulation, single pane windows, leaky roofs, etc. But there are other instances where losses due to conduction and convection are not so obvious. These can be detected by the equivalent of a CAT scan and a pulmonary function test, in the building trade identified as "infrared scanning and imaging" and a "blower door test." The first localizes the problem of conduction by noting the involved area of heat loss by image color change and the second notes conduction loss by the rate of pressure reduction caused by air leaks of the building. By making improvements in this investing layer, enormous savings can be made. Finally, once the envelope has been secured, one of the simplest means of reducing the wasted energy is to change traditional habits. Instead of maintaining a goal of 68 to 70 degrees, it is recommended that the temperature be set for 63 or even 60 degrees. It is believed that for every degree the thermostat is lowered, there is a 3% savings on the total heat expenditure. A reduction from 70 to 63 would reap a 21% savings on the heating bill.

We hope that more and more people will become aware of these facts and strive to make a difference. Over the next months we will endeavor to disseminated more detailed information on these subjects and make them available at the New London Town Offices and Tracy Library. A pamphlet that has been particularly useful for explaining building envelopes was published by The Rocky Mountain Institute. This is one of a series of nine briefs that provide clear information on such topics as lighting, space cooling, space heating, electricity, kitchen appliances and others and give comparative statistics and prices for a variety of products and techniques.

Hopefully by becoming economically, environmentally and technologically conscious we will achieve a less costly and more responsible and sustainable life style. Remember! Don't idle your vehicle and turn the lights out whenever possible.

Chet Reynolds, a retired surgeon who has lived in New London for 21 years, is the chair of New London's Energy Committee. www.nl-nh.com/energy