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GREEN BUILDING: Zero-energy buildings address global warming concerns

By Boone Guyton
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People did not set out to cause global warming or mercury poisoning or increased asthma. We set out to improve our standard of living and quality of life by employing more energy to do more work and produce more commodities and services. We now have a system that depends on a huge and growing amount of energy consumption to get us around, heat and cool our buildings, run our factories, grow our food and power an increasing number of gadgets, gizmos and labor-saving devices. Some of these applications of energy improve our quality of life and some are questionable, but overall increased energy consumption indicates a higher standard of living. As the population increases and the overall standard of living increases, our effect multiplies.

The way we generate energy, mainly through burning fossil fuels, is leading to the most important climate change consequences since the last Ice Age. We are now confronted with altering the most fundamental way we do business.

As Yogi Berra said, “The future ain’t what it used to be.”

The nearly unanimous consensus of scientists is that global climate change is occurring mainly because of human activities. To avoid the worst effects of global warming which would accompany a 2 to 3 degree rise in global temperature, scientists suggest we reduce our carbon production by 60 percent to 80 percent by 2050. So we need to not only stop the increase that is happening but also reverse it and reduce our output of greenhouse gases dramatically within the next 40 years.

If we look at where the most demand is for products and services that contribute to the problem, buildings show up as the single biggest source. Buildings are responsible for 43 percent of total U.S. carbon dioxide emissions from their operations, which have been increasing at almost 2 percent per year since 1990. Most of the increase is because of increased size, increased use of electrical appliances and electronics, and increased use of air conditioning. If you add in the energy involved in producing the materials that go into the buildings, the contribution of buildings to total U.S. greenhouse gas emissions is 48 percent, whereas transportation is 27 percent and industry is 25 percent.

To have a shot at dealing with global warming in a significant way, we must change the way we build and use energy in our buildings. According to Edward Mazria in Architecture 2030, “Herein lies the hope. By the year 2035, approximately three-quarters of the built environment will be either new or renovated. This transformation over the next 30 years represents an historic opportunity for the architecture and building community to avoid dangerous climate change.”

The ultimate goal is a zero-energy building, one that produces as much energy from renewable resources as it uses. Though the cost of a zero-energy home can be expensive, the costs are coming down while the cost of fossil fuels, especially when you include the costs of climate change, are going up. Appalachian State

University and N.C. State Energy office along with Catawba Habitat for Humanity built a zero energy home in 2005. Mazria has initiated the challenge to reduce all new buildings' fossil fuel use to zero by 2030 with the aim of helping to mitigate climate change.

By designing with environmental consequences in mind and incorporating the latest materials and technologies, we can reduce our buildings' carbon footprint and avoid the dramatic consequences of global warming.

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