



Another Good Reason to Insulate

by Alex Wilson

Why build an energy-efficient house? After all, energy prices have been stable for the past five years, so public interest in energy conservation has dropped off. American consumers are demanding bigger houses and faster cars again. Why should you, as a builder, go to the effort of building homes that use less oil, gas, and electricity?

According to atmospheric scientists, the best reason to build energy-efficient houses is to forestall a global warming trend. Though fossil fuels have long been implicated in environmental problems from smog and acid rain to oil spills and strip mining, they are now believed to be the primary culprit in a potentially much more far-reaching and destructive problem: global warming. Experts have been warning us of this trend since the early seventies, but we never paid much attention.

Until last summer, that is. Throughout much of the country during June, July and August, we saw record-breaking temperatures. From scorching temperatures and lack of rainfall across the grain belt, we experienced crop failures. Widespread electricity shortages were prevalent in the Northeast, including brown-outs and even rolling black-outs. High temperatures increased our electricity use while reducing our production capacity.

Throughout much of the country during June, July and August, we saw record-breaking temperatures....causing widespread crop failures, and in the Northeast, widespread electricity shortages.

We had already endured four of the hottest summers ever recorded during the 1980s, and here came another. In 1988, for the first time, leading scientists linked the high temperatures and drought to a much broader global warming trend. In June, Dr. James Hansen, director of NASA's Goddard Institute for Space Studies, told a Senate committee that there was a 99 percent certainty that the unusually warm temperatures we were experiencing were not just an anomaly, but part of a global warming trend: The "greenhouse effect" had arrived. That pronouncement generated a flurry of media attention.

The culprit, according to Hansen and other experts, is a rapidly growing concentration of heat-trapping gases in the upper atmosphere. Carbon dioxide is the leading contributor to

the greenhouse effect. CO₂ levels have risen 25 percent since 1860, largely from the fossil fuels burned following the industrial revolution. Along with CO₂, other man-made gases are believed to be causing the greenhouse effect, including chlorofluorocarbons (CFC), nitrous oxide, and methane.

CFCs (also implicated in a different concern, the destruction of atmospheric ozone) trap far more heat than CO₂ on a per molecule basis—10,000 times as much. Although CFC production and use is being curtailed globally through an international treaty, CFC concentrations in the upper atmosphere will probably continue to rise for many decades. Nitrous oxide and methane (other products of fossil fuel use and combustion) are also increasing in concentration in the atmosphere and contributing significantly to the greenhouse effect.

The implications of current global warming theories are staggering. Through sophisticated computer modeling, scientists predict that in the best case scenario (assuming considerable efforts beginning immediately to reduce the problem), global temperatures will rise by 3 to 9°F by the middle of the next century. Such a temperature increase equals the entire temperature rise since the end of the last ice age, and it would be occurring over a tiny fraction of the time.

This temperature rise would not be spread evenly over the globe, according to computer models. At the equator, increases in temperature would be slight, but at higher latitudes the effects could be staggering. It would radically alter weather patterns and regional temperatures. Our grain belt could experience a rise of as much as 20°F, turning prime farm land into desert over a few decades.

Just as significant would be rising sea levels. Polar ice caps will begin melting and seawater will expand as the oceans warm up. Even with this "best case" scenario, experts say sea levels could rise as much as 6 feet. Low lying coastal areas such as Florida, Louisiana, and barrier island communities along the east coast will be inundated. Bangladesh and many tropical island countries could practically disappear.

So how does all this relate to you? It may relate directly in the next few years. I believe that global warming will prove a greater force in promoting energy conservation and energy alternatives than the oil shortages and price increases of the 1970s. Demand for more efficient houses will either be a "bottom-up" grassroots effort, from an environmentally aware (and uncomfortable!) public or it will be a "top-down" regulatory effort by policy makers. Either way, you will be building more efficient houses, installing more efficient appliances and relying

on such technologies as solar energy (remember solar energy?).

Policy makers are already reviewing ways to reduce production of greenhouse gases. They realize that it will not be an easy job—after all, our society runs on energy. But they seem ready to tackle the problem. Senator Tim Wirth of Colorado (a long-time supporter of energy efficiency and renewable energy sources) recently introduced a Senate bill "The National Energy Policy Act" (S.2667). It deals specifically and thoroughly with the global warming issue by addressing a large number of interrelated issues, from auto efficiency to research on photovoltaic substances. It also includes a greater coordination of national and state energy policies.

Try to keep energy efficiency high on your priority list. Talk to clients about extra insulation and better windows. If saving money in heating isn't a big enough motivation for them, talk to them about saving our environment.

Though the bill will be revised on its course through Congress, the current version calls for a residential energy efficiency rating program for buildings. All residential buildings would be rated at the time of sale and the rating would be "prominently communicated to potential buyers..." Commercial buildings would be affected similarly by the bill. Policy makers recognize that buildings account for more than a third of the nation's energy use and our nation consumes a fourth of the world's energy. Therefore, altering energy use in our buildings can make a big difference in global energy.

Though global warming is an issue we would like not to think about, if scientists are correct, it is a vitally important environmental concern that transcends political and a geographical lines. Solving or limiting the problem requires a concerted effort from all societies, U. S. and worldwide. Though global warming seems very distant and abstract its solution includes you as builders. Try to keep energy efficiency high on your priority list. Talk to clients about extra insulation and better windows. If saving money in heating isn't a big enough motivation for them, talk to them about saving our environment. ■

Alex Wilson is a technical writer based in Brattleboro, Vermont who specializes in energy and building issues.