

What Do You Think You're Doing?

Thinking green isn't necessarily the same as being green.

Alex Wilson talks with Jeff Stein AIA



Alex Wilson is president of BuildingGreen, Inc., the Brattleboro, Vermont publisher of *Environmental Building News (EBN)*; *GreenSpec Directory*; and *BuildingGreen Suite*, an integrated online resource (www.buildinggreen.com). The executive editor of *EBN*, he is the author of *Your Green Home* (New Society Publishers, 2006);

coauthor of *Green Development: Integrating Ecology and Real Estate* (John Wiley & Sons, 1998); coauthor of *Consumer Guide to Home Energy Savings* (New Society Publishers, 9th Edition, 2007); and editor of *Greening Federal Facilities* (FEMP, 2001). He served on the board of the US Green Building Council from 2000 through 2005. BuildingGreen is a partner with the Boston Architectural College in the development of the BAC's Sustainable Design Certificate Program, the nation's first architecture school certificate program on sustainable design.

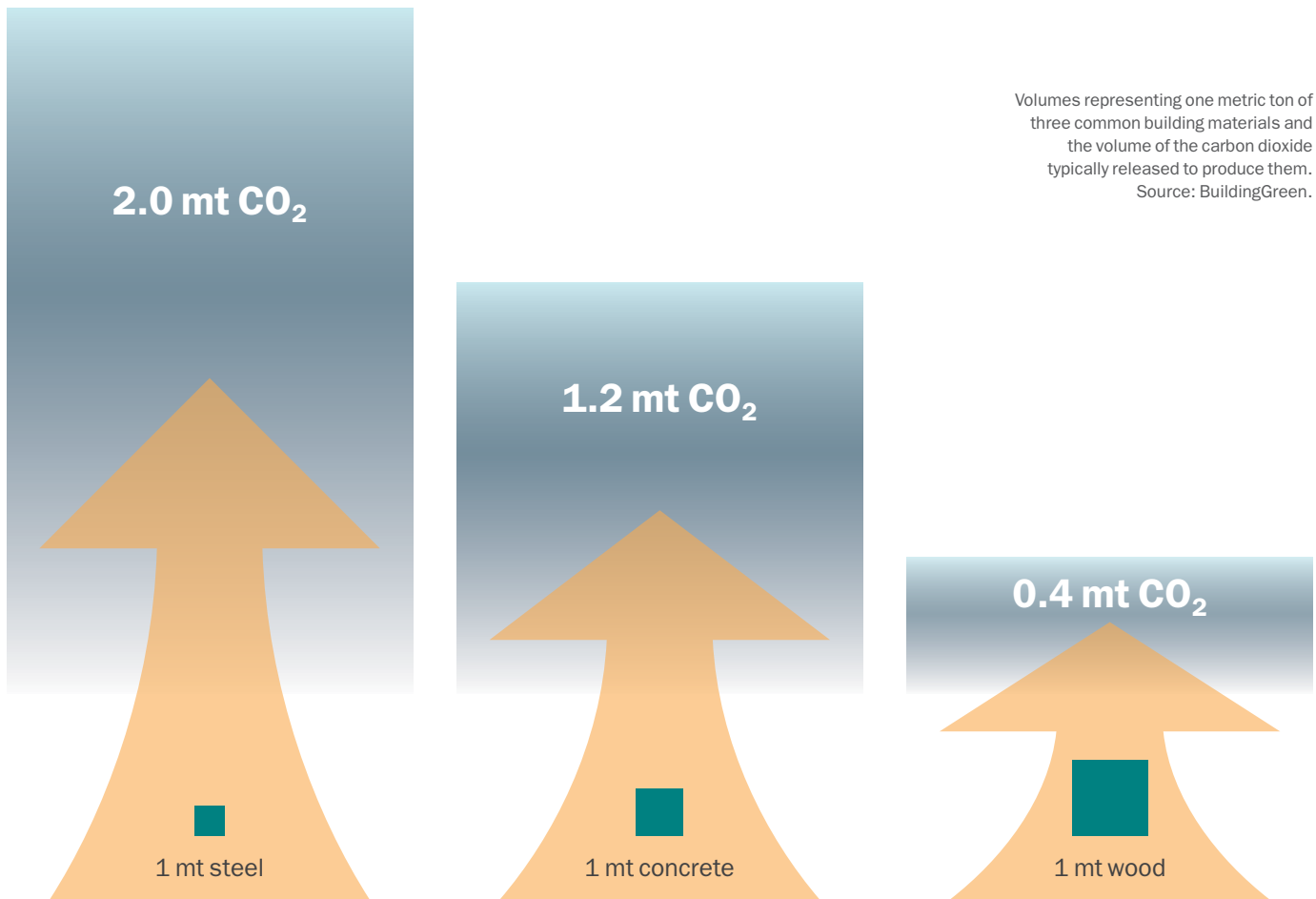


Jeff Stein AIA is head of the School of Architecture and dean of the Boston Architectural College and is the architecture critic for *Banker & Tradesman*.

Jeff Stein: Designers, builders, and clients increasingly want to know how green their building solutions really are; we all want to be able to measure the level to which green solutions are making a difference in our buildings and our lives. But how do you measure what is really green?

Alex Wilson: The key to green building is information. Designers and builders need to know how to achieve the low-energy, environmentally responsible buildings that clients are asking for. A big part of this is measurement of performance — that's what the US Green Building Council's LEED [Leadership in Energy and Environmental Design] rating system is all about. Rating systems for green buildings — and certification systems for green building products — are attempts to independently attest to performance. Our company tries to help architects and others in the building profession understand what green building is, figure out the priorities with green design, and sort out the hype from the reality.

Jeff Stein: Here's a snapshot of the current complexity of the situation: In the US, we have Energy Star ratings for appliances and the LEED standards for individual buildings, which will soon cover landscapes and neighborhood design, too. LEED is dominant but it's not the only one — the American Institute of Architects just released a study of three rating systems: LEED, Green Globes for New Construction, and SBTool 07. In Abu Dhabi, there is the Estidama Program. The UK has a Code for Sustainable Homes; there are also the Edinburgh Standards for Sustainable Building (ESSB) and BREEAM, the Building Research Establishment Environmental Assessment Method. And the European Union, through E-CORE, the European Construction Research Network, has developed various standards with acronyms like PeBBu (Performance Based Building Network), ENERBUILD (Energy in the Built Environment), CRISP (Construction and City Related Sustainability Indicators), and PRESCO (Practical Recommendations for Sustainable Construction).



Alex Wilson: There is tremendous confusion among manufacturers. They want to do the right thing and certify their products, just as building owners are increasingly interested in certifying their buildings, but there are so many different certifications that companies don't know what to do — which programs to go with. Our company, BuildingGreen, is trying to help solve this confusion by objectively explaining and comparing the many programs [see “Beyond the Logos: Understanding Green Product Certifications,” *EBN*, January 1, 2008]. Building certification seems to be a little less confusing, because LEED has been so dominant in the market, but it's certainly still an issue.

Jeff Stein: And of course, measuring greenness — energy use, material extraction, component manufacture, transportation requirements, what happens at the end of a building's or product's useful life — is extremely complicated. I know someone whose nephew works in Shanghai for a company that produces blades for wind turbines. That sounds as if it's a green job. But then, most of these Chinese-manufactured blades are shipped to California. What's more, they are made from an oil-based resin that is transported from Germany to China in the first place. Can this really make sense?

Alex Wilson: A lot of people worry about the embodied energy in the transportation of so-called green products. My feeling is that even though those products may be made far away, if demand grows adequately, then manufacturing will eventually move closer

to the point of use. As the price of energy goes up, the threshold at which local manufacturing becomes feasible is lowered. So I'm in favor of specifying green products, wherever they are made.

Jeff Stein: A new term has entered the vocabulary recently: greenwashing. How would you define it?

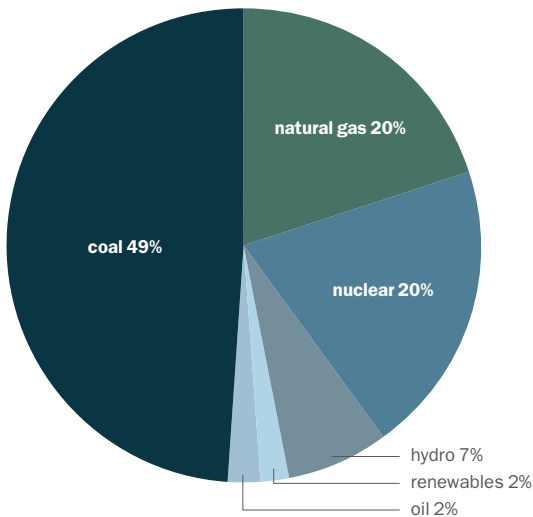
Alex Wilson: Greenwashing refers to the exaggeration of the environmental benefits of a particular product or service, and it's become a very significant issue in the green building movement. Green is popular, green is selling products today, and every manufacturing company out there is touting its products as green, whether they are or not. It really calls for third-party certification to verify claims.

Jeff Stein: But even when green building products are certified by a third party, what exactly does it mean to be green? Nothing is truly green — none of these buildings, for example, is actually producing oxygen.

Alex Wilson: When we started our newsletter, *Environmental Building News*, we debated what our subtitle should be. “Sustainable building” was an obvious option, but we decided against it, because there really is no such thing as a sustainable building. We don't actually know what a sustainable building would be, what it would look like, what it would do.

I think of “green building” as a general term that doesn't

US National Average Fuel Mix for Generating Electricity



Source: BuildingGreen (from Energy Information Administration, US Department of Energy, 2006 data).

Comparison of Transportation and Operating Energy Use for an Office Building

Average US commute distance (one way)	12.2 miles
US average vehicle fuel economy 2006	21.0 miles per gallon
Work days	235 days per year
Annual fuel consumption	273 gallons per year
Annual fuel consumption per automobile commuter	33,900 kBtu per year
Transportation energy use per employee	27,700 kBtu per year
Average office building occupancy	230 sf per person
Transportation energy use for average office building	121 kBtu per sf
Operating energy use for average office building	92.9 kBtu per sf per year
Operating energy use for code-compliant office building	51.0 kBtu per sf per year
Percent transportation energy use exceeds operation energy use for an average office building	30.2%
Percent transportation energy use exceeds operation energy use for an office building built to ASHRAE 90.1-2004 code	137%

Source: BuildingGreen.

necessarily imply that a building has no impacts on the environment — because every building has impacts on the environment — but that it’s moving in the right direction. It may use less energy and less water; it may be healthier to occupy; it may have less impact during its life cycle and the life cycle of the materials going into it. But a green building isn’t by definition sustainable. We have a long way to go before we’re really able to call a building sustainable.

Jeff Stein: What are the steps we would have to take — both physically and politically — to get there?

Alex Wilson: I’ve actually been focusing a lot of my attention recently on that, looking at the big picture. One of the things I’ve been looking at is transportation, which has been a very under-represented issue in the green building community so far.

Jeff Stein: What do you mean by underrepresented? Transportation seems to be the only thing most people speak about when they talk about environmental issues. The fact that you can now buy a car that gets 35 miles per gallon instead of 25 seems to most people to be real progress. Yet we now know that about half of all the energy consumed in the US is used to construct and operate buildings, and only about a quarter of it is used by the entire transportation sector.

Alex Wilson: Yes, but if you look at what I’ve called the “transportation energy intensity” of buildings, we find some very interesting things. Simply getting to and from the average US office building uses roughly 30 percent more energy than the building itself uses. If instead of an average building you look at a code-compliant building — that is, a building that meets the ASHRAE 90.1-2004 energy code — the differential is of course even greater: the transportation energy associated with that building is more like 2.4 times the building energy use. This is significant because the LEED rating system that is most commonly used in the US to rate green buildings has 69 potential points, of which only a half-dozen specifically relate to location and transportation. Yet the energy use associated with getting to and from buildings is very high. So we need to look at these as part of a bigger picture and re-allocate points in the LEED rating system, as well as reorder priorities in the green building industry.

Jeff Stein: Is some of that about to happen with the new LEED neighborhood standards?

Alex Wilson: I think it is. Certainly LEED for neighborhoods addresses location very effectively. But there’s also change going on within the LEED rating system that’s going to result in a re-prioritization of points.

Jeff Stein: It sounds as if urban design will be increasingly important in the coming era.

Alex Wilson: It’s absolutely critical, because that’s how you get at the transportation energy intensity issue of buildings, by looking

at where we're building, how densely we're building — all the issues that fall under the rubric of urban planning.

Water is another important issue. There's been a tremendous focus on energy over the last few years, and a growing focus with the price of oil spiraling out of control. But water may be an even more significant issue in the coming decade or two.

Jeff Stein: It's not used very resourcefully in buildings now, in that all of the fresh water that comes into a building, regardless of how it's used, leaves as sewage and goes to a treatment plant where it's mixed with other wastewater and caustic chemicals, then put directly into wetlands or rivers or, in Boston's case, the Atlantic Ocean.

Alex Wilson: It's a pretty dumb process, and the wastewater management issue is a key part of it. In most of the country, we're using the same-quality water for drinking that we're using for flushing toilets and washing sidewalks; so there are tremendous opportunities for having two separate plumbing networks in buildings, one potable and one non-potable, and to allow alternative sources to supply the non-potable network, that could be used for toilet flushing, landscape irrigation, and refilling cooling-system water supplies.

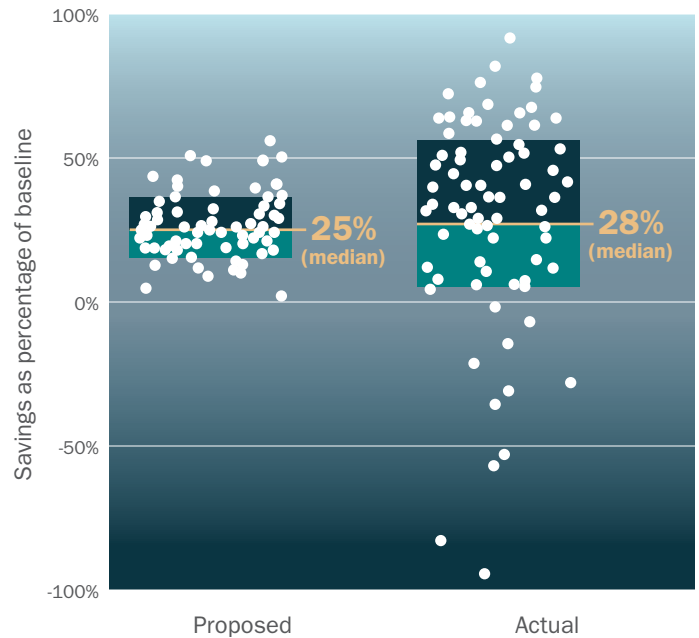
Jeff Stein: Are you optimistic about reversing, or at least mitigating, global climate change? It seems that we in the US are starting to recognize the impact of our development practices, and trying to make changes. But can one country make enough of a difference without there being some sort of global consensus and effort?

Alex Wilson: Global climate change is unquestionably one of the biggest challenges facing humanity. And I won't pretend that it's not going to be difficult to deal with these issues. But wherever there is a problem, there are opportunities. The need to dramatically change the way we are designing and building structures creates huge opportunities for smart architects and smart builders. The buildings that most of us have been creating for the last hundred years are going to be obsolete very quickly. They're going to need to be either significantly modified, retrofitted with a much higher level of insulation, or torn down and replaced. That affords opportunities for forward-thinking architects who can recognize what the needs are and learn how to address them.

Jeff Stein: The AIA is proposing as a professional standard that architects in practice must be able to offer green alternatives to their clients, which suggests that in three or four years, if you're not designing green buildings, you're not going to be designing buildings at all.

Alex Wilson: But we also need to start thinking more creatively about what those alternatives might be. One example is the concept of passive survivability. For several years now, the green building community has been talking in terms of incremental improvements in energy performance and the goal of halving the energy consumption of homes. But if we frame these issues as life-safety issues, we can interest code officials in incorporating these practices, essentially zero-net-energy design practices, into building codes. I

Energy Savings in LEED Buildings



The actual savings vary much more widely than the proposed savings that were predicted in the LEED submissions — with some projects actually showing negative savings (usage that exceeds their base case). The boxes show the quartiles (25% of projects) above and below each median. Note that LEED assigns energy points for predicted energy cost savings, which do not always correspond to predicted energy savings. Source: BuildingGreen (from USGBC/NBI).

believe that climate change, risks of future terrorism, and potential energy-supply problems are going to argue for designing buildings, particularly homes and apartment buildings, that maintain livable conditions in the event of an extended loss of power, loss of heating fuel, or even loss of water. It's really a life-safety issue.

For example, imagine if there were a major heat wave coincident with a major drought, where water levels drop to the point that cooling water intakes for coal-fired and nuclear power plants fall too low, and those plants have to be turned off. There could be a massive power outage in the western US. People in Phoenix and Denver and Las Vegas may have trouble staying alive in a massive, widespread outage.

So we need to begin thinking about mandating that all new homes meet this design criterion of passive survivability. What would achieve that? A very well-insulated envelope — for a northern climate, that would mean R40 walls, R60 ceilings, triple-glazed windows. It would require cooling-load avoidance strategies, and natural-ventilation strategies. For many of these, we could go back and look at the vernacular architecture in hot climates. One hundred years ago, New Orleans homes all had wrap-around porches designed for natural ventilation. These are aspects of passive survivability that we need to begin building back into our homes. And we need to do that by mandating them in building codes.

Jeff Stein: It's interesting that passive survivability doesn't require exotic technologies, but rather a clear understanding of how we

used to do things, using building techniques that are available to us right now and aren't particularly expensive. It just requires us to ask more of architecture in terms of building performance.

Alex Wilson: There's also a great deal that we can draw from the tremendous advances that were made in design and building in the early '70s with the first fuel embargo — the whole passive solar movement, the super-insulation movement. Many architects became very familiar with the concepts and worked with them for a while, but then let them drop off the radar screen. Those need to come back. I was surprised to learn that Sweden's building code has required triple-glazed windows since 1976. In this country, if you ask manufacturers about triple-glazed windows, they look at you like you're from outer space.

Jeff Stein: How did you find your way into this field?

Alex Wilson: My training is in environmental biology. I first got the environmental bug back in the mid-'60s — I decided in junior high school to become an environmentalist and try to make the world a better place. I imagined myself as an ecologist, or maybe an aquatic biologist. But somewhere along the line, I decided that solving some of the environmental problems that were harming ecosystems around the world would be more rewarding, and to do that, I needed to focus on what was causing the problems. And because buildings are responsible for a huge percentage of our overall environmental burdens, I made a conscious decision to shift my focus from natural ecosystem studies to the built environment. I've stuck pretty close to that personal agenda, much to my surprise, and it translated into my business, BuildingGreen, which has a corporate mission to make the building industry more environmentally responsible.

Jeff Stein: You once said that at the very beginning, it was a struggle to make this business work, but now, years later, it's a struggle to keep up with how the rest of the culture is working with the notion of green building.

Alex Wilson: Yes, it's been exciting to see the growth in interest in the last five or ten years. I started the company in 1985, and launched our newsletter, *Environmental Building News*, in '92. We're often mistaken for a nonprofit entity, but we're a for-profit company — although a very mission-driven one. We used to have to knock down doors to get anyone to pay attention. Now we're trying to keep the door closed enough so that we can get our work done.

Jeff Stein: It always seemed to me that you were out ahead of the culture, which is a tough place for a for-profit company to be.

Alex Wilson: Maybe we should have been a nonprofit, in that a lot of what we do has come before a market for it has existed. But we went the route of being for-profit, and had some lean years. But we're doing well now.

Jeff Stein: Has your experience running a business affected the way you think about green solutions?

Alex Wilson: One problem we're facing as a culture is our failure to look at the long term. I think this is especially a failure in our business world, where we define success in publicly traded companies by the next quarter's performance. Similarly, we look at the economic performance of a building in terms of its payback three or four years out; when we're looking at energy improvements, we rarely look much beyond that. We need to be looking at the long term.

Jeff Stein: How long term?

Alex Wilson: Generations. The Native Americans consider the impacts of their actions seven generations forward. If you look at all of the oil that's been consumed since the dawn of the petroleum age in 1859, when it was first pumped in Pennsylvania, 94 percent of that has been consumed since I was born in 1955. There's a lot of debate today about whether we've reached a peak in oil consumption, but nobody really knows. There's some evidence that that's happening this year, but it might still be a decade or two away. The fact is that we're fairly close to the midway point in our consumption of the world's oil resources, and we've arrived there in the span of one person's lifetime. The human species has existed for tens of thousands of years, yet in this instant of geologic time we've taken a very concentrated energy resource that took hundreds of millions of years to accumulate and we've burned it up and released that carbon into the atmosphere as carbon dioxide, wreaking havoc in terms of climate change.

Jeff Stein: How smart does one have to be to make informed decisions in the green building arena?

Alex Wilson: One doesn't have to be smart, but one has to be wise enough to know where to turn for advice and information. There are a lot of very smart people involved in the life-cycle assessment of building materials and figuring out what the criteria for LEED and other building certifications should be. The better a job the developers of these standards do, the easier it is for us — architects, specifiers, builders, and developers — to use that information effectively in our decision-making. That said, staying up-to-date with green building is very important. Design firms should budget time for their employees to get up-to-speed about green building and stay there. Attending conferences, reading magazines, and monitoring green building listserves should not be relegated to employees' own time during evenings and weekends; it's a key part of doing business today.

Jeff Stein: Oil really makes us stupid, doesn't it? Not just because when you burn it and breathe the carbon monoxide it destroys brain cells. But the very use of it allows you to overlook other ways to deal with your relationship to your surroundings and to other people.

Alex Wilson: One of the tragedies, I think, is that those of us who were pushing these ideas 20 and 30 years ago were widely accused of being alarmist Chicken Littles. Now that we're faced with four-dollar-a-gallon gasoline, people are saying, why didn't we take action when we had the opportunity? ■