

Building Green with **Impressive Green Buildings**

by Keith Waller



Tom Baker is curious, constantly analyzing. You can tell from the pause in conversation and change in eye movement. Each challenge is a puzzle, and it's clear Baker likes puzzles. Never satisfied with accepting that things just are, Tom deconstructs conventional thinking and makes new rules, breaking away from convention and popular thought and opening the way for innovation. The right answer should be tested and proved. Getting personally involved in the strategy for solving problems and coming up with the right solutions, Baker has a "first things first" perspective and believes in planning projects focused on the goal and the protocol for getting there.

"Your best money spent is on conservation, not power generation," he says. "When someone hires me as the general contractor of this process, I suggest that you want to reduce energy needs first. It's the insulation, the caulking – the non-glorious things first." If economics is a project goal, then it's cheaper not to use energy than to buy it or buy the means to make it. "First, you should start with the intangibles: fixing air infiltration and insulation before you buy anything. If you spend \$5,000 in insulation and tightening up the building to avoid buying a new three-ton air conditioner, so you can drop down to a two-ton unit, you might save \$2,500 in equipment, but also save \$60 every month for more than 20 years on your utility bill. You'll come out way ahead."

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Actually, Baker begins the process with testing and analysis to see what savings can be squeezed from making the building more airtight. Using a door blower, a fan system that measures air loss in a leaky building, he checks for major leaks that are the source of humidity and outside air infiltration. "Infiltration is more important than insulation here on the Southern Coast; it's not like up North," he says. "If not for the humidity, we could almost keep windows open year around. Since humidity is the biggest comfort issue, a dehumidifier system bringing in fresh dried air can reduce the air conditioning load another half ton to save even more."

With a goal of reducing a client's energy load an unbelievable 50%,



Tom Baker

he starts with his "rule of thumb" figures to identify inefficiencies. "A crawl space needs to be sealed. That's 10-15% energy loss there. The attic is 30 to 40% of your air conditioning bill." Much of the work in green remodeling is in watching and paying attention to the details. "Is the house air conditioning properly zoned? Is energy used only where needed? Using a duct-blast test to find leaking ducts, testing air flow through supply and return vents, and testing refrigerant charge rates, are all important checks to be sure you've gotten the properly sized, most efficient equipment to do the job using only the necessary energy," Baker explains.

Quality and attention to detail is key. "You need to pay attention; and when you pay attention to the little stuff, you begin to see that the little stuff really makes a difference," he adds. "The cheaper thing isn't cheap. Good systems, good planning and good stuff, installed properly, is more economical in the long run. Most important is: #1 envelope, #2 sizing and testing, and #3 plan. You want a dollar back for every dollar spent. You might have to do work in stages, but spend your best dollar first."

When adding new systems to an energy-efficient house, Baker has priorities for which systems to employ. "In moderate climates like the Strand, using pipe systems to draw free warmth or coolness from the ground has a huge value. Geothermal is low cost with high benefits. For solar energy, solar thermal water heating is the best value. Everyone uses hot water, and for this and many systems, you get about 60% of the cost back in tax credits. When electric costs go up, your savings is even bigger."

Baker has his point of view on incentives to support energy savings and his own opinion on the recent Santee Cooper program to sponsor 10 homes to install solar photovoltaic equipment. "It was set up to fail. You simply cannot succeed economically generating solar power first. You need to conserve first. It would have been more successful if they focused on reducing the peak energy load and installed smaller systems." Baker doesn't believe net-metering is the issue, as much as reducing peak demand to a low and steady demand that is manageable by the utilities at a lower cost. "They could have used that money to insulate hundreds of home attics and offset more electrical generating needs at the plant than the solar systems would produce."

While Baker has his "first things first" rule and "best dollars first" budgeting plan, he practices what he preaches. His building in Myrtle Beach off Highway 707 is an embodiment of his analysis, testing and vision. Using the thermal mass of heavy concrete, his building temperature rarely varies by a degree, and his air conditioning systems, while appearing vastly undersized, are actually perfectly matched for their load. His bright, reflective and heavily insulated rooftop

is adorned with photovoltaic panels, vacuum tube solar thermal panels, and a tall tower topped with a spinning wind generator. Inside, he has geothermal systems and storage for hot water, a battery bank and an inverter for the solar electricity generated.

While his building is not "off the grid" powering itself with its own equipment, that wasn't his goal and wouldn't be a smart move economically. "I took the tax credits, and I pay wholesale rates for my power, but I'm the ideal Santee Cooper customer. I have no peak power needs during high demand times, or any time, for that matter."

If the public utility power goes out during a storm now, Impressive Green Buildings would lose electrical power like anyone else, but perhaps that won't be the case in the future. Baker has already pulled the gasoline engine out of one of his trucks to convert it to electric drive with a large battery pack. "I can charge my truck at three cents per kilowatt hour, or even less with solar, and it's a wise use of battery back-up power. My trucks, parked and plugged into the building, could run the building for days during an outage, and it makes more sense than having a big battery bank just sitting here. I can drive them down the road when I need to." This operating model could be an interesting possibility for many commercial businesses with fleet vehicles on the Strand.

Overall, Baker has a perspective on the relationship of community issues with utilities, energy and resources. "Electricity is cheap, but we're not paying for the environmental cost of cheap electricity. We're not paying for the true cost of burning fossil fuels. We're pushing it into the future, and we don't even know what those costs are." Baker believes that the money is in the system for a truly beneficial conservation incentive program that would encourage homeowners, business owners and developers to build smartly and conserve. "They say we can't afford to conserve. We can't afford not to," he adds. Santee Cooper has developed new

energy saving programs and cancelled the proposed new coal-fired generating plant, indicating, perhaps, a shift in thinking.

Banking on the value of a super-efficient home design, Baker is remodeling his own home and also building a new speculative home at the Sago Plantation at the Legends Golf Community. The new home at Sago Plantation will be a US Green Building Council LEED Platinum Home, the highest certification for sustainability and resource efficiency possible, with completion in the spring of 2010.

Impressive Green Buildings is located at 320 Reindeer Moss Ct, in Myrtle Beach, just off Hwy 707. For more info, call Tom Baker at (843) 215-2607 or visit ImpressiveGreen.com. See ad page 11.



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