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What Exactly Is A Green Home?

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Every day we see more companies promoting their green products and practices. John McCain, Barack Obama and T. Boone Pickens are promoting their plans to reduce America's dependence on foreign oil and to increase our supply of clean, renewable energy. Closer to home, we all are feeling the higher cost of gas and utility bills in our personal budgets. A shift is occurring in the demand for more fuel efficient hybrid cars. But, why do we not demand the same efficiency and performance from the largest purchase most people make in their life – their home?

What exactly is a "green" home?

Most people know about Energy Star Homes which must achieve at least 15% increased energy-efficiency over a code built home. Additionally, there are several national green programs, like LEED-H (Leadership in Energy and Environmental Design) or the NAHB Model Green Home, and local green programs geared to a particular community, like Build San Antonio Green, that develop criteria to review and certify a home's level of

"green." Regardless of the program, common categories, in addition to energy-efficiency, are site design, materials and building practices, water conservation and health. To be successful, a home must be designed, built and operate as a system.

The term "building science" has become a popular label for the system built approach to design and construct buildings that are more durable, healthier, more sustainable and more economical than most buildings built today. An important and often misunderstood example in our hot, humid climate is the selection of a home's air conditioning system where most people think bigger is better. However, in a properly insulated, tight home that has double pane low-e glass windows and air conditioning ducts tested for leakage, installing an oversized air conditioning system will cause the system to short cycle (turn on and off in short periods of time). This reduces efficiency, does not effectively control humidity and increases wear on the equipment. Increased humidity not only affects comfort in a home, but can impact indoor air quality by maintaining a humid

environment suitable to mold growth. So, you spend more money up front to install a larger system, you spend more money to operate the system and you are not comfortable, but the mold spores are happy.

A green home starts by working with an energy rater to perform a Home Energy Rating System (HERS) model. The building specifications, such as insulation, windows and air conditioning system among others; performance standards, such as air infiltration and duct leakage goals; and the building design details, such as wall and window areas with orientation, are entered into a computer model to determine energy use for the home. The HERS model provides an index score indicating the energy use as compared with the same home built to code minimum standards. The index score for the code built home is 100, the maximum Energy Star qualifying score is 85 and every decrease of 1 point equates to a 1% energy use reduction until you get to 0 which would be a "zero energy" home using energy generated by renewable sources such as solar or wind. It is important to test and inspect the home throughout construction to insure the end result will match the predicted goal. Two common tests are the duct blaster, to measure air conditioning duct leakage, and the blower door tests to measure infiltration in the home.

Energy-efficiency is the area most valued by homeowners because it is easy to see the payback every month when paying utility bills. An energy-efficient home starts with proper framing and structural details to create a building envelope (walls, foundation and ceiling) that allows a continuous thermal barrier (insulation) and air barrier to be installed. Whether specifying foam, cellulose or fiberglass

insulation, detailed installation free of voids, gaps and compression is important to achieve the rated thermal performance. Modern technologies, such as Demilec open cell spray foam, not only make it easier to fill all voids in walls and ceilings as the foam expands around pipes and wires, it creates an impenetrable air barrier. In comparison, fiberglass batt insulation costs less, but is more difficult and time consuming to properly install around pipes and wires with gaps, voids or compressing the fiberglass fibers which in reality means it does not perform. Add energy-efficient windows with low-emissivity (low-e) glass, Energy Star appliances and compact fluorescent light bulbs to the system and a smaller, "right-sized" high efficiency heating and air conditioning system can be installed saving initial cost for the unit, reducing utility costs and providing more comfort. After insuring this efficient system is in place, renewable solar or wind energy systems begin to make sense.

Water conservation is a hot topic every summer in San Antonio. Green homes are designed to conserve this precious resource indoors and outdoors. Indoor water conserving features commonly include structured plumbing systems that keep water supply piping out of the foundation and provide a more direct delivery of water to each fixture; tankless water heaters; dual flush toilets use an averaged 1.28 gpf with better performance than typical 1.6 gpf low flow toilets; Energy Star dishwashers and washing machines and low flow plumbing fixtures. Outdoor conservation includes selecting landscaping from the SAWS approved low-water plant list and, if installing an irrigation system, sod areas are zoned

Continued On Page 10

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Continued From Page 1

separately from planting beds that are equipped with drip and bubbler heads. Water use can be reduced by as much as 40,000 gallons per year and further reduction can be achieved by incorporating rain water catchment or grey water systems.

For people dealing with asthma or other respiratory ailments, the indoor building environment they spend most of their time in can have a negative impact on their condition. Green homeowners value better indoor air quality achieved by use of paints, sealers, adhesives and materials that have low levels of volatile organic compounds (low VOC), installing sealed combustion gas appliances, reducing carpet areas in favor of more durable and easier to clean hard surfaces such as tile and wood and specifying Carpet and Rug Institute Green Label carpeting where it is installed. Air tight insulation systems previously mentioned reduce dust, pollens and pollutants from the indoor environment and high efficiency, whole house air conditioner filters, typically rated MERV 8 or greater, further enhance indoor air quality.

Site design elements take into account solar orientation to reduce windows on east and west elevations, preserving trees along with natural vegetation and managing stormwater runoff during construction to reduce offsite impact. With detailed and accurate material takeoffs and preparing a waste management and recycling plan, the amount of construction

66% using services such as those provided by Greenstone Industries.

The materials and building practices specified for green homes are evaluated for durability, maintenance requirements, recycled content and embodied energy from production to transportation requirements to get it to the homesite. After all, it is important that a home not only last for the life of the mortgage, but performs the way it was designed for generations to come. So whether you want to save money on utility bills, live a healthier lifestyle or do your part to reduce global warming, green homes are available today and will, in the near future, be just the way homes are built.