

## HOME BUILDERS ASSOCIATION OF THE GRAND TRAVERSE AREA, INC.

### ENERGY STAR FOR HOMES DRIVES EFFICIENCY STANDARDS

Mention Energy Star to most people and they will think you are talking about energy efficient home appliances such as a refrigerator or perhaps a furnace. But since 1996 the *Energy Star for Homes* program has been evolving their program standards and certifying whole homes as energy efficient. When you consider that California is taking steps to require that all new homes built in 2020 and beyond will be net zero energy, and that the Michigan energy code is being upgraded in March 2011 from the 2003 IECC to the 2009 IECC, the writing is on the wall that the planning and construction of new homes will need to incorporate higher energy efficiency measures and improved building practices. The Energy Star for Homes program is an ideal way for builders seeking to ensure their operations don't fall behind the changing regulatory environment or the evolving market for energy efficient homes.

This year the Energy Star for Homes program is rolling out its Version 3.0 standards, also known as Energy Star 2011. The certification process is a bit more complex than Version 2.0, but I believe the program does help produce a product that is more energy efficient, more durable, safer and more comfortable for the occupants.

Energy Star 3.0 homes will have to meet a set of mandatory requirements. These are structured in a series of checklists the builder, HERS rater and HVAC installer must complete for certification, and are outlined below:

- Thermal Enclosure Rater Checklist: This is an extension of the Thermal Bypass Checklist from Version 2.0. This checklist sets specific requirements for windows, insulations levels, air barrier alignments and air sealing for each climate zone. In this new version, thermal bridging must be reduced by design, and may be achieved by R-5 continuous rigid insulation sheathing (climate zones 5-8) or insulated siding, SIPs, ICFs, double wall framing and advanced framing.
- HVAC Contractor Checklist: This is a new checklist for Energy Star and seeks to ensure a rightly sized and properly installed HVAC system. This checklist must be completed by the HVAC installer and includes meeting ASHRAE 62.2, system design using ACCA Manual J/D/S methods and equipment selection. Additionally the installer will need to verify refrigerant calculations, electrical measurements and airflow/balancing testing.
- HVAC Rater Checklist: This checklist seeks to provide third party verification of a quality HVAC system. The rater is required to evaluate duct installation for insulation level, kinking, leakage, as well as whole-house and local exhaust ventilations and compliance with ASHRAE 62.2.
- Water Management Builder Checklist: This checklist aims to improve moisture control and includes requirements for site and foundation assemblies, wall and roof assemblies, flashings and gutters, and building materials such as carpet near baths and moisture resistant materials behind tubs and showers. The Energy Star Indoor Air Plus checklist can be substituted for the water management checklist.

Once the home design meets the requirements of the checklists (and passes final verification), then the builder may choose between the Prescriptive Path and the Performance Path.

Briefly the Prescriptive Path has an eligibility guideline based upon a maximum conditioned floor area for the number of bedrooms in the home. Essentially large McMansions are steered toward the Performance Path. But if a builder meets the floor area criteria and chooses the Prescriptive Path, the program specifies climate zone requirements for HVAC equipment efficiencies, air infiltration rates of the building envelope, insulation levels, and windows and doors. For example in our climate zone 6, some of the key requirements are:

- 90 AFUE or great gas furnace; 85 AFUE or greater boiler or oil furnace (and Energy Star rated)
- Air infiltration rates of 4 air changes per hour @ 50 Pascals or less (verified by the blower door test)
- Window U-value of 0.30 or less
- Insulation levels meeting 2009 IECC (which Michigan will pass in March 2011)

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- Total duct leakage less than or equal to 6 CFM@25 Pascals per 100 square feet of conditioned space
- Energy Star appliances and efficient lighting fixtures

The Performance Path, which most of my builder clients' have chosen, requires a software energy model of the home to determine whether the design meets Energy Star requirements based upon a HERS index. This path provides the builder more trade-offs and flexibility within the home design as long as the total performance is at least as good as the Energy Star reference home. Again a size adjustment factor is applied to the minimum HERS Index score for larger homes with same intention of raising the performance of "McMansions". The Performance Path also provides a good chance for a builder and rater to iterate on design and costs to meet both energy efficiency standards and the desires of the home owner.

Energy Star for Homes is providing a transition period for implementation of Version 3.0. During 2011 only certain parts of each checklist will be enforced. The checklists have to be fully filled out, but there will be phased in enforcement of certain sections and requirements. Come 2012 meeting all requirements will be mandatory. And keep in mind the Energy Star Version 4.0 is being talked about with 'net zero energy' in the same breath. Energy Star for Homes remains one of the easiest and less costly ways to begin building energy efficient homes.

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