

Wisconsin Energy Conservation Corporation
Response to Environmental Protection Agency's Proposed National
Specifications for ENERGY STAR Qualified Homes
(Draft dated 2/8/05)

Introduction: Wisconsin Energy Conservation Corporation (WECC) is a non-profit energy conservation corporation. WECC designs, implements and administers market based energy efficiency programs – demonstrating the profitability and value of energy efficiency through integration with market channels. WECC is a longstanding member of the Residential Energy Services Network (RESNET) and acts as an accredited Home Energy Rating System (HERS) provider and trainer in support of WECC's award winning residential programs - the Wisconsin ENERGY STAR Home and Home Performance with ENERGY STAR program. In our response to the Environmental Protection Agency's (EPA) Proposed National Specifications for ENERGY STAR Qualified Homes we provide the following background to better clarify the context of the proposed changes in the market we serve and our commentary.

Background: In Wisconsin the success of the Wisconsin ENERGY STAR Homes program came about as a result of following factors:

- Wisconsin has a long tradition—extending back to the 1980s—of supporting residential energy efficiency programs as part of a balanced approach to managing the state's energy needs.
- In 1998, the 'possibility' of deregulating the electrical utility industry led to the creation of a pilot program under agreement with a large investor owned utility and the State Department of Administration (DOA) and eventually the passage of legislation that created a public benefits fund for efficiency programs.
- Oversight and responsibility of the pilot and public benefit funded efficiency programs was given to the state DOA which contracted through a bid process to WECC for the design, implementation and administration of a new construction program among others.
- Given the growing importance and national recognition of the ENERGY STAR label (both then and now) DOA and WECC chose the National ENERGY STAR Homes program (pending review) as the platform of Wisconsin's new construction program.
- Wisconsin had at that time, and still has its own building code for one and two family residences known as the Wisconsin Uniform Dwelling Code (UDC). This code has always kept pace with, and in many areas has exceeded the national codes.
- A review of the national ENERGY STAR for Homes program (at the time) to assess its market feasibility, applicability and impact in light of Wisconsin's history in efficiency programs, building industry, current new housing stock/practices, and state energy code revealed areas of concern not addressed by either state code or the ENERGY STAR for Homes program. These areas were identified as the following and provided

the additional framework (along with the national platform) for the Wisconsin ENERGY STAR Homes program.

- ✓ Combustion safety
 - ✓ Moisture and IAQ
 - ✓ Building durability
 - ✓ Occupant comfort
-
- WECC consulted with local, state and national building performance professionals in the development of specific building standards to address these areas. Since buy-in by the building community was also essential, WECC sought direct input from building community and associations on the proposed standards and framework in order to receive the ENERGY STAR label.
 - WECC negotiated permission with EPA to launch the “Wisconsin ENERGY STAR Homes Program” with specific standards addressing combustion safety, ventilation capacity, and building air tightness. The program was piloted in 23 counties and was expanded state-wide under the public benefits legislation.
 - The success of the Wisconsin ENERGY STAR Homes program (both then and now) is based on credibility and providing the building industry and buying public with reliable and relevant information on proven techniques and technology that effect building performance. We have done this through trainings, conferences, marketing, and the development of well trained private consultant infrastructure who deliver certification services here in Wisconsin.
 - The addition of standards to the ENERGY STAR platform in Wisconsin has addressed building issues of concern to the building community, buying public, and program sponsors. These additional standards have also reduced callbacks and strengthened the value and acceptance of the national ENERGY STAR label in our building market, resulting in substantial gains in program growth and recognition since program inception.
 - The Wisconsin ENERGY STAR Homes program has built up a lot of trust and is often times used as a resource for building performance information by many people including builders, trades contractors, supply houses, lumber dealers, building associations, and consumers state wide. All of this trust is premised on the fact that what we promote, and require is based on *sound building practices and techniques that are relevant to our climate and are specific, assessable by testing, feasible for builders to achieve, and are effective at producing energy efficient, safe, durable homes.*

Having stated our background and the history of the Wisconsin ENERGY STAR Homes program, we would now like to directly comment on the EPA’s proposal.

GENERAL COMMENT: In our building environment, where most homes are built by custom builders, a performance analysis approach is most appropriate. Builders and consumers like the ‘trade-off’ nature of this approach for showing ENERGY STAR compliance

We would favor either a single national rating score or a regional scoring approach¹. Your proposal to compare a homes score as built to the prescriptive package would also be acceptable but we note that this would require 2 modeling runs compared to having a new reference home score—which could increase the costs (and barriers) to home certification and create market confusion.

THERMAL BY-PASS INSPECTION CHECKLIST: We do not endorse the requirement OR inclusion for this checklist in any compliance option. We have found that building air tightness has made more of an impact on energy consumption than ‘insulation installation’ and we have in place a series of site visits that already address the concerns on this list. Your insulation concerns will be addressed with the 2006 RESNET technical changes. Our Wisconsin ENERGY STAR Homes have an average Natural Air Changes per Hour of **0.12** with some builders getting down below that on a regular basis. Independent studies done by the Energy Center of Wisconsin have verified that our energy savings compared to conventional building is directly related to our building tightness which is why we have requirements for air tightness set at 0.25 cfm50 per sq/ft of building shell (program average is approximately 0.16 cfm50 per sq/ft of building shell)

RIGHT-SIZING OF HVAC EQUIPMENT: This issue is not as relevant in Wisconsin because our state building code requires a load calculation and equipment sizing report to be included with every building permit application filed. Every new home has to have a permit. There are limitations on oversizing set at a maximum of 15%. Our codes also set a maximum for estimated infiltration in sizing equipment. These ‘code’ requirements have been very successful at limiting the massive oversizing reported in other states. Also as stated on page 2-1 of ACCA’s manual “S”, **quote:** *oversizing is not an issue as far as fuel efficiency is concerned. Laboratory tests sponsored by the US department of energy indicate that modern furnaces and boilers can be oversized by as much as 100% without causing a significant increase in operating costs,* **end quote.** Right sizing seems to be more of an economic issue of purchase price rather than efficiency.

DUCT LEAKAGE: We do not endorse any requirement for duct leakage testing or its inclusion in any compliance option for the following reasons.

- Only leakage to the outside is relevant and the vast majority of distribution systems here are located within the conditioned space. There are already code requirements here for sealing any and all ductwork outside the conditioned space and is enforced by building inspectors.
- We already have in place a requirement for pressure-pan testing for any ducting running outside the conditioned space. This is done as part of the Wisconsin ENERGY STAR Homes program’s additional requirements. This screening allows us to address the real concern of leakage to the outside where applicable, without the labor intensive other testing options. Sealing of all supply and return registers for testing can require the

¹ Note that in Wisconsin the rating score is a pre-requisite for program participation and to show compliance with ENERGY STAR label requirements.

movement of heavy and expensive furniture risking damage and/or injury. Quite a few of our builders want us to test after the owner has moved in.

- We have done duct blaster testing on a representative sample of homes and found negligible leakage to the outside. We discussed the duct leakage 'issue' and its relevance here; with many national experts on the subject and most agree that because of our building practices and code requirements, full blown duct leakage testing may not be appropriate here. Some have indicated "issues" with the test procedure itself and the interpretation of the results.
- The whole issue with duct leakage in new homes in Wisconsin has been very challenging even for other well known entities. The new home program run by Certainteed Corporation had very little buy-in here due to their duct tightness and testing requirements and is now gone. There have been no other viable attempts by any other national organizations to bring their programs here when they have duct tightness requirements. The American Lung Association Health House Program as an example has certified only 2 homes to date.
- We have and continue to work directly with the HVAC industry here and even they are unable to get buy-in by their dealers and contractors in either right-sizing or duct leakage. There are very few if any complaints that can be traced here to duct leakage.
- We have certified approximately 5000 Wisconsin ENERGY STAR Homes to date and are happy to report that both the reported energy profiles and our independent field follow-up surveys and auditing indicate overwhelming customer satisfaction. Our relationship with the building community and general public is very strong and we feel that if we were required to conduct time consuming, labor intensive duct leakage testing as proposed without showing a reasonable benefit to all parties, we could very easily lose both momentum and credibility for the ENERGY STAR label.

Summary: It is our shared interests and goals with the EPA and national the ENERGY STAR for Homes program that leads us to comment on your proposals. We are committed to the continued promotion of the ENERGY STAR label in all our efforts here in Wisconsin. This includes in our appliance program as well as both our homes programs. We continue to share ideas and technical information with other program administrators around the country in an effort to help advance their programs, but always keep in mind the regional differences that make each unique and valuable in their respective market.

We hope to be able to continue our partnership as we together raise the bar for ENERGY STAR Homes nationally but ask you to consider our state specific codes and building practices while implementing any changes.

We agree with the core principles being used in the development of the new guidelines, they are:

- Maintain the ENERGY STAR designation as representing a premium product in terms of efficiency
- Assure that homes can earn the ENERGY STAR with "tried-and-true-technologies"
- Ensure the cost-effectiveness of recommended energy-efficiency improvements
- Require third party verification of the energy performance of ENERGY STAR qualified homes; and

- Offer builders the *flexibility* of both performance and prescriptive verification options

In our opinion, the best path for Wisconsin would be a new national or regional score to use with the performance option², along with the option of using the existing duct leakage defaults (such as no observable leakage) to address outside duct leakage concerns in lieu of testing

Thank you for the opportunity to express our concerns and position on your proposed new guidelines for ENERGY STAR qualified homes.

Greg Nahn

Wisconsin Energy Conservation Corporation
Program Manager
Wisconsin ENERGY STAR Homes

Joe Nagan

Home Building Technology
Technical Director
Wisconsin ENERGY STAR Homes

² Using the “expanded” scoring method as promoted and defined by RESNET