August 19, 2005

Mr. Jonathan Passe
Partner Support Coordinator
ENERGY STAR Homes Program
US Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460

RE: JOINT COMMENTS ON THE ENERGY STAR HOMES JULY 27, 2005 DRAFT SPECIFICATIONS

Dear Mr. Passe,

We the undersigned organizations offer joint comments below on the July 27, 2005 draft specifications for ENERGY STAR Homes.

In general, we agree with and support the improvements incorporated into the July 27, 2005 draft. However, because of the importance of this program and the infrequent modification to program requirements, we would like to identify the following issues and propose further improvements:

1. **Proposed improvements identified by the Responsible Energy Codes Alliance (RECA):**

   We understand that RECA is submitting separate comments on three issues: (1) the need to make insulation levels consistent with the 2004 IECC in the National Builder Option Package; (2) the need to require, in addition to meeting all state and local codes, that the home satisfy all requirements in the most recent version of the IECC (the 2004 IECC); and (3) the need to tie the HERS minimum expanded score for the performance path to some percentage improvement over the 2004 IECC. We need not reiterate these comments here, but we want to fully endorse them.

2. **Window requirements in the National Builder Option Package:**

   We endorse the requirement of "ENERGY STAR Qualified Windows or Better." We suggest the following additional improvements:

   (1) Extend the maximum 0.45 SHGC requirement proposed in zone 4 to zone 5 as well. We agree with the extension of solar heat gain control

requirements to zone 4 as proposed by the draft (0.45 SHGC maximum), although we believe it would be more consistent to use a 0.40 maximum as in the first three zones. Window SHGC drives HVAC sizing, peak demands, summer electric use and pollution, in any climate that uses significant air conditioning. Solar control is particularly important in the prescriptive path, since that path allows a substantial amount of glazing (up to 21%) and there is no assurance of orientation and design of windows to control summer heat gain. Solar control is also critical to comfortable homes in the summer (and sometimes even in the winter) and the failure to control solar gain can lead to substantial increased energy use due to homeowner response to discomfort (adjusting the thermostat down). Although zones 4 and 5 are less cooling dominated than zone 3, SHGC requirements still make sense in those zones. As an aside, the performance path of the 2004 IECC uses a 0.40 SHGC in the Standard Reference Design for homes in zones higher than zone 3 (including zone 4 and 5).

(2) Clarify that all glazed fenestration (windows, glazed doors and skylights) must be ENERGY STAR Qualified. The draft requires "ENERGY STAR Qualified Windows" but is not clear that glazed doors and skylights also must be ENERGY STAR Qualified. These products should also be ENERGY STAR Qualified for the same reasons as windows. Please note we support the exemption for decorative glazing up to 0.5% of window to floor area.

(3) Eliminate the skylight exception (treat skylights like windows and require ENERGY STAR skylights). If the skylights are ENERGY STAR Qualified, we are unsure why there is an area limitation (other than the overall window area limitation) and we suggest removing it. Instead, ENERGY STAR skylights should be treated as part of the window area.

(4) Eliminate the recognition of solar screens. We are concerned with the recognition of solar screens as an option. At a minimum, there need to be provisions to ensure that such screens are permanent. In our experience, such screens are easily removed by the homeowner and often are. Moreover, we are not aware of a nationally-accepted rating system for such screens that would provide reliable data to determine the SHGC effects of solar screens.

3. <u>ENERGY STAR Products Mandatory Requirement under the National Performance Path Requirements:</u>

We endorse the establishment of a mandatory requirement under the National Performance Path for using certain ENERGY STAR Qualified products. However, we think the proposal does not go far enough and instead, we recommend that:

(1) Use of ENERGY STAR Qualified Windows (and other ENERGY STAR fenestration products) be mandatory (with the exceptions established for the National Builder Option Package) and

(2) The home also include either: (a) ENERGY STAR Qualified heating and cooling equipment, or (b) the Lights/Fans/Appliances package.

Alternately, although less preferred, if ENERGY STAR Qualified Windows are not required, then the Mandatory Requirements should require at least two of the ENERGY STAR Qualified Product categories, rather than only one category as in the draft. We think that the ENERGY STAR Homes program should require the use of ENERGY STAR products. Requiring one category is a good start. Requiring more than one would be even better.

Most importantly, however, we think that, at a minimum, ENERGY STAR windows should be a mandatory requirement. First, the draft itself recognizes the need for ENERGY STAR windows. Specifically, footnote 8 states that "ENERGY STAR qualified windows are recommended." We urge you to go farther and require ENERGY STAR Qualified windows. The windows are a critical envelope item for both heating and cooling. While HVAC and light fixtures/appliances are important, we submit that the potential negative impact of poor windows is far greater. Poor windows increase the size of HVAC systems; reduce comfort; increase condensation problems; and increase summer and winter utility peak demands, among other things. HVAC systems already have minimum requirements as a result of federal law. Neither HVAC nor light fixtures/appliances is part of the envelope. Both are far easier and less costly to replace, and they are likely to have a much shorter useful life. Even the ICC has recognized the need for minimum window requirements, and has established mandatory minimum window performance standards in the 2004 IECC applicable to the performance path.

4. <u>Costs of verification under the National Builder Option Package:</u>

We endorse the establishment of a single, separate National Builder Option Package (in lieu of many individual BOPs). Having a simple prescriptive path is valuable in the ENERGY STAR Homes program for many of the same reasons that it is valuable in the energy codes – moreover, we believe that a good simplified path will substantially increase participation in the program. Our only concern is that the verification requirements should be as inexpensive and accessible as possible while still reasonably verifying compliance. If verification makes this option too expensive, and if limiting certified inspectors means that the inspection industry cannot meet demand, then participation will be reduced. Therefore, we recommend that EPA carefully evaluate the verification requirements to assure reasonable

verification while reducing the cost of verification and increasing accessibility. In this regard, EPA may want to relax any requirement for RESNET-accredited Providers (where other types of providers authorized by the state can provide necessary verification) and should carefully consider how to permit some form of sampling to ensure compliance. In particular, careful consideration should be given to how to further simplify, if possible, compliance with the "Thermal Bypass Checklist" under this option.

5. <u>Verification of "right sizing" requirements</u>

We support the concept of HVAC "right sizing" because proper equipment capacity along with efficiency is a key determinant in building energy usage. However, the draft specification is unclear about the actual requirements for right sizing. We offer the following comments to clarify the requirements and thereby make them more effective in achieving properly sized residential HVAC systems:

(1) The reference to RESNET HVAC equipment sizing protocols does not appear to be correct in the current draft. It refers to the HERS Standard, (Mortgage Industry National Home Energy Rating Systems Accreditation Standards) Chapter 3, Section B.6.b.(7). This generally provides assumptions for "Corrections for climate conditions and mis-sizing of equipment, using correction factors to HSPF, SEER and AFUE that are established or approved by the accrediting body and consistent for all HERS providers operating within a state." However, **we believe the intended reference was for another RESNET document**, "Adopted Enhancements to the Mortgage Industry National Home Energy Rating Standards" and its "Amendment TECH: 2004--13 – Correction of Local Climate Conditions and Proper Sizing for Heat Pumps and Air Conditioners." We also understand that this enhanced standard is going through further modifications and is not yet finalized. **EPA should coordinate with RESNET to determine what the proper reference should be in its final form**.

(2) Apart from the correct reference, the current draft specification does not specifically require right sizing of HVAC equipment. It only recommends that that HVAC equipment "should" be sized in accordance with RESNET protocols. As a "best practices" specification this recommendation should be made a requirement to the extent practical.

(3) RESNET does not offer HVAC right sizing protocols per se. The current RESNET references provide software input assumptions to be used in calculating the effect of equipment sizing on the HERS score under the National Performance Path approach. Under the National Builder Option Package approach, a builder would presumably have to

follow a similar approach and use the stated assumptions when using ACCA Manual J or equivalent method for calculating system capacity.

(4) The current specification does not recommend or require any limit on equipment oversizing. For example, ACCA Manual S recommends a limit of 15 percent oversizing on most HVAC equipment and up to 25 percent for heat pumps in cold climates. These parameters are not addressed in the current specification. Thus, it will be difficult for builders to know or demonstrate that HVAC equipment is "right sized."

(5) The current specification appears to have dropped the references to ACCA Manuals D, S and J for duct design, system selection and system sizing. These should be reinstated to provide more practical direction to builders wishing to right size their HVAC equipment.

(6) In light of the foregoing comments we offer the following language to replace Note 11 in the National Performance Path and Note 2 in the National Builder Option Package: "All requirements for ENERGY STAR qualified equipment shall be based on the latest ENERGY STAR specifications. Heating and cooling equipment shall be sized and documented in accordance with industry standard procedures such as ACCA Manuals D, S and J (or their equivalents) taking RESNET-approved protocols into account. To the extent practical, HVAC system oversizing shall adhere to ACCA-recommended limitations based on equipment type and climate location." We believe this language is practical because it requires that builders follow best practices for HVAC equipment sizing, yet allows flexibility if there are building-specific conditions that require a departure from ACCA-recommended oversizing limits.

6. The HERS (Expanded) Minimum Performance Score

We are not certain of the basis for selecting an 83 minimum score in zones 1-5 and 84 in zones 6-8. **We would like to make sure that these scores represent a significant and demonstrable improvement over the 2004 IECC.** Moreover, we are not certain why the scores differ for different parts of the country. Given that zones 1-5 make up the overwhelming majority of housing starts in the country, we suspect that this proposal effectively establishes a weighted average for the country of close to 83. This issue is particularly important given the standards of 30% and 50% better than the IECC recently established in the 2005 Energy Policy Act for tax credits. EPA should clearly explain the basis for this choice, and delineate alternate levels (and their respective relationship to IECC levels) that could be considered and seek more comment on this specific issue.

Thank you for the opportunity to comment on the guidelines for this important program. Please contact Kate Offringa at NAIMA (703-684-0084) with any questions.

Sincerely,

Alliance to Save Energy

American Council for an Energy-Efficient Economy

Building Codes Assistance Project

Cardinal Glass Industries

Guardian Industries Corporation

Midwest Energy Efficiency Alliance

North American Insulation Manufacturers Association