Summary of Significant Changes to the 2006 ENERGY STAR Homes Guidelines Since the Release of the Final Draft on September 7th, 2005

Since EPA posted the final 2006 ENERGY STAR New Homes Guidelines on September 7th, 2005, stakeholders have been requesting clarifications, exemptions, and alterations to the documents. A summary of significant comments, EPA's response to each comment, and any action taken by EPA to address the comment is listed below. Note that minor editorial changes that did not change the intent of the guidelines are not included.

1. **Topic:** Thermal Bypass Checklist (TBC) - Air barrier requirement for showers and tubs in hot climates

   Summary of Comment:
   Concern was expressed about whether the air barrier detail for tubs and showers at exterior walls should be required for homes in hot climates. It was felt that the effort required to achieve this detail outweighed potential benefits and, therefore, builders should be exempt in hot climates.

   EPA Response:
   EPA felt that there was strong justification for maintaining this requirement in all climates. First, leading technical references including the EEBA Builder Guide and Building America Guide for Hot and Humid Climates include air barrier details at tubs and showers at exterior walls. Second, even in climates in the southern part of the country, there are seasons with cold winter nights when the pressure drives toward the exterior of the home. And lastly, the cost of creating the air barrier is minimal, because a small piece of house wrap or thin board product would be sufficient.

   Resolution:
   Given the points cited, EPA decided to maintain this requirement in the TBC across the entire country.

2. **Topic:** National BOP & Performance Path – Eligible locations for the use of ENERGY STAR lighting

   Summary of Comment:
   A request was made to allow ENERGY STAR qualified fixtures installed in laundry rooms count towards the required use of five ENERGY STAR qualified products.

   EPA Response:
   EPA agreed that energy efficient lighting installed in laundry rooms can contribute to significant energy savings.

   Resolution:
   EPA added laundry rooms to the list of eligible locations.

3. **Topic:** National BOP - UA tradeoff allowance for thermal envelope

   Summary of Comment:
   A request was made to clarify the UA tradeoff allowance with respect to fenestration. The respondent questioned which fenestration requirement would apply if the fenestration requirements in the national BOP do not correspond with those cited in the IRC.

EPA Response:
The UA calculations must be made using the IRC requirements (with the exception of fenestration) plus the fenestration requirements contained in the national BOP.

Resolution:
EPA clarified this methodology in the footnotes to the national BOP.

4. **Topic:** National BOP - Applicability of 2004 IRC Sections N1102.1 through N1102.5

Summary of Comment:
A request was made to clarify whether Sections N1102.1 – Insulation and Fenestration Criteria, N1102.2 – Specific Insulation Requirements, N1102.3 – Fenestration, N1102.4 – Air Leakage, and N1102.5 – Moisture Control of the 2004 IRC apply to the national BOP.

EPA Response:
In general, Sections N1102.1 and N1102.2 provide constructive guidance and exceptions that should be followed when complying with the national BOP. However, it should be noted that, with regards to Section N1102.2.4 – Steel Frame Ceilings, Walls and Floors, the calculation of the U-factor for a steel-frame envelope assembly shall use the ASHRAE zone method, or a method providing equivalent results, and not a series-parallel path calculation method as is stated in the code.

Sections N1102.3, N1102.4, and N1102.5 contain information that is superseded by requirements in the national BOP and the Thermal Bypass Checklist or that is not relevant to the program. Therefore, these sections are not applicable.

Resolution:
EPA clarified which sections of the 2004 IRC are applicable in the footnotes to the national BOP.

5. **Topic:** National BOP – Exemption of programmable thermostats for zones with radiant heating systems

Summary of Comment:
A request was made to clarify the definition of "zones with radiant heat" referenced in the exemption of programmable thermostats.

EPA Response:
The exclusion for radiant heating should refer to mass radiant heating only, not conventional hot water baseboards or radiation. Because mass radiant heating has a very slow reheat time, the use of programmable thermostats is not appropriate. While radiant baseboards do not reheat as fast as forced air heating systems, the response time is sufficiently fast to allow for the use of programmable thermostats.

Resolution:
EPA clarified that only mass radiant heating systems are exempted from using programmable thermostats.

6. **Topic:** National BOP – Requirement on maximum allowable total duct leakage

Summary of Comment:
The national BOP released on 09/27/2005 included a requirement that total duct leakage not exceed 9 cfm / 100 square feet of conditioned floor area. Stakeholders requested that this requirement be removed, because total duct leakage primarily impacts comfort and not energy consumption. As such, the efforts required to measure this value do outweigh its benefit.

EPA Response:
EPA agreed that total duct leakage is an important determinant of comfort, but conceded that it is not primarily a measure of energy efficiency.

Resolution:
EPA removed the requirement for maximum allowable total duct leakage.

7. **Topic:** TBC – Requirement that wind baffles be installed

Summary of Comment:
A concern was expressed about the requirement in the TBC requiring solid baffles at attic eaves to prevent wind washing. It was noted that the new RESNET insulation inspection procedures prohibit the assignment of "Grade I" to ceiling insulation that does not have eave baffles. Because the BOP requires grade I insulation, it was felt that this requirement is redundant for the prescriptive path. For the performance path, the stakeholder preferred flexibility to credit the use or penalize the absence of baffles.

EPA Response:
EPA felt that it is important to require attic baffles even under conditions where builders use the performance path and the insulation installation is level 2 or 3. Wind baffles reduce the risk of thermal performance and moisture control problems that EPA wants to minimize in all ENERGY STAR Qualified Homes. Also, regarding the national BOP, EPA believed it is worth explicitly requiring the use of baffles so that this important detail is not overlooked.

Resolution:
Given the points cited, EPA made no change to the TBC with regards to wind baffles.

8. **Topic:** National BOP & Performance Path – Requirement for active ventilation in homes that are exempt from duct leakage testing

Summary of Comment:
A request was made to require mechanical ventilation in homes that are eligible for an exemption to duct leakage testing. Such homes must have all ducts and air handling equipment in conditioned space and have envelope leakage tested to be $\leq$ 3 ACH50 or $\leq$ 0.25 CFM 50 per square foot of the building envelope. In such cases, it is highly unlikely that the outdoor air exchange rate will meet the requirements of ASHRAE 62.2 without the use of mechanical ventilation.

EPA Response:
EPA concurred with the points made by the stakeholder and will require active ventilation systems in such homes.

Resolution:
EPA revised the footnotes of the national BOP and performance path to include this requirement.

9. **Topic:** TBC **–** Requirement added for common walls between dwelling units

   EPA Response:
   EPA extended the requirements of the TBC to the common walls between dwelling units. While this interface may be challenging to bring into compliance with the TBC, it can represent a significant thermal bypass that should not be overlooked by builders.

   Resolution:
   EPA added common walls between dwelling units as an additional item on the TBC.

10. **Topic:** TBC **–** Requirement for rim joists and box sills

    Summary of Comment:
    A concern was stated about the difficulty of meeting the TBC detail at rim joists / box sills using present day technology. For this reason an exemption for this requirement was requested.

    EPA Response:
    Based on consistent feedback from stakeholders about the difficulty of achieving this detail, and input from building science professionals, EPA decided to highly encourage, but not require, a complete air barrier detail at band joists. However, a complete air barrier detail will be required where HVAC duct systems, leakier than 4 cfm/100 sq. ft., are run in joists between a sub-floor and finished ceiling

    Resolution:
    EPA updated the TBC to restate the requirement as a recommendation, except for the condition cited above, for which the requirement must be met.

11. **Topic:** National BOP & Performance Path – Flexibility in defining outdoor design temperatures for system sizing

    Summary of Comment:
    A request was made to provide geographic sensitivity to the outdoor temperature condition (i.e., 99.0%) cited for sizing calculations. For example, in the Las Vegas market, it was noted that engineers consistently use a 114 to 120 degree cooling design temperature for sizing, which exceeds the 99.0% value.

    EPA Response:
    EPA provided an exemption to the current right sizing outdoor air temperature requirement (99.0% as published in ASHRAE Handbook) in cases where a preferred higher temperature represents a prevailing outdoor air temperature used by the HVAC industry in that location and reflects extreme climate conditions that can be documented with recorded weather data.

    Resolution:
    EPA incorporated this change into the national BOP and performance path documents.