ENERGY STAR 2011 Qualified New Homes Comments

This is a compilation of all comments received by EPA during the ENERGY STAR Qualified New Homes comment period ending July 10, 2009

The following comments have been extracted from submitter emails and attachment files, which were received in a variety of formats. The Environmental Protection Agency is not responsible for any typographical errors or omissions.

Table of Contents

AAA Energy Management – Berger, Ervin	7
Adena Energy – Smith, Terrance	8
Advanced Energy	9
Advanced Environment Imaging, LLC – Mrzlak, Paul	10
Affiliated International Management, LLC – Klein, Gary	11
AIR by Design – Hill, Bill H.	17
Air Conditioning Contractors of America (ACCA) – Davis, Wesley R.	18
Alliance for Water Efficiency – Dickinson, Mary Ann	19
Alpine Energy Solutions – Shillito, John	20
Alpine Energy Solutions – Schmuck, Allan	21
Alternative Resource Management. LLC – Lea. Mike	22
AltruEnergy Building Performance – Folse, Chris	23
American Council for an Energy Efficient Economy (ACEEE) – Thorne Amann, Jennifer	25
American Gas Association – Williams. Ted A.	28
Antares Homes – Formby, Ron	
Apple Blossom Insulators Inc – Meeks, John	
Arkansas Energy Office – Brown, Evan	
ASERusa – Fries, Garv	
Badgerland Home Consultants – Bates Dale	33
Beck Builders Inc. – Jacques Dan	34
B-macs construction – McKenney, Brian	
Blume Albrecht, Kelly	
Braselton Homes – Braselton. Bart	
Braselton Homes – Honea. Tim	
Brickfield, Burchette, Ritts & Stone, PC – Stone, Garrett	40
Brown, Rick	
Buckeve Power, Inc. – Staats, Teresa	
Building Codes Assistance Project – Panetti, Cosimina	43
Building Performance Co. – Robinson, Chad	44
Building Performance Contractors Association of New York State – Lisanti, Tony	45
Building Performance Specialists – Dunning, Skye	47
Building Technology Services, LLC – Headrick, Charlie	48
Bureau Veritas – Stephens, David	49
Butternut Creek. LLC – Swift. Duane	50
CEE – Lvnch. Margie	51
Central Florida Gas – Ranck. Scott	55
Chapala Consulting, Inc. – Chapala, Ray	56
City of Frisco – Middleton, Ryan J.	57
Coastal Training Consultants – Bolus, Robert B.	58
Comfy House – Branch, Thomas	59
Community Energy Services – Shipley, Scott	60
Conservation Services Group – Harley, Bruce (on behalf of CSG)	61
Cool Metal Roofing Coalition – Kriner, Scott	63
Cornerstone Energy Conservation Services – Powell, Eric	64
cowanhouse – Cowan, Jack W	65
Critcher, Jim	66
Darling Homes – Turner, Cheryl	67
De Kok Builders – De Kok, Jerrel G.	68
Department of Business, Economic Development and Tourism - State of Hawaii - Wiig, Howard	69
Discovery Energy Consultants, LLC – Wigger, Scott	70
Discovery Homebuilders LLC – Miller, Alan	71
DR Horton – Ferguson, Mark	72
Driskill Homes – Driskill, Larry	73

Duct Testers – Ellis, Jeremiah	.74		
JuPont Building Innovations – Weston, Theresa A.			
Durango Fine Homes, LLC Solar Home Specialists – Kawell, Steve	.76		
E3 Building Sciences – Brown, David	.//		
EAM Associates – Migneco, Frank	.79		
EarthSTEPS – Mordas, Alex	.81		
East Kentucky Power Cooperative – Littrell, Josh	.82		
Ecocrafters/CPS Custom Homes – Smith, Craig	.83		
Edwards, Dick	.84		
EHS Construction Co., LLC – Seetelt, Joanne	.85		
	.86		
Eld-Co Buildings, Inc. – Eld, Kyle C	.89		
EMF Home Consultants, Inc. – Fredenberg, Mark	.90		
energetechs – Hellem, Russ	.91		
Energy Efficiency Associates – Ducios, Mike	.92		
Energy Image – Reynolds, George	.93		
Energy Impacts – Visnic, Chuck	.94		
Energy Inspectors – LeBron, Galo	.95		
Energy Masters – Winston, Mary	.96		
Energy Saving Comfort Systems – Smith, Brian	.97		
Energy Sense – Curry, Mark	.98		
Energy Services Group – Minch, Ed.	100		
Energy Smart – Tippit, Don	101		
Energy Solutions, Inc. – Gough, Danny	102		
Energy Strategies, Inc. – Miller, Patrick	103		
Energy Vanguard – Bailes, Allison A.	104		
EnergyLogic – Schwarz, Robby	105		
En-Tech Associates, Inc. – Vitale, Tom	107		
Envinity, Inc – Goble, Liam	801		
Environmental Resource Partners, Inc. – Nichols, Scott	109		
Esolutions2 – Myers, Kevin	110		
eZing, Inc – Porterfield, John M.	111		
Fard Engineers, Inc. – Colter, Avery Ray	112		
Ferkey Builders – Ferkey, Roy	113		
Fitzpatrick, I om	14		
Florida Solar Energy Center – Fairey, Philip	115		
Fox Energy Specialists – McDaniel, Maci	116		
Gachelin Associates – Hernemar, Marie	118		
Gallo Homes, Inc. – Galello, Michael	120		
GDS Associates, Inc. – Lydon, Mark	121		
GDS Associates, Inc. – Bennet, Bruce	122		
Georgia Power – Donaid, Tony	124		
Glaus Brothers Contracting – Glaus, Paul	125		
Global Green USA – Bardacke, Ted	126		
Grading Spaces LLC – Furst, Mark	127		
GRCC/Tassell M-TEC – Shultz, Brian	128		
Great Lakes Carpentry, Inc. – Nilsson, Randy	129		
Great Lakes Home Performance LLC – Rosendaul, Matt	130		
Great Lakes Home Performance LLC – Voisin, Gienn	131		
Green Building LLC – Brenaon, John	132		
Green Dog Enterprises, Inc. – Wildennaus, Daniel	133		
GREEN DREAM GROUP, LLC – LUNSTORD, CORDETT	134		
Guir Coast Lotts – Wallin, David W	135		
Gurlier Bros. Consultants, Inc. – Gurlier, Michael	130		
SVIS - Faikel, Kelly	131		

H5 Energy – Harrison Darol	142		
Habitat for Humanity Chicago South Suburbs – Tracy David			
Habitat for Humanity of Michigan – Phillins Thom	145		
Harris Andrew			
Hathmore Technologies II.C - English Mary	152		
Head's Heating & Air Conditioning Head Donnie Sr			
Head's Heating & Air Conditioning – Flead, Rohnie L. St.	153		
Heatmiser Home Energy Consulting LLC – Duffenbarger Jacon			
Heinbacker Kurt	155		
Highland Building Consultanta Maak Douglas			
Higher Mott			
Hissony, Mall			
Home Builders Association of Georgia – Hicks, Deron (on hohalf of HPAG)			
Home Builders Association of Levington – Rock, Sandy (on behalf of HPAL)			
Home Building Technology Services - Neger Les			
Home Building Technology Services – Nagan, Joe			
Home Energy Group – St. Hildlife, Claude			
Home Energy Inspections – Hummerlund, Gary			
Home Energy Technologies, LLC – Harding, Peter			
Home Performance Professionals Inc. – Bakowski, Martin			
HomeCheck, Inc. – Snephera, Carl			
Huntsville Utilities – Denman, Larry			
IED/Indoor airPLUS – Werling, Eric			
Ideal Home Builders, LLC – Deal, Jonnny			
Image Design, LLC – Hugnes, Eric A.			
IN or Out Smart Energy – Bates, Randy			
Innabit - Green Building Consulting – Mazal, Andy			
IR Energy Saver – Kubly, Rick			
J. & B. Building Services, Inc. – Meyer, Robert			
J. Bixler Conn & Associates, Inc. – Bixler Conn, Jane			
Jay County REMC – Denney, Cindy			
Johns Manville – Ray, Bruce			
Keller Homes – Manly, Charles Jr.			
Knight, Ken			
Kentucky Division of Energy Efficiency and Conservation – Colten, Lee			
Knapp, Scott			
Krebs, Mark			
KR Services – Ripberger, Kenneth			
L.E. Meyers Builders, Inc. – Meyers, Leon			
Lawrence Berkeley National Laboratory – Sherman, Max			
Ledger Builders – Pruim, Mark			
Lightly Treading, Inc. – Bartczak, Clayton			
Littlewolf Architecture – VIcek, Christopher	200		
Long Island Builders Institute – Watt, Michael	201		
Lumber One, Avon Inc. – Carlson, Chad	203		
Lutron Electronics Inc. – Anderson, Erik	204		
Lyon, John	205		
M/I Homes Midwest Region – Bailey, Dennis	206		
MaGrann, Mark	207		
MaGrann Associates – McCleery, Doug (on behalf of McGrann Associates)	208		
McIntyre Builders Inc. – McIntyre, Arn	210		
Metzguer, Tom	211		
Morehead State University – Schack, Edna O.	212		
Moutos, John	213		
NAIMA – Cottrell, Charles	214		
National Association of Home Builders – Ritterpusch, John (on behalf of NAHB)	218		

National Propane Gas Association – Swiecicki, Bruce	220
National Property Inspections (Gregory Enterprises, LLC) – Gregory, Steve	221
Natural Resources Defense Council – Burt, Lane (on behalf of NRDC)	222
Newport Ventures, Inc. – Moor, Mike	224
Norbord Industries – Haluska, John	225
North Carolina Energy Partners – Courts, Andrew J. Jr.	226
North Star Energy Consulting, LLC – Maletta, James	227
North Twin Builders – Volkmann, John	229
Northeast HERS Alliance (NEHERSA) – Stack, Kevin (on behalf of NEHERS Alliance Board of Directors)	230
Northern Colorado HBA – Wagner, Vicki	233
NorthStar Comfort Services, Inc. – Boone, Jeff	236
Northwest Energy Efficiency Alliance – Brink, Anne	237
NVR, Inc. – Phillips, Christine	240
O'Brien & Company – Jackson, Alistair	241
Oklahoma Gas & Electric – Dorton, Donney	242
Om Homes LLC – Bhatia, Marty	243
Omaha Public Power District – Swett, Dave	244
On-Site Performance Testing – Geissler, David	245
Optimal Building Systems, LLC – Butler, David	246
Orchard at New Market, LLC – Seawright, Steve	249
PA Home Energy / Performance Systems Development – Greely, Kathy	250
Pacific Sustainable Building Science, LLC – Johnson, Mitchell	251
PanelStar Custom Homes – Stelmack, John	252
Parker, Ken	253
Pikes Peak Committee	254
Portland Energy Conservation, Inc. – Cook, Warren	257
Progressive Engineering Inc. – McCutchan, Larry	258
R&D, Pulte Homes – Peterson, Jim	260
R. Whitfield Assoc. Trust – Whitfield, Roderick	262
Raintree Energy Services – Robinson, Stephen	263
Renewal Home Energy, Inc – Oldenburg, Karl	264
Residential Science Resources, LLC – Gates, Mat	265
RESNET – Baden, Steve	267
Ryland Homes - Dallas – Tschetter, Chad	271
Sawyer Homes Inc. – Latyala, Bob	272
Schultz Building Inc – Schultz, Noel	273
Scott Austin Builder, LLC – Austin, Scott	274
Seawright Homes, LLC – Denny, David	275
Senercon – Ruiz, Javier	276
Shove, Miles	278
Skinner Construction – Skinner, Eric	279
South Texas Energy Raters – Lewis, Steve	281
Southeastern Energy – Angel, Steve	282
Southern Energy Management – Peaden, Michael	283
Southface – Speciale, Eurinea	285
Southwest Gas Corporation – Shoberg, Eric	289
Spering, Gene	289
Spille Builders – Spille, Tom	
Stewart Duniders, Inc. – Stewart, Mary	
Surrey and Testing Services Inc. Disherdeen Mitch	
Survey and Tesung Services, Inc. – Kichardson, Milch	
Sustainability Consultation – Stein, Tyler	
June Olech - Gales, Alleli	290 206
Texas Association of Dunuers - Caudulo, Paul	207
1 Exas Viassiv I 10111ES	291

TexEnergy Solutions, Inc. – Brauer, James Jr.	
TexEnergy Solutions, Inc. – Saunders, Steve	
The Buffum Alliance Group - Buffum, Norman M.	
The Home Co., LLC – Congdon, Bob	
The Home Inspector General, Inc. – Holcomb, Michael	
The House Inspector, LLC – Greening, Chuck	
Thermo-Scan Inspections – Dunn, Travis	
TJH Energy Consulting – Krawczyk, Tom	
Trendmaker Homes – Walton, David	
U.S. Green Building Council – Metalitz, Batya	
United Way of Long Island – Wertheim, Rick	
Uponor, Inc. – Stroud, Dale	
Utah Division of Housing and Community Development – Glenn, Mike	
Vandemusser Design, IIc – Musser, Amy	
VEIC on behalf of NYSERDA, LIPA, NYSBA, LIBI	
Veridian Homes, LLC – Zajicek, Gary (on behalf of company president)	
Vermont Energy Investment Corporation – Gordon, Chris (on behalf of VEIC)	
Vinyl Siding Institute – Dobson, Matt	
Vox Energy Solutions – McLynden, Shane	
WaterFurnace International, Inc. – Niesse, Tom	
Winchester Homes Inc. and Camberley Homes – Melvin, Randy	
Winter Sun Construction, LLC - Pader, James	
Wisconsin Energy Conservation Corporation – Dedolph, Carter (on behalf of WECC)	
Witham, Rick	
Wisznia & Associates – Katz, Myron	
Anonymous #1	
Anonymous #2	
Anonymous #3	351
Anonymous #4	
Anonymous #5	
Anonymous #6	
Anonymous #7	
Anonymous #8	
Anonymous #9	358
Anonymous #10	

AAA Energy Management – Berger, Ervin

To Whom It May Concern,

I am a certified rater in the State of Texas, Beaumont, TX. The proposed changes to the Energy Star program are good in theory but the most horrible time to implement these changes. Someone from the EPA needs to spend time with a rater in the field to understand the flow, timing and complete process for certifying a home especially with the proposed changes. Some homes require a driving distance of 75-100 miles. I will have to pass these additional trip costs on to the builder for inspecting the various requirements proposed. Listed below are some of my thoughts/comments regarding the proposed changes:

The timing of these changes is not right. With the economy in a downturn and builders going out of business, any additional requirements/costs will cause the builder to say the hack with the Energy Star program.

The additional price to the builder for these requirements will place a negative connotation regarding the Energy Star program. Knowing some of the builders and just trying to keep them in the program now, any additional costs will not be received by the builder.

The Water-Managed Construction Checklist and the Indoor Air Quality Checklist seem unreasonable. I truthfully believe you will get a big laugh from builders on these two. Someone from the EPA needs to meet with some builders who have been in the business for some time and get their reaction.

On the HVAC Quality Installation Rater Checklist requirement, I do not think that the rater should be responsible for verifying that design conditions are met in the field installation, that duct systems are installed in accordance with best practices and that bedrooms have 1 in2 of transfer area per cfm of supply air delivery. This should be an HVAC contractor requirement to sign off on.

Who will verify the Quality Framing Checklist? As a rater, I am not qualified to do so. Raters are not trained in HVAC work. I can just see how the HVAC contractor will react to something I might ask him about with my limited HVAC knowledge. I would just have to take his response and say okay. Is this what we want?

Raters would have to be on site numerous times to perform these additional inspections. Has this been considered?

I feel strongly that these additional requirements will hurt the Energy Star program. Has the negative impact on the program been given its due consideration?

For the person(s) proposing these additional requirements, what is the proposed additional cost? Can someone from the EPA provide me with this estimate? I would like a response to this question.

Thanks for asking for input on the proposed changes. Feel free to contact me regarding any of the comments.

Adena Energy – Smith, Terrance

My name is Terry Smith and I'm with Adena Energy in Ohio. I am an accredited Rater Training organization and have been a HERS Provider. After reviewing the information from the EPA and RESNET I mostly concur with RESNET's positions. Especially that the timing is inopportune given housing markets, but also because of gearing up for other programs. Below are my comments on the proposed changes to the Energy Star Qualified Homes requirements.

Size Adjustment Factor

I concur that the Size Adjustment Factor is reasonable and easily implemented.

Checklists

In total the additional checklists and citations for compliance with referenced standards (Manuals J, D S, and T, OVE, etc.) bring the verification into a range similar to LEED or the HBA's Green Homes programs. These programs together certify homes in the hundreds, or generously, thousands per year whereas Energy Star certifies homes in hundreds of thousands, nearing a million a year. Complexity and cost are the 2 most frequent reasons cited for the lack of participation from builders. Other changes to the program did not adversely affect participation. I believe this degree of change would, though I can't predict how much.

The additions would mean an additional 2, possibly more trips for the inspectors. Many aspects would not be readily examined through a plan review such as framing details and some HVAC requirements. So, preliminary communication with clients becomes troublesome.

The issue of builder sign off is very troubling. Those matters which are not in the normal knowledge base of the rater or verifier and which the inspector has not had some minimum training in should not be included in the checklist. These should never be left to the builder to sign off on.

I in fact believe that if these requirements are implemented, the builder sign off should NOT be allowed but additional certification be added for verifiers.

Qualifying Criteria

I am deferring to Energy Star and RESNET on the technical aspects of these criteria and if they are technically correct and helpful in the objectives of securing the brand and promoting improved efficiency.

These criteria however seem that they would be very difficult to present to a builder client. The brand itself should be the tool for attracting buyers and that doesn't seem too much an issue.

The additional complexity sadly, however, brings new risk to the verifiers.

Training

The addition of an existing home specialty is currently adding more time to the Rater/Building Analyst/Verifier curriculum. Manual J and D courses I have worked on for Ohio's HWAP were each 2 days and OVE/water management takes approximately 2 more.

I have used the Thermal Bypass Checklist Guidance as a training tool for builders and it takes ½ day to cover properly. If Energy Star were to provide similar tools for these checklists and criteria, the total time for builder training would be several days.

Speaking as a training entity again, the additional training will add nearly a week to the current Rater/Verifier curriculum. I'm not opposed to this additional knowledge transfer – it is certainly needed – but it will also be costly.

Advanced Energy

We applaud EPA for moving forward with their ENERGY STAR for New Homes program. The new construction standards are generally based on sound building science and should lead to more resource-efficient homes. And the size adjustment factor and the water conservation standards are important steps forward that should lead to a more accurate and holistic reduction in energy.

However, no matter how noble EPA's goals for the ENERGY STAR for New Homes program are, how these are translated for and implemented by the raters, builders, and trades will be what determines its success. We feel this is where ENERGY STAR 2011 falls short. Taken as a whole, the majority of the effort for this new program will be directed towards figuring out the simplest method of "passing" (wading through the mandatory requirements, modeling, and the checklists) and, once on site, completing forms, rather than measuring home performance.

For example, the new program requires checklists to be completed but does not address (particularly with the HVAC Quality Installation Rater Checklist) whether or not raters will have knowledge of what they are asked to verify, nor does the program incorporate any feedback loop after the fact to assess whether or not the systems in the home are working as intended. Unless ENERGY STAR 2011 includes these two measures, we fear that the checklists will have little effect on home performance.

One solution would be to measure home energy and water consumption, and offer the ENERGY STAR to those that use less than a certain benchmark and that include the prescriptive indoor air quality and durability standards. In this way you are ensuring that the homes do work—through measuring their performance. This is possible: more than 150,000 homes across the country have already been built to meet the current ENERGY STAR standards and have comfort and heating & cooling energy consumption guarantees. This is more than 1 in 10 of all of the certified ENERGY STAR homes and includes more than 2,000 homes built in the affordable housing market. Feedback loops with measured (not projected) results are essential for ensuring home performance.

Our second concern with ENERGY STAR 2011 is that it will leave large chunks of the home construction industry behind. The new construction standards are ambitious, and we suspect that markets which currently have low to no ENERGY STAR home certification market share will not participate in the new version of the program. On the other hand, sophisticated markets should be held to higher standards. Enforcing the higher standards nationally will likely lead to voids around the country where very few, if any, energy efficient homes will be built. One solution to this dilemma would be to mandate that ENERGY STAR 2011 be used once ENERGY STAR market penetration exceeded a certain threshold (10%, for example), and rely on the existing version of ENERGY STAR for New Homes for more fledgling markets.

In summary, we support the EPA in its efforts to improve ENERGY STAR for New Homes, but feel that for the program to be effective its success must be based on actual home performance rather than a stack of completed checklists. And in order for ENERGY STAR for New Homes to truly be a national program, it will need to recognize different needs in different markets. Phasing in the ENERGY STAR 2011 standards to markets as they reach a certain market penetration threshold with the current ENERGY STAR for New Homes standards could achieve this goal.

Advanced Environment Imaging, LLC – Mrzlak, Paul

I just wanted to comment that Energy Star should not reduce the new standard going forward. As an Energy Consultant and Rater, I have not enjoyed the "Get by" attitude of many builders, (most certainly not all) that really struggle to get the basics done. Since several states have already adopted program standards that exceed today's Energy Star, how can lowering the standard help the market. If an Energy Star home does not perform much better than average, then why should it even be labeled?

Affiliated International Management, LLC – Klein, Gary

Thank you for the opportunity to provide comments on the proposed guidelines for the 2011 program. I look forward to working with you on revising the guidelines and in future implementation of the program.

Topic 1: Exhibit 1: ENERGY STAR Mandatory Requirements for All Qualified Homes, Row 3, Water Efficiency and Row 4, Lighting and Appliances

Comment: Why are only showerheads addressed in the water efficiency specification? What about lavatory faucets, and kitchen sinks? What about low water consuming dishwashers and washing machines? What about high efficiency toilets?

Rationale: If an Energy Star Qualified Home is to be water efficient, it needs to address all aspects of indoor water efficiency. This includes both cold and hot water use, since there is energy embodied in the cold water delivered to the home as well as the energy added at the home when it gets heated for domestic use. A reasonable number for the embodied energy for indoor water in the United States is approximately 5 kWh per 1000 gallons, including the supply and conveyance, treatment and delivery of water to the home and removal, treatment and disposal of the waste water. As of July 2009 there are WaterSense criteria for lavatory faucets. These should be part of the Energy Star for Homes specifications. There are no similar criteria for kitchen faucets or showerheads, although one is being developed for showerheads. There are now categories for Energy Star dishwashers and washing machines that are also low-water users.

Suggested Change (or Language) Include more water efficiency components in the mandatory water efficiency requirements. Include the water efficiency aspects of dishwashers and washing machines in the mandatory requirements under Lighting and Appliances. Be consistent with WaterSense criteria where applicable.

Topic 2: Exhibit 1: ENERGY STAR Mandatory Requirements for All Qualified Homes, Row 4. Water Efficiency

Comment: The statement: Hot water distribution system shall use demand pumping, manifold, or core layout is not explained in this document. Slides 4-12 of the document entitled Mandatory Requirements discuss the three plumbing system configurations, but again, no specifics have been given. ¹

As shown in the diagrams, a home with the core plumbing concept will have the most efficient hot water distribution system. In logical terms, a core layout can only be accomplished when the hot water outlets are in close proximity to each other and the water heater that serves them. If the hot water outlets are clustered in this way, so are most all of the cold water outlets, as are the drain lines. Overall, this is a very efficient strategy. It is also likely to cost less to build, since there will be fewer feet of pipe (hot, cold and drain). Plumbing a core layout can be done one of two ways. The traditional trunk, branch and twig plumbing (likely configuration based on the figures) generally has a relatively long trunk and medium long branches and short twigs. The other method has a short trunk, relatively long branches and short twigs. At the extreme, there is a short trunk and relatively long twigs, which is really a manifold system, with or without valves for each twig. A demand pumping system could be added to the trunk, branch and twig layout, reducing both the water and energy waste as well as reducing the time-to-tap for all cold start events.

The discussion in the previous paragraph points out one of the inconsistencies of the proposed mandatory measures for hot water distribution systems; they are not mutually exclusive. They should be or the criteria should be revised so that any piping method, with any material, can meet the criteria.

Since the Energy Star for New Homes program requires the mandatory installation of one of the three hot water distribution systems, they should all have relatively similar energy impacts. Additionally, limits need to be placed on the volume of water in the distribution system between the source of hot water and the hot water outlets, otherwise there is a great likelihood that the hot water distribution systems will not be efficient in energy, water or time.

In short, the most energy efficient hot water distribution system will have the smallest volume of water between the source of hot water and the hot water outlets it serves. Think short, skinny pipe. Waste heat will be collected from shower drains and used to preheat the cold water used in the shower or to preheat the cold water going into the water heater, depending

¹ See Appendix 1 for my analysis of the Energy Efficient Component Checklist, a copy of which was supplied to me by Sam Rashkin, but which I could not find on the website for public comment.

on the configuration of the house. The distribution system will be connected to one or more high efficiency water heaters, again depending on the configuration of the house.

If Energy Star for New Homes is going to have a category for hot water distribution, it must be both water and energy efficient. Focusing on time-to-tap is the best way to ensure that both are achieved.

Rationale: There are several ways to address this requirement. One is to prescriptively require certain lengths and diameters of pipe from the source of hot water to the hot water outlets. Another is to specify the maximum volume contained in the pipe, again from the hot water source to the outlets. Still another is to specify the time-to-tap. The first strategy looks much like typical building codes, as an inspector can verify that it is built in accordance with the criteria before the building is complete. I do not recommend it on its own.

The second and third strategies are verifiable post-completion by measuring volume or time.

I would recommend the Energy Star adopt either the second or third strategies, since what matters is the actual performance once the building is occupied. In addition, every customer can help with verification, either the performance metric has been met or it hasn't. Please note that in order to obtain either of these performance metrics, it will be necessary for the builder to pay attention to the length and diameter of the pipe between the source and the outlets. What Energy Star needs to determine is what level of performance it desires: either volume-to-hot or time-to-tap. I recommend using a metric that minimizes the time-to-tap. This will help ensure high customer satisfaction with this aspect of their homes.

There are two proposals that Energy Star should examine:

- 1. EPA Water Sense for New Homes proposed a volume-based metric of 0.6 gallons. My comments to EPA are contained in Appendix 2. Topics covered include:
 - a. Hot Water Distribution System Analysis
 - b. Type of Water Heater
 - c. Insulating Hot Water Piping
- 2. A proposal has been submitted to the International Code Council for consideration this fall that effectively has a maximum structural waste of 0.25 gallons, less than half of the WaterSense for New Homes proposal. The proposal is being supported by several groups including DOE.

One last point, the structural waste of water is directly related to the structural waste of energy. After hot water has been used a given location, if the time between events is long enough, the temperature of the water in the pipes will no longer be acceptable for hot water use. The greater the allowable structural waste of water, the greater the eventual energy waste.

Suggested Change (or Language):

EPA Energy Star for New Homes should coordinate with WaterSense for New Homes so that there is one specification for the two programs. I support the comments submitted by the Alliance for Water Efficiency on this topic. As for the criteria, I recommend that:

- EPA Energy Star for New Homes adopt a time-to-tap metric of no more than 5 seconds, based on flow rate of 2 gpm (This approximates typical faucet and shower flow rates as installed and operated). This is buildable under current codes and using existing materials. In some homes, multiple hot water distribution systems will be needed from one water heater to accomplish this. In other homes, multiple water heaters in different locations will be needed. Some homes will need both strategies.
- 2. Demand controlled pumping systems be the only allowed recirculation method.
- 3. All hot water piping should be insulated. I prefer the equal heat loss per foot method, but am willing to support the one wall thickness method.

Topic 3: Size Adjustment Factor for the Performance Path

Comment: If I have read the methodology correctly, the effect of the new Size Adjustment Factor for the performance path is to make the HERS rating lower (i.e., more stringent) the larger the home is above average (2,800 sf for 4 BR). Larger homes will need to be relatively more energy efficient to qualify under the new ES criteria.

Rationale: There is some precedent for making larger homes be more energy efficient. An example is Marin County in California. They received permission from the California Energy Commission to limit the energy budget of larger homes to the energy budget of a median-size home of roughly 2,500 square feet.

I would note that a larger home has greater need for careful attention to the efficiency of the hot water distribution system. So stronger mandatory requirements for water efficiency (Exhibit 1 requirements are mandatory for both prescriptive path and performance path) should help larger homes comply with performance path requirements. Suggested Change (or Language): None at this time. This is a very sensible change to the program.

Appendix 1 - Analysis of Energy Efficient Component Checklist

According to Exhibit 1: ENERGY STAR Mandatory Requirements for All Qualified Homes contained in the Draft ENERGY STAR Qualified Homes 2011 National Program Requirements, one of the three hot water distribution systems shown in the table, from the Energy Efficient Component Checklist, must be installed. The Checklist contains the proposed method of determining what is necessary in order for each type of hot water distribution systems to qualify as part of an Energy Star New Home.

	Inspection Guidelines	Must Correct	Rater Approved	N/A
1. Water Efficiency	1.1 Average flow-rate for shower heads shall be \leq 2.0 gallons per minute			
	1.2 Hot water distribution system shall use one of following:			
	demand pumping system ¹			
	manifold system ²			
	core layout ³			

- 1. Demand pumping system shall necessary components to activate pump on demand to distribute hot water to fixtures, and shut it off automatically when hot water is distributed to fixtures. Recirculation systems without automatic controls do not meet this requirement.
- 2. Manifold block shall be located within 8 feet of water heater and water distribution lines from manifold to fixtures shall be maximum 3/8" diameter piping.
- 3. All fixtures shall require a maximum hot water piping length of 15 feet.

There are very different energy consequences for the three systems as currently defined. Core layout requires a maximum of 15 feet from the source of hot water to the hot water outlets, but does not specify the diameter. In principle, this means that someone could install, say, a 1 inch nominal pipe from the water heater to the angle stop serving an individual sink, and then connect the last two feet from the angle stop to the faucet with ¼ inch nominal tubing (typical). This means that the first 13 feet would contain more than 8.67 cups while the last 2 feet would contain less than 0.07 cups for a total of about 8.74 cups or more than 0.5 gallons. According to the rules, the pipe between the water heater and each hot water outlet could have this much water (in fact it could be more because there is no limit to the diameter). This means that during the delivery phase of each separate hot water event, more than 0.5 gallons will run down the drain before hot water arrives at the outlet and when the hot water event is over, the energy contained in the 0.5 gallons will be lost when the water in the pipe cools down.

However, the waste is even larger than described above. According to research conducted by the California Energy Commission, the amount of water that is wasted per hot water event is larger than the amount of not-hot-water that is stored in the pipe. At flow rates between 1 and 3 gallons per minute, the extra waste of water is approximately 1.25 times the actual volume in the pipe. The waste of water gets larger as the flow rate decreases, growing to roughly 2 times the actual volume when the flow rate is around 0.5 gallons per minute. While many water efficiency and green building programs specify low flow rates for faucets, there are also many occasions in which people do not use the full flow rate. In addition, we can anticipate that flow rates for lavatory faucets will decline over time to 0.5 gallons per minute, since that is already the law for public restrooms; the technology is available and it works well.

I realize that I have exaggerated the pipe diameter that is likely to be installed to make a point, but I have done so to demonstrate the need to limit volume, which is the combination of length and diameter.

In logical terms, a core layout can only be accomplished when the hot water outlets are in close proximity to each other and the water heater that serves them. If the hot water outlets are clustered in this way, so are most all of the cold water outlets, as are the drain lines. Overall, this is a very efficient strategy. It is also likely to cost less to build, since there will be fewer feet of pipe (hot, cold and drain). It will, however, require rethinking the floor plan! Plumbing a core layout can be done one of two ways. The traditional trunk, branch and twig plumbing generally has a relatively long trunk and medium long branches and short twigs. The other method has a short trunk, relatively long branches and short trunk and long twigs, which is really a manifold system, with or without valves for each twig.

In all cases of a core layout, the source of hot water is a water heater, however it is configured. The current definition does not say this, although it should.

Now let's look at the manifold system as defined. The manifold must be located within 8 feet of the water heater. Fine, but as stated it would be possible for someone to install, say 50 feet of 1 inch nominal pipe between the water heater and the manifold and still have the hot water distribution system meet the Energy Star for New Homes requirements. Before you laugh and say this will never happen, I have seen just such a case. In this distribution system there would be more than 1.5 gallons of water in the trunk line to the manifold; three times what we described would be possible for the core layout configuration.

The manifold requirements also state that the piping to the outlets must be no larger than 3/8 inch nominal. While I support this goal, both the International Plumbing Code and the Uniform Plumbing Code have provisions that will make this difficult, if not impossible to accomplish for all hot water outlets. In both codes, it is sometimes permissible to use 3/8 inch piping, but only if the total developed length is less than a certain amount, generally 60 feet. In the scenario described above, each twig coming from the manifold would need to be less than 10 feet long.

This illogical system again points out the need to define the volume between the water heater and the manifold and ultimately to the hot water outlets.

The requirements for demand pumping systems only address the controls, not the layout of the circulation loop (trunk line) or the volume of water between the circulation loop and the hot water outlets. In principle, someone could build a circulation loop that was very long and used very large diameter piping that had a large volume between the loop and the outlets and still qualify as an acceptable system under the program. The loop could start out with 1.5 inch nominal piping, dropping down to 1.25, then to 1, then to $\frac{3}{4}$ inch and finally returning to the water heater. Such a system could contain 18 gallons of water in the circulation loop. The branches and twigs could be a combination of 1, $\frac{3}{4}$ and $\frac{1}{2}$ inch piping and easily contain 0.5 - 1 gallon to each outlet grouping. There would be significant energy to prime the loop with hot water, which would eventually lost when the water in the pipe cools down. There would also be significant losses to each outlet, both in terms of water wasted during the delivery phase and later the water in the pipe cools down. Since the Energy Star for New Homes program requires the mandatory installation of one of the three hot water distribution systems, they should all have relatively similar energy impacts. However, as currently worded, they do not.

Appendix 2 - Comments Submitted to Water Sense for New Homes, July 7, 2009

Topic 1: <u>3.3 Hot Water Delivery System</u> – To minimize water loss from delivering hot water, the hot water distribution system shall store no more than 0.6 gallons (2.3 liters) of water in any piping/manifold between the hot water source and any hot water fixture. Timer- and temperature-based recirculating systems shall not be used to meet the criteria.

Comment: There are six types of recirculating systems:

- 1. gravity or thermosyphon (no pump, but large heat loss in the circulation loop)
- 2. continuously pumped
- 3. timer based controls
- 4. temperature based controls (aquastat controls temperature)
- 5. time and temperature based controls (aquastat controls temperature)
- 6. demand controlled

Of these, the only demand controlled has been demonstrated to be energy efficient.

Rationale: See Comment above

Suggested Change (or Language): Either include all of the types that are prohibited, which are items 1-5 above, or say that only demand controlled is acceptable.

Topic 2: <u>3.3 Hot Water Delivery System</u> – To minimize water loss from delivering hot water, the hot water distribution system shall store no more than 0.6 gallons (2.3 liters) of water in any piping/manifold between the hot water source and any hot water fixture. Timer- and temperature-based recirculating systems shall not be used to meet the criteria.

Comment: Why is the specification set to allow a structural waste of 0.6 gallons from the source of hot water to the fixture? The original proposal and subsequent drafts had a much smaller amount. The amount of structural waste needs

to be much smaller to provide acceptable hot water delivery over the life of the plumbing that will be built into a WaterSense qualified new home.

Rationale: According to research conducted by the California Energy Commission, the amount of water that is wasted per hot water event is larger than the amount of not-hot-water that is stored in the pipe. At flow rates between 1 and 3 gallons per minute, the extra waste of water is approximately 1.25 times the actual volume in the pipe. The waste of water gets larger as the flow rate decreases, growing to roughly 2 times the actual volume when the flow rate is around 0.5 gallons per minute. Even with the flow rates for faucets currently defined by WaterSense, there are many occasions in which people do not use the full flow rate. In addition, we can anticipate that flow rates for lavatory faucets will decline over time to 0.5 gallons per minute, since that is already the law for public restrooms; the technology is available and it works well. People care more about time-to-tap than they do about water or energy savings. I have surveyed more than 20,000 people from all over the United States, in all walks of life in the past decade. Universally, they want the time-to-tap to be between 2 and 3 seconds at any faucet or shower, and they would like this to be reasonably consistent throughout the house. They consider 10-15 seconds to be acceptable. (A maximum of 10 seconds is also what the American Society of Plumbing Engineers considers acceptable for buildings designed by plumbing engineers.) When hot water arrival takes longer than 15 seconds, most everyone leaves the tap they turned on and does something else, returning to use the hot water when they are ready. Their departure introduces the second type of waste related to hot water delivery, behavioral waste. While difficult to measure, it can be significantly larger than the structural waste.

With these additional elements in mind, let's analyze the performance of the proposed hot water delivery criteria. Structural Waste = 0.6 gallons in the pipe * 1.25 (factor for additional waste) = 0.75 gallons Time –to-Tap, based on existing flow rate criteria

Lavatory Faucets @ $1.5 \text{ gpm} = 0.75 \text{ gallons} \div 1.5 \text{ gpm} = 0.5 \text{ minutes} = 30 \text{ seconds}$ Kitchen Faucets @ $2.2 \text{ gpm} = 0.75 \text{ gallons} \div 2.2 \text{ gpm} = 0.34 \text{ minutes} = 20 \text{ seconds}$ Showers @ $2.5 \text{ gpm} = 0.75 \text{ gallons} \div 2.5 \text{ gpm} = 0.3 \text{ minutes} = 18 \text{ seconds}$

Performance will be considered unacceptable by consumers for all faucets and showers when the maximum allowed structural waste is built. We note that there is currently a discussion underway to reduce showerhead flow rates to 1.75 gallons per minute. Assuming the same length of pipe, the performance will be very similar to that of the lavatory faucets. In addition, although there will be not water waste, energy will be wasted when the piping serves dishwashers and washing machines.

In order to get the waste at current flow rates down to acceptable time-to-tap delays, it is necessary to reduce the volume of structural waste. The lowest flow rate is the critical variable, in this case 1.5 gpm. To get the time-to-tap down to the maximum acceptable delay, the volume needs to be cut in half down to 0.3 gallons. To get down to the preferred maximum delay of 3 seconds, it is necessary to cut the volume down to 0.06 gallons. This buildable under current codes using demand controlled circulation with short twigs serving the hot water outlets, and with multiple water heaters or hot water plumbing cores such that the volume from the one or more water heaters is no more than 0.06 gallons.

I would note that a proposal has been submitted to the International Code Council for consideration this fall that effectively has a maximum structural waste of 0.25 gallons, less than half of the current WaterSense for New Homes proposal. The proposal is being supported by several groups including DOE.

One last point, the structural waste of water is directly related to the structural waste of energy. After hot water has been used a given location, if the time between events is long enough, the temperature of the water in the pipes will no longer be acceptable for hot water use. The greater the allowable structural waste, the greater the eventual energy waste.

Suggested Change (or Language): If EPA wants to have long-lived plumbing systems that will be considered acceptable for many years of changes to federal standards and to the Water Sense flow rate criteria, then please reduce the maximum allowable volume to 0.06 gallons.

I also want to encourage EPA to consider and adopt the changes to the Draft Inspection method proposed by the Alliance for Water Efficiency.

Topic 3: Type of Water Heater

Comment: The current Draft Specifications are silent on acceptable water heaters. Current tankless water heaters, both fossil-fired and electric, waste water as they ramp up to temperature. The waste is on the order of 0.25 to 1.0 gallons, which is very similar to the maximum acceptable structural waste of water in Section 3.3.

Rationale: This topic was raised in comments on earlier drafts. By setting the maximum acceptable structural waste for all hot water distribution systems, all water heaters are treated equally, which is as it should be.

Suggested Change (or Language): No change is needed. EPA has done a great job on this issue.

Topic 4: Pipe Insulation

Comment: Hot water piping needs to be insulated. This reduces both water and energy waste and it improves the time-to-tap.

Rationale: Insulation on hot water piping makes a difference to water waste when the environment in which the piping runs is relatively cold (basement, attic, crawl space or within a concrete slab in winter) or damp (buried in the ground, often under a concrete slab). In these cases, insulation makes a difference during the delivery phase of a hot water event, thereby directly impacting the water waste covered in Section 3.3. It also makes a difference to the energy waste during the use and cool down phases of a hot water event.

Insulation also reduces water waste when the time between hot water events is between 10 and 20 minutes for ½ inch nominal piping and between 15 and 45 minutes for ¾ inch nominal piping, for pipes located in room temperature air (65-70F). These pipe diameters are the most common in sizes found in single family housing. The time frame is a bit less for 3/8 inch nominal piping and a bit longer for 1 inch nominal. When pipes are located in the adverse environments described above, insulation is even more critical, since the time to cool down is much shorter for uninsulated pipe.

In these situations, insulation keeps the water temperature usefully hot (105F) so that the next hot water event sees hot water much more quickly that it would on the cold starts envisioned in Section 3.3. In some cases, the hot water will come out practically instantaneously.

Please note that effective July 2009, California's Title 24 building code will require that all hot water piping from the water heater to the kitchen be insulated, regardless of pipe diameter or the environment in which it is installed. The reasoning for this is that the kitchen sink is the most used hot water outlet and the time between events is often within the window in which insulation makes a big difference. R-4 will be the minimum acceptable insulation level.

There is nothing in the current proposal that addresses the time between events energy waste, unless the maximum allowable waste was applied to the cool-down period as well as to the initial cold start.

If the hot water piping is installed in adverse environments, it will be necessary to insulate the pipe to meet the maximum allowable waste, and for these conditions no change to the Specifications is needed.

However, over the lifetime of the piping, say 50 or more years, it is likely that there will be many occasions in which the time between events will be within the insulation effectiveness range, regardless of where the piping has been installed. Think master bathroom and one shower after the other during the morning rush hour; think one shower after the other followed by consecutive lavatory sink use in the kid's bathroom; think sink use in the powder room when there is a large party; think the time between hot water draws during the washing machine and dishwasher cleaning cycles.

If EPA accepts that the piping should be insulated in order to save water, then the question becomes to what level. The International Code Council has received a proposal that recommends R-3 minimum for all piping unless the volume from the source of hot water to the outlet is less than 0.25 gallons. This proposal has the support of DOE, among others. The Green Technical Committee of International Association of Plumbing and Mechanical Officials is recommending that the wall thickness of the insulation be equal to the nominal pipe diameter up to 2 inch diameter for typical pipe insulation materials. This will be very close to R-3 for ½ inch nominal piping, and more for the larger diameters. This concept results in practically equal heat loss per foot.

Since pipe insulation will often be inaccessible for the life of the piping, we want to install materials that do not shrink over time. Some types of foam pipe insulation shrinks approximately 10 percent in length in just a few years. These should be avoided.

Suggested Change (or Language): Please add the following to Section 3.3:

All hot water piping shall be insulated to at least R-3.

There also needs to be a way to test for this during the inspection. Example language:

After completing the initial water waste test, get hot water to all hot water outlets. Wait 15 minutes, then turn on the hot water at each outlet. Water at a temperature of at least 105F shall arrive within 2 seconds.

AIR by Design – Hill, Bill H.

I can see that all of these new items have very good intent, however, many far exceed energy as an overriding factor and all of them drive the cost of the program up. Is Energy Star trying to become Sustainability Star? Are we shifting goals to encapsulate other ideals? Isn't it too late for an Energy Star Green Home?

Radiant barriers? Required? The one test I have seen reported was by a mfr. In the report, it was quite evident that the radiant barrier improved cooling efficiency but in the scenario of a fair to poor insulated attic floor, R4 ducts, and a leaky duct system. Radiant barriers in the south may always be beneficial, but one does need to look at the current cost to obtain it. With everything else done right the law of diminishing returns does not justify their economic benefit.

Right D? Required? I would say ""hallelujah"" although I know that for the most that this inspection would be a joke. Right now, maybe 5% are done by Right D. I am an ACCA Instructor and have et to find many contractors who could even attempt to provide a Right D.

SHR: <0.7 Required? Since we are going to all this extra effort for sizing correctly, this is a mute point. I have been designing systems for the Wilmington and Bald Head Island area for the last 10 years and have never needed a dehumidifier. This is a step away from efficiency. If you want to require something, then require a dehumidifying t'stat.

Air Flow field test: Within 5%. You might as well hang it up. Maybe 10%.

Duct quality: this is the best and most needed change, esp. 2.10, although I wish it were per pressure differential of room to main.

Fan sound requirement: some people actually prefer a loud fan, thank you.

Water management: how about an Energy Star + Water Star + IAQ Star as options?"

Air Conditioning Contractors of America (ACCA) – Davis, Wesley R.

ACCA has reviewed the proposed ENERGY STAR Qualified New Homes 2011 guidelines and recommends adopting the ANSI-recognized HVAC Quality Installation Standard.

It is noted that the checklists used in the proposed new homes guidelines refer to an HVAC Quality Installation (QI) checklists however, there is neither a reference to the ANSI standard nor do the checklists employ all of the minimum requirements from the ANSI/ACCA 5 QI.

Continued use of the term "quality installation" by the Energy Star New Homes program will cause confusion in the marketplace with the existing Energy Star QI program. ACCA recommends that the EPA harmonize the new program's checklists with the existing program, which seeks the same goal. The attached letter provides more detail and proposes revisions to the Energy Star New Homes HVAC checklists.

ACCA is willing to help Energy Star New Homes program address the necessary modifications to resolve the issues and prevent confusion."

Attachment 1

Alliance for Water Efficiency – Dickinson, Mary Ann

Please accept the attached as public comment from the Alliance for Water Efficiency on the Proposed New Guidelines for ENERGY STAR Qualified New Homes. Thank you for the opportunity.

To the EPA ENERGY STAR Office:

The Alliance for Water Efficiency notes that the EPA Energy Star office has proposed revised eligibility criteria for the Energy Star New Homes program. For the first time, criteria intended to improve the efficiency of domestic hot water use are being proposed as mandatory requirements for all Energy Star-qualified new homes. We welcome this development, but note with some consternation that the Energy Star comment period runs concurrently with the comment period for the revised WaterSense New Homes Specification, and that the two proposals differ in key respects.

Regarding the substance of the Energy Star proposals, there are two key elements to address. First, we believe that it is premature to specify a maximum flow rate for showerheads of 2.0 gpm until additional performance metrics are developed to ensure customer satisfaction is maintained while water efficiency is improved. Since

WaterSense has issued a notice of intent to prepare a specification for showerheads, and work on such a specification is well underway, the more appropriate course for Energy Star would be to specify installation of a WaterSense-labeled showerhead upon adoption of the WaterSense showerhead specification. Since the proposed Energy Star specification will not take effect until January 1, 2011 in most states, there should be ample time for a fully vetted WaterSense showerhead specification to be adopted and available to meet the needs of the Energy Star program.

A second issue relates to the design of domestic hot water distribution systems. The

WaterSense draft specification seeks to achieve energy and water efficiency by limiting the volume of water that may be contained in piping between the hot water source and the furthest fixture using hot water. Any hot water piping configuration may be installed provided the volume limit is met. The Energy Star draft specification, in contrast, specifies three particular hot water piping configurations, although key terms are not defined and volumetric limits are not established. We believe the WaterSense approach to be far preferable. Indeed, without any limit on water volume, pipe length, or maximum wait time for hot water (any of which might be acceptable approaches), we fail to see how the Energy Star specification as proposed can be expected to achieve the very specific hot water energy savings claimed for this provision in the Energy Star Homes savings methodology document.1

Regarding the awkward process of concurrent, but inconsistent, draft proposals from the same agency addressing the same subject matter and same stakeholders, we believe that EPA should provide the public with an explanation as to how this happened and what steps will be taken to ensure that it does not happen again. In this immediate instance, in order to maintain fairness to all stakeholders and to avoid the delay of either specification, we recommend that the comments received on these overlapping provisions be consolidated, and that WaterSense and Energy Star jointly prepare responses to all comments received on these issues. Each program should then issue a reconciled set of hot water criteria that are at least consistent, if not identical.

Thank you for the opportunity to submit these comments. If we can be of further assistance and/or provide further information, please contact us at 773-360-5100.

Sincerely, Mary Ann Dickinson Executive Director

1 A 24% reduction in consumption for gas-fired water heaters and a 31% reduction for electric water heaters are claimed. "Overview of Evolving ENERGY STAR Qualified Homes Program & Methodology for Estimating Savings," Exhibit 4, p. 9.

Alpine Energy Solutions – Shillito, John

I am an energy rater providing certifications to builders in Wisconsin. After reading through the proposed documents a couple of times I feel emphatically that this will not work and not a single builder or homeowner would be willing to do it at any cost. It is completely unrealistic in the real world, and I anticipate that every builder that I currently work with will drop the program.

I will be forwarding more specific comments in the near future.

Alpine Energy Solutions – Schmuck, Allan

I understand you want and need to raise the standards for ENERGY STAR homes but these proposed changes are ridiculous. There is no way any builder will go along with this in today's market. You will kill my business!!!!! There are ways to raise the standards with out all the check lists and paper work. Have any of you people ever been out in the real world and done any testing or even a blower door test? Save all the paper work and check list, just lower the cfm/sf on the blower door test and/or raise the required R-values of the attic and walls. And requiring that all duct work be sealed and tested when it's in conditioned space makes no sense. The Wisconsin ENERGY STAR Homes program has been doing well the last couple of years, getting up to 18% of all homes built. You will kill the whole program with your proposed changes and extra cost to the builder. Please be sensible with your changes and ask someone who does this for a living what they think.

Alternative Resource Management, LLC – Lea, Mike

I am a certified rater in the state of Wisconsin working with the Wisconsin Energy Star Homes program. I have been talking to my contractors regarding the changes to the Energy Star guidelines. The response has been unanimous that none of the contractors will continue with the program if these changes are adopted as proposed. Some of these guidelines are so far beyond what the program should be about that the contractors feel that the added costs will far outweigh any benefits they receive by building Energy Star homes.

I will have to raise my fees significantly to allow for the extra time involved to certify a home and to cover the extra costs of insurance since we will now be required to make structural engineering decisions. Due to the higher liability and reduced interest by builders, I would have to seriously consider discontinuing my work with the program as well. Feel free to contact me with any questions you may have. Thanks you.

AltruEnergy Building Performance – Folse, Chris

My Name is Chris Folse a HERS Rater in Charlotte, NC - I support RESNET proposals. I take the same stand as RESNET does about the proposed changes. We aren't code inspectors and we don't want to be. When issues arise with builders and subcontractors code always becomes an issue, therefore, we can't be so far from building codes that the builders see too much significant cost and frustration. They already have enough of that. We need better energy efficient homes and I think that slow changes over time will see the program stay the course. We have to have clear lines between building codes as standards for water and also clear lines between energy efficiency and the reality of what can be accomplished. The harder or more expensive energy measures are made the more rebellion it gets from the market. "Easy Does It". "Keep It Simple Sir" Lets' try and stay the course. Rome wasn't built in a day. We can't win a war in a day. Unfortunately I don't have time or knowledge to form a scientific opinion, however, my experience with Energy Star on the street with builders is that they want to know how much time and money it is going to take and how will that help me sell homes.

Too bad the Realtors ran over the Waxman-Markey Bill for labeling existing homes. It only about their commission and ease of job that they are concerned about. Not home owners, economy or anything else. I've been a real estate appraiser for 15 years and Realtors don't give a hoot about anyone or anything but their commission. We need to ramp up a new campaign for existing homes! That's where all the energy is going up the chimney!

RESNET Position on Proposed Additional Checklists - I adopt this position

RESNET believes that the proposed new checklists are, in many respects, well-grounded in building science. However, RESNET also believes that proper implementation of these checklists is likely to come at a high price. EPA's price estimates for the addition of these checklists is \$1,200 per home in inspection costs alone. These costs, when added to the additional construction costs, may prove burdensome in the current housing crisis and EPA has not shown evidence that builders or consumers would be willing to bear these additional costs. The HVAC and moisture checklists in particular represent the largest risk to EPA's program in terms of cost, credibility, and participation.

RESNET is also concerned that the HVAC checklist, signed off by the installing technician, will end up being a rubberstamp with no accountability and no real quality review. This can have two negative effects, first, it threatens the credibility of the whole program; second, it requires the Rater to "sign off" that the installer signed off, but without adequate training or authority to really inspect and enforce the application of the requirements. For those Raters doing the minimum, it has high potential to be a rubber-stamp; for those who really understand HVAC, it will put them in an awkward position with no real mandate to enforce if their understanding differs from the installer's.

There are other areas of concern regarding the HVAC checklists. First, the proposed requirements impose a heavy burden for AC and ASHP installations but ignore similar potential installation problems with GSHP and boiler systems. Second, when compared to ANSI/ACCA 5 QI, which has been adopted by ENERGY STAR as its HVAC quality installation standard, EPA's proposal is significantly more stringent in several areas, and in some cases requires conformance to a standard that is more stringent that the resolution of the test methods themselves. Finally, this proposal will necessarily require substantial training of HVAC technicians -- who will train them? Most Raters do not have this level of training, and even when they do, Raters often don't have a mandate with HVAC contractors or local code officials to ensure this level of compliance.

RESNET recommends that EPA seriously reconsider the HVAC checklist, and in its place provide an incentive, rather than a requirement, for compliance with ACCA 5 QI. The incentive could be to allow a relaxed threshold on the HERS index (perhaps by 2-4 points) for those who can show compliance.

RESNET is also concerned that the water management checklist goes beyond the mandate of an energy-efficiency program. While the requirements represent good building practice that all builders should be incorporating, most of them are beyond the scope of a rating, beyond what a Rater is trained to do, and many are not able to be inspected at times a Rater would be on the site. This checklist will add significant cost to construction and the rating, with no tangible energy benefit.

The updated thermal bypass and the new framing and IAQ checklists represent additional work for the Rater that will increase the cost of an ENERGY STAR compliance rating, as well as increase the cost of compliance to the builder. Adding the HVAC and moisture checklists further increases costs and the potential for alienating the building industry becomes greater. RESNET strongly recommends that EPA carefully consider the potential down side for these additional requirements and that they conduct builder and consumer surveys and focus groups to ensure that these requirements do not hurt the program more than they help

RESNET's Position on Changing Qualifying Criteria

RESNET recommends that EPA reconsider their proposed ENERGY STAR Reference Design Home concept. It is EPA's stated policy goal that they will achieve at least 15% savings with respect to prevailing standards. In 2011, the prevailing standard for homes will be the 2009 IECC. The preliminary analysis provided above indicates that EPA's proposal falls short of their stated policy goal. As such, EPA should consider an alternative to their proposed ENERGY STAR Reference Design Home.

FSEC has conducted an analysis of all of the home size and number of bedroom pair sets provided in Exhibit 3: Benchmark Home Size of the EPA proposal. For each of the eight size/bedroom pair sets, an IECC 2009 Standard Reference Design Home is constructed for each of the seven contiguous U.S. climates, yielding 56 distinct IECC 2009 Standard Reference Design homes. For each of these homes, the HERS Index is computed using EnergyGauge® rating software, producing the data shown in Table 1, below.

Table 1. HERS Index for IECC 2009 Standard Reference Design Homes of Specified Size and Number of Bedrooms across U.S. Climate Zones. Data such as that in Table 1 would allow EPA to establish program guidelines that would accomplish EPA's policy goal of achieving 15% energy savings with respect to prevailing minimum code standards in ENERGY STAR new homes.

Consistent with the FSEC analysis, RESNET recommends that EPA add a third row to their Exhibit 3: Benchmark Home Size table. This row should contain the Base HERS Index that is required to achieve a performance level that exceeds national model codes by 15%. Table 2, below, is provided as an example:

Table 2. Example Expansion of EPA Exhibit 3: Benchmark Home Sizes

It is important to point out that Table 2 is only presented as an example and that the values shown for the Base HERS Index should be considered "placeholders." While these values stem from legitimate analysis, the analysis is limited to only a single home type. If EPA chooses to adopt this approach, it is recommended that they conduct a national analysis to develop a final set of Base HERS Indices. It is recommended that such analysis consist, at a minimum, of the following steps:

1. Determine the HERS Index for IECC 2009 Standard Reference Design for all home sizes, in all climates for all reasonable foundation types using electric space air conditioning, gas furnace space heating and gas hot water heating in all climates.

2. Determine the average HERS Index for each home size across all climates and all building foundation types (this average could also be a weighted average that is based on expected or historic home starts).

3. Multiply the resulting average HERS Indices by 85% to establish the Base HERS Index for each base home size (Benchmark CFA).

4. Use the actual home size (CFA) and EPA's proposed Size Adjustment Factor (SAF) to establish the "Qualifying HERS Index" for proposed ENERGY STAR homes.

5. Adjust all BOP requirements to be in line with the above.

The above procedures will resolve some of the largest challenges with respect to advancing the ENERGY STAR new homes program. It will document and explicitly remove the home size factor that currently advantages larger homes and disadvantages smaller homes. It will achieve EPA's policy objective of providing ENERGY STAR new homes that are at least 15% more efficient than prevailing national model codes. It will provide clear guidance to builders and consumers regarding the HERS Indices that are expected from ENERGY STAR labeled homes.

When coupled with EPA's proposed Size Adjustment Factor, it is likely to seriously impact home size selection. For example, if a builder or homeowner chooses to build a 5,000 ft2, 3-bedroom home, they will quickly and easily be able to determine from EPA's qualification guidelines that the required qualifying HERS Index for this home is 77*(2200/5000)0.25 = 62. This level of explicitness likely will result in additional success for EPA's home size initiative.

It is also strongly recommended that EPA not allow homes with heat pumps in climate zones 4-8 to qualify through EPA's Builder Option Package but instead require homes with heat pumps in these climates to qualify through the performance path, achieving a specified HERS Index.

RESNET also has strong concerns about "gaming" with EPA's proposed ENERGY STAR Reference Design home concept. It is unclear whether a Rater would be allowed to manually create the ""ENERGY STAR reference home", find out the target index, do additional calculations to adjust the index if the home is bigger than the benchmark size, and then do a rating on the proposed home. This would create a nightmare from the perspective of quality assurance. It invites gaming, offers many more opportunities to make mistakes, and would require saving, tracking, and providing QA on two rating files (the standard design home and the rated home) for every address. This is simply not a viable option.

American Council for an Energy Efficient Economy (ACEEE) – Thorne Amann, Jennifer

This letter comprises the comments of the American Council for an Energy-Efficient Economy (ACEEE) on the DRAFT ENERGY STAR Qualified Homes 2011 National Program Requirements. ACEEE is a nonprofit organization dedicated to advancing energy efficiency as a means of promoting both economic prosperity and environmental protection. ACEEE fulfills its mission by conducting in-depth technical and policy assessments; advising policymakers and program managers; working collaboratively with businesses, public interest groups, and other organizations; publishing books, conference proceedings, and reports; organizing conferences and workshops; and educating consumers and businesses. We have followed the progress of the ENERGY STAR Qualified Homes program since its inception and are generally very pleased with its evolution and evolutionary directions. Nonetheless, we wish to share our concerns in several areas:

1. **Sustainability.** ENERGY STAR's recognition of the impact of sheer size on resource commitments today and on continuing commitments in the future is heartening, and a good start. However, ACEEE suggests that the proposed "SAF" correction for large homes is a good-faith effort, but overly complex and may not achieve its goals. Why not simply cap the size-related energy budget in the performance path at a reasonable number (perhaps about 3000 s.f., or about 1 standard deviation above the median house size), and require that any larger house and its design meet that cap with additional efficiency and/or on-site renewable energy? The luxury sector must begin to justify that it is not posing an inordinate strain on sustainability.

2. Internal consistency. At several points, the Qualified Homes program needlessly complicates life for contractors, equipment manufacturers, and public benefit program administrators. This program should simply require ENERGY STAR products in all categories where they are available. This includes appliances, HVAC, and water heating, and must refer to the ENERGY STAR program requirements that will be in place at the time the 2011 Requirements are in effect, and to include updates that take effect during the life of these requirements.¹ It must also be coordinated with the Agency's own Water Sense program for water efficiency. For maximum success in the market, the program's clients must see a consistent interface across all national programs.
3. Innovation-friendly. The house built in 2011 is expected to last 5 – 10 times longer than the equipment and appliances installed by the builder. On the horizon, we see large changes coming during the next decade, to say nothing of the more remote future. ENERGY STAR Qualified Homes should, at minimum, be ready for solar and for integrated appliances that require condensate removal.

We develop these themes with more detailed comments on specific text elements released by EPA.

DRAFT ENERGY STAR Qualified Homes 2011 National Program Requirements

Prescriptive and Performance Paths

ACEEE supports the intent of the two paths, and is comfortable with their thrusts. Others with specialized knowledge, such as HERS raters, may have important reservations that should be considered.

ACEEE believes that the "SAF" or Size Adjustment Factor for over-sized houses is unnecessary, and should be replaced by a capped energy budget. The program's goal is pollution prevention, not relatively efficient high energy use homes.

Exhibit 1: ENERGY STAR Mandatory Requirements

• *Quality Framing Checklist.* We have not reviewed the checklist in detail, but appreciate that its requirements do not put advanced systems such as structural insulated panels and insulated concrete form systems at a disadvantage. Indeed, are there advanced construction systems that cannot be readily constructed with major infiltration paths, which should be allowed an exception from infiltration testing?

- Cooling and Heating System.
 - ACEEE strongly supports the requirement of ANSI/ACCA 5 Quality Installation.
 - ENERGY STAR equipment levels in effect in 2011 should be required for all equipment used.
 - Exception: Please see notes under Exhibit 2, particularly for combination appliances.

• *Water Efficiency.* It is inappropriate for ENERGY STAR and Water Sense, programs with complementary goals offered by the same agency, to be inconsistent. All discrepancies must be resolved.

• *Lighting and Appliances.* All builder-provided and builder-installed equipment and appliances for which there is an ENERGY STAR program must be ENERGY STAR-rated. We specifically include water heaters, with further comments under the performance path, below. This is the only feasible way for public benefit programs to fully support this new construction program, and greatly eases the burden on manufacturers and the distribution chain.

¹Note 13, pertaining to revision of the ENERGY STAR fenestration requirements, is an example that should be emulated for all ENERGY STAR products.

• *IAQ and Durability.* ACEEE supports these requirements and checklists. As pointed out by Lstiburek,² high performance materials require high performance design and construction protocols. Without such consideration, there is substantial risk of ever-increasing problems that threaten the value of the house and the ENERGY STAR brand.

Exhibit 2: ENERGY STAR Reference Design

We applaud the differentiation in specifications by climate, as ENERGY STAR has long done for fenestration. However, rather than introducing a New House specification that diverges from the ENERGY STAR HVAC equipment program, we urge you to note that the requirements will be those of the HVAC program, and will track its effective dates. We believe that far greater savings can be obtained by some relatively minor requirements that meet near-term IAQ and long-range "future-proofing" goals. These include:

1. In addition to being ENERGY STAR rated,³ combustion-based HVAC and water heating equipment shall use intermittent ignition and induced draft. Indeed, it should require "sealed combustion," or "direct power vent," that is, drawing outside combustion air as well as exhausting to the outside. This provision is a key to allowing a technology migration path for these systems. As an example, under the proposed requirements I could install an 80 AFUE furnace and an atmospheric water heater. Replacing the furnace with a more efficient condensing model would require also replacing the water heater, or expensive lining of the "orphan" water heater flue. It is also a key for minimizing the likelihood of excess infiltration driven by fan-induced pressure differentials, or even back-drafting of combustion appliances.

2. Align efficiency requirements with those for ENERGY STAR HVAC and water heating products in effect at the time the house is completed. It is not certain if future equipment specifications will follow the laudable New Home model of regional differentiation, but it will confuse all concerned to have divergent requirements. It feels like an unnecessary aggravation to have different requirements for the same equipment in this program from the ENERGY STAR water heater program. This may require special consideration for resistance water heating under special circumstances. The best resolution may be to work with Water Sense to allow installation of modulating point-of-use and small tank water heaters located in conjunction with structured plumbing.

3. Require that all ductwork and equipment (except vapor compression condensing units) be located within the thermal envelope of the house. Equipment and ductwork outside the thermal envelope are simply incompatible with the program's explicit goal of promoting advanced building practices. The building science is clear on this. This goal includes eliminating systems with large inherent losses, and ones whose installation will make future upgrades difficult or extremely expensive. This provision will prohibit the following in ENERGY STAR construction:

a. *Single-package air conditioners, heat pumps, and "gas-packs."* First, it is essentially impossible to build condensing versions of this equipment, so its use is completely inappropriate in mixed to cold climates. More importantly, once the ductwork is set up for roof-mounted packaged equipment, there is no easy evolutionary path to more efficient equipment in the future: Gas lines, condensate lines, and major ductwork changes would be required. In general, this equipment is favored for smaller houses, where there are fewer options for moving the equipment after the roof location is locked in. Finally, package equipment is rated at ambient conditions, which do not reflect the very large expected standby losses, when convective loops can be set up between the heated space and the radiating roof-top equipment, through both the supply and return ducts. These latter two factors are important in all climates.

b. *Attic-mounted HVAC equipment and ductwork,* unless "cathedralized" construction is used. As with packaged equipment, we expect large stand-by losses from poorly-insulated equipment installed in attics.

c. *Attic-mounted water heaters.* These have no migration path to condensing fossil equipment, and are problematic for condensate drains that would be required by these and heat pump water heaters. They are inconsistent with quality construction, as the likelihood of eventual pipe freezing when insulation is damaged is too high.

4. Assure that the system installation requirements (ANSI/ACCA 5 QI) are applied to all applicable systems, including ducted ground source heat pump systems. There are well documented issues with sizing and installation quality for ground source (geothermal) systems, as for all other types.

² Lstiburek, Joe 2009. 5 Fundamental Changes in the Last 50 Years. ASHRAE Journal 51 #7, p. 52.

³ An exception should be considered for combination appliances that are condensing and/or have stipulated control packages. There is not currently a rating method that would comfortably support an ENERGY STAR program.

5. In conjunction with Water Sense, require that all water heater installation locations be "innovation-friendly." In practice, the requirements include:

a. *Line voltage outlet at the water heater location,* for all water heaters. This is necessary for almost all efficient tankless water heaters (which also all but require installation at an exterior wall for venting). It dramatically reduces the installation cost of next-generation fossil fuel water heaters which may be characterized by large enough pressure drops in the heat exchangers to require inducer fans. They are likely to have intermittent ignition and feed-back controls to regulation combustion, too.

b. *Provision for condensate removal,* for both heat pump water heaters and condensing gas appliances. This may be met by the line voltage outlet, which can support a condensate pump, if coupled with pre-installation of a condensate drain line.

c. Gas line adequate for 200,000 Btu/h tankless water heater, for all houses with natural gas service. In addition to tankless units, this will also assure adequate service for a "combo" appliance supporting both water and space heating needs.

d. *Rough-in for solar water heating.* Much of the cost of solar water heating in retrofits is the cost of opening walls to run piping and wiring to the roof or other suitable location. At minimal cost, ENERGY STAR houses can be provided with an adequate chase (with bypasses sealed) that includes a conduit and a pair of pipes from the water heater location to a suitable solar thermal panel location (presumably on the roof). This may, in total, cost \$100, but avoid > \$1000 in the retrofit situation. It also identifies third generation ENERGY STAR houses as being ready for solar, a nice differentiating factor that adds value to the Brand.

6. *Thermostats.* We suggest that the announcement simply state that ENERGY STAR thermostats will be required if there is an ENERGY STAR program for this product class at the time construction is completed. It is our understanding that this program is in flux now.

7. *Ducts.* As noted above, ACEEE opposes all ductwork (and equipment) except within the thermal envelope. By now, the thermal envelope of ENERGY STAR houses should be good enough that interior registers and short ducts will suffice for all supply and returns. This has many advantages: It allows smart contractors to install everything inside the thermal envelope. By shortening ductwork (perhaps by half), it reduces both noise and energy losses associated with external static pressure (duct friction). And, if the envelope works well, there should not be major temperature variations among rooms.

Comments on the RESNET Position

ACEEE strongly supports the intent of the additional checklists and requirements, including both HVAC and water management. We understand RESNET's concerns, and offer two notes:

1. Replacing the HVAC QI checklist with an incentive makes no sense to us. The variability of achieved efficiency is strongly dependent on proper installation. Poor installation can easily increase energy costs by 20% or more, and the profession must be helped to achieve better performance.

2. It is not clear that each house built by some contractors and with some methods must receive the same level of inspection. We look at the inspection requirements in part as an inducement to innovation that will build in the features for which we now inspect, such as a lack of many kinds of thermal bypass. Under some circumstances, a statistical sampling approach based on empirical measurements may be quite appropriate.

We do not claim expertise on the details of RESNET implementation. We would note that a newer generation of cold climate heat pumps is in production by at least one manufacturer, and that we expect others of its ilk. Such products, as well as combination units that reduce cost and standby losses by providing multiple services, may warrant consideration. This could be incorporated readily into the performance path; the question is whether it could be folded into the Builder Option Package, in the absence of adequate rating methods.

This concludes ACEEE's comments, and we thank you for this opportunity.

Sincerely, Harvey M. Sachs, Ph.D, Senior Fellow Jennifer Thorne Amann, Director, Buildings Program

American Gas Association – Williams, Ted A.

Attached are the comments of the American Gas Association on the DRAFT ENERGY STAR Qualified Homes 2011 National Program Requirements.

Attachment 1

Antares Homes – Formby, Ron

The cost of the 2011 Energy Star is too much for the \$150,000. This will eliminate the volume builders and anyone wanting to provide first time homes. The detail to tell the customer will be impossible for them to understand and see any value in the program.

Apple Blossom Insulators Inc – Meeks, John

I am responding to the request for input on the proposed changes to the Energy Star program to take effect in 2011. I applaud the changes and look forward to fulfilling on our obligations and responsibilities associated with the changes as Raters, and implementing those changes effortlessly with our partner/contractors in the field.

I feel these proposed changes help to close the gap between where we are and where we have to be in terms of our clear and present responsibility to the environment. The times are challenging and changing at light speed. I am both, honored and challenged with the opportunity at hand.

Arkansas Energy Office – Brown, Evan

The rationale for larger homes to have greater levels of energy efficiency is that a large home can more easily meet an energy score compared to an "average" home.

If this modification is incorporated, the other side also needs to be considered—small homes. When the same energy efficiency characteristics are processed through a "typical" home (say 1500 sq. ft.) and then applied to a small home (say 900 sq. ft.) then the home appears to be not as efficient as the large one. The reason for this is that a small home has a greater ratio of surface area to volume.

It is unfortunate that a small home has to go to greater efforts to obtain the same score.

ASERusa - Fries, Gary

ASERusa is a professional Building Verification Group specializing in Building Design, Verification, and Rating of National Building Programs. ASERusa is considered the largest group providing these services in the state of Missouri, including ENERGY STAR Homes Verification. So indirectly, we represent the ENERGY STAR Homes Program in Missouri by sheer volume of homes rated and largest marketing efforts underway statewide.

ASERusa would like to submit our comments on the Proposed Guideline changes to the ENERGY STAR Homes Program.

ASERusa agrees 100% with the outline that RESNET has presented to the EPA on this subject. The Proposed Guidelines follow good building science, but will damage our efforts to promote your program in a recession.

Therefore, please follow the RESNET Comments on this subject.

Badgerland Home Consultants – Bates, Dale

I have been a certified rater for the past six years and have certified over 200 homes in Wisconsin. After reviewing the proposed changes and discussing these changes with contractors that I am working with I find that there will be very few if any homes going into the Energy Star program if these changes are to take place. These proposed changes will add significantly to the cost of the homes and will price the Energy Star program out of my contractor's budgets. Further more, I believe that Energy Star should not be trying to mirror the LEED program and should stick to energy efficiency requirements only for certification verification. If any more that a very limited amount of the proposed changes go into effect, the Energy Star Home program will wither away to being virtually non-existence due to the additional costs to builders not only in my area, but across the country

Beck Builders, Inc. – Jacques, Dan

Great aspirations but taking a simple and effective process today transforming into a cumbersome process with a much higher expense to implement.

Cost to build will further increase from trades, additional inspections, and builder management. We're not sure the market place will overwhelmingly be willing to accept the incremental higher cost of construction for the Energy Star label.

We agree with ""raising the bar"", but the process must be manageable and cost effective. We firmly believe a simpler process will gain more support and implementation."

B-macs construction – McKenney, Brian

Brock Adams of the Carter administration was the lighthouse keeper not the caused but a contributor in Detroit free fall of public confidence. HE & the Beltway think alike, not understanding how automobile engines work - demanding too much too quick. In 1977 American car engines were suffocating from government standards rammed down their carburetors. By product of this shotgun technology engines lasting less than 100,000 miles. The rest of the story is all too familiar.

30 years later, American taxpayers are still taken that one on the chin.

The environmental protection agency's reputation is tarnished. The one that really gets me is people in the agency. Writing laws, and then becoming high-priced consultants justifying their fees for being instrumental in creating laws.

Last week in the House of Representatives, Congressman Markey of Massachusetts and a colleague read the names into Congressional record

Of employees who were instrumental in creating a new environmental standards. It is my belief that a high percentage of the people will turn that into a cash cow just like in the past. If you stopper, that practice. It would do far more to restore confidence in the EPA public credibility rating and leave energy Star ratings to energy Star. Don't bring them down to your level of public confidence, take note and bring the agency to their higher public standing.

Too much too quick history has already answered that question time and again"

Blume Albrecht, Kelly

I am concerned that too many of the proposed changes will create such a financial impact on the price of an Energy Star certified home that people will no longer bother to have their homes certified as such, and will just make the construction decisions that benefit their energy bills and bottom line. If you add too many expenses, you may eliminate a whole category of buyers who want energy efficiency but either can't afford or don't want to pay for the "Cadillac" of energy efficiency. In effect, you would be creating a designer label that most cannot afford... with the economy as it is, most people are looking to cut back and be more frugal already... so making a smart but somewhat costly decision (which will see them with a guaranteed return on their investment) significantly more costly **will eliminate** many buyers.

Rather than make costly requirements that do not add up to significant energy savings (requiring Energy Star appliances for example), I would suggest eliminating a couple of the Energy Star tiers, namely the 1 Star and 2 Star tiers. In my mind, a home with a HERS20Index of 500 is not very energy efficient.

We build super energy-efficient homes that cost very little to heat and cool compared to the average home. These homes are rated at a HERS Index of 70 or less, which is an Energy Star rating of 5 Stars Plus. These homes create truly meaningful savings in terms of energy usage and cost, as well as significantly reduced carbon output.

I think it would be nonsensical to say one of these homes does not qualify for an Energy Star rating simply because it has a non-Energy Star refrigerator that uses an insignificant 137 kWh more than its Energy Star counterpart. In this example the Energy Star fridge costs \$200 more, but saves only \$11 - \$14 per year on electricity.

I also object to the requirement of CFLs in 80% of sockets, since CFLs are not ideal for certain applications. Any CFL in a socket that will only be turned on for short periods of time will burn out much faster than its intended lifespan. Closets, bathrooms, hallways, basically any fixture that is NOT in a sitting area, would be a bad choice for a CFL, as these short bursts of use will wear out the bulb much faster, resulting in additional waste, as you have to discard these expensive bulbs more frequently than intended. In terms of environmental impact, many if not most consumers are NOT following the recommendation of turning these mercury-containing bulbs in at hazardous waste disposal sites, so they are going into our landfills. There are certain applications that are ideal for CFLs (offices, rooms where people are staying for a long period such as living/family rooms, commercial locations), but certainly not 80% of the sockets in a typical home. Also, in colder climates, these bulbs are not ideal for outdoor use as they do not work as well in cold weather. This will probably also shorten their lifespan, resulting again in more mercury-containing bulbs in our landfills.

Water efficiency requirements make sense in areas with water shortages, but in areas without such challenges, it creates unnecessary expense for the homeowner.

Requiring windows evenly distributed to four cardinal compass orientations would be detrimental to energy-efficiency in many climates. Depending on the home's orientation and the type of windows used, to save energy you may want to limit the windows on the north side of the home in cold climates. This kind of cookie cutter requirement does not make sense in every climate. I would also recommend increasing the percentage of window area to at least 20%.

Perhaps some of the above could be listed as a suggestion rather than a requirement? We are currently building our 13th home rated 5 Stars Plus (a HERS Index of 70 or less), and are seeing fantastic results in energy savings on these homes. The results we are seeing are exactly the kind of energy-savings and reduced environmental impact that the Energy Star program aspires to attain. However, with the projected requirements, many of these homeowners would probably have opted to build an energy-efficient home, but skip the Energy Star certification.

I hope you will take these comments into consideration before changing the Energy Star program requirements.

Thank you --

Kelly Blume Albrecht

Lighting & Appliances

Lighting:

Object to the requirement of Energy Star bulbs in 80% of sockets. CFLs are not ideal for certain applications. Any CFL in a socket that will only be turned on for short periods of time will burn out much faster. Closets, bathrooms, hallways, basically any fixture that is NOT in a sitting area, would be a bad choice for a CFL, as these short bursts of use will wear out the bulb faster, resulting in much waste as you have to discard these expensive bulbs more frequently than intended.
Most consumers are NOT following the recommendation of turning these mercury-containing bulbs in at hazardous waste disposal sites, so they are going into our landfills. There are certain applications that are ideal for CFLs (offices, rooms where people are staying for a long period such as living/family rooms, commercial locations), but certainly not 80% of the typical home. Also, in colder climates, these bulbs are not ideal for outdoor use as they do not work as well in cold weather. This will probably also shorten their lifespan, resulting again in more mercury-containing bulbs in our landfills.

Appliances:

In comparing appliances, you quickly find out that the Energy Star rated appliances do not save enough energy over the course of the year to merit their use unless you can get them for the same price as their slightly-less-efficient counterpart. For example, comparing an average side-by-side refrigerator, the Energy Star model costs \$200 more, but only saves 137 kwh per year, a savings of \$11-\$14 per year.

We build super energy-efficient homes that cost very little to heat and cool compared to the average home. Concentrating on these larger issues is much more effective in terms of energy savings and the environment than a measly 137 khw per year savings with a special refrigerator.

Rather than require these silly little items that add up to be cost-prohibitive to many buyers, why not eliminate the lower level Energy Star brackets.... A home that is a 1 Star according to the Energy Star ratings wastes a tremendous amount of energy compared to a 5 Stars Plus Energy Star home that uses a meager 137 extra kwh because of the refrigerator.

Braselton Homes – Braselton, Bart

The proposed changes are disastrous; they move too far, too fast. While, over time, substantial changes can be made, too much too fast will hurt new homes, and participation in the program.

Braselton Homes – Honea, Tim

Dropping our HERS score 20 points in 18 months is a lot to ask with current product. My opinion is that the EPA should push for heavier tax benefits to builders attaining different EStar levels. For example a .75 rating gets a \$1500.00 credit, a .70 a \$2000.00. Basically \$100.00 per percentage point.

We will go the way of the US Auto makers if the government gets their way. When the Chinese figure out how to ship houses over, we will be out of business.

Brickfield, Burchette, Ritts & Stone, PC - Stone, Garrett

I would like to offer two comments:

(1) The program should require that, in addition to meeting the specific applicable jurisdictional energy code, that all qualifying homes (prescriptive or performance) meet all of the provisions of the most recent version of the national model energy code -- the International Energy Conservation Code. National public policy, both as enunciated in existing federal law (such as the ARRA) and included in draft legislation being considered by Congress, supports national adoption of the most recent IECC or more stringent codes. By requiring national model code compliance for Energy Star Homes, the program can pave the way for state and local adoption of the newest most updated code and help rebut arguments that meeting the code is too expensive, not cost-effective, or otherwise unreasonable.

(2) I support updating Energy Star Homes to require for the prescriptive compliance approach the most recent version of Energy Star Windows. However, my fenestration experience suggests that Energy Star windows should be a mandatory measure for all Energy Star homes. First, it should be noted that reasonably good windows are a mandatory measure in the IECC. Second, because even good windows are not equivalent to a very weakly insulated wall, it is critically important that the windows be reasonably good no matter how the home is constructed. Otherwise, discomfort from bad windows will inevitably lead to more energy use due to changing the thermostat. Moreover, windows have a substantial impact on electrical peak demand nationwide. Given the current strains on the electrical grid and pollution and climate issues associated with electric use in peak times, it is particularly important to control this source of potential problems. Unfortunately, an energy simulation simply does not address the peak demand and usage issues, making it critically important good windows are a mandatory measure.

Brown, Rick

The other night I watched a PBS reporter interviewing a lady who lost her home in a tornado and he asked her why she and her husband weren't building a ""green"" home like some of her neighbors, the woman said she'd take a green home, a pink home a purple or a blue home any color they could afford. I know it might amaze you folks in the EPA, but homes need to be both energy efficient and affordable.

With the growing success of the Energy Star Program it would be a tragedy to completely destroy new housing construction by the implementation of guidelines that might be well meaning, but are poorly planned, sloppily written, wide open to corruption, unenforceable in the field and punitive to home buyers and the home building industry.

Keep the concept of energy savings, erase all the side issues, political agendas, personal gripes and wish list items. You will find that only a few common sense one sentence minor changes and a few clarifications are needed at this time to best serve the public.

You can go on to save the planet, after, you get this right.

Buckeye Power, Inc. - Staats, Teresa

While we understand the need to move forward with increasing energy efficiency standards in new home construction, we have numerous concerns based upon our knowledge of what is being proposed.

Some of our concerns revolve around having a program that can be implemented simply and effectively without creating excessive need for additional trips by the rater and delayed construction for the builder due to scheduling additional inspections.

We believe software to effectively implement these inspections should be mandatory before any program change becomes effective. Requiring a rating company to input two sets of data into software to develop comparisons is excessive and needless work. Software should be adequately designed to address the program goals. Increasing energy efficiency, while decreasing work efficiency (that increases costs needlessly) does not balance. Having adequate software to comply with new program guidelines is a must. Anything that can be done to help streamline the entire process should be explored. Programs that require significant hurdles to accomplish will fail.

Our concerns also extend to builder, contractor and subcontractor education as it pertains to implementation of the new standards. This type of training must be available readily throughout the country and online as well to ensure adequate access. Inadequate training could lead to frustration, ill-designed and built houses, and a crumbling of the Energy Star Home program and its validity.

Finally, we see a need for marketing on a national level by Energy Star for this program. Local programs can only market to a certain level. With increasing awareness of the Energy Star name throughout the country, national marketing for the program by Energy Star could only help solidify a base that could help build program awareness, acceptance and desire by consumers for an Energy Star home and all that it offers.

Building Codes Assistance Project – Panetti, Cosimina

On behalf of the Building Codes Assistance Project (BCAP), I would like to express our support for EPA's Proposed 2011 ENERGY STAR New Homes Guidelines with the following comments.

- 2011 should enable the HERS infrastructure to better accommodate code compliance as part of the ENERGY STAR Homes "service", helping to improve energy code implementation where desired, as well as take advantage of Raters promoting ENERGY STAR through the connection with codes.
- "Any local energy code requirements will take precedence over ENERGY STAR Reference Design and mandatory elements and will replace those elements when the state code is more rigorous. " It is unclear who will be charged with making this determination. Care will need to be taken to assure that Raters fully understand those different baseline code requirements. This function could be served by the local Accredited Rating Provider, rather than counting on each Rater to accommodate those details in modifying the Reference Design.
- There is some concern that the "moving target" of the new Reference Design might send mixed messages to the market. Care should be taken to not undermine the "label" value that has been built over so many years of positive progress with ENERGY STAR by potentially sending a "mixed message" to the consumer public.
- The increased inclusion of current building science practices which address moisture and durability issues are
 progressive and necessary additions, including those proposed for the new checklists. Followed with required
 training for Raters and Builders, these concepts can be understood and more readily incorporated into builders'
 "business as usual".
- BCAP commends EPA's proposal to account for the size of a home and see this as one of the *many* new
 progressive energy efficient features which sets ENERGY STAR Labeled Homes apart from the improving
 national standards. Likewise, the inclusion of higher efficiency HVAC and appliances in the baseline package is
 also a good accommodation to the increase in technologies and efficiencies currently being realized in the
 marketplace.

BCAP applauds ENERGY STAR Homes program as it continues to improve construction practice in the field, as well as to more closely align with improving national energy codes.

Sincerely,

Cosimina Panetti, CEM, LEED AP Senior Program Manager

Building Performance Co. – Robinson, Chad

First I am a mechanical engineer by schooling and have been working in the residential construction industry for the past 8 years. I recently became a certified HERS energy rater, and I'd like to share a few observations that may be relevant to the proposed guidelines.

I believe the new guidelines are great and well founded in building science. A house verified to be a ""new"" energy star house will definitely be a well built house. However, as a recent attendee of a HERS rater training class I will attest to the fact that there are very few raters (especially new raters) that even know what a lot of the new guidelines are talking about let alone understand the concepts or building science behind those guidelines. Therefore, there will be a whole energy rater workforce that needs to be retrained to understand the proposed guideline and recertified so they can apply the guideline.

One other point I believe is very relevant to this comment is that an arbitrary (HERS) rating system is really unnecessary and unhelpful in telling consumers how much energy or dollars their house may consume compared to another house. We can predict energy usage and dollars for utilities under a certain set of conditions so why not mandate that ratings require these numbers. Consumers as well as Realtors and Mortgage lenders may understand the importance and usefulness of ratings if they understood the numbers.

Building Performance Contractors Association of New York State – Lisanti, Tony

On behalf of the Building Performance Contractors Association of New York State, we are pleased to provide these comments to regarding the proposed 2011 changes to the EPA Energy Star Homes Program.

BPCA/NYS, is a RESNET accredited Rating Provider and trade association based in New York State which represents more than 200 home performance professionals, HERS Raters, builders and energy consultants. As a RESNET Accredited HERS Provider since 2001, our affiliated rater/members have performed 10,018 Home Energy Ratings since the inception of the New York Energy Star Labeled Homes program, 9,983 of these have been within New York State and a total of 1,636 Energy Star Labeled Homes have been reported to EPA in the past 12 months. Our membership consists of more than 80 certified HERS Raters throughout New York State. We welcome this opportunity to provide the following comments in response to the EPA's 2011 proposed changes to the ENERGY STAR® Labeled Homes program:

As practioners, we recognize the need to continually integrate sound Building Science strategies into the daily practices of building a house. We also recognize the need to assist builders and developers in adopting sound Energy Efficiency practices to increase the energy performance of our new homes while ensuring the health and safety of the homeowners and durability of their new homes. We also recognize that most main stream builders, subcontractors and even many local code officials lack the fundamental understanding of basic Building Science concepts. In recent years there has been a shift in momentum due to the efforts of the EPA, RESNET and associations like BPCA/NYS in raising awareness and providing education. Unfortunately, the reality is the industry has a long way to go to before the present 2008/2009 Energy Star Requirements are considered mainstream.

While we fully support the advancement of energy efficient building practices, it is the opinion of our members that the proposed 2011 changes go too far by exceeding what is practical for the mainstream builder to achieve. We also have to consider that many municipalities are now requiring the current and future versions of ENERGY STAR® Labeled homes as their minimum building code standard. The initial feedback we have received from existing builders and developers who are current ENERGY STAR® PARTNERS for the ENERGY STAR Labeled Homes program is that proposed changes will be cost prohibitive from a voluntary perspective.

Additionally, such changes may place an undue financial hardship in achieving the ENERGY STAR® Label in townships where it is mandated. The EPA cost analysis indicating the incremental costs of approximately \$4300, in our opinion is optimistic at best. In our region costs would likely be double or triple that amount and it is highly unlikely, given the property and school tax burdens on home owner in NY State, that few if any potential home buyers would be willing accrue additional mortgage costs of that magnitude, regardless of the potential benefits.

As Raters, the proposed program changes will significantly change the role and responsibilities, most especially into areas beyond the general expertise and core competencies of the average Raters. At the same time, such changes will significantly increase the costs for Ratings beyond what the market may bare. As a result, we feel the proposed changes will result in a significant decrease in participation and market penetration and will discourage builders from considering developments within municipalities that require such standards. Without a significant education and outreach program focused on the building and contracting community, facilitated by federal, State and Local governments and trade associations, the proposed changes will do irreparable harm to the momentum gained over the last 10 years.

The recommendations of the BPCA are as follows:

1. BPCA/NYS supports the comments provided directly by RESNET and NEHERS and we encourage the EPA to adopt such recommendations in regards to the proposed changes to the program.

2. BPCA/NYS understands and supports the size adjustment factor threshold to minimize the environmental impact of large homes.

3. BPCA/NYS recommends proposed changes listed below be delayed until 2012 or later to allow the home building industry to adjust its practices:

_ HVAC Quality Installation Contractor Checklist

_ HVAC Installation Rater Checklist Requirements

_ Indoor Air Quality Checklist

4. BPCA/NYS recommends that the Quality Framing Checklist and Water Managed Construction Checklist be eliminated from the Energy Star program and the focus of such measures is on NAHB, LEED and other Green Home programs where it is more appropriate and where the additional field verification time and cost is already accounted for. The benefits of quality framing and minimizing thermal bridging are already rewarded by achieving a lower HERS Index as a result of

the improved thermal performance of the structure. Raters should not be responsible for advocating structural designs that require sign off by civil engineers and/or licensed architects.

The consensus from our membership is that 'raising the bar' for energy-efficient homes is in the best interests of everyone. However, as advocates for our industry we cannot ignore the fact that the competency of the building and contracting community at present is not prepared for such a large leap in a short amount of time.

The economic climate here in New York and around the country is tenuous at best and the current proposed changes will most certainly take away the hard earned momentum gained through Energy Star Labeled Homes in recent years.

Phasing in the HVAC and IAQ checklists beginning in 2011 over a period of at least one year or more will help meet both the national need toward energy independence and allow a reasonable amount of time for the practicality of teaching traditional builders and their subcontractors the value—and need—of making building science a part of their standard operating practices for building ENERGY STAR® new homes.

Respectfully, Anthony V. Lisanti On behalf of the Building Performance Contractors Association of New York State

Building Performance Specialists – Dunning, Skye

Many of my concerns regarding the proposed ES 2011 requirements are covered by the response from RESNET, but there are three specific issue which I would like to point out (again). If it appears that I am a frustrated and angry man, it would be because I have brought these issues up in meetings, in phone calls, and in published letters over the last few years and have never seen any reasonable action or reaction.

Testing ducts: It is well known in the building science industry that tape does not provide a lasting seal on duct work. This is a fact that any energy rater learns in building science 101 and has somehow eluded the responsible parties in the Energy Star program. With all of the new HVAC requirements you are proposing, it astounds me that water-based mastic is still not on the list. What is the point of testing a duct system to establish compliance with a specific leakage rate when the method used to seal the duct being tested has shown to have a high rate of failure? The only thing that makes any sense at all, is that there is a political reason behind the ignoring of this elephant in the room.

Right Sizing Legalities: You have not provided any training or legal resources for energy raters regarding the HVAC ""right sizing"" rule. I warned that this would lead to legal action against energy raters and was ignored. Then last year we got a letter from Energy Star stating that it had come to your attention that raters had ""been involved in litigation"" over the right sizing rule and asking for input. RESNET responded by saying that the rule, as it exists, has serious problems and should be abandoned. Instead, Energy Star released a ""disclaimer"" form. Amazingly, this form, if anything, appeared to increase liability for the rater. It actually says something like, ""your HVAC system has been engineered to be sized properly"". To say that the system has been engineered because an HVAC contractor performed (likely incorrect) load calculations, and that the rater checked the design temps & infiltration is completely irresponsible.

Verifying Load calcs: Which leads me to my last point: So called ""Right sizing"" an HVAC system by checking a load calculation through a process which ignores such items as windows, overhangs, and duct location is the height of absurdity. Anyone with the smallest amount of training for performing proper load calculations knows that these are some of the largest drivers. Like the duct tape that everyone knows is falling off, somehow this common knowledge continues to elude the responsible parties at Energy Star. Or, since I and others have brought it up repeatedly, it is apparently being purposely ignored for some reason.

Other than these three issues, as a general comment I would like to say that it appears as if ES thinks they are in a building program arms race that you are determined to win. ES does not need to be another green building program. It has been successful program thus far because it has been reasonably attainable.

Building Technology Services, LLC – Headrick, Charlie

"ES2011 looks like exactly the kind of quality work that all raters should aspire to – immediately. Add the Manual J EPIC class to the rater requirements. How else will you get the HVAC guys up to speed? This needs to be accompanied by Wrightsoft qualifying education as a minimum rater requirement, since it is the most widely used by the HVAC guys. Accept Elite as a second optional training.

Do not yield to those who want to water down your program for expediency purposes. We need good raters – who can learn expeditiously.

Great Changes! This is getting the standards high enough for qualifying professional building practices. Do not water down the ENERGY STAR Qualified Homes 2011 criteria. Let's take verification and building to a new, higher level. Let's make it high enough to weed out the builders and verifiers that are not doing anything significant above the old status quo.

Nothing in a voluntary program can be legitimately called "burdensome". If people are not willing to pony up to the higher standards, they have merely chosen or volunteered to not meet higher standards. It is voluntary. Do not join if you do not want to. "Too burdensome"??? Go get another brand to stick on your house."

Bureau Veritas - Stephens, David

We are also very concerned about #1 Quality framing checklist and #5 Water-managed construction checklist These are both IBC and IRC Code items, the framing techniques are in LEED for Homes and Greenbuilt programs, I think we are getting too many crossovers and duplication of efforts, it is getting very confusing for all involved. Also the added cost to the Builders is never a good thing unless there is some immediate payback for them or the new owner. Also #5 the Watermanaged construction checklist is full of liability concerns on the Raters part, between the structure damage, foundation damage, contents damage and mold, no one will want to sign off on this, these are already addressed in the Building Codes and by the Foundation design Engineer. DOE and Energy Star need to remain a narrow scope of the project and stay focused on the basics of the Energy aspects of the structure. There also may be conflicts between Energy Star and LEED or Greenbuilt programs, Codes and Ordinances? In that case which will over ride the other? Energy Star needs to remain focused on its intended need and use. It does not need to expand its scope but refine it as it relates to Energy. We are also concerned about #2, 3 and 4, I agree that the HVAC contractor on #2 may become a rubber stamp process and serve no purpose, if we accept this as Raters, again where does the Buck stop, are we liable? #4 is addressed in the IRC and Mechanical Codes, licensed Mechanical Contractors need to be responsible for this through permits and inspections. Also in #4 the carbon monoxide detector is in Codes, ordinances and other programs, the Merv 8 filter is in other Green and LEED programs and will be changed out incorrectly by the new owner because of cost or improper maintenance. Let's stick with the Basics of Energy Star and make it the best it can be. If the DOE and Energy Star want to do something to really help, a National Rebate program paid directly to the Rater would work for everyone involved, this could offset our costs and not be up for negotiations with the Builders as a fee increase for the Old Energy Star program and the New Energy Star programs to come.

Butternut Creek, LLC – Swift, Duane

We appreciate the opportunity to comment on the proposed ES rating changes. I will keep this short in order to minimize my time along with the readers. We are custom home builders primarily focused on log and timber frame homes in a recreational/retirement home market in Northern WI. There are no production home builders in this market. However, there are 100's of small custom builders.

-It is very difficult to criticize a program that encourages home builders to improve their processes. It is the right thing to do and it would be very tough to argue that point. Given the market penetration experienced by ES (17% in 2008 if I read it correctly) there is hardly enough share to merit a lot of changes. The brand is barely scratching the surface in this market and we are among only three or four promoting the benefits of ES homes. I know this is not the case with homes in other markets and this will go to my primary point in this paragraph.

- · There is a need to regionalize not nationalize the program
- · Regionalizing by zones makes more sense than by market areas
- · Builders in rural areas will not embrace ES any more than they will LEED on their own. Their customers must demand it.

• If the market is just starting to embrace ES programming in rural areas strengthening the program (making it more stringent) will discourage builders from participating

-Market penetration of the Energy Star brand is far less than 17% in rural America. It is just getting a toe hold in this market and while there are certainly many fewer homes in Zone 7, they are big consumers of energy during long winter months. If your goal is to reduce market penetration to protect the brand you may face simply eliminating it from markets like this one. LEED Certification has done just that. Sure, tougher standards will produce better homes but not if no one builds them. Don't let a desire to produce an elite brand overwhelm the goal of better performing homes around the Nation not simply in some markets where the brand has seen some acceptance.

-Speak English to builders. The check lists were written by engineers. This probably works OK with big production builders but smaller custom builders will be unlikely participants due to a lack of understanding of the rating systems. These are very busy (most of the time) small business owners and the vernacular used will frustrate them. Word the materials so that they not only buy in to the ES program but more importantly understand it. If they see it as just another "building inspector" the program will not gain broad acceptance.

-Energy Star should spend it's time and energy gaining public acceptance of the program. Potential home buyers must ask for the program. It can't be successfully driven by builders. Remember even though there is a strong argument (one we often use) that the cost of \$5000 or whatever it turns out to be, in the mortgage is less than the energy savings realized on a monthly basis, the decision to purchase a new home on that basis is made on faith. No one can guarantee them the savings in advance. We have to have tools that can PROVE the savings is greater than the monthly increase in the mortgage. To my knowledge that tool isn't available and a home can be built w/o ES rating and associated costs, that will perform as well.

-There is a possibility that those small builders just entering the ES program (like us) will step away from it due to the more stringent guidelines. There is a temptation to believe that those who feel they can no longer afford the program will continue to build to the old standard of ES. There is no evidence that will be the case. You cannot declare the success of the program if the number of builders declines. Builders are the disciples of the program and the more you have the stronger the support.

-If your target is only production builders I see nothing wrong with the new rules. Economic good times will return soon and the rules will not be a problem for them to comply with. For small businesses I suspect the rule changes will discourage those who have been on the fence and not participated in the program but are considering it. ES will likely lose these people who potentially may become production builders of tomorrow. Program officials may have considered this a acceptable and unavoidable situation.

-Finally, the changes work much better in a high demand housing situation. I assume that will return by 2011. If it doesn't it will be a tough sell.

-Please remember high performing homes can be built without the ES brand so consumer demand is a huge factor. Sell the public on the value of the additional \$5000 and builders will joyfully go along because their customers demand it. Higher home prices work in their favor.

CEE – Lynch, Margie

On behalf of the Consortium for Energy Efficiency, I am submitting the following comments for your consideration regarding the proposed revisions to the ENERGY STAR for Homes Program.

These comments were developed by the CEE Whole House Committee. Thank you for the opportunity to provide comment. The organizations listed at the end of this letter have chosen to indicate their individual support for these comments.

CEE is a nonprofit organization that works with its energy efficiency program administrator members in the United States and Canada to promote energy efficient products, technologies, and services. These CEE comments are intended to address the issues in the specification revision of national import that affect all voluntary program administrators. Individual CEE members may elect to submit separate comments on matters specific to their own market circumstances (e.g., costs, codes), climates, and new homes program goals and activity.

Overall Goals

CEE supports EPA's decision to move forward with a revision of the New Homes Program requirements at this time. A growing market penetration in some areas of the country, increasing stringency in building codes, advances in standard building practices, and the opportunity to capture additional energy savings all support a specification revision at this time with a goal of maintaining the credibility of the ENERGY STAR label for new homes. Two aspects of the proposed requirements—the mechanism to ensure ENERGY STAR continues to deliver above code performance and the inclusion of a more stringent requirement for larger homes—are particularly noteworthy. CEE has not been able to fully assess whether these measures will have the intended effect of staying above code and providing a more level playing field in measuring the efficiency of larger homes. Although they appear promising, we would appreciate further detail regarding EPA's analyses supporting these changes so that we can more fully assess their likely effect in practice and provide informed comment.

At the same time, CEE has concerns that the energy savings associated with the proposed revisions may not be cost effective from a program sponsor perspective, in part due to the inclusion of requirements without apparent energy-saving benefit. CEE has not been able to conduct a detailed assessment of the supporting data EPA has provided on cost-effectiveness or to conduct its own analysis. However, in Committee discussions, several members have shared pieces of their own analyses and have communicated their concerns that the cost estimates provided by EPA may be understated (e.g., costs of training are not included).

With the additional costs of the proposed program requirements, CEE is concerned about a potential drop in builder participation in the national ENERGY STAR for Homes program. It will be important for EPA and other stakeholders in the new homes program to continue to create consumer demand for ENERGY STAR labeled homes. In addition, energy efficiency program sponsors that are required by their regulators to demonstrate cost effectiveness may need to consider other models for their new homes programs. We therefore encourage EPA to evaluate whether the goals for ENERGY STAR 2011 can be achieved with changes to the program that have specific energy saving benefit and are less sweeping in scope and in cost. In the comments that follow, we propose several revisions to the proposed requirements that we believe could help to accomplish this.

ENERGY STAR HERS Index Target

EPA has provided data showing variations in the HERS Index for homes with similar energy efficiency features in similar climates. We understand these data have prompted the proposed departure from the HERS Index, which is currently used in the new homes program. Having seen these data, we appreciate what EPA is seeking to accomplish with its proposed change in approach.

We have not conducted our own data analysis, though we have reviewed the analysis recently conducted by the Florida Solar Energy Center and believe it raises some questions about the proposed approach. We would appreciate the opportunity to review EPA's response to the FSEC analysis.

Many CEE members have structured at least some portion of their new homes programs around the HERS Index, which is used in the current ENERGY STAR for Homes Performance Path. As a result, CEE has several concerns about the proposed departure from the HERS Index that are detailed below. (Where the HERS Index is not an integral part of new homes programs, such as in the Northwest, there is less concern about the proposed departure from the HERS Index.)

First, we are concerned about the market confusion that could result from the introduction of a new energy efficiency metric—the ENERGY STAR HERS Index Target—that is related to, but different than, an existing one. Increasingly, the

HERS Index is being used in the marketplace by both sellers and buyers as a means of differentiating performance. While we appreciate that the ENERGY STAR label is binary, CEE members report that the market demand for this additional level of information is strong. Further, it is important to program sponsors and to market actors that there be a common metric in the market for comparing the energy efficiency of homes, and at this time that is the HERS Index.

Second, the proposed ENERGY STAR HERS Index Target will also impose an additional administrative burden on program sponsors, builders, and raters, including retraining. To minimize this burden, it will be important that software vendors make the necessary adjustments to reflect the new ENERGY STAR program requirements. We have not yet received assurances from EPA or others that this will be the case. Third, it is unclear to CEE whether the proposed approach addresses the apparent disparity in how the HERS Index measures the efficiency of homes with gas versus electric heating. We would appreciate additional information from EPA on each of these issues.

To address these concerns, CEE proposes that EPA work with RESNET and other stakeholders to address any shortcomings with the existing HERS Index (e.g., by amending the RESNET technical standards to account for all energy saving benefits of meeting the checklist requirements) rather than create a new, modified index. Given market, climate, and building code disparities across the country, program sponsors also request the flexibility to work with EPA to set performance requirements (HERS Index-based or other) for their ENERGY STAR Homes programs that work best for their individual circumstances.

Inspection Checklists

CEE appreciates EPA's efforts to incorporate advances in building science and practice into the proposed specification, many of which are included in the six checklists (revised Thermal Bypass Inspection Checklist and five new checklists). CEE has no basis for challenging EPA's assertion that these provisions will aid in the construction of high quality, durable, and energy efficient homes. As mentioned above, however, CEE has concerns about the balance between energy savings and cost effectiveness in the proposed specification and many of these concerns stem from the checklists. In order to limit additional costs and burden association with the checklists, CEE proposes that all of the checklist items requiring rater verification be accomplished in two site visits—at rough framing and final inspection. We suggest that this might be accomplished by switching the verifying party from rater to builder for items requiring verification at a time other than during the two visits. As with the current Thermal Bypass Inspection Checklist, the new checklists should have ample opportunity for builder verifications at the discretion of the rater.

To ease the transition to the additional new requirements, CEE also proposes that EPA prepare a summary matrix designating which requirements must be verified by the builder, which must be verified by the rater, and which can be verified at the discretion of the rater.

HVAC Quality Installation Checklists

CEE has carefully considered the proposed HVAC Quality Installation (QI) Checklists—one for contractors and one for raters. We agree that verified quality installation of HVAC equipment is essential to achieving rated performance, and commend EPA for moving to standardize this practice in the new homes market. However, we have two concerns with EPA's proposal that are described below.

Market Readiness

Many CEE members are conducting or considering HVAC QI programs, primarily in existing homes. They report that it requires significant time and attention to advance the HVAC market to the state where it can consistently provide and verify quality installations. Given this experience, there is concern that contractors and technicians may not be ready to implement the required elements of the checklists on the effective date of the new homes specification. CEE would appreciate any information EPA possesses regarding the state of the market and the ability of HVAC contractors and technicians to credibly install and conduct the required inspections starting in 2011.

If a careful examination of the market reveals that it is unrealistic to implement these requirements within the next 12-18 months, CEE recommends that the requirements be phased in. We propose that the checklists initially (first 12-18 months) be required to be completed—but the provisions not be treated as mandatory—while training of contractors, technicians, and raters continues. It is our understanding that this is how the Thermal Bypass Inspection Checklist was phased in, and that the practice allowed program sponsors to understand where training efforts would be most effective without compromising the credibility of the program.

If the checklists are initially optional, we recommend that EPA consider requiring differentiation between the *rated* SEER and the *effective* SEER within the HERS Index calculation. Under this scenario, the *rated* SEER for an air conditioning system or air-source heat pump would only be entered upon demonstration that the requirements of the HVAC QI Checklists have been met.

Otherwise, an *effective* SEER that reflects the efficiency penalty of a typical installation would be entered. (Some of our members estimate that the effective SEER is roughly 3 points less than the rated SEER without a verified qualified installation. Working with our members, we would be happy to assist EPA in determining the appropriate number by which the rated SEER should be modified.)

Appropriate Requirements for HVAC Checklists

We note that the requirements in the HVAC QI checklists differ from the *ANSI/ACCA 5 2007 HVAC Quality Installation Specification*, in some instances being more rigorous and in others less so. CEE participated as a stakeholder in the development of this specification and understands that the current focus in the HVAC industry is to train contractors to meet the specification requirements. Aligning the ENERGY STAR for Homes Program's work with these industry efforts (and with the ENERGY STAR HVAC program efforts with regard to QI) would be extremely beneficial. For example, the ANSI/ACCA 5 specification addresses the quality installation of furnaces as well, which is not addressed in the ENERGY STAR 2011 proposed checklists. We would appreciate any information from EPA that supports a departure from the ANSI/ACCA 5 specification. We propose that if EPA is seeking more rigor than that specification provides, it consider providing additional recognition to partners that implement the additional measures. And as industry standards continue to evolve, we encourage the new homes program to reflect them.

Finally, several efficiency programs currently conduct their own verification of HVAC quality installations. As a result, CEE requests that the ENERGY STAR for Homes specification provide an option for efficiency program verification instead of rater verification upon demonstration of proper qualification (e.g., NATE certification) to do so.

Water Managed Construction Checklist

While we appreciate EPA's argument that the water managed construction checklist is analogous to certain requirements in the ENERGY STAR CFL specification, it is possible that few efficiency program administrators will be able to justify the costs of verifying the water managed construction requirements. Without a direct tie to increased energy efficiency, it will be extremely difficult for efficiency programs to justify the costs to comply with these requirements to builders, consumers, and regulators. As a result, CEE recommends that EPA designate this checklist as optional and provide recognition to builders that comply with these requirements. However, if EPA continues to include this checklist as a mandatory requirement, CEE recommends that all of the requirements be verified by the builder rather than by the rater.

Hot Water Distribution System Requirement

The research supporting the water efficiency requirements—low-flow shower heads and distribution system—seems to show that most of the energy savings stem from the low-flow shower heads.

While we support the concept of efficient hot water distribution systems, our understanding is that there is no industryaccepted standard to construct or to measure the performance of these systems. Unless additional research demonstrating energy savings from the specified hot water distribution systems and industry standards for design and construction of these systems is available, we request that the distribution system be removed as a requirement. We note that water usage and efficiency issues are addressed as separate categories in green label programs with a broader scope than ENERGY STAR (e.g., LEED).

Training in Support of New Requirements

Support for training in the ENERGY STAR specification requirements is of significant interest to CEE members. We fully support EPA's intent to prepare detailed guidebooks, training curricula, and other supporting materials for the required inspections. The materials that were prepared in support of the Thermal Bypass Inspection Checklist when it was incorporated in the current ENERGY STAR for Homes requirements have been very useful.

In addition to guidebooks and training materials, CEE believes that additional emphasis on training is needed due to the significant nature of the proposed revisions to the specification. At a minimum, CEE requests that EPA conduct regional in-person trainings. We believe these trainings would be most useful if they focus on "training the trainer" in addition to training builders. Finally, as program sponsors will bear much of the responsibility for conducting training on the new requirements, CEE requests that EPA provide the resources to co-sponsor with program sponsors additional in-person trainings that will be required for a successful—and cost-effective—roll-out and implementation of the new program requirements.

Quality Assurance

As you know, measuring, verifying and evaluating energy savings are of great interest to energy efficiency program sponsors. After reviewing the materials provided in support of the new homes specification revision, program sponsors have these unanswered questions regarding quality assurance:

1) How will quality assurance be provided for measures that are not included in the appropriate RESNET standard(s) (e.g., Mortgage Industry National Home Energy Rating Standard), which we understand is the standard governing most ratings conducted under the ENERGY STAR for Homes program?

2) It is our understanding that the verification work for raters will increase significantly under the proposed revisions. There may also be a decline in builder participation, which could produce fewer rating jobs overall and pressure to keep the cost of a rating as low as possible. A possible result of these circumstances is that the quality of ratings could suffer. Has EPA assessed whether additional safeguards may be necessary at the national program level to ensure the accuracy of the ratings and verifications required by the program? CEE would appreciate further information from EPA regarding how quality assurance is addressed in the ENERGY STAR 2011 program. We appreciate the time you have spent with the Committee to explain the proposed requirements and answer our questions. Given the magnitude and potential effect of the proposed changes, we believe a second draft of the ENERGY STAR 2011 program requirements with an opportunity for stakeholder comment would be very valuable. We look forward to continuing to work with you and your team to finalize and implement the new program requirements and to achieve the ENERGY STAR 2011 program goals.

Sincerely, Marc Hoffman Executive Director

Supporting Organizations

Cape Light Compact Progress Energy Florida Cascade Natural Gas Questar Gas Commonwealth Edison San Diego Gas and Electric Company Connecticut Light & Power Southern California Gas Company Efficiency Vermont Wisconsin Focus on Energy National Grid Xcel Energy Northwest Energy Efficiency Alliance NSTAR NV Energy PacifiCorp

Central Florida Gas – Ranck, Scott

I understand the need to continue raising the bar. It really seems to take a long time to educate the builders and subcontractors. I got about a three week notice that the HERS Index needed for ENERGY STAR Qualification for Florida was dropping to 77. That seems totally unrealistic to me. Not the drop, but the time frame to communicate the message. For one thing, Florida is pretty much dead as far as new construction goes, so why hurry? Give the raters some time to put something together to bring the builders up to speed.

My second and only other thought was I was really slightly angered to read, "The HERS Index score does not currently represent true energy savings for ENERGY STAR . . ." How many years have you been using this standard of measurement? The statement may be true but a better way to say it would be this. "The HERS Index has served us well up to this point, but with all the changes being made the HERS Index criteria will need to change as well."

The way it is stated creates mistrust. So, I'm already second guessing whether the new HERS Index methodology will be reliable! Kind of like when I was in high school in the 70's the newspapers, nightly news and science was saying we are heading for another ice age! Now the same people say we are having global warming! It causes me to say none of them know what they are talking about, hang around 20 years and they will be preaching something else. In other words, don't discredit the industry just because it needs to improve!

Wow, I was exposed to what was coming in ENERGY STAR 2011 at the RESNET Conference in New Orleans. I've carefully read over the documents you've produced. First, let me commend you on all the research and the development of the program. It really is quite impressive. My response is based on my interaction with builders in Florida. I've been doing ENERGY STAR presentations for a year now and have met with many builders to teach them about your program. We have had some success.

Currently, in Florida the new home industry is really bleak. There are "ghost" subdivisions scattered all over the place. They are subdivisions that were started before the crash, many with the infrastructure and roads in but nothing else. I've seen some over on the East Coast that even have guard houses built where the gate would be but nothing but utility pipes and weeds sticking up out of the ground. Most builders are fighting to stay alive, prices have been slashed, money cannot even be borrowed to build spec houses currently. To ask them to spend \$5,000 more to build a home to reach the 2011 criteria, when in this climate they will not be able to recoup, is a hard sell. Consumers say they are interest in Energy Efficient homes any many will say they would pay more but right now it is a buyers market and they really aren't willing to pay extra, they want the builder to take the loss.

I want to be very honest about one other thing. I've met many builders in FL who want to do ENERGY STAR or some Green Program, but I've only met one builder who really seemed to care about ENERGY EFFICIENCY or saving the planet!! They want the marketing power, they want to be able to sell a home, and they want to be different than the guy down the street but only because of what it will do for their business.

You are walking a fine line between being obsolete on both sides. If you don't tighten the standard it won't mean much to have it, if you tighten too much it isn't worth what it cost to get it. Many are projecting the housing market isn't going to make a big turn around for five years! With that in mind the 2011 standard is really close to falling off the tightrope towards being obsolete by being too demanding and complicated. With all the criteria on all the checklists it seems like more work than it is worth when looking through a builders eyes.

My recommendation is keep ENERGY STAR about Energy. Don't turn it into another Green Building Program, there are enough of those and many builders get multiple labels. Focus on Energy and leave the indoor air quality and the water issues as optional. Our company chose to partner with you because we felt Energy Efficiency is here to stay. If you are evolving into another Green Program you may loose your significance in the industry.

Chapala Consulting, Inc. – Chapala, Ray

First, let me establish my credentials: HERS Rater; BPI Certified; B.A. Business; MS Ind'l Psychology; MAS Mgmt Science; and Senior Industrial Engineer.

Second, the biggest catch in these guidelines is the fact that most HERS Raters do not have sufficient training. Because of this they will wilt under the pressures brought by the developers, contractors, and builders who are under budget constraints.

Third, these guidelines focus on energy efficiency. There, also, should be a focus on building construction efficiency. How many builders use the Critical Path Method in construction? I know of none.

City of Frisco – Middleton, Ryan J.

Is there anything in there that jumps out as being unfair or over the top in comparison to our existing standards? It looks like we already require a lot of the changes. I'm excited about the update and feel it will benefit our program. We're having and in house meeting on Friday to go over the changes. "The City of Frisco supports the changes in Energy Star and sees the improved quality of the program as a positive step in addressing environmental quality and sustainable building. However, there are two concerns we see with the program:

1. Energy Star neglects to address the largest use in water through irrigation systems. We suggest including standards that reduce water waste from residential irrigation.

2. Mandating Energy Star appliances and flow rates more stringent than the Federal standard (10 CFR section 430.32 and 430.33) creates difficulty for programs that require Energy Star to be enforced at the state and local levels. We suggest moving these standards out of the mandatory section and using them within the HERS point system or leaving them as options within a list of several alternatives so that they are not "required".

Coastal Training Consultants – Bolus, Robert B.

Your proposed changes for the Energy Star program are an administrative nightmare. My god, what were you thinking. Only a bureaucrat could come up with something so convoluted. If passed in its current form, this program will run me out of the rating business as none of my builders would voluntarily submit themselves to this amount of pain. Haven't you ever heard of the anachronism KISS!

Comfy House – Branch, Thomas

To start with I agree mostly with the RESNET comments that have been submitted. The hoops to jump through for Energy Star certification will run builders out of the Energy Star market. I have a couple of small builders just coming on Line. They have faced the fact that efficiency sells and they are sincerely attempting to follow cost feasible guidelines to achieve Energy Star. I have told them that in most cases it is tweaking and enhancing what they already do, these proposed changes will be far from that.

My builders are currently pleased that they can build demonstrably better houses for a few thousand dollars more than the competition, especially if I can coach them on qualifying for tax credits. They are proud home builders that hope to do so profitably. I am happy to help them build better homes and I rely on their business. They are bending over backwards with amazing patience to learn and comply. My hope is that over time these contractors will grow and build greener and greener homes. Currently, in this tough economic climate while Energy Star has some good building science, they are showing poor business acumen.

As a LEED for Homes associate, I have a good idea how much more a LEED house cost and how more work and cost the additional checklist can be. Rather than double their effort, most contractors are going to lean towards an easier green marketable standard. I already know of contractors marketing their own pseudo green standard. They build close to code and throw in a few enhancements.

My contractors are presently building better then code out of pride as the market can bear. Two are building houses on spec right now. I believe that these new Energy Star demands will turn them off. They'll proudly go on building better houses than code without Energy Star.

It seems to me that Energy Star has a choice to make. Either, build far fewer houses that are efficient and save a little energy, or, build many pretty efficient houses and save a lot of Energy. As for me, I'll still comply with Energy Star and help my remaining builders, but the bulk of my marketing will have to focus on retrofit work.

On the size adjustment factor, I see things differently than most of my colleagues. Unless large house are going to be outlawed we ought to encourage building them efficiently. After all a poorly designed large house is what we really want to avoid. People are going to build big houses. Depending on lifestyle, a 6000 sq. ft. house that scores in the 50s can be as efficient as a 3000 sq ft house that scores in the 70s. Do the people who want to punish for a larger construction carbon foot print also credit for the fact that the heat loss and gain per square foot is usually very low in large houses because they have a much lower ratio of envelope compared to foot print. Some of my best clients realize that they are building big and they innovate to make it right with designed day lighting, right sizing of equipment, economizers, orientation adjustments, ground source heat pumps, and even demand controlled ventilation.

It seems to me that if Energy Star wants to be so critical of building standards at this time, then they ought to be looking at the arbitrary .35 air changes per hour in their own standard. This standard has much to do with legal protection and little to do with building science. In a tight clean building 7.5 to 15 CFM per person is sufficient for most activity levels. Range hood sizes are another standard that Energy Star could put more effort into.

Thank you for your time. I hope that you will reconsider many of the proposed changes.

Community Energy Services – Shipley, Scott

Just want to make sure LED lights are acceptable under the new guidelines to meet the lighting requirement. I already have clients installing them. Thanks.

Conservation Services Group – Harley, Bruce (on behalf of CSG)

Attached please find CSG's comments: a cover letter with ""big picture"" narrative, and detailed technical comments embedded in the PDF files of the draft documents.

Attachment 1 Attachment 2 Attachment 3

Thanks for the opportunity to provide feedback on the proposed new guidelines for ENERGY STAR Qualified New Homes. The staff at CSG feels this effort is a laudable and comprehensive attempt to bring Energy Star to a new level. It addresses energy efficiency across the entire home, adding stringency to keep it relevant in the face of a new wave of increasing stringency of energy codes. It addresses the house size issue in a proactive way, which CSG applauds. And, by de-coupling the Energy Star threshold from a specific HERS index, it potentially addresses a number of concerns: it satisfies EPA's long-term desire to set an efficiency level that is independent of house size and geometry; it automatically brings the prescriptive method and the performance method in very close alignment regardless of climate, house size, or geometry; and it provides a welcome emphasis on the performance path by requiring its use for homes that exceed the benchmark floor area. However, from our perspective as both a program implementer and a rating provider, we have concerns with two areas where the proposal might be strengthened: quality assurance and energy savings. The following are CSG's summary comments and recommendations on these issues. Also, attached are the three PDF draft files with comments on technical details embedded in the files.

Quality Assurance

From a quality assurance perspective, there are three significant concerns: the large number of new prescriptive requirements and checklists, the apparent potential for raters to "make their own" reference home, and the state specific exceptions, as follows:

Checklists

There is evidence that in some markets at least, the existing Thermal Bypass Checklist is applied inconsistently (at best) or in some places practically ignored. Where program requirements and incentives exist with a robust third-party QA system on the ENERGY STAR program, this can be managed, but in other markets the only QA mechanism is the RESNET provider—and the provider has no authority or mandate over anything besides the rating itself. Adding four new mandatory checklists has the potential to multiply this issue by a factor of five, and if not implemented carefully could threaten the credibility of the whole ENERGY STAR for Homes program.

There are three interrelated issues in the checklists: first, training of both raters and the responsible subcontractors themselves: no small feat for those like CSG who have been running HVAC QI programs (as an example); second, authority and liability (raters should not be required to sign off on something that the HVAC installer or other trades are required—in many cases by law—to take responsibility for, and that are outside the scope of an energy rating); and finally, a large cost to implement, with energy savings that may not be large (or in the cases of IAQ and Water Management, non-existent.)

With the HVAC checklist in particular, as well, three questions come to mind: first, the HVAC checklist provides detailed and very stringent criteria in parallel to, but in many cases more (or less) stringent than ACCA 5 QI, which is already cited as the "ENERGY STAR Quality Installation Standard" for existing homes. Why not simply cite the ACCA standard? Second, if a TXV-equipped system is an acceptable substitute for commissioning in colder weather, why not just require a factory-installed TXV on every system? (This appears to be close to an industry norm already, for higher efficiency systems.) Third, if absolute cooling consumption is very low in cooler climates, why force the expense of this quality installation process on every installation, for minimal savings? Finally, some preliminary analysis by Southern CA Edison and Nevada Energy of the first large-scale production HVAC tune-up programs shows that these seem to be resulting in much smaller savings than was expected; although no formal impact evaluation has yet been published, it is likely we will have much better information within a year.

These results were mostly or entirely with existing systems, that are much more likely to be non-TXV and thus more dependent on charge and air flow than new, 13+ SEER equipment; the suggestion is that actual savings attributable to a program like EPA is suggesting may be minimal even in heavy cooling climates. It may be better to wait until more thorough research is available; an optional phase-in period for the detailed HVAC checklist would allow EPA to adapt as more program results become available.

The water management checklist is generally a good practice specification, but is not directly energy related and should not be included in ENERGY STAR specifications as a mandatory requirement, and/or should not be the rater's responsibility to verify. It will add several new site visits and require raters' interpretation that goes far beyond the scope of

a rating. The IAQ checklist is also not directly energy related; however the inclusion of a mechanical ventilation standard is an important step forward and brings the national program in line with many regional programs, as well as in closer alignment with the RESNET standards by allowing full credit for required air sealing. CSG supports the implementation of the IAQ requirements, as well as the framing checklist, but es that it may come at the cost of significant program participation in a slow housing market.

CSG would suggest that EPA consider several options regarding the checklists, alone or in combination: first, eliminating the rater duplicate sign-off on the same items on the HVAC installer checklist (section 1 of the rater checklist); this is unnecessary and potentially confusing from a liability and authority standpoint. Second, consider making the HVAC and water management checklists optional, at least for a significant phase-in period. Third, consider allowing for builder sign-off on the water management checklist, or at least on a much larger proportion of the total items on the list.

ENERGY STAR Reference Home

CSG generally supports the EPA proposal to create an "ENERGY STAR reference home", but with caution. The way the proposal is written suggests that a rater would be allowed to manually create the reference home, find out the target index, do additional calculations to adjust the index if the home is bigger than the benchmark size. Then the rater would do a separate rating on the proposed home, and keep track of whether or how much of the compliance results from renewables). If this is indeed what EPA is proposing, it would be an absolute nightmare from the perspective of quality assurance. It provides far too many opportunities to make mistakes, and would require saving, tracking, and providing QA on at least two, sometimes three rating files (the standard design home, the rated home, and possibly the rated home with no renewables) for every address. This is simply not a viable option. In order for this proposal to work, the ENERGY STAR standard design home must be auto-generated by software, just as the HERS reference home and numerous IECC (and MEC) standard design homes are autogenerated without control of the user. Unless there is expressed cooperation of the software providers in advance, CSG does not support this proposed process, despite the advantages that might accrue if it can be implemented with an automated reference home.

State Exceptions

We are very uncomfortable leaving the interpretation of state energy codes and this set of rules to raters, or even software providers alone. Determining relative stringency is not always a simple task, and neither is keeping track of all the variations in 50 state energy codes. For this proposal to be viable, EPA would need to take responsibility for keeping track of and publishing specific exceptions for specific states, in parallel with the statement (footnote 3) on "states with performance only" option.

Finally, it would need to be limited to statewide mandatory codes only—and should not apply to "homerule" states where individual jurisdictions may adopt their own codes. Because some jurisdictions have adopted "ENERGY STAR" or other very advanced levels of construction in their local codes, there is an obvious problem with EPA defining ENERGY STAR as a certain percentage above codes if there is any way at all to interpret this to extend to individual jurisdictions. As an alternative, CSG would encourage EPA consider a single ENERGY STAR metric for the whole country, and accept the fact that in some regions or states there will be a degree of "free-ridership". However, we would also suggest that EPA could more explicitly allow individual states to increase the stringency of ENERGY STAR labeling, with EPA's approval. Such "up-rating" of ENERGY STAR happens in some programs by default, due to incentives that may only be available for local or regional programs, but EPA could extend its recognition (and limit changes to the compliance metric to) any non-sponsored or sponsored programs on a state-wide basis.

Savings

Although codes are indeed becoming more stringent, and some markets may see increased funding for incentive programs, these factors have to be weighed against the realistic backdrop of the slow housing market and the position of ENERGY STAR within the market. For years, raters in our programs have brought builders "into the fold" just barely meeting the standards, and over time have developed builder partners that go far above and beyond on a regular basis. It's worth noting that as codes quickly get more stringent, there is a definite squeeze on what remains available to get significant savings, as well as increased builder push-back. CSG is concerned that as proposed, the "entry point" for ENERGY STAR may just be too far out of reach for many to even try. In addition, there is continual pressure from program sponsors to ensure savings go with incentive and program dollars spent; we believe that if EPA implements some or all of CSG's recommendations, it will help ensure both higher levels of cost effectiveness for savings, and strike a better balance between progress and achievability.

Thank you, Bruce Harley Technical Director

Cool Metal Roofing Coalition – Kriner, Scott

Regarding ENERGY STAR for New Homes Draft Guidelines, my comments pertain to Exhibit 2 specific to the Envelope, Windows and Doors categories.

Exhibit 2: ENERGY STAR Reference Design

• Under Heading: Envelope, Windows & Doors, for Hot Climates, change as follows:

"If more than 10 linear feet of ductwork are located in an unconditioned attic, a radiant barrier¹⁰ or an ENERGY STAR qualified Roof Product^{10a} shall be installed.

• Add to Mixed and Cold Climates:

"ENERGY STAR qualified Roof Product11 shall be used in CZ 4,5, 6 and 7."

• Change footnote 10 as follows:

10. Any radiant barrier with a minimum reflectance of 0.90 and maximum emittance of 0.10 or an ENERGY STAR qualified roof product meets the requirement for a radiant barrier.

• Create new footnote 10a:

10a. Any labeled ENERGY STAR Roof Product, or roof installed such that a ³/₄" continuous airspace is created between the roof surface and the solid sheathing below, meet the requirement for an ENERGY STAR qualified Roof Product.

The comment proposed for the new footnote 10a is based on research conducted at ORNL showing the benefit of natural convective cooling that occurs in an continuous airspace created between a roof product and the solid sheathing below. ORNL has shown a 30% reduction in heat flux from this airspace in different climate zones. The same comment is in the 2008 California Building Energy Efficiency Standards, Part 6 of Title 24 as an equivalence to cool roofing under prescriptive standards. The airspace comment is also part of the ICC-700-2008 National Green Building Standard under Passive Cooling Designs in the Energy Efficiency chapter."

Cornerstone Energy Conservation Services – Powell, Eric

First and foremost, I applaud the efforts of the ENERGY STAR program to maintain a distinctly higher standard than code and yes rated homes should be based on newer or at least current codes. However I believe that the new standards, while valid, are very far reaching and seems to encompass other aspects such as the Indoor Air Plus certification and more. Since the Indoor Air plus is only a complimentary label to the ENERGY STAR label, the new standards will in effect nullify the indoor air plus program which in my opinion should be a voluntary step up for builders.

I am also concerned as stated by many other raters without a background in HVAC to put liability for accurate verification of AC performance and HVAC system sizing on people who aren't trained to do so.

While the new ENERGY STAR target for each individual home seems completely appropriate, I agree that there will be confusion to the builders and quite possibly to some raters as well.

My greatest concern is that these new standards will greatly affect the profitability of larger rating companies whose focus is production builders such as ours. We would all hope that all of our current clients would step up to the new standards, however, at this time and in this economic climate, I believe that most production builders will see this as an unnecessary burden. Unless a production builder is in it for the federal tax credit, the marketing advantage of ENERGY STAR may be viewed as a loss leader when faced with some additional construction, material, and higher certification costs and will be the first thing on the cutting board if the current housing slump continues as emphasized by today's record low new home construction numbers."

cowanhouse – Cowan, Jack W.

Congratulations on continued progress and updating to the ENERGY STAR Homes Program. My comments:

- 1. Size Adjustment Factor is great! Adds value to the program.
- I agree that more accountability, measure and testing needs to exist in HVAC, but please offer a clear achievable pathway for testing and verifying. We need clear expectations of raters based upon skills sets, and burden of proof shift to HVAC contractors where appropriate.
- 3. Instead of 'absolutes' or 'drop dead' requirements, think about exceptions that are reasonable and appropriate. For example:
 - if you're implementing a foam sprayed insulated roof deck and encapsulated attic there is no need for the Raised Heel Truss requirement.
 - some applications using passive solar heat gain, will not want or need good SHGC windows for that exposure section
- 4. Refocus the program on PERFORMANCE. I don't think it's a good idea to expand the program into water management nor air quality. It will add a huge administrative and cost burden and may discourage potential program entrants.

Both air quality and water management issues need to be addressed by another program or by a plus program like ENERGY STAR with IAP.

Critcher, Jim

Many of your proposals are in the GRAY Area for confirmation of work performed. My background is HVAC and Residential Energy Efficiency.

Page 5 – Duct testing not required if all ducts inside conditioned space – I tested homes (Blower door and duct blaster everyday for years) and this is extremely GRAY. Many times the worst leakage was inside multiple floors in the home. You Must test and verify tightness of duct system for maximum performance of the HVAC system.

The HVAC Rater Checklist 2.9 (< 4 cfm duct leakage per 100 Sq. ft. of conditioned floor area) Not required or needed. Sq. footage per system is all that is needed regardless of floors.

Everybody has an opinion – Considering residential construction, many persons do not have the experience, knowledge and/or background with testing and diagnosis of homes to recommend what is beneficial to and for the customer. Homes are too tight as we speak and without proper planning and execution of the building process, waste of energy and long term moisture problems will arise. The moisture problems in residential construction abound everywhere and have only come about since energy efficiency has come to the forefront. I am on your side for building homes which perform and operate efficiently. BUT - The residential housing market is in a major slump and recovery is not in sight. Your efforts are excellent, but to complex.

Please simplify your efforts and consider downsizing the: Water Managed Const Checklist Indoor Air Quality Checklist HVAC Quality Installation Rater Checklist

On the HVAC Quality Installation Contractor Checklist – are you going to require a hard copy of Manual D, Manual J or approved, Manual S and Manual T?

In the refrigerant charge section of this list – you can do all of these requirements correctly BUT if you do not pull a vacuum with a micrometer (and serviced vacuum pump) all is in vain. I have attended many HVAC technician classes and 1 to 2 out of 10 servicemen actually service the vacuum pumps and have micrometers.

IF YOU ARE GOING TO BE THIS DETAILED WITH THE REFRIGERANT CHARGE LIST - This item needs to added

THIS IS A MUST FOR THE HVAC SYSTEM TO PERFORMANCE AND ENDURE A LONG LIFE.

Complicating the process is going to drive perspective customers and builders away from the program.

Darling Homes – Turner, Cheryl

2011 National Program Requirements:

Square Footage Limitations: A builder wishing to follow prescriptive path methods have to meet the benchmark modeling that is defined on page 3. The square footage limitations are penal in nature in that they will ensure that higher end homes cannot meet the standards. As a consequence, builders of higher end product will have no choice but to opt out of Energy Star. The program should allow for reasonable tradeoffs that will enable builders of larger homes to select other energy saving options in lieu of reducing square footage. While homeowners will accept many compromises in the name of energy efficiency, very few in the higher end price categories will accept these smaller square footage bands.

Page 2 – There are two items of concern:

- R-8 duct in unconditioned space—The larger duct work will result in either increased plan size or less livable space. To compensate, the plans will be expanded, thereby increasing material expense.
- Energy Star Refrigerator—it is not noted that this appliance is only subject if included. Verbiage will need to be modified to allow this.

Inspection Checklists:

Page 4 – Item # 2.1.2: All headers above windows & doors insulated. The additional definition at the bottom does not inform us enough about the purpose if it is to be considered as an additional thermal break than what is required on the envelope of the home.

Page 10 - Item #3: Fan Sound Ratings...what does this have to do with energy or indoor air quality? "

De Kok Builders – De Kok, Jerrel G.

While I laude the effort to improve the program, I think this effort is misguided. I have built Energy Star rated homes since the year 2000. Things have changed a lot since then but the thing that kept me participating was the fact that it really didn't require a purpose trained professional on staff to decipher and administer the program. This is getting close. When it gets to the point where I can no longer figure this out myself, with a little reading or training I will no longer participate, and after seeing this new set of "hoops to jump through" I'm sure a lot more builders who might have started to participate will be dissuaded by this additional cost and time requirement. I think the larger goal will be damaged to satisfy... what?

Department of Business, Economic Development and Tourism - State of Hawaii - Wiig, Howard

The current Energy Star reflectance standard for steep residential roofs is 0.25, with no emissivity standard.

Many major roof membrane manufacturers now impregnate asphalt shingles, clay tiles and metal tiles with titanium dioxide while maintaining the original color. Due to this improvement, I propose that the new Energy Star reflectivity value be 0.40 and that an emissivity value of 0.70 be assigned. Thank you! "

Discovery Energy Consultants, LLC – Wigger, Scott

Please don't ruin a great program by implementing the proposed changes in their entirety, it will have a negative effect on the program as a whole. Instead of moving the program forward, it will result in a major step backwards as builder partners and potential new homeowners will walk away from the program all together because of the paperwork and resulting added cost for a rater to complete it. I am a Rater and I know the builders I work with, I have talked with them about some of these changes and ALL of them just shake their head and laugh. They have told me that they will not pursue certification because no one will pay the fee to get it certified. There are too many requirements and limitations. For instance, just the HVAC checklist for the heating contractor will drive the cost up for the builder, home building is a dog eat dog business especially in today down market and everything we do is custom built. The market will not support such drastic requirements, and if you shove it down their throats only a negative impact will result. The energy star market share is not large enough to bare such a load, it will dwindle to nothing...then how much market share will you have ?

Have any of the folks who wrote these new proposed requirements actually performed a blower door test or a duct blaster test for that matter. Have they done a rating on a house before, other than just a random training exercise? Have they tried to make money doing all the stuff they are requesting? Then there is the self generated HERS index number.....how much added time is that going to add to modeling a house....who will pay for that.....and along with that you are opening Pandora's Box by introducing huge potential for error. Leave the HERS index the way it is, don't fix something that isn't broke. Are you doing this to justify your own existence? Well, you will mess up a very good thing if you continue on the path your are currently on.

Do they realize the time it takes to seal off all the ducts in a house and do the duct tightness testing. Especially a house with a cathedral ceiling with returns up high, having to move expensive furniture to get to the ducts. Also, do any of these folks realize that they set us (Raters) up for huge exposure to liability which means insurance costs go up, because now we need to carry more professional liability insurance....that means I need to charge more for my services.....where does it end ?

By implementing the proposed changes, you will essentially risk killing the program and the lively hood of many a Rater. Have you actually read what you are asking us to do....open your eyes folks, I doubt any of you are in the field trying to make money doing this for a living, let alone selling the service. A service that will become extinct because of the cost for the raters to implement out in the field will price them right out of the market, a market that is very fragile and struggling already.

Thank You

Discovery Homebuilders LLC – Miller, Alan

I am a Green/EnergyStar Builder in NC. Do not make the process more difficult when this is just being accepted by the general public.

DR Horton – Ferguson, Mark

Just when it appears that more and more builders are beginning to embrace Energy Star, the program is now threatened with changes that will add even more costs, and at a time when 1)consumer confidence is low 2) mortgage qualification and approvals are tight and 3) the appraisal industry is reeling from the new changes including the Home Value Code of Conduct (HVCC) laws. Today, the ability to obtain a fair appraisal based upon current costs and pricing remains challenging. Adding more costs to the Energy Star program will effectively increase home prices, and will only add to the appraisal problems that are already stifling the market like a cold blanket. Until such time that the appraisal and mortgage industry reach an appropriate balance in policy and practice- that doesn't kill the real estate market at the same time, will it make no sense to raise the costs associated with Energy Star, but rather reduce the participation in the program unless participation is mandated. . Please do not seek to increase costs at this time if you want any chance of economic recovery that will be greatly influenced by a recovering housing market.
Driskill Homes – Driskill, Larry

I built my first Energy Star Home in 2005. At the time I did not expect that 2009 would find me as the only builder in our market vigorously promoting energy efficient homes with Energy Star certification. But such is the case.

The proposed guidelines are, in my view and experience, far too stringent.

If adopted they will probably ensure that I remain the only builder in our market building 100% Energy Star Homes.

Something closer to 15% better than code is a better route. Don't drive off current and potential builders with unrealistic, cumbersome guidelines.

Tens of thousands of homes 15% better, certified, and mainstreamed is better than a few hundred ""LEED imposters"" appreciated and desired only by the apostles.

Duct Testers – Ellis, Jeremiah

One of the proposed requirements is with regards to roofing products. It requires that the installed roofing product be an energy star labeled product or have a radiant barrier.

I would like to see another product type to be accepted as well, which would be a Cool Roof product. The Cool Roof Rating Council has a procedure for rating such products. <u>http://www.coolroofs.org/</u>

DuPont Building Innovations – Weston, Theresa A.

Attached are my comments on the Proposed 2011 Energy Star Guidelines:

I commend Energy Star on including the water management requirements, more specifically, the "Water-Managed Construction Checklist" in the 2011 program. The industry cannot realistically improve the energy efficiency of construction unless it is also producing durable construction. Water management is one of the keys to building durable buildings.

However, I believe the proposed checklist could be improved by referencing industry material or system standards, rather than specifying material compositions. Two examples are:

(1) Guideline 3.3 and 3.4 which currently require:

3.3 Self-sealing bituminous membrane or equivalent at all valleys and roof decking penetrations. 3.4 in ZECC 2006 Climate Zones 5 and higher, self-sealing bituminous membrane or equivalent over sheathing at eaves, extending >/- 2fr up roof deck.

I suggest replacing "self-sealing bituminous membrane or equivalent" with "self-sealing membranes complying with ASTM D7349". ASTM D7349 is titled "Standard Test Method for Determining the Capability of Roofing and Waterproofing Materials to Seal around Fasteners." There may be other suitable ASTM or AAMA standards that could he referenced also.

(2) Note 7 describes a fully sealed continuous drainage plane as "Any of the following systems may be used: a monolithic weather-resistant barrier (i.e., house wrap) sealed or taped at all joints; weather resistant sheathings (e.g., faced rigid insulation) fully taped at all "butt" joints; or lapped shingle-style building paper or felts."

What appears to be intending in the governing guideline 2.2 is a sealed water-resistive barrier. Although the note describes product categories that are used as water-resistive harriers, it provides no performance criteria to ensure that they will perform. Additionally, although the governing guideline specifically calls for sealing, some of the products mentioned in Note 7 are not sealed or only partially sealed. I suggest Note 7 is replaced with the following: **7.** Any water-resistive barrier recognized by ICC-ES or other accredited agency may be used. All seams of the water-resistive barrier shall be durably sealed.

Thank you for the opportunity to provide comments on the proposed guidelines. Theresa Weston

Codes and Standards Development Manager DuPont Building Innovations.

Durango Fine Homes, LLC Solar Home Specialists - Kawell, Steve

To Whom it may concern,

I would like to comment on the regulation relating to the solar heat gain coefficient of windows for the 2011 guide lines.

The suggested level of .30 may be an appropriate guideline for windows that have a main purpose of reducing the heat gain during the summer cooling season.

As a passive solar designer & builder I design homes that utilize the winter sun to heat the building.

I incorporate proper site orientation and roof over-hangs to shade these window areas during the summer months which protects the buildings from overheating.

For this passive solar application a .30 solar heat gain coefficient is not appropriate.

The objective is to allow a high level of solar energy to enter the South windows during the winter heating season, so the higher the solar heat gain coefficient the better.

I recommend that you allow a higher level SHGC for South facing passive solar applications.

Thank you for considering this distinction.

E3 Building Sciences – Brown, David

We are writing today to express our comments and concerns regarding some of the provisions of the Proposed 2011 Guidelines for Energy Star Qualified Homes.

E3 Building Sciences has been a staunch supporter of the Energy Star program for several years. We have certified more than 1,700 Energy Star homes in Florida and we physically tested each and every one of those homes to insure compliance with Energy Star program requirements. We are one of the largest energy rating firms in the State. In recognition of our success in promoting energy efficiency to builders, the United States Green Building Council (USGBC) took the unusual step of naming our firm as a second USGBC LEED for Homes Provider in Florida – One of only 38 providers across the country.

At the outset please be assured that we support EPA's efforts to maintain the integrity of the Energy Star program and to ensure that an Energy Star home is significantly more efficient than the national energy standard as represented by the 2009 International Energy Conservation Code. However, we also believe that the Energy Star program should maintain its original focus on energy efficiency and not drift into non-energy "green" territory. Moreover, the program must be based on standards which are physically, and financially, obtainable by more than tiny percentage of the housing industry. Unfortunately, the increased cost of Energy Star compliance, estimated by EPA to be approximately \$5,000 per home, will put the Energy Star program out of reach of many builders and homeowners. It is likely that the strongest impact will be on low-budget affordable housing, the group of homeowners who would most benefit from the reduced costs of an energy-efficient home.

Checklists

If addition to the existing Thermal Bypass Checklist, the proposed 2011 Guidelines would create 5 new checklists. As building scientists we applaud the encouragement of solid building practices. However, as pragmatists, we cannot endorse the checklists as part of the Energy Star program. At the \$1,200 per home increase in certification fees estimated by EPA, the costs of verification are simply not justified by the quality increase which might occur. This is especially true of the IAQ and Water-Managed checklists which not only add to verification costs, but are also well outside the original scope of Energy Star. There are also specific problems with the checklists, to wit:

Quality Framing Checklist.

The proposed checklist includes raised-heel trusses, apparently as an absolute requirement unless the attic is conditioned. The rationale for this provision is to "elevate the roof adequately for full-depth attic insulation at the attic perimeter". We have encountered numerous homes which provide clearance for full-depth insulation at all points without the need for raised-heel trusses, a more expensive approach than standard trusses. Imposing this cost without any corresponding benefit is unnecessary. This checklist item should be rewritten to require raised-heel trusses "if required for full-depth attic insulation at the attic perimeter".

HVAC Quality Installation Contractor Checklist.

We share RESNET's concern that this checklist, to be completed by the installing HVAC contractor, could become a rubber-stamp. Conscientious contractors will have exercised care in the original installation and the checklist would only serve to catch occasional errors. Less trustworthy contractors could simply sign off on their own shoddy work, obviating the value of the checklist. Our experience is that the vast majority of HVAC contractors fall into the first category. Given the high cost of the physical testing required by the checklist we do not believe that the benefits of catching a few errors and a few unscrupulous contractors are justified by the cost. While EPA could require independent third party testing of the checklist items we do not endorse this approach – it simply adds too much cost in light of the relatively small benefit received.

HVAC Quality Installation Rater Checklist.

This checklist would demand review and verification of a large amount of information which is well outside of the typical rater's education and experience. More importantly, it gives raters tacit responsibility, and possible legal liability, for installations and test results over which they have absolutely no authority or control.

Indoor Air Quality Checklist.

The IAQ checklists contains a number of requirements which are good building science. It does not, however, have any direct impact on the energy efficiency of the home and adds cost to the Energy Star program which is meant to be all about energy efficiency. If EPA wishes to encourage sound IAQ practices it should do so through a more appropriate forum, not through a program such as Energy Star whose focus should remain solidly on energy efficiency.

As is the case with indoor air quality, water management is a valid construction concern, but not one which should distract Energy Star's focus from its primary concern, the promotion of energy efficiency.

National Program Requirements

Size Adjustment Factor.

Historically, Energy Star frequently favored larger homes and penalized smaller residences. We agree that the system requires revision and, with one exception, endorse EPA's proposed approach. The exception is the failure to extend "credit" to homes which are smaller than the prescribed size. If the goal is to discourage larger homes through the size adjustment, then the result should also be the encouragement of smaller homes through the same mechanism.

Conclusions

At nearly \$5,000 per home Energy Star will simply be too expensive to appeal to a significant portion of the builders and homeowners in the United States. In the affordable housing arena where the average home cost is \$75,000-100,000 a cost increase of 5-7% simply cannot be justified by the savings in energy cost. Builders in this arena will eschew Energy Star in favor of less expensive programs, or no program at all. There will be a similar reaction at the production builder level. Large and medium-sized builders are already staggering under the burden of the worst housing market in history. To significantly increase their costs without appreciable benefit will likely cause them to flee the Energy Star program in droves. We recognize that the goal of the Energy Star program is not simply market penetration; program integrity is important. However, if the penetration of the program is severely constrained by its costs, Energy Star will become an energy saving program in name only, it will not reach enough homeowners to significantly impact energy consumption in the United States.

EAM Associates – Migneco, Frank

EAM Associates Inc White Paper: "Proposed EPA ENERGY STAR Homes 2011 New Guidelines" © 2009 EAM Associates, Inc. Perfect Balance – *Right* from the Start All Rights Reserved

WHITE PAPER BACKGROUND – The Federal Environmental Protection Agency ("EPA") is proposing, and soliciting feedback on, the significant third-generation guidelines for ENERGY STAR qualified homes. These changes are an opportunity, per EPA, to:

1. Add requirements that ensure a comprehensive approach to building science;

2. Ensure high-efficiency equipment and products in qualified homes;

3. Add new, high-value on-site inspections to ensure that ENERGY STAR qualified homes perform to expected levels; and,

4. Limit the carbon footprint of "large" homes earning ENERGY STAR.

The proposed improvements are anticipated to assist EPA in meeting its broader goal to transform the housing industry to build homes with less environmental impact and increase homeowner benefits, including "greater affordability" through lower energy bills, along with improved comfort, indoor air quality, and durability.

EAM BACKGROUND– EAM Associates, Inc., ("EAM") has been an EPA ENERGY STAR partner since 2000, and a RESNET accredited HERS Provider since 2001, providing approximately 9,000 certified new homes directly or through Independent Raters working under EAM's Provider accreditation. We have worked with utility programs (design and implementation), national and regional; production builders across several states, as well as local "mom and pop" builders on their new home efficiency profiles.

EAM COMMENTS ON "WHY CHANGE THE ENERGY STAR QUALIFIED HOMES GUIDELINES NOW?"

EPA is revising the guidelines for ENERGY STAR qualified homes to ensure homes continue to represent meaningful energy efficiency improvements over homes built to code or standard builder practices.

EPA has identified three items that necessitated the guideline revisions:

1. Codes are ramping up: EAM has seen codes in specific areas adopting ENERGY STAR Qualified Homes Program as their energy code. EAM believes that the nation will best be served by not updating the current ENERGY STAR qualified Homes Program to assure meaningful above code performance for homebuyers, but to develop and implement a program that is targeted to this market. EAM recommends having two programs ENERGY STAR basic and ENERGY STAR "improved".

2. Standard business practices are ramping up: EAM does not believe, based on the evidence presented, that in 2008 17.0% of all homes built were qualified as ENERGY STAR, that this has become a "standard practice in many markets". For this specific market, ENERGY STAR Improved program should be launched, and the remaining markets allowed to adopt ENERGY STAR Basic and ramp up to a Program platform that supports ENERGY STAR Improved Program guidelines.

3. New technologies and practices are available to increase the value proposition:

EAM would want EPA to consider availability, cost, and training needed as these technologies and practices become hard requirements. These behind the scene costs as well as the technology cost, will impact the affordability of homes that qualify under the 2011 format.

EAM COMMENTS ON KEY CHANGES PROPOSED FOR THE 2011 GUIDELINES

I. Additional Mandatory Measures Needed for complete Building Science Requirements:

These items will require additional training of field personnel and then added time on the job site to determine and document compliance. These do not add to the affordability of new homes. Moisture is indeed an issue facing many existing homeowners and in new home construction. We are migrating from thermal envelop to more process specialization skills which require a period of time to launch.

II. Inclusion of High-Efficiency Equipment and Products:

EAM supports a performance path method to ensure a consistent bundle of high-efficient heating, cooling, and water heating equipment – inclusive of ACCA Manual D duct designs.

EAM believes lighting, appliance, and plumbing source fixtures are customer or homebuyer specific transactions that should not be a hard Program requirement - -but one which builds new homebuyer awareness on high-efficiency options.

III. Simulated Performance Method Replaces Fixed HERS Index Performance Threshold:

EAM sees this as the course for the Improved Program platform and the Basic Program should maintain the fixed HERS Index threshold. EAM also questions if this method would allow for "gaming" of proposed ratings.

IV. Consideration of House Size:

This should be a function of zoning at the municipal local levels and not one dictated by the 2011 Program Guidelines. In some instances there is a need to reach a certain size threshold to ensure affordable and profitable new units. Smart Growth tactics aimed at lots within existing municipal boundaries should not be penalized if the market conditions in that jurisdiction necessitate above average housing sizes. EPA should not be influence in the 2011 design by social scientist directives.

V. Consideration of State Energy Code Requirements:

EAM agrees that local codes should super cede 2011 proposed Guideline requirements.

VI. Field Verification:

EAM is concerned that the additional time on the job site as well as the administrative cost to implement the new checklists will generally impact new home affordability. Prior to field implementation the training and form management processes need to be absorbed by both HERS Providers and Raters. Based on the past history with the Thermal Bypass Checklist – these additional documents are not a means to an end to ensure high efficiency was delivered.

CONCLUDING STATEMENTS

In niche markets the 2011 proposed Guidelines may be the next step in advancing qualifying new homes - -but to raise the bar for all markets, with a 17% market share and adding additional cost to the certification process as a national platform does not make sense at this time.

EAM advocates:

EPA sets the stage for an "advanced" program to take advantage of niche markets which have adopted ENERGY STAR or surpass existing ENERGY STAR Home standards that exist with a slightly modified base program.

A national platform for trade ally training for those involved in new home construction to build awareness of the new technologies and practices available and then migrate to field documentation.

Find the balance between new home affordability and the cost to procure high efficiency measures and practices in the national market, and leave house sizing to municipal regulations and not penalize new homebuyers for exceeding arbitrary housing size constraints.

EAM applauds EPA in their progressive proposed 2011 guidelines. In light of the current housing downturn and national crisis, it may not be prudent to load additional cost for participation in a one model program platform. Direction on added cost should be weighted against the potential benefits.

EAM appreciates the opportunity to have our voice and voices of our clients heard during this process. We hope that our constructive feedback is considered in formatting any 2011 proposed Guideline requirements.

EarthSTEPS - Mordas, Alex

As a HERS Rater, I find that the proposed ENERGY STAR changes are appallingly - and apparently blissfully - ignorant of the current state of ""green building"" and the economy at large.

We are finally starting to see builders in reasonable numbers become interested in the ENERGY STAR program. Colleagues of mine claim that 5-20% of builders in some areas are becoming partners with the US EPA's ENERGY STAR program. Many of these builders now produce more than half of their homes as ENERGY STAR.

The ENERGY STAR program - as it currently exists- can be considered a gateway program to sustainable building. Meeting the 15% performance improvement over code built homes is certainly a laudable challenge... yet one that is not too difficult to achieve with a little planning and oversight of quality. I often find that builder/clients that manage to get their first home certified will turn to me and say ""what's next"". ""I got a HERS of 75... how do I get a HERS of 65 or lower..."" or ""can we now try a LEED certification"".

To take a program that is exhibiting such tremendous success as ENERGY STAR, and transform it into a confusing mess, is a huge disservice to our nation at a time of great need. I would ask that the EPA reconsider their proposed changes. We should maintain ENERGY STAR as the accessible and elegant program that delivers real and measurable benefits to our country, our homes, and our working public. Let's leave the confusing mess to the USGBC, and let ENERGY STAR serve to break our builders in gently while maintaining value and the recognizable quality associated with this brand.

East Kentucky Power Cooperative – Littrell, Josh

As a HERS Rater, I think it is worth commenting on the proposed 2011 changes to EStar. To our state (Kentucky), these changes represent an enormous roadblock in our effort to promote better building practices. We are in the early stages of adopting the current Energy Star specs, and the program has become very popular as is. But, in an environment where the "as is" Energy Star is still a very new concept, the proposed 2011 changes will likely kill what is becoming a very popular program. From our standpoint, EPA needs to focus on retaining this program as a cost feasible energy conservation program and not an environmental program. We understand the political pressures that are behind these changes, but for longevity that will outlast political pressures, we think only small improvements should be made to the Energy Star program. The current program changes are much too drastic. On that note the Energy Star New home program "as is", is a wonderful program that is accomplishing great things in our state.

Ecocrafters/CPS Custom Homes – Smith, Craig

In the determining the benchmark square footage for the Prescriptive Path, it appears all bedrooms are counted, even if they are below grade. I build a ""raised"" bungalow plan that has a 1250 SF footprint w/ 1 Bed/1Bath on the Main Fl. & 2 Beds/1Bath in 1000 SF below grade (Garden or ""Look-out"" level). By my read, the 2 below grade bedrooms would force my counted SF above the level allowed for the Prescriptive Path on a 3 bedroom home. This would be an un-fair burden on homes w/ below grade spaces which are inherently more energy efficient than above grade spaces especially in the air-infiltration area. Earth homes would be penalized as well. There needs to be consideration for these types of designs.

Also it appears that the main difference between the two paths is whether Modeling is required. Am I to understand that multiple 3rd Party inspections are required for both? I would suggest that for a home that follows the Prescriptive Path, that only the Final Inspection w/ Blower Door Test be required. There are many of us in the industry who balk at the idea of more inspections on top of what we are already subjected to. I submit that this will discourage some from bothering to attain Energy Star Rating when they are otherwise in compliance.

Thanks

Edwards, Dick

Attached are detailed comments. For most part I agree with the proposals except the water management Checklist, that is a Code Enforcement Officer issue; and the method of adjusting for mega-homes.

There is a fine line between being an energy rater and being a building inspector. It has been my experience that the custom builders welcome a HERS rater dealing with the insulation and HVAC subs. The main reason is that is a Code requirements that is not enforced by most building inspectors.

Attachment 1

EHS Construction Co., LLC – Seefelt, Joanne

I have been an Energy Star homebuilder for over 15 years, having built the first Five Star Energy Efficient home in New Jersey along with at least 60 other Energy Star homes. The home I am building now was enrolled in the new program on March 31, 2009 and is still in the process of being completed. I have been told, at this late point in time, that my home, which is a modular home (not manufactured) does not qualify for the Energy Star program because the modular company did not adhere to the new rules (i.e., did not hire a HERS rated inspector, inspect and complete 3 Energy Star homes, including my home.

I am being told that it cannot qualify as an Energy Star home after I have already upgraded the home to meet Tier 2 energy efficiency. As I stated above, I have built over 60 Energy Star homes, all modular construction, and am outraged that I was never told of the change in the rules as they relate to the modular home industry. The Energy Star homes which I have built exceeded all requirements of the Energy Star program and always exceeded the requirements for the blower door test--without the HERS inspector.

The modular companies I deal with are not willing to hire a Rater hence I can no longer build energy efficient homes. I implore you to return to the original program as it relates to modular homes. Otherwise, I along with many other builders will no longer be able to join your program.

EIC - Campbell, Paul

EIC has been reviewing the proposed guidelines for the newest version of Energy Star with great interest. The current proposal contains some very interesting features and undoubtedly will bring a significant price increase for the builder to install new components and features, as well as an increase in fees for additional inspections.

From a broad perspective, EIC recognizes the right of Energy Star to incorporate more selective features and standards, while moving beyond Energy Conservation and requiring numerous "Best Building Practices" and other requirements. The required five Inspection Checklists are:

Thermal Bypass Inspection Checklist (current) Quality Framing Checklist (new) HVAC Quality Installation Checklist – Contractor and Rater (new) Indoor Air Quality Checklist (new) Water Managed Construction Checklist (new)

It should be apparent from the titles of the checklists just how far beyond "Energy" the program is moving. Many builders may currently be addressing some, or all, of these areas through alternative means, but will now be in the position of channeling those efforts through Energy Star Checklists. EIC does believe that across the current Rating community significant education/ training needs will have to be met.

Thermal Bypass Checklist:

Largely unchanged, but note the requirement of Insulation installs to be a mandatory Grade I. Energy improvements are attributable to following the thermal and infiltration control measures of this checklist.

Quality Framing Checklist:

Largely consists of good construction practices, but with limited Energy impact. Builders should particularly note the requirement for Raised Heel Trusses, which significantly alters design and cost. Other OVE requirements are likely to alter current framing practices.

HVAC Checklists:

From an energy perspective, EIC wholeheartedly agrees with the new EPA position that significant energy advantages are available through HVAC commissioning. This requirement has been a fundamental component in the EIC/ComfortHome program since its inception in 1984.

There are cautions in using the proposed HVAC Checklist. There are particular line items that EIC would take issue with, specifically the design requirement of 0.70 sensible heat ratio in warm humid climates in Zones 1-3. Other language is vague, or renders stated "requirements" meaningless. For example: where "or equivalent" in Section 2 procedures are noted, they will need to be defined in order to maintain the rigor of the requirement. Similarly, the use of 99%/ 1% design tables is compromised by the following line "OR Based on prevailing local practice reflecting documented weather data", without further definition.

Other requirements are overly restrictive, such as the within 5% requirement for airflow, static pressure and capacity compared to design. EIC would maintain that there exists a much wider range of acceptability and functionality for some values. Narrow standards such as this may reduce the credibility and intent of the program.

An example would be: If a design called for a total ESP of 0.6 iwc and 1400 cfm of air for a system with a 3.5ton condenser, would it matter if total ESP was actually 0.45 iwc and airflow was 1550 cfm?

There are also some requirements that are over simplifications, while ignoring the real intent. For example ductwork w/o kinks or bends over 90 degrees and no excess coiled or looped flex duct. Is not the intent to have a well functioning system that delivers required airflows? If a 4" flex is bent 180 degrees and meets airflow of 20cfm to a bath or closet – and system static pressures and airflows are fine – isn't that okay?

Similar perhaps is the required opening area for bedrooms, at 1 sq. inch per 1 cfm of supply air. Is not pressure the issue and concern? If so, the standard should be addressing thresholds of pressurization or depressurization.

On another front total system duct leakage has been reduced to 6% floor area, and rto duct leakage is at 4%. These numbers are achievable but have some regional impacts - note that cavities (even in conditioned spaces) are prohibited from acting as returns.

EIC is concerned that the specificity and narrowness of the HVAC Checklists will lead to many false negatives, that is units that will fail on specific points, while functioning well within optimal engineering requirements and standards.

Indoor Air Quality Checklist:

This checklist carries a slight negative impact on energy efficiency, as outside air will require to be conditioned.

Fresh air systems will be required, through a variety of choices. EIC maintains that a significant number of homes would be required to install systems under ASHRAE 62.2-2007 standards that functionally are unnecessary. The added cost, concerns for mechanical failure, and energy impacts are significant considerations against required installation. Point source ventilation standards and performance are worthy.

The MERV 8 filter requirement may be a change for some builders, but is not over restrictive. Consideration should be given to potential impacts on mechanical design and function. Water Managed Construction Checklist:

Also a non-energy related checklist, though full of good construction practices. Timing may be critical in the normal or current scheduling of Rater activities.

Other Requirements:

Domestic Hot Water:

Reductions in domestic Hot water use or course translates to energy savings, cost to be evaluated on an individual basis. Water conservation requirements, low flow devices and Energy Star Appliances are required.

Efficient Distribution Designs, being Structured Plumbing layouts, Manifold layouts, or demand controlled systems.

Lighting and Appliances:

All major appliances installed during construction must be Energy Star Qualified.

Lighting package requires 60% of hard wired fixtures to be Energy Star Qualified, or 80% of screw-ins to be qualified CFL's.

Overall Impact:

Commentary from the EPA and RESNET discuss inspection fees in excess of \$1,000. This price will be determined in the market place with significant variability, but the price tag of Inspections alone will be a significant barrier for many builders, and particular price sensitive market segments. The added cost of features will need to be evaluated on a case by case point, as a review of current practices versus new requirements is different for each builder. Suffice it to say that the expense will be significantly more that current standards, and may well approach the estimates of in excess of \$4,900 for some construction sets.

Choice of Prescriptive or Performance Path:

Prescriptive Path requires that the home does not exceed a standard based upon the number of bedrooms, if greater, then the house will have to go the performance route. Components are well spelled out, and the home will have to meet all of the checklist requirements, plus the DHW and lighting and appliances requirements.

The square foot / bedroom standard will require that larger than average homes will need to go the route of Performance, bearing the cost of rating.

The Performance path requires a rating in which the as built is scored against the benchmark home – which is Energy Star Reference Design, based upon prescriptive requirements. A size adjustment factor is then applied for homes that exceed the footage of the Benchmark home. The home will also have to meet all of the checklist requirements, plus the DHW and lighting and appliances requirements.

This scoring process does offset a size bias that existed in earlier scoring methodologies, and favors smaller homes. Intuitively this is sound policy.

Technical Background:

EIC has read with interest the technical discussion published by RESNET and calculated by FSEC regarding the % better than code performance of a selected group of homes. EIC looks for continued discussion and investigation of these analyses, in particular the apparent bias that exists in Heat Pump homes in Zones 4-7.

Reviewing the analysis and justification of percentage improvement exhibited by the EPA in their exhibit 4 of the Overview document raises some question. In particular the benefits attributed to the TBLC, Right Sizing and Duct Tightness improvement all contain variables and assumptions that include other variables. If the EPA is to assert, or project savings

benefits across its Prescriptive Path approach then in light of FSEC's initial review and the above referenced data, EIC would invite more detailed research to justify the claim.

In summation this version of Energy Star is aggressive in expanding the scope beyond just energy conservation, and adds significant cost to most construction sets that is very likely to significantly reduce participation levels. Initial discussion with building Industry confirms our impression of the impact. If that is the direction the EPA would like to go, then it is theirs to do, while understanding and calculating the reduced impact the program is likely to have on the national construction set.

Eid-Co Buildings, Inc. – Eid, Kyle C.

HVAC Quality Installation Rater Checklist

Section 2. Duct Quality Installation, Part 2.6 specifies that ""Building cavities may not be used as return ducts"" One of our heating contractors asks why not when it is permissible according to the International Mechanical Code.

Water Managed Construction Checklist

Assembly 1. Water Managed Foundation, Part 1.5 specifies ""For wood framed walls, finish with trowel-on mastic and polyethylene or other equivalent waterproofing"" This is inconsistent with the specification for Polyethylene only in The 2006 International Residential Code, Technical Bulletin #7 The Permanent Wood Foundation System from the National Forest Products Association and Permanent Wood Foundation Guide to Design and Construction published by the Wood Products Promotion Council.

Assembly 2. Water Managed Wall Assembly, Part 2.3 specifies ""Window and door openings are fully flashed"" While this is a preferred method in many installations it is inappropriate with vinyl window extruded nailing flanges built in. Consider adding a footnote that also specifies "" or to the window manufacturers specifications which will allow for variations in window construction.

Assembly 4. Building Materials, Part 4.2 specifies ""Cement board or equivalent... A distinction should be made when using full fiberglass or equivalent tub and shower surrounds or enclosures."

EMF Home Consultants, Inc. – Fredenberg, Mark

Where do you acquire the right (what document gives you the authority) to require my Company to have Errors and Omissions Insurance? It is very expensive, which will burden the Builder, which will burden the Consumer. This is not going to stimulate the Economy.

I believe in what you are trying to accomplish. Can we as an energy industry offer levels of service to provide good building practices that bring energy savings to the broader general public?

I feel the Builders will have no choice but to walk away from our Energy Star Program due to the costs associated with these new guideline changes.

We now have a verifiable, consistent Program in Wisconsin that the general public recognizes. When you change the Standards, confusion automatically comes in, like a leak in a boat. The Tradesmen do not understand the changes and misrepresent the reasoning and facts behind the changes. The public hears the misrepresentations and errors about the changed standards. The public comes to the Builders confused about the changes and does not buy into the associated costs. History proves this theory if you look at other Programs. Like any other product or service, you get what you pay for. Some people can pay for the service that assures they will get the best building practices to get a high quality home. Others cannot afford this proposed high end service you are advocating with these new changes. Lets not create an elite sector of Energy Star Homes that only the Corporate 2nd generation executives can afford, so the rich get richer and the average American gets poorer (and pays the bill).

I could see our Energy Industry providing services to all people, that will provide huge savings. As the tradesmen, Builders and Public see the next levels of building practices they will incorporate and buy into some of them, as they are doing now. Knowledge increases as the benefit present themselves in proven techniques. But not all people can afford to pay for these techniques. Therefore offer levels they can buy into. Just like buying any other product in the marketplace.

energetechs - Hellem, Russ

I would like to see the following items changed:

1. "Ducts in unconditioned attics shall have insulation > R-8; All other ducts in unconditioned space shall have insulation > R-6."

All ducts that are in unconditioned space shall have a minimum of R-8, not just ducts in attics.

2. I don't see any requirement for thermal breaks around the building. Due to the huge amount of energy wasted through thermal bridging, I believe it would greatly benefit our climate to install thermal breaks around the entire building envelope.

3. The air tightness requirement should be significantly upgraded. In all the houses we have ever blower door tested, we have only seen a few that are leakier than the 5ACH 50 listed for our climate zone. Air tightening does not cost that much money if it is designed into the building.

Thank you and I look forward to seeing the revisions as they occur.

Energy Efficiency Associates – Duclos, Mike

I'm writing to comment upon the proposed Energy Star 2010 Guidelines.

I fully agree with the RESNET comments, I think this will have a major impact on the Energy Star program.

However, I think what is being proposed is not enough.

The buildings that are being built today will last well past 2050, when we are supposed to be reducing our CO2 by 80% or more. There is no magical technology that is going to create an enormous amount of CO2 free energy that is technically, economically and politically feasible on the horizon. I think we should stop trying to make the kind of 'incremental improvements' embodied in the 2011 proposal. This is not going to get us where we need to be - quite frankly, the 2011 proposal falls very far short of the mark. I believe we should be using the best available building technology to create homes that are very durable, comfortable, economical, and use 10% to 20% of existing and new home energy respectively.

I think we should adopt PassivHaus certification as the baseline and add an eclectic selection of key IAQ and other health and safety measures. I believe we can build these houses very economically, and that they can save vast amounts of energy and money. There are thousands of these homes in Germany and Austria today.

We just have to stand back, take a fresh look at the problem and our goals, and I think this solution will present itself as being 'obvious in hindsight'.

Thank you for considering this 'different' approach.

Energy Image – Reynolds, George

As a Thermographer (Level 2) first and a HERS rater second; I am glad to see that the new checklist addresses many of the areas that I find in just about all homes. I would go further and recommend that the hurricane straps be screwed to the truss and top of the top plate as opposed to the side of the top plate where it always offsets the sheetrock. I also recommend a light line of latex caulk at the top plate and bottom plates along with screws for all second floor walls. The exterior walls also would be caulked on the main level. Nails will usually crack the sheetrock next to the caulk.

The additional HVAC checkpoints should be relegated to the local county inspectors and coordinated between the mechanic supervisor as regards performance, design and flow measurement. I will use data loggers to measure temps, amps, dew points, air flow, etc. I'm looking for a number that shows the system can perform below 5 btu/HDD/sqft. However, most raters are not equipped with the loggers (although they are relatively cheap) and it does require more site trips.

If you really wanted to get attention you should go back to the original electrification charter of only 60 amp service for residences. If somebody wants more for their Mc-mansion, then get a windmill, solar hot water, and photovoltaic, wood pellet outdoor boiler or whatever. With less purchased electrical power, only the really very efficient products and construction techniques will survive.

Energy Impacts – Visnic, Chuck

The normal plan submittal of a residential project in southern California does not include a mechanical duct layout or mechanical plan of any type other than information as shown on Title 24, the building officials I have questioned view ACCA as site constructed by licensed discipline doing the work. Section 310.11 of the CBC is recognized as most important residential standard related to mechanical performances and the commercial plan submittal always includes mechanical plans to demonstrate required ventilation is supplied as needed based on occupancy. We have been providing ACCA Manual D, J for the past 10 years and the only city requirement was if the house exceeded five thousand square ft they required duct layout not for mechanical performance their interest layout noting duct penetrations into shear wall.

I think the technology of Cad programs as well as duct design programs similar to Wrightsoft and ASHRAE 62.2 addressing ventilation and better environmental design strategies will help bridge the gap of not being the HVAC field expert.

When the HERS rater visits the site he should be assisted with an approved plan to verify the expected performance from properly designed systems.

Energy Inspectors – LeBron, Galo

Enclosed are Energy Inspectors comments on the new Energy Star program. I believe that the additions that are not specifically in the field of Energy are confusing to our clients, as it sounds more like a Green Building Program and perhaps might be branded as so. But we are including feedback from all of our clients, and believe that phasing in these changes might be a better way to go given the economic climate. We have color coded our comments along these lines.

Attachment 1 Attachment 2 Attachment 3 Attachment 4 Attachment 5 Attachment 6 Attachment 7

Energy Masters – Winston, Mary

As a RESNET rater I applaud tightening of the Energy Star requirements. My opinion departs from the official RESNET position. I've inspected and heard of too many ""energy Star"" homes which fail in their promise to the consumer.

I believe that raters should be better grounded in building science, including mechanical systems efficiency (not just duct testing) than many now are. Rater inadequacy is no reason for not improving the energy performance of buildings.

We know what to do to make buildings much more efficient than they are. Your new program requirements are a big step in the right direction. It's time to stop pandering to those mired in mediocracy.

Energy Saving Comfort Systems – Smith, Brian

I will echo the concerns put forth by RESNET as I believe them all to be valid concerns:

The biggest issues I have involve the proposed water management and HVAC check lists. I believe that the proposed new checklists are, in many respects, well-grounded in building science. However, I also believe that proper implementation of these checklists is likely to come at a high price. EPA's price estimates for the addition of these checklists is \$1,200 per home in inspection costs alone. These costs, when added to the additional construction costs, may prove burdensome in the current housing crisis and EPA has not shown evidence that builders or consumers would be willing to bear these additional costs. The HVAC and moisture checklists in particular represent the largest risk to EPA's program in terms of cost, credibility, and participation.

I am also concerned that the HVAC checklist, signed off by the installing technician, will end up being a rubber-stamp with no accountability and no real quality review. This can have two negative effects, first, it threatens the credibility of the whole program; second, it requires the Rater to ""sign off"" that the installer signed off, but without adequate training or authority to really inspect and enforce the application of the requirements. For those Raters doing the minimum, it has high potential to be a rubber-stamp; for those who really understand HVAC, it will put them in an awkward position with no real mandate to enforce if their understanding differs from the installer's.

There are other areas of concern regarding the HVAC checklists. First, the proposed requirements impose a heavy burden for AC and ASHP installations but ignore similar potential installation problems with GSHP and boiler systems. Second, when compared to ANSI/ACCA 5 QI, which has been adopted by ENERGY STAR as its HVAC quality installation standard, EPA's proposal is significantly more stringent in several areas, and in some cases requires conformance to a standard that is more stringent that the resolution of the test methods themselves. Finally, this proposal will necessarily require substantial training of HVAC technicians -- who will train them? Most Raters do not have this level of training, and even when they do, Raters often don't have a mandate with HVAC contractors or local code officials to ensure this level of compliance. I recommend that EPA seriously reconsider the HVAC checklist, and in its place provide an incentive, rather than a requirement, for compliance with ACCA 5 QI. The incentive could be to allow a relaxed threshold on the HERS index (perhaps by 2-4 points) for those who can show compliance.

I am also concerned that the water management checklist goes beyond the mandate of an energy-efficiency program. While the requirements represent good building practice that all builders should be incorporating, most of them are beyond the scope of a rating, beyond what a Rater is trained to do, and many are not able to be inspected at times a Rater would be on the site.

This checklist will add significant cost to construction and the rating, with no tangible energy benefit.

The updated thermal bypass and the new framing and IAQ checklists represent additional work for the Rater that will increase the cost of an ENERGY STAR compliance rating, as well as increase the cost of compliance to the builder. Adding the HVAC and moisture checklists further increases costs and the potential for alienating the building industry becomes greater. I strongly recommend that the EPA carefully consider the potential down side for these additional requirements and that they conduct builder and consumer surveys and focus groups to ensure that these requirements do not hurt the program more than they help.

Energy Sense – Curry, Mark

Items of Concern:

Overall Costs to Builders - At this time and with market conditions builders are looking at ways to reduce cost not increase it.

Raters being able to raise rates enough to cover all the extra work required - While it has been stated that all of the additional checklist items can be observed during the same time we currently look at homes (2 trips) we believe there at a minimum there will be an increase to the rater administratively.

Business Retention - We expect 50 percent loss in market share if these proposed changes move forward.

Rater being responsible for HVAC data - For most raters HVAC is not their area of expertise and adds a different level of experience for field personnel and liability to rating company.

HERS index scoring changes and number of ratings that will need to be done and redone - Our builders have hundreds and hundreds of plans and to redo them all could be cost prohibited, additional time would be needed to meet this change

Rater being held responsible for gathering all data and verifying all checklists from different factions and being compensated for this evaluation

Handling homes that miss inspections – reduction in builder sign off number of items will also hinder the number of homes that can be certified minor turndowns should still be allowed to be signed off by builder

Homes being compared to a Reference home having Energy Star appliances – how can the scores be reduced from the reference home with those advantages? Most builders do not include appliances as a standard.

Size Adjustment Factor being applied correctly. The numbers being used in the chart do not reflect the avg sq.ft. for our market. These numbers need to be adjusted to reflect what is actually being built in that region.

Will we have to count lights per socket? How to verify this 80% of sockets?

Even if we can inspect all of the additional inspection items at the same time we are already at the address it will take additional time increasing the amount we will have to charge more for inspections.

Obtaining signatures and paperwork from other trades – has not happened in the past and will add to the administrative burden on the rater the alternative is to have one document kept on file for each trade

Keeping up with local codes that supersede Energy Star levels and adopting these changes into the inspection requirements

Change all forms and processes – implementation schedule - All raters will see an increase cost if they try to incorporated these additional inspection items/checklist in to their current forms therefore, additional time is needed to incorporate these changes. Is it really necessary for all these changes? Maybe they could be phased-in in 2012.

Framing checklist – adding time to inspection process again and added training and field inspector knowledge levels as well as increased cost to the builder for such new items as raised heal trusses

Manual J's and all associated responsibility increase costs and liability and additional staffing for some rating companies will be required.

Additional administrative burden and training to "read" and verify checklists

Flow Hoods and checking and verifying indoor air quality – new equipment time and training and cost recovery will also increase costs to both raters and builders.

Slab and Water Managed foundation - how do we determine this or inspect for this? (Rater is responsible)

Roof Assembly - who inspects this? And at what stage?

Building Materials - who inspects?

Quality Assurance – Changes to our current processes will be even more burdensome. These could be phased-in in the following year."

Energy Services Group – Minch, Ed

I would like to comment on your Version 3 of the Energy Star Program for New Homes. As you know, we have been in the program since 1997, and have been sealing houses to the Thermal Bypass Checklist standards since 1981.

I am on the Board of the Northeast HERS Alliance and was on the committee that wrote their response to V3. We looked at other comments and came up with a comprehensive look at the new program from the perspective of a rater, a provider, and a trainer. I am not going to go into length on the items listed below as many others have and will express themselves more gracefully than I can. However, I agree with the points made in that response that fall into roughly 4 categories:

Rater Qualifications: Kick-out flashing, grading and all sorts of items not related to energy are included in the new program. The one that scares me the most is a rater telling a builder to take out a piece of lumber because it is causing thermal bridging.

Rating Cost: If a rater is really on the ball, he may be able to get by with 4 inspections, but he may have to do as many as 7. Add in 5 lists to fill out. Right now ratings in the DC area are down to \$95 each. Something has to give.

Market Impact: Not just the cost of ratings, but the cost of associated items will increase. I would not be surprised to see a drop in the number of houses in the program of 3/4. The larger builders, who build the majority of the houses, are very price sensitive (one large regional builder said ""If I can't get EStar for \$1,000 or less I won't do it"").

Consistent Energy Star: We are surrounded now by many raters/providers delivering Energy Star. It is the rare house that has the Thermal Bypass Checklist properly completed, and we believe that most of these items are absolutely essential to a comfortable and efficient house in our mid-Atlantic region. If we cannot get the current single checklist completed properly (the most important of those in the new program, in my estimation), what hope do we have of completing all of them.

Of these 4 concerns, I believe that the last one is the biggest stumbling block. RESNET currently does not have the resources to look at field work, but this is, of course, where they should be concentrating their time. They should care less about the paperwork and more about the physical treatment of each house.

Looking at the Energy Star houses of today, how many are an ""A+""? A ""B""? A ""D""? From what I see, I would have to rate the average house in the ""C-"" range, with a healthy portion of ""F"". I believe that we have to get that average up to the ""B+"" range before we think about adding unrelated items to the rater's list of tasks.

By the way, I would love to live in a house built to the standards laid out in V3.

Energy Smart – Tippit, Don

I agree with the concept of ensuring that the Energy Star label continues to represent meaningful improvement in energy efficiency over homes that are built to code or standard building practices. The proposed guidelines are a good step in providing that distinction. However, I do share the Residential Energy Services Network's concerns in regards to the proposed checklists. In that regard, I concur with their recent response to the EPA.

My primary concern is the substantial increase in cost of the proposed program to the nation's homebuilders, particularly during the current economic times. In my opinion it is doubtful that the market would recognize the required price increase to cover participation in the proposed Energy Star program. While the proposed guidelines offer great benefit, it is uncertain that appraisers could support such increases in value.

The end result will be that program will lose substantial builder participation.

My recommendation would be to initiate the proposed changes in stages rather than simultaneously. This would allow the program to provide a clear path to meaningful energy efficiency improvement over time while allowing homebuilders an opportunity to recoup costs through price increases.

Energy Solutions, Inc. – Gough, Danny

Sam et al, I applaud the changes in raising the bar for Energy Star labeling new homes. Throughout our rating careers, we have been extremely vigilant in protecting the label. That's because we always wanted it to be of value to the consumer. Although the new requirements may further differentiate the brand, it may not be meaningful until we adopt serious oversight to reduce and eliminate bogus, unearned or rubber stamp ratings. We continue to see more and more homes with the Energy Star shingle which do not meet the requirements now. My fear is the new requirements will just cause "weak, unprincipled raters" to overlook more of the mandatory requirements. I would love to have some means of measuring results to assure the buyer they actually got energy savings instead of the "prediction" of energy savings. In conclusion, I think the new upgrade is GREAT. Then I get discouraged thinking about the creativity of raters who skirt the requirements. Thanks for your good work. My dealings with the folks at EPA have always been extremely positive, professional and helpful. I look forward to more of the same.

Energy Strategies, Inc. – Miller, Patrick

To whom it may concern;

For those of you proposing the ENERGY STAR third-generation changes, I ask: are any of you considering the overall realistic effects of these changes? One truly realistic effect might be that it becomes so difficult and costly to achieve the ENERGY STAR certification that the program will achieve even less (if any) market share and disappear completely. Currently, you state that in 2008, over 17% of all homes built were qualified as ENERGY STAR. That is not a very big percentage. It seems to me that if a program is successful, it should be able to achieve at least 50% market share if not more. Your proposals will drastically make it more difficult and costly to achieve a certification and will certainly bring DOWN that 17% market share.

Our REAL WORLD FIELD EXPERIENCES show that builders and homeowners are continually bucking the costs of certification and the costs of building upgrades to achieve certification. The certification process as well as the building requirements MUST remain simple in order for builders and homeowners to even consider certification.

Is it a coincidence that your proposals look very similar to LEED certification requirements? Are you trying to compete with the LEED program? LEED certification is very expensive and very difficult compared to the current ENERGY STAR certification process. What is LEED's market share in the residential certification arena? In Wisconsin it is pretty close to zero. The main reasons are cost and practicality.

Why do we need a variable HERS Index? What meaning can a variable number have to a homeowner? A builder? A realestate agent? Or to anyone not directly involved with the home energy certification market? A fixed number has meaning, is simple to understand, and can get better (lower) over time as buildings perform better. What's the problem with that? Size-adjustment factor? Why are we interested in penalizing people with larger homes? These are the people with the money to implement renewables and are willing to do so and in most cases - do so voluntarily. They are the influential people in the world and can have much more impact in pushing the market forward. This size-adjustment factor also makes certification more complicated and less meaningful.

Checklists. More checklists equates to more time, more requirements, and more expenses. Many of the items listed on these proposed checklists are quite ridiculous, not necessary, and frankly not clear, concise, or relevant to the overall goal of the ENERGY STAR program. For example, what relevance does the proposed requirements like the equipment manufacturer model number, serial number, ARI reference number, etc. have to the overall performance of the equipment. Relevant information is the efficiency, size, and type/style of the equipment. The rater is verifying this information for accuracy and inputting this information into the computer modeling program. The rater may need this information to look up and verify efficiencies, but why must serial numbers, for example, be recorded? What relevance does this type of information have to certification?

Manuals D, S, T, J, etc. calculations are done for proper design, sizing, and specification of equipment. Again, why is it relevant for the rater to verify that the contractor did these calculations? How much expertise has a rater to determine if any of these calculations are done correctly? The verification requirement is ridiculous.

All checklist requirements should be scrutinized thoroughly for overall intent and necessity to the ENERGY STAR certification program to keep the process simple and inexpensive. I don't know of any builder or rater that is willing to put themselves on the line by approving any item they are not appropriately trained in or knowledgeable about, not to mention the liability issues this would open up. For example, how does one check for ""capillary break beneath all concrete slabs""? When would this be checked? How many site visits are necessary to check everything you are proposing us to check? How can we charge a fee for each site visit and make any money while not breaking the bank for the homeowner and/or builder? These checklists are very impractical. Put yourself in the shoes of the homeowner, builder, and rater and scrutinize each and every requirement you are proposing and see if there might be anyone out there that would be willing to have their home certified. Maybe a pilot study is needed to convince you that these proposals will end the ENERGY STAR program as we know it.

The intent you have is admirable, but in the real world, it is impractical, unrealistic, and way to costly to achieve. Please reconsider ALL of these proposed changes and scrutinize them thoroughly before implementing any of them.

Thank you for the opportunity to provide my opinions.

Energy Vanguard – Bailes, Allison A.

I have read through the documents relating to the proposed changes to the ENERGY STAR guidelines; I was in on the RESNET rater roundtable a couple of weeks ago; and I've just finished reading RESNET's official response to the proposed changes (""RESNET Comments to EPA on Proposed Version Three of the ENERGY STAR Homes Program""). My comments parallel RESNET's document. I believe the addition of a penalty for larger houses is wonderful, and I've been hoping for this for years. In fact, when I went to my first RESNET conference in 2004, that's the issue I discussed with ENERGY STAR's David Lee. On the other hand, I think the ENERGY STAR reference design home is the wrong approach. I also believe, as does RESNET, that the extra checklists will increase the cost too much and put undue burden on raters.

In short, I support the RESNET position on the 2011 proposed ENERGY STAR guidelines. My company, Energy Vanguard, is an accredited home energy rating provider, and I've been involved with HERS and ENERGY STAR since 2003.

EnergyLogic – Schwarz, Robby

Version 3 qualifying Criteria

- I imagine the system Energy Star outlines can be incorporated into existing modeling software so that the house specific Energy Star HERS Index could be created. I would think that the size adjustment would need to be wrapped into the software as well to ensure that everyone is properly implementing the system.
- However this whole process will be very difficult to express to the builder especially production builders.
- EnergyLogic recommends that Energy Star strongly consider alternative approaches to achieve their goal such as the HERS index approach offered by RESNET and the Florida Solar Research Center.

Version 3 Checklists

- Thermal Bypass Checklist
 - 1.4 Although Slab edge insulation is important the field application continues to be very difficult for builders. Primarily the finish details. Although the program offers some suggestion for this most builders in the Colorado market are still rejecting them for a number of reasons. It also appears from a modeling perspective not to be as large a heat lose item as the other areas that the program concentrates on. I would recommend making this a best practice until better techniques and technologies come to market.
 - o #3 Insulation installed to maintain permanent contact with sub-floor above, including necessary supports
 - EnergyStar backed away from requiring that the entire floor system be insulated. This version should require it! It works! Partially filled cavities, even horizontal ones, don't.
 - It would make lots of sense to prohibit ducts in cantilevers. It becomes impossible to insulate the cavity that has a duct in it. You can't fur it down like in a garage floor system.
 - #5 We believe that all penetrations to the attic need to be sealed yet the checklist does not call out bath fan housing sealed to drywall or duct boot sealing to drywall or sub floors. This specifically being called out would be very helpful. The 2009 IECC is now calling these areas out why not Energy Star?
 - #6 EnergyLogic treats all common walls like walls to the exterior and requires that all TBC issues that are adjacent to the common wall be dealt with. This would be a good requirement since most jurisdictions will not allow sealing of the common wall since the assembly was not fire tested that way. A swap out of the rock wool ire stop is not allowed so require the TBC items.
 - It would be good to specifically call out sealing around windows and doors with low expansion foam as is being done in the 2009 IECC. Items like this are difficult to enforce unless they are written down.
- Thermal Bypass Checklist Foot notes
 - #1 "For purposes of this checklist, an air barrier is defined as any solid material that blocks air flow between conditioned space and unconditioned space" I like this definition. The problem is that Energy Star has not stood behind the definition and has allowed flexible air barriers that are also vapor barriers. Will Energy Star stand behind the interpretation of the Rater if an issue goes up to them?
 - #8 We believe that all penetrations to the attic need to be sealed yet the checklist does not call out bath fan housing sealed to drywall or duct boot sealing to drywall or sub floors. This specifically being called out would be very helpful. The 2009 IECC is now calling these areas out.
- Quality Framing Checklist
 - Raised heel trusses Please specify heel height for specific Rvalues so we can take this directly to the builder. Or perhaps a % of insulation value at perimeter.
 - o Please specify HVAC Platform height for specific R-values so we can take this directly to the builder.
 - o Will 3 stud corners work? Extra wood but more popular. Is this equivalent?
 - Double walls continuous insulation requirement needs to be explained more. Blow the cavity full, put it to the outside, need clarification?
- HVAC Contractor
 - #2.1.1b it will be very difficult to determine what prevailing local practice is. This should be changed to be more concrete. Such as 5 or 10% of ASHRAE if last 5 years of local weather data can back up the adjustment.
 - Can the checklist be made in a version where the contractor can type into it so that they can easily fill it out on a computer and email it to the Rater?
 - Looks like Energy Star is asking for the contractor and the Rater both to field test the system. Is this what is intended?

- HVAC Rater
 - 1.2 More specific compliance matrix needs to be created for the Rater to review Manual S, D, and T to see if they meet the programs intent.
 - 1.4 More specific compliance matrix needs to be created for this evaluation. Prevailing local practice is way too vague.
 - 1.6 Currently there is no written national protocol for how to measure flows in a house. Should systems be balance with the supply registered louvers before the test or should they all be opened fully. What fan speed should the system be running at for the test? A national protocol for these tests should be created so that everyone is doing the tests the same way. Right now it varies across the country.
 - Test that need protocols Flow hood, Room pressures
 - o 1.10 This is not clear. What fan speed is being asked for?
 - 1.12 -1.14 Sub-cooling and superheat measurements are not measurements that typical Raters do. Is it the intent of the program that the Rater just review this data or perform the tests?

IAQ

•

- This checklist along with some of the aspects of the HVAC checklist are basically the EPA's IAP program.
 Seems crazy to adopt something different when the IAP has already been created. It would make better sense to add those features here that are not on the IAP to the IAP and just require that.
- #6 Garage separations should be measured and be at least 45 Pascals, house with respect to the garage when the house is depressurized to 50 Pascals with reference to outside.
- #8 HVAC Filter All of this should also be on the HVAC checklist so that it is right in front of the Contractor.
- Add that the filter slot needs to be made air tight.

En-Tech Associates, Inc. – Vitale, Tom

With just the thermal by pass check list, I have walked away from many projects. I believe less than 10% of the EPA total projects meet this basic standard.

When you add these other items, less than 1/10 of 1% will actually pass. Maybe these lists can be completed on a score card where 85% of the items need to be checked off to pass. A score card acts as an educational tool to advance the building sciences with out shutting down the industry.

The government directive to increase standards that are understood clearly by less than 1% of the Rater population is going to kill the industry and leave a trail of liabilities for the Rater and the Rater Organizations.

It is less of a liability for an Engineer and Architect to stamp drawings than for the Rater to Certify / Commission a Project!

Regulations to reduce global emissions are shipping millions of jobs oversees and these yellow clouds of pollution from as near as Mexico and as far as China will all eventually blow over unemployed US Soil.

Don't let anything unreasonable become a requirement or a law!

Envinity, Inc - Goble, Liam

We are an energy services company located in State College, Pennsylvania. We built Centre County's first ENERGY STAR home (HERS 54) and have continually worked to build more energy efficient homes. The current ENERGY STAR certification process makes it too easy to achieve ENERGY STAR certified homes. The new proposed process is much more stringent and will enhance the ENERGY STAR program.

RESNET predicts an additional \$1,200 in required inspections. This additional cost is approximately 0.5% of the cost of a new home, and for an ENERGY STAR home (under the proposed guidelines), the additional costs will probably be returned within the first two years of ownership through cost savings. Please move forward with the guidelines as written.
Environmental Resource Partners, Inc. – Nichols, Scott

Comment #1

Provisions in the new program should include a mandatory builder training class for the Energy Star Program. The rating industry spends a many unpaid hours training builders on the existing program. The increased complexity of the 2011 program will add additional training cost which is largely unpaid time. All existing and future Energy Star builders should be required to attend a program requirements training class as a condition of registration to be listed as an energy star builder on the web site. All existing green building programs require this type of training and so should the 2011 ES program.

Esolutions2 – Myers, Kevin

My name is Kevin Myers and I own the energy consulting company Esolutions2. I am writing this email to address my concerns with the new Energy Star Home proposed requirements. I wish to have you note how devastating it will be to add more requirements than the market will bear. At this point in time it is quite difficult in Northern Wisconsin to sustain a business certifying Energy Star Homes and even more difficult to join forces with builder partners that have customers with the fore thought and financial where with all to build an Energy Star Certified home. Please take this into consideration when designing the new Energy Star Requirements.

eZing, Inc – Porterfield, John M.

Thank you for the care in administering the Energy Star program and thank you for the ever-expanding resource that <u>www.energystar.gov</u> is!

I have reviewed comments by RESNET on proposed Energy Star changes. I concur with all points brought forward in RESNET's RESNET Summary and Positions On EPA's Proposed 2011 ENERGY STAR New Homes Guidelines (v3.0)

I further comment:

Changing the standard that has been recently changed and supplemented, in a way that is as different as the shift from 100 is ""perfect"" to 0 is perfect, is ill-timed considering other changes underway. The Administration is managing transition from non-sustainable economy to a sustainable economy and initiating this transition within a severe recession. I believe the change in INDEX is ill considered and is certainly ill-timed. Now is a time to consolidate standards and recent major policy changes and AVOID CONFUSION.

For HVAC compliance I concur with allowing an incentive for commissioning. I strongly advocate more energy-related training for building trades and am VERY pleased to see funding targeted to energy education.

I believe that comparative research is merited before proceeding with a ""tech fix"" requirement for ventilation.

I believe that focus should be given to new materials and methods to admit new technologies rather than codify advanced framing.

Consider linking Builders Tax Credit to Energy Star qualifying residences OR consider linking quality assurance aspects of Energy Star ""brand"" to builders tax credit."

Fard Engineers, Inc. – Colter, Avery Ray

I want to be clear on whether 2011 will be a single national program or whether there are separate provisions for California. I ask because I have seen one issue with the oversizing limits. Due to experiences in the field with the 2006 heat wave, and in anticipation of climate change, we have a policy at our firm of oversizing the sensible capacity of equipment to the sensible peak load by 15%. In some cases this can require oversizing the cooling system above the limitations set by Energy Star, such that in order to close the gap measures are taken such as increasing mechanical ventilation rates. This may be less of an issue soon however, as mechanical ventilation at ASHRAE 62.2 rates will become a requirement for low-rise residential spaces next year, where currently natural ventilation is assumed.

Ferkey Builders – Ferkey, Roy

If proposed guidelines become too strict it may cause Energy star builders to drop out of the program and keep new builders out of the program.

Fitzpatrick, Tom

Like others, I'm pleased to see the extent and general direction of effort to raise the bar for Energy Star-labeled New Homes. I have a few specific concerns and comments.

1) Application of the HERS Index. I disagree strongly with the initiative to create an Energy Star reference design Index unique to each home. The Energy Star program has been outstanding historically in simplifying the marketing of energy efficiency. The proposed system of unique Energy Star reference Indexes is at odds with the objective of clear, simple market communications. It also appears to add work and expense that does not result in significant additional savings. As it complicates the work of identifying whether a product will qualify for Energy Star, it would add expense, where accepted, to planning and procurement activities on the side of the builder. I favor a simple reference target HERS Index and a simple message that lower is better.

2) Size Adjustment. I think this is a very positive direction as it addresses a very specific limitation (bias) of the HERS Index. There has been concern expressed in Texas that the size of homes (larger) recently built in Texas may not be adequately reflected in the assumed average sizes. That concern should be addressed. The direction, however, of encouraging smaller homes that use lower resources overall, is solid. I believe that a size adjusted HERS Index, along the lines suggested in RESNET-filed comments, can stay within the "easy to talk about" requirement for a reference target.

3) Rater Verification. Although I agree with the concept of using HERS Raters for program verification, I think the present proposal assumes some additional trips, access or testing skills that are not realistic. The HVAC Quality Installation Rater Checklist and Water Management Checklist should be revised to indicate which items can be verified as "in Plans" and which can actually be verified at times the rater is on site – even assuming an extra trip. I also think that Rater can verify whether assertions are included in HVAC Contractor report, but not necessarily whether the item "Needs Correction." The concept of requiring, in effect, greater integration of the HVAC Contractor with the builder, is a good one, requiring some support in the form of training and certification.

Florida Solar Energy Center – Fairey, Philip

As a RESNET-accredited software provider, I would like to comment on EPA's proposal to create an ENERGY STAR Reference Design. While it is entirely possible to create additional reference homes within rating software, it is not necessarily a simple and easy task to "get it right." EPA's stated specifications for the proposed ENERGY STAR Reference Design are worrisome in this regard because they require that the ENERGY STAR Reference Design use the envelop specification of either the 2009 IECC or any local code that is more stringent than the 2009 IECC. This provision is simply untenable for software providers as there are literally thousands of code jurisdictions across the country.

Furthermore, if EPA desires to define another reference design, it is incumbent upon EPA to fully define the specifications for that reference design – for all conditions, locations and jurisdictions under which the reference design is applicable.

EPA has adopted a policy in this regard that does not serve them well – it will effectively function as a "poison pill" with respect to the market development of software that can implement EPA's proposed ENERGY STAR Reference Design. EPA's policy in this regard is local rather than federal and it clearly leads to untenable situations as described above.

EPA is a federal agency and, as such, it should establish policy at a federal level, not the local level. My home state, Florida, recently adopted a code that is 15% more stringent than the 2006 IECC. As a result, EPA has effectively "punished" Florida by requiring that ENERGY STAR new homes be 15% more efficient than its new code. By state law, next year Florida will modify its code again – this time to be 20% more efficient than the 2006 IECC. And in 2013, Florida's code will become 30% more efficient than the 2006 IECC and so forth until it becomes 50% more efficient than the 2006 IECC in 2019, again by state law. Will EPA continue to "punish" Florida by requiring Florida ENERGY STAR new homes to be 15% more stringent than Florida's code? From EPA's current policy perspective, it will "have to." And it will likely "have to" in other jurisdictions as well.

EPA's current policy effectively says that you can never reach the goal because if you increase code efficiency at the local level to equate to the ENERGY STAR performance level (something some jurisdictions have already done because EPA has made ENERGY STAR a household name), then EPA will be forced by its own policy to move the bar, ad infinitum to oblivion. EPA should change this flawed policy and allow all homes that meet national EPA ENERGY STAR standards to qualify. And EPA should take full credit for each of these homes and for moving the national marketplace forward to this degree.

It is also important to point out that it is not only the "on paper" energy performance that qualifies a home as ENERGY STAR but also a set of verification, quality control and commissioning criteria that work to ensure that the "on paper" energy attributes are achieved. This is a critically important piece of the puzzle that is generally missing from code processes due to either poor enforcement, a lack of training and knowledge on the part of code officials or both – face it, a code official's primary job is health and safety, not energy performance and comfort. Unlike almost all code processes, this element of EPA's ENERGY STAR program (e.g. independent verification by trained and certified individuals with quality assurance oversight) sets the example, is national in scope and works to produce much better energy performance, comfort and quality regardless of "on paper" code compliance projections. So abandon this "or 15% better than local code" policy and concentrate on moving the nation's housing stock to the next level of performance through the already existing combination of designed efficiency + commissioning framework.

Fox Energy Specialists – McDaniel, Maci

To Whom It May Concern: Please see our attached comments on the ENERGY STAR V.3 2011 spec. Please feel free to contact me if you have any questions or need additional information. Thank you for the opportunity to submit our comments.

Major Comments:

1. There is a strong case for allowing R – 6 ducting. There are complications for mandating R-8 ductwork. Can this be included as part of a builders "trade off" options on the performance path? Is there data for hot climates, which show increased savings, to offset the substantially increased to cost of R-8 ducting? The California Energy Commission study conducted a few years ago, does not support the concept. In the California Study done by Berkely Labs which was presented to the EPA and Texas A&M Energy Systems Lab during the ENERGY STAR V.2 evaluation and Code Task Force Meetings, installing R-8 ductwork vs. R-6 in hot climates resulted in less than 1% improvement in efficiency. This savings is far too small given the cost of the product and the design issues associated with installing it. And common sense would tell us that by requiring Radiant Barrier to lower attic temperatures, the savings would be even smaller.

There is not a building science precedent for the "value of R 8 ducting". It was placed in the mandatory section of the 2004 IECC by mistake. In our Texas, R-6 is allowed in homes where there are 14 SEER systems. Texas HERO members submitted a large amount of commentary, including the "California Study" during the ES V.2 discussion regarding the R-8 Duct requirement. The same rationale exists today. There are significant problems with R-8 and very little proven energy savings. Please review all the R-8 commentary provided during the V.2 discussions and consider them prior to V.3 implementation. We see no value in requiring R-8 and most likely very significant negatives.

- ENERGY STAR Refrigerators being mandated in the reference home: Including ENERGY STAR refrigerator kWh in the reference home unfairly penalizes builders who do not provide refrigerators with their homes. The refrigerator choice is left to the home owner. This should not be required for builders who DO NOT provide refrigerators.
- 3. Moving away from a HERS Index target will be difficult for consumers to understand how to measure the value of Energy Star because there is no a simple benchmark to refer to. We support the RESNET alternative to at a minimum provide a HERS Index Target based on Bedrooms Count/Square Footage.
- 4. The Size Adjustment Factor as currently proposed, will unfairly penalize the Texas building market. During recent discussions with Sam Rashkin in Houston, he commented in order to "hang their hat on something" they used 2005 REC data to create the SFA tables. Unfortunately, REC data disproportionately reflects homes constructed prior to 2000, which results in reduced bedroom to floor area ratios. The current SFA bedroom to floor area allowances do not reflect typical homes currently being constructed in most of the Texas ENERGY STAR programs. We have included an attached spreadsheet to illustrate what is currently being constructed by the production builders in Texas, in order to show the inaccuracy of the SFA tables. These statistics were collected from both Fox Energy Specialists and Energy Sense which are two of the larger Rating Companies in the Texas Market. This information would be easily gathered from other raters throughout the country to give the EPA a better statistical sample of the homes currently being constructed in their program that would aid in revising the Benchmark Home Chart to be more accurate. We would ask that the EPA entertain increasing the square footages in the tables that would encompass a larger percentage of the homes built in the current ENERGY STAR program or regionalize the chart.
- 5. The new modeling method will require builders to have multiple product specifications, based each homes designed size, number of bedrooms, etc. Moving from builder wide uniform specifications in order to meet floating index thresholds, will be very difficult for builders to price and accurately manage the delivery and implementation onsite. It will also create problems with home buyers when a builder tries to explain why one home in the same community has one specification and components, while another has something totally different (better or worse) because it's bigger and is needed in order to qualify. It will be difficult for sales staff to communicate to consumers in a manner they can understand all of the requirements behind the differences. This will potentially cause significant problems for the builders and the rater trying to explain the technical issues forcing builders into this situation. They barely grasp how we do ratings and plan analysis now, much less having to create reference homes, etc.

6. ENERGY STAR is meant to be an energy efficiency based program. By incorporating the water management requirements, etc. they are just duplicating what other green programs already require. While we agree with the building science behind the requirement, we believe the EPA is diluting their message and brand without being able to quantify the energy efficiency benefit or savings.

	2 Bedrooms	3 Bedrooms	4 Bedrooms	5 Bedrooms	6 Bedrooms	7 Bedrooms
Builder A		2762	3144	4330		
Builder B		2138	2978			
Builder C		4573	4398	4648		
Builder D		3201	3605	4589		
Builder E		2427	3300	3832		
Builder F		2212	3249			
Builder G		2490	3063	4355		
Builder A	1840	1832	2902	4112	3721	
Builder B		1851	2470			
Builder C		2312	2906	3730	3624	
Builder D	1823	2123	2775	3354	3695	
Builder E	1710	2096	3294	4635	6408	8420
Builder F	2977	3016	3362	3597	3848	4183
Builder G		2000	2764	2952	3697	
Builder H		2678	3667	4018	5240	
Builder I	2053	1965	3184	4184	4234	
Builder J	1343	1946	2787	3371		
Total Average for all Builders	1958	2448	3168	3979	4308	6302

Texas Builders Average Square Footage by Bedroom Size Statistics

EPA Benchmark Home Size						
Bedrooms in Home to be Built	2 Bedrooms	3 Bedrooms	4 Bedrooms	5 Bedrooms	6 Bedrooms	7 Bedrooms
Conditioned Floor Area Benchmark Home	1600	2200	2800	3400	4000	4600

Difference	358	248	368	579	308	1702

Red Denotes National Builders

Blue Denotes Regional Builders

Estimated Total Number of Energy Star Homes from this Sample Per Year

16,000

Gachelin Associates – Hernemar, Marie

Noting that EPA is taking comments on the Energy Star program, I bring to your attention the following concerns:

1) Certification for new raters is unachievable and as such, EPA needs to revise the procedures and make necessary changes

3) There must direct government oversight showing no conflict of interest, now, RESNET regulates itself on behalf of EPA and DOE. RESNET is a private entity but seems to function as a federal government agency

4) RESNET's board of directors and ethics Board have conflict of interest because they own and operate the businesses that RESNET regulates

5) Complaints against businessmen and business owners who sit on RESNET's Board of Directors and Ethics Board should not go to RESNET's for resolutions. The current system is a mockery; EPA and DOE appear to be in collusion with RESNET and it is a poor image for any federal agencies to have when it comes to establishing trust especially when it comes to energy efficiency

6) Lack of oversight in managing the program and lack of oversight or third party in verification of actual service provision or energy ratings

7) There are examples of fraudulent Energy Rating reports being done and since RESTNET has complete absolute control, the public is a risk for fraud

8) RESNET has a monopoly and taxpayer money is involved. A solution to that problem has to take a priority and as quickly as possible.

9) IF RESNET is to remain unchanged, EPA needs to appoint an independent party to assure oversight over RESTNET and to assume part of the responsibilities that gives RESTNET absolute control over the Energy star and Energy Rating industry

10) In terms of monopoly and market competition, it is unrealistic for EPA or any organization to think that RESNET whose board of directors and ethics board consist of business owners and businessmen who regulate the business that RESNET regulates, would train, then certify others to begin operating similar businesses that would put them at a direct competition with the businesses that the board owns and operates. EPA has to make changes. Those who certify can't operate similar businesses and sit on the Board of Directors at RESNET. Unless we expect Microsoft to begin training and certifying others to operate businesses that will compete with Microsoft, than EPA does not need to make any changes in RESNET.

11) Homeowners who want to sell their homes seem concerned that the program requires them to have a home energy rating before they can sell their homes instead of the regular home inspection. EPA needs to clarify. EPA needs to clarify whether or not it is making home energy rating obligatory before a homeowner can sell his or her home.

12) Energy star seems to be losing focus that the program is for promoting and achieving energy efficiency and people who are not in the market of buying homes are also part of those to whom the government needs to reach in promoting energy efficiency. It is not all about mortgage loan.

I understand that ICF works work with EPA to inform the agency of situations that are brought to the attention of ICF. From I know, EPA cannot compel a builder or rater to qualify a home as ENERGY STAR and cannot verify that a builder rater has met the requirements when it qualifies a home as energy star. It is also left to RESNET and/ or the rater to take corrective actions if any against raters when there are complaints against the rater. ICF also has a seat on RESNET's board of directors.

EPA has only approved RESNET as an oversight organization over the entire program.

I hope that I was able to convey to you the grave concerns that I've noticed just by simple review of RESNET's website, a few communications from RESNET, first hand account of an incident with a RESNET/hers Rater provider, and other researches that I conducted within a short time. As important a role as Energy efficiency and energy independence

appear to have in the USA as well as abroad, it is imperative that the public has trust in the system. As such, EPA needs to address and remedy with Anti-Trust violations and lack of oversight, conflict of interest issues, the risk of fraudulent rating reports and to establish the Energy Star program as a model to promote efficiency and not a facade to squander taxpayer money.

Should you need clarification on comments or assistance in revising and implementing changes, please do not hesitate to contact me.

Gallo Homes, Inc. - Galello, Michael

Two things I picked up on the check list that would be great having added.

1) check for proper air sealing and insulation on sidewalls and ceiling of any type of roof dormers connecting to condition space.

2) the number one air leak in multi-family structures is the party wall. This would help greatly if the following can be added. Check for open floor open web truss systems opened to party wall assemblies maintaining a required 1" air space that is not sealed to the outside. The truss or floor system needs to be sheathed, air sealed and insulated to the 1" air space to protect infiltration and wind washing the between floors."

GDS Associates, Inc. - Lydon, Mark

Thank you for accepting comments on the proposed guidelines for 2011. I'm a consultant / verifier active in Madison, WI.

1) I support the continued evolution of energy efficient housing. The bar must be raised. I'm concerned about the HVAC Quality Installation Contractor Checklist. Many consultants do not have the technical expertise to handle this. Many HVAC contractors have not seen or heard of a duct blaster. I understand the need for high quality installs, but this will be a difficult pill to swallow.

2) I support rising HERS index values per the formula given. Here in Wisconsin, we are already implementing many of the measures proposed without these complex checklists. This is based on performance path guidelines that require such practices. Can States choose to adopt tighter HERS index values, sizing formulas, OVE requirements, etc without having to do the checklists?

3) I support the benchmark home size table. I encourage even tighter HERS index values to further force larger homes to adopt on-site power generation. "

GDS Associates, Inc. – Bennet, Bruce

Thank you for the opportunity for industry professionals to weigh in on the proposed changes for 2011. We certainly appreciate the excellent standards that have been established for the ENERGY STAR Homes program and hope to continue to be able to support your efforts. We have been able to encourage builders to embrace the changing technologies and changing principles of construction driven by your guidelines. However, it is still a stretch for many builders that have been resistant to change in the past, and though codes are changing, enforcement of statewide energy codes will still have significant shortcomings.

Along these lines GDS has attached comments to the proposed 2011 ENERGY STAR Homes guidelines for your consideration.

Thank you for the opportunity to provide comments on the proposed revisions to the ENERGY STAR Homes guidelines. First, I would like to commend you for raising the standard to a level that will truly generate homes that will be more efficient while also addressing a concern that is commonly cited as a reason not to build efficient homes; building-durability.

However, we have very serious concerns regarding the complexity of the proposed program guidelines, and the impact that these complexities will have on maintaining building participation. Our concerns include the following interrelated impacts:

- Overly complex program requirements will be very difficult to explain to builders and the broader market;
- Program participation and cost-effectiveness of current and successful ENERGY STAR Home programs in the Northeast;
- Added liability that raters would be asked to accept;
- Confusion in the marketplace;
- Participant disenfranchisement with the ENERGY STAR label;
- General reduction in the acceptance of home energy ratings as a way of assessing the efficiency of residential buildings.

Communication Complexities

While industry advocates can regularly discuss ideas and share thoughts on topics, conveying information to each other effectively, bringing such discussion to home energy raters, homebuilders, subcontractors and the general public in a cost-effective manner is extremely difficult and very costly. Communicating the current ENERGY STAR guidelines typically require a substantial amount of time spent with each participating builder. Communicating the proposed changes will require an exhaustive amount of time to educate builders of the new guidelines (and re-educate those experienced with the current ENERGY STAR guidelines), and greatly increase the chance that critical program requirements will be overlooked and result in homes that fail to meet the guidelines.

Builders will have invested more into their homes in anticipation of receiving the ENERGY STAR label. Builders in the northeast typically spend \$2000 to \$5000 in increased construction cost to meet ENERGY STAR Homes labeling requirements over their typical construction practice. Failing to meet the guidelines by overlooking critical, but obscure make-or-break ENERGY STAR requirements, results in unhappy program participants. Unhappy program participants share their experience with the program with their subcontractors, their customers and other key market allies and could impact continued participation and interest in the program.

Similarly, managing a network of home energy raters is currently very challenging to ensure that all raters (and other program implementers) are presenting the program requirements consistently from one builder to another and that builders are receiving all of the information consistently from one rater to another. The extent of the proposed changes will certainly create an impractical task of ensuring that all raters are trained to then effectively convey this information to builders and other program allies. We would like to propose that the EPA make an increased effort to tailor guidelines and related trainings to builders that have not been through the program and in such a way the keeps the process simple. As an alternative, we suggest that the EPA develop a clear transition strategy to minimize the loss of program sponsors and participants (builders) as they are encouraged to move to the new requirements that they will find very frustrating to understand and to meet compliance.

Program Participation Rates and Cost Effectiveness

At a minimum there are two site visits required to ensure compliance with the current guidelines, and several hours corresponding with program allies (e.g. builders, subcontractors, home owner/buyers, realtors etc) explaining the rules of program, inspection follow-up with the builder and the subcontractors. This cost is either borne by the builder or a program

sponsor typically electric and/or gas utilities or other program administrator. The increased level of service required to meet the needs of these program allies will be significantly increased under the EPA's proposed guidelines and will drive the cost of the rating upward.

Cost increases for certification will greatly impact program participation or will require greater incentives from program sponsors to maintain participation in the Northeast. Assessing the impacts of these changes by using the California code as a basis for comparison is not appropriate. The home building market is vastly different in the Northeast than it is in western states and program participation is much lower in the Northeast. It has been stated that an additional \$300-\$500 on average is what it would take to bring the average Title 24-home to ENERGY STAR level of the proposed new guidelines. Again, builders in the Northeast would be required to spend significantly more than this amount (estimated by some at ten times more).

Increased Liability

Raters being asked to verify items contributing to a compliant HERS rating and items on the current Thermal Bypass Checklist implement careful risk management practices to ensure strict quality control of all certifications. The proposed revisions to the guidelines place a substantial increased level of risk to raters and their providers. Not often trained in mechanical or structural engineering, these proposed requirements would force HERS raters to accept further liability.

Market Effects

The greatest concern comes with the very likely negative impact that the more complex requirements will have in the marketplace. As mentioned, it is believed that the changes would negatively impact the ENERGY STAR label in that builders would be come disenfranchised with the labeling program, the programs adopting the guidelines and the home energy rating industry. Builders are already being required to construct buildings that meet a more stringent building code. And more states are adopting more stringent codes in order to maintain eligibility for federal funds under the American Recovery and Reinvestment Act (ARRA). Increasingly, builders are also commenting that they will be building fewer, but more costly homes. And if going to the proposed new ENERGY STAR level is overly complex they may focus on merely meeting the more efficient building codes.

It must be acknowledged that the home energy rating industry owes a large part of its popularity to the EPA and the ENERGY STAR Home programs. However, as raters continue their attempt to expand the use of HERS ratings for other initiatives such as energy efficient mortgages, "stretch-codes" and their acceptance within real estate sales information (MLS listings), the market's faith in the credibility of HERS ratings must be maintained. The proposed threshold HERS index under the new guidelines is not very straightforward and will be viewed by many industry allies as an even more mysterious "black-box".

We agree and understand that the need for raising threshold criteria for the ENERGY STAR label is necessary to stay ahead of changing energy codes. However, the guidelines must be clearly written, recognizing the need for transitioning existing participants and welcoming new participants in order to maintain the program's overall effect on market transformation.

Sincerely, Bruce Bennett, Project Manager GDS Associates, Inc. – Home Energy Raters of New England

Georgia Power - Donald, Tony

Thank you for the opportunity to provide comments on the newly proposed guidelines for the ENERGY STAR for Homes Program.

Georgia Power Company ("Georgia Power" or the "Company") supports the Environmental Protection Agency's ("EPA") effort to continuously examine the ENERGY STAR for Homes qualification guidelines in order to maintain the credibility, and meaning, of the ENERGY STAR brand as being more energy efficient than the standard code. With the increased effectiveness of residential energy codes and advances in building science products and techniques, the need for ENERGY STAR guidelines to continuously evolve are evident.

As you are aware, Georgia Power has worked diligently over the past four years to create a market for ENERGY STAR homes in Georgia. Georgia Power offers incentives, training, marketing and support to builders, raters and realtors. The Company also conducts large statewide consumer awareness campaigns to help educate the potential home buyer. Georgia Power feels the market for ENERGY STAR homes is poised for tremendous growth once the residential market begins to rebound in Georgia. When the market returns to normal activity levels, the number of new homes built in the Georgia Power service territory will average approximately 30,000. The Company is anticipating a sustainable market of 10,000 to 15,000 ENERGY STAR homes per year in Georgia under our current program. Due to the timing (as the market just begins to improve) in large part, but also, because the added requirements will impact building schedule, building costs and rater costs, Georgia Power feel the proposed guidelines have the potential of reducing the number of ENERGY STAR homes under Georgia Power's program to 2,000 to 3,000 per year. Comments on the technical aspects of the proposed guidelines are best made by participating organizations like RESNET and CEE since Georgia Power is focused on program implementation.

Additionally, Georgia Power is concerned the new guidelines will create confusion with the ENERGY STAR brand among all stakeholders. The ENERGY STAR brand has always been simple, and understandable, by all stakeholders as the symbol for energy efficiency. The new guidelines seem to blur the line between an energy efficiency brand and an environmental brand. Even though saving energy can be considered an environmental benefit, the new guidelines are mandating several requirements that have no apparent energy saving benefits and in fact may make the overall energy savings lower. We currently support environmental (green) building programs as long as current ENERGY STAR energy efficiency guidelines are met. With the proposed new guidelines, ENERGY STAR appears to be another green building program with potentially less energy savings per home than under the current ENERGY STAR guidelines. Georgia Power has made the commitment to support the ENERGY STAR for Homes program as a way to reduce expected energy usage in the new home market.

Georgia Power currently plans to support the ENERGY STAR new home program in the future. However, with lower builder participation expected in building homes that meet the new ENERGY STAR guidelines and potentially less energy savings per home, the Company may need to pursue an additional new residential home program focused primarily on energy savings to help fill the likely void (10,000 to 15,000 qualified homes reduced to 2,000 to 3,000) that will occur for energy efficient homes in our service territory.

To help implement the new proposed guidelines in Georgia, Georgia Power respectfully recommends that the EPA delay implementation of the proposed guidelines for a period of time to allow the new home construction industry to be reestablished and consumer confidence to normalize. A delay in implementation could allow program administrators to develop training and strategies to grow the infrastructure needed for successful implementation of the new program guidelines.

Thank you again for the opportunity to comment on the proposed guidelines and as always, we look forward to working with you in the future.

Glaus Brothers Contracting – Glaus, Paul

We have been with Wisconsin Energy Star since 2006. With the techniques that we currently implement, our houses exceed Energy Star standards by 50%. We are only adding about \$2000.00 - \$2500.00 to the cost of a home that would build on a budget and not test and certify to Energy Star standards. With this small increase we can still compete with builders that are not building to these standards and yet give the customer a value that they can't get with these other builders.

After reviewing the proposed documents there will be significant cost added just to Certify a house to Energy Star standards. I feel many of these items are inappropriate to make a quality building. These documents will add a bunch of cost to our houses and I don't feel that the end result is going to be any better that what we are currently doing. We are just building houses and this is making a mountain out of ant hill. It doesn't have to be this complicated or expensive to build high performance houses.

Being that this is a voluntary program, If these proposals go through we will likely end our partnership with Energy Star. I don't feel the proposals are in the best interest of the customer as a cost added value which is very important to our company. We will most likely continue building the high performance homes that we do using an independent tester. We can then give the customer's the paper work showing how there performed and other documents they can use for resale. We can then still get our Tax credit and only loose the Energy Star certification.

An Alternate route might be to gather information from Energy Star builders and testers. This may give some insight to what is practical in the field and still yields good results. I know how cut and dry everything looks on paper but things are not that way in the field being I work both sides.

I won't go into all the particulars but if my heating guys saw there sheet of requirements they would scratch their heads and have to go back to school for a bachelors degree. Also there are many different methods of framing that would include using foam board, many of my customers would be leery of 24"" o/c framing. I won't go into anymore but I would be interested if you were looking for comments on revisions to the proposals.

Global Green USA – Bardacke, Ted

Global Green appreciates the thought and attention given to multi-unit buildings in the new proposed Energy Star Homes criteria.

However, the requirement of a MERV 8 filter would be extremely onerous for many multi-unit buildings because of the small fan size that their HVAC systems use. These fans are typically so small that they cannot pull enough air through a MERV 8 filter, leading to poor performance. Of course builders of these apartments can buy bigger fans, but this comes with both a cost and energy use penalty that in our opinion far outweighs the benefits of the MERV 8 filter. We know this from our work with LEED-Homes, which has a MERV 8 prerequisite that has driven up the cost of LEED Homes for multi-unit buildings and driven a number of projects away from pursuing certification

Grading Spaces LLC – Furst, Mark

I am a home energy rater in Wisconsin, where there is a strong commitment to building high efficiency homes. I work with several builders who have enthusiastically sought out the services of someone like me, realizing that an Energy Star certification on a home is both a good business move as well as a benefit to the bigger picture of climate change and the environment.

That said, these builders still beat me up on what I charge them for this service. When I explain how much I need to do in order to complete the up front paperwork, the required on site visits, phone calls to sub contractors and then the follow up paperwork, they reluctantly pay up. And this is along side them claiming the EPACT tax credit!

Now imagine what they will say when I tell them that this same service will perhaps more than double, even triple in cost and involve many more levels of detailed inspection, including areas that previously were not considered in the rating process. More cost, more complication.

In general, the level of detail of the new rules will require much more on site inspection work and it looks to me that failing in one small area can fail the whole rating. Why not stick with a single, more stringent HERS (adjusted for size) score and then give credit (a better score or lower threshold) for voluntary improvements above the minimums.

Water Management: This seems to be outside of the direct efficiency concerns that EStar has addressed up to this point. I say leave this to the LEED boys and to local codes. Thermal Bridging & Minimum Framing: are we to become structural engineers? It seems that in order to eliminate framing members to reduce wood content, we would need to be suitably qualified. Engineering in advanced framing is another increase in cost, one that can exceed the cost of the actual lumber.

IAQ checklist: good stuff, and includes much of what we do here in Wisconsin, however seems like the vent placement guidelines/verifications cross over into code country.

HVAC checklists: it is hard enough to chase down the HVAC contractors for information, now we will need them to do paperwork and then commission systems? Not only will we, the raters, be charging the builders more, but the subs will have to do so as well. In Wisconsin, we have the ""Wisconsin Exemption"" for not having to do a duct blaster test on duct systems if they are completely within conditioned space. Perhaps you should allow that nationwide and only require duct testing and close duct installation inspection when builders choose to install in unconditioned attics and crawlspaces. Duct systems installed completely inside simply have less problems, perform better and waste less.

The home sizing factor is probably the best and most workable part of the new rules. Overly large homes can be made efficient but ultimately will have a larger carbon footprint and so should be handicapped accordingly. I try to encourage people who are having a house built to consider reducing the overall size of the structure and to put the money saved into energy measures. The sizing factor will, hopefully, have this effect.

I think that the intent of the new requirements is good and building more efficient buildings is a great idea but if the way we get there is a burdensome and onerous then I feel we will loose a lot of participating builders. Most builders I work with are custom builders, with each house being different in design, size and type. Some even work with different contractors on each project. Working in the present guidelines is hard enough right now but adding the new requirements will, I feel, push it over the top. Accommodating incremental changes in any program is usually workable but these sudden and wholesale changes to Energy Star will make most builders I work with balk.

I hope you guys aren't doing this simply to remain "relevant" because of the improved national codes nipping at the program's heels. Please take time to visit the real world and see how actually implementing these proposals will result in less overall participation.

GRCC/Tassell M-TEC – Shultz, Brian

I have reviewed the Proposed Rules Changes for Energy Star Homes and though I approve of the overall intent I have the following concerns:

1) Homes that are larger than the Energy Star Reference Design (based on number of bedrooms) will be allowed to adjust their HERS rating by adding renewable sources of energy to the home for compliance. I find this allowance objectionable. Larger homes should only be allowed to meet compliance by increasing their energy efficiency. It makes no sense to allow a large home that is consuming more energy to be allowed to offset it by using re-newable energy sources. If anything the opposite should be true. Homes that have reduced their energy demand make the addition of renewable energy much more cost effective. For example, a home uses 1000 kw a month of electricity. Where is money more wisely spent, increasing energy efficiency or purchasing renewable energy? Hands down energy efficiency wins. However if that same home, through energy efficiency measures, now uses 500 kw of electricity per month, the cost effectiveness of adding renewable energy increases. Stop justifying larger homes.

2) This is related to #1. The allowable square footage sizes you have listed in your chart are too generous. Most of the data I have seen indicates that the average four bedroom home in the US is 2,400 square feet, up from 1,200 square feet in 1950 and it has been increasing dramatically since 1980. So why is your benchmark 2,800 square feet? Again, stop justifying larger homes.

3) I am also concerned with the degree of complexity that the new rating system adds. If anything, rating systems for green homes should be striving for simplicity and ease of use. The rating systems are beginning to look like the tax codes, understandable by only a few."

Great Lakes Carpentry, Inc. - Nilsson, Randy

Thank you, for the opportunity to comment on the proposed changes to the Energy Star Rating Program. We are custom home builders in Northern Wisconsin. We are certified green building professionals. We are faced with selling our ideas and our philosophy to every potential customer we encounter. In most instances it is a hard sell.

Most of our prospects go to the bottom line first. They want to know what every item costs and how it works. We are one of very few builders that work with Energy Star in our area. We love the Energy Star program and plan to work within its existing parameters'

However; we feel that if you make the program more complex, and costly, you will make this an even harder sell to our already reluctant prospects. We are trying our best to build high performance homes for all of our customers. I beg you to please reconsider making significant changes to a great program. You will more than likely kill the program in our area. Large production builders may be able to absorb the extra costs and will have the staff to wade through a more complex set of standards. Small custom builders, such as us, will not. There are no large production builders in our area. Please help us to keep Energy Star Homes alive and well in our area by not making changes to a great program.

Great Lakes Home Performance LLC – Rosendaul, Matt

I agree with the Resnet findings and recommendations that the program would only suffer from these changes, not benefit. I wish to submit the following comments and suggestions:

- As a rater in the field and a trainer/QA Designee, I see the program lacking adequate quality control and enforcement procedures. If the new changes are implemented, the already weak quality measures would be overwhelmed by the burden of additional responsibility.

- I do believe that Energy Star should "raise the bar" of homes which qualify especially with the new changes in state codes which exceed typical standards. The easiest method for doing this is to simply lower the index number needed to qualify. A simple 15 point drop in the standard index requirement from 85 to 70 would easily achieve such a change.

- To implement water management, advanced framing, and HVAC commissioning would raise the cost and time requirements for the rating process and would deter builders from participating. The blue logo has value as a brand, but that brand is only worth so many dollars. Beyond that cost, builders and homeowners see it as an expense, not an investment in the brand. These additional categories could be made optional packages which could lower the score by five points each which would achieve the 15 point reduction suggested above.

Great Lakes Home Performance LLC – Voisin, Glenn

I believe these standards will have the opposite effect on the home builders. Since this is a voluntary program, adding excessive requirements to the raters and the builders will increase the cost of the rating and the home. This will discourage participation in the program. It takes a lot of effort to convince builders to put the extra time and money into the homes due to the intense competition among builders. The tax credit is a large motivator. When the costs of the improvements and the increased cost of the ratings exceeds the benefit of the tax credit, we will have an impossible time convincing builders to participate in Energy Star. These standards will effectively kill the energy rating business.

I believe at this time the standards don't need to be tightened, later a stepped rating like LEED with gradually harder standards for different levels of compliance could be possible. I believe that increasing participation in the program will achieve the goals you are trying to reach. Take a look at the percentage of Energy Star builders compared to the whole industry, its not that high. Make the rules too tough and nobody will play the game.

Green Building LLC – Brendon, John

I am a rater in Hawaii. We have some very specific issues here in the islands related to building science etc. I think that a revised BOP for Hawaii should be part of the analysis.

Green Dog Enterprises, Inc. - Wildenhaus, Daniel

I applaud the effort to move Energy Star into the next decade with meaningful changes. I have a few concerns however over the proposed changes.

1 While we can all agree that preventing moisture from intruding into the building is good building science, I can't help but think that this checklist may be better served with a different program. It seems to make more sense to stress this under the new Indoor Air Plus program rather than through Energy Star.

2 I am concerned that regarding the checklist for HVAC, Raters/Verifiers may be taking on greater liability. From conversations I have had with local Raters/Verifiers in Washington State, many have shown no interest in taking this liability on.

3 What kind of allowances will there be for parts of the country where local codes meet or beat the new Energy Star requirements? In our state, there is a push to increase the base code by 30%!

4 In our part of the country (at least for now) there is a growing movement towards accepting the EPS rating system for homes. Will there be a method that a Rater/Verifier will be able to use the EPS score rather than HERS? Is there at least a conversation about this happening?

5 Will there continue to be a method where builders can hire a Verifier instead of a Rater?

Thank you for taking the time to listen to all the comments you are surely getting!

GREEN DREAM GROUP, LLC – Lunsford, Corbett

Thanks for taking comments. I believe making the ENERGY STAR label into a whole-home green building certification is a big mistake. Already, there is almost no market for ENERGY STAR Home Certification in the Chicago area, which is not one of the worst-hit by the housing crash. We're one of 4 companies that are RESNET-certified in the city, and we've done only 3 ENERGY STAR projects in the past year. If you make this too complicated, it will get as expensive for us HERS raters to do as LEED is, and I'm certain it will dwindle and lose whatever hold it has in people's minds. Please consider scaling back the certification to its original focus on energy, with whatever 'extra credit' measures, like Air Plus, you deem desirable. Thank you for helping advance this industry, not stifle it before it reaches full bloom.

Gulf Coast Lofts – Wallin, David M.

yes I went to the link you provided and it showed more of the same that the gov knows how to deliver, if you want energy efficiency and sustainability at affordable prices look at the website below. <u>www.gulfcoastlofts.com</u>

Energy Star, there are much greater improvements in the building industry than what you are promoting, we have blown all your empirical numbers out of data history because we made great changes that are cost effective and quite sustainable plus all other points promoted by your agency, see what the private sector has done at this link. www.gulfcoastlofts.com.

Gurtler Bros. Consultants, Inc. - Gurtler, Michael

Gentlemen:

I own an Engineering Company and have a RESNET rater who works for me. I think most of your ideas are good sound building practices. An energy rater, however, is not qualified to perform the thermal bypass checklist as you have amended it. Raters can't see all of the conditions you are asking them to check and can't sit on the jobsite all day to watch (for example) the flashing at the valleys when the roofing contractor is ready to install the flashing but before he installs the shingles.

I think you can have the builder, architect or design professional certify these details, as they have nothing to do with energy usage. If you have a professional certify this work, there should be some penalty imposed if the work is not done or done properly. Maybe some kind of insurance policy should be obtained that would cover any defects that arise over the following 5 or 10 year basis. The insurance industry would raise prices on builders that have too many claims for defective work.

We are also home inspectors and see the building problems in 5 and 10 year old houses every day. The condition of the homebuilding industry is deplorable, but raters cannot fix that.

GWS – Parker, Kelly

The following are excerpts from the EPA documents attached. GWS has taken some of the more important issues and commented on them in RED below.

GWS believes the new EPA v.3.0 labeled home to be a better built home while addressing numerous building science concerns that have not been previously addressed in the ENERGY STAR Program in years past.

Overall the incremental improvements are valid issues to be addressed but the new v.3.0 will cause many builders to drop out of the current program and will now allow the ENERGY STAR Program to be a truly independent building science program on its own merits with its own target reference home supported and managed by EPA. ENERGY STAR v.3.0 will now give the builder a chance to choose ENERGY STAR as a stand alone program rather than a stepped approach to other energy/green programs and not be tied to a single HERS Index threshold. The new v.3.0 is truly an independent program in which EPA will now be directing the technical and software approach to labeling homes to meet the v.3.0 criteria.

Estimate of costs for upgrade to v.3.0 on the Savings Cost Summary is low –For example installing Radiant Barrier-Phoenix a 2200 s.f. home will cost more than \$390.

The verification/documentation required by v.3.0 is a definite increase in the rater workload. This is good for the rating industry but will mean a substantial increase in the cost of verification to the builders. This verification cost is not completely reflective in the documented \$4,000-\$5,000 incremental building costs to the builder for now adopting v.3.0. Cost shown for rater verification is \$1200/house for checklist management.

The Checklists in their current form leave a lot of substantial interpretations up to the Rater/verifier. In the past these interpretations have been handled within the HERS Industry and/or overseen by RESNET committees. This will not be the case in v.3.0 since there are not technical involvement/interpretations by RESNET. EPA will now be directing the technical interpretations and overseeing the software implementation for v.3.0. Basically a government entity entering into the private sector to direct technical expertise and software implementation among other issues-does EPA have the staff necessary to handle these issues?

GWS wishes to thank the chairs of the RESNET Committees for taking the time to review and aggregate comments on our behalf.

Some of the more important issues are:

Additional Mandatory Measures Needed for Complete Building Science Requirements:

- Thermal flow New mandatory requirements for proper installation of insulation, reduced thermal bridging, and increased duct insulation.
- Air flow New mandatory requirements for pressure-balancing and an additional Thermal Bypass Checklist requirement for sealing sheetrock at top plates.
- Moisture flow New mandatory requirements for whole-house mechanical ventilation, spot local exhaust, and water-managed roofs, walls and foundations to address reduced tolerance to unmanaged moisture flow in tightly sealed and insulated homes.

Why is an Environmental Protection Agency Program -whose main directive is saving CO2-providing a program mandate dealing with moisture flow? Seems this is beyond the limits of the agency mandates.

Simulated Performance Method Replaces Fixed HERS Index Performance Threshold:

ENERGY STAR Reference Design specifications are used for HERS software evaluations, which establishes a unique HERS Index Target threshold for each home as opposed to a fixed HERS Index threshold.

We understand the need for v.3.0 to evolve beyond a single fixed HERS Index but now EPA has created a threshold to achieve v.3.0 compliance. It is no longer an Index number-it is a yes/no threshold-it will be up to the software to determine the HERS Index for a specific home with specific number of bedrooms and a specific size. How is a production builder who builds in the 1000-2000 s.f range able to build all his homes using a single set of components in every home?

However, larger homes will be subject to a 'size-adjustment factor' that will reduce the HERS Index Target threshold and require additional energy efficiency measures.

The builder will be required to add additional energy efficiency measures for every 600 s.f. increase in house size. Is there data to support this arbitrary size adjustment factor of 600s.f.? How will a production builder achieve consistent components if they build product lines spanning 2 or 3 size categories?

Using accredited Home Energy Rating software, the rater will apply all elements of the ENERGY STAR Reference Design (and any State energy coded elements that exceed ENERGY STAR requirements) to the home being modeled.

The rater will have additional steps to model the new v.3.0 in the software. A rater will first have to input the quantity takeoffs into the software, input the elements of the Energy Star Referenced Design, review the state energy code for elements exceeding ENERGY STAR requirements, then compare the new ENERGY STAR Home with the Energy Star Referenced Design and see if it meets the threshold. Some of the software calculations can obviously be behind the scenes in the software or is EPA going to allow manual manipulation of the software by the rater? This leaves the threshold compliance up to interpretation by the rater manipulating the software. Has EPA discussed these issues with the software vendors? Will the software be "locked" down or open to manipulation?

The rater and builder can then work together to change the energy efficiency features of the home – so long as the resulting HERS Index value for the home is equal to, or lower than, the final ENERGY STAR HERS Index Target; all Mandatory Requirements are included; and all state energy code requirements are maintained.

To now determine v.3.0 Compliance the rater will have to interpret between the HERS Index (Based on the HERS Reference Home) and the final ENERGY STAR HERS INDEX TARGET (based on the EPA mandatory measures with the Energy Star reference design inputs). There is additional time needed for raters to work with the builder and ultimately a charge to the builder for these services-these fees again are not counted in the Savings Cost Summary.

If the rater manually inputs the information of the rated home and the ENERGY STAR reference design home, the software program will be used to produce two separate documents for each house that is being qualified: one for the ENERGY STAR Reference Design home, and another for the rated home, which demonstrates the same or better value than the ENERGY STAR Reference Design home. Thus, each home being qualified will be associated with TWO documents to be maintained by the provider as part of the home's records.

Additional documents maintained required to be maintained by the provider. Additional expenses born by the rater will need to be charged to the builder and are not counted in the cost of verification to the builder.

The simulated performance method provides the opportunity to more accurately associate the ENERGY STAR Qualified Homes 2011 threshold with homes that include comprehensive building science measures that are roughly equivalent to homes 35 percent more efficient than the 2006 IECC.

Is the Prescriptive path as stringent as the Performance Path and what data supports the 35% savings over 2006 IECC? This justification was not given. Unfortunately software development by EPA/ICF does not prove the same output as REM/Rate or Energy Gauge. Note this same issue occurred last year with the South Texas BOP. EPA/ICF software showed HERS Indexes of less than 85 for a group of homes. REM/Rate/Energy Gauge showed HERS Indexes of 89-92. EPA justified this by commenting they would review in one year for any changes...the year is up in July. What software is used to determine stringency of Prescriptive Path?

By example, EPA cost analysis for ENERGY STAR Qualified Homes 2011 guidelines suggest an approximate incremental cost range from \$4,000 to \$5,000.

Cost analysis shows additional costs for raters doing additional work for v.3.0 Checklists which is \$1200- a significant cost figure for a production builder.

Radiant Barrier – Phoenix, AZ \$390.00

For a 2200 s.f home the Unit cost for Radiant Barrier is reported as \$390.00. This cost is too low. Suggest real world estimates.

A-G Wall Insulation Installation-Phoenix, AZ Grade III Installation to Grade I Installation \$128

\$128 to increase from Grade III to Grade 1 in a 2200s.f. home- too low.

ENERGY STAR Checklists

Thermal Bypass United States EPA. ENERGY STAR Qualified Homes 2011 Thermal Bypass Checklist Savings & Cost Estimate. 2009.

Quality Framing United States EPA. ENERGY STAR Qualified Homes 2011 Quality Framing Checklist Savings & Cost Estimate. 2009.

HVAC Quality Install. - Contractor United States EPA. ENERGY STAR Qualified Homes 2011 HVAC Quality Installation Contractor Checklist Savings & Cost Estimate. 2009.

HVAC Quality Install. - Rater United States EPA. ENERGY STAR Qualified Homes 2011 HVAC Quality Installation Rater Checklist Savings & Cost Estimate. 2009.

Indoor Air Quality United States EPA. ENERGY STAR Qualified Homes 2011 Indoor Air Quality Checklist Savings & Cost Estimate. 2009.

Water Managed Construction United States EPA. ENERGY STAR Qualified Homes 2011 Water Managed Construction Checklist Savings & Cost Estimate. 2009.

Thermal Bypass Yes \$250 \$250 suggested for v.3.0 checklist management. Quality Framing No - \$50 HVAC Quality Install. - Contractor No - \$400 HVAC Quality Install. - Rater No - \$50 Indoor Air Quality No - \$500 Water Managed Construction No - \$200 This \$250 is already in v.2.0 and not counted toward additional \$1200

The following information for the HERS Reference and Rated Homes is a duplication of Table 303.4.1(1) in the RESNET 2006 Mortgage Industry National Home Energy Rating Systems Standards with the exception of footnotes. It is provided for comparison to the ENERGY STAR Reference Design Home defined in the 2011

ENERGY STAR Qualified New Homes guidelines.

The definition for the 2011 ENERGY STAR Reference Design Home is now controlled by EPA-a government entity and can be modified/changed with only a simple public notice or small timeframe public comment period. Effectively this allows EPA to change the program within a small window of time-60-90 days. Production builders need advance notice of 9-12 months before making even small changes. V.3.0 implementation timeline is adequate-the problem is no definitions or timeframes given for future updates to the program for v.3.1 or beyond. Continued changes to a program hinder production builders from participating in the program. There should be definitive timeframes given for any updates to the program. Major changes such as v.3.0 provide a challenge to production builder implementation and prior to new commitments for v.3.0 large builders want to know when the next change is to occur. Update timeframes should be in the v.3.0 documents.

Type: Vented with net free vent aperture = 1ft² per 150 ft² of crawlspace floor area Same as the Rated Home3 3. 4. For homes with conditioned basements and for multi-fam

4. For homes with conditioned basements and for multi-family attached homes the following formula shall be used to determine total window area:

 $AF = 0.18 \times AFL \times FA \times F$ where:

AF = Total fenestration area

AFL = Total floor area of directly conditioned space

FA = (Above-grade thermal boundary gross wall area) / (above-grade boundary wall area + 0.5 x below-grade boundary wall area)

F = 1- 0.44* (Common Wall Area) / (above-grade thermal boundary wall area + common wall area) and where:

Thermal boundary wall is any wall that separates conditioned space from unconditioned space or ambient conditions; Above-grade thermal boundary wall is any portion of a thermal boundary wall not in contact with soil;

Below-grade boundary wall is any portion of a thermal boundary wall in soil contact; and

Common wall is the total wall area of walls adjacent to another conditioned living unit, not including foundation walls. Same as the Rated Home, net free ventilation area shall not be less than the Reference Home unless an approved ground cover in accordance with IRC 408.1 is

used, in which case, the net free ventilation area shall be the same as the Rated Home down to a minimum net free vent area of 1ft² per 1,500 ft² of crawlspace floor

Rater will now have to be trained in "approved ground cover in accordance with IRC 408.1" Where is this training? There is a minimum net free area for crawlspace ventilation on the Rated and Reference Home which is now going to be 1 ft2 per 1,500 ft2 of crawlspace floor...this implies even a conditioned crawlspace requires ventilation at a rate of 1ft2 per 1,500 ft2 crawlspace floor. Where is this ventilation need documented and for what purpose? Is this technically accurate? Again this points to technical experience of EPA. These types of specifications allow for interpretation by the rater and with the current economic climate-business competitive disadvantages quickly appear-one rater will allow it and one will not-creating a competitive disadvantage due to lack of adequate technical specifications. Need for clarity in technical specifications.

Duct Leakage to Outside: 4 CFM/100 ft² of conditioned floor area Duct Insulation:

These are hard to achieve in reality in some climates. This is the technical specifications for the Energy Star Reference Design Home (ESRDH). Therefore-current v.2.0 requires 6% so automatically the ESRDH will be raising the HERS Index for an existing Energy Star builder.

Attic: R-8; Other Uncond. Spaces: R-6 Duct Surface Area: Same as Rated Home Duct Location, Per # Stories & Foundation Type: 1-Story / Slab: 100% in Attic; 2-Story / Slab: 75% in Attic; 25% in Cond. Space; 1-Story / Crawl: 100% in Crawlspace; 2-Story / Crawl: 75% in Crawl; 25% in Cond. Space; 1-Story / Bsmt: 100% in Basement; 2-Story / Bsmt: 75% in Bsmt; 25% in Cond. Space.

Where did these percentages come from? Is there documentation supporting 75% or 25% duct area in these locations?

Type: Manual Type: Same as Rated Home Type: Thermostat: Programmable

Thermostat is now Programmable in the ESRDH. What is the increase in HERS Index for a Manual T-Stat which was the basis for the HERS Reference Home?

The term "Rater" refers to the person completing the third-party inspections required for qualification. Depending on the compliance path selected, this party may be a certified Home Energy Rater, BOP Inspector, or an equivalent designation as determined by a Verification Oversight Organization such as RESNET.

The Verification Oversight Organization such as RESNET—Is it RESNET or EPA? Who determines equivalent designation? Is there any submission requirements?

Note that the ENERGY STAR window specification is currently under revision. It is EPA's intent to align the ENERGY STAR Homes specification with this revised specification upon its release. Visit www.energystar.gov/windows for the latest information on ENERGY STAR qualified windows and doors.

How often will v.3.0 be updated as new ES products become available? Will this change the mandatory requirements or just the ESDRH? If the ESDRH changes will this change the HERS Index number needed for threshold compliance....will this be a new version change such as now required by RESNET? If the software updates change the HERS Index then the version of the software changes- How will EPA handle this? Where in v.3.0 documents is this addressed? How long will a provider/rater have to adopt the latest software revisions since EPA will now be dealing directly with the software vendors?

To determine domestic hot water (DHW) EF requirements for additional tank sizes, use the following equations: Gas DHW EF \ge 0.69 - (0.002 x Tank Gallon Capacity); Electric DHW EF \ge 0.97 - (0.001 x Tank Gallon Capacity).

As the tank gets larger the EF gets smaller? Seems counterproductive. So a 75 gallon Gas DHW only has to meet EF or .54? This appears to send the wrong message to the market place.

Duct leakage shall be determined and documented by an EPA-approved verifier using a RESNET-approved or equivalent ASTM-approved testing protocol.

Define EPA approved verifier.

4. Lighting & Appliances

All installed refrigerators, dishwashers, and clothes washers shall be ENERGY STAR qualified6
Advanced Lighting Package (ALP), or ENERGY STAR bulbs in 80% of sockets, shall be installed7
All installed bathroom exhaust and ceiling fans shall be ENERGY STAR qualified

Some mechanical exhaust systems (ERV and HRV) are bathroom exhaust and are not currently Energy Star qualified. Since this is a mandatory requirement-would this prohibit a home from being labeled as ENERGY STAR v.3.0?

Note that this change in policy only defines a rated home that determines the performance threshold for the ENERGY STAR Qualified Homes program. As a result, the 2011 ENERGY STAR Qualified Homes guidelines continue to fully utilize, embrace and support:

o Use of the HERS algorithms as developed and approved by RESNET

o Use of the HERS Reference Home as developed and approved by RESNET

o Use of RESNET-approved residential energy software

o Use of the network of RESNET home energy raters to determine compliance with the performance path and complete crucial quality control activities in the field for both the performance and prescriptive path

The wording is correct concerning the "Use of the HERS algorithms...Use of HERS Reference Home" but v.3.0 utilizes the TOOLS of the HERS industry. Not the full extent of the technical committee or software development committee for instance, set up under RESNET to determine what the HERS Index is comprised of—basically there maintains a level of engagement and development by the rating industry to determine the make up of the HERS Index—with EPA and the ENERGY STAR Reference Design Home there is no industry input/determination of the make up of the Target EPA HERS Index--EPA is disengaging from the RESNET HERS Index but requiring use of the tools of the industry. In other terms- I bought a hammer so I am by EPA definition a carpenter. The hammer is made from inferior metal with no regard for how it is to be used to hammer a nail.

Water	Water-managed foundation,	No improvement factor applied, as no energy impact
Managed	walls, and roof; use of moisture	from this checklist is anticipated.
Construction	resistant or moisture protected	
Checklist	materials	

If no energy improvement-then where is CO2 savings-which is primary mandate of EPA?

This is the preliminary comments by GWS. Thank you for the opportunity.

H5 Energy – Harrison, Darol

1) The requirement to meet all applicable codes

I assume this is referring to local (city, county), state, and national/international building codes. Current jurisdictions do not have enough staff to verify the existing requirements on all homes. Will the rater be responsible for verifying this? Does this apply to energy related requirements or all requirements? Will the rate be required to state that all codes are met?

2) Size Adjustment Factor

A size adjustment factor, if used, should be based on energy usage alone. I have seen many 4000 or 5000 square foot houses that use less energy than the average 1500 square foot house. This is too much of a political item and does not belong. Some probably would like to penalize an 8000 square foot zero energy house. Who identifies the correct size for a given number of bedrooms? Energy Star needs to stay out of this.

Inspection Checklists

1. HVAC Quality Installation Contractor Checklist

- a. Most HVAC contractors today don't know how to do a Manual J load calculation correctly, or they cheat on the calculation to get the size they really want to install. Is it expected that raters will review the load calc and confirm it is done correctly? The parameters listed in the checklist are not the only ones that will need to be verified.
- b. While I believe this checklist is very good and the right way, these are things that are already required in almost every state but not done. The enforcement aspect is one that is under considered here. It will likely mean fewer Energy Star houses due to the cost.
- c. Consider adding collecting Condenser and Air Handler blower motor volts and amps to the data collection sheet. While you are collecting all the other data you might as well get this.
- d. Will digital gauges be required? What accuracy/calibration requirements will be placed on the equipment used for collecting this data?
- e. In 2.6, where is "properly sloped" defined?
- f. Suggest adding "required superheat/subcooling.

2. HVAC Quality Installation Rater Checklist

- a. 1.2, Compliance with Manual J, S, D, and T is the rater being asked to verify the HVAC contractor said he did it correctly, or verify he did it correctly? If the contractor lies about it, checks the box saying he did, and the rater approves it is the rater liable?
- b. 2.3, No compression...! Does this mean 0.000. Will raters have to take multiple diameter measurements and if they are slightly different it is a failure? Gravity does happen, so there will need to be some form of visual or measurable standards.
- c. 2.8, 2.9 Currently most would only conduct a "leakage to outside" test. This will add an additional test. I understand the equipment is already set up, but it is nonetheless adding one extra test and time to the process. What is the value of performing the total leakage test?
- d. 2.10, Evaluating pressure balancing of bedrooms adds time to the field inspection. While it may not be a large amount of time, all of the extra things together are going to result in significant more time at the site, more likelihood for errors, more cost, etc.

3. Indoor Air Quality Checklist

- a. 1 and 2 exhaust flow measurement this adds a test and likely some equipment to most raters.
- b. 6 Does this include any rooms accessed from the garage?
- c. 8.4, air-tight gasket on the surface of the filter grille? This requirement is ridiculous and needs to be removed. The amount of air that bypasses the filter, assuming the correct filter is installed, would be considered negligible. More unfiltered air enters into the house when opening a door. Do we want to install air locks?
- 4. Water Managed Construction Checklist
 - a. Due to the timing of several of the items listed and the restriction that the builder can only approve three, this will likely require an extra trip to the site for the rater. Has this been calculated in the implementation cost? What about the added impact of driving the extra trip?

Savings and Cost Estimate Summary

2. Quality Framing Checklist

- a. This evaluation is missing the "get up to speed" aspect. Builders and framers will not study a book and start framing in this manner. Someone will have to hold their hand through the process to make sure they are doing it right. This will cost considerably more. Either that or the builder will have to attend training, which will increase his overhead, which will increase the building cost. Either way it has not been accounted for in this analysis.
- 3. HVAC Quality Installation Contractor Checklist
 - b. The minimum cost was listed for HVAC commissioning. Are all costs mentioned in this document minimum? If so, we need to know the upper limit since the reality is somewhere closer to the average or higher. There should be a more rigorous statistical evaluation of the overall costs to gain an accurate representation of the impact.
 - c. With these requirements implemented there will be an overall impact of more trucks on the road. These extra requirements mean more time for each house, which means more people are required to meet the work load which means hiring more people and more cars contributing to the supposed overall problem. These costs should be factored in to the evaluation.
 - d. Based on my experience the cost to reduce one ton of HVAC or \$500 is too large. Factors involved are the availability of stock units, the requirements for the units, etc. Why was an average cost used here where a minimum cost was used for commissioning? Be consistent with the method of evaluating costs. In this case it appears it was done to support the desired result.

4. HVAC Quality Installation Rater Checklist

- e. \$50 is not going to happen to complete this checklist. The added time for duct inspection and pressure balancing along with reviewing the HVAC contractor checklist and probably interviewing the contractor will add more time that is assumed here. It appears that the number assumed was based on everybody doing everything right the first time. This does not happen in the field, and especially when the rules are changed.
- f. Need to add in the added training cost for the raters to understand the requirements for HVAC installations.
- 5. Combined checklist costs added for the RATER ALONE:
 - g. Thermal Bypass \$125
 - h. Quality Framing \$50
 - i. HVAC Contractor ?
 - j. HVAC Rater \$50
 - e. IAQ \$150
 - f. Water Managed \$100
 - g. Total of \$475 added just for the rater alone based on this study. What is not included are the added inspections, tests, and trips. If all of the requirements listed are added to Energy Star the cost of a rating, as an example, will go from \$500-750 now up to \$1200–1500 and more.
 - h. Factor in the added costs of insurance, training, travel, etc. These will add a huge increase in the amount of energy expended just to get ready for the new requirements. This needs to be considered.

Habitat for Humanity Chicago South Suburbs – Tracy, David

I am ED with Habitat for Humanity Chicago South Suburbs and wish to register my opposition to the changes proposed for the Energy Star program. Given the current economic situation, the proposed changes will make it very difficult for my affiliate to continue building homes with E Star certification. I feel that the changes are unnecessary and will discourage the general move toward green building.
Habitat for Humanity of Michigan – Phillips, Thom

While I agree that Energy Star needs to make efforts to remain a step up from energy codes, I do have some concerns about Energy Star 2011 requirements. As a certified HERS rater, I am not certain that our training has prepared us for the changes proposed. Also, the time commitment that will be required to verify compliance will drastically change the timing and pricing policies that we will need to employ. Having read the proposed changes, I applaud the intent to rectify what we all agree are shortfalls of the current Energy Star program, but Energy Star 2011 might be taking too big of a bite too soon.

As someone involved in affordable housing, I have thus far been able to justify the additional expenses of achieving Energy Star status with simple monthly payback calculations. I am not confident that we will be able to show positive cash flows to low income home buyers with Energy Star 2011.

Energy Star is a great building science based program and some changes are indeed needed to ensure that homes are treated as the systems they are to ensure health and safety of occupants. But if it becomes exclusive on account of its' own requirements, it may have less of its' intended impact on the global environment and the built environment. We would have to seriously consider our participation in the program if we cannot economically justify the costs to certify our homes. As is usually the case, some solution lies in the middle of both extreme sides of the argument. Make the changes that are important and urgent to keep Energy Star a step ahead of most energy codes, but be careful about creating yet another green building program.

Harris, Andrew

I respectfully request that the time period to provide comments be extended to the end of this month and that once all comments are addressed and a revised document posted that a second comment period be provided. Comments on checklists enclosed. Comments previously submitted on proposed National Program Requirements.

My comments are not as well developed as would have preferred given time constraints.

As requested yesterday, I request that once all comments are addressed and a revised document posted that a second comment period be provided and be open to the full document and not just the changes.

My comments are submitted by me as a person and are not reflective of any positions, opinions or belief of others.

A separate general comment is that I do not believe the current program nor the proposed program adequately addresses existing properties. The proposed requirements and checklists may serve as a barrier and a disincentive for existing property owners.

I look forward to the revised guidelines.

Comments to 2011 National Program Requirements

General

The 2011 National Program Requirements are not well presented in a user-friendly manner.

The exhibits to the 2011 National Program Requirements are excessively laden with notes such that the exhibits are unreadable. The text of the exhibit is in many cases contained in the footnote and not in the exhibit.

Documents referenced in the 2011 National Program Requirements are poorly located. The affect of any referenced document is not made clear, particularly where any such document is an "additional resource." Please review the *Guide to the use of standards in the ICC international codes* for assistance. Also refer to the Construction Specifications Institute's *Manual of practice* for drafting techniques.

Language lacks clarity. The use of "recommend" should be stricken. This term is generally disliked as one may interpret it as being obligatory. The fact that the EPA recommends an action should not be open to interpretation that it must be good otherwise the EPA would not have recommended it therefore it should be done. Using recommend further implies an additional voluntary action in what is already intended to be a voluntary program but affords no quantifiable benefit to the user. Because the program is itself voluntary does not mean that language within the program should be voluntary. Prefer use of "shall" in all cases and that the use of "may" or "recommend" be eliminated entirely.

Exhibit 1

- Why have a box next to each mandatory requirement as if each box is to be checked.
- What sockets are subject to this requirement?
- What are bathroom exhaust fans a separate item and not part of a broader ventilation requirement?
- Why must a ceiling fan be an ENERGY STAR labeled product if not required to be there in first place? This
 seems to fall under Note 6 that is god but should not be mandatory.

Exhibit 2

Radiant barriers should not be required. Their long term performance is not proven and to date many claims have arisen resulting from or relating to such applications.

Requiring radiant barriers will have the effect of requiring truss heels as no insulation can be in contact with the radiant barrier. Truss heels should not be required, directly or indirectly, in 2006 IECC Zones 1, 2, or 3. Section 402.2.1 of the 2009 IECC does not require truss heels when attic ceiling insulation values are below R-38.

No prescriptive alternate to a radiant barrier is provided.

The type of ductwork is not defined. Is ductwork solely for pressure balancing and not for conditioned air distribution exempted?

What does "insulation levels shall meet or exceed the 2009 IECC" mean? Does this imply that compliance with the 2009 IECC under Section 405 with insulation values less than those in Tables 402.1.1 or 402.1.3 is no longer permitted? Note 11 does not help and further confuses the issue. Note 11 seems clear in its intent not to permit values less than that required under Sections 402.1.2, 402.1.3 and 402.1.4. This wholly obviates the flexibility and ability permitted under the performance approach, Section 405. Please recall the prior noted sections are not mandatory under the 2009 IECC but this note makes them mandatory under the 2011 National Program Requirements.

What is an "EPA-approved verifier" under Note 20 versus a Rater under Note 1.

Note 1 states, "depending on the compliance path selected." This implies there is more than a prescriptive and a performance path. As there are only 2 paths, state the path that this statement applies to. I would also like an affirmative statement that this does not apply to the other path. Would prefer to have listed what type of Rater is permitted to do what under each path.

Avoid the use of "may" in any text.

The reference in Note 2 does not define how to calculate a framing fraction. Is the calculation of a framing fraction required? What does one do with it under the 2011 National Program requirements as exhibit 2 seems silent on its requirement and its use and application? Why is the reference provided for comparison only if it is not a requirement? No reference intended to be made part of the requirements should be contained in the requirement. I must assume the use of comparison is used as the author did not want to be bound by the content of the comparison.

Note 7 refers to benefits. Any potential benefits should be in a separate document and not in the text of any requirement nor should such be referenced in any requirement. Note 7 is not needed and serves no purpose as a note to a requirement.

Note 6 should be stricken. If this is to be a requirement then make it such and do not use language with differing intent with unintended application to the requirement. Same applies to Notes 17 and 20.

Note 5 implies that no other climate is unique.

Under Note 3, when is the EPA to provide corresponding modifications to those states that only have a performance approach?

Hopefully Note 13 will not refer to uncompleted documents when this 2011 National Program Requirements document is finalized.

Note 15 is too ambiguous. What is "evenly distributed to four cardinal compass orientations" mean? How is it interpreted and applied? If windows are not evenly distributed, is a home disqualified? Why should the program require windows on side lots where distances between structures may be very low? As window locations ar3e taken into account under ACCA Manual J and D, why is window distribution even a requirement? The effect of this provision will be to increase the window count for no reason whatsoever and will likely correspondingly increase energy usage.

The above grade and below grade definitions do not comport with those in the IRC. They should match or the note should make clear the definition is different.

Note 20 as written will have many unintended consequences.

Note 23 is concerning. Why is Note 23 not next to Note 2? Exhibit 3 should be made part of exhibit 2.

"Bedroom" is not expressly defined in the IRC. A bedroom could be required to be 120 sf if all other habitable rooms are less than 120 sf. "Egress window" is not defined in the IRC. Section 310 and not 311 applies as presented in the note.

The list of rooms under Note 23 is inclusive and limiting. Preferable to say all other rooms other than living rooms and foyers. What about great rooms, lofts or halls? The term "bedroom" should not be used at all. I assume rooms and areaways or passageways with no door are not a bedroom.

Comments to 2011 Checklists

General

How is a Rater to permit exceptions to inspections for the Thermal Bypass and Water-Managed Construction Checklists? If at discretion of Rater how is builder to decide to assume or not or is this only an accommodation to scheduling purposes as the number of permissible exceptions are expressly set forth? Can the same items always be verified by the builder?

I can count on one hand the number of raters that currently know anything about Water-Managed Construction. Why would I want to rely on a Rater for something well outside the scope of their basic training and competencies?

Same comment to Note 1 as to use of rater as on 2011 National Program Requirements. Many of the checklists cannot be completed in one trip or inspection. How are multiple dates handled?

Many of the checklists items cannot be signed off until other items on other checklists are first signed off as being inspected and passing. The checklists do a poor job of identifying conditions precedent. I could easily see a Rater missing many items as they may not understand the sequence for all items on one topic to be approved.

Not sure if I like the concept that compliance with these checklists comports quality. Need general objective on product selection. Should have put in comments to 2011 National Program Requirements.

- 1. Products and materials should be relatively easy to work with and to install. Ease of constructability should be readily repeatable.
- 2. Products and materials shall be cost feasible.
- 3. Products and materials should require as little multi trade involvement as possible to achieve the desired outcome. Multi trade involvement shall be clearly coordinated, articulated and segregated.
- 4. Products and materials not accessible after the completion any construction process should be selected to remain functional for a service life compatible with that of other products and materials in each applicable assembly or system.
- 5. Products and materials should be sufficiently durable to withstand the rigors of the construction processes.
- 6. Products and materials should be compatible.
- 7. Practices and details with fewer products and materials are preferred.
- 8. Products and materials should be utilized only for their intended purposes. Alternate applications or purposes may be considered where approved in advance by the applicable manufacturer(s).
- 9. Products and materials should be substitutable.

Quality Framing Checklist

The Quality Framing Checklist has nothing on framing fractions and what role they play, if any.

If R-values are to be specified for prescriptive applications, are these R-values based on rigid XPS or EPS or polyiso? I believe the checklists avoid this issue but conversely set a minimum R-value that is not achievable if one selects certain type of product? Is this intended?

Why must something be prefabricated if it can also be done on site?

Raised heels are essentially required for all roofs regardless of insulation depth if the full depth must be maintained over the outer plate. This is unnecessary in climate zones 1-3. This is also contradictory to Section 402.2 that permits reduced insulation amounts in climate zones 4 and up. I interpreted this checklist to override Section 402.1. The effect of this item is to also impair architectural design as the elevation will increase in height a corresponding amount equal to the truss heel. This increase will be not less than a nominal 2 by 12. See general thickness guidelines below for loose-fill insulation.

Min. thickness (in.) R-value Machine manual

R-38	14.25	11.88
R-30	11.25	9.38

HVAC Quality Installation Contractor and Rater Checklists

Most of this is well beyond the training and competencies of any Rater.

Much of the checklist is devoted to reviewing the installation contractor's checklist. It seems to be wasted space. Why not place an additional column on the installation contractor's checklist for the rater to initial off reviewed.

I would prefer much of this stuff be inspected and verified at the design stage and not the installation stage. Much of this is not easily fixed. You would be better off requiring a true HVAC plan overlain on the structural and requiring it to be signed off by the Rater.

This is the first instance I see that the outdoor design temperature can be anything so long as it is based on local prevailing practices. What if the practices are to use the 99.6% design or other extremes?

Air flow permitted tolerances are absurd. With 20 cfm design flow the permitted field measurement is 19-21 cfm otherwise the whole house fails and cannot be ENERGY STAR qualified. I do not think this is intended.

Why is there no requirement that all supply delivering less than 20 cfm be eliminated? Other tolerances are too tight and inflexible. I question how many houses currently ENERGY STAR qualified may meet these.

Is static pressure measured with accessories and filter or without? I see a MERV 8 filer is required under the Indoor Air Quality Checklist but is not mentioned in this checklist and that the static pressure must take the additional restriction into account.

Why no tolerance on charge?

Included below are some more manageable and consistently achievable requirements.

- 1. Air flow at supply plenum is within 10 percent of manufacturer rating.
- 2. Air flow to each room is within 10 percent of design airflows for airflows above 80 cfm and within 20 percent of design for airflows below 80 cfm.

How are differing equipment rating accounted for when operating at peak load or at elevated temperatures?

Why references to the 2004 Supplement to the IRC. All references to the code should be as to the 2009 IRC or IECC. I understand that ENBERGY STAR is based off the 2004 versions but with this update I assumed the references would change. I see many references on the EPA's site as to 2004 IRC and/or the 2004 IECC. Is the current ENERGY STAR program based on both or is it only the 2004 IECC.

Indoor Air Quality

62.2 is a whole checklist in of itself.

I assume there should be an upper end to continuous. Intermittent rate has no tie to actual moisture loads. This seems inconsistent with all other requirements.

How does 2.5 apply to 2.1 and 2.2? Many kitchen fans are at this limit. Most range downdraft or hood fans exceed 400 cfm with some at or around 600-800.

Is kitchen ventilation required in all cases including if no fossil fuel burning appliances present?

What if bathroom is broken into multiple rooms? Is this applicable to water closet room in addition to the main bathroom. What if MBR closet open to MBR bath?

Many HVAC chases are located in garages but are enclosed in a framed chase. Is this acceptable?

No garage door can be completely air tight.

The language in 7.2 does not match the R315.1. 7.2 does also not meet NFPA 720. See Section 9.4.1.1.

Do inlets require dampers? If vent inlets are automatically operated, what affect under required ventilation rate if automatic?

Water-Managed Construction Checklist

1.2 is already in the code. Why here?

ACI recommends 10 mil polies as a minimum. Note 3 is off and fails to address requirements of floor covering manufacturers.

All under slab vapor membranes should be placed in accordance with the latest American Concrete Institute ("ACI") Committees 302, *Construction of Concrete Floors*, and 360, *Design of Slabs on Ground*, recommendations that slabs with vapor-sensitive floor coverings should always have the vapor retarder or barrier in direct contact with the slab. (Reference Addendum to ACI 302, 1R, 2001). Assume all floor coverings are or may be sensitive to vapor transmission (*Reference* Ceramic Tile Institute of America1, Carpet and Rug Institute2,3, Resilient Floor Covering Institute, Tile Counsel of North America4 and the similar professional trade association publications that recommend moisture emission rate from the concrete not exceed 3.0 pounds, or in some cases 5.0 pounds, of water per 1,000 square feet in 24 hours). This also permits the homeowner flexibility in placing most any floor covering at a later date. As such, all under slab vapor retarders and barriers SHALL be placed in direct contact to the concrete in all cases.

All under slab vapor retarders and barriers should be installed in accordance with ASTM E 1643. All under slab vapor retarder should comply with ASTM E 1745, Class A or Class B, with a maximum water vapor transmission rate as previously specified.

Vapor retarder or barrier should be placed under and around all ribs, footings (integral, isolated, etc.), grade beams and the like. Consider wrapping vapor retarder up sides on exterior and below sill plate (and sill foam or sealant).

What about requirements for tubs and showers? Don Halvorson of Forensic Tile Consultants has estimated that the average shower enclosure or environment, with just one user, can be subjected to more that 83 feet of water annually. "Some statistics estimate that approximately 40 million showers constructed in the US leak because they were built incorrectly and may contain mold while other experts estimate that over 95% of the showers are leaking."

Solid blocking (2-inch by 4-inch) should be provided around full perimeter or lip or support for shower pans, tub decks, shower seats and the like. Place blocking with tall dimension (4-inch nominal) flush with inside face of framing.

Self-adhesive, SBS or butyl, flashing should placed over solid blocking (behind the drywall (or cement board)) and over the pan lip or flange around the full perimeter.

Where drywall continues down behind any deck or pan flange, seal the flange with double sided SBS or butyl tape. The Ceramic Tile Institute of America recommends 6 inches minimum of flashing at the wall-to-tub/receptor transitions and at the shower-

dam/curb-and-threshold transitions areas to the outside of the shower. A list of potentially permissible flashings is included later.

1.6 seems to require a foundation drain or drain tile in all instances regardless of foundation type or soils conditions. Many crawl spaces do not have foundation drain systems installed in them. Drain systems should not be installed at the footings and placed level in expansive soils. What about foundations on drilled piers?

Many downspouts are placed on side elevations and discharge perpendicular to the lot line. As the setback is in many instances only 5 feet downspout extensions themselves are not 5 feet or greater. Many may be only 4 foot in length.

2.1 does not address bottom of walls at roof lines on headwalls and sidewalls.

Why must ice and water shield be used in all valleys? What food does a self-sealing membrane do one at a penetration by itself? It could be on the upper side of any flange as flashing below the underlayment but as drafted seems meaningless.

How far of a separation is needed under 4.1?

Note 13 states 18% but code states 19%. Not sure in IRC. See IBC 2303.1.8.2.

2.3 states pan flashing required for all window and door sills. Is rigid and flexible pan flashing permitted? What constitutes a pan? Many rigid pans on the market by prominent manufacturers do not slope.

Change references to 2004 IRC as previously discussed.

1 See CTIOA Field Report 2001-6-01, The Elements of Moisture and Effects on Ceramic Tile and Stone Installation.

2 As a general guideline, an emission rate of 3 lbs. or less is acceptable for most carpet. In the range from 3 to 5 lbs., carpet with porous backings can usually be installed successfully; however, the risk of moisture related problems increases. Since some floor covering products are less tolerant of moisture than others, always consult the individual manufacturer to determine the acceptable emission rate for specific products. See Floor Preparation under Installation.

3 CAUTION: Carpet installed in the presence of excessive moisture emission or alkali has a high risk of failure. Concrete, not properly placed or cured in accordance with recommended American Concrete Institute standards, may exhibit moisture emissions that exceed the tolerance of the carpet and/or adhesive selected. The determination of compliance with ACI standards, including moisture emission and pH testing, is outside the scope of responsibility of the carpet manufacturer, retailer, or installer. Some floor covering products, and installation methods, are more tolerant of moisture and alkali than others. Carpets with impermeable or non-porous backings in glue-down applications are considered the most critical. Most adhesive manufacturers require that carpet be installed only if the moisture emission rate as determined by the anhydrous calcium chloride test is not more than 3 lbs/1000 sq. ft./24 hours. Procedures for conducting calcium chloride vapor emission tests are outlined in ASTM F-1869-98, *Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride* (updated 2004). The presence of excessive surface alkali can destroy most floor covering adhesives. Concrete sub-floors with a pH greater than 9 requires corrective measures before carpet installation using adhesives. Moisture and alkali may have less impact on the success of carpet installations when stretched-in over separate cushion. Excessive moisture emissions in all methods of installation may result in mold and mildew growth and in indoor air quality problems. *Reference* CRI 105-2002, 18 *Standard for Installation of Residential Carpet*.

4 See TCA, Handbook for Ceramic Tile Installation, and ANSI A108/A118/A136, Specifications for the Installation of Ceramic Tile.

Hathmore Technologies, LLC – English, Mary

I appreciate that you are trying to make the Energy Star program more stringent for energy reduction in new homes. However, I am concerned that as it's proposed, it is so complicated now that the bar will be raised so high that most builders will be scared off. I like the house size adjustment. My only other suggestion is to besides that addition, make the Indoor airPLUS required now and call it a day. Adding this to the existing requirements (TBI, insulation grading, Manual J, etc, etc), this would raise the bar enough and cover the rest of the bases without making the program so complicated as to render it powerless in the market.

Head's Heating & Air Conditioning – Head, Ronnie L. Sr.

I think that you are making a big mistake. You will see the builders pull out! Their coast will go up to much. The rating prices will triple. the air Conditioning prices will increase about 30% I want to see the program grow but I believe it will go down hill. With these changes it is too much at one time.

Head's Heating & Air Conditioning – Piff, Carlo

I am Carlo Piff and I work at Head's Heating and Air along with Ron Head. I am an EnergyStar rater through GWS (Guaranteed Watt Savers), #061, and I feel like the EPA and EnergyStar are ruining a good thing.

The fact that EnergyStar is focused on the finished house energy consumption is an ideal niche to focus on. It was a reasonable improvement over ""standard"" construction while still not adding excessive cost to the builder and homebuyer. It is something that many people feel is achievable while not limiting their opportunities to get their houses sold. If you add thousands of dollars in requirements, no matter how logical they are, you will lose participants. In our climate every house would have to have a whole house dehumidifier to comply and I don't see the builders knowing how to pass on that cost. We like and sell dehumidifiers however we know that starter homes can't bear that initial cost and still compete with non EnergyStar homes when those builders still call themselves efficient and the consumers don't know enough to tell the difference.

Also, many other programs are saying that EnergyStar compliance is a must to participate in their program. These changes are putting them in head-to-head competition with the other programs. Will other programs delete EnergyStar and make their own version. Why shouldn't they?

If this goes through I foresee builders switching to the other programs exclusively or just forgetting about the idea of having any type of rating done on their houses. If they build right and get a few testimonials they can market their houses without all the hassle and expense this draft would force on them. And most homeowners don't realize the house has a higher appraised value until after they have committed to buying. All they'll know is it costs too much more than that other nice looking house down the street.

By trying to grab for more I feel they may lose more than they had to start with!!!! Don't ruin a good thing!!"

Heatmiser Home Energy Consulting, LLC – Puffenbarger, Jason

Regarding the proposed changes to Energy Star for Homes in 2011, I would like to briefly offer my opinions. Currently I believe less than 10% of homes are ES certified, a small but growing number. The builders that I currently work with truly want to build quality, energy efficient homes and have done so even before getting certified as ES. While they value the ES label, the cost of testing each home adds to the cost of the home in the worst market most home builders have ever seen.

The new guidelines will add yet more costs to home builders, both due to additional costs to meet the new guidelines as well as the cost of the additional work that home energy raters will have to do to certify the homes. In a depressed housing market builders can no longer afford to add to their costs. It is my belief that many home builders will simply abandon Energy Star yet still continue to build quality, efficient homes.

The complex new guidelines will also deter new builders from joining the program as even current guidelines require a learning curve for even experienced builders.

Please keep Energy Star for Homes at a level of quality AND simplicity that quality home builders want to participate in. I'm afraid that increasing costs and confusion in a battered home building market will have the unintended consequence of disinterest.

Heinbecker, Kurt

Nothing bothered me but the seven choices you gave for framing. Really there were two choices for most builders and with shear framing being what it is you only have one choice for most builders to follow. The first. I need to understand that option better and I need more information to do that.

Highland Building Consultants – Meek, Douglas

Highland Building Consultants promotes cost effective home improvements for the Wisconsin ENERGY STAR Homes program. We have processed over 1,000 houses that are listed on the national ENERGY STAR web site. We have over 75 builder clients that we work with on a regular basis. Most of them are custom home builders that pitch the program to each of their customers, and have the customer decide whether to enter the home into the Wisconsin ENERGY STAR Homes Homes program.

There is hardly anyway that a builder will be in the program following the proposed changes for 2011 standards. The increased costs do not translate to actual energy savings on almost every one of the homes I have worked on to date. I was under the impression that this program was supposed to be cost effective improvements for residential construction. I have always dealt with my builder partners by suggesting cost effective improvements that have actual savings associated with the costs.

The market in my region could not support this increased cost for these new requirements to the program. I fear that I will be working on residential homes that are not certified through the EPA program.

One recommendation would be to lower the rating score by ten percent. This would actually lead to more efficient homes across the country. Also, builders and their customers can decide which improvements to make to reach the new targeted rating score.

If some of these other changes are going to be adopted, then the national program should have a list of trade offs. A builder or home owner would be able to decide the improvements for a particular residence based on cost and how much value is added to the home.

Hissong, Matt

It is hard enough to build a home in this market maybe next year things will be better. please don't make it more expensive to build a home.

Holcombe Enterprises – Pintok, Les

I am a ResNet rater and in working my way through the proposed changes it was evident that Energy Star homes are taking a step backwards. With the additional checklists and risk absorption I would have to raise my fees. I have discussed the proposed changes with the contractors that I work with and they feel that the additional cost would basically force them to forgo the Energy Star certification. The concept of pushing the window is fine but the proposed changes are way over the top.

Home Builders Association of Georgia – Hicks, Deron (on behalf of HBAG)

Please accept the following comments on behalf of the Home Builders Association of Georgia (the "Association") with respect to the Proposed New Guidelines for ENERGY STAR Qualified New Homes.

The Association has carefully reviewed, among other materials, the proposed national program requirements and the proposed quality checklists. According to the information accompanying these materials, "EPA is revising the guidelines for ENERGY STAR qualified homes to ensure that homes that earn the label continue to represent a meaningful improvement in energy efficiency over homes that that are built to code or standard builder business practices." However, based upon our review of the material provided, we do not believe that this statement continues to reflect the core purpose of the ENERGY STAR program. Rather, it appears that the true purpose of the proposed new guidelines is, as reflected in EPA's ENERGY STAR 2011 Fact Sheet, to "help EPA meet its broader goal to transform the housing industry to building homes with less environmental impact and increased homeowner benefits, including greater affordability through lower energy bills, along with improved comfort, indoor air quality, and durability." As this statement indicates, the goal of "lower energy bills" no longer represents the program's core focus. This change is reflected in many of the checklists included in the proposed guidelines, to include the Indoor Air Quality Checklist and the Water-Managed Construction Checklist. While these checklists may reflect quality building practices, it is often unclear how these practices relate to the goal of energy efficiency.

Builders and consumers associate the ENERGY STAR label with energy efficiency. In our opinion, the program is not viewed by the public at large as a comprehensive "green" building program (although energy efficiency is certainly a component of any green program), or as a program designed to improve indoor air quality or water management. The Association therefore believes that the proposed new guidelines will inevitably result in consumer confusion and uncertainty. Such confusion and uncertainty will only serve to undermine the value of the ENERGY STAR brand.

The Association respectfully submits that the proposed guidelines should be significantly revised to focus exclusively on those practices that will increase energy efficiency. Moreover, the program should strive to become more result-oriented and less process driven. That is, although EPA's guidelines should suggest best practices to achieve the goal of energy efficiency, the ultimate criteria should be whether a particular builder has delivered a product that satisfies the goal of energy efficiency, regardless of the particular path taken to achieve that result. Builders should be encouraged to utilize creative new techniques, products and designs – even if those techniques, products and designs are not included within current guidelines.

Home Builders Association of Lexington – Beck, Sandy (on behalf of HBAL)

The Home Builders Association of Lexington (HBAL) hosted two discussion sessions with a combined total of 80 industry professionals in attendance from Kentucky and surrounding states who have a direct concern about the impact the proposed 2011 ENERGY STAR New Homes Guidelines changes will have on their businesses. We were honored to have Sam Rashkin personally visit and present the proposed changes to both groups on June 30th, 2009, as many questions were raised and clarifications needed. On behalf of those 80 attendees and members of the Home Builders Association of Lexington, we respectfully submit the following comments and position statements to the EPA for consideration.

Exhibit 1: ENERGY STAR Mandatory Requirements for All Qualified Homes

It is our position that **Lighting and Appliances** as well as **Water Management** need to be evaluated separate and apart from the ENERGY STAR blue label. Building Science alone should be the basis for scoring to earn the ENERGY STAR blue label on a new home.

If lighting and appliances stays as a part of the evaluation process toward earning the ENERGY STAR blue label, we strongly encourage the EPA to change the language under #4 Areas of Improvement where it states Advanced Lighting Package (ALP), or ENERGY STAR bulbs in 80% of sockets, shall be installed to read: Advanced Lighting Package (ALP), or ENERGY STAR bulbs in 80% of fixtures, shall be installed.

There is a concern that homes with chandeliers could cause a home to fail in this area due to the potentially large number of "sockets" in one light fixture. Changing the language to read "fixtures" instead of "sockets" will help.

Ventless fire places will be installed in climate areas where ice storms occur. We recommend the EPA take this into consideration before finalizing the **Indoor Air Quality Checklist.**

ENERGY STAR rated ceiling and bath fans should be encouraged but not required as they will add considerable cost to the affordable home. Fan sound ratings have no bearing on efficient use of energy.

Exhibit 2: Reference Design

The ENERGY STAR for New Homes Program is a voluntary labeling program that defines "energy efficient" and recognizes builders. We believe also that the blue ENERGY STAR label should be a trusted label for the second home buyer as well as the first. Because appliances, lighting and equipment efficiencies can be changed, the label may lose credibility with the resale. We strongly suggest that the EPA consider basing the ENERGY STAR for New Homes program on building science alone. Lighting, appliances and other equipment efficiencies should be offered as up-sale, stand alone options for upgrades – not to be represented by the blue ENERGY STAR label.

Affordability

The EPA has stated there will be a quick pay back. This is not accurate in all markets – certainly not in the state of Kentucky. We strongly suggest that the EPA take into consideration the low electric rates in the state of Kentucky when calculating the return on investment over time.

The Home Builders Association of Kentucky is proud to be in the forefront with its aggressive support of the ENERGY STAR program and with the Green Build Kentucky guidelines. Kentucky's awareness of energy efficiency is widespread. Kentucky's builders are some of the most aggressive in the nation with regard to understanding and building high performance homes. We have worked hard to encourage Home Builders Association members and the community to embrace ENERGY STAR and green build concepts and practices. We have reached out to surrounding states with education opportunities, public relations efforts and promotions. The response we have seen has been overwhelming and impressive.

We feel very strongly that maintaining affordability is the key to the future growth of the ENERGY STAR Homes program. To maintain affordability and to maintain trust in the ENERGY STAR label, the program must be based upon sound building science and kept separate from lighting, appliances, equipment efficiencies and water management. Lighting, appliances, equipment efficiencies and water management all should be handled as add-on optional upgrades.

CHECKLISTS

Quality Framing Checklist & Notes HBAL Comment/Position

The use of a raised heel truss to allow full ceiling insulation height over the top plate is not a problem because truss manufacturers can design for the loads. However, with conventional roof framing the issue of how to raise the roof rafter and provide the proper fastening method to support the horizontal load at that location is not properly documented. Either

proper fastening methods must be documented or the requirement for full ceiling insulation height over the top plate for conventional roof framing should be eliminated.

HBAL Comment/Position

There is a concern about the measure of insulation levels. We suggest the EPA develop an alternative measure of insulation levels when deed restrictions or costs prohibit the use of raised heel trusses. This is applicable when there are height restrictions.

HBAL Comment/Position

There is a concern that the new ENERGY STAR Reference Design Home approach separates the program from the 2009 IECC code and will create confusion for both builders and consumers. While the previous method may not have resulted in the actual percentage savings over code desired the concept was clear to everyone and simple to explain. With the current move toward a national energy code it would appear to maintain that as a base for comparison is a good idea. In addition, the Reference Design Home approach is not based on any "standard" so it must stand on its own.

The Reference Design Home appears to be similar to the 2009 IECC Standard Reference home, however, in some cases it is more stringent and in others less, for example Glazing. The use of a separate Reference Design Home also increases the complexity for the software developers. The newest versions of some HERS approved software include a 2009 Code compliance calculation so the incorporation of that as a new base does not appear to be problematic. If the ENERGY STAR standard was 15% better than the current IECC code then everyone understands the point of reference and that the target will shift every three years. Using a concept similar to the 2005 Tax Credit it would be possible to insure that improvements in the envelop performance were required to obtain ENERGY STAR certification.

The Reference Design Home also changes the focus of the ENERGY STAR certification program as a program to encourage builders to find and adopt energy saving practices to one that defines what those practices are. While the building science principles behind many of the Reference Design Home specifications are sound they could limit the ability of a builder to be innovative. As the current state of technology and materials change in the home building industry it would appear to be better to set a target to achieve than to set standards they must utilize.

HVAC Quality Installation Contractor Checklist

HBAL Comment/Position

There is a strong concern about the builder's ability to have any control over the installation quality of the HVAC system. The HBAL supports proper installation of this equipment as it is imperative for optimal performance. If this is to be a factor in the scoring process for and ENERGY STAR Home, The HBAL suggests the EPA provide training modules on the proper installation of the qualified equipment. Installers should be certified ENERGY STAR system installers. This suggestion, however, does not override the HBAL position on basing the ENERGY STAR for new homes program on building science alone without including equipment efficiencies

Indoor Air Quality Checklist

Ventilation

3. Fan Sound Ratings; 3.2

Intermittent fans rated at ≤ 3 sone, unless maximum rated flow rate ≥ 400 CFM

HBAL Comment/Position

This requirement is obviously designed to require ENERGY STAR rated fans which will add an excessive increase in cost for affordable housing. The EPA should assist the affordable housing builders with literature that will encourage, rather than require ENERGY STAR labeled fans.

Combustion Pollutants

7. Appliances and detectors; 7.1

No ventless combustion appliances installed, except for kitchen cooking devices

HBAL Comment/Position

Ventless fire places will be installed in climate areas where ice storms occur. We recommend the EPA take this into consideration before finalizing the Indoor Air Quality Checklist

Water Managed Construction Checklist

HBAL Comment/Position

Water Management is a green issue that should be evaluated separate and apart from the ENERGY STAR Qualified Homes program as a stand alone – not represented by the ENERGY STAR blue label. Inclusion of measures of this type dilutes the credibility and significance of the ENERGY STAR label.

CONCLUSION

On behalf of our members and all discussion participants, the Home Builders Associations of Lexington and the state of Kentucky applaud the EPA for the proactive nature of the proposed 2011 changes to the ENERGY STAR HOMES Program.

We understand the passion behind the desire to create comfortable energy efficient living by setting the bar high and encouraging builders to have a desire to offer the prestige of an ENERGY STAR labeled home. We share your passion. We also understand that passion must be tempered with reality so that we do not set ourselves up for failure. Reality is that consumers have a long way to go before they ask for, let alone demand an ENERGY STAR home. Today, they are curious. Curiosity alone is evidence that consumers have the desire to do the right thing to conserve energy. But if it hurts too much (cost prohibitive), consumers will walk away if they can. When the cost of the changes overburdens the builders because consumers are not asking for it, you are going to lose the builders.

Let's work together to keep the builder interest high, continue to grow their participation and build a promising future for the ENERGY STAR New Homes Program.

Home Building Technology Services – Nagan, Joe

Since the release of the Proposed Version 3(V3) documents on May 8, 2009, I have been painstakingly sorting and reading through mountains of building science manuals, research documents, case studies, and Wisconsin specific research done by The Energy Center of Wisconsin. The State specific study topics include energy, technology, characterization studies, as well as *potential* studies which give us an idea as to *what and where* the most promising areas are related to energy savings. While I write this comment paper I am surrounded by over 26 years of research documentation. I think it is clear to say that *we do know how buildings function* and *have known this for a very long time*.

Having been to several of Sam's preliminary presentations on V3, I had a good feel for the intent and content to be released. I knew that any comment sent to the Homes Team would have to be specific and provide supporting content if expected to have any impact on the proposed changes to the current guidelines.

In an effort to do so, I would like to offer my comments from 4 perspectives, they are:

- Personal overview & comments
- Technical justification comments
- Business impact comments
- Recommendations

Personal overview: Having a very strong mechanical background I have always been fascinated as to just how things work. Having mastered both the automotive and commercial machinery fields, I turned my attention to the residential construction industry in 1983. My interest was driven by the fact that I had just built a new small home myself and I felt it did not work very well. It was uncomfortable and had much higher utility bills than I was told I should expect. To fast forward 26 years I can summarize my accomplishments since then:

- I have developed a small but successful Consulting business that works with home owners and builders primarily
 addressing the construction of new homes. My core service is designed to help them get the best performance
 out of the *potential* of their unique design and budget.
- I have won the EEBA, International Design Competition for Energy Efficient Homes, for a home I helped design, build and commission here in Kaukauna, WI.
- I have developed a home building training service and offer training services primarily serving the Midwest cold climate area.
- I was directly involved in the development of the Wisconsin ENERGY STAR Homes Program and currently serve as Technical Director for that program.

The reason for providing this personal overview is that I would like to substantiate that I do have a very good feel for the home building industry here in Wisconsin, from both the builder and home owners' perspective. Wisconsin is a recognized leader in energy efficient home construction. This comes from very strong leadership at the State level (DOA) as well as from the Utility Companies.

The Wisconsin residential building code (UDC) has had an energy component since 1980 and has always adopted requirements *above the base model code*. Wisconsin has just adopted the 2006 IECC (4-1-09) as the new base code, but again has added requirements above the base model code showing their strong commitment to energy efficiency. These code requirements establish a very strong base for efficiency here in Wisconsin.

Also since the 1980's, Wisconsin's Utility Companies have been promoting energy efficient new home construction. Wisconsin Public Service, one of these companies, not only ran programs such as the nationally recognized 'Good Sense' program and offered financial incentives to participate, they went even further. In an effort to support their new home program **and get buy in from the building community**, they held workshops in seven locations every year. All seven events, every year, were standing room only with more than 300 attendees at several locations. To make sure the information was reliable and accurate; they hired Oliver Drerup and Ned Nisson to do this training. These two gentlemen were at the very forefront of the energy efficient housing movement that we are currently part of today. Very little of the core building science has changed since then.

Everyone involved in the Wisconsin new home housing industry has had access to the very building science and energy efficient practices that are now being promoted in the proposed V3. Combine this with the State commitment from a policy perspective as well as the UDC energy codes over the years, and it's no wonder that new homes built here are very energy efficient and include most of the building science practices included in V3.

This leads me to my specific comments on V3.

Having been involved with the Wisconsin **ENERGY STAR** Homes Program (**WESH**) since it's inception, both from the program perspective and as a Rater, it gives me a pretty good feel as to just how far we can push this market in a *voluntary program.* Our new home market is primarily made up of small building companies building custom and/or speculation homes. This market makes up 100% of my personal rating service work as well.

When our WESH program started in 1999 we were given permission by EPA to add State specific requirements to enhance the value delivered. The WESH program has *always required* the following *since 1999*:

- Tested air tightness requirement better than the EPA Homes BOP spec
- Tested whole house and spot ventilation systems including range hoods ducted to outside
- Non-spillage susceptible combustion appliances including all fireplaces
- Sealed sump pits
- Carbon monoxide detector(s)
- Multiple Site visits that addressed the majority of the items of the current TBC and every home gets tested, no sampling, none.

We felt these additional items would provide substantial energy savings as well as address widely held building science principles. This package has worked well for over 10 years and 11,000 homes. We were able to demonstrate the value of these added requirements in terms of reducing callbacks while improving performance, while being reasonable in our approach.

*This is where the Proposed Version 3 package comes in. Since the release of the proposed V3 I have met and talked with a substantial number of Builders and Raters. As a result, in my view of the housing market here in Wisconsin, this proposal goes *well beyond* what our market would *support in a voluntary program* for several reasons, they are:

- The baseline quality of homes built here as described previously
- The substantial increase in both construction cost and Rater fees
- The lack of perceived value to the Builder along with their reluctance to promote (higher cost could cost them the job)
- The lack of perceived value by the consumer and their reluctance to pay
- The lack of substantial 'program incentives' as compared to other States
- The fact that this proposed update was not 'tested' using focus groups of builders and consumers
- The current lack of interest in other beyond code programs such as Green Built and Leeds for Homes
- The failure of The American Lung Association Healthy House program
- The lack of participation in the Building America program even though we have had a State partnership with DOE BA Teams.
- Builders feel that they are already building homes that meet current expectations from the majority of home owners, especially based on the value proposition: cost versus delivered product
- Unlike the electronics and automobile industry *which we expect to evolve* almost on a regular basis, people do not expect the housing industry to change at the same pace. A house is not considered a throw away item.

Consumers want to see home building *products and building techniques they're familiar with,* this is why in my view other technologies such as SIPS and ICF have such a small market share here, even after all the years of being available. *Electronics and cars can be tried and returned if they don't meet customer's expectations. Homes cannot be.* The perceived value must be undeniable and without question. Upfront before purchasing, any additional costs for an ENERGY STAR qualified home compared to a non ENERGY STAR home will be scrutinized with a fine tooth comb. Unfortunately when it comes to energy, consumers immediately throw out the question: "What's the payback and where are the incentives to pay for this?" Having noted our strong Utility Programs previously in this document, I must mention them again here. Incentives have traditionally been used to pull the market forward and consumers still expect substantial incentives when it comes to voluntary energy related purchases and building. We have few such incentives.

V3 SPECIFIC COMMENTS:

Exhibit 1: Mandatory requirements

- I believe the specific items under the **#3 water efficiency** and **#4 lighting and appliances** will not meet the costeffectiveness criteria *here in Wisconsin* by either Builders or Consumers.
- The additional checklists with the inclusion of specific items such as raised heel trusses and a choice of methods
 to reduce thermal bridging, look like an attempt to redefine the *'performance path'* to compliance. This looks like
 an attempt to remove this option. I feel that Builders in Wisconsin understand and can sell a truly performance

- The additional checklists will also be viewed as not showing enough benefit for the costs. Even the current TBC has not conclusively been shown to provide substantial value, even though often given *direct credit* for energy savings. When going through each of the proposed checklists it appears there is an effort to build a perfect home as if there were no limit to cost and time. This is not a real perspective of the home building industry or even customer expectations.
- The checklists do not give credit for the current state of construction here in Wisconsin as described previously in this document.

SUGGESTION: Offer additional label recognition for compliance with any of the checklists such as the IAQ & Water Source labels currently offer. WESH Builders here in Wisconsin have asked about differentiating themselves from other WESH Builders. This would allow them to do this and still allow us to recruit new partners at a **reasonable entry level basis.** We need to recruit more partners.

Exhibit 2: ENERGY STAR Reference Design

- I believe the specifications in Exhibit 2 will provide a reasonable improvement basis for our climates (IECC 6,7) when used *in the current format of comparing a 'Proposed Design' to the Reference Home.* At this time the base 2009 IECC specs would be above our currently adopted State code which as of April 2009 updated to the 2006 IECC with additional State specific requirements.
- Given this; I support the concept provided by FSEC in the RESNET position paper. This concept would continue
 to provide a HERS Index threshold for compliance based on the applicable IECC Zone. Builders are comfortable
 and feel confident with this current method.

Exhibit 3: Benchmark Home Size

I agree with the size adjustment factor that would use Exhibit 3 as its reference, as long as this adjustment is calculated by the software and then adjusted in the HERS Index threshold for that home. There are a significant number of homes built here that may be impacted but I do not think this would be a significant deterrent. I believe that since these homes will be built anyway, we can benefit from being involved with them and provide the energy and environmental benefits promoted by EPA. Owners of these larger homes often times have the financial resources to go beyond the current requirements. This is good.

TECHNICAL COMMENTS:

- Most of us in this industry understand just how difficult it can be to substantiate projections of energy savings with homes. We also understand it is very difficult to change home owner behavior. Many of the very items listed in the Proposed V3, from an energy savings perspective, could also be vigorously debated. While we do this amongst ourselves, the home building industry will be out there building homes without us because there is still a market for their current product.
- While we debate these items from a technical perspective, home owners will continue to make choices based on
 their personal value system not ours. I believe that the very reason more consumers don't choose ENERGY
 STAR Homes is that when it comes to energy savings marketing, our very industry has a history of significantly
 embellished claims. We all know what they say about that concept. "If it sounds too good to be true......."
- We all know that we can find a report somewhere to support any position we may take. This is the nature of
 research when combined with marketing.
- We need to be careful on how far we ask the building community to go especially when using *currently held* beliefs related to energy savings which have received national attention through a variety of national figureheads. The recent document written by John Proctor: "AC Sizing, Electrical Peak, and Energy Savings" dated June 1, 2009 reminds me of just why I have never jumped on that energy savings concept. Eventually concepts are reevaluated. I applaud Mr. Proctor for this document.
- I appreciate the opportunity given to me to read the *draft report, preliminary findings,* of the EPA's study of Minnesota Homes. This report also reminds me that often times, currently held beliefs, might not be able to be substantiated.

BUSINESS COMMENTS:

• Since I am a RESNET accredited Rater I will also be impacted by the final configuration of V3. With the projected increased costs for my services it is obvious that many Builders and Consumers will reevaluate the need for my services. Even with current Builders, they always have to include my costs in their bidding process. They are often at a slight disadvantage when bidding even with my average cost of \$750 for current requirements and services. I would expect a significant drop off of even some of my most valued Builder customers.

- With the Proposed V3 in its current form, I can only estimate the time it would take to even do a presentation on all the checklists and mandatory requirements. I would in all fairness, need to go through every checklist including every footnote in order to provide a thorough understanding of just what's required for certification. I estimate this to take at least 3 hours. I need to make sure that the home will be completed as required or I won't get paid and I need to be sure of this before starting any work on a new home. With custom homes, folks make frequent changes during the building process. This is the way it works.
- I can't even imagine a Builder attempting to do a similar presentation to a potential customer. I can hear the
 customer asking: "Is all that necessary? What's wrong with your current building practices?' Most Builders
 at that point would not be able to adequately represent the EPA's position and would end that conversation.

SUMMARY THOUGHTS: Joe Nagan-Home Building technology Services

It is obvious that nationally there is a competition among organizations offering *labeling* for homes. In most cases I believe the goals are admirable but the **processes influenced directly by the competition** are getting way to complicated and are now getting in the way of their very own goals.

The current consumer interest in 'going green' and 'carbon footprint' are now going to be put to the real test as costs for verification of these goals becomes prohibitive. I was concerned with this very issue as I watched the sheer increase in new home labeling programs develop over just a few short years. As business professionals watched from a national perspective, they soon realized there was money to be made in labeling and the labeling race grew substantially. I often call this a trophy race. I was, and am concerned about this race from several perspectives including the following:

- It now looks to the building community that we are asking them to support our paperwork habits. If the current V3 goes through with all the checklists being mandatory, this will be exactly the case. Yes, one could argue that my business includes a paperwork element, and that's true. However unlike a toilet or windows my services are not viewed as a necessary element in order to build a high quality home here in Wisconsin. The cost for my services will be prohibitive.
- I am very concerned for the whole Rater/Energy Consultant industry throughout the US. If it appears to the building community that voluntary labeling programs are going beyond what would be considered practical for their market it will lead to a decline in confidence in our ability to provide sound, credible and cost effective measures for them to sell and implement. Any decline in confidence will impact these businesses which in many cases are not a blip on the local radar screen. Many of these businesses are struggling to stay afloat at current activity levels. Please keep in mind that from a Raters business perspective, the only product they have is information. Any challenge to the validity of that information can have a significant impact on their ability to stay in business.
- There is no way to get around the cost of any product or service. On the EPA web page showing State by State market share for ENERGY STAR Homes it is well known that many of these States such as Minnesota and Iowa have utility programs driving participation. It is very clear that in both of these States that 100% of the incurred cost for certification is paid for by the Utility. In Iowa not only is the certification cost paid for by the Utility, but some of the actual building improvements are almost paid for through large incentives by Utility Company. I know this to be true. It begs the simple question: *"Will these Utility Companies continue to pay for any increase costs associated with V3"?* and without Utility compensation, *"What will happen to the number of homes certified"?* It's easy to say yes when there's no cost to saying so. It is also possible to devalue the true cost of such a service when the person receiving the benefit pays nothing for it.
- In our market, the value of both the Raters services and any perceived benefit to ENERGY STAR certification is
 paid for by the market. As costs go up it requires money from the overall building budget to be shifted. Without
 "rigorously-defensible results" to support any additional construction & certification costs, Builders and
 Consumers may feel we've finally reached the tipping point where value no longer supports the cost in a voluntary
 program
- Across all the available labeling programs, I see the same scenario developing without supporting credibility for
 projected benefits and results. This ultimately may backfire on the entire movement and render future efforts even
 more difficult for those providing legitimate services.
- In a paper titled "Revealing Myths about People, Energy and Buildings" written by Rick Diamond & Mithra Moezzi of LBL, it reveals many of the very reasons why I think consumers are skeptical about claims by energy programs and those in the energy related businesses. One section states the following "As in most knowledge systems, little of what energy professionals believe as true, and use as truth in their daily work, can be shown to be carefully weighed, carefully articulated statements of irrefutable fact. Rather, such claims and assumptions are combinations of what we believe to be true, what we want to believe, and what we want others to believe"

FINAL SUGGESTIONS:

- I would recommend continuing the current ENERGY STAR platform of reference home calculations along with an updated climate specific HERS Index. Your own preliminary results from the Minnesota study shows that REM/rate can provide reliable estimates of actual energy consumption.
- I would allow further recognition of the 'potential values' of the checklists to be captured in a separate label addendum as an option. This could even be done using a point system if it would work better.
- I would not loose site of the substantial differences in State and regional programs and the impact program changes would have to both those programs and market providers working within these programs.
- Finally; I would try and maintain as many current partners as possible. Small growth, no matter how small, is still
 growth. The loss of participants would only continue to allow programs to leverage themselves off the failures of
 others. As far as I see it, ENERGY STAR for Homes is recognized by most consumers as '*the proven choice*' for
 certifying a new home as being truly energy efficient while also demonstrating considerable benefits to the
 environment. Let's do what's necessary to keep it that way.

Thank you for considering my thoughts as you work through the final configuration of ENERGY STAR for HOMES Version 3.

Joe Nagan Home Building Technology Services Kaukauna, Wisconsin

Home Energy Group - St. Hilaire, Claude

Fundamentally, the Home Energy Group endorses the principals to the proposed changes in the ENERGY STAR new homes program. However, we are concerned that the additional cost for compliance will result in a significant drop in home builders participating in the program. We have seen the number of builders considering the adoption of the current ES program, remain on the sideline until the new program guidelines have been released.

In a specific evaluation for an affordable housing project using the new reference home guidelines, we determined that the target HERS index for this home would drop from an 85 to 74. The estimated cost to achieve this HERS score on a 3 bedroom 1400 square foot house to meet the efficiency requirements under the new program would add 8% to the cost of the home. This additional 8% added cost is before any extra costs required to meet the Water Sense or the Indoor Air Plus program requirements. Smaller homes are negatively impacted by the revised ES program.

As proposed, we expect 75% of our builders to drop participation in the ENERGY STAR new homes program. The energy efficient home building industry needs a solid entry level program geared strictly towards energy efficiency. Not another Green Certification program to further confuse the market place. We would like to offer the following suggestions:

- 1. Keep the ENERGY STAR for new homes program focusing on building science fundamentals for improved energy efficiency.
- 2. Establish the new HERS target based on percentage improvement over the 2006 or 2009 IECC standards. Develop separate guidelines for states such as California to exceed the Title 24 Standards.
- 3. Offer additional certification labels for the Indoor Air Plus program and the Water Sense program. This allows the builders to offer these as value added options. Home owners can then choose the options that fit their needs and budget.
- 4. Incorporate the Home Size Adjuster, but consider rewarding homes for smaller sizes by raising the baseline HERS index.
- 5. Minimize the number of forms to be filled out by the Rater and sub contractors. We must keep verification and certification costs down.
- 6. Develop a National database for a list of homes, by address, certified to the ENERGY STAR program.
- 7. Focus on the appraisal industry to adequately valuate the many benefits and features of ES homes. EEM's & EIM's are non-existent in the South East due to the lack of understanding from the appraisal industry.
- 8. Mandate, that any new construction utilizing Federally Funded dollars (Our Tax Dollars) require ES certification at a minimum!
- 9. Develop an ES, existing home certification program based upon a % improvement in the HERS index. This will fill a void for the existing HERS rating industry with the significant drop in new home construction.
- 10. Require all new Homes to have an energy efficient label, similar to the energy label on new appliances."

Home Energy Inspections – Hummerlund, Gary

Questions for Lisa Jackson & Steven Chu: What is Energy Star doing for Michigan?

ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy helping us all save money and protect the environment through energy efficient products and practices.

While the Energy Star team seems to be directing its efforts on creating new standards for it's Energy Star program for new homes, we here in Michigan don't even have Home Performance with Energy Star.

While the stated goal of "helping us all save money and protect the environment through energy efficient products and practices" sounds good, it focuses only on new construction in Michigan. Why are you spending time and resources meant for all on just 2% (new home builders)?

Forget about trying to tighten standards for new construction for a while and focus on 98% of the potential, existing homes. A program similar to the Builders Challenge for existing homes would be nice. The infrastructure, RESNET's HERS Index, has been around for 20 yrs or so. All we have to do is promote it to consumers. So forget trying to force a few builders to comply, educate the consumer and builders will want to comply.

Why do we need new regulations for the Energy Star program? Leave it as it is, promote the Builders Challenge. Energy Star should be for the little guy, LEED already exists for the few.

I know Lisa Jackson is new to the EPA, and Steven Chu is new to the Department of Energy, I do wonder what they'll say when they realizes their Energy Star team is focused on tightening standards for new construction during this recession.

I hope they ask; Did anyone on the team know that between 80 – 90% of the houses we will occupy in 2050 already exist?

I also wonder what President Obama's response would be if asked "what is the focus of the Energy Star Team?"

Will the proposed changes to the Energy Star for homes program add value to a home? LEED is struggling with the value issue right now as many homeowners go to sell their homes and aren't able to resell the value of LEED to the next buyer.

I am currently consulting on a new vacation home. I was hired by the homeowner (a client whose existing home needed energy efficiency upgrades last year) to make the home as energy efficient as possible, within some cost guidelines. The builder has never built an energy star home, and the homeowner doesn't want to participate because he says there's no resale value in Energy Star, Green Built, or LEED homes. I have exposed the builder to both Energy Star and the Builders Challenge, they like the Builders Challenge and will promote it if they do well enough to participate. I also consult for a condominium development that doesn't meet the current energy star guidelines. New construction is less than 20% of my business, so whether my clients participate or not in your program won't mean much. But take notice of my business model – less than 20% new construction and over 80% existing homes, the consumer is speaking volumes. Is anyone listening. "

Home Energy Technologies, LLC – Harding, Peter

Background

Home Energy Technologies is a HERS rater serving the state of Connecticut. In addition to qualifying homes for the ENERGY STAR we are also verifiers for the Builders Challenge and the NAHB's National Green Building Standard. Home Energy Technologies was formed in April 2009 to acquire the home energy rating business of Competitive Resources Inc when CRI decided to exit the rating business to concentrate on weatherization and other energy-saving programs. CRI was by far the largest energy rater in Connecticut and has qualified over 5,800 homes for the ENERGY STAR. Prior to forming Home Energy Technologies Peter Harding was an employee of CRI.

Comments

In reviewing the EPA's proposed changes to the ENERGY STAR for Homes program my principal concern is that it will lead to a major reduction in the number of builders participating in the ENERGY STAR for Homes program and the number of new ENERGY STAR qualified homes.

While the introduction of the TBC a few years ago represented incremental improvement that users could understand the proposed changes are so substantial that many builders will simply look at the new requirements and opt out of the program altogether. For example, here in Connecticut the number of ENERGY STAR qualified homes in 2009 will likely be down 70% to 80% from 2008. While much of the decline can be attributed to the recession in the building industry a significant part is attributable to changes in the rebate programs that have been critical to the success of ENERGY STAR for Homes in Connecticut. The 2009 program incents homes with a HERS index of 64 or below but offers little to builders of homes in the 65 to 85 HERS index range for who the rating costs alone may exceed the value of the rebates they receive. However few spec builders are building homes in the under 64 range so most of the ENERGY STAR homes now under construction are custom homes. For these homes the rebates cover the costs of qualification but the ENERGY STAR homes in the and is perceived to have little value since the homeowners have no intention of selling these homes in the near future.

Fundamentally I have five major concerns with the new requirements:

The new requirements will be expensive to implement.

Rater costs could easily double under the new program. However this is likely to be only a small part of the extra cost, and I can easily foresee that the real cost of building an ENERGY STAR home will increase by \$10-20,000 or more. The EPA has looked at the potential physical costs of meeting the new standards but ignored the effects of market forces. The reality is that in the past ENERGY STAR has represented maybe 10-12% of Connecticut homes but in the future it will be less than 5%. While some subcontractors will be willing to cater to this small segment they will demand a premium for their services in excess of the actual extra costs incurred and, with a less competitive market, ENERGY STAR homebuilders will have little choice but to pay higher prices.

- The new requirements are not easy to comprehend.

The new requirements introduce a new reference home concept and five new checklists. To really understand all of the new requirements will take many hours of study. While raters will invest this time to study the new requirements many builders cannot or will not. Builders are businessmen and in the current economic environment are stretched extremely thin trying to keep their businesses afloat. Many will unfortunately view the pages and pages of new requirements as too onerous to even try to understand and will drop out of the ENERGY STAR for Homes program.

- Some of the new requirements are difficult to verify, dangerous to verify, don't conform to good building practices and are vague or ambiguous.

A major component of the new program is the new checklists for framing, installer HVAC, rater HVAC, IAQ and Water Managed Construction. While no one disputes that all of the practices covered by these checklists are beneficial these checklists require further validation with users before being introduced. Some problems are:

Verification difficulty: The requirement that drywall is sealed to the top plate is impossible for a rater to verify unless they are onsite while the drywall is being installed. Even the homebuilder will have difficulty unless they are onsite for the application of every sheet. Drywall crews in this part of the country are typically paid by the sheet so anything that slows them down will meet tremendous resistance. Builders already encounter resistance from drywall installers to face stapling rather than side stapling of kraft-faced batts and this additional requirement will meet substantial passive if not active resistance.

- Dangerous to verify: The flashing requirements would require raters to go on roofs to inspect that flashing was installed correctly (WMC 3.1). It should be noted that the NAHB Green Building program specifically forbids verifiers from going on roofs to verify this kind of detail.
- Don't allow for good construction techniques: QF 1.1 mandates raised heel trusses yet in custom construction we commonly see stick-built roofs. WMC 1.6 mandates that a continuous vapor barrier not be installed on below grade walls yet high-density spray foam is a very effective way of sealing and insulating below grade walls but is also a very effective vapor barrier.
- Are vague or ambiguous: Who is to determine when a stud is "unnecessary" (QF 2.1.5)? How do you define "high moisture content" (WMC 4.6)? Without specific standards raters will be put in an untenable position.

- The new requirements dilute the ENERGY STAR brand

ENERGY STAR's greatest strength lies in the unambiguity of its message – it is about energy efficiency. Unlike the term "Green" that has been widely used and abused there has been no misunderstanding what the ENERGY STAR brand means. While the new requirements for IAQ and WMC make a great deal of sense in their own right as good building practices few consumers and builders will be able to relate ENERGY STAR to these areas. This kind of brand extension may be appealing to the EPA but it will probably seriously jeopardize the long term value of the ENERGY STAR brand franchise.

- The new requirements may reduce the availability of rebates tied to ENERGY STAR certification

There is real concern that utility companies, public authorities and others who have incented energy efficient construction through rebates tied to ENERGY STAR qualification will drop their ENERGY STAR-based rebates and adopt other, purer energy efficiency measures such as the HERS index or HERS index plus other criteria such as the existing TBC. For example, in the 2009 Connecticut program the ENERGY STAR rebate is tied to the HERS index plus some other energy-related criteria determined by the DPUC. These rebate programs are specifically designed to reduce energy consumption but the extensions into non-energy practices in IAQ and WMC will require many of the programs to question whether they should be supporting ENERGY STAR when other, purer energy-related measures are available or could easily be developed. If this became widespread the effect on the ENERGY STAR program would be devastating.

Given these concerns I suggest that the EPA should:

- 1. Phase in the introduction of the new requirements (whatever they finally may be) over 2 to 4 years to give adequate time for the verification resources be properly trained and for the users to be educated on and become comfortable with the requirements
- 2. As part of the phase in, identify a few key practices as "mandatory" and have others as "desirable" for a few years until all or most become "mandatory". This will introduce builders to the new standards while not subjecting them to a pass/fail hurdle.
- 3. Combine and simplify the Thermal Bypass Checklist and the Quality Framing checklist into a single Thermal Envelope Checklist
- 4. Drop the IAQ and WMC checklists. While they contain desirable practices they are inconsistent with the "ENERGY" brand. These practices are also well covered in other programs such as the NGBS and LEED for Homes. Alternatively, these checklists could be made part of a superior ENERGY STAR level to be called ENERGY STAR GOLD or some other premium brand.
- 5. Increase the tangible benefits of ENERGY STAR certification. Specifically, the EPA should negotiate for future renewals of the 2005 Energy Efficient Home tax credit to be (a) based on ENERGY STAR certification so we have a consistent federal standard for an energy-efficient home, (b) extended to all homebuilders, not just builders of spec homes and (c) increased in value to \$10,000. This step alone would dramatically increase acceptance of the new requirements.

As an example, a possible implementation timetable could be:

- 2011
 - Implement the new reference home

- Implement a New Energy Efficient Home Tax Credit based on ENERY STAR qualification (if not possible to introduce in 2010)
- Implement a new Thermal Envelope Checklist combining the TBC and the Quality Framing Checklist but make several of the new requirements "Recommended" rather than "Mandatory".

2012

- Introduce the HVAC checklists but make at least 70% of the practices "Recommended"

2014

- Modify the checklists so that 80-90% of the practices are "Mandatory"

I believe that phasing in the new requirements in this way will significantly reduce the risk of a collapse of the ENERGY STAR program and will greatly facilitate the acceptance and adoption of the new program by both builders and raters. The US homebuilding industry is deeply distressed and many economists have projected it will take 5 to 10 years to recover. Phasing in the new requirements, particularly if supported by realistic tax-credits, will help in the recovery of the industry and help embed the building practices the EPA wants justifiably to see adopted. Forcing the proposed set of requirements on a weakened and vulnerable industry risks a widespread opting out and the demise of a program that is clearly in our strategic national interest.

Home Performance Professionals Inc. – Bakowski, Martin

Just briefly, I think you have lost your collective minds with your proposed changes to the ES labeled homes program. Your proposed changes would significantly drive up costs for everyone from the builder to the buyer to the Rater while not really improving anything. While I am sure the EPA means well you seem to be reinventing the wheel for no good reason. Find something that is broken and fix it. Leave the labeled homes program alone.

HomeCheck, Inc. – Shepherd, Carl

Many of the proposed changes will significantly increase the cost of the program. In this tough housing market, the increased cost will drive many builders and buyers away from the Energy Star program. As a HERS rater, I can see my field time increasing by 3 or 4 times.

Some of these ideas could be implemented in some bonus points, but the basic program needs to stay the same.

Huntsville Utilities – Denman, Larry

Huntsville Utilities is proud to have brought the first significant Energy Star new homes program to our state. The program is expanding, it is healthy, and it has been outstanding in its accomplishments related to energy efficiency. We built the program with concise explanations as to requirements. We agreed with the program's requirements and have been able to convince participants that they are grounded and practical. We understand the requirements and have been able to get behind them with passion.

The new checklist on the other hand, cannot be easily explained nor defended. Even though most of the measures will improve the structure, the impact is tiny in comparison to the expense. We have never seen a problem with moisture from a tub shower enclosure in any of our programs, but we are now required to have concrete board installed behind every shower? Please veto this type proposal. It will produce a very small value for a very large price. How could I defend this change? This is a solution without a problem. The HVAC requirements are overkill and cannot be practically inspected. A strict adherence would only produce a small effect in comparison to what is being done now. Please reconsider. --- The existing checklist makes sense and we can explain it and defend it with passion whereas, the new checklist is quite the opposite. The framing, HVAC, and roofing changes are obvious overkill and we cannot defend them. Instead, we will say that our friends at the EPA/DOE have taken the program that we have worked so hard to develop in our area to a place that we cannot follow with our common sense. ---

The issue mentioned above is so big that the other problems don't matter in comparison, but even so, it should also be stated that many of us see the new checklist requirements as new liabilities. Are we now going to tell builders how to frame, construct their roofs, and prepare grades? These issues should be left up to local inspectors and to the builders who are supposed to be accepting full liability. If we step into these areas, we are stepping into liability. (HVAC Contractors are being asked to sign something that we all know cannot be verified in most cases.) Adherence to the listed manuals is what makes up standard practices but the new requirement is like a builder signing a paper that reads: "I have built this home according to all applicable standards". Even instructors who teach from the ASHRE manuals tells us that all the rules are not intended to be set in concrete. They teach us to use the manual in combination with our common sense and commonly offer examples of the exceptions. --- Those advising Energy Star regarding these changes may understand all aspects of building, but they are moving away from energy issues. We need to stay clear of structure, grade, and roofing, and certainly from signed statements regarding general manuals.

Please reconsider the changes that have been proposed. These changes will definitely take our version of Energy Star away from volume builders and turn it over to a few custom builders who build huge homes for those who do not worry about the extra expense. The niche for these type clients is very small, and I can't believe we are going to drop the mainstream for the elite. Why not continue to reach out to standard home builders who we can talk to with honesty, passion, and common sense. This program has done so much good for so many. Lets' not throw that away in favor of a custom builders program. Energy Star has been a program for the middle class and even the lower class but these changes will make it a program primarily for the rich homeowner and the customer builder. The change will come not only due to the added expense, but also from our inability to explain the new requirements with honesty, common sense, and passion.

IED/Indoor airPLUS – Werling, Eric

National Requirements & Notes:

- 1. Notes should explain the overlap and synergies with Indoor airPLUS, the complimentary EPA labeling program for indoor air quality in new homes.
- 2. Homes qualifying for both ENERGY STAR and Indoor airPLUS labels should be exempt from the ES2011 proposed "Indoor Air Quality", "Water-Managed Construction", and the "HVAC" checklists because of overlap (more on these issues below).

Indoor Air Quality Checklist:

- 3. **Problem**: This checklist and its title are confusing and misleading. The checklist does not cover many IAQ issues, so it should not be titled "Indoor Air Quality Checklist". Furthermore, Indoor airPLUS is already the EPA labeling program that covers IAQ issues for homes and it is complimentary with ENERGY STAR for New Homes. This new checklist requirement should not be confused with Indoor airPLUS.
- 4. **Solution**: Revise the scope/title of this checklist to focus exclusively on compliance with ASHRAE Standard 62.2, the minimum industry standard for ventilation and IAQ. Many builders don't know or even own the industry standard and this checklist can help improve that situation. It is almost there now; 24 of the 28 requirements are directly from ASHRAE Standard 62.2 requirements. Specific changes to this checklist that would align this proposed checklist with the ASHRAE standard include:
 - Either add the Airflow Rating requirement in 62.2 section 7.3 to 1.1 or add a new line item for it.
 - Change 4.3 to "once per day" to match 62.2 section 4.3 Exception.
 - Change 6.1 to match 62.2 section 6.5 (measured duct tightness, not a prohibition).
 - Delete 7.2 (CO alarms not in 62.2).
 - Change 8.1 to MERV 6 to match 62.2 section 6.7.
 - Merge 8.4 and 8.5 into one general requirement about avoiding bypass per 62.2 section 6.7.
 - Also consider including the ASHRAE Std 62.2 section references to each item and adding a general statement about how this is a "tool for assisting in compliance with Standard 62.2, not a certification of acceptable indoor air quality".

Water-Managed Construction Checklist:

5. The requirements in this checklist are essentially identical to Indoor airPLUS 1.1 through 1.13, but the numbering scheme is different and the verification process is different – e.g., it requires raters to check each item, whereas Indoor airPLUS allows builders to self-certify foundation water management requirements. This should be coordinated so partners only have to learn one verification path for the verification requirements of the two complimentary programs. I recommend using the Indoor airPLUS checklist Water Management (Moisture Control) section, expanded to include the explanatory details provided in this draft checklist, as appropriate.

HVAC QI Contractor Checklist:

- 6. This checklist IS needed there is no standardization among HVAC contractors on how to commission a residential system.
- 7. However, it doesn't include pass-fail criteria (i.e., +/- X% of manufacturer rec. +/- Y% of design load.) I think the allowable variances need to be here. Otherwise how do they know if they pass?

HVAC QI Rater Checklist:

8. This checklist is NOT needed – it is essentially a Checklist to Check that the HVAC contractor filled out his Checklist properly! Why not include these things on the Contractor Checklist? That would make the Contractor Checklist more useful, it would be one fewer checklist, and it would be easier for raters and contractors to be literally on the "same page".

Ideal Home Builders, LLC – Deal, Johnny

Radon mitigation should be included.

Image Design, LLC – Hughes, Eric A.

As one of Michigan Leading Sustainable Residential Design Firms I have asked all of my builder to read the EPA's proposed rule changes for 2011. All of my builder have said the will no longer build to the new Energy Star standard and there main reason most often cited is cost followed by rater scheduling of inspections and construction/occupancy delays. As the Residential Green Building Advocate (RGBA) for the USGBC for the State of Michigan. I will be bring this up at our bimonthly meet on Wednesday July 8th to discuss with the USGBC and the other RGBA throughout the United States.

IN or Out Smart Energy – Bates, Randy

Please consider the concerns expressed by RESNET. These are substantial points and need to be implemented.
Inhabit - Green Building Consulting - Mazal, Andy

I am a HERS Rater and Energy Star partner located in Boulder, Colorado. I am writing to comment on the proposed changes to the Energy Star New Homes program for 2011.

In short, I would suggest that the suggestions of RESNET be adopted. Rather than go over every point, I simply agree with RESNET's comments and suggestions to changes that need to be made to Energy Star for New Homes 2011.

Additional to supporting RESNET's suggestions, I would further suggest eliminating the TBC checklist item for drywall gaskets at the top floor ceiling. In my opinion this will cause many builders to fail to qualify for Energy Star despite building very tight homes. A well sealed drywall corner is just as airtight as a poorly sealed corner with a gasket. Quality control in drywall installation should eliminate the need for the gaskets, and I believe that this is just one more needless hurdle for builders to have to overcome while pursuing Energy Star certification for their homes.

IR Energy Saver – Kubly, Rick

Hello,

After working for 5 years to get my Energy Audit Company going in the Black hole of energy inefficiency in the South central part of Wisconsin; I have had to practically give my work away to get people to understand. You now propose to now only take all the standards of the Wisconsin Energy Star homes of Wisconsin, you've now jump the shark and want us to become structural engineers, HVAC installers, you want building inspectors not HER raters. You will kill the program by trying to implement all of these guidelines. I do not have enough time to accomplish all this for the monetary price that people will pay.

The builders are just now realizing the benefits of the program, because of the economy they are all looking to better there business right now, I would have a hard time convincing them I now have to do all these extra checklist just to reach Energy Star.

Our standards in Wisconsin are 25% more conservative than the UDC calls for.

We have records to show the savings of Millions of BTUs per year because of the program and the good people involved in Wisconsin Energy Star homes.

By adding things that good builders already do and making more work will not save anyone time or money.

Please think about this carefully.

J. & B. Building Services, Inc. – Meyer, Robert

My name is Robert Meyer of J. & B. Building Services, Inc. and I would just like to comment on the implementation and proposed verification of the new proposals.

My greatest concern is that while I feel it is necessary to continue on the path of an energy efficient home, I don't know that this criteria should be placed as priority 1 without regard to the total cost of inspections/verifications to the builder which in turn would be passed on to the homeowner. In this already financially shaky area of the building market it seems that implementing everything as specified immediately would further burden and already questionable recovery.

J. Bixler Conn & Associates, Inc. - Bixler Conn, Jane

I have reviewed the proposed changes to the ENERGY STAR qualifying guidelines. I understand the need for an evolving standard, and fully endorse the Building Science concepts incorporated into these proposals and the new checklists. And I respect the time invested in trying to adjust this program to better serve the public through healthier, more energy efficient new homes.

However, my training as a Rater has not prepared me to be a HVAC contractor, a building inspector, and/or a Green certifier. It appears that to meet the proposed guidelines, I will need to be all three.

In my geographic area of the Florida panhandle, builders are just beginning to take on the challenge of qualifying their homes for the current ENERGY STAR standards. It is a ""difficult sell"" right now, even with affordable pricing to the rater and a relatively straightforward performance program. Such a large quantitative increase in pricing (my rate will triple), paperwork, and verification could well erase the small progress made here in the last year. I do not believe my area is very different from much of the country.

As an example, in January 2009 one Florida down payment assistance program began requiring either a Green certification or an ENERGY STAR qualification for each home that participates in that program. The data I have collected in a six county area shows 65+ homes have met this requirement through a Green certification, and less than 5 through ENERGY STAR. Making the program more expensive and onerous will not increase the number of builders willing to participate.

Change is almost always difficult, and proposed changes encounter resistance. In this instance, I believe the proposed changes are too radical a diversion from the existing standard. Enactment of them will cause confusion on the part of the builders, the raters, and the public. And instead of having a positive impact by increasing the quality of new homes, and the quantity of those homes, it will simply cause the ENERGY STAR program to be used less often. I hope you will take my thoughts into consideration.

Jay County REMC – Denney, Cindy

I have concerns over the cost and confusion that will be generated in the housing and rating industry by the proposed changes. EPA's estimates that it will cost an extra \$4,950 over the current procedures for a builder to meet the proposed changes. Can the housing industry afford such an increase?

This is an important issue that will have a dramatic effect on how raters verify homes for the ENERGY STAR label and the demand for the program in a time of a housing slump. It appears all government agencies do not take into consideration the annual income of the good people who live in this country. If we are not being taxed to death (cap and trade), we are mandated to spend more money for something that we have no choice over. We need to have more governmental agencies caring about the average income home owner. The idea of making change for the sake of change is ludicrous without thinking of how it is going to affect the population who bears the burden.

Start a change CARE!"

Johns Manville - Ray, Bruce

Headquartered in Denver, Colorado, JM is a manufacturer of building materials (including insulation and commercial roofing products) and engineered products.

<u>Summary</u>

JM strongly urges EPA to make mandatory the use of cost-effective, market-ready formaldehyde-free building materials for Energy Star qualified new homes. Such a requirement is consistent with – and perhaps even required by – EPA's mission and existing policies as well as existing laws.

EPA's Mission, Its P2 Policy And The OPA Require Formaldehyde-Free Building Materials

EPA's overall mission is to protect human health and the environment. <u>http://www.epa.gov/epahome/aboutepa.htm</u>. While energy efficiency is important, gains in energy efficiency, especially in new homes, should not come at the expense of deterioration of indoor air quality and corresponding adverse health impacts. As new homes grow increasingly tighter to achieve ever higher levels of energy efficiency, potential indoor air pollution also increases since many conventional building materials emit volatile organic compounds like formaldehyde.

The best way to address indoor air pollution is through aggressive source control and the Energy Star program is certainly no exception. As Former EPA Administrator Carol Browner stated: "We must build pollution prevention into the very framework of our mission to protect human health and the environment." US EPA *P2 Policy Statement,* <u>http://epa.gov/p2/pubs/p2policy/policy.htm</u>. The Energy Star program should be a model of pollution prevention.

That Energy Star should take the lead in pollution prevention is well described in the attached letter June 17, 2009 letter from Rep. Diana DeGette (Vice Chair of the House Energy and Commerce Committee) to EPA Air and Radiation Assistant Administrator Gina McCarthy:

Therefore, I suggest that the EPA Indoor airPlus program as well as the Home Performance with Energy Star program fully implement principles of pollution prevention by requiring building materials, including insulation, to be made without formaldehyde and other potentially harmful chemicals.

Attachment 1

As pointed out by Rep. DeGette in her letter to EPA and as recognized by EPA itself, pollution prevention is also legislated national policy:

The <u>Pollution Prevention Act</u> established the national policy that pollution should be prevented or reduced at the source whenever feasible. Preventing pollution offers important economic benefits, as pollution never created avoids the need for expensive investments in waste management or cleanup.

<u>http://epa.gov/p2/pubs/laws.htm</u>. The Pollution Prevention Act establishes a hierarchy of how pollution is to be addressed. Specifically, the decision pathway is as follows:

- as an overriding first priority, pollution should be avoided and prevented
- pollution that cannot be prevented should be minimized
- pollution that cannot be minimized should be treated
- only such pollution that remains after prevention, minimization and treatment can be diluted

This hierarchy underlies every EPA substantive program including, without limitation, the Clean Air Act, the Clean Water Act, and CERCLA. As an example, the Clean Water Act standard of performance for new sources for fiber glass manufacturing is "... no discharge of process waste water pollutants to navigable waters." 40 CFR 426.15.

Unfortunately, the proposed Energy Star Indoor 2011 Indoor Air Quality checklist does not follow EPA pollution prevention policies or the Pollution Prevention Act. The checklist skips prevention via source reduction, minimization and treatment entirely; instead, Energy Star has chosen the discredited method advocated years ago by industries that were reluctant to

upgrade their pollution control equipment - dilution. This must be reversed. Energy Star must require the use of formaldehyde-free building materials.

Fiber glass insulation made without formaldehyde is a cost effective way to help prevent indoor formaldehyde pollution. And by reducing overall formaldehyde exposure, the home can be made healthier and safer. Such insulation is also market-ready; it is literally off-the-shelf technology and formaldehyde-free forms of insulation are made by all major manufacturers and are available nationwide.

Some additional information on formaldehyde in fiber glass insulation can be found at http://www.healthybuilding.net/healthcare/Fiberglass-insulation-formaldehyde-emissions-090116.pdf.

Relying On Ventilation-Dilution To Address Indoor Air Pollution Is Not Effective

Relying in the first instance on dilution of pollution via ventilation is not only clearly contrary to EPA and legislative policies, dilution has been shown to be an ineffective way to address indoor air pollution. The recent Offerman study demonstrated how difficult it is to achieve high levels of fresh air ventilation in the residential environment:

Consideration should be given to regulating the emissions of air contaminants from building materials. To this end, in April 2007 the California Air Resources Board (2007) adopted an airborne toxics control measure (ATCM) to reduce formaldehyde emissions from composite wood products. *Emission rate reductions from other indoor sources of formaldehyde will also be needed to provide healthful indoor air quality.*

http://www.energy.ca.gov/pier/conferences+seminars/2008-10-29+30_energy_and_air_quality_conference/session_02-Building_Characteristics_Indoor_Environmental_Quality/1%20BudOffermann1.pdf?bcsi_scan_7909DC0819E730E8=0&b csi_scan_filename=1%20BudOffermann1.pdf at page 31. Emphasis added. At a workshop where his results were presented, the principal investigator advised that indoor air pollution source elimination and reduction were the first choice in dealing with indoor air pollution. <u>http://www.arb.ca.gov/research/seminars/offermann/offermann.htm</u>.

Relying On "Low-Emitting" Certifications Is Likewise Not Effective

Relying on so-called "low-emitting" certifications from organizations like Greenguard is likewise ineffective for the residential environment. Greenguard assumes an unrealistically high fresh air dilution rate in making its certification decisions. Specifically, Greenguard uses ASHRAE 62.1 ventilation rates for *commercial buildings* (<u>http://www.greenguard.org/Default.aspx?tabid=109</u>) or the California ES-1350 ventilation rates for *school classrooms* (<u>http://www.greenguard.org/Default.aspx?tabid=110</u>)</u>. Such ventilation rates are approximately one air change per hour (ACH), depending on the size of the building and the number of people to be present. But typical ventilation rates in new homes are much lower – closer to 0.25 for a new single family home.

<u>http://www.berkeleyanalytical.com/UserFiles/File/BAA_WP_07-02_Residential_Exposure_Scenarios_092007.pdf</u>. This means that the actual indoor air concentration of formaldehyde from a Greenguard certified product could be up to four times the certification level. This is important as even Greenguard has recognized that formaldehyde can cause health impacts at low concentrations:

Because studies show that irritation may occur at very low levels (8 parts per billion or less in the air), government agencies and standards setting organization placed limits on acceptable levels.

Indoor Air Guardian, Greenguard Environmental Institute (February 20, 2008) - E-mail edition.

Incidental Benefits From Requiring Formaldehyde-Free Building Materials Complement Other Important EPA Policies

Requiring formaldehyde-free building materials for Energy Star homes also strongly complements important and related EPA policies. First, when manufacturers switch away from formaldehyde-based formulations, factory worker formaldehyde exposures are greatly reduced or eliminated. This makes for a healthier worker population. Second, factory emissions of formaldehyde can be substantially reduced or eliminated if a switch is made to formaldehyde-free formulations. This is certainly true for JM as EPA formally recognized in writing that JM's plants making building insulation are exempt from the hazardous air pollutant MACT regulations applicable to the rest of the industry. This is also recognized in the letter from Rep. DeGette.

Requiring the Energy Star program to look past pollution causing materials that use formaldehyde would also help prevent pollution at the very factories making the building materials.

Third, many formaldehyde-based binder systems require large-scale refrigeration of stored binder components. This is because the phenol-formaldehyde binder is highly reactive at room temperature and must be kept cold before use to prevent premature cure. By switching to a non-formaldehyde binder, JM has eliminated the need for this refrigeration and has thereby substantially reduced its carbon footprint.

Other Agencies Recommend Formaldehyde-Free Building Materials

The California Air Resources Board (CARB) has published recommendations on formaldehyde exposure from building materials. Specifically, CARB first published its Fact Sheet entitled "Reducing Your Exposure to Formaldehyde" (Aug. 2004) at http://www.arb.ca.gov/research/indoor/formaldfs08-04.pdf. Because CARB had previously declared formaldehyde a Toxic Air Contaminant, based on its potential to contribute to cancer risk, CARB explained that removing or reducing the formaldehyde sources in the home will reduce the risks to home occupants. One of the steps CARB recommended is to use formaldehyde-free insulation. CARB then published its Indoor Air Quality Guideline entitled "Formaldehyde in the Home" (Aug. 2004), at http://www.arb.ca.gov/research/indoor/formaldfs08-04.pdf. The IAQ Guideline notes that formaldehyde emitted from insulation materials installed in the ceiling or walls can enter living spaces in the home. Accordingly, CARB recommends formaldehyde-free building materials.

In 2005 CARB also issued its final report to the California Legislature entitled Report on Indoor Air Pollution in California. In that report CARB noted that virtually all indoor environments exceed California's Office of Environmental Health Hazard Assessment (OEHHA) then existing Chronic Recommended Exposure Level (CREL) of 2.4 ppb for irritant effects and OEHHA's 10-6 excess lifetime cancer risk level of 0.13 ppb. http://www.arb.ca.gov/research/indoor/ab1173/finalreport.htm

EPA itself had the opportunity in 2005 to comment on the Indoor Air Quality proposal in the US Green Building Council's LEED-NC Version 2.2. USGBC had found it appropriate to cite to the California chronic reference exposure level (CREL) for formaldehyde of 2.4 ppb as an applicable standard; however, USGBC realized that 2.4 ppb is difficult to achieve and proposed an exception. In its comments, EPA agreed with an interim exception but with a caveat:

Under potential technologies and strategies we understand the need for the exception to using the CREL for formaldehyde. However, in June 2004 the International Agency for Research on Cancer classified formaldehyde as carcinogenic to humans. Therefore, along with the statement about the exception there should be a sentence about formaldehyde as a carcinogen and that it is best to limit that amount of exposure as much as possible.

Comments of US EPA on LEED-NC Version 2.2; Response to Comments on Draft Standard for Indoor Environmental Quality, Indoor Environmental Quality Prerequisite 1 at pp 71-72, Issue EQc4.3.14 (emphasis added). <u>http://www.specjm.com/files/pdf/EPAComments_on_LEED_NC.pdf</u>. (It is important to note that the California CREL and 8-hour standard for formaldehyde were recently changed to 7 parts per billion. See below. <u>http://www.oehha.ca.gov/air/hot_spots/2008/AppendixD1_final.pdf#page=128.</u>)

When rebuilding the damage to the Pentagon after the 9/11 attacks, the Defense Department specified that the insulation be formaldehyde-free. Copy attached. This work is still on-going.

Attachment 2

Even the formaldehyde trade association, the FCI, continues to recognize the need to reduce exposure: "From a product stewardship perspective, FCI recognizes the general and continuing goal of reduced [formaldehyde] exposure." <u>http://www.oehha.ca.gov/air/hot_spots/pdf/ResponsesCommentsTSD042408.pdf</u> at page 70.

<u>Requiring Formaldehyde-Free Building Materials Is Consistent With State And Federal And NGO</u> <u>Recommendations On Formaldehyde Exposures</u>

The following are some relevant recommendations from state and federal health and environmental agencies and organizations concerning formaldehyde exposure.

- 16 ppb – EPA's Maximum Indoor Air Concentration Standards for new EPA RTP facilities, *Leading by Example: Two Case Studies Documenting How The Environmental Protection Agency Incorporated Environmental Features into New Buildings* (United States Environmental Protection Agency EPA742-R-97-006 December 1997 - Pollution Prevention and Toxics (7409) Environmentally Preferable Purchasing Program), <u>http://www.epa.gov/epp/pubs/case/grnbldg.pdf</u> at page 54 (pdf page 78); Testing for Indoor Air Quality -<u>http://www.epa.gov/rtp/campus/environmental/018109.pdf</u> at page 3.

- **16 ppb** - National Institute of Occupational Safety and Health (NIOSH) Maximum allowable exposure for an 8-hour period, <u>http://www.cdc.gov/niosh/npg/npgd0293.html</u>.

- **8 ppb** - Agency for Toxic Substances and Disease Registry (ATSDR) Chronic minimal risk level, <u>http://www.atsdr.cdc.gov/mrls/index.html</u>.

In spring of 2008, FEMA also adopted a standard of **16 ppb** for formaldehyde in all future temporary disaster housing it purchases. <u>http://www.fema.gov/news/newsrelease.fema?id=43180</u>. A FEMA spokeswoman said the formaldehyde reductions called for in the new specification are relatively easy to achieve by removing certain fibers, insulation and other components that generate high formaldehyde readings. Copy attached.

Attachment 3

Perhaps the most recent action in this area was by OEHHA which adopted new formaldehyde reference levels as follows:

Formaldehyde Acute REL Reference Exposure Level **55** µg/m³ (44 ppb) Critical effect(s) Mild and moderate eye irritation Hazard Index target(s) Eye irritation

Formaldehyde 8-Hour REL

Reference Exposure Level 9 µg/m³ (7 ppb) Critical effect(s) Nasal obstruction and discomfort, lower airway discomfort, and eye irritation Hazard Index target(s) Respiratory

Formaldehyde Chronic REL

Reference Exposure Level 9 µg/m³ (7 ppb) Critical effect(s) Nasal obstruction and discomfort, lower airway discomfort, and eye irritation Hazard Index target(s) Respiratory

http://www.oehha.ca.gov/air/hot spots/2008/AppendixD1 final.pdf#page=128

Conclusion

Rep. DeGette summarized the issue quite well in her recent letter to EPA

The federal government should encourage the use of safer materials that are now widely available across the country from multiple manufacturers. Energy Star homes should be more energy efficient as well as healthier and safer for our families.

Now is the time for EPA to follow other green building organizations and environmental agencies and require the use of formaldehyde-free building materials, including insulation, in Energy Star homes. Using such cost-effective, widely available and off-the-shelf products will make our homes healthier and safer for our families and help achieve other EPA pollution prevention goals in and around building materials factories.

Keller Homes – Manly, Charles Jr.

First, I think it is important to challenge Sam Rashkin's premise (as expressed in our teleconference of June 11) that now is an appropriate time to increase Energy Star requirements and accordingly, the builder's cost of compliance. Mr. Rashkin asserts that by increasing the level of differentiation we will increase sales. Our experience is exactly the opposite. Today's customers appreciate the Energy Star brand, but they are reluctant to pay even a penny extra to obtain it. Put another way, the only differentiation that matters to a typical customer is that of price, and anything that makes new homes less competitive with existing homes must be resisted in this market and for the foreseeable future.

Second, the proposed insertion of the Energy Star brand into water efficiency is wrongheaded and will damage the brand's credibility in the intermountain West. The vast majority of residential water consumption in this region goes to landscape irrigation. In the absence of a strategy that addresses irrigation, the minor upgrades you propose seem insignificant and are therefore not credible. The Energy Star label will be damaged by being applied to "improvements" which do not bring real value.

Fan sound ratings are another area in which the Energy Star brand has no appropriate role.

ASHRAE 62.2 may be the default value for residential ventilation, but it overstates ventilation requirements in a typical home. Ventilating to this level brings with it a substantial energy penalty during cold weather that dictates the addition of an HRV, adding around \$2000 to the cost of a new home. Furthermore, our generally mild climate makes such an expenditure unjustified. A much better solution to the ventilation "problem" would be to require the builder to ventilate in a manner that would make ASHRAE 62.2 achievable by placing control of the ventilation system in the hands of the homeowner. I am reflexively suspicious of any mandate that takes control out of the homeowner's hands – I believe that the homeowner is the individual most qualified to manage his living environment.

The new lighting requirements are also problematic. The ALP has not gained traction, as the available fixture choices are too limited for our customers' tastes. The option of using 80% CFL's - which will inevitably include most recessed cans - will cost far more than your estimate of \$90 per home. This will tempt builders to under-illuminate homes to defray these costs, and homeowners will ultimately provide their own lighting – possibly with the 500W torchieres they moved from their previous homes.

Colorado Springs is in climate zone 5, as is Chicago, but we do not need bituminous membrane (AKA Ice & Water Shield) on all roof eaves. Our climate is not prone to ice damming issues. We have a local Code that addresses the conditions in which this product should be installed. Given our 25-year history of not having ice dams, and a broad scientific consensus that warmer weather is on the way, this seems like a very expensive solution in search of a problem, and an excellent illustration of the dangers inherent in broad climatological groupings.

The very idea of a Size Adjustment Factor for new homes implies that someone other than the buyer and seller is an appropriate judge of how large a home should be. I am extremely uncomfortable with any authority other than our customer determining the appropriate size of our homes, and the SAF places a de facto "Virtuous" or "Unvirtuous" label on the home. This reeks of nanny-statism.

Raised heel trusses will cause some homes to exceed local height requirements, and thus be unbuildable on a given lot. Re-engineering all of our truss designs to meet this requirement is a very high price to pay for Energy Star compliance. The 2009 IECC may be substantially amended when adopted in Colorado Springs. In particular, if the 2x6 wall requirement is amended out of our local code, builders who are forced to incorporate 2x6 walls as a component of Energy Star compliance will find themselves in an untenable competitive position.

In summary, we have a major divergence of opinion about the types of changes that the Energy Star brand can incorporate at this time. I certainly understand your concern with staying ahead of building codes, but I think that these difficult times call for an incremental approach. Energy Star apparently believes that this moment demands a Great Leap Forward. If this is to be the outcome, I suspect that many of your builder partners will abandon the program.

At Keller Homes, we are always attuned to the risk of building the best home that our customers cannot afford to buy. I urge you, our partners at Energy Star, to be similarly cautious about the possibility of creating an Energy Star program so stringent that few homebuilders can justify supporting it.

Knight, Ken

I am concerned about the added expense our builders will be asked to incur. We should keep in mind that this is a Voluntary Program and with the additional requirements, builders will most likely choose to opt out of the program.

*ENERGY STAR should concentrate on energy efficiency and not get distracted with water management and air quality control.

*I believe the stiffer requirements for larger homes is unfair and is politically motivated. The "Punish the Rich" mentality serves no purpose in ENERGY STAR.

*These proposed new requirements will triple the work load and responsibility of the raters. I don't believe the builders will agree to the increased fee raters will need to charge in order to provide the ENERGY STAR Label.

*The liability associated with being a rater will increase causing our professional liability insurance premiums to increase substantially.

IF THESE STANDARDS ARE ADOPTED, ENERGY STAR MUST BECOME MANDATORY, OR THE BUILDER'S TAX CREDIT MUST INCREASE!

Kentucky Division of Energy Efficiency and Conservation - Colten, Lee

The Kentucky Department for Energy Development and Independence wishes to offer the following comments on the proposed changes to the ENERGY STAR Homes Program. As a long-time ENERGY STAR Partner, we have supported and promoted ENERGY STAR new homes. It is a great program and Kentucky is realizing tremendous energy savings and quality additions to our housing stock because of this program.

However, in consultation with some of our university and trade association partners, we have reviewed the proposed changes and have serious concerns that ENERGY STAR may be going too far, too fast. We defer to RESNET's position paper and wish to express our support of their technical points. While the proposed changes are technically sound, we are concerned they are not in the best interest of the program. These changes add greatly to the cost of the inspection and the cost of the home and pose significant technical challenges for HERS raters in the field.

We are concerned the sum total of these requirements will weaken the program and make the program unattainable for most homebuyers. We therefore ask that you reconsider these recommendations in light of the RESNET comments and recommendations.

Knapp, Scott

As a rater I am a little troubled with the new requirements. First would be the number of inspections necessary to make the home Energy Star. Second would be that the number of inspections will drive the cost to the builder higher and make it less likely in today's economic time that a builder will build to these standards. Third is the fact that in our area the code enforcement personnel would be uneasy that someone is actually checking the same things they are. Fourth is there going to be a higher tax credit with this new requirement system. Fifth I would need to be trained on the framing side of the inspection and where does this happen or who pays for this.

Krebs, Mark

I have three (3) concerns with EPA's proposed ENERGY STAR 2011 proposal which are discussed as follows:

1. I appreciate that the proposed Energy Star 2011 does not allow an unfair advantage for electric resistance space heating in its Exhibit 2: ENERGY STAR Reference Design. However, EPA does allow for electric resistance water heating. This allowance should be modified to align with EPA's Energy Star appliance standards for water heaters which do not allow electric resistance.

2. EPA's Proposed Quality Checklists for indoor air quality number 7.1 specifies "no ventless combustion appliances installed, except for kitchen cooking devices." This requirement appears to be arbitrary as EPA's associated documents for this proposal present no justification for banning such appliances. Moreover, the manufacturers of such devices will probably consider this requirement capricious as well. Therefore, this requirement should be eliminated.

3. The overall cost effectiveness of this proposal is lacking. Based on EPA's stated \$4,364 average cost divided by \$443 per year savings (per the following tables) this indicates a 10-year simple payback on average. This is not sufficiently cost effective assuming the average consumer has a choice in the matter. Accordingly, EPA is advised to scale back the cost of its proposed revisions.

				Annual Utility Bills (\$)		
				Costs		Savings
Home	Climate	Location	Heating Fuel	2006 IECC	2011 ENERGY STAR	2011 ENERGY STAR
1	2	Phoenix, AZ	Electric	1,889	1,475	414
2	2	Orlando, FL	Electric	1,620	1,287	333
3	4	Lexington, KY	Gas	1,778	1,335	444
4	4 Marine	Seattle, WA	Gas	1,454	1,142	311
5	6	Chicago, IL	Gas	1,929	1,403	527
6	6	Minneapolis, MN	Gas	2,196	1,571	624
Population Weighted Average For These Six Homes				1,806	1,364	443
Sample Home 1			\$4,950			
Sample Home 2			\$5,060			
Sample Home 3			\$4.072			

ENERGY STAR Qualified Homes 2011 Illustrative Savings Summary

	.,
Sample Home 1	\$4,950
Sample Home 2	\$5,060
Sample Home 3	\$4,072
Sample Home 4	\$3,992
Sample Home 5	\$3,930
Sample Home 6	\$4,179

Average \$4,364

This concludes my comments.

Mark Krebs

KR Services – Ripberger, Kenneth

The new changes proposed to Energy Star for residential homes are not necessary. The system was just given a major and cumbersome upgrade a few years back. My clients have resisted doing any more energy ratings already, these new changes will run away more proposed ratings.

L.E. Meyers Builders, Inc. – Meyers, Leon

L.E. Meyers Builders is a general contractor engaged in the construction of new custom homes and residential renovations for over 27 years in the Research Triangle area of Piedmont NC. We have participated in EnergyStar for about six years at a very modest volume, many times encouraging our clients to consider EnergyStar when they have not been otherwise inclined to do so. The 2011 guidelines will put an end to our EnergyStar work.

It's clearly a conscious policy decision on the part of EPA to penalize owners who choose to build larger and more complex houses. In my opinion, that direction is counterproductive.

Homeowners who are prepared to build larger and more complex houses will contract to have them designed and built with or without EnergyStar. What has EPA accomplished by raising the bar for larger houses so high that very few will choose to participate?

The large-house penalty combined with the astronomical increase in documentation and testing requirements qualifies the 2011 EnergyStar program as a common government bureaucracy. EnergyStar began as a program focused on promoting energy efficiency in residential construction beyond building code requirements using relatively simple metrics and management. Like many other government programs, it has lost its way. As building codes move toward more demanding energy requirements, Energy Star's participation rate and its impact on the nation's energy consumption profile will go the way of many government programs that refuse to accept the realities of markets. That's an unfortunate outcome for a program that still had significant potential before the 2011 changes.

Lawrence Berkeley National Laboratory – Sherman, Max

I generally support the guidelines. I have a few comments

1) On Note 12 of program requirements regarding envelope leakage: RESNET testing protocols alone should not be required. The language should be as in note 21 that equivalent ASTM-approved testing methods may also be used.

2) IAQ Checklist there is a reference to ASHRAE Standard 62.2-2007. There have been several addenda issued on that standard and they should be included. ASHRAE will republish Standard 62.2 in 2010 (which will be 2007 with all addenda passed as of that time): since that will happen before 2011, I would suggest you make the reference 62.2-2010.

3) Note 3 of HVAC Checklist puts limits on oversizing. This is an inappropriate limitation and can be counter-productive. The two reasons for not wanting oversizing are part-load efficiency and, in humid climates, latent removal. Rather than having this requirement have two requirements. One requirement might be that the efficiency must be met at Manual S load not full equipment load or equivalently that the manufacturers part load correction term must be applied for any unit oversized by more than 10%. The second requirement, dealing with dehumidification. belongs in Note 4. Other requirements may work as well, but the oversizing one interferes with energy efficient operation of the HVAC system and hinders occupant comfort

4) Note 4 of HVAC Check list regarding latent capacity. First, this requirement should apply to Climate zones 1A, 2A 3A, 4A. All these climates can potentially have problems and the problems expand as the quality of the home improves. Second, SHR < 0.7 is not sufficient to be control humidity. In these climates there will be many hours where there will be little sensible load but substantial latent load and the system will not dehumidify because it will not run. Products currently on the market, however, can meet this load and should be allowed. If you must have a prescriptive option to a stand-alone dehumidifier consider multispeed A/C units (having an SHR<.7) plus an ERV or dehumidifying supply air ventilation system.</p>

5) Economizers or evaporative A/C are penetrating the residential market and have very good energy performance in climate zones 1B, 2B, 3B, 4B (and maybe C zones as well), but the checklist needs to be expanded to make sure they are installed correctly."

Ledger Builders – Pruim, Mark

I am writing in response to the proposed rule changes for energy star requirements. Our company is building homes at the current energy star requirements and we feel those requirements not only provide a good balance between energy efficiency and cost but also practical and reasonable ways to build an overall better home. Additionally, there are several other programs (LEED, green built Michigan) available offering certification of a higher level of efficiency for those contractors and clients interested in achieving a higher level. Sadly, if the proposed requirements are approved we will no longer be able to justify the expense of energy star.

Lightly Treading, Inc. – Bartczak, Clayton

I agree with RESNET that the HVAC Quality Installation Rater checklist is beyond the scope of work for most raters and as RESNET points out, most raters are not qualified to perform these types of QA on HVAC installation. I urge the EPA to reconsider this particular part of the program.

Additionally, I was extremely happy to see EPA's proposal of the Size Adjustment Factor. I (and many other raters I know) believe this is a key factor that should be taken into consideration when doing an energy rating on a residence. Unfortunately, energy rating software does not account for this either and as such, larger homes are not seen as the large energy consumers they truly are. Thank you for including this important piece in your proposal!

Littlewolf Architecture – VIcek, Christopher

I've been designing Energy Star certified homes for 10 years. So far it's been a pretty minimal requirement to achieve. In general I applaud the intention for increased performance, verification, and size-adjustment factor. I've dabbled with the LEED rating system, and find it useful but cumbersome for the residential work I do. I like the ease of the Energy Star system, the market appeal of it, and rebates for my clients & builders.

However, if we're going to the trouble of the additional inspections and ratings, I'd like to see the improvements beyond just achieving the E-Star rating to be EMPHASIZED. Similar to the E-Star label that shows \$/year for appliances, I'd like to see something along the lines of the Size-Adjusted HERS rating to be touted for each job. HERS 85 is minimal, but OK it gets a rating. But we should be emphasizing when we achieve better, such as ""This Home HERS 60 (or 40)!"" Get these numbers into the psyche of consumers so they think about it when shopping for houses.

The ""Road Ahead"" presentation PDFs are great. They could go further, especially with mechanical systems - layout, system diagrams, efficiency options, design for future alterative sources (i.e., design for geo, solar future tie-ins). But the final ""Road Ahead"" PDF has some pretty mediocre house plans! We can do better than that on any budget.

Long Island Builders Institute - Watt, Michael

The Long Island Builders Institute (LIBI) is a signatory to a joint letter with the Long Island Power Authority, the New York State Energy Research and Development Authority and the New York State Builders Association in response to the stakeholders comment request on ENERGY STAR 2011 due today. We are submitting this additional comment to clarify our issues with the proposed new standard.

LIBI is probably the only homebuilders association that has actively supported the adopting by local governments of energy code amendments incorporating the ENERGY STAR requirements into their local codes. We did so based on strong community support for such an action and our recognition that these requirements were cost effective for our customers.

These new amendments are proposed because codes have become more energy conscious. For the ENERGY STAR program to remain meaningful for market transformation on a voluntary basis, therefore, higher standards are needed.

LIBI supports the intent to "raise the bar" on the existing ENERGY STAR standards for the voluntary program. In that context, ENERGY STAR creates a goal, that should be challenging yet attainable. However, in the context of a pattern of local government code adoption of these standards caution must be exercised. Long Island has a situation not seen in most of the country in that ENERGY STAR is mandated in ten of the 13 towns that comprise the Long Island region. So, as ENERGY STAR changes so do the local codes. There will be a huge need for education the cost and prerequisite of which has not been recognized tin the materials the agency has circulated. Education involves the design community, building community, and most importantly, government and the public. For this reason alone, phased implementation to provide the time needed to re-train raters, architects, engineers, local building officials, builders themselves and the members of the trades must be allowed for. LIBI's initial effort when codes were adopted to build industry infrastructure through personnel training was Herculean.

The program changes add costs that are inconvenient and come at a difficult time for our industry. We need to evaluate their effectiveness in saving energy and the payback period for our homebuyers. We are far more concerned about the practicality of the proposed standards and their implementation, however.

The increases in the program requirements will result in a drop off of participants in the voluntary program, but our members have little chance to avoid unwanted costs and the practical difficulties of these new requirements.

The current HERS Score Rating works because it creates a known benchmark. We are not sure the chaotic situation that we will face in court codes and above codes incentives is worth the added benefit. To the extent that the individual rater makes the changes then any "standard of measurement" is gone.

The Size Adjustment Factor may work if it can be implemented into the software. Many communities are looking at this issue and a recognized standard is preferred to the whim of a local government.

The Thermal By-pass checklist is similar enough to the one used now and this will work.

The Quality Framing Checklist promotes framing practices that will increase the energy savings of a structure, but some are problematic in our coastal area. For example, some Long Island municipalities will not allow items (2.1.1, 2.1.3, 2.2). The wind loads we are required to design to do not allow these practices. In addition, the insulated sheathing (2.2) in this wind load area will require double sheathing and additional added cost. Some of the practices proposed under Optimum Value Engineering are open to interpretation by individual building departments, making the award of an ENERGY STAR certification dependent on the Building Dept and not a national standard.

The HVAC Checklist certainly would result in Energy Savings, but the cost and time of training could be a problem for some smaller contractors. The actual costs of the work are relatively insignificant compared to the potential for operational savings and efficiencies, but phased implementation is necessary for pre- training participating contractors. There is no standard for hydronic heat.

The Indoor Air Quality Checklist needs to be incorporated now. It is too important from a health standpoint not to incorporate this when the structures are being made tighter. The potential for liabilities alone would make the adaption of this checklist a must.

The Water Managed Construction Checklist, while important from a building science and health standpoint, does not result directly in energy savings. Many builders are doing this now and it may be less important for inclusion at the initial stage of program implementation.

Under water conservation, the reduction of water heating loads will result in savings. But, since practices (other than low fixtures themselves) need to be implemented in the design stage, we suggest you delay implementation until the necessary education can taker place.

LIBI can't overemphasize the need for time to educate everyone concerned before implementation, particularly in our ENERGY STAR-as-code regulatory environment. We will work with LIPA to refine our estimates of educational effort needed and hope EPA can assist in this effort to support ENERGY STAR implementation through code as well as voluntary goal setting.

LIBI urges EPA to hold this stakeholder comment open and also to establish a second round in response to EPA changes developed in reaction to stakeholders.

Respectfully submitted,

Michael Watt Executive Vice President Long Island Builders Institute

Lumber One, Avon Inc. - Carlson, Chad

EPA and Energy Star Program,

As a RESNET Rater and partner builder, I find the proposed energy star requirement changes extremely disheartening and burdensome. In these economic times and the new construction housing slump, it is difficult enough to build homes, much less try to encourage builders such as ourselves to spend an additional \$5,000 to gain an Energy Star label.

As a builder in Minnesota, we have far exceeded the Energy Star requirements for years. Our homes and our contractor's homes are testing at or below a HERS score of 63 on a consistent basis. Their Thermal Bypass checklists are passing without major corrections and in many cases exceeding the requirements. It is our opinion that the additional requirements will only lead to additional costs with VERY LITTLE benefit in the home's construction, tightness and energy efficiencies.

Particularly burdensome is the HVAC verification process by the contractor and rater. The costs for on-site testing by the contractor and the rater will ultimately be passed onto the consumer. With additional rating costs and time by the installer, an additional cost of \$2,000 to \$3,000 will make or break a deal. At this point, my fear is that builders will just give up and no longer try to qualify their homes as an Energy Star home if they risk losing a project.

In addition, contractors will become complacent and begin boiler plating test results and checklist as many of the contractors install the same equipment from house to house. If this happens, what really is the purpose of the checklists? Also, is the EPA going to provide funding to train ALL the raters so they are certified to sign off on the contractor's checklist? I will NOT verify equipment or testing results without knowing how they are suppose to be tested and if the test results are accurate. I agree with RESNET assessment that this should be an incentive program and NOT a requirement! As a Rater, I assure you I will lose my contractors if this requirement is adopted, which impacts my livelihood. As a Builder, we will certainly no longer participate in the Energy Star Program. Will we lose our competitive edge by not building Energy Star Homes? Maybe. However, knowing the other builders in our region, they will no longer participate either.

With this said, I respect the intent of the EPA and Energy Star to ensure our homes are being built to the best standards. However, the changes introduce an unnecessary cost to the homeowner (again contractor and rater's costs will be passed to the homeowner) and, in my opinion, will make the Energy Star Label disappear from new home construction. Finally, as a Certified RESNET Rater, I fully support the position of RESENT challenging the proposed changes. I'm willing to take any comments or questions. Thank you for your time.

Lutron Electronics Inc. – Anderson, Erik

Lutron Electronics shares the Department of Energy's commitment to and support of energy saving practices within the construction industry. We have built our business on creating products that save energy and the environment in both residential and commercial applications since 1961.

We are concerned; therefore, about the Advanced Lighting Package's current standards in this category. According to the standards within the lighting category they only take into consideration the fixture and bulbs, not what controls them, as in an occupancy/vacancy sensors, switches, or dimmers.

Lutron respectfully requests that the Department of Energy review the "Lighting and Appliances" category again. By adding dimmers along with occupancy/vacancy sensors to the category, builders will benefit from another solution when they consider how to qualify their structures to the Energy Star standards.

We realize many people are unaware that dimming an incandescent/halogen light bulb save energy and the environment. There are two primary issues to understand, let's consider new construction along with the existing homes within the United States:

Energy Savings and Return on Investment -

By dimming an incandescent bulb to a level equal to 75% of its full brightness, one will reduce power consumption by approximately 20% and extend the bulb life four times longer. If one replaces a 300 watt fixture with an \$18.00 dimmer, the dimmer will pay for itself in less than three years with standard use.

Environmental Impact -

If every US household added only one dimmer, the resulting savings would be 2.2 billion kilowatt hours of energy per year. Also, saving this much energy reduces CO2 emissions by 4.3 billion pounds per year. The facts are:

- 1. 2.2 billion kilowatt hours are equivalent to the annual energy output of 1.7 coal plants.
- 2. 4.3 billion pounds of CO2 is equivalent to the annual CO2 emissions of 370,000 automobiles.

Lutron Electronics strongly believes that builders will benefit from selecting multiple product types within a category that offer significant energy savings to the homeowner and a positive impact on the environment. After careful consideration, we are confident the Department of Energy, Energy Star Home Task Force will want to take a more in depth look at this addition to the existing Advanced Lighting Package. We would be more than happy to discuss the solutions dimming and sensors can provide to energy savings along with enhancing the comfort of the home.

Enclosed are Lutron's suggested category changes.

Attachment 1

Lyon, John

Your proposed energy standards will put the bullet in the head of the already wounded housing industry. It's as if you want to destroy the housing industry.

M/I Homes Midwest Region – Bailey, Dennis

I trust all is going well for you and Energy Star for Homes. Our business here at M/I Homes continues to be challenging, but we feel the general market conditions in the Midwest have improved slightly from 2008. Energy Star continues to be an important part of our program and product offering to our customers. We again appreciate the help you have given us in training and education which has greatly impacted our ability to improve.

We are aware there are pending guideline changes under consideration for EPA Energy Star Certification. We appreciate your commitment to help us improve the product we deliver. We are cautious however and very concerned about the potential of significant cost increases. For M/I Homes to compete in our market place in our primary target price ranges for first time and first move up buyers we fight daily to keep our costs competitive. We have spent the better part of the last year on an initiative to reduce costs and at the same time working to make sure we are delivering what our customers want and can afford. This is a critical initiative that virtually everyone in our industry is doing to stay in business.

Your guideline information that was distributed said you anticipate a \$4-5,000 increase to achieve these guidelines. This increase together with the cost we have in our homes already would put the total cost of a new home Energy Star certification beyond the level that our customers would willingly agree to pay. Our buyers are often in a situation where they are choosing options for their new home knowing that they are working to achieve a dream and at the same time trying to afford the payments. An additional \$4,300 is a significant investment for someone who is buying a \$150,000-\$250,000 home, and it's one that many would not make. The competitor who can offer his non-Energy Star home will gain an advantage by selling \$5,000 below us and take our sales and profits at a time when we have too little of both.

We are currently analyzing the cost impact to M/I and our customers and we do not want to sound like an alarmist. In complete candor however, with our industry struggling, buyers concerned about jobs, buyers facing a credit issues with the prospect of rising rates, this may not be the time to make this change. If homebuilders become less competitive in their markets, we could see fewer homebuilders offering Energy Star.

We would be more than happy to discuss this topic with you if it would help. Thanks for listening and again thanks for all you have done to help M/I Homes.

MaGrann, Mark

Here are some notes and comments from your presentation in KY. These are mine personally. The team here at MaGrann will give you a more formal response later this week. I did not get a chance to discuss with you after the event but I did want to touch base. Generally, I agree with you and know we have to raise the bar over time. But I think the scope, timing, and costs of the change will have a more of a negative impact than we both would want.

General Comments (MM)

Raters:

- We will be now engaged in Commissioning / Building Inspection Higher cost, more liability
- Costs not accurate on Upgrade Cost example for Raters. No framing / No HVAC lists /No water management. Additional work will cost far more than \$50

Scope:

- Out of Bounds for EPA
- Crossing with LEED & Build America
- Code Compliance is for others

Good:

- Higher EE, Appliance / Lighting, Ventilation Standards

Needs Work:

- Hard ducts & mastic requirement should be incorporated
- Ducts in exterior walls should be prohibited

MM's Opinions

•

- You will have drop outs > 20%. This is what you will hear from builders:
 - HVAC Requirement (Contractors will not do this readily)
 - Framing Requirement (Too much, too soon)
 - Indoor Air Requirement (Too Much, too soon)
- Postpone to 2012. Let market recover first.
 - Match with federal rules on code enhancements scheduled for 2012
 - Get EEM's in place with Banks / Appraisal FIRST. Add Estar value in real dollars before this hits the street.

MaGrann Associates – McCleery, Doug (on behalf of McGrann Associates)

Please find attached MaGrann Associates' comments regarding the proposed 2011 Guidelines for ENERGY STAR Homes. Also attached are 3 EPA documents containing "sticky notes" that address specific guidelines and checklist items. Please feel free to contact me with any questions regarding these comments. We look forward to working with you to finalize these guidelines in a manner that produces energy efficient, durable, comfortable, safe and cost effective new homes.

MaGrann Associates has spent a significant amount of time reviewing the proposed ENERGY STAR 2011 Guidelines, both internally and as participants in industry discussions, over the past several weeks. We find that these guidelines are consistent with the EPA's publicly stated goal of "transforming the housing industry to build homes with less environmental impact and increased homeowner benefits, including greater affordability through lower energy bills along with improved comfort, indoor air quality, and durability." We agree that working to achieve these goals is of the utmost importance to the homebuilding industry. We further find the proposed changes to be firmly rooted in good building science.

However, as longtime advocates of energy efficient home building and the ENERGY STAR Homes standard in the custom, production and affordable new home markets, we have reservations about introducing the entire proposed package of guidelines and checklists as baseline requirements for participating in the program beginning January 1, 2011. As you know, MaGrann Associates will likely be the first implementers of the new "checklist" standards as part New Jersey's Climate Choice Home program (a 3rd tier pilot within the existing residential new construction program targeting limited enrollment). Even on this limited basis and with highly motivated builders, we expect to have issues with the checklists and have budgeted significant time and resources to address and overcome the expected hurdles.

We have participated in the review process conducted by RESNET and Northeast HERS and signed on in support of the comments issued by these groups. In this letter, we will attempt to not repeat those comments which have been widely voiced. Rather, we have chosen to focus on the following key issues that are important to MaGrann Associates and the segment of the home building market in which we most actively participate:

1. We support the higher energy efficiency standards and the inclusion of base load-reducing appliances and lighting.

2. We support the addition of ventilation requirements, but see the implementation of mandatory kitchen ventilation as potentially problematic, particularly in attached housing where kitchens tend to be located away from exterior surfaces, lengths of ventilation systems are excessively long and the use of fire dampers in rated assemblies may create unwanted grease traps.

3. We support the use of the Sizing Adjustment Factor (SAF) as a positive step towards reducing the energy use in large homes. However, it is our opinion that the use of conditioned floor area (CFA) as the basis for the SAF will have the unintended result of discouraging the use of the conditioned basement (unfinished, but within the thermal envelope of the home). For example, if "House 3" from the *ENERGY STAR Qualified Homes 2011 Savings and Cost Estimate Summary* were to be built with insulation on the basement walls instead of in the floor over the basement, the home would then be approximately 50% larger than the Benchmark home and would require a 10% lower HERS score.

4. The program checklists, as proposed, have the potential to make the program very inflexible. The ability to use an energy model to differentiate between quantifiable items, such as a reduced insulation value below an attic platform, the impact of 26% framing vs. 17% framing in a wall assembly, or the difference between Grade I and Grade II insulation, has been curtailed. If the checklists are to be used in a similar fashion to the current Thermal Bypass Inspection Checklist, where rigid compliance is needed and builder verified items are used as the exception rather than the rule, we expect to see a low compliance rate. If the checklists are to be used less rigidly and with a wider use of builder verified items, the compliance rate may not suffer, but the results will be less consistent.

5. The expansion of program requirements beyond those which are directly related to energy performance (savings and/or comfort) may have problematic consequences in the following ways:

- a. The new scope crosses into code enforcement territory in several areas, including Water-Managed Construction and HVAC Quality Installation, which increases liability for raters and program sponsors;
- b. The new scope expands the rater's role into building commissioning in the areas of HVAC Quality Installation and Indoor Air Quality, thus increasing implementation cost and liability for raters and program sponsors;
- c. The items included in the checklists cannot be verified during the two standard inspections traditionally associated with ENERGY STAR Homes verification. The two or more additional inspections we anticipate needing to conduct will create a significant scheduling burden for builder site personnel.

- d. The Contractor HVAC Installation Checklist contains line items that may require the input of 2 or more entities (a design engineer who is not the installer will be responsible for much of the design portion and the field technician who performs the installation) and requires field calculations that go well beyond measurements (such as field measured capacity). In addition, we have experience in New Jersey where the addition of a much simpler contractor verification form resulted in a continuous backlog of 20% or more homes that could not be certified.
- e. The additional training required for raters, builders and subcontractors will place a significant burden on raters, HERS Providers and program sponsors alike. Quality ssurance procedures have not yet been developed to cover the additional scope.
- f. The additional resources will be required to implement the expanded program. The additional costs must be passed on to builders, carried by program sponsors, or absorbed by raters. In many cases, the additional implementation costs will reduce participation.
- g. Many potential program participants will see the simultaneous implementation of the 5 new checklists and associated standards as a wall so high that they will choose not to attempt the climb. In an environment where energy savings are so critical, combined with a down market, this may be a setback that program sponsors cannot accept. Some current advocates may choose to adopt another standard.

6. While we have no way of accurately predicting the impact of the proposed changes on the participation rate, our gut reaction is that we could see a dropout rate of 20% or more amongst the market rate homes in the New Jersey program. The affordable market is harder to predict. We suspect that the funders of affordable projects in New Jersey will see the benefit of the additional program changes in the areas of durability and indoor air quality. However, we don't know if these projects will be able to bear the additional cost of implementation. The "worst case" scenario is that the funders of affordable housing in New Jersey will seek another standard and that the dropout rate could approach 100%.

We recommend the following modifications to the proposed 2011 ENERGY STAR Homes program requirements as a way of balancing the need for increased home performance with that for the continued participation of builders:

- a. Implement the new requirements that directly impact the energy use of these homes. The other proposed requirements could be handled in a number of ways. The items on the current checklists could be separated into "required" and "recommended best practice" categories, which could then be applied on a voluntary basis by builders, adopted as additional requirements by program sponsors, or adopted as requirements for program participation at higher levels (such as the Tier 3 Climate Choice Home program in NJ). On a more gradual basis, the "recommended best practice" items could be transitioned into the "required" category.
- b. Make sure that the HERS Target Index can be calculated by the HERS Rating software before the standard goes into place. It is my expectation that the software developers will be able to accomplish this, but requiring raters to manually create a HERS Target Index invites an unwanted inconsistency to the process.
- c. Provide performance based alternatives to mandatory checklist items, where possible, to increase program flexibility and prevent the "one strike and you're out" scenario. For example, allow Grade II insulation installation and account for the decreased energy performance in the HERS Rating and allow a maximum duct leakage to outside of 6 CFM/100 square feet for small homes under 1,200 square feet (keep the reference home at 4 CFM)
- d. Make the Water Managed Construction Checklist a builder verified checklist, preferably on a voluntary basis (see 1.a. above). This checklist alone may require up to two additional site visits if the HERS rater is responsible for verification.
- e. Base the Sizing Adjustment Factor (SAF) on Finished Floor Area (FFA) instead of Conditioned Floor Area (CFA) in order to not discourage the use of conditioned basements.

We have electronically attached specific comments and questions to the .pdf versions of the DRAFT ENERGY STAR *Qualified Homes 2011 National Program Requirements* and DRAFT ENERGY STAR *Qualified Homes 2011 Inspection Checklists* documents.

Sincerely, Douglas S. McCleery, P.E. Vice President/Technical Services

Attachment 1 Attachment 2 Attachment 3

McIntyre Builders Inc. – McIntyre, Arn

Comment 1

Concerned with energy star certification moving toward green certification. Energy star should stay with energy. Most all green certification programs require Energy Star as a baseline requirement.

By adding requirements outside of energy the Energy Star program will conflict with Green certification programs. This will add redundancy and potential discrepancies between the programs. This will add confusion and cost as well as complication to the certification process. The auditors I have spoke with have stated their cost to the builder will increase close to three times. Up to \$1,800 to \$2,000 for only the inspection process. Much of these cost are a result of the additional inspections some of which are focused around non energy items. e.g. water efficiency, water management, site grading etc.

Please focus the program on energy and not create the additional administrative cost to adhere to the program.

Some cost impacts can be inspected but these changes will likely add a large amount of cost and much of which are administrative that add no value to the consumer.

Comment 2

The base home method appears to better address the issue with HERS comparing like houses even when they are larger homes. I have not compared examples but it looks like it is going in the right direction.

Comment 3

Clarify type of ducting that requires insulation. Will exhaust fan and exhaust ducts need to be insulated.

Metzguer, Tom

I am committed to sustainable building and living practices, and I applaud ES efforts to raise the bar. However, I think the proposed guidelines are a bit too much of a reach at this time and all at once and thus may backfire. How about a logical phase-in that will not hit the building industry so hard and risk ES being blown off as another silly government program? Maybe start in 1/2011, but phase it in over three years? That would give builders, product manufacturers, energy raters, and others more time to adjust, create, and strategize about how to help this happen. You could, for instance: notch the required energy rating down a few points each year, allow builders to certify a bit more (so raters will not have to make additional visits to verify), and add the checklists in two or three stages rather than all at once. Please find a way to phase it in!

Morehead State University – Schack, Edna O.

I suggest the advanced lighting package include a requirement for outdoor lighting fixtures that are both ENERGY STAR® qualified and International Dark-sky Association (IDA) approved. The obvious benefits are the energy and financial savings. Other benefits include increased safety by minimizing glare, happier neighbors by decreasing light trespass on other's property and a positive impact on wildlife whose natural habits are adversely affected by artificial light. There is even recent evidence that excessive artificial light might adversely affect humans by decreasing melatonin levels that are triggered by darkness. Melatonin may be connected to sleep patterns and cancer occurrence. IDA approved fixtures are designed to maximize these benefits. More information about benefits and best lighting choices can be found at http://www.darksky.org/mc/page.do

Moutos, John

To whom it may concern,

In reviewing the proposed changes to the energy star model, I believe that the lightning package poses significant additional costs, major delays and other difficulties in home building. Currently, I order the bulk of the lighting package for my homes from a local electrical distributor for the simple fact that home depot, Lowes and other popular supply chains do not offer enough variety in there lighting to accommodate current trends and screw type CFL's which are the only type of CFL that can easily be purchased at any store for a fraction of the specialized pin style CFL that must be ordered. Furthermore, the time it takes to receive the lighting from the time the order is placed is anywhere from 1 to 4 months. While consumers are constantly changing buying habits, it is a ongoing battle to search for unique styles in lighting that offer a convenience in peoples lives. Currently, appraisers do not make an adjustment for Energy Star / Healthy Built Homes in the area and it is the duty of the builder to persuade and prove the value of the home to the buyer. If this change is to be implemented, 2 years is not enough time for manufactures to adopt these changes and provide products that are priced consumer friendly.

NAIMA – Cottrell, Charles

These comments regarding the proposed new guidelines for Energy Star qualified new homes are submitted on behalf of the North American Insulation Manufacturers Association (NAIMA). NAIMA is the association for North American manufacturers of fiber glass, rock wool, and slag wool insulation products. Its role is to promote energy efficiency and environmental preservation through the use of fiber glass, rock wool, and slag wool insulation, and to encourage the safe production and use of these materials.

NAIMA is a strong supporter of the Energy Star Qualified Homes program and supports EPA's goal of reducing energy use in homes by requiring proper installation of not only insulation, but all building components that affect energy efficiency.

Energy Star Homes R-value Levels

Energy Star Qualified Homes is widely recognized as the largest brand in the home energy efficiency market and the program is regularly accepted as an "above code program." NAIMA believes above code programs must contain energy efficiency requirements which exceed the International Energy Conservation Code (IECC), the model code which represents the minimum acceptable energy efficiency level for new homes. The proposed changes to the program do not contain any upgrade to the R-value requirements already contained in the 2009 IECC. It is also important to recognize that state and local governments and have amended their energy codes to be more stringent than the model codes.

The building envelope is the longest lasting part of the building and the most costly to upgrade in the future - especially the opaque walls. Many homes that were built 50 to 75 (or more) years ago are still in existence and many have the same insulation levels that were installed when they were built. The ceilings, floors and especially the walls are the most enduring portion of a home that affect its energy efficiency and the most cost effective time to insulate them is at the time of construction. Installing insulation correctly is important, but it is equally important to install the greatest R-value that can be justified.

The ENERGY STAR Qualified Homes 2011 Fact Sheet dated May 04, 2009, contains the following question and answer.

"Why Change the ENERGY STAR Qualified Homes Guidelines Now?

EPA is revising the guidelines for ENERGY STAR qualified homes to ensure that qualified homes continue to represent a meaningful improvement in energy efficiency over homes that that are built to code or standard builder business practices. The revision has been necessitated by the following:

• Codes are ramping up:

Across the nation, increasingly rigorous energy codes are being planned or implemented at the Federal, State, and local levels. When codes approach or exceed the ENERGY STAR Qualified Homes guidelines, it is critical that EPA increase the requirements for the ENERGY STAR program to assure meaningful above code performance for homebuyers."

If EPA really wants "to ensure that qualified homes continue to represent a meaningful improvement in energy efficiency over homes that that are built to code" why not require above code insulation levels? Increased insulation requirements are easily accomplished via the prescriptive path or performance path. Today's technology and building practices allow increased insulation levels without design alterations or significant cost increases. The energy savings are more predictable and more easily accounted for than many of the other changes being proposed by EPA. It is apparent that EPA is struggling to accomplish and document its goals. Proven technology, such as thermal insulation, is an easy way to help achieve those goals, and it will stay in place, saving the same energy, for the life of the structure.

Currently the Department of Energy publishes cost-effective R-value recommendations with levels that significantly exceed those in the IECC and the Energy Star Qualified Homes program. NAIMA recommends the Energy Star Qualified Homes program adopt the following table of insulation requirements, which are cost-effective levels contained in the DOE recommendations:

Climate Zone	Attic	Cathedral Ceiling	Walls		
			Cavity	Insulation Sheathing	Floor

1	R-49	R-49	R-15		R-13
2	R-60	R-49	R-15		R-25
3	R-60	R-49	R-15	R-5	R-25
4	R-60	R-49	R-15	R-6	R-30
5	R-60	R-60	R-21	R-6	R-30
6	R-60	R-60	R-21	R-6	R-30
7	R-60	R-60	R-21	R-6	R-30
8	R-60	R-60	R-21	R-6	R-30

Energy Star Qualified Homes Installation Requirements

NAIMA's mission is to support the proper use and installation of fiber glass, rock wool and slag wool products. These insulation materials represent the majority of the insulation products used in residential construction. After the introduction of the RESNET insulation grading criteria, NAIMA and its members have responded to questions from insulation installers whose raters refused to rate fiber glass batt insulation as Grade I, despite clearly meeting the RESNET Grade I criteria.

The RESNET 2006 Mortgage Industry National Home Energy Rating Systems Standards clearly allow fiber glass batt materials to be rated as Grade I. Following are the RESNET Grade I criteria:

1. "Grade I" shall be used to describe insulation that is generally installed according to manufacturers instructions and/or industry standards. A "Grade I" installation requires that the insulation material uniformly fills each cavity side-to-side and top-to-bottom, without substantial gaps or voids around obstructions (such as blocking or bridging), and is split, installed, and/or fitted tightly around wiring and other services in the cavity. To inspect, probe in, around, or through the insulation and/or vapor retarder in several places to see whether these requirements are met. Replace or repair the vapor retarder and insulation as necessary. During inspection (typically before drywall is installed), if the exterior sheathing is visible from the building interior through gaps in the cavity insulation material, it is not considered a "Grade I" installation.

To attain a rating of "Grade I", wall insulation shall be enclosed on all six sides, and shall be in substantial contact with the sheathing material on at least one side (interior or exterior) of the cavity. Exception: the interior sheathing/enclosure material is optional in climate zones 1-3, provided insulation is adequately supported and meets all other requirements.

For rim or band joist insulation, use the inspection guidelines under "Walls—Insulation value" to assess "Grade I", "Grade II", or "Grade III" installation. Exception: the interior sheathing/enclosure material is optional in all climate zones, provided insulation is adequately supported and meets all other requirements.

For exterior applications of rigid insulation, insulation shall be in firm contact with the structural sheathing materials, and tightly fitted at joints to be considered a "Grade I" installation.

For faced batt insulation, Grade I can be designated for side-stapled tabs, provided the tabs are stapled neatly (no buckling), and provided the batt is only compressed at the edges of each cavity, to the depth of the tab itself, and provided it meets the other requirements of Grade I.

[emphasis added]

For sprayed or blown-in products, density shall be sufficient that the fill material springs back when compressed slightly with a hand or finger, and provided it meets the other requirements of Grade I.

Interpretation: The following illustrations represent the boundary conditions between Grade I and Grade II, that is, the installation shall be at least this good to be labeled as "Grade I":

Occasional very small gaps are acceptable for "Grade I".

Compression or incomplete fill amounting to 2% or less, if the empty spaces are less than 30% of the intended fill thickness, are acceptable for "Grade I".

The following standards may be applied as a reference: NAIMA, Recommendations for Installation in Residential and Other Light-Frame Construction—Fiber Glass Home Insulation (PUB # BI402), Recommendations for Installation in Residential and Other Light-Frame Construction—Fiber Glass Loose Fill Insulation (PUB # BI403), CIMA, Technical Bulletin #2 -- Standard Practice for Installing Cellulose Building Insulation, Technical Bulletin #3-- Standard Practice for Installation in Sprayed Cellulosic Wall Cavity Insulation. For other products and materials, manufacturer's installation instructions will apply.

These grading criteria were developed by RESNET with input from manufacturers of all commonly used residential insulation. The "Grade I" clearly includes, and can be met using fiber glass (or rock wool) batts, either inset or face stapled. Furthermore, thermal testing conducted at certified test labs show inset stapled batts perform at their rated R-value and substantially the same as face stapled batts.

The RESNET standards state that all insulation materials can meet the Grade I criteria. NAIMA contends that EPA must be completely product neutral and clearly state that all insulation products, including batts, can equally achieve a Grade I rating. To that end, we strongly urge EPA to add the following statement to item 1.2 of the ENERGY STAR Qualified Homes 2011 Thermal Bypass Inspection Checklist:

(Note: All insulation materials can be rated "Grade I". Inset stapling of faced batts does not prevent a "Grade I" rating. For specific inspection criteria refer to the RESNET *2006 Mortgage Industry National Home Energy Rating Systems Standards.*)

Duct Insulation Requirements

Insulating ducts, in both unconditioned and **conditioned** spaces, is a proven method of reducing energy consumption. The Energy Star Qualified Homes program currently requires ducts located in unconditioned space to be insulated, but like the building envelope, the requirements are only as equal to the minimum code.

Ducts located in conditioned space should also be required to be insulated for two reasons. First, insulation on ducts in conditioned space virtually eliminates the likelihood of condensation on cold ducts and hence the associated moisture problems. Second, insulation on ducts helps assure the air discharged from the register is at the design temperature. This is important because a homeowner who is uncomfortable in one room may choose to change the thermostat setting for the entire house to make the one room comfortable, i.e. raise the setting during the winter and lower it during the summer. This behavior would result in increased energy use. Insulation on ducts in conditioned space (and sealing) helps ensure the duct system works efficiently and maintains an even temperature throughout the conditioned space.

The argument made against insulating ducts in conditioned space is that energy loss (or gain) from ducts in the conditioned space doesn't matter because it is not lost to the outside - in other words, it still either heats or cools the home. This argument does not consider the behavior, and the resulting increase in energy use, of an occupant trying to resolve a comfort issue by changing a thermostat setting. Well designed duct systems provide conditioned air to the intended spaces with as little loss in air volume or change in air temperature as possible. Maintaining volume relies on duct sealing. **Maintaining temperature relies on duct insulation**.

Therefore NAIMA recommends requiring R-4 insulation on ducts located in conditioned space. This should be done by changing the *ENERGY STAR Qualified Homes 2011 HVAC Quality Installation Rater Checklist* by adding the R-4 requirement to inspection item 2.7 and revise footnote 2 as shown below:

- 2.7 Ducts in unconditioned attics have insulation ≥ R-8;
 All other ducts in unconditioned space have insulation ≥ R-6.2
 <u>Ducts in conditioned space have insulation ≥ R-4 (new language underlined)</u>
- 2. EPA recommends, but does not require, locating ducts within conditioned space (i.e., inside the air and thermal barriers). EPA requires using a minimum of R-4 insulation for ducts inside conditioned space to prevent condensation and increase duct system efficiency. (revised language underlined)

Similarly, revise item 20 of the DRAFT ENERGY STAR Qualified Homes 2011 National Program Requirements to read:

20. EPA recommends, but does not require, locating ducts within conditioned space (i.e., inside the air and thermal barriers). EPA requires using a minimum of R-4 insulation for ducts inside conditioned space to prevent condensation and increase duct system efficiency. (revised language underlined)
NAIMA would like to emphasize that the changes, as proposed by EPA, do not constitute an "above code program" but would more accurately be described as the minimum energy code with rigorous inspections. EPA should take this opportunity to comply with the President's direction to make significant improvements the energy efficiency of new buildings by increasing the envelope and duct insulation requirements in the Energy Star Qualified Homes program. Such improvements would be in line with the President's policies and the Congress' which is currently considering the American Clean Energy Leadership Act, legislation that could make mandatory and significant (30-50%) improvements in the nation's model energy codes.

Thank you for your consideration of these comments and with the recommended revisions NAIMA will continue to support the EPA Energy Star Homes program.

Sincerely,

Charles C. Cottrell Vice President, Technical Services

National Association of Home Builders – Ritterpusch, John (on behalf of NAHB)

Thank you for the opportunity to comment on ENERGY STAR for Qualified New Homes: Version 3. As you know, the National Association of Home Builders (NAHB) has long recognized the importance of energy efficiency to the nation's economy, environment, and security. For this reason, NAHB has been a strong supporter of ENERGY STAR, which we believe demonstrates that building with energy conservation is both practical and profitable. It is with this focus in mind that we submit the following comments for your consideration regarding the proposed revisions to the ENERGY STAR for Homes Program.

Within the residential sector, energy codes continue to become more stringent and it is evident from the proposed revision that Environmental Protection Agency is concerned that state and local energy codes have already approached and in some cases eclipsed current ENERGY STAR performance levels. With that in mind, ENERGY STAR, as a voluntary program, needs to maintain this above-code performance while at the same time ensure that Home Builders have attainable efficiency targets that can be achieved and verified using reasonable compliance methods. The focus of NAHB's comments relate primarily to the proposed mechanism to verify the required "above code" performance.

NAHB takes strong exception to the requirements for the addition of five new checklists as they will be onerous to comply with, require many additional man hours to record, are outside the scope of a typical raters capabilities, outside the scope of an energy efficiency program, and adds a considerable amount to the cost of a rating. The original *Thermal By-Pass Checklist* has been a difficult hurdle for many builders since its introduction. Now the EPA wants to increase that frustration fivefold without any demonstrable proof that these additional hoops would have builder support or consumer interest.

Areas of Chief concern include:

-The *Indoor Air Checklist,* NAHB fails to see the correlation between these new requirements and the improved energy performance of a home, which has always been the stated goal of the ENERGY STAR program.

-The *Quality Framing Checklist* requires sophisticated framing techniques that contribute to higher energy efficiencies but ultimately pushes ENERGY STAR deeply into Green Building territory and more specifically resource efficiency.

-The HVAC Quality Installation Checklists (Contractor/Rater) requires the rater to have a high level of HVAC expertise in an area that generally is not under the purview of energy raters.

-The Water Managed Construction Checklist goes far beyond the scope of what can reasonably be considered as energy efficiency criteria.

NAHB fails to see, for instance, what positive effect the requirement to protected drain tile with clean gravel and fabric filter will have on the energy performance of a home. NAHB further anticipates that raters, who could formerly focus on practices pertaining to energy performance, will now be required to perform many unrelated verifications such as the proper grading of driveways and the installation of qualified membranes on roof valleys. The extra time and training required to learn how to verify these items and then to actually perform the verifications in the field will undoubtedly translate to a more costly and therefore less attractive program.

While these checklists do reflect proper construction techniques, they should not be considered as part of an overall energy rating and are completely beyond what ENERGY STAR should be striving to attain. It is difficult to understand how the various checklists integrate with the EPA charge of providing marketable energy efficient improvements, and, how this new set of requirements will ultimately impact climate change in a way that reflects the mission of the EPA.

Moreover, by Residential Energy Services Network (RESNET) estimation, the costs associated with administering the new checklists are \$1200 per home. And, this is just for the expenses identified with inspections alone, not including the actual upgrades. Add that to the cost of all additional upgrades, including extra inspections for the revised *Thermal Bypass Checklist*, which EPA estimates will cost the builder an extra \$4,950 over the current procedures.

In the wake of an historic housing industry downturn, NAHB is concerned that builders will be less compelled to incur such a cost for a voluntary program. Bear in mind, that 246,000 U.S. households are priced out of the market when the cost of a median-priced new home is increased by just \$1000. This would be an unfortunate turn for a program that has been so successful as an energy-focused initiative. The result could be a loss of traction for the program at a time when many envision the housing industry to rebound from the present slump by riding a wave of interest in energy efficiency.

The ENERGY STAR label has historically been remarkably successful in providing builders with an easily identifiably way to showcase their efforts to build energy efficient homes. However, NAHB is concerned that that same label does not readily convey all the other green practices required of this newly proposed version of ENERGY STAR. With the economic realities at hand, NAHB predicts builders will be more selective in the programs they participate in and will seek those that best allow them to showcase the above–code features they've included in a home.

As you are aware, EPA participated on the consensus committee during the development of the *ICC 700 National Green Building Standard* (NGBS) which was approved by the American National Standards Institute in January 2009, and remains the first and only green building standard to have ANSI approval. In the five months since its introduction, over two thousand projects have been scored to the NGBS via the free scoring tool hosted on <u>www.NAHBGreen.org</u>. As the NGBS is the vehicle to move green building into the mainstream, it is critical for ENERGY STAR to insure their product also incorporates handily into the NGBS's energy practices.

As you are also aware, the NGBS recognizes the current ENERGY STAR program as equivalent to the energy requirement at the Bronze level. If EPA is to remain intent on expanding the requirements of the ENERGY STAR program beyond energy efficiency, NAHB feels EPA should similarly refer to the relevant prescriptions offered by the NGBS as a method of alternative compliance. The Department of Energy has taken this approach in promoting its *Builders Challenge* program, whereby a builder seeking certification to the NGBS can, if they incorporate the certain NGBS practices specified by DOE, simultaneously satisfy the requirements of the *Builders Challenge*. The NAHB Research Center, who provides the certification to the NGBS, is also in discussion with EPA to explore whether the provisions in the NGBS can be similarly aligned with the new *Indoor AirPLUS* program. NAHB invites the EPA to further discuss the feasibility of this idea with respect to the ENERGY STAR program.

EPA needs to be focused on creating energy efficiency criteria that can easily incorporate into credible green building requirements, rather than slowly morph into a standalone green program. NAHB's NGBS allows the current ENERGY STAR requirements to fold smoothly into the energy efficiency practices. Expanding those mandatory items to include a myriad of green building details will lead to a cumbersome integration of the revised program (at best), and force builders to look elsewhere to satisfy their desire to build to above code levels through a more practical approach already found in other existing efficiency programs.

However, NAHB would prefer that EPA keep the focus of the ENERGY STAR brand on what it was created to represent. By attempting to morph the program into an all-encompassing green building program, EPA risks damaging the equity of the ENERGY STAR for HOMES brand. That equity, by right, belongs to the tax payers that have come to rely on the label to identify energy efficient buildings.

For example, the Department of Energy's *Builders Challenge* program has coordinated their program with the NGBS and enabled houses certified under the NGBS to be concurrently qualified with the Builders Challenge program when specific criteria are met. As the NGBS is the vehicle to move green building into the mainstream, it is critical for ENERGY STAR to insure their product also incorporates handily into the NGBS's energy practices. This will give ENERGY STAR the ability to continue to drive the industry rather than taking a back seat.

In closing, NAHB strongly advises EPA to re-evaluate the goals for ENERGY STAR 2011 by amending the guidelines as requested in this letter. NAHB and EPA not only share the same goals, but also the same committed builders who are dedicated to voluntarily building high energy efficient housing. We desire our membership to participate in the ENERGY STAR program in great numbers, are confident that our changes will help guarantee future success. We thank you for the opportunity to provide these comments, and look forward to continuing to work with you and your team to finalize and implement the new program requirements.

Sincerely,

Chip Dence Chairman, Energy Subcommittee

National Propane Gas Association – Swiecicki, Bruce

NPGA is the national trade association of the propane industry having a membership of about 3,500 companies, with 39 state and regional associations representing members in all 50 states. NPGA's membership includes retail marketers of propane gas, propane producers, transporters and wholesalers, and manufacturers and distributors of equipment, containers and appliances. Propane gas is used in over 18 million installations nationwide for home and commercial heating and cooking, in agriculture, in industrial processing and as a clean air alternative engine fuel for both over-the-road vehicles and industrial lift trucks.

The NPGA would like the EPA and the Energy Star program to withhold publishing the 2011 guidelines for Energy Star qualified homes until an issue of major importance has been adequately addressed. With the recent release of the study conducted by DOE entitled "Review of Site (Point-of-Use) and Full-Fuel-Cycle Measurement Approaches to DOE/EERE Building Appliance Energy-Efficiency Standards," it is clear that the most beneficial means for achieving our nation's energy goals is to use only the "full-fuel-cycle," rather than the "point-of-use" methodology. Up to this point, it has not been demonstrated that the Energy Star program has utilized anything other than the point-of-use approach in determining the requirements for minimum appliance efficiencies.

The report to the DOE states that the study considered the impact of energy consumption on national security, the environment and climate change. The primary recommendation made by the committee to DOE is that it "consider moving over time to use of a full-fuel-cycle measure of energy consumption for assessment of national and environmental impacts, especially levels of greenhouse gas emissions..."

Therefore, the NPGA requests that the publishing of the 2011 guidelines for Energy Star qualified homes be withheld until the issue of "site vs. source" is addressed in accordance with the recommendations of the DOE study referenced above. Doing so will address a concern mentioned on Page 2 of the supporting documentation titled, "Overview of Evolving ENERGY STAR Qualified Homes Program & Methodology for Estimating Savings." It was mentioned that revisions to the inaugural Energy Star Program "attempted to address fuel-neutrality concerns." By utilizing the full-fuel-cycle approach to determining appliance efficiency in the third edition of the guidelines, the program will take a giant step towards addressing those continuing concerns.

National Property Inspections (Gregory Enterprises, LLC) – Gregory, Steve

Please be mindful that you are writing regulation for use by trades people in the field. While standards need to be lofty they must more importantly be practical for application in the real world. Often professionals trusted with the privilege of developing standards encounter their own egos which causes them to lose sight of who and why they are serving. Keep it simple – often works far better than over complicating.

Natural Resources Defense Council – Burt, Lane (on behalf of NRDC)

Attached please find the comments of the Natural Resources Defense Council on the proposed changes to the Energy Star program for new homes. Please confirm receipt.

On behalf of our 1.2 million members and e-activists, the Natural Resources Defense Council (NRDC) respectfully submits its comments on the ENERGY STAR for New Homes Proposed Guidelines distributed in June, 2009. Thank you for the opportunity to provide input on this document and we look forward to the work ahead.

NRDC is concerned by the inclusion of the multiple required 'checklists' and the move away from straightforward performance-based requirements. The following are our major concerns and comments:

- Prescriptive requirements for compliance are barriers to participation due to their higher costs and inflexible structure;
- There are already multiple performance-based efforts underway that the proposed guidelines conflict with and could even undermine;
- NRDC supports the technical suggestions developed by the Residential Energy Services Network (RESNET) as an adequate performance-based approach, and;
- The size adjustment factor for large homes should start at 1, not 1000, square feet.

Prescriptive requirements force builders into a narrow set of allowable measures to reach compliance. Historically, this has raised costs by impeding competition and creating a barrier to participation, especially in the context of codes, where the number of houses complying is largest. Builders are much more likely to seek ENERGY STAR certification if they can work within the program to find a path that is the most cost-effective and takes advantage of their expertise.

If the proposed prescriptive requirements have been modeled to be effective, then it stands to reason that using the same modeling in evaluating *any* building should yield similarly effective measures. In other words, if EPA can determine an effective set of measures given certain modeling assumptions, why can't builders? EPA should work with previously developed models and organizations already employed in the industry to allow any builder to determine the most efficient and cost-effective measures that achieve the desired efficiency goal.

The Department of Energy's Builders Challenge and the existing Builder Tax Credit (Section 45) rely on performancebased energy ratings to determine eligibility. These programs provide the flexibility and incentive to leverage the industry into finding the best (that is, cheapest and most consumer-friendly) way to construct an efficient home. This makes the building industry an ally in bringing cost-effective energy efficiency into the marketplace. If instead these programs demanded prescriptive requirements for compliance, as the proposed guidelines do, they could alienate and aggravate the building industry.

In addition, the proposed guidelines do not harness and reinforce these existing programs by building on their success. The tax credit program, for example, has lifted a virtually nonexistent level of new-home efficiency to a market share approaching 5% in just three years. The Builders Challenge program is, even in the current housing bust, attracting commitments from builders to meet *even more advanced* levels of energy efficiency, and is likely to be enhanced by a higher tax incentive that Congress is currently considering. Energy Star should be the entry platform to these financially-incentivized programs. Instead, the guidelines as proposed represent a deviation from this successful path to improving home efficiency.

NRDC has reviewed and agrees with the comments made by RESNET and the Consortium for Energy Efficiency (CEE). The technical modifications proposed in RESNET's comments seem to satisfy the intent of the ENERGY STAR program of 15% efficiency improvements beyond the national model codes while providing flexibility and working with existing programs already being used in the field.

Finally, although we are pleased to see the inclusion of a size adjustment factor, it should not have a lower bound of 1000 square feet. While it is clearly the intent of EPA to provide an incentive for small homes, why do so only down to 1000 square feet? A 500 square feet home should be encouraged over a 750 square feet home in the same manner as a 1500 square foot home is encouraged over one at 2500. NRDC strongly suggests bounding the lower end of the size adjustment factor at 1 square foot and thus providing an incentive for all small homes. Note that there are some markets, such as San Francisco, where a 1000 square foot new low-rise home is not "small" but includes additional size elements that are hard to justify from an environmental perspective and even harder from a housing affordability perspective.

With regard to water conservation, we believe EPA should address an inconsistency between the proposed requirements and the parallel WaterSense specification for new single-family homes. As proposed, ENERGY STAR new homes will be required to use one of a few specified types of hot water distribution systems. By contrast, WaterSense new homes can use various delivery systems, so long as a given system stores no more than a specified volume of water between the hot water source and any particular hot water fixture. The latter approach is preferable, and we encourage its use here; unlike the technology-specific approach, the volumetric approach is an effective limit on water loss. Going forward, we strongly encourage EPA to integrate the water elements of its ENERGY STAR and WaterSense specifications, in order to avoid this kind of disconnect.

Thank you for considering these comments. If you have any questions, please feel free to contact us at any time. We will be happy to work with EPA and other stakeholders to implement these technical and policy recommendations.

Sincerely, Nick Zigelbaum

Newport Ventures, Inc. – Moor, Mike

IAQ Checklist - #1 Whole-Building Delivered Ventilation

- In Footnote #2 to Whole-Building Delivered Ventilation, the footnote seems to state that the whole-building
 ventilation system airflows should be tested. If this is the intent, the wording should be completely clear: "all
 system flows must be tested to match design flow rates using a flow hood, flow grid, or other airflow measuring
 device". This way there is no room for debate about the intent. Right now the wording is a little vague.
- Also related to Footnote #2, suggest wording on acceptable testing results: "measured system flow rates in their typical operating mode must be within 10% of design flow rates" or similar language. Otherwise you're requiring people to test but not providing Pass/Fail criteria.
- Also related to Footnote #2, we propose that Energy Star provide the prescriptive design alternative found in Section 7.3 of ASHRAE 62.2 (e.g. select fan based on its rated airflow at 0.25" WC and use the duct sizing chart). The testing requirement is borrowed from this same section of ASHRAE 62.2, so why not also provide this other method for flexibility? Low air flows are difficult and sometimes inaccurate to measure in field applications, so allowing for a prescriptive design pathway makes sense as an option.

IAQ Checklist - #2 Local Mechanical Exhaust

- The provisions for both Kitchen and Bathroom exhaust should clearly state that the exhaust air must be directly ducted to outdoors. Re-circulation of kitchen air or terminating exhaust ducts in interstitial spaces should not be allowed as acceptable methods, and the provisions should directly address this.
- Suggest clarifying that mechanical exhaust is required in ALL bathrooms, regardless of operable windows or whether the bathroom has a tub or shower.
- Item 2.5 addresses how much exhaust flow is acceptable IF the home has atmospherically vented combustion appliances or solid fuel burning appliances located inside the pressure boundary. The majority of homes in the Energy Star program will not fall into this category. However these homes are treated as the Exception to the rule, as stated in Footnote #5. In other words, Item 2.5 is backwards in a sense. It should start off by saying: "For homes with atmospherically vented combustion appliances or solid fuel burning appliances located inside the pressure boundary, do XYZ." It should be quickly clear to readers that this provision only applies to a certain subset of homes, instead of forcing readers to follow the provision all the way to the last sentence of the footnote to learn that it doesn't apply.

IAQ Checklist - #3 Fan Sound Ratings

• The footnote on this item indicates that HVAC air-handlers are exempt from sound rating requirements. Are HVAC air-handlers still exempt from sound ratings if the AHU is an integral part of the home's whole-house ventilation system? If so, why?

IAQ Checklist - #5 Air Inlets & Ventilation Source

- Item 5.2 suggest adding a minimum 1' clearance above grade to the air inlet location requirement. Perhaps "Air inlets are a minimum of 1" above grade and located high enough to be free of obstruction due to snow, plantings, or other material."
- Item 5.4 in its current wording is difficult to comply with. Suggest "Air inlets located to draw air directly from outdoors and not from adjacent dwelling units, garages, crawlspaces, or attics."

IAQ Checklist - #7 Appliances and Detectors

 Item 7.1 – suggest "No ventless combustion appliances installed, except for kitchen cooking devices which must be equipped with exhaust to outdoors."

IAQ – General Question

• Why is radon not mentioned or addressed in the IAQ provisions? Leaving radon mitigation up to local code is unreliable. Suggest adopting provisions similar to LEED for Homes.

Thank you for your consideration.

Norbord Industries – Haluska, John

I am commenting on the Draft Energy Star Qualified Homes 2011 Requirements and Checklists. In the draft of the National Program Requirements, Exhibit 2, as revised 4/20/2009, the section limiting the requirement for radiant barrier sheathing to situations where ... "more than 10 linear feet of duct work are located in an unconditioned attic...." seems to be arbitrary and while if followed closely, will no doubt have a very measurable impact on energy usage, it would seem to be much better in terms of energy savings, and much easier to implement and to rate a structure, if a radiant barrier were a requirement in all unconditioned attics in Hot Climates (2006 IECC Zones 1, 2, 3). My comment is to require the installation of radiant barrier in all unconditioned attics in Hot Climates. Also, I did not see any reference to a radiant barrier requirement in any of the checklists. Can you explain that?

In the draft Inspection Checklist, as I read the Quality Framing Checklist, I see no option for achieving energy savings by simply going with thicker wall with a fully insulated cavity. The focus should be on the goal of increased energy efficiency and providing as many reasonable paths of achieving such an increase in efficiency as possible. As I read section 2, Exterior Above Grade Walls, the only option for increasing framed wall cavity insulation is through double wall framing. The dealer should have the option of framing with thicker studs or engineered products such as wood "I's" designed to be sued as studs. Either would result in a thicker wall cavity allowing for the use of more insulation. While the solutions offered in 212, 2.3, 2.4, and 2.5 are effective, the use of thicker-deeper framing can achieve the same results and gives a very reasonable option fully consistent with present, common framing practices. My comment is to allow an option 2.6 of using conventionally framed single wall assemblies providing a minimum insulative R-value of 14."

North Carolina Energy Partners – Courts, Andrew J. Jr.

All well intended. I think that if you are going to make these changes, you should provide free and frequent training sessions so that all Raters can deliver the goods. Without this training, I think you are asking for trouble down the road. Sorry for all of the hack sayings. Call/email if you want further opinion.

North Star Energy Consulting, LLC – Maletta, James

Dear friends:

While I appreciate the desire to keep the Energy Star Homes brand relevant in the face of increasingly stringent state building code requirements, I think there are a few flaws in the thinking and in the proposed changes which need to be seriously considered before you effectively KILL the Energy Star Homes program.

The 17% market penetration of ES Homes is not stellar. It is also not enough of a market penetration to put us in the position of dictating substantially higher standards at significantly higher costs without the high probability of a market back-lash where we end up losing builders and market share rather than gaining it.

In reading the material provided on the proposed changes -- including the proposed new check-lists -- I get the clear impression that Energy Star is taking on some aspects of the LEEDS for Homes program. While I admire the goals of LEEDS -H, I have to tell you very frankly that it is not making a big impact on the market in my area because it requires a substantial amount of extra documentation and paper-work and plain hassle which the few builders with whom I have been attempting LEED certifications are finding to be both time consuming and far more expensive than they originally estimated. It is not proving to be adequately user friendly to builders and those with whom I have been working in this program have already determined that when they complete the homes which are presently underway with LEEDS-H they will not be doing any more. My strong concern is that the same reaction will be the result from Energy Star Homes implementing the checklists for HVAC Quality Installation Contractor, HVAC Quality Installation Rater Checklist, Water Managed Construction Checklist, and Quality Framing Checklist.

I would like to express a few concerns with regard to these additional checklists. Energy Star Homes is supposed to be focused on energy efficiency. While water management can save energy in both direct and indirect manners, most of the water management items on the checklist as directed more to the quality of construction than to energy savings. These are items which are addressed in our state building code. By making them an Energy Star Homes requirement, you are effectively placing the burden of verification of these code items on the Rater. Properly verifying all the items on this check-list will require a minimum a 2 extra site visits during construction at a cost of at least \$200 more for the rating. In addition, since you are placing additional inspection liability on the Rater who will now have to defend against potential law suits from unhappy home owners for any water related issues, I can guarantee that our E & O Insurance will increase to a level equal to at least what I was paying for it as a home inspector (more than double the cost of the coverage offered through RESNET). Spreading the insurance cost over the number of homes done in a year will add at least \$75 to the cost of each Rating.

The HVAC Quality installation checklists will require significant time and work from the contractor above the usual now needed for Energy Star certification. Informal conversation with some HVAC folks indicates the new checklist will add between \$800 and \$1400 per house to the cost for certification. For the rater check-list, many of the items on the list either exceed the expertise of most Raters or will require significant additional time for verification and documentation. They also represent a significant increase in Rater liability. I also note that you continue to beat the drum for duct leakage testing. This is a requirement which is proven to be irrelevant in Wisconsin homes and the test itself is of questionable accuracy. Meeting all the requirements of this checklist as written will add a minimum of \$800 to the rating fee and this is likely to be conservative.

The Quality Framing Checklist is an invitation to law suits for raters. It is also an invitation to failure for many of our builders. Completion of this checklist puts the Rater in the position of having to 2nd guess the architect and the framing carpenter. Who is best qualified to say whether or not a stud is necessary or not? This checklist has the Rater determining whether studs should be in place or removed. ""Framing limited at all windows and doors""? The Rater gets to order removal of unnecessary lumber by windows!? Now I am no longer a Rater, I am a structural engineer. These items are an invitation to a disaster -- structurally and/or legally. The energy savings from OVE framing are a very small piece of the picture. We can give the builder credit for the savings through the rating software without having to have a checklist and assuming such massive liability in the process.

One final note on the Quality Framing Checklist: The requirement that the energy heel truss elevate the roof adequately for FULL DEPTH insulation at the perimeter when combined with the requirement that all insulation be only Grade 1 and no less will increase construction costs significantly as well s increasing the potential for failures and fewer homes being certified. If code requires a minimum of R49 attic insulation, this would require a energy heel with a depth of at least 16 inches to allow for full insulation at the perimeter. Up until now, if a builder used a 12"" heel and tapered down the insulation, we could simply down-grade the insulation to a grade 3. Under the proposed rules, if this were done it would result in the failure of the house -- no certification. If the builder uses a 16 inch heel, then there will be additional cost for the trusses, the additional wall sheathing to cost the heels and the additional house-wrap and siding to cover the

sheathing. Depending on the siding used and the size of the house, this one requirement could add about \$2000 to the cost of the house all by itself.

Item 2.6 on the HVAC Quality Installation Rater Checklist indicates that building cavities will not be used as return air ducts. Ouch! This is a common practice in homes presently being certified as Energy Star right now. I could see requiring that such return pathways be sealed against leakage. Outlawing them completely means all duct runs have to be completely enclosed in sheet metal. This will add anywhere from \$1000 to \$3000 to the cost of a house in additional labor and materials.

The statement on page 3 of the fact sheet that ""Renewable energy systems shall not be used to achieve the HERS index value of the Energy Star Reference Design"" is a bit short-sighted. All of us in these energy programs are supposed to be pulling together and encouraging not only energy efficiency but the installation of renewable energy systems of all sizes. By not allowing a builder or home owner any credit toward certification of the house for renewable energy systems, we are effectively telling them it is not important enough to bother doing it. Wrong message folks! I think it is a bad idea to get away from the fixed HERS Index. If you want to increase the value of the Energy Star brand, then raise the bar by changing the fixed index to 65 or 70 instead of 80. Remember the KISS rule (Keep It Simple Stupid). By changing the rules to a floating target which changes from house to house you are making it complicated and confusing for builders, prospective home buyers and raters. We have enough trouble making it manageable for builders as it is. This kind of complication will only make the sales process more difficult and less successful.

All in all, while the intentions are good, most of what you are proposing is not anywhere close to being as cost effective as your \$4000 to \$5000 per house claims. From my perspective as a business owner, I will have to take a hard look at your final product because I have to protect myself in this process. Quite frankly, the increased liability exposure I see in the proposed changes to this program make it such that I will probably discontinue my participation. I know for a fact the builders with whom I work will not be willing to pay the substantial increase in my fees which will be needed to cover my time and expense in meeting the program requirements outlined in the fact sheet and checklists I have reviewed. I strongly encourage you to stay focused on energy efficiency and do not try to be all things to all people."

North Twin Builders - Volkmann, John

This letter is in regard to the proposed new guidelines referred to as Energy Star 2011. At the present time, we find it difficult to sell the advantages of building above "standard codes". The proposed new guidelines for the Energy Star program will be too stringent to follow. Many individuals are reluctant to build to the current standards, and because of the dramatic changes to your program, even fewer homeowners will participate in the program.

Also, the present state of our economy has affected the building industry in a variety of ways. We have retirees who have no desire to invest in an Energy Star home, either because of costs or their age factor. We have individuals who desire a new home that meets Energy Star, but because of the real estate market, appraisals are falling short. Couples planning construction and discovering associated costs, which means they start eliminating energy efficient products from their plans.

The truth be told, the average American is struggling just to live. If the new guidelines go into effect **as** proposed, there will be No Approved Energy Star homes in Wisconsin in 2011.

Thank you for your time. John Volkmann North Twin Builders, LLC

Northeast HERS Alliance (NEHERSA) – Stack, Kevin (on behalf of NEHERS Alliance Board of Directors)

Thank you for the opportunity to review and comment on the proposed ENERGY STAR for Homes guidelines. Overall, the Northeast HERS Alliance (NEHERSA) agrees that the new guidelines are quite technically sound. Following these guidelines will result in energy, durability, and overall performance levels much higher than those found in conventional construction – kudos to EPA for raising the bar on home performance. The chief concerns we have with the proposed guidelines are related to practical, reliable, and affordable implementation along with broader market effects.

In reading the guidelines, it's clear that EPA envisions that the scopes of work for ENERGY STAR raters will be substantially increased. We foresee this presenting several overlapping challenges:

- Raters are not necessarily qualified to verify all aspects of the new requirements;
- With more features to verify, the cost of ratings will rise substantially (separate from any increased construction costs);
- With such long, comprehensive checklists, there is potential for many more items to be overlooked.

Finally, many NEHERS Alliance members share concerns about the effect of these rigorous guidelines on the ENERGY STAR program, the rating industry, and the homebuilding industry overall.

This letter lays out general comments on the proposed guidelines; attached to the letter are comments related to specific details and/or requirements of the guidelines.

Rater Qualifications

One very appealing aspect of the new guidelines is taking HVAC design, sizing, and quality installation responsibilities away from raters and putting the responsibility on system designers and installers – as it should be.

Conversely, raters now seem to be responsible for policing aspects such as roofing, flashing, site drainage strategies, and structural framing. The last is the most concerning. Raters are not structural engineers, and putting raters in a position to approve or fail framing details seems untenable.

While no one questions that the quality framing and moisture checklists contain important features for high-performance homes, many members have questioned whether the energy rater is the proper person to verify these items. As a compromise, we suggest that the builders or trades be responsible for documenting many of these non-energy items – much like HVAC contractors are required to do for the HVAC Quality Installation checklist. This would keep the responsibility and liability with the builder or trade with the appropriate expertise.

Currently, the responsibility for educating and training builders on ENERGY STAR requirements typically falls on raters (often by default). Many raters are not knowledgeable on elements in these new guidelines, and educating builders on these elements will not be practical. Educating builders also opens up substantial liability to raters. If and when these guidelines do come into place, it is critical that EPA provide substantial support and training material for both raters and builders.

Rating Cost

Under the current program (V2), even with builders familiar with program requirements, more than two site visits are often necessary to verify various TBC or insulation issues that weren't addressed during the first inspection. To truly verify all aspects of these new guidelines, raters will need to visit sites several times:

- 1. Foundations/slabs (verify capillary breaks, etc. WMCC 1.3, 1.4, 1.5)
- 2. Before roofing (WMCC 3.3, 3.4)
- 3. Before siding (WMCC 2.1, 2.2, 2.3)
- 4. Before insulation (for framing and TBC items)
- 5. After insulation, before rock (for insulation verification and TBC items)
- 6. After completion, final testing.

Builders can verify a few of the WMCC items, but not all of them. Visits number 1 and 2 above may sometimes be combined, as can visits number 4 and 5 in some – but not all – cases. The guidelines seem to require a minimum of 4-6 site visits – <u>if</u> there are no failures or re-inspections needed. This will increase rating costs dramatically. We feel that these costs – combined with the cost of changing construction practices – will dramatically reduce the participation in the ENERGY STAR program.

Consistent Verification

EPA is not currently involved in the verification of its program's requirements, defaulting to RESNET's QA process specific to the Home Energy Rating System. The new guidelines feature a considerable number of new features that fall outside of RESNET's current quality assurance scope. This could lead to even greater inconsistencies among the rating community in the verification of these new requirements. We fear that the credibility of the program may be questioned if implementation is not consistent due to this lack of oversight.

We suggest that EPA consider focusing more effort on consistent verification through more oversight on their own part or by working with RESNET (or other oversight organizations) to develop an expanded quality assurance scope that will cover all of these new guidelines. A successful transition to the third generation of the ENERGY STAR Homes Program is our goal, and EPA's commitment to consistent verification will help achieve this goal.

Market and Industry Impact

Through the first two versions of the ENERGY STAR Homes program there was an emphasis on transforming the market, one measure of the program's success being its acceptance, especially among larger production builders. In this, the program has certainly succeeded. The ENERGY STAR Homes program certainly can take a fair share of credit for the dramatic improvement in energy codes and construction practices across much of the country.

With the very high benchmark in Version 3, along with the substantial increases in complexity and cost, we are concerned that the program is moving focus away from transforming the mainstream builder market towards custom, high-end, or "boutique" homes where customers can afford the increased costs and fees. We feel that with these guidelines as written, builders and local program managers may abandon ENERGY STAR and it may cease to be a driver in improving performance of mainstream homes.

Thank you again for the opportunity to comment on these guidelines. It is exciting to see the ENERGY STAR bar being raised again. We hope, however, that many of our comments are considered seriously so that ENERGY STAR can continue to drive improvements in the performance of American homes.

Sincerely,

Kevin Stack, President On behalf of NEHERS Alliance Board of Directors

NEHERSA Director Comments of Specific Items in the Proposed V3 Guidelines

Consistent definition of "Conditioned Floor Area"- There needs to be a consistent and clear definition between EPA, RESNET, codes, jurisdictions and software providers. The importance of this is elevated with this new approach. We need guidance on whether or not to include attic kneewall spaces, cathedralized attics, basements with insulated walls but no thermostat or intentional distribution (with and without insulated distribution systems), etc.

While we like the theory behind the size adjustment factor, it seems to discourage the conditioning of basements which is generally a good building science practice. A builder would be harshly penalized in the rating if he insulated the basement walls thus unintentionally making that basement "conditioned" space. The size adjustment factor in conjunction with spaces like these (basements, crawls, conditioned attics) needs to be re-evaluated.

More generally, we feel the current system for determining HERS target and SAF does not effectively achieve the goal of balancing energy use in larger homes. The Florida study is interesting and I think it makes sense to make the HERS baseline and Size Adjustment Factor more stringent, while suggesting that the checklist requirements be less labor intensive for raters.

TBC 1.2 "Grade I insulation installation." This will be extremely difficult to achieve with batt insulation. It will eliminate around 90% of homes insulated with batts. Why not just keep the modeling penalty? Or allow grade I and II (not III)? One predicted outcome is that the definition of Grade I insulation will blur tremendously.

TBC 5.1: Sheetrock sealed to top plate at all attic/wall interfaces. How does EPA expect this item to be verified? If after rock and before insulation, this would require yet another site visit.

Quality Framing 2.1.5 "Unnecessary studs have been eliminated" risks raters second-guessing on structural issues – not good. Or it will raise cost for builders even more to get structural plans.

HVAC Contractor Checklist 5.5. "Fan speed setting" seems to ask for air flow, not fan speed. 5% tolerance seems very impractical for most systems - with the possible exception of those with ECM fans.

HVAC Contractor Checklist 6. What about AC's in winter when they can't be charged and operated. Does ENERGY STAR home certification have to wait until warm weather?

RATER HVAC 8.1, MERV Filter: This has been somewhat of a challenge with LEED. Will need lots of communication to suppliers, installers. Need to know this during design because MERV rating of filter affects calculated flows.

Rater HVAC 2.8: "Total duct leakage < 6 CFM per 100 sq. ft. of conditioned floor area". This will be very challenging for sheet metal duct systems; this will also result in a significant increase in time when you need to test all ducts, not just ones outside thermal envelope. We believe it will often be very onerous to comply with this requirement – with minimal energy savings.

HVAC Rater Checklist 2.10. 1 sq.in. per CFM seems large, especially for return grills. We suggest alternative pressure balancing method like in FL: less than ~3 Pa difference between rooms and central spaces with doors closed. Raters have manometers and can check this rather easily.

The new duct leakage requirement of 4% to outdoors will be extremely difficult to achieve in small multi-family units.

Water managed construction checklist should be the responsibility of the builder. It will be difficult to complete within the two site visit framework, and seems like an appropriate alternative given that this checklist is not directly tied to energy savings.

The allowance of only 3 items be verified on the water managed construction checklist is a very tight limit especially being that this is the checklist with the most varying site visits.

Northern Colorado HBA – Wagner, Vicki

We are submitting these comments on behalf of our two organizations: the Horne Builders Association of Northern Colorado (representing builders along the northern Front Range of Colorado) and the nine sponsors of the Northern Colorado ENERGY STAR Homes program (cities, towns, a county and utilities).

Our organizations hosted a series of three stakeholder meetings (May 28, June 11, June 23,2009) to learn about and review the draft guidelines. The first meeting included Sam Rashkin, National Director of ENERGY STAR New Homes, by phone, to address questions. Invitations for the meetings were sent to the membership of HBANCO, all registered ENERGY STAR national builder partners in the region, all RESNET-certified energy raters in the region and members of the NoCO ESH Lead Team. Attendees included several builders, three members of the NoCO ESH Lead Team and an energy rater.

The following summarizes the comments that emerged during these meetings.

We look forward to collaborating with EPA in making the transition to the ENERGY STAR 2011 guidelines. Thank you for the opportunity to comment. HBA of Northern Colorado ~~~ Vicki Wagner ~ President Platt River Power Authority Mike Rubala

NoCO ESH Lead Team Affll/atedwith

These comments are the result of three stakeholder meetings hosted by the Home Builders Association of Northern Colorado and the sponsors of the Northern Colorado ENERGY STAR Homes program in May and June 2009. The comments are submitted on behalf of both organizations.

Summary Comments

The draft ENERGY STAR 2011 guidelines are on the right track for supporting a voluntary transition to high-performance new home construction. They appropriately increase the focus on as built performance, using a building-science-based, whole-house approach rather than prescribing significantly more stringent requirements for individual building components.

They are largely consistent with the more stringent guidelines locally developed for the Northern Colorado ENERGY STAR Homes program in 2008. As noted below, there are areas in which the ENERGY STAR 2011 guidelines should be relaxed and others in which they should be strengthened; certain guidelines need further clarification.

National Program Requirements

Combustion safety. Mandatory requirements should include safe combustion equipment, i.e. equipment that is very resistant to backdrafting. This is particularly important given the attention to building tighter homes that are more prone to pressure imbalances that create negative pressures in the vicinity of combustion equipment.

These requirements could be explicitly stated in Exhibit 1 of the *National Program Requirements* (first choice, for clarity) and/or included in the *HVAC Quality Installation Checklists*. Examples of complying equipment:

- Furnace or boiler: sealed-combustion, meaning sealed intake and sealed exhaust. (There are many recent examples in this region of furnaces designed to be installed this way that have instead been installed with the air intake stubbed off into the mechanical room, drawing indoor air for combustion; this compromises the safety aspect of the equipment.)
- . Water heaters: Sealed-combustion, direct-vent or power-vented. Even though the latter option is connected to the pressure zone of the mechanical room, the fan-forced venting and safety switches make this an acceptable alternative.
- Fireplaces: Direct-vent.

Infiltration. Included in Exhibit 2 is the infiltration requirement of ACH50 = 5.0 or below for the NoCO region (CZ5). This is lax compared with current building practice in the NoCO region.

Blower-door measurements of 12 representative new homes in Fort Collins in 2007 showed an average air leakage rate of ACH50 = 3.0, with a range of 1.9 to 4.2 (all well below the draft requirement). Only three of these homes were ENERGY STAR qualified. Further, the application of the *Thermal Bypass Checklist* on ENERGY STAR Homes will lead to infiltration rates lower than ACH50 = 5.0. NoCO stakeholder comments on draft ENERGY STAR 2011 guidelines – page 2

Duct leakage. Exhibit 2 includes a requirement for maximum duct leakage to the exterior. This makes sense. But footnote 22 then references total duct leakage without providing any specifics.

Those are found in the HVAC Quality Installation Checklists and there is no reference to that in the National Program Requirements. This is confusing as presented.

Thermal Bypass Checklist

1.2 Grade I insulation installation. Grade I is a worthy goal. The most difficult place to achieve it will be in rim joists. In this region, rim joist insulation is typically rated as Grade III installation.

Should there be a transition period during which Grade II insulation is accepted at rim joists?

5.1 Sheetrock to top plate at all attic/wall interfaces fully sealed. Clarify whether construction adhesive applied as the sheetrock is installed would meet this requirement, or whether a flexible caulk or other specific materials would be required.

Common problem areas. Should this checklist address some specific areas which commonly present insulation and/or air sealing challenges? E.g. an electrical panel in the wall between garage and house, skylight shaft walls, ductwork in exterior walls. It sounds like the *TBC* approach to date has been to provide more general guidance in the checklist, backed up by a lot of common examples in the *TBC Guide* (available at the ENERGY STAR New Homes web site).

Quality Framing Checklist

1.1 **Raised-heel truss installed in attic.** Footnote 1 states the truss height should allow full-depth attic insulation at the attic perimeter. This is not practical for high R-value attic insulation and may be overkill. Instead specify a prescribed minimum heel height that provides adequate – but likely not full depth – attic insulation at the exterior edge of exterior wall top plates. Eight inches is suggested as a practical number that would allow for 6" of insulation (i.e. at least R-15 for fiberglass, more for higher R-per-inch materials) and 2" for venting.

HVAC Quality Installation Contractor Checklist

Footnote 1. This checklist only applies to certain types of equipment. What are the plans for addressing design and installation details for other types of equipment, including furnaces, boilers, evaporative coolers, solar thermal, in-floor heat?

2.1 Heat gain calculation method ... Design heat loss must also be addressed (winter design conditions).

2.2 Duct design method compliant with Manual D or equivalent. This puts the focus on the design phase but the loop is not completed with any performance metrics. Instead, require air flow testing at all registers with a requirement that the measured flow be within X% of Manual J design flow. This puts the focus on as-built performance, which is what the homeowner will care about more than design calculations. With testing feedback, contractors will be more motivated to do a good job on duct design and installation. The testing should be performed by the contractor (not the energy rater) as a quality assurance step. A +/- 15% tolerance is probably a reasonable requirement, particularly as such a testing requirement is introduced (the first goal is getting away from a NoCO stakeholder comments on draft ENERGY STAR 2011 guidelines – page 3 common situation: 100 cfm delivered to the main level powder room and 20 cfm to the master bedroom over the garage). Measuring air flow at registers is not as straightforward as it might seem.

Training will be required and flow measurement equipment specifications may be needed as well, along with periodic spot checks by the NoCO ENERGY STAR program.

Footnote 6. This states that several measured field values shall be within 5% of design values. A 5% tolerance is too tight. A 15% tolerance may be more realistic, as noted in the previous comment.

6. Refrigerant Charge. This is an important test for the installed performance of AC systems. How will this requirement be handled for homes that are completed in a time of year when outdoor temperatures are too cold to perform the test?

Furnace heat rise. Add a requirement to measure furnace heat rise. This is a quick and useful measurement related to air flow through the furnace. Since heat rise is also influenced by the input capacity of the furnace (as installed), it might make sense to make this a new category (i.e. not under "Air Flow").

Bedroom-to-core pressure balance. There is no requirement to test this parameter; instead the rater is supposed to take measurements of return air path opening size (2.10 on the *HVAC Quality Installation Rater Checklist*). A measurement will be much more effective and should be added. It's very quick to perform with a manometer and the air handler running. A limit of 3 Pascals is recommended. This test provides as-built performance data and the kind of feedback the contractor needs to fix any problems with the ductwork. Again, it's part of an effective quality assurance process.

HVAC Quality Installation Rater Checklist

Who tests HVAC system? Should HVAC contractors test systems they've installed versus the rater doing the testing as a third-party? It's better to have the contractor test, following a quality assurance model.

1.2 Compliance with Manual J, S, D and T or equivalents indicated. See note regarding item 2.2, duct design, above in the *HVAC Quality Installation Contractor Checklist* section.

1.6, 1.7, 1.8, 1.10 Comparison of as-built performance data versus design values. See note regarding Footnote 6, above in the *HVAC Quality Installation Contractor Checklist* section.

2.8 Total duct leakage, 2.9 Duct leakage to outdoors and Footnote 4. As written these requirements are confusing. It appears that Item 2.8 should reference the second sentence in Footnote 4, and that Item 2.9 should reference the first sentence of Footnote 4.

2.10 Bedroom pressure balance. See note regarding bedroom-to-core pressure balance, above in the *HVAC Quality Installation Contractor Checklist* section. The draft requirement is time consuming and does not provide any indication of as-built performance.

Indoor Air Quality Checklist

1.3 Net supply flow. Define "very cold climate."

4.3 Automatic operation of intermittent ventilation system. There are concerns about added cost and complexity if the intermittent ventilation is provided by spot exhaust fans rather than a central system.

6.2 Doors between house and garage. Add requirement for self-closing doors.

Water-Managed Construction Checklist

Though comprehensive water management is an important part of building a high-performance homes, there are concerns about the challenges for energy raters to verify the requirements, especially if EPA's goal is for no more than two job-site visits by the rater. Consider alternative verification methods.

1.3 Capillary break beneath concrete slabs.

- There are concerns that the sheeting directly in contact with the base of the concrete pour will adversely impact concrete curing and finishing.
- Don't allow compacted sand as a base for the slab.
- The overlapped sheeting will not provide much radon avoidance benefit (to be effective, seams would need to be airtight, not an achievable goal).

1.4. Capillary break for crawl space floors.

- 6 mil poly sheeting should be shown as the minimum approach to meeting this requirement.
- Caution: experience has shown that airtight sheeting over a dirt c.s. floor may balloon due to soil gas entry below the sheeting. In high radon or high moisture areas, consider a passive stack penetrating the sheet and vented to outdoors, i.e. a "radon-ready" approach.

3.4 Bituminous membrane at eaves. Other guidelines (air sealing between attic and house, raised heel trusses) properly address the root causes of ice-damming. This requirement addresses the symptoms and should be eliminated in Climate Zone 5. It may be appropriate in colder climates.

NorthStar Comfort Services, Inc. - Boone, Jeff

To whom it may concern:

First of all, I would like to commend the EnergyStar program for positioning the brand as a recognizable & sellable symbol of energy efficiency in the housing industry. As an insulation company at our core, we think it is very important for EnergyStar to continue leading the way towards increased comfort & sustainable/resource efficiency in home building.

That said, I do have some comments on the proposed changes to the program.

1. I think that the Simulated Performance Model, requiring a unique HERS Index Target, is too complicated. It has taken over 10 years for EnergyStar houses to start to become requested in our area & I fear, that by complicating the procedure for our builders & potential home buyers, it will turn them off from the process entirely. I would suggest that lowering the target HERS score for EnergyStar houses would be a far easier to explain change.

2. I do like the consideration of house size & state energy codes.

3. All the additional field verification is a nice idea but will add a lot of costs to EnergyStar verification &, ultimately, will make the entire process cost prohibitive. As a company that does ratings, this would add 4 more trips to the job, one for each new checklist, and we would need to charge for overhead & time for each one. Unless the goal of EnergyStar is to make their homes less affordable, this needs to be re-evaluated.

In short, I think EnergyStar should reconsider these proposed changes but do think the bar needs to be raised.

Northwest Energy Efficiency Alliance - Brink, Anne

Northwest Stakeholder Comments on the EPA 2011 Specifications

Thank you for providing the opportunity to comment on the proposed specification revisions for the ENERGY STAR homes program. The following comments were developed after input from Northwest ENERGY STAR Home's verifiers, Northwest utilities, State Energy Offices, Northwest RESNET Providers and technical analysis provided by Ecotope.

The Northwest stakeholders congratulate the EPA for taking steps to increase the specifications of the ENERGY STAR Homes program as a response to increasing residential building codes and climate legislation. We also praise the EPA's effort to provide thorough backup and details regarding the changes. We have the following comments on the specifics of the EPA's proposal.

Mandatory Requirements

The Northwest stakeholders strongly encourage the EPA to alter the checklists such that no more than two onsite inspections need be conducted by the HERS Raters or 3rd party inspectors. This may mean allowing builders to sign off on more items for certain checklists. In addition, we recommend the language be made more specific in many instances to avoid confusion. A stakeholder advisory group could be convened to help refine the language.

Water Efficiency

The Northwest stakeholders agree with the EPA's proposal to add low flow shower heads as a mandatory requirement to the ENERGY STAR Homes specification.

We strongly recommend moving the hot water distribution systems to the reference design scenario as options for achieving energy efficiency until further research is conducted to verify energy savings. The research currently provided by Oakridge National Labs concludes that more research is necessary before policy makers establish requirements regarding hot water distribution. In addition, any estimated savings from the EPA regarding hot water distribution are minor and the barriers to overcome in redesign of systems or in incremental costs are substantial. Northwest Energy Star verifiers, utilities and program management are consistent in our concern of this requirement.

Thermal Bypass Checklist

The Northwest stakeholders substantially agree with the requirements of the Thermal Bypass Checklist but request that exceptions to grade one insulation installation be made if continuous exterior insulation is used.

Quality Framing Checklist

While the Northwest generally agrees with the overall requirements to improve framing efficiency and agrees with encouraging the use of raised heel trusses we recommend moving the raised heel trusses to the reference design scenario. Certain narrow lot developments and home designs are not conducive to raised heel trusses and can be better executed with improved efficiency by other methodologies. Allowing flexibility at this stage of the game is desirable to maintain program participation.

Water Managed Construction Checklist

The Northwest stakeholders strongly encourage the EPA to exclude the Water Managed Construction Checklist from the mandatory requirements. Feedback from the verifiers in the Northwest was consistent. Great concern exists about liability and increased insurance premiums as a result of this checklist. Concern is also consistent across utility stakeholders and program management regarding proper training and execution of this checklist.

In addition, this checklist falls outside the scope of the ENERGY STAR Homes charter to reduce green house gas emissions and improve energy efficiency of buildings. The argument has been made that Energy Star has in the past included evaluations of other measures, such as CFL efficacy, which bear no relation to energy savings. We would argue that, in that particular case, lighting efficacy has a strong relationship to retention, and is relevant. We find no such relevancy with the Water Managed Construction Checklist.

Water management issues are better served through codes and through other, water management specific programs, utilizing specialized consultants willing to take on those legal risks.

HVAC Quality Installation Checklists

The HVAC Quality Installation checklists, while technically worthy, are a substantially difficult addition to implement. Training costs for HVAC technicians, quality assurance resources and increased home prices due to substantial added time to design and test installations are all of concern. The Northwest stakeholders recommend that the EPA allow an initial grace period of 12 to 18 months before homes certification depends on compliance with these lists.

The Northwest certifies HVAC contractors to provide duct testing and heat pump commissioning services. We recommend that the EPA allow HVAC technicians operating under this program and other equivalent programs to inspect their own systems and that 3rd party verifiers be required to only collect the paperwork. This maintains the consistency with an already established infrastructure and process.

Indoor Air Quality Checklist

The Northwest Energy Star Homes program agrees with the requirements of the indoor air quality checklist. Clarification of protocol for testing of exhaust fans and fresh air intakes is requested.

Reference Design

The Northwest Energy Star homes program agrees with the reference design scenario proposed by the EPA.

House Size

Northwest stakeholders agree with the EPA's proposal to adjust energy efficiency requirements based on the size of the home. It is not clear how the EPA's adjustment factor and reference house size were determined and how this would impact specific home requirements and builder participation. We strongly recommend the EPA work with several large builders to determine how this would impact their building process and their participation in the ENERGY STAR program before finalizing the house size adjustment. It is possible that the base sizes or adjustment factors would be modified as a result of this feedback.

State of Oregon

The state of Oregon upgraded the ENERGY STAR specifications in January of 2009. Our calculations indicate that the current Oregon specification is equal to or within 1% to 3% of the proposed EPA specifications. NEEA requests that the current Oregon specification remain in place until the next code change currently scheduled for April of 2011.

State of Washington

Washington State is in the public comment period for updating their code for July 2010; the final version of the code should be completed by the end of 2009. While the baseline efficiency levels for Washington State are as yet unknown, NEEA has analyzed the EPA specification versus the proposed 2010 Washington code. The analysis indicates that the new Washington code will exceed ENERGY STAR standards west of the Cascades. East of the Cascades the new EPA specification will provided less than 5% savings over the proposed code.

EPA has recommended that states with codes that exceed the proposed 2011 ENERGY STAR Homes specification substitute code requirements for the corresponding ENERGY STAR Homes measures.

In this instance, upgrading the ENERGY STAR Homes standards to code specifications will result in minimal energy savings to the home buyer in the state of Washington. This potential result does not deliver on the ENERGY STAR brand's promise to save energy and reduce carbon emissions. The Northwest recommends that an agreed upon minimum percentage above code be required for those states whose codes exceed the 2009 IECC, ensuring that the ENERGY STAR brand continues to deliver on its promise.

Training Resources

The proposed changes present significant challenges to ENERGY STAR Homes program in the Northwest. The requirements of the checklists will necessitate significant training resources that may not be supported with utility and program funding. Of particular note is the HVAC quality inspection checklist. Training HVAC contractors across the region will require far more resources than training 3rd party verifiers. It is important that the EPA provide support for training builders, 3rd party inspectors and HVAC technicians to ensure proper implementation of the new specifications.

Again thank you for the opportunity to participate. We look forward to your response. Regards,

Anne Brink Market Manager - New Construction Northwest Energy Efficiency Alliance

Dale Horton Residential Manager National Center for Appropriate Technology Andrew M. Gordon Energy Specialist (or Program Manager, Northwest Energy Star, Washington State) Washington State University Extension Energy Program

Rob DelMar Residential Energy Analyst Oregon Department of Energy

NVR, Inc. - Phillips, Christine

National Program Requirements: According to Exhibit 3 of the 2011 National Program, the Benchmark Home Size is based on the number of bedrooms within the home and the conditioned floor area. This benchmark should be further defined to include the above grade conditioned floor area only and not include the basement floor area whether it is conditioned or not. An in-ground basement has different HVAC and envelope requirements than above grade walls. Most basements in the northern climates will be required to be conditioned if the water and sewer utilities are entering the home through the basement. Including the basement square footage in the overall square footage of the home could penalizes homes built in areas that require the basement to be conditioned by putting the conditioned square footage, built in the same neighborhood to be evaluated at different HERS Index Targets simply because one house is designed with a conditioned basement and the other is unconditioned. While the new Standard is intended to normalize performance for larger homes, this particular detail may result in penalizing smaller, efficient homes (very popular in today's marketplace) simply because of number of bedrooms. Recommendation: The basement should only be used to establish the initial index based on a foundation type and not be included in the conditioned area of the home.

Quality Framing Checklist & Notes: Item 1.1 requires a raised-heel truss installed in the attic. This may prove to be cost prohibitive on smaller homes intended for the first time home-buyer or move-up market. Recommendation: Place an exception on homes that are a certain percentage below the benchmark conditioned floor area.

Indoor Air Quality Checklist: Item 8.1 requires a >= MERV 8 filter be installed on ducted mechanical systems. MERV 8 filters and above have a large pressure drop (dirty filter pressure drop can be as high as 0.3" ESP). Many residential furnaces and air handlers do not have the fan power to overcome this pressure drop and still have enough available static pressure to move air through the ductwork. The impact of making MERV 8 filters mandatory could be to use two HVAC systems in a house that currently only requires one in order to ensure all the rooms are provided with the calculated airflow per Manual J. Two systems use more energy than one making the home less energy efficient. Recommendation: This should be a recommended practice, not a requirement.

Water-Managed Construction Checklist: Item 4.4 states that the permeability rating of finishes used on the interior side of exterior walls should be greater than 1. Recommendation: Clarifications should be made to account for walls in shower and tub areas where ceramic tile or other impermeable surfaces are installed.

O'Brien & Company – Jackson, Alistair

Thanks for the opportunity to review and comment on the proposed new EnergyStar standards for 2011.

- 1) We greatly appreciate the addition of a CFA correction factor for large homes this is an important addition to the program;
- 2) We also appreciate the addition of efficient shower heads in the program, but think that selecting 2.0 gpm instead of 1.75gpm is a missed opportunity. With two years before this system comes into play, there is plenty of time for the number of high-performing shower heads at ≤ 1.75 gpm to reach broad market availability. This would represent a significant impact.
- 3) We have found that REMRate is not an accurate modeling tool for the Pacific NW climate, particularly in low load homes – EnergyStar should consider other performance modeling tools in addition to those currently approved by RESNet, or else require that those existing tools are revised to better reflect diverse climatic conditions;
- 4) It appears that regional code requirements that exceed Energy Star requirements will be incorporated into the Reference Home under the performance pathway. This will result in a consistent outcome compared to the prescriptive pathway. Which is important. However, in states where the local code exceeds the EnergyStar requirements across all parameters, a code home and the reference home will be the same – is this Energy Star's intention, or will there be revisions to the regional programs in that case;
- 5) Hawaii is given a special program of its own; why not the Pacific NW, also.

CHECKLISTS

- 6) The HVAC Quality Installation checklist should specify the pressure for the duct leakage targets CFM25 or CFM50. Not all readers will be familiar with the relevant testing standards;
- 7) We don't understand why the Water-managed construction checklist should be included in the scope of EnergyStar or even EnergyStar with Indoor airPLUS. These are durability requirements their "verification" may be deemed a qualitative judgment, potentially exposing the rater to liability in the event of failure. This would need to be accompanied by a "hold harmless" declaration by the contractor, at the least, to prevent rater liability insurance premiums from going through the roof.

Oklahoma Gas & Electric – Dorton, Donney

Thanks for the opportunity to voice my concern for EPA changing the HERS Index to a per house target number. The amount of confusion created from this type of marketing approach is horrendous. USGBC and LEED for Homes went to a moving target score to achieve their certification and it makes selling LEED-H an extremely complex and tedious effort. The sales person is lost in an extended explanation of the scoring system instead of using the valuable face to face time selling the positive points of the certification. EPA will create this same confusion for builders, people who have little patience for complexity and are looking for the bottom line to the program with ease of understanding. They want to be able to quickly identify the goal (Index score) needed for all of their homes, regardless of size or style. They want to be able to compare their Index score with the builder down the street, this is healthy competition, and it is part of why builders want Energy Star Certification. The Index may not be perfect, but it is a very usable number in the industry for comparison purposes. Not having a clear, consistent, national and easily understood Index goal for builders will hurt the Energy Star program a great deal.

Om Homes LLC – Bhatia, Marty

I am a general contractor, a real estate broker, a developer, and a material supplier in Chicago focused on sustainability. I have built an Energy Star single family, and am currently completing 7 more units of Energy Star certified condos.

I've had a hard time implementing current guidelines with sub contractors, and have had to go through at least 7 HVAC contractors to find one that can truly understand the requirements. These contractors also cost more than the standard contractor. After reading the proposed changes to the Energy Star program I have to say that I am concerned on several accounts.

The number one problem that I see is that there are more rules, more inspections, more checklists that have nothing to do with energy efficiency, and no training being provided. The Energy Star program is getting changed so fast, that it is likely to be abandoned before it can be adopted. I can't afford to retrain every six months, and I think the program is losing direction.

Why is there so much indoor door air quality requirements from Energy Star that are outside of the HVAC systems and building envelope. Energy Star should refrain from mandating the use of carpet, and how downspouts should be used. There are plenty of programs out there that are handling water management, and indoor air quality that when coupled with Energy Star can provide a substantially more healthy home.

Energy Star needs to stay focused on the central component of energy use, and stay out of water conservation, indoor air quality, and anything else that is a tangential course of action.

The number one thing that challenges builders to ever accomplish these tasks is the inability to chose the best direction for his or her business as it pertains to systems they use. Each location, market, and skill set is different, and frankly if Energy Star is going to make this program any more expensive or complicated than it already is, then there is a good possibility that I as a builder will abandon the attempt to get certified.

Given this current market, and the competition building total crap I will have to pick and choose my battles. I will not get any building certified on the proposed changes.

Instead of piling on more requirements, the EPA should focus on getting more builders trained, and maintaining incentives for getting up to par now.

Change slightly and less often. Let us catch up.

Omaha Public Power District – Swett, Dave

Regarding the proposed guidelines, specifically the proposed HVAC Quality Installation Contractor checklist.

It's good to see a thorough process for validating performance and capacity on site.

The number 7 footnote, indicates that Energy Star is defining that the duct blaster and the True Flow meters (both exclusively products of the Energy Conservatory) as the only approved means of measuring CFM. That's a product monopoly issue and it also leaves a number of other good air measurement products out of the process that are capable of delivering reliable air flow measurements.

It is also inconsistent with the ANSI/ACCA's QI-5, Quality Installation Specification standard that outlines several other means for producing reliable CFM values during the testing and performance process within this HVAC industry standard.

Energy Star's proposed criteria for approved CFM verification is too narrow and should be open to multiple products for use by those of us involved in installing and performance testing HVAC systems and/or energy rating homes.

Appreciate the opportunity to comment.

On-Site Performance Testing – Geissler, David

I have many concerns about the certification of new Energy Star Home Program. With all of the proposed revisions to the program the consultant would have to be an expert in all aspects of the construction fields. The site visits would be very lengthy and require a much high cost to the builders. I believe what you are trying to accomplish is to have the perfect home in a perfect world. You may want to consider some other type of package like a Gold Star Energy Home package and keeping the existing program the way it is today. With the economy issues today, the average homeowner can not afford this type of program and would shy away from my services.

Optimal Building Systems, LLC – Butler, David

General Comments:

Because the proposed 2011 Energy Star guidelines will likely be in effect until the middle of the next decade, it's important to look beyond the current state of the home building industry. As the market recovers, energy efficient design will undoubtedly be a dominant theme. However, Energy Star will have growing competition from municipal and county green building programs based on simple check-offs. Despite Energy Star's strong brand – both in terms of trust and recognition – the average home buyer does not appreciate the difference.

Current program cost is often low enough to be a non-issue, especially in markets where utility or other offsets and subsidies are available. However, a significant jump in cost will likely drive builders to less burdensome green building programs. Even Energy Star's own estimates indicate the add-on cost of ESv3 vs. ESv2 will increase by a factor of two. Unfortunately, most builders are focused on perception rather than real benefits. A competitive market enforces this reality.

The upgrade from ESv1 and ESv2 was required to stay ahead of conventional building practice. In many ways, the new guidelines are exactly where ES needs to go to lead the market. But cost issues aside, I believe Energy Star is biting off too much at one time. Rater training and consistency continues to be a major challenge.

Moreover, the national rater exam and field requirements need to be made significantly more rigorous. I think more time is needed to address these critical issues, and a plan in place *before* moving forward with Esv3.

Specific Comments and Recommendations:

- A. In general, I recommend a phased approach of these new guidelines, perhaps over three years (or less, if major portions are dropped, as recommended below).
- B. I recommend Energy Star limit furnace oversizing to 50% of the 99% design load. I have written a yet-to-be published editorial on the topic of how grossly oversized furnaces are creating significant comfort issues in high performance homes.
- C. Notwithstanding my detailed comments below, I totally concur with RESNET's comment on the need for further study of the Reference Design Home concept.
- D. Notwithstanding my detailed comments, I totally concur with RESNET's comment on the HVAC checklists.
- E. Notwithstanding my detailed comments below, I totally concur with RESNET's comment on Water Managed Checklist. It has no place in Energy Star as the issues covered are inconsequential to energy savings and most have little or no potential for being a negative side effect of energy savings measures.
- F. I strongly believe that the IAQ Checklist should remain an optional program.
- G. In addition to the foregoing 'big picture' comments, I have the following detailed comments on specific issues and sections of the proposed guidelines:
 - 1. The mandatory lighting requirements are too aggressive. Many permanent fixtures, especially those in closets, halls, storage rooms, and attics, are turned on less than an hour a week. In these situations, the additional cost for high efficiency fixtures or bulbs is clearly not justified. I recommend excluding fixtures in these rooms from the calculation, or lowering the percentage appropriately.
 - 2. The heated water distribution options are important improvements, especially considering the energy waste from traditional circulation pump systems. However, motion activated pumps are unwise, due to high potential for false triggers.
 - 3. Regarding the radiant barrier requirement... Some Santa Fe style homes are built with attic spaces between the ceiling insulation and the roof deck. If ducts are located in this space, it seems redundant to apply a radiant barrier when high performance roof coatings are used.
 - 4. I've long advocated for changing the duct leakage benchmark to a percentage of nominal fan flow. A benchmark based on conditioned floor area represents a very low hurdle for super insulated homes with low cooling and heating loads. Simply reducing the standard to 4% doesn't resolve this issue. Ideally, ducts would

be in conditioned space in these homes. But I've seen a fair number of ICF and other super insulated homes that easily pass the ESv2 duct leakage requirement based on CFA, even though they leaked more than 20% of fan flow! Mike Barcik once told me the CFA method of specifying the duct leakage benchmark was created to make it easier for raters to understand. With the ESv2 load calculation checkoff and the ESv3 HVAC QI Checklist, this argument no longer holds water (if it ever did).

- 5. On the HVAC Quality Installation Contractor Checklist, Equipment Capacity (Section 4), presumably the Design Values and Field Values refer to calculated load vs. installed capacity. If so, then a clarifying footnote is needed, and Item 1.6 on the HVAC QI Rater Checklist needs to be changed from 5% to 15% or 25% oversize tolerance as appropriate, and presumably zero tolerance for under-sizing. If on the other hand, the intent was to record the design capacity and field-verified capacity, I strongly urge the EPA to reconsider this requirement. I have several years experience working on the R&D team at Enalasys Corp (eScan) and respectfully make the following points: (i) very few HVAC contractors or raters are qualified or equipped to make in-situ capacity measurements, (ii) because of tolerance stack (airflow, supply and return temperatures, and especially moisture content of the return and supply airstreams), 5% accuracy is not possible with currently available equipment and procedures, (iii) it is difficult to normalize for design capacity at varying outside and inside conditions, (iv) as already noted for Section 6, air conditioners cannot be commissioned year round, and (v) the cost of performing such a measurement is not reflected in the \$125 allowance for commissioning, especially considering the other things that commissioning entails.
- 6. Other comments on the HVAC Quality Installation Contractor Checklist...
 - a. Section 2 and Footnote 3 refer to 99% ASHRAE design temperature. Should be 1% (99% is for winter). This is a carry-over from the ESv2 performance path guidelines.
 - Footnote 3 for Section 2 requires the load model to have infiltration set to "tight". I recommend this footnote be amended to include "or set to infiltration target specified by ES Guidelines" (another carryover from ESv2).
 - c. Section 4 a footnote is needed so the Contractor will note the equipment capacity at *design conditions* as per Manual S procedures, and not ARI conditions. This is the single biggest problem for Raters in determining if the installed equipment complies with the ESv2 guidelines for verifying correct sizing. Requiring the contractor to 'prove' that he's done a Manual S by listing this number eliminates this issue.
 - d. I'm unclear as to the purpose of Item 5.5 -- Fan speed setting (CFM). How is this different from Airflow at evaporator (Item 5.1)?
 - e. Newer Lennox units no longer use the Approach method. A slight wording change in Section 6 would be appropriate (also requires change to Section 1 of HVAC QI Rater Checklist)
- 7. On HVAC Quality Installation Rater Checklist...
 - a. Item 2.8 (Total duct leakage) is not mentioned in the April 20, 2009 Draft Requirements document currently posted on the ES website.
 - b. Item 2.10 (pressure balancing bedrooms) requires the Rater to know the target or actual airflow for each bedroom as well as the k-factor for the grills. There is no requirement that the rater be provided with this information by the mechanical contractor. I recommend an alternate means of satisfying this requirement: using a pressure gauge to test for maximum of a 3-Pascal differential with doors closed and HVAC system fan on.
- 8. Indoor Air Quality Checklist, Item 6.1 (no air handle/return in garage). Good practice but majority of homes in my southern Arizona are being built this way. This will have the unfortunate side effect of forcing more units to be located in the attic, much worse from a thermal standpoint. Obviously, it would be better to put equipment inside, but even Energy Star recognizes the difficulty in mandating locating HVAC inside. A better approach would be to require a higher standard for unit/duct tightness and require garage venting.
- 9. IAQ Checklist, Item 4.3 is ambiguous. Does this mean the pipes must have insulation separate from the cavity insulation? If so, which types of pipes are included? Water supply? Sanitary? HVAC liquid line (typically uninsulated), Distribution pipes for central vac? Wiring conduit? A footnote would be helpful.
- 10. IAQ Checklist, Item 4.5 -- what about a subfloor that gets rained on and delaminates? This is common and is usually mitigated by removing the delaminated sections and applying an appropriate filler. After repairs are complete, it is obvious there is water damage, so these homes would automatically fail this requirement. I recommend adding the word "unrepaired" before water damage.

11. Regarding the Thermal Distribution Systems section of the Reference Design Home comparison chart, I wondered why the 2-story/Crawl configuration didn't include 50% or similar in attic. 2-story homes on crawls with one unit in attic and one unit in crawl represent the vast majority of the homes I modeled in the Charlotte area. I have no problem 'penalizing' homes with attic ducts, but I don't think that was the intent here, and certainly not be picking on one particular configuration.

David Butler Optimal Building Systems, LLC, Sierra Vista, AZ

Orchard at New Market, LLC - Seawright, Steve

These comments will be comparatively brief as follows:

1) With respect to more stringent Energy Star standards intended to promote increased energy savings, I would urge that no standard be adopted that can not meet the test employed by FHA for energy savings features being eligible for an Energy Efficient Mortgage. That test is that a certified energy rater must perform a net present value analysis on the projected incremental energy savings that arise from a particular energy efficiency construction improvement For purposes of the present value analysis the loan interest rate is the present value discount rate, and ultimately the present value of incremental energy savings over the life of the improvement(s) can not exceed the incremental cost of providing such improvement (s). Satisfying that criteria means that a given energy efficiency improvement will more than pay for itself. If that test can not be satisfied by any of the ""raising the bar"" standards proposed by EPA, that standard should be modified to a point that the savings it yields pays for itself. You can rest assured that neither builders, REALTORS nor homeowners will promote or embrace paying for incremental energy savings that do not make economic sense.

2)The requirement you propose under ""indoor air quality"" for continual air exchanges appears antithetical to the concept of Energy Star. To the extent that you are requiring this consumption of electricity for air exchanges without a demonstration that indoor air quality degrades to a level detrimental to health, is simply increasing energy consumption without a showing of compensating benefit. This appears to be a ""Green Building"" issue rather than an ""Energy"" issue (except to the extent that it will result in the needless of consumption of energy). If EPA is attempting to move Energy Star in the direction of becoming a green building standard, there already is a ""National Green Building Standard"" and EPA requirements perceived as being a competing ""Green"" standard simply is a duplication of effort that results in needless confusion. As it is now, Energy Star and the National Green Building Standard are complementary, but what you are proposing is not complementary. If, as a builder, I must choose a Green Building Standard, it will be the National Standard, not the confused identify, Energy Star program reflected in the proposed guidelines.

3)With respect to your proposed new category of ""water management"" as pertains to foundation construction, flashing details and gutter and downspout treatment, see concluding comment of 2) above. To the extent that your are dealing with quantifiable savings that arise from ""Water Sense"" product features, you are on solid ground, because you are dealing with something that has measurable costs and benefits, but the other issues you are addressing already are dealt with by the National Green Building Standard.

4) Lastly, Energy Star does itself a severe disservice and loses considerable credibility by having spokespersons speaking before groups or being in print representing that the incremental costs associated with meeting the new guidelines will be in the range of \$2000-\$4000. My company has not yet completed a full costing of what compliance with the new standards signifies in dollar terms, but we currently are past \$6000, with the likely final number being in the range of \$8000, and that number is direct incremental costs only, without any mark-up.

Hopefully the preceding comments will be taken to heart. I currently am an Energy Star builder and a believer in the objectives of ""Green Building"". I, along with my customers, believe in and readily can be sold on energy efficiency improvements and investments that decrease water consumption which can be demonstrated to pay for themselves. To the extent that you move in the direction of imposing costs that are certain for the sake of benefits which are doubtful and unproven, you lose my customers, me and thousands of builders like me and their customers.

PA Home Energy / Performance Systems Development – Greely, Kathy

Thank you for the opportunity to submit comments on the Proposed ENERGY STAR for Homes 2011 guidelines. As a sponsor of a relatively new ENERGY STAR for homes program, we appreciate EPA's efforts to advance building practices and maintain a high standard of quality in new home construction.

We are particularly pleased to see the introduction of a Sizing Adjustment Factor to take into account increased energy use associated with larger homes, as we already incorporate a similar factor in our incentives for new homes. We also support the requirement for mechanical ventilation to reach ASHRAE 62.2, which is a current feature of PA Home Energy's new homes program.

However, we share the concerns stated by RESNET and MaGrann Associates (a service provider in the PA Home Energy program) that the proposed changes will significantly increase the costs for a rater to conduct a rating, and thus significantly reduce our ability to involve new builders and developers in our program, as well as affect retention of current participants.

Specifically, as a program sponsor in a "young" ES New Homes Market, we are concerned with the following:

- Increased rating costs, increased liability, and increased programmatic costs (arising from additional training and quality assurance needs) associated with the five new proposed checklists. Completion of these checklists will require several additional inspection visits, significantly increasing costs to complete the rating.
- The new requirements will increase construction costs for builders to meet the ENERGY STAR standard, as well
 as increasing the cost of the rating itself. We expect this to significantly diminish our ability to bring new builders
 into the program, especially in a market like ours where the existing ENERGY STAR for Homes program is yet
 not well-established.
- Manual calculation by each rater of the "customized" HERS Target Index is likely to introduce error and inconsistency to the program. Incorporating these calculations in the rating software would yield more standardized results.
- Implementation of the new guidelines will require a substantive training effort, for raters and for builders. How will these training needs be met? Will the EPA be able to offer assistance in supporting this training effort?

We encourage the EPA to fully evaluate the likely impact of the proposed changes on the viability of ENERGY STAR for Homes, and to consider adjustments that will lessen the burden imposed by these changes (such as phased in or voluntary approaches). We appreciate your efforts to maintain a high standard for energy-efficient new homes.

Sincerely, Kathleen M. Greely Program Manager, PA Home Energy Performance Systems Development

Pacific Sustainable Building Science, LLC – Johnson, Mitchell

This is Mitchell Johnson of Pacific Sustainable Building Science, LLC, in Honolulu, HI. We currently have a client with a few questions.

Allow me first to set the scenario.

He is a production builder using stick-framing and 100% sprayed foam insulation in all of their homes. The average size of the homes are just under 2000sf/4bdrm. Very efficiently sized 16 SEER air conditioning and air tight construction. The average home tests at or below 3 NACH. Solar water heating and high performance glass is always standard along with mechanical ventilation to meet ASHRAE 62.2.

They have also been consistently meeting the requirements for the Builder Tax Credit. This builder, Gentry Homes, has been building the most efficient homes in Hawaii for several years now and is putting a considerable amount of money into doing so.

Because of the location, climate, consistent temperatures, etc, performance testing is not required in Hawaii since, according to the local utility company, the largest consumer of energy in a home is the water heater.

I have performance tested hundreds of homes throughout Hawaii and Guam and I have seen that this is not always true. In fact, with the limited regulation on codes and specs in the islands, it has become much of the opposite.

To make a long story short, Efficient building practices can hinder challenges to some builders here because of our intense termite problem. Some stick builders are using added materials for durability reasons, rather than insulative reasons. Next, because of our location and countless models I've performed on homes in the region, more insulation is not the key as much as envelope tightness. Shouldn't there be some sort of adjustment for this sort of quality craftsmanship?

In Hawaii, 99% of all new homes have water heaters installed in garages. This benefits the homeowner from the delta T in conditioned space where garages are warmer, prevents mildew and property damage in the event that a leak occurred, and third, increases useable living space in the home. The proposed water systems for the 2011 plan do not show allowance for this scenario. All hot plumbing should be insulated, but circulation systems and manifolds come at a cost to the builder if they are not currently using such products.

R-8 duct insulation in attic spaces may perhaps be a bit much in Hawaii. I feel R-6 is sufficient. Along with that, I feel that "Manual J Calculation" is too ambiguous. Like the saying goes, "Garbage in, Garbage out." I have another client who's mechanical designer is more than happy to produce a Manual J summary sheet for the work he did on my client's homes. When asked to see the relevant information he used to determine the calculations, it was Garbage.

The recommended changes may be great for mainland builders. Property is relatively low cost and big homes can be built for around \$250-300,000. In Hawaii, that will get you a great down payment on a house. Lots run for that amount out here. Everything runs more expensive in Hawaii.

Wages do not fluctuate much from the mainland. By placing such high standards on our builders, my clients, they may say forget the whole thing and continue the way they were before.

Everything from materials to storage costs more in Hawaii because everything has to be shipped in. The homebuyers are only making as much as they make and will only qualify for as much as they can qualify for. With the credit market tightened up to what it has, there are a lot fewer buyers for the builders.

If the Hawaiian builder has to change building practices, change materials, and add components to become Energy Star builders, when they are already doing so much already, they will be forced to either reduce their market and lose customers, or not participate in programs that are tailored for the mainland.

I would like an opportunity to work with the EPA, ENERGY STAR, DOE, Sam Rashkin, and anyone else who has jurisdiction in the composition of the Energy Star program to help effectively tailor a program specifically tailored for Hawaii. The local utilities have been menacing for quite some time as to letting the program know what is and isn't energy efficient in their eyes. Times have changed. I'd like to support the program at all costs, but going hungry.

PanelStar Custom Homes – Stelmack, John

As an Energy Star Builder Partner it is encouraging to see the guidelines grow and keep pace with expanding awareness of the need to conserve our energy resources. More-so, it is helpful to the cause that these guidelines are based upon science. My comment/suggestion may not fit in this forum because I would not change anything proposed. However my comment is (in my opinion) applicable.

Comment on problem: As public awareness and participation in the Energy Star program grows, support for the consumer must grow as well.

Specifically, Energy Star labeled properties have a higher market value, but the appraisal and lending industries are reluctant to accept this fact. We have the Energy Addendum for Fannie Mae and Freddie Mac, as best I can tell, as the only authoritative document in support of a higher market value to an appraisal. This is a problem for home buyers who are eager to endure the expenses associated with building an Energy Star labeled home. The appraisers will not place added value because they are afraid that doing so puts their license at risk. They are skeptical and in some cases, fearful.

Suggestion: Work with the Appraisal Institute and Lending industry to develop a training program focused on the elevated market value of energy saving features. The Appraisal Institute has published a similar program but the focus is on ""Green"". Energy Star is mentioned but clearly not the focus.

Until the government, appraisers and lenders acknowledge and stand behind the higher market value of an Energy Star labeled home, the home buyers will continue to reject the additional expense. This is because they cannot afford the additional cash in the form of higher down payments on construction loans.

Your leadership in such a program is essential and would be greatly appreciated.
Parker, Ken

I do not think the average person knows what Energy star means.

Pikes Peak Committee

Attendees

Rick Colombo, PPES Chair/Campbell Homes Phyllis Thurber, Vantage Homes Charles Manly, Keller Homes Kelly Noble, Campbell Homes Lindsey Nigon, La Plata Communities (hosting this event) Kate Gregory, US EPA Doug Bursnall, EnergyLogic Jeff Rath, Colorado Springs Utilities Kristen Shewfelt, Architectural Energy Corporation (via phone) Sharon Higashi, CB&T Mortgage

Pre-Conference Call Meeting Notes:

- With respect to the proposed ENERGY STAR 2011 guidelines, there is no anticipated mortgage impact as the industry is already able to go over the debt-to-income ratios through an automated system. Any benefit would be determined by the individual lending company based on their philosophy regarding supporting "greening" the world and their desire to be more attractive to ENERGY STAR builders, not on any HERS Index Score.
- The builders are certain that the costs for the 2011 requirements will more than double. And with the customer not absorbing these costs now, much less later, the full weight of the up-front expenditures will fall on the builder.
- Builders are discouraged that local governments might tie the stimulus funds to full compliance with the new requirements.
- There will be some builders that will cease to comply in order to remain market competitive.

Planned questions for Sam:

- What work will he/his office be doing to increase customer participation in the new costs/plans?
- The builders reviewed the ENERGY STAR Qualified Homes 2011 Savings & Cost Estimate Summary. Where are the estimated costs shown on this plan coming from? The builders are not in agreement with many of these estimated costs, e.g., the number of lights as well as the cost per light are both below what the builders here are experiencing (while there are some very basic/entry level homes that might meet this criteria, most homes are not in this price/quality range).

General discussion items:

• Jeff Rath is of the opinion that smaller homes will enjoy more benefit from this than larger homes.

Webinar Meeting Notes

At noon we called in to the Q & A. Sam indicated that his primary concern was that questions could be answered; it is not intended for an exhaustive review of the specifications listed in the 2011 requirements. He has a list of comments and/or questions to begin with:

Why the changes?

- Activity at the national level. The proposed Waxman/Markey bill requires the Secretary of Energy to support
 consensus code-setting organizations to establish building codes achieving 30% and 50% higher energy efficiency
 targets in 2010 and 2016, respectively, to establish codes directly if such organizations fail to do so, to include cool
 roofs standards, and to support state and local adoption of such advanced codes by supporting training and funding
 for energy-efficiency code enforcement. See The American Clean Energy & Security Act of 2009, at
 http://energycommerce.house.gov/Press_111/20090331/acesa_sectionsummary.pdf).
- Increasingly-rigorous energy codes are being planned or implemented at the state and local levels.
- There are a number of market-ready technologies and construction practices beyond what is required in the current ENERGY STAR guidelines that can cost-effectively improve the performance of homes that earn the label.

 In order to keep the ENERGY STAR label relevant in the market place, ENERGY STAR must evolve and upgrade to the new available options and knowledge. It is critical that EPA increase the requirements for the ENERGY STAR program to assure meaningful above-code performance for homebuyers.

Biggest changes:

- Grade I Insulation Installation (current ENERGY STAR specifications call for Grades I, II and III levels of insulation installation quality)
- New mandatory requirements for reduced thermal bridging.
- New mandatory requirements for pressure-balancing and an additional Thermal Bypass Checklist requirement for sealing sheetrock at top plates.
- New mandatory requirements for whole-house mechanical ventilation, spot local exhaust and water-managed roofs, walls and foundations to address reduced tolerance to unmanaged moisture flow in tightly-sealed and insulated homes.
- ENERGY STAR lighting, appliances, space heating and cooling systems.

Process changes:

- Simulated Performance Method Replaces Fixed HERS Index Performance Threshold. ENERGY STR Reference
 Design specifications are used for HERS software evaluations, which establishes a unique HERS Index Target
 threshold for each home as opposed to a fixed HERS Index threshold."
- Size adjustment factor. Houses of all sizes will continue to be eligible to earn the ENERGY STAR label. However, larger homes will be subject to a "size-adjustment factor" that will reduce the HERS Index Target threshold and require additional energy-efficiency measures.
- More significant reliance on mandatory measures (more checklists).
- Consideration of state energy code requirements. Any state that has standards that exceed the national ENERGY STAR standards will take precedence.

Questions from subcommittee members:

Jeff Rath: Jeff asked Sam Rashkin about how the parameters for each of the representative homes were determined. It appears that Colorado climate was not reflected in this chart (see

http://www.energystar.gov/ia/partners/bldrs_lenders_raters/downloads/2011_Technical_Background.pdf, Page 10), and, as a result, the climate characteristics used for Colorado does not necessarily reflect the heating and cooling situations we find here. Sam suggested that we submit to EPA our own specific concerns with respect to any proposed specification item that might not be cost effective for Colorado Springs conditions. Jeff reiterated that he has no concerns with respect to any specific upgrades at this time, but is concerned about a Colorado Springs home being rated vis-à-vis a Minneapolis reference design home.

Other pre-prepared questions:

Only one ventilation system is acceptable now.

If ENERGY STAR bulbs are required in 80% of sockets, does that mean you also have to have the pin-based light bulbs as opposed to the screw-in light bulbs typically being used? Answer is that standard screw-in light bulbs can be used to meet the qualifying percentages.

Is duct leaking testing by a third party required? If they are in "unconditioned" space, yes.

Why is the HERS rating process getting so complex? According to Sam, the complexity is related to understanding the process. He believes that once the reference design is integrated into the software that it will become very easy to deal with this change.

Sam's contention is that a HERS number is much more difficult for a consumer to understand rather than the two paragraph explanation he gave. Comments were made in our group that a number, with its relativeness (is higher or lower better?) is easier to understand. So there is some disagreement on this item from our group as well as from at least one other gentleman on the phone call.

Multi-family program question: Has the EPA determined that low-rise multi-family must comply with 2011 specs? Sam's response is that it is the same as single family, due to the amount of lead time given. Projects permitted before Jan 1, 2011 must be completed by July 2011 or they have to meet the new specs.

What is the cost impact on builders? Sam's response \$3-4000 per 2500 square foot home on average in addition to what is being spent now.

Will the nanotech-based line of thermal insulating paint reportedly achieves 20-30% energy savings be permitted in the ES program? Sam: not likely because a national test lab is unlikely to document that amount of savings. In order to use an R value, it must be a value that is nationally recognized. According to Sam, the NAHB has a well-established laboratory that may be helpful in certifying the thermal insulating paint product.

Additional questions:

Any work being done by RESNET (Residential Energy Services Network) to upgrade "Rater" training to support the knowledge required to appropriately rate a home under the new guidelines? Sam's response was that there wasn't such a knowledge difference that the Raters couldn't handle it with what they know now or with minimal additional training.

Question regarding the 2009 IECC. Here in CS we amend every code we adopt. If we amend the 2009 IECC to not require the 2x 6 construction on every wall that this would drive builders out of the ES business? Sam stated that an R19 wall effective is an agreeable thing. And a builder not willing to go there is not quite ready to be an ES builder.

The subcommittee let Sam know that the customer is not going to pay for this, so the builder will be absorbing it. Sam states that ES is not being properly sold and therefore if it was the customer would pay for it. There was much offline discussion on this subject as subcommittee members strongly disagree with this statement.

The subcommittee asked Sam if this national standard is already set in stone, or is our input going to perhaps make some changes. Sam responded that the subcommittee should provide the documentation to back our concerns and they will consider it. He stated that the process is not pre-determined.

Recommendation by CS PPES was made that the National organization take baby steps towards these goals rather than the larger leap being suggested by these guidelines.

Call was ended at 1:15 pm.

Offline questions: Is this ENERGY STAR'S efforts to keep up with the USGBC LEED for Homes program? (Not sure of this word). And yes was the consensus of our group.

Jeff Rath from Springs Utilities mentioned how difficult it would be to determine their rebates and incentives without a specific HERS Index Score.

Action item: we have until July 10th to form our group's response and send off our letter.

Next schedule meeting for the full committee is on July 16th at 1pm at Keller Homes.

Portland Energy Conservation, Inc. – Cook, Warren

New Checklists

The added expense of additional verification – even if offset by proven durability improvements and increased energy savings – will be a large consideration in the New Homes programs we operate in the Pacific NW and West. We understand the need for increased scrutiny and technical support for builders and subcontractors, and support EPA efforts to make the program better and the builders more accountable.

We are responsible for designing and implementing programs that achieve cost-effective energy savings for our utility clients. EPA can assist us in assigning energy savings to the new program elements, and help us sell the new program changes to our clients. We appreciate EPA efforts to correlate real-world savings with HERS residential software simulation predictions.

Qualifying Criteria & Size Adjustment Factor

The proposed changes are a leap forward in addressing challenges of larger homes. However, HERS index does not reflect the operational energy costs of a home. We do not feel the HERS "number" is an adequate sales tool for builders, as homebuyers cannot grasp XX% better than code (especially in our states where code exceeds the HERS baseline) and equate the HERS index to what the anticipated energy costs will be in their new home. We understand the challenges of an energy budget approach in different climates and different shell configurations. For one of our new homes programs we use an energy performance score – rated in annual MBTU and proposed annual energy costs. This has been a significant enhancement to our program, and has helped us guide builders to ENERGY STAR and to give them a demonstrable "score" to show customers for homes that exceed ENERGY STAR. For those builders who find our strict energy codes a challenge, we use the score to get them to consider incremental improvements beyond code, even if ENERGY STAR is not achievable. We would like to see EPA develop consumption-based criteria to augment the HERS index methodology and give builders an understandable target to seek, and a valuable metric to market.

Progressive Engineering Inc. – McCutchan, Larry

I am a HERS Rater in northern Indiana. I have the following comments about the proposed changes to the ENERGY STAR Program. I know you have put a tremendous amount of work into this proposed upgrade, and my knowledge is pretty insignificant in comparison. But I used to be a contractor, I understand construction, I understand building science, and I know what builders expect as a return on the investment they make to have a rating done on a home. You have proposed several things that are commendable and several things that are simply off base.

1. Quality Framing Checklist: This will require an additional trip to the site and will subsequently raise the cost of certification. I cannot inspect the framing when it is covered with insulation. If a builder uses blown cellulose in the walls, I will not disturb that insulation to check how the corners and wall intersections were framed. I must inspect the framing before the home is insulated. This checklist is has a minimal impact on energy saving and has more to do with green building. The items shown are already covered under the current system if the Rater does his job properly and enters the information into REM/Rate to accurately represent the home. All you need to do is add a couple more options in the program for framing percentages.

2. HVAC Contractor Checklist:

- Section 1 is simply data that the Rater can obtain in the field.
- Section 2 is a list of Yes/No questions that cannot be easily verified. Why not just have the contractor submit the calculations? If they use a computer for the system design, this is simply a printout that would also include the design criteria.
- Section 4 is more data that the Rater should be able to obtain.
- Section 5 is asking for field verified air flow data. I have never worked in HVAC, but I am pretty sure this is seldom
 done. It may be a good idea, but most contractors will balk at doing this, some even to the point of making up
 numbers. If they do these tests, it will raise the cost to the builder. If the system is designed properly and built
 according to the design, then this step is not worth the cost. I say eliminate this checklist altogether and just
 require the contractor to submit calculations to the Rater.

3. Indoor Air Quality Checklist: ENERGY STAR is about saving energy. Indoor air quality is an admirable goal, but is has little to do with saving energy. It is a green building issue. If you want homes to have a green rating, then require that. But this checklist has no place in ENERGY STAR.

4. Water Managed Construction Checklist: Again, an admirable goal, but not energy-related. In my area, all homes have basements. Inspecting the below-grade walls will require another trip to the site, thus raising the cost due to an issue not related to energy. Installing a drain tile, as 1.8 seems to require, along with a sump pump, is often not needed, depending on site and soil conditions, and again raises the cost. And some of the items in Section 4 will require another visit to the site to verify them before the final finishes are installed. So this checklist alone requires at least 2 additional inspection trips for things that have nothing to do with saving energy. Eliminate this checklist and leave these items to the green raters.

5. Size Adjustment Factor: This is a welcome improvement. We need to stop rewarding builders of large homes. Is there any way we could reward builders of smaller homes? Why not let the Factor exceed 1, at least for homes up to 3 bedrooms?

6. Overall, you seem to have lost sight of the big picture and have chosen to focus on details, either just because you can or to make it look like you have done something. The goal of ENERGY STAR, as I understand it, has always been to reduce overall energy consumption of a home by 15% over code minimums. The current system does that. The proposed program seems to shift the focus away from the goal and onto the method used to get there. This is not a bad thing, but it comes at a price. My position would be to maintain focus on the 15% overall reduction and let the builders determine how to get there. Site conditions, product availability, and construction practices vary widely throughout the country. Requiring so many specifics may be placing an unnecessary burden on some builders when alternatives are available that achieve the same final result at a more affordable price.

The proposed changes will require at least 3 additional trips to the site, plus a lot more paperwork. This will raise my price to the builders by at least \$500 to \$1000. For this additional investment, the builder gets nothing substantial in return. There are no financial rewards for building to ENERGY STAR. Marketability is better, but the cost of the home is still the most important marketing factor. Along with the increased rating fee, the builder will need to do a lot of additional work to meet the new requirements. The result will be a home that costs several thousand dollars more than a similar non-rated home.

Standard building practices in my area are very good. Nearly all homes would meet ENERGY STAR standards with only a few extra steps on the part of the builder. However, few builders have their homes rated simply because it costs money to have that done. The additional costs required by these new standards WILL drive builders out of the ENERGY STAR market. You will have fewer homes rated, which I would think is exactly the opposite of what you want to achieve. These proposed changes go too far, and they will backfire. We need to entice more builders to construct efficient homes, not fewer.

R&D, Pulte Homes - Peterson, Jim

Topic: Checklists

Comment: The quantity of checklists will increase inspection costs dramatically. This will serve as a large disincentive to the program over the current program.

Rationale:

Suggested Change (or Language):

Topic: HVAC Contractor Checklist

Comment: In many smaller markets the HVAC contractors are not equipped to do the required airflow testing.

Topic: HVAC Contractor and Rater Checklist

Comment: I do not believe contractors or raters are adequately trained or equipped to verify all the items requested.

Rationale: In requesting quotes from contractors and raters I am getting estimates that make me believe they will be filling these forms out without adequate verification.

Suggested Change (or Language): Greatly simplify both checklists.

.....

Topic: Quality Framing Checklist

Comment: Mandatory raised heel trusses

Rationale: Various jurisdictions throughout the country have instituted stricter height restrictions which has eliminated the use of raised heel trusses. Mandating raised heel trusses will impact interior ceiling heights in those areas.

Suggested Change (or Language): mandate raised heel trusses with the exception of areas that limit building height AND lower ceiling heights below a minimum for specific floor levels.

Topic: Quality Framing Checklist

Comment: Mandatory Exterior Wall Corners

Rationale: Various jurisdictions have interpreted wind bracing details in the IRC in a way that prevents specific framing at exterior corners without substantial alterations to wall layout or member framing

Suggested Change (or Language): Should be flexible in regards to local wind bracing regulations

Topic: Water Managed Construction Checklist

Comment: Various components that are not specifically related to the energy efficiency of the building although they are soundly based in building science principles

Rationale: Many of these items are building code related and others that are not are included in various green certification programs. A Rater is not qualified to inspect many of these items and/or is not present on site to inspect

Suggested Change (or Language): Limit these items to maintain the focus of the program on Energy Efficiency while limiting the cost implications that go beyond code regulations and have no direct relation to Energy Efficiency

Topic: All checklists

Comment: Numerous additional checklists with various cost implications

Rationale: The complexity and scope of these checklists should be reconsidered. Combined they will add time and money to the process which may incline numerous builders to shy away from the program

Suggested Change (or Language): Limit the checklists to items that are directly linked to energy efficiency. Carefully review mandatory items or consider multiple paths to mandatory items. Conduct an in depth survey of builders to understand the cost implication of these checklists

R. Whitfield Assoc. Trust – Whitfield, Roderick

Please be advised that the 2011 code compliance for Energy Star will compliment as well as supplement the various other codes IEC, IBC and increase value with a small increase in cost in which the value to cost ratio will be positively effected to increase building quality improving indoor air quality/ventilation, power/energy consumption by improving lighting, heating and cooling, U factor of wall internal insulation or R value as well. Improving The HERS rating and how the house will be constructed as for materials related to one of the 8 climate zones to achieve its Energy Star rating.

Raintree Energy Services – Robinson, Stephen

I am a HERS rater and have done diagnostic work for the DOE and base compliance studies in Indiana. I have taught energy efficient construction and best building practices, Green building, and basic building science for years. We have made great leaps over the last two decades that I have been involved in the industry.

I am however troubled by the proposed changes to the Energy star requirements for new homes. While they appear to be well intentioned their implementation and verification will be inconsistent, costly and problematic.

This will not only significantly drive the cost of this program up when there are many green programs such as LEED and the ANSI 700 standard out there with energy efficient components, it will be costly to implement and verify. With this much additional work, you are talking driving ratings to double or triple their existing levels and why would builders do this when they could easily get a green certification instead.

You will place raters in a difficult position to verify and certify equipment and features that perhaps are dramatically outside of their current knowledge in some areas that would require much re-training.

The criteria for Size adjustment Factor does not appear to be a consistent 15% over the code that would be in effect in 2011 which would be the 2009 IECC. The use of the SAF would in addition be a time consuming mathematical and verifiable nightmare.

There is a great deal of time now spent on data collection and inputs with really good available software. So now we want to make the mathematics even more difficult and time consuming. We open the arena up for mistakes.

The goal of Energy Star was for deep market penetration of Energy efficient homes thru a market driven approach that made it compelling to consumers and builders alike. Please tell me why we want to make it so difficult to achieve. I am a builder as well as a rater and I can tell you this will not tip the scale in favor of Energy Star. We currently have a working product with decent market penetration that is somewhat affordable. So now we want to make it increasingly difficult and more expensive to comply? In this market?

Good luck!

They will not spend another 400-800 0n a rating. Nor will they spend significantly higher dollars for compliance. At some point we keep increasing the sine curve and there is no payback, not in 30 years and certainly not in 7 years which is still the initial ownership time frame of home buyers. I appreciate and applaud the efforts of EPA and DOE in promoting the program and getting us to where we are. Lets not wreck this train now. Let's get together with the technicians in the field, RESNET and our Energy Star partners and Builders and come up with a better program. There is no need to jump headlong into this with as many potential pitfalls as exist in the current proposal.

Renewal Home Energy, Inc – Oldenburg, Karl

I am an energy rater in La Crosse, Wisconsin.

Although I recognize the well intentioned changes with regard to building science, accounting for larger home size and creating more efficient homes, I believe the proposed guidelines, as currently constructed, will cause drastic reductions in home certifications and alienation of partner builders. Currently builders and home-buyers have a belief that they build efficient homes. Adding a cadre of new requirements and additional cost will cause many to question the value of certification (consultant building science recommendations included) and abandon the system for other measures with greater perceived cost/benefit implications.

Increased labor cost under the proposed guidelines causes increased costs from the rater, HVAC contractor, and additional material costs. These costs weigh heavily on builders who are already struggling with decreased demand for homes and tight budgets with clients who would rather put dollars into home furnishings.

I feel that the proposed guidelines would have the following repercussions:

- Increase costs by a minimum of \$1,100 per home by the rater (over doubling rater costs).
- Increased costs by HVAC contractor.
- Alienation of rural builders by raising certification costs to locations where additional rater travel is required.
- Loss of builder participation by over 50%.
- Increased cost of liability insurance to raters due to assumptions and additional reporting requirements. These costs would also need to be added to rater charges to builder.
- Builders would feel that the additional \$4,000 to \$5,000 in additional costs will not have sufficient benefit for participation. This is similar to the alienation that the LEED for homes program currently has.

In lieu of the proposed guidelines I would suggest:

- Mandatory furnace and AC equipment that complies with current tax incentives.
- Lowering HERS rating scores to indicate the reality that homes can easily comply with the 80 rating. This number should be leveraged so the public and builders come to understand what it is before alienating them from the process.
- Issuing a comparative cost per sf for heating and cooling costs so that consumers have a MPG standard they can
 understand for homes.
- Enhance electrical requirements with simple switching to allow homeowners to control phantom loads.
- Publish a list of proposed home enhancements that a builder is required to distribute to the prospective homeowner. This would include options like low some fans and other best practices and building science features that the builder can choose to adopt.

Residential Science Resources, LLC – Gates, Mat

I want to take this opportunity to thank you and you staff for all the effort and support that you bestow upon the ENERGY STAR® Homes program. My company, clients, and staff find it very reassuring that the support, tools, and dedication needed to make this effort successful is readily available.

As requested Residential Science Resources, LLC (RSR) is taking this opportunity to submit comments on the recent proposed changes to the ENERGY STAR Homes Program. Please take into consideration that RSR supports ENERGY STAR Homes in three distinct roles: A HERS Rating Organization, HERS Provider, and Utility Program Implementer. While we are in support of bettering and improving the program as suggested, we do have the following comments and questions:

1. RESNET Comments

As a RESNET member and HERS Provider, RSR agrees with and supports the issues raised in the RESNET
position paper, especially concerning the added checklists.

2. CEE Comments

 On behalf of our client, Xcel Energy, Residential Science Resources was able to participate in several of the conference calls with CEE regarding the proposed changes of Version III. Residential Science Resources agrees and supports the comments submitted by CEE.

3. Rating Cost(s)

- •While we have not yet determined the exact financial impacts of performing Ratings to the new standards, we do believe that the costs will mostly likely increase significantly for ratings, providing, and implementations due to:
 - a. Increased data recording and management
 - b. Retraining of Builders, Raters, Subcontractors, and supporters
 - c. Reworking collateral, presentations, and websites
 - d. Meetings with clients to explain specifics of impact on their homes
 - e. Additional time on site and recording of information
- I do understand that the ENERGY STAR Homes team has developed some estimates" as to the incremental cost of the Rating(s). We do believe that the term "Rating" is commonly misunderstood throughout the country. Can you please share with us and clarify your findings/estimates on the increases rating cost(s) including:
 - a. Current base cost(s)
 - b. What is currently included in the current base rating
 - c. A list of differences between the current rating and an itemized list of improvements and additional work, each with an associated cost increase

4. Construction Cost(s)

- While we have yet to take the news of Version III directly to our builder clients, there is great deal of speculation that the costs of construction will increase substantially for our clients to adhere to the new standards. Have you performed such a study and if so can you please share with us your findings/estimates on the increases in building cost(s) including:
 - a. Current base cost(s)
 - b. What is currently included in the current base house
 - c. A list of differences between the current house and an itemized list of improvements, each with an associated cost increase

5. Participation

- It has been stated that both the number of builders and qualifying homes will significantly decrease.
- a. Can you please share your estimates?
- b. How long do you anticipate it will be until the number of qualifying homes and builders is back to the 2009 numbers.
- 6. HERS Index/Performance Index
 - Understanding the reasons for moving away from the Current HERS index, including size of house issues, Fuel Source, climate location, and region; we find the proposed method to be confusing.
 - Can you please provide a detailed specific example of the new calculation for:
 - a. A 2,000, 4,000, and 6,000 Sq ft home

- b. All gas heating and water heating vs. electric in a northern climate
- c. All electric cooling and water heating vs. gas and electric in a southern climate
- Is one of the intents of the proposed metric to simply pass/fail homes on ENERGY STAR? And to eliminate the HERS Index?
- Why not just fix the HERS index to make it work better and be more meaningful. One example is to label homes on the scale of Btuh and/or kWh consumption /sq ft of home

7. Integrity and/or Interpretation of Ratings

- There is currently a great deal of interpretation among raters thorough the country regarding the TBC, and intended various requirements. With the additional checklists, what process, if any, will be in place to assure Quality Control to the ratings and the associated judgments?
- Will RSENET be required to add this to the QA requirements?
- Will there be a different entity to report and perform QA?

8. Base Home per Region

- Can you please share what your estimated "Base Home(s)" per region are, to include:
 - a. Consumption
 - b. Fuel type
 - c. Overall U-Value
 - d. Infiltration rate

There is one final general comment and concern that I would like to make on behalf of our clients. Many of the utility based ENERGY STAR New Homes Programs that we manage for different utilities are marginally passing their cost benefit analysis now. Any increases in cost of the program, rating(s), and/or builders cost(s) to upgrade; without any additional energy savings will most likely adversely affect the cost benefit ratios and thus may render the program economical unfeasible. This coupled with a predicted substantial decrease in participation, and increase in cost of training, education, and marketing (to combat the decrease in participation) will only further negatively affect the program.

Thank you for your consideration and replies to these questions and comments. Sincerely, Mat Gates

CEO Residential Science Resources, LLC

RESNET – Baden, Steve

Attached are RESNET's formal comments. It is attached as a WORD document due to the difficulties involved in pasting the charts and graphs on an e-mail message. RESNET appreciates the opportunity to comment on this important issue.

RESNET appreciates the opportunity to submit its comments on the proposed changes to the ENERGY STAR Homes Program. The comments were adopted by the RESNET Board of Directors based upon input from its membership.

RESNET appreciates the thought behind the proposed changes. We laude EPA's commitment to move its program into a higher level in terms of building science and green building practices. We believe, however, that there are challenges in the proposed program that must be addressed before it is adopted. In making such significant changes, care must be taken to limit unintended consequences.

It is in this spirit that RESNET offers the following comments:

RESNET Position on Proposed Additional Checklists

RESNET believes that the proposed new checklists are, in many respects, well-grounded in building science. However, RESNET also believes that proper implementation of these checklists is likely to come at a high price. This cost can be avoided, however, as we suggest below. EPA's price estimates for the addition of these checklists is \$1,200 per home in inspection costs alone. These costs, when added to the additional construction costs, may prove burdensome in the current housing crisis and EPA has not shown evidence that builders or consumers would be willing to bear these additional costs. The HVAC and moisture checklists in particular represent the largest risk to EPA's program in terms of cost, credibility, and participation.

RESNET is also concerned that the HVAC checklist, signed off by the installing technician, will end up being a "rubberstamp" with no accountability and no real quality review. This can have two negative effects, first, it threatens the credibility of the whole program; second, it requires the Rater to "sign off" that the installer signed off, but without adequate training or authority to really inspect and enforce the application of the requirements. For those Raters doing the minimum, it has high potential to be a pointless bureaucratic action; for those who really understand HVAC, it will put them in an awkward position with no mandate or real authority to require system modifications if their understanding differs from the installer's.

There are other areas of concern regarding the HVAC checklists. First, the proposed requirements impose a heavy burden for air conditioning and air source heat pump installations but ignore similar potential installation problems with ground source heat pump and boiler systems. Second, compared to the ANSI/ACCA 5 Quality Installation Standard, which has been adopted by ENERGY STAR, EPA's proposal is significantly more stringent in several areas; in some cases (such as room air flow tests) it requires conformance to a standard that is more stringent than the resolution of the test methods themselves. Third, this proposal will necessarily require substantial training of HVAC technicians – who will train them? Most Raters do not have this level of training, and even when they do, Raters usually don't have the authority with HVAC contractors or local code officials to ensure this level of compliance. Finally, air conditioning savings in cold climates is likely to be far too small to justify the added cost.

RESNET recommends that EPA seriously reconsider the HVAC checklist, and in its place provide an incentive, rather than a requirement, for compliance with ANSI/ACCA 5 QI, an existing consensus-based standard for quality HVAC installations that is consistent with many existing utility programs, and already cited by ENERGY STAR's HVAC program. The incentive could be to penalize affected HVAC installations (heat pumps and AC systems) by an agreed percentage for those who do not participate and demonstrate compliance. This would also assign the level of energy impact appropriately based on the equipment and climate. The new check list specifications thus become *one option* for achieving an energy efficiency target, not a mandatory requirement. This encourages their use, maintains EPA's proposed level of savings, but does not entail the large increase in costs.

If EPA accepts this advice, RESNET will work with EPA to incorporate the benefits of meeting checklist items directly into the calculation of the HERS Index.

RESNET is also concerned that the water management checklist goes beyond the mandate of an energy-efficiency program. While the requirements represent good building practice that all builders should be incorporating, most of them are beyond the scope of a rating, beyond what a Rater is trained to do, and many are not able to be inspected at times that a Rater would be on the site. This checklist will add significant cost to the rating, with no tangible energy benefit.

EPA treats water-specific issues through a separate program—Water Sense. Addressing the water issues through this program is more self-consistent.

The updated thermal bypass and the new framing and IAQ checklists represent additional training requirements and work for the Rater that will increase the cost of an ENERGY STAR compliance rating, as well as increase the cost of compliance to the builder. Adding the HVAC and moisture checklists further increases costs and the potential for alienating the building industry becomes greater. RESNET strongly recommends that EPA carefully reconsider the potential down side for these additional requirements and that they conduct builder and consumer surveys and focus groups to ensure that these requirements do not hurt the program more than they help. These down sides can be avoided by our suggestion of offering tradeoff credits for meeting them, so that the costs can be justified in comparing these sorts of efficiency measures with others. At a minimum, RESNET recommends that EPA consider making the non-energy features the responsibility of the builder, rather than the rater, to document; likewise, any specialized HVAC installation practices should be signed by the HVAC installer alone

RESNET's Position on Changing Qualifying Criteria

The most significant change to EPA's proposed qualifying criteria occurs within the performance path. EPA has stated that a specific HERS Index is not the most appropriate means of representing their ENERGY STAR home criteria, and has outlined their reasoning for this position in "Overview of Evolving ENERGY STAR Qualified Homes Program & Methodology for Estimating Savings", posted as "Technical Background" on the EPA's <u>website</u>. As such, EPA has proposed a new ENERGY STAR Reference Design home. The characteristics of this new ENERGY STAR Reference Design home closely follow EPA's prescriptive qualification requirements. For the ENERGY STAR Reference Design home, any given proposed home would be modeled using accredited rating software and these prescriptive requirements, as modified by EPA's reference home modeling rule set. The resulting HERS Index would then be used as the base HERS Index for that home. This base HERS Index would be further modified by a Size Adjustment Factor, if necessary, to arrive at the qualifying HERS Index for the proposed home.

The Florida Solar Energy Center (FSEC) has conducted a limited analysis of the ENERGY STAR Reference Design Home concept across the seven standard continental U.S. climate zones. Figure 1 illustrates the results of the analysis. While the analysis is limited to only one home size and type, it is clear from Figure 1 that, with respect to the minimum requirements of the 2009 IECC, EPA's proposed ENERGY STAR Reference Design home does not achieve EPA's stated ENERGY STAR policy objective of new homes that save at least 15% compared with prevailing code minimums. The

ENERGY STAR Reference Design Home meets or comes close to meeting this object in southern climates. However, it falls significantly short of the goal in northern climates when heating is provided by electric heat pumps. In fact, St. Louis (CZ4) appears particularly problematic in that it does not come close to this goal regardless of heating fuel type.

This FSEC analysis also shows two other salient facts.

- There is a strong correlation between the 2009 IECC source energy use savings shown in Figure 1 and the HERS Index achieved by the ENERGY STAR Reference Design Home.
- If the HERS indices for the 2009 IECC Standard Reference Design for the 8 different home size/bedroom pair sets of EPA's Exhibit 3: Benchmark Home Size table are calculated for all seven climates at 85% of their value (indicating 15% savings over the 2009 IECC), the results fall within a narrow band width about 78.



Figure 1. Energy savings of the proposed ENERGY STAR Reference Design Home as compared with the 2009 IECC across the continental U.S. by fuel type.

2009 IECC), the results fall within a narrow band width of only about two HERS Index points – from about 76 to about 78.

Additional results and details from this analysis are available on the RESNET web site at <u>http://resnet.us/EPAv3-HERS.pdf</u>.

RESNET recommends that EPA reconsider their proposed ENERGY STAR Reference Design Home concept. It is EPA's stated policy goal that they will achieve at least 15% savings with respect to prevailing standards. In 2011, the prevailing standard for homes will be the 2009 IECC. The preliminary analysis provided above indicates that EPA's proposal falls

short of their stated policy goal. As such, EPA should consider an alternative to their proposed ENERGY STAR Reference Design Home.

FSEC has conducted an analysis of all of the home size and number of bedroom pair sets provided in Exhibit 3: Benchmark Home Size of the EPA proposal. For each of the eight size/bedroom pair sets, an IECC 2009 Standard Reference Design Home is constructed for each of the seven contiguous U.S. climates, yielding 56 distinct IECC 2009 Standard Reference Design homes. For each of these homes, the HERS Index is computed using EnergyGauge[®] rating software, producing the data shown in Table 1, below.

Cond. floor area (ft ²):	1000	1600	2200	2800	3400	4000	4600	5200	Range	
No. bedrooms:	1	2	3	4	5	6	7	8	(max-min)	
Miami (CZ1)	90	89	88	88	87	87	87	87	3.0	
Daytona Bch (CZ2)	91	90	89	89	88	88	88	88	3.0	
Dallas (CZ3)	89	88	87	87	86	86	86	86	3.0	
St. Louis (CZ4)	91	90	89	88	88	88	88	87	4.0	
Indianapolis (CZ5)	92	91	91	90	90	90	89	89	3.0	
Burlington (CZ6)	93	93	93	93	92	92	92	92	1.0	
Duluth (CZ7)	93	93	93	92	92	92	92	92	1.0	
Average:	91.3	90.6	90.0	89.6	89.0	89.0	88.9	88.7	2.6	
85% of Average:	77.6	77.0	76.5	76.1	75.7	75.7	75.5	75.4	2.2	

 Table 1. HERS Index for IECC 2009 Standard Reference Design Homes of Specified Size and Number of Bedrooms across U.S. Climate Zones

Data such as that in Table 1 would allow EPA to establish program guidelines that would accomplish EPA's policy goal of achieving 15% energy savings with respect to the prevailing national minimum code standards in ENERGY STAR new homes.

Consistent with the FSEC analysis, RESNET recommends that EPA add a third row to their Exhibit 3: Benchmark Home Size table. This row should contain the Base HERS Index that is required to achieve a performance level that exceeds national model codes by 15%. Table 2, below, is provided as an example:

No. of Bedrooms	1	2	3	4	5	6	7	8				
Benchmark CFA	1,000	1,600	2,200	2,800	3,400	4,000	4,600	5,200				
Base HERS Index	78	77	77	76	76	76	76	75				

Table 2. Example Expansion of EPA Exhibit 3: Benchmark Home Sizes

It is important to point out that Table 2 is only presented as an example and that the values shown for the Base HERS Index should be considered "placeholders." While these values stem from legitimate analysis, the analysis is limited to only a single home type. If EPA chooses to adopt this approach, it is recommended that they conduct a national analysis to develop a final set of Base HERS Indices. It is recommended that such analysis consist, at a minimum, of the following steps:

- 1. Determine the HERS Index for IECC 2009 Standard Reference Design for all benchmark home sizes, in all climates for all reasonable foundation types using electric space air conditioning, gas furnace space heating and gas hot water heating in all climates.
- 2. Determine the average HERS Index for each home size across all climates and all building foundation types (this average could also be a weighted average that is based on expected or historic home starts).
- 3. Multiply the resulting average HERS Indices by 85% to establish the Base HERS Index for each base home size (Benchmark CFA).
- 4. Use the actual home size (CFA) and EPA's proposed Size Adjustment Factor (SAF) to establish the "Qualifying HERS Index" for proposed ENERGY STAR homes.
- 5. Adjust all BOP requirements to be in line with the above.

The above procedures will resolve some of the largest challenges with respect to advancing the ENERGY STAR new homes program. It will document and explicitly remove the home size factor that currently advantages larger homes and disadvantages smaller homes. It will better achieve EPA's policy objective of providing ENERGY STAR new homes that are at least 15% more efficient than prevailing national model codes. It will provide clear guidance to builders and consumers regarding the HERS Indices that are expected from ENERGY STAR labeled homes.

When coupled with EPA's proposed Size Adjustment Factor, this procedure is likely to provide a clear signal that seriously impacts home size selection. For example, if a builder or homeowner chooses to build a 5,000 ft², 3-bedroom home, they will quickly and easily be able to determine from EPA's qualification guidelines that the required qualifying HERS Index for this home is $76*(2200/5000)^{0.25} = 62$. This level of explicitness likely will result in additional success for EPA's home size initiative.

With this formulation, additional credit is given for smaller homes without regard to what the starting point is. Establishing a size below which the qualification level is constant is an exercise in arbitrariness. The formula recognizes that smaller homes always produce less environmental impacts.

RESNET also has strong concerns about "gaming" with EPA's proposed ENERGY STAR Reference Design home concept. It is unclear whether a Rater would be allowed to manually create the "ENERGY STAR reference home", find out the target index, do additional calculations to adjust the index if the home is bigger than the benchmark size, and then produce a rating on the proposed home. This would create a nightmare from the perspective of quality assurance. It invites gaming, offers many more opportunities to make mistakes, and would require saving, tracking, and providing QA on two rating files (the ENERGY STAR Standard Design home and the Rated home) for every address. This is simply not a viable option from the perspective of the current HERS rating infrastructure.

RESNET's Position on Size Adjustment Factor

RESNET lauds EPA's proposal to account for the size of a home in labeling of ENERGY STAR Homes. It is good energy policy. The proposed method of using the forth root of the size ratio appears to strike a reasonable balance and could be fairly easily incorporated into rating software programs.

Again, RESNET appreciates the opportunity to comment on the proposed changes.

Ryland Homes - Dallas – Tschetter, Chad

The standards need to consider Climate Zones and building practice differences between regions of the country. What is good for one region isn't always good for another region.

The requirement of Heel Trusses is a major change to the way homes are built in Texas. We would have to redesign all of our homes to incorporate this change. The cost to do this would far exceed the limited benefit to the homeowner's utility savings. It would force us to pull out of the Energy Star Program. Please reconsider that requirement.

Sawyer Homes Inc. – Latyala, Bob

There needs to be an alternative to Manual D duct sizing. Flexible duct work is the prevalent material used in our area. In fact I don't know of a builder or HVAC contractor that uses anything but flexible duct work. It is my understanding that Manual D design will require the use of metal duct work to achieve different designs. This will add significant cost to a residential home because commercial type contractors will have to be utilized to install this duct work.

Schultz Building Inc – Schultz, Noel

As a company we have been participating in WESH for two years building all our homes to WESH standards. What has hindered us from participating in the past is cost. The building market in our community is very competitive and some home owners would rather have granite countertops than a energy efficient home. The proposed changes are going to raise the cost of certification for a WESH built home and make the sale of the program harder than it already is. As a design build contractor the customer drives the choices for their home based on their build budget. For a completive bid project we will no longer include WESH certification if the proposed changes are passed for 2011 unless the customer requires the certification as part of the build as we would no longer be competitive if we included the certification in our bid.

Scott Austin Builder, LLC – Austin, Scott

I am a rater and also a builder in Platteville WI and I have read over your proposed new guide lines and my first thought that came into my head was I will bet that whoever is responsible for writing these measures has never ever conducted or been through the audit process. I highly recommend that the panel of people that are going to make changes to this program should be veterans from out of the field itself. Please do not squash a good program. These new guidelines look to me like you are trying to be more like the LEED program and not that anything is wrong with that program but you have to find someone that is able to afford it. If you look at the state of Wisconsin I believe that last year there were only 2 to 3 LEED certified homes and there were several hundred Energy Star homes. It is hard enough to talk people into our program. Unless you can show me some kind of liability issue for making these changes I am strictly against your proposal.

Seawright Homes, LLC - Denny, David

Dear Energy Star,

I request In-line Bathroom exhaust system's, achieve an Energy Star substitution rating, for the proposed 2011 program requirement, mandating the use of Energy Star rated fans, for bathroom exhaust. I request the ability to use In-line systems, in lieu of the proposed, mandated use of individual Energy Star rated bath fans in each bathroom. The In-line system achieves one of Energy Star's greatest goals - reducing penetrations in the building envelope! Where a single bath exhaust fan is installed in a bathroom, it requires direct venting thru the building envelope. Therefore, a house with 3 bathrooms and a powder room, requires 4 (four) penetrations in the building envelope. An In-line system requires only a single penetration, for up to 4 bathrooms, on most multi-port fans. Additionally, some fans are designed for continuous operation, meeting the ""whole house ventilation"" requirement in the proposed 2011 Energy Star National Program. I forward the following examples of In-line fans systems, for your review;

- Broan, In-line, Multi-Port fan system
- Fantech, CVS series In-line system.

Please contact me with any questions regarding this request.

Senercon - Ruiz, Javier

To whom it may concern

We have conducted a quick analysis of the new proposed standards, and believe that all of them have the right intentions and definitely move the homes to a whole new level. But our organization as well as other Energy Star builders partners do consider that the extra cost that will have to be incur in our market would be prohibitive taking into consideration that our market is one of the most affordable in the country. High end custom homes will not be affected as much, but homes built by affordable, and nonprofit building organization will not be able to continue certifying the homes they build, under these new standards if implemented as they currently stand.

HVAC verification checklist is a high risk and high liability for the Rating company and the rater.

We truly understand the intentions of the new checklists, but we (our organization and our building partners) that even though the proposed checklist definitely encourage higher building standards which is very good, the cost benefit on energy efficiency gains would not be cost effective. We believe that builders that want to Certify to Green Building Standards will definitely benefit from the new proposed standards, but ENERGY STAR should keep focusing on Energy Efficiency parameters and some broader building science aspects for the new standards.

Just in our market alone, we have the potential of losing a little over 50% of our builders if the new standards are implemented as they are.

Proposed Quality Framing Checklist - As is can be deployed with any mayor concerns or cost. (Note 5 & 7: most builders will not and do not use the services of an structural engineer and sometimes building officials performing their structural inspection make builders add framing members, this is usually not recorded or documented onsite) with this being said, it will be a challenge to educate building officials (BO) on this item. Is not uncommon for some of our builders to try to implement some advance building framing techniques and BO making them do otherwise.

Proposed HVAC Quality Installation Contractor Checklist - Manual D is extremely challenging to implement and verify compliance, we have done hundreds of Manuals D's and 99% of the time the site implementation is not 100% complaint. Builders like ENERGY STAR because it encourages try and true technologies that are practical to implement and provide value to their product. In design everything looks great, implementation and practice very different. 4 HVAC companies that we contacted said that they can comply with this checklist at an estimated extra cost of \$800.00 - \$1,100.00 ... this amount totally impacts the homes in the \$ 130's to \$200,000 .00

In addition, average HERS Raters and Field Inspectors do not have the proper training, knowledge and expertise to decide if the numbers used are correct, and in order to verify them the cost to it will certainly raise the cost of the certification.

Proposed HVAC Quality Installation Rater Checklist – Most items are already being addressed by builders but full verification of compliance with all the manuals I believe can become something meaningless. As Raters we would only agree to what the HVAC contractor is saying. No one, wants to accept extra liability for the HVAC performance, this checklist could easily start being used to fight legal battles when home owners are not satisfied with their systems. HVAC companies will certainly drag the Rating company into the battle, by checking off and using these types of checklists. And we all know the cost of this, not to mention the cost of reputation and program reliability.

Proposed Thermal Bypass Checklist Update - No problem

Proposed Indoor Air Quality Checklist – Fan Sound rating doesn't have anything to do with Energy efficiency, we understand the purpose but is irrelevant for energy efficiency. Also, some items are already addressed by code, and just to have them on the checklist will add liability to the program and perceived difficulty and burdensome.

Proposed Water-Managed Construction Checklist – Irrelevant for Energy efficiency, let the builders built to green standard on top of Energy Star, we truly believe that they are good building practices but should not be verified thru the Energy Star Program... Let's focus on Energy Efficiency, and let code address other areas.

ENERGY STAR has been extremely well received by builders, we have builders thanking us to have them introduce to the program, and some of them have started to improve in other areas of their constructions implementing green building

practices little by little, the pace of how builder implement change is very slow, we all know that, but once they implement those changes they become standard practice, lets keep them on the right track and help them keep improving.

Our partnership with ENERGY STAR has been extremely valuable to us and to our building partners, we want to keep improving the building standards in our community and help build a more sustainable place to live.

Thanks for the opportunity to share our concerns.

Winton/Flair Custom Homes Saratoga Homes Carefree Homes **Quality Craft Homes Classic American Homes** University of Texas of El Paso Fortune Homes Padilla Homes **Roberts Construction** Vista Serena Homes **GMF Homes Monterrey Homes** Segovia Homes Icon Builders **Bella Vista Homes Bella Homes**

Thanks

L. Javier Ruiz - LEED AP

SENERCON

Southwest Energy Conservation, LLC

Mechanical Technologies Gale Insulation Custom Dream Homes Tierra Del Sol Housing Corporation Sunwest Homes Stearn Custom Homes Accent Homes Dawco Homes JKS Homes Simply the Best Contractors Interglobal Dynamics Pointe Homes Zima Homes Diamond Homes Xavier Homes

Shove, Miles

To Whom it may concern,

This is a great idea but the problem I am having with the EnergyStar home construction is financing because these homes cost a lot more to build I can only afford to do the work myself and getting funding is unreal. Our Presidents stimulus money could be used to help people like myself with loans through banks or gov't programs to afford building these homes. the current loans that are available are for a maximum of \$10,000.00 this only allows for minor improvements to existing homes how about the person or persons building a new home this won't even but the windows. If you are serious about promoting this program then step up and give it a boost.

Skinner Construction – Skinner, Eric

I have bemoaned the fact that you can build an Energy Star Home, have it certified, and still have a home of marginal energy efficiency and durability. Version 3 seems it would stop that, but perhaps too much too soon. Talking to my builders, I believe I would loose most of them if Version 3 became protocol. As I'm sure you have heard numerous times: The home will be built with or without Energy Star certification. Let's make more gradual changes.

South Texas Energy Raters - Lewis, Steve

As an energy rater in South Texas for the past two years, I strongly applaud the efforts of Energy Star to raise the bar to a new level in efficient home building and comfort. Unfortunately, given the current market here, I do not see these major changes being well received by the public or the builders. The market here in South Texas had very limited acceptance of Energy Star until AEP started their \$300 builder rebate program, which partially offset the builder's cost in having a house rated. This is because the ""cost"" of Energy Star (in this market) seems to be primarily born by the builder, and not the buyer.

The problem appears to me to involve two things:

1. Appraisers do not give credit for energy efficiency on the appraisals. From the builders I have talked to, this causes the buyers to compare Energy Star homes with non Energy Star homes, and expect the price of the Energy Star home to be the same as non Energy Star. One builder I polled said that he sat in his model home during the entire ""Parade of Homes"" (with Energy Star sign out front) and no potential customers asked about Energy Star. Having inspected many homes in the past two years, I am proud to say that I know the Energy Star process has resulted in improvement in almost all of them. However there is no assigned ""value"" to these improvements. Most of the builders I know really prefer to build efficient homes, but somebody needs to want to buy them so that the builder can recoup the costs. More education is needed so that the consumer realizes the benefits. It is imperative that appraisers start assigning value for Energy Star.

2. Where are the ""energy efficient mortgages"" we have been hearing about? While the upgrades to the current Energy Star program have definite costs associated (how much depends on where each individual builder is at the time he elects to build Energy Star), it is safe to say that the cost for the 2011 Energy Star program home will be more (in inspection costs alone). If the price of the house has to go up because of increased builder costs, a certain percentage of customers will be driven out of the market due to reaching the ""price ceiling" of what they can qualify for. Often, these consumers are the ones who can least afford any spike in utility prices. I believe efforts to bring energy efficient mortgages into the mainstream will help these consumers, as they will be able to buy a more efficient home, which will actually save them money at the end of the month.

First things first. While I personally understand and agree with the value added by complying with the Energy Star 2011 program, I feel the program is destined for failure in South Texas unless the above issues are corrected first, before adding any additional requirements. I appreciate any consideration on these issues.

South Texas Energy Raters – Lewis, Steve

I surveyed my builder customers regarding the proposed changes. Most do not understand the value they bring. They view the added expense of the additional checklists required as unnecessary costs that will have to be passed on to the customer and that these costs might make the builder non competitive as far as price for the house. In the South Texas market, the customer is not willing to pay extra.

In conclusion, for the 2011 program to work in South Texas, in my opinion, two things are needed: 1. Appraisers need show ""value"" for the HERS score which shows the customers that they are getting something for the money.

2. Much more consumer awareness is needed on the benefits of the program so that customers will be willing to pay a premium for Energy Star houses.

If the above items are not done, the added costs for the 2011 program could ""kill"" Energy Star in the South Texas market.

Southeastern Energy – Angel, Steve

I have had trouble getting builders to comply with the current standards, especially in this housing market. I agree with RESNET that these new standards will alienate most builders to Energy Star. There is not nearly enough incentive for these new costs. You won't have a program left if these go into effect!

Southern Energy Management – Peaden, Michael

Attached you will find our comments and questions about Energy Star 2011. Please contact me if you have any questions!

- What is the new Energy Star "elevator "speech, i.e. ESTAR = 15% < IRC 2004?
- Water Efficiency
 - o Why showerheads vs. faucets for water efficient standard of 2.0 gpm?
 - Is the 2.0gpm an avg. for all shower heads? I.E. can you have the wall of water shower with all others being high efficient shower heads?
 - o What counts as a showerhead? Indoor/outdoor?
 - H2O distribution : define core layout characteristics, how do we define what qualifies and doesn't? How does this align with EPA Water Sense standards?
 - o Define what qualifies as a demand pumping? What about a recirc pump with a timer?
 - Why hasn't Energy Star adopted Water Sense standards for appropriate measures (showerheads, recirc pumps)?
- Bath Fans
 - Will the HERS score reflect the energy savings from bath fans and other items not captured by the HERS software?
 - o What is the benefit/rational of requiring an Energy Star bath fan?
 - Could there be an exception for ½ baths since moisture is not much of an issue and the fan use will be minimal?
- Fewer trade-offs perceived with Energy Star Reference Design?
- Variable HERS index will be a difficult 'sell' to new builders and be difficult to verbalize to existing builders.
- Why is heating HSPF so high? Is this achievable with readily available equipment?
- Why aren't water heaters required to be Energy Star certified when all other equipment is?
- TBC Checklist: No Comments
- Quality Framing Checklist:
 - 2.1.1 Two stud corners don't always allow for nailer for siding, this is especially a problem with cementitious siding
 - HVAC Quality Installation Contractor Checklist
 - Footnote 8: Guidance needed for what temperatures are acceptable for accurate testing of charge.
 - HVAC Quality Installation Rater Checklist
 - Recommend changing from an area opening requirement to a pressure based requirement. Pressure easier to test than airflow.
- Indoor Air Quality Checklist
 - We have concerns that meeting the ASHRAE 62.2 Standard will introduce moisture problems in the home in our climate. We recommend a duct from the outside terminating at a return. Fresh air will be drawn into the home when the HVAC is running and thus the air will be conditioned.

- 2.5 is contradictory to mechanical exhaust requirements- especially on smaller homes. For example, a 1200ft2 home that has measured kitchen exhaust flows of 150cfm and a maximum bath fan flow of 65cfm would exceed the maximum flow allowed by 2.5 by 35cfm. This requirement gives a larger buffer to larger homes.
- 3.2 Energy Star 2011 already requires that all bath fans are Energy Star rated, and being that they are Energy Star rated, the maximum sones level is 2, meeting the required sone level in 3.2, why even have the requirement?
- o 6.2 should read "Doors to garage...." to avoid confusion.
- Water Managed Construction checklist
 - Builder sign-off needed on a greater number of items. Too many items cannot be inspected or timed to inspect. We count 6 items that would be difficult to inspect and would require builder sign-off
 - o 4.6 Who will test wood moisture content?

Southface - Speciale, Eurihea

Summary

Recognizing the importance to the residential building market that is presented in the *EPA ENERGY STAR 2011 for New Homes 2011 Guidelines (ES 2011)*, Southface staff has prepared the following document. The intent of this document, which is a product of collaboration from senior members of the Residential Green Building Services team, is to provide the EPA ENERGY STAR program with both praise for advancing the *ENERGY STAR for New Homes* program and critical insight on weaknesses of the proposed changes.

We would like to stress the fact that many of these new items will require additional training of our certified HERS raters, and also for many HVAC contractors who work with ENERGY STAR builders. This will have a significant financial impact on all professionals working in this industry. We would like to know what the EPA's proposal is to address these additional training requirements.

Comments

Listed below are comments made on specific items proposed by *ES 2011*. Comments will be prefaced with the following tags:

- COMMENT signifies Southface comment on potential drawbacks of proposed *ES 2011* requirements, standards, methods, procedures, etc.
- CLARIFY signifies that Southface requests that description of proposed *ES 2011* requirements, standards, methods, procedures, etc. become more specific for clarity.
- IMPROVE signifies that Southface offers a specific method to improve upon a line item, footnote, or checklist.
- ENERGY STAR Prescriptive Path:
 - CLARIFY: Measurement of benchmark home size and conditioned floor area by ANSI standard versus other energy modeling standard? (I.e. will unfinished, conditioned basements be counted for this measurement?)
 - 2. Climate Zones (CZ's)
 - COMMENT: Greater energy efficiencies can be reached if CZ's 3 and 4 are in their own "Mixed" category due to the fact that CZ 3 has a lot of heating dominated areas, and CZ 4 has a lot of areas with significant demand for cooling.
 - IMPROVE: There should be three different categories for climate zones: Hot, Mixed, and Cold. Mixed will include Climate Zones 3 and 4. Mixed shall require 14 SEER and 90 AFUE furnace.
- ENERGY STAR Performance Path:
 - 1. COMMENT: We are strongly in favor of the Size Adjustment Factor and the new ENERGY STAR HERS Index Target calculation. We believe this furthers the effort to level the playing field across varying home sizes, types, and regions.
- Thermal Bypass Inspection Checklist (TBC):
 - 1. Grade I Insulation:
 - COMMENT: We have found that inset staple batts almost never hit Grade I. This is a common installation method in the Southeast. Also, dry applied blown-in cellulose & fiberglass insulation tends to settle to varying degrees at the top of the wall cavity. Thus, the new ENERGY STAR program would be effectively mandating spray in wet-applied cellulose, spider or foam in order to obtain this insulation value.
 - IMPROVE: Program should require Grade II or better insulation installation.
 - 2. Indoor air barriers for insulated walls in unconditioned basements:
 - COMMENT: We do not perceive enough significant energy saving impact to justify the additional cost and material to require an interior air barrier for insulated wall assemblies in unconditioned basements and crawlspaces.
 - IMPROVE: Recommendation is to not require indoor air barrier for basement/crawlspace walls in climate zones 4 and higher, as long as insulation achieves Grade 1.
 - 3. Item 5.1:

- COMMENT: With the exception of airtight or spray on gasket installed at pre-drywall phase, this
 would have to be a builder verified item and not something that third party raters or technical
 advisers would be able to verify.
- 4. Item 6.1:
 - COMMENT: Many local fire codes do not allow spray foaming around sprinkler piping.
 - IMPROVE: Recommendation is to note that other codes such as fire codes, etc. shall supersede ENERGY STAR requirements.
- Quality Framing Checklist:
 - 1. OVE framing in gut rehabs:
 - CLARIFY: How does the framing checklist come address gut rehab renovation projects that are attempting to earn ENERGY STAR for New Homes?
 - 2. Item 1.1:
 - CLARIFY: For stick framed construction, are you requiring a raised top plate (plate installed on top of ceiling joists) in order for the rafters to be equivalent to a raised heel truss system?
 - 3. Builder Verified Items:
 - IMPROVE: There should be at least one builder verified item, such as verifying insulated headers, for this checklist.
 - 4. Insulated Headers:
 - CLARIFY: Does the R-5 requirement for insulated headers include the R-value of the framing material?
 - 5. Inspection of Jack and King studs:
 - COMMENT: To check the king and jack stud supporting the header for every window and door will add unnecessary time to the inspection.
 - IMPROVE: This should also be a builder verified item.
 - 6. Builder Certification Status for Missed Item:
 - CLARIFY: If you get a 'no' on the framing inspection (missing 1 item on 2.1), do you lose your ability to certify under ENERGY STAR?
 - COMMENT: Although we appreciate the effort in encouraging advanced framing techniques, it would be a very harsh penalty if a builder were to be excluded from the program for missing one of the items under 2.1.
 - IMPROVE: The builder should be allowed a tradeoff allowance for a failed framing item (such as triple stud corners instead of two stud corner) that would require significant effort and expense to correct.
- <u>Contractor HVAC Checklist:</u>
 - 1. Specify Equipment location:
 - IMPROVE: For the "1. Equipment" input boxes, include demarcated spaces to input model, serial, and reference numbers for multiple systems (i.e. "System 1" or "System serving floor(s):" etc.) Currently, there is not enough room to include all information requested, and no way to track which system was inspected using the list.
 - 2. Footnote 3: Manual D, S, T Equivalence:
 - CLARIFY: What are you considering to be a Manual D, Manual S, and Manual T equivalent procedures?
 - IMPROVE: Please give examples of all of these and/or give more specifications of what procedures will be considered compliant.
 - 3. Sections 4, 5, and 6:
 - CLARIFY: How do you test the latent heat gain and the sensible heat gain in the field if you are not in the ARI field condition?
 - COMMENT: Unless field rating conditions meet the conditions of the ARI design conditions, you will never meet the tested rating. These two items should be removed from the checklist.
 - 4. Efficacy of Contractor Field Verification:
 - COMMENT: Although we favor the concept of having HVAC contractors completing this field verification checklist, we are afraid that most contractors will simply be checking items off without actually completing required testing, and the rater will have no way of verifying whether or not.
- Rater HVAC Checklist:
 - 1. Item 1.8:
 - COMMENT: Due to equipment calibration issues, 5% is too stringent.
 - 2. Item 2.6:

- IMPROVE: Make it mandatory that building cavities are not used as supply ducts in addition to return ducts.
- 3. Item 2.8:
 - COMMENT: 6% total duct leakage is too restrictive. There are too many difficulties post-drywall in
 obtaining such a low total leakage rate. Issues include cutting out registers, having decorative
 registers, etc. that cause small amounts of duct leakage that can add up. Thus, it is good to set a
 bar, but the bar is too high.
 - IMPROVE: In order to strike the balance between rigor and feasibility, 10% total duct leakage should be the requirement.
- Indoor Air Quality Checklist:
 - 1. Assignment of Climate Zones:
 - CLARIFY: Does this checklist consider "hot- humid climates" to be CZ's 1, 2, and 3; and "very cold climates" CZ's 4 and up?
 - 2. Item 1.2:
 - CLARIFY: Are these requirements for exhaust ventilation strategy only?
 - 3. Items 1.2 and 1.3
 - CLARIFY: Are mixed climate zones 3-4 exempt from the requirements under 1.2 and 1.3?
 - 4. Items 1.2 and 1.3:
 - CLARIFY: Does 1.2 and 1.3 apply only to whole house ventilation system, and not spot ventilation (such as bath, kitchen fans)?
 - 5. Item 2:
 - CLARIFY: Do spot ventilation systems have to be vented to outside of building, or can they vent to unconditioned space?
 - IMPROVE: This item should specify that local exhaust fans must be vented to the outside.
 - 6. Item 2.5:
 - CLARIFY: Does this requirement have to be met by checking the rated flow or by measuring the flow in the field?
 - CLARIFY: Does this requirement include dryer exhaust flow?
 - COMMENT: Overall, we believe that this is easy to fail in any house, not just those with excessive flow rates for localized exhaust units.
 - 7. Rater Responsibilities for Documenting Ventilation Requirements:
 - CLARIFY: Is the Rater required to test for flow requirements all of the items listed under "Ventilation" on this checklist in the field or are they simply required to be checking that the commercial ratings of the equipment meet the requirements?
 - CLARIFY: If measured in the field, are these flows required to be measured from the inside or the outside of the building?
 - CLARIFY: If measured in the field, how does one measure sone rating?
 - COMMENT: We are concerned that you are adding on excessive testing and inspection items that the Rater has to do in the field in order to verify the house. This not only can lead to less builders/Raters participating in the program, but also could lead to more instances of Raters "rubber stamping" items in the field.
 - 8. Item 4.3:
 - CLARIFY: Is this only a requirement for whole house ventilation strategies, or also for spot/local exhaust?
 - 9. Item 5.2:
 - CLARIFY: Is this to be checked for at the time of inspection, or is the rater supposed to take into consideration plant maturity growth which may obstruct air inlets in the future?
 - 10. Item 6.1:
 - IMPROVE: This should say "supply and return ducts".
 - 11. Item 7.1:
 - IMPROVE: Explicitly spell out "No unvented gas logs" for this item.
 - 12. Item 7.2:
 - IMPROVE: The requirement should be that one CO monitor must be present on every floor with bedrooms.
 - 13. Items 8.4 and 8.5:
 - COMMENT: These requirements are going to be difficult to accomplish unless there is an ENERGY STAR approved filter rack.
 - 14. Footnote #2:
 - IMPROVE: Specify that it is the Rater, not HVAC contractor, who must verify the fan flow per footnote #2.

15. Footnote #5:

- CLARIFY: Do the exhaust flow requirement exemption include gas ranges?
- Water Managed Construction Checklist:
 - 1. Line Items 1.1
 - CLARIFY: How many feet away from the house must the slope be?
 - 2. Line Items 1.1 and 1.2
 - COMMENT: We certify many homes before landscaping is installed. Thus, it could potentially
 require an additional site visit to verify both of these.
 - IMPROVE: This should be a builder verified item.
 - 3. Builder Verified Items
 - COMMENT: Many of the requirements of this checklist will have to be builder verified.
 - IMPROVE: Either make the entire Water Managed Construction Checklist builder verified, or at least make the following line items builder verified (additional comments listed when necessary for clarification):
 - 1.1-1.3, 1.5, 1.8
 - 2.1 (first half)
 - 2.2, 2.3
 - 3.1, 3.2 (second half if leading to underground cistern), 3.3, 3.4
 - 4.4, 4.5
Southwest Gas Corporation – Shoberg, Eric

Speaking as Quality Assurance Designee and an administrator of the Southwest Gas Corporation Energy Star for Homes program we applaud the effort and thought which has gone in to the EPA's proposed changes to the Energy Star for Homes program guidelines.

RESNET's positions on the proposals, which also largely endorse the new guidelines, seem to be well considered suggestions which would improve the proposals specifically in regard to the likelihood of gaining or maintaining widespread participation. We endorse them as a whole.

1. A predetermined required HERS index number, varying home to home based on the several factors laid out by EPA, but incorporated into a small matrix as suggested by RESNET, would take a level of uncertainty out of what is of necessity a varying target. This is strongly endorsed.

2. Requirement of a performance based rating for heat pump homes in cold climates is the most appropriate solution to the problems arising in the score results for those applications.

3. We strongly recommend the Index Score incentive approach proposed by RESNET for HVAC checklists, and allowing the builder to verify the water management checklist.

Once again, in closing, the challenges addressed and the appropriate efforts EPA has made to keep Energy Star a meaningful and respected program for new homes are greatly appreciated. Let us take the additional steps needed to address legitimate concerns over certain costs and benefits as well as the barriers to implementation and adoption which RESNET has outlined.

Addendum to prior submission-

In reviewing my notes on the proposed guidelines, I found an item of concern. It was brought up I believe by Darran Wastchak in a RESNET phone conference with Mr. Rashkin. The item is on a framing checklist and requires sealing of drywall to top plate.

I don't get it. To start with, as a whole the Energy Star homes that we test have great infiltration numbers, so good that we have to put in a little fresh air on the HVAC return just for health. I.E., according to ASHRAE 62.2, the house is tight enough already. By doing this we have slight positive pressure in the house when the HVAC is on, and are not drawing in heat or cold from the attic. Return air paths further prevent this ""bleed -in' when bedroom doors are closed, and are a preferable solution.

It is, I think, better to actually treat the cause of a problem than mandate an expensive, time consuming and fallible treatment of a symptom, which is what this requirement is.

In all the infra red I have done, the effect shown in Sam's IR shots does not show up as a problem for houses configured as described above. Now un-capped soffits, knee walls, missing attic baffles, bad insulation, excessive framing, I readily admit they show up.

In short, I think this is a big expensive bat to swing at a minor problem better addressed by return air paths and supply or balanced ventilation strategies which themselves have additional benefits.

The IR pictures used as evidence by Sam by the way, over all are outdated and some are unreliable. As an example, the one showing very even effects across the whole exterior side of a building has a grainy appearance. This means the temperature scale was set very wide, minimizing visible temperature contrast.

Sperling, Gene

Please consider separating the HVAC 'sign off' requirements shortcomings in the new proposal. The new standards compromise the ability and integrity of the HERS rater to help insure this vital system.

'Gaming' of this portion of the recommendations is sure to occur. Please close this possibility of a rubber stamp to this highly important part of your proposed changes.

Spille Builders – Spille, Tom

I just want to comment on the proposal, it will overall add unnecessary expense to a difficult market as it is, one item I'm not in agreement in is under the ""water-managed construction notes"" part 5, it would be very impractical to have the gravel layer ""fully wrapped with fabric cloth to prevent fouling of the drain tile""

This would be not only impractical, but very expensive.

An option would be to have the drain tile on the inside of the footer perhaps, away from any mud or silt to foul it. Or possibly a fabric lined drain tile option. Also, when you mention ""backfill tamping"", I don't agree with that either. I wouldn't want to put such pressures on a new foundation. It's standard practice to limit any ""tamping"" or excessive vibrations next to a new foundation. This can cause micro cracks in a poured foundation which later become an issue.

Stewart Builders, Inc. – Stewart, Mary

You are making this way too complicated. I thought this was meant to be an affordable program, but it is getting pushed up to the stringency of a NC Healthy Built Home or a LEED Certified home. Ask people in the field.

Sun Plans Inc. – Coleman, Debbie

As an architect that specializes in residential energy-efficiency, and a proponent of the existing EnergyStar programs for homes, I'd like to add a few comments about the proposed changes. While I am in favor of increased checklists and oversight on the HVAC systems and indoor air quality, I am opposed to adding the framing checklists and moisture control. Framing is often determined by structural engineers with building inspector oversight. Some high wind areas and the Fortified Building Program which promotes building above code wind minimums do not allow for advanced framing. Also the moisture issues are good basic practices and should also be left to builders and building inspectors.

Additional training for HERS raters will be needed with the HVAC checklists and I'd hate to see it get watered down with structural and moisture issues as the proper training for those is too extensive.

Survey and Testing Services, Inc. – Richardson, Mitch

I have been rating homes since 1996 and I think the new standards are going to put me out of business. > The new standards are asking too much all at once. I have already discussed the proposed changes with my top 3 builders (which are the 2nd, 3rd and 10th largest builders in my state) Each one is certain that unless the utility companies start offering larger rebates for energy star compliance, they will be dropping out of the program when the new requirements are enforced.

There are two problems.

First is that builders are all running short staffed right now and do not have the man power to be able to manage all the installation related changes, training the subcontractors etc.

Second is the increased costs of equipment, materials and contracted labor etc. (including increased inspection fees.)

I think if the changes were enforced in 2 stages they would have better luck getting builders to stay on board. Implement half of these things in 2011 and the other half two years later.

This big of a jump is going to kill interest in Energy Star. Too expensive, too much management time to implement. The economy won't support it. The builders won't support it and the buyers won't buy it.

Sustainability Consultation – Stein, Tyler

I am new to the rating business as of one year ago, but I would tend to agree that the whole business should not over complicate things. For starters it is hard enough to get builders to want to join and comply as it is. Secondly, as with all energy upgrades implemented into a home, if they are not cost effective by means of payback period and increased equity, then they will not get done. As a new home energy rater, it is obvious that the cost to take a builder through the ENERGY STAR process will go up a certain percentage, not to mention many of us will have to increase our level of certification. At some point we will not be able to reduce the energy level of a home enough to make our job worthwhile. Thirdly, I believe the whole country needs to see a better economy roll around before we decide to try to raise the bar to super levels of expectations. I know in our area issued building permits are down about 80%, we need new home construction just as badly as new home construction needs us! Thank you for the opportunity to give our opinion.

SynerGreen – Gates, Allen

I support the comments and position provided by Resnet.

Texas Association of Builders – Cauduro, Paul

The membership of the Texas Association of Builders (TAB) is proud that the State of Texas leads all other states in the production of ENERGY STAR homes by a wide margin according to the 2008 ENERGY STAR Qualified New Home Market Indices for states. Well educated builders, building product suppliers and service providers, in conjunction with educated buyers in very competitive housing market, have helped Texas achieved this status.

As the nation's leader we are keenly aware that EPA's Proposed 2011 ENERGY STAR New Homes Guidelines: Version 3.0 (Guidelines) slated for implementation on January 1, 2011 represents a challenge to all that participate in the program. This challenge is just one of many confronting the housing industry such as construction financing and home appraisal reform that we hope will be resolved by the beginning of 2011.

Upon review of the proposed changes and the stated reasons for proposing them the TAB certainly understands the building science and brand development reasoning for updating the Guidelines. However, given the testing requirements of the latest International Energy Conservation Code, increased standards and inspection requirements at the local level and the recent release of the International Code Council's National Green Building Standard (NGBS), it may be possible for the EPA to reach its objectives by maintaining its focus solely on energy performance and promoting the sustainable construction aspects contained in the proposed Guidelines as "best practice" instruction.

In this manner, a builder could achieve the above-code status of energy performance established by the EPA while at the same time select the appropriate sustainable building techniques needed to reach NGBS certification or certification in other bona fide green building programs. This is important because not only do the Guideline's proposed indoor air quality checklist, water-manage construction checklist and quality framing checklists seemingly add tremendous cost, they also add inspection redundancy for many construction elements contained in the building code, in existing green building programs and in a quality construction management program implemented by the home builder.

There are many aspects of the testing requirements, ENERGY STAR Reference Design Home Concept, proposed Size Adjustment Factor, and impact to multifamily construction that will surely receive extensive technical comments. After these technical comments are vetted we hope that they produce Guidelines that are easy to implement by current raters and inspectors, clearly understood by builders, respects the intelligence of today's home buyer and/or renter, and acknowledges the budget constraints of all parties involved.

The TAB looks forward to continued participation as a stakeholder in the development ENERGY STAR of Qualified New Homes: Version 3.

Texas Classic Homes

<All comments received in attachment>

Attachment 1

TexEnergy Solutions, Inc. – Brauer, James Jr.

In regards to having an ENERGY STAR fridge modeled as part of the reference design home, most of the builders we have experience with do not include a fridge as part of their offering so they have no opportunity to make it ENERGY STAR or not. This would automatically put them "behind" with the HERS target by having to offset points lost from this element. My stance is that this should not be part of the reference design home otherwise it becomes a punishment rather than a planned trade-off.

TexEnergy Solutions, Inc. – Saunders, Steve

Overview:

The EPA has presented a compelling case for a new and improved standard for the ENERGY STAR for Homes Program. The EPA has put enormous effort into outlining the historical direction of the program and laid the foundation for improvements to the program. Change in the energy world is coming. This change will be driven by codes, standards and (most likely) pending international agreements regarding greenhouse gas emissions. EPA has set the stage for the direction of "above code" energy performance. Successful completion of a home meeting ENERGY STAR 2011 requirements will clearly deliver on the brand promise of energy efficiency, quality and durability.

The overview and outline are set. The EPA has asked for practical, building science and implementation feedback in order to finalize administration of the program. Our organization is in support of the new energy efficiency world. This document is an effort to put as much intensity into issues and implementation to build on the preparation effort from the EPA. While lengthy, this is not an attempt at criticism. This effort is designed to give the maximum feedback so that the final protocol is clean and clear.

General Comments related to scope, approach, strategy and potential resistance:

 <u>Change</u>: Change is hard and the key question with ENERGY STAR 2011 is how much change is enough and is there a line where there is too much change for the market to fathom. There is so much change collectively that there will be inherent resistance from many who have no interest in adding this set of criteria onto an already overwhelming list of tasks to make their business work. Much resistance will come from the expected reduction in ENERGY STAR certifications and the associated revenue declines in business. This is important to recognize and is not a trivial commentary.

It is unclear at this time if the duct testing requirement of the 2009 IECC will help add revenue to the rating community. ICC is (very appropriately) suggesting to their members that Cities can add duct testing to their existing set of services and by doing so can save jobs in the Building Inspection Department.

- 2. <u>Competition:</u> Do not be surprised to see various "programs" insert themselves in between ENERGY STAR 2011 and base code. EPA appears to be prepared for significant attrition. The purpose of this comment is to fully communicate that there is a strong likelihood that this protocol will spawn imitators.
- 3. <u>Money</u>: There is concern that ENERGY STAR 2011 is too expensive. Today, it is impossible to forecast whether this protocol cost too much. In the future, energy efficiency will have more value. In the present, durability and reliability is crucial. No doubt, this protocol (products and process) will require substantial investment. After much research and intense effort, the EPA believes that this program is a good value for the consumer. Long term, we believe that the EPA perceptions are well founded. When builders believe and communicate the value of the investment, consumers will buy. It may take time, but the mega trend is for improved energy performance and ENERGY STAR will be a premium product to bundle as part of the builder's value proposition to the consumer.
- 4. <u>Process and Performance</u>: We see significant issues in this protocol where it is impossible to perform to the protocol or to evenly and fairly confirm performance through the checklists. These issues appear very significant. Regardless of the price, building projects must adhere to a schedule and a budget. Lack of clarity in the protocol will drive builders, contractors and raters away from ENERGY STAR. EPA must strive to understand and clarify these issues and then adjust the protocol to eliminate the problems.
- 5. <u>HVAC:</u> There are significant implementation issues in the HVAC Quality Installation Checklist. Our organization is 100% in support of a HVAC Quality Initiative. We are 100% in support of ACCA and EPA efforts for improving HVAC performance.

Since our sister company is a HVAC Contractor, we believe that there are parts of the checklist that cannot be properly completed. This creates opportunity for uneven and unfair enforcement of guidelines. While the issues are highly technical, the real world impact can very negatively affect industry perception of the value of the brand. We urge you to very carefully evaluate the specific measures and benchmarks in all aspects of the protocol. The HVAC checklists, as proposed, ask for data that is not reliably obtained. The protocol asks for comparisons to a design value – where the design value may measure data differently than the collected field data that is already suspect. The combination undercuts the effectiveness of the protocol.

- 6. <u>Multifamily</u> At present, ventilation to ASHRAE 62.2 is an absolute deal breaker for the vast majority of our multifamily clients. We have not seen nor heard of compelling building science that specifically addresses ventilation for multifamily projects. This is not an objection to the concept or the need for ventilation as we tighten building envelopes. We understand and support ventilation in single family dwellings, but there are major issues with ventilation in multifamily projects. Owner/developers fear that the ventilation cure is more deadly than the ventilation disease. We have seen no compelling building science that says mechanical ventilation will solve more problems than it creates. At present, we do not see practical solutions to the issues surrounding ventilation in hot / humid
- 7. <u>Perceived Unfairness</u>: This protocol offers a strong challenge to builders, contractors and the rating community. EPA challenges all of us to improve our product and processes. When there are areas that can be perceived as "unfair", there will be lots of focus and discussion. One example of a minor issue that will generate major distractions is the inclusion of an ENERGY STAR refrigerator in the EPA reference design to create the target HERS Index. Please consider the relative value from using an ENERGY STAR Refrigerator and the potential negative and act accordingly. Carefully evaluate the feedback for other potential areas where there may be questions on value-added elements.

Suggestions:

- 1. <u>Alignment</u>: In general, it is prudent for ENERGY STAR for HOMES to align with other equally well grounded programs. There is so much change coming. When there is alignment between programs; the building community can make larger investments in time, process development and knowledge. This additional investment benefits all.
 - a. Specifically, we believe that EPA and the USGBC should work in tandem to align LEED for Homes and ENERGY STAR. We have considered the options for linking or de-linking the programs. Both programs are stronger when they work together and in conjunction with the Rating and Green Rating community.
 - i. The potential negative is that alignment adds risks to both from compromise that detracts from the individual program's central message;
 - ii. Advantages flow to both programs as they support and build on the momentum of the other.
 - b. Collectively, the value of close alignment will create more positive than negative and the potential gain to both programs much greater than the risks to either. There is and will be so much change coming for the residential building stakeholders. A substantial alignment allows raters and builders to leverage their knowledge and to build on the momentum of both programs. In January of 2011, we will need all the help we can get.
- 2. Align the home size adjustor in ENERGY STAR 2011 with the LEED for Homes Protocol. As both programs continue to grow, they are strengthened when the rule sets are similar and weakened when they are different.
- 3. Please create an airtight description of what constitutes a bedroom. This will be a battle ground and a builder negotiation point if you do not create absolute clarity in this area, i.e. is "Flex Space" a bedroom, an office, a media room or a hobby room. If it qualifies as a bedroom, it is important to know and to clarify early.

Questions:

- 1. Target Score Is it EPA's intention that a set of measures have the same target score, i.e., does this new system make it easier for a builder to select a set of measures that will "get all homes to the target score" (knowing that you have to add measures > than 2200 sq. ft.). Will this make it easier for builders to specify a level for a community than the current system and have them all qualify?
 - a. Note: The "select measures" approach makes standardization for a production builder very complicated.
- 2. Water Efficiency There is substantial concern related to gpm reductions in shower heads. There is fear that too low a flow will create significant customer dissatisfaction. Is 2.0 gpm a crucial item? Can we relax this particular water standard if the other methods of efficient hot water distribution are mandatory?
- 3. Manifold hot water system In Texas, there are many "modified" home run systems where there is a run from the central manifold to a bath room where the supply line delivers water to two or three or four fixtures in a bath group. Is this compliant with the new standard?
- 4. How do you suggest the rating community capture the training to successfully implement Quality Framing Checklists? Specifically, we are worried about having successful communications on this subject with frustrated

field builders and their framing crews. How will the rating community communicate failure to builders who will have vastly greater knowledge and understanding about framing than the rating community?

- 5. If a home has a stud extra on a Frame Inspection does that mean the home cannot be ENERGY STAR? If yes, how will that be enforced, especially during the first few months of the protocol? If no, how many studs are allowed until there is an issue with the protocol?
- 6. Will raised heel trusses mean that baffles are no longer needed?
- 7. What is the comparable requirement to raised heel trusses in a stick built roof?
- 8. If a home does not have raised heel trusses (or its stick built equivalent), does that automatically disqualify the home for ENERGY STAR certification?
- 9. There is a strong case for allowing R–6 duct systems in Texas attics. There are significant complications for mandating R-8 ductwork. Can R-6 be included as part of a builders "trade off" option on the performance path?
- 10. There is no presented case for the "building science value of R-8 duct". R-8 duct was placed in the mandatory section of the 2004 IECC by mistake. In our market, R-6 is allowed in homes where there are 14 SEER systems. Texas HERO members submitted lots of commentary for ENERGY STAR V2 that discussed the R-8 duct requirement. The same rationale exists today. There are significant problems with R-8 and very little to no energy savings. Please review all the comments about R-8 with the V2 commentary and consider them included in the 2011 implementation issues. Let's eliminate any discussion of duct R-Value from the protocol. Let code requirements prevail.
- 11. How do we determine what is an absolute requirement and what is open to a trade off of other energy saving measures? If there are elements in the 2011 Protocol that can be an energy trade off in the performance path (R-6 vs. R-8 for example), that will generate additional flexibility for participants. At present, it is difficult to determine what areas are possible for energy trade offs.

HVAC Checklist Items:

- 1. Air Flow measurements at evaporator CFM Checklist item 5.1
 - a. What is the design CFM? HVAC manufacturers give themselves > 10% leeway on the performance of system CFM. To them, performance goals are met with a unit that is designed between 350 to 450 CFM. How will the contractor deliver air within 5% of a number on a chart that can vary by > 10%? While this is not needed when the system is within 5%, it is a significant room for discussion (real anger, frustration, extra cost and un-estimated extra cost to contractors or builders) and can lead to schedule delays.
 - b. HVAC contractors who use their product data can match sensible loads (right sizing) with many combinations of furnace, coil and condensers. The air flow measure for a 3-ton system might have a 4-ton blower. The AHRI matched system will be allowed in AHRI but the Rater could be very confused with the CFM measure of a 3-ton condenser with a 3.5-ton evaporator and a 4-ton blower. Which is the measure that EPA wants on the checklist and how will it be compared with the design value? There will be another very different combination of equipment that has almost exactly the same sensible system with entirely different CFM ratings. Under that scenario, what is the design CFM and how could the Rater understand what is real and what is "made up" by someone gaming the system?
 - c. Very frequently HVAC distribution companies "substitute" the same or equal products at the warehouse for delivery to a particular job. This substitution is to keep the project on schedule even if the ordered product is not in stock. This situation is neither the fault nor the responsibility of the contractor, the builder and often not the distributor. When this situation happens and the design and field values do not match up, what is the position of the protocol?
 - d. Other potential ways in which there will be problems measuring air flow and capturing a number that has design and field values within 5%;
 - i. There is no clear determination on measuring air flow with a wet coil or a dry coil. There can be significant differences in total output.
 - ii. Fan speed settings from the factory are different for heating and cooling. Which fan speed is to be measured? Which was measured by the installer or the rater?
 - iii. Air flow can be impacted by static pressure there is nothing in the protocol that says the filter must be in or whether it can be removed during measurement.

- 2. How will "right-sizing" be determined (the question is if contractor says they are right- sizing and using the manuals, how does the Rater determine if that is true?
 - a. Design outdoor temperature questions: There are several "trade" acceptable practices of loads with outdoor design of 102 and/or outside design of 105. There is no objective summation of that information nor is there any reference party for confirmation. Given that, what can be done to have fairness? To ask the same question differently, we have clients who regularly elect a different outdoor design temperature. They do so to meet client commitments and as part of their sales strategy. They have selected these values for many years. To require a lesser temperature spread could be a deal breaker for them.
 - b. Right-Sizing is an area where there are differences in interpretation. Air Conditioning Contractors do not always agree. Engineers often come to different load calculations. Energy Raters can have very divergent opinions about load calculations. One Rater could allow a variance while another might not allow variances in interpretation. If this rule cannot be standardized, then more clarity about approved interpretations may need to be communicated.
 - c. Does any of the right-sizing questions become moot if higher efficiency dual speed systems are installed?
 - d. Right-sizing can vary by equipment combinations, load calculations often do not reflect the nominal tonnage rating of installed equipment.
- 3. HVAC other:
 - a. The HVAC industry is ready and able to absorb implementation of enhanced professional tools. The adoption of HVAC measures by the EPA for this protocol will be an amazing catalyst to lifting professional performance and expectations. It is because of the power of the ENERGY STAR brand that EPA must be very careful so that it has the positive impact on energy use that we all desire. The checklist, as proposed and as we understand it, is not yet ready to assume the role we expect it to take. We commit to helping on the final draft if requested.
 - b. Specification 1.3 and 3.1: It seems like the best way to get the ARI Reference Number and the ARI Certificate is not on the field checklist but submitted separately (possibly by address) from the HVAC Contractor to the Rater. If an ARI Certificate is attached to the checklist, why does the checklist need to have an ARI # posted?
 - c. Specification 2.5 To my knowledge, there are no central unitary cooling systems with a sensible heat ratio < .7 other than Unico and Space Pak. As SEER increases, so does the SHR (and the higher the SEER, the higher the SHR.) This means the protocol requires a "stand alone" dehumidifier in the home. This needs to be clearer as many will not know that this is a core requirement. Also, clarity with regard to "stand alone" is needed. Fairness requires that there be some minimum standard definition on dehumidifiers.</p>
 - d. Right-sizing and equipment selection for HVAC in Dallas (according to the manuals) are all about "sensible" load. If you have sufficient sensible, the load calculation shows you will have sufficient latent. The intense focus of our HVAC Company's effort on loads is all about sensible. Latent is a byproduct. Capturing and measuring latent in our climate zone is not a productive use of time; however, in locations with a much higher latent load (coastal areas) this is very important. It is hard in a national program to know what to make standard and what to keep variable. This is one thought for your consideration.
 - e. Stand Alone Humidifier definition: Please comment as to the acceptability of thermostats that have extra run time below the set point if there is a higher humidity level that needs to be made. This is likely not what you want but will be what is installed unless you give more clear definition.
 - f. Specification 4.1, 4.2 and 4.3 You may have answered this question. We do not know how the HVAC contractor is supposed to field measure latent and sensible heat.
 - i. The design measure is based on what temperature? Many manufacturers report more than 95/80/67 (ARI Steady State Conditions) in their product data and any rating can be interpolated based on actual outside conditions.
 - ii. It is unclear that the tools and methods for field measurement are equal to the task of effectively gathering this data from field performance. The protocol has no explanation for what tools and methods. <u>Thus far</u>, we have not found these measures in any of the ACCA Publications either.
 - iii. There are not defined methods to capture this data and we have seen no building science or HVAC research that indicates that this data from the field can be positively correlated with the data from the HVAC manufacturers.
 - iv. The reporting timeliness and effectiveness of this data varies widely by HVAC manufacturer. During times of transition (and that has been constant for a number of years) HVAC engineering data has been slow to market. If the protocol lives or dies by data and the data is unavailable or subject to change, it greatly complicates the process.
 - v. The data is mostly available by web site. HVAC and Rating companies can plan on one data point and find that the data point has been updated causing much difficulty in completing this measure successfully.

- vi. Most of the performance data from the manufacturer's data tables are computer generated and supported by SEET (System Extreme Environmental Tests) tests, but a wide number of equipment combinations have never had a lab test for data. The vast majority of "design values" are computer simulations and mathematical formulas. They may not be within 5% tolerance themselves.
- vii. The lab test for data is only at ARI conditions (95/80/67) and then mathematically interpolated for other temperatures. It is unclear how effective those interpolations are to meeting the computer generated numbers. It is even more unclear if the real world measures match the final product.
- viii. This entire section of the checklist is an area ripe for inaccuracy and uneven enforcement. Lack of clear standards and lack of confidence that any clear standard generates the real world data set creates questions related to the value of the protocol.
- ix. We are uncertain as to the benefit of successful completion of this specification anyway. A properly sized unit (using all the Manuals) will be the best test of a proper size of equipment and distribution system. Measurement of field capacity add huge complications, do not have clear methodologies and will distract from the goals and objectives of the protocol while delivering no tangible benefit to the occupants of the home. The "5%" rule is (at least appears) totally arbitrary.
- g. Specification 5.4 and 5.5 We do not understand the value of capturing the design and field value of fixed or variable fan. This is inherent in the model number and not particularly relevant beyond that. The vast majority of installations utilize the fan speed set from the factory for the HVAC system. The vast majority of changing fan speed setting comes on a complaint call where the fan speed is adjusted by the HVAC Service Technician. Since the specification mandates a pressure relief for each room, fan speed adjustments needed much less than without pressure adjustments. These two elements of the HVAC check list have limited value and could potentially be removed.
- h. Specification 5.1 Measurement of Air Flow: The EPA chooses to have measurement at the evaporator and not at the grille. Between the two, this is the best choice. The purpose of this comment is to argue against measurement of airflow at the grille against a Manual J calculation. There are too many variables to make this a repeatable test and it will be a contractor / verifier / and builder nightmare. Please continue to avoid this trap and ask for more detail if you are tempted to include this in a final protocol.

Questions specific to multifamily:

- 1. Will the performance path be mandatory for multifamily?
- 2. How do you deal with "thermal bridging" when there is a structural engineer drawing the framing plans? Is "framed to plan" an acceptable answer in multifamily?
- 3. Fresh Air appears to be a mandatory requirement.
 - a. At present, fresh air is a non-starter among your stronger advocates for ENERGY STAR multifamily. Many of our customers will avoid ENERGY STAR 2011 because it requires mechanical fresh air.
 - b. Mechanical Fresh Air is problematic, particularly in hot humid climates.
 - c. The ENERGY STAR 2011 is based on the best building science, but the Building Science I have read with regard to ventilation is not compelling. I have read no studies that indicate that Fresh Air is needed / required in multifamily applications.
 - d. Can you address how to deliver fresh air in hot humid climates that addresses the concerns of builders?
 - i. Extra penetrations water leak potential;
 - ii. Extra penetrations/coverings aesthetic downgrade of building exterior;
 - iii. Bringing hot humid air into the building is strongly deterred by many consulting engineers advising builders. We have consulting engineers who will simply not sign the plans;
 - iv. Who assumes liability for mold / moisture in the building when fresh air is induced and is a cause or contributor?
 - e. There are some potential strategies that partially address the concerns in "d" above. However, the cost of the more effective options seems prohibitive. The ones I am thinking of will make the ENERGY STAR 2011 prohibitively expensive and that is not the strategy for success.
 - f. We have already seen selection of an "exhaust only" 62.2 compliance strategy in our climate zone. ASHRAE 62.2 repeatedly discourages (but does not ban) exhaust only strategies in hot humid climates. Will the EPA allow exhaust only strategies in hot humid climates? Will you make a comment or a warning?
- 4. Low Boy water heater efficiency is less than ENERGY STAR minimum. Is there a different path for individual water heating for multifamily?

- a. Will you specifically check to see what EF is available in high volumes for "low boy" water heaters? At present, we have struggled to find a low boy that meets these EF numbers. This is a crucial element in multifamily where space is at a premium and the AHU fits above a water heater in a closet.
- b. Multifamily builders could put a taller water heater in the closet and utilize a "pancake" air handling unit. That may adjust the EF question. But, pancake units lead to other trade offs and create potential engineering issues with outside air, fan static (air flow and comfort concerns) and evaporator size (not enough rows to evaporate all refrigerant) causing performance concerns at higher SEER levels.
- 5. MERV 8 Filtration has some specific limitations filters for PTAC's for example and filters for furr down / pancake AHU. This is an area ripe for unfairness to those who try for strict compliance and those who meet the letter of the rule but plan for a lesser MERV rating at the first filter change. ENERGY STAR 2011 needs some specific areas of accommodation for these product types.
- 6. Hot water design on multifamily projects what is acceptable? This could be a very important issue with compliance in the future and "wet walls" may have other design barriers for multifamily. Changing the architectural design of an inherently very water efficient process may lack a strong value proposition.
- 7. ARI Ratings: In multifamily, the largest suppliers of indoor units are manufacturers who specialize in apartments. At least one (and likely several) do not rate their products in ARI. They do not rate the product because their air handler offering is in the hundreds and to rate each AHU with each manufacturer's equipment would be hugely costly with little perceived benefit. They do have very significant and very competent engineering. A Texas based manufacture with a dominant market share participated with the DOE in helping create the ARI rating methodology many years ago. The existing ENERGY STAR protocol allows for inclusion of this product option with words asking for product rated to the "ARI Methodology". An effective Multifamily ENERGY STAR 2011 will be inclusive of professional engineered and manufactured products that are focused on this target segment of construction.

We ran out of time prior to completing a more comprehensive set of comments on the other checklists. Sorry not to get further through the protocol. Thank you for considering our comments.

One last marketing thought: It would be great if EPA could convince Fannie Mae and Freddie Mac to support a certified ENERGY STAR 2011 Home with an Energy Efficient Mortgage. This would be a great third party validation and would significantly address the fears related to initial cost of the protocol.

Email response to Ryan Middleton of City of Frisco :

Ryan,

When taken in total these changes will seem like a whole lot. When broken down, they can all be managed. The hardest part will be changing the framing, insulation, HVAC and Rating worlds all at once. All these trades resist change and the collective change of process will be very difficult for all to absorb and manage. There is no way it won't be a messy process.

However, not everything in the discussion document of the protocol will make the final program. This current format is for public comment and mostly they (EPA) want to know the barriers, building science issues, and potential deal breakers and then they will (probably) make protocol adjustments that will satisfy their best judgment of what improves the protocol, delivers on their brand promise for quality and durability and that remains affordable (as for the most part the ES is a voluntary program).

One other point, this protocol also seems like a big step since it assumes (my opinion) that the base code when implemented will be the 2009 IECC. In Texas, we may or may not switch to the 2009 IECC before January 1, 2011. So, that could be a blessing or a curse – who knows. What I told our most advanced production builder yesterday is that everything on the list was coming anyway. They really had no choice about whether on not to do the list. Their choice was about when they did the list and if they implemented in pieces or in total as part of the program.

Texas HERO is seeking comments from members and builders to generate a public comment to EPA. CT Loyd, who used to be with Fox Energy Services is HERO's new Technical Director and we could schedule a time for him to come visit with your team to discuss these changes in detail if you wished to get some individualized discussion of the specific items.

I think the EPA makes a good argument for why, what and how to move forward. The biggest objection (regardless of how it is stated) is fear. Fear of cost. Fear of not being able to perform. Fear of not following all the rules. Fear of putting effort and failing. Fear of not putting effort and seeing others succeed. All topped by the difficulty in having sustainable business that can survive this downturn.

Builders will happily build what consumers want. A collective challenge of the industry is to communicate that the ES V3 can deliver what they want.

The Buffum Alliance Group - Buffum, Norman M.

We are a builder in West Michigan and find it horrific what is being considered. Changes the rules on what may be required for 2011 will motivate remaining builders to go out of business and many others will be forced to raise prices in a very tight economy where buyers are already forced to continue renting or buy an old house. This mandate would crush an already very temperamental industry. Furthermore, these kinds of mandates would discourage new comers to get into this industry which would hurt the potential growth of the industry. When you raise the prices of new homes, you will have fewer buyers purchasing new homes and the economy will be hurt by this. The current Energy Star program has required most builders to come to a standard that raises the bar to unprecedented levels of energy efficiency. This program change would kill what is left of this key industry.

The Home Co., LLC – Congdon, Bob

Good afternoon:

The following are my comments and opinions regarding the Energy Star Program:

To me, and I have been doing this for 30 years plus, you have to walk before you run. The problem in the field is getting contractors to buy into this with common sense and cost justification. Cost is a critical item in the current real estate depression. It if doesn't make economic sense, people aren't going to buy it and builders aren't going to put it in. You got to get builders into the mind set of using energy efficient standards, like they do a code, before you can get them to adapt advanced technology. It is my opinion that every house, condo, townhouse and apartment complex in this country should be built to Energy Star Standards, but not overburdening them with bureaucratic checklists and procedures that do not make sense in the field.

We haven't gotten a majority of all new home builders to buy into the process at this stage. Put too many expensive requirements on them now and some of those we have will leave and many new won't adapt it. That is one of the problems with for housing; too expensive to implement except for custom home builders and so those producing affordable housing will not adapt it.

Affordable housing is where the real playing field lies. Those that produce affordable housing, like Public Housing Agencies, ReDevelopment Agencies, Community non-profits, HUD subsidized homes, etc. are still learning how to incorporate cost effective processes into their homes. Now we are going to ask more of them in cost–we could lose the valuable ground lost. For me it is all about that thermal envelope--get everyone buying into that with substantial increases in blower door requirements and you can really get a majority of all builders buying into it. The thermal envelope is the most cost effective system to be worked on.

Raters already have limited power in influencing HVAC contractors. You have to coddle them along. The duct blaster and conditioned air leaking to the outside are the 2 requirements that should be strengthened, but not through more measuring and increased framing requirements, but rather by forcing tightening up what is has been a standard process to now. The object is to get more people to buy into the program, not alienate them.

- 1. As to the quality framing checklist: Some building inspectors are not going to allow minimized exterior wall corners. The ladder T for interior walls to outside walls is good.
- 2. HVAC Quality Installation Checklist is OK to require a Manual J calculation. As to the other requirements, many HVAC contractors have been reluctant to purchase the expensive Manual J program or rely on their supply shop. To add other mandatory requirements involving other design programs will be overkill until you get a substantial majority of HVAC contractors buying into Manual J design and implementing it. Commissioning the system is a LEED requirement. It will add to the contractor cost. It seems to me that getting them to install according to a Man J, then mandating a duct blaster test and leakage to the outside
- 3. HVAC Quality Installation Rater Checklist: The measurement of transfer area from bedrooms is a little much to ask of a rater at this point. We are still banging heads to get the HVAC systems designed and installed with minimal leakage. We are still trying to get it through builders and HVAC contractor's heads, that you can limit the size of HVAC equipment without putting their warranties in jeopardy.
- 4. Indoor Air Quality Checklist: Yes it has to be improved with the tightening of houses. Requiring higher filtration efficiencies and outside air provisions is a major step. It is hard to get builders starting out in program to incorporate thoughts of outside air into their thinking. They just see it as cost. I believe it should be included with special attention paid to not allowing super humid air to be brought into the system without provision for conditioning it, in other words the amount and when should be controlled.
- 5. Requiring capillary breaks between footing and foundation is a tough sell, further building inspectors have some tough times with it. If you drain your foundations well and you slope your earth correctly and control water discharge through gutters, swales, etc. Then water laying along foundation and wicking up through the foundation (rising damp syndrome) is not as critical. Your last line of defense is the foundation and you may find builders reluctant to buy into it.

Requiring self sealing membranes in valleys will step on a lot of toes. Interior finishes applied to wet walls will infuriate many builders. What is the standard for wet framing materials? How much moisture content is allowed? Are you going to have all builders check with moisture meters? This means many times that house will have to sit, HVAC be installed, and

a drying out period allowed. This doesn't work for many in the construction industry. It will delay their scheduling with no benefit to cost or bottom line. Who is going to be responsible for checking humidity and wetness requirements before finishing applications?

Some other thoughts–Heat Pumps in Northern Environs don't work well. I first installed them in the late 70's, early 80's in the Northeast and people ripped them out after a couple years. Heat Pumps make sense in super tight houses or in air conditioning areas, but not much sense in extreme cold climates.

I believe that more insulation should be required in attic and cathedrals. R-38 is now code. We need more. We also need to more in the walls, rims and bands. I believe that fiberglass batts should not be employed in attics, only blown products, including fiberglass.

I believe that houses over 2400 SF should be held to a higher standard on a HERS rating. When one is building a 5000 SF home or a 3500 SF home, they can usually afford the utility bill. The people struggling at the bottom end of the food chain, that energy savings is critical to their just living and paying their bills. This program should not reward energy hogging houses, but rather the majority of existing and potential homeowners in the US.

Further until banks start seriously offering reduced rate mortgages for Energy Star Certifications and appraisers start to understand and recognize these systems and benefits and appraise them accordingly, we will never have mass acceptance until again Gas prices go above \$4.00 per gallon. We got to be a little practical here.

I could go on and on, but I have to go preach the gospel to a Habit for Humanity program and if you complicate and increase cost for Energy Star, these volunteers may just to what they believe to be correct and say to heck with Energy Star–that would be a shame. I wish had more time to polish this, but I don't, and I want to get this in today. Take care.

Sincerely, R.C.Congdon II

The Home Inspector General, Inc. – Holcomb, Michael

After reviewing the proposed guidelines we surveyed our builders to determine their response. Nearly 83% of current, active Energy Star builders, under contract with our company, indicated they would no longer participate in the Energy Star Homes program under the new (proposed) guidelines.

While supporting Energy Star's current guidelines we agree with our clients that the proposed changes would not benefit the consumer nor the building industry in general. There are a variety of green building programs with prescriptive approaches to energy performance and third-party testing that would result in quality, sustainable construction at an affordable cost. It is our opinion that the proposed changes, if enacted, will result in significantly reduced market penetration for Energy Star.

I urge you to reconsider both the timing and the scope of changes to this program.

The House Inspector, LLC – Greening, Chuck

My company currently provides building consulting services within the Wisconsin ENERGY STAR Homes program. I'm not sure of the vision the folks have at the EPA for ENERGY STAR Homes labeling, but it is apparent they do not have any idea what today's construction in Wisconsin looks like. Without going into great detail these are a couple of things that really stand out.

1) The whole idea of limiting or penalizing the size of homes is completely backwards. These are homes that will be built with or without our guidance. With our help, I feel that we can make much more of a difference in reducing utility usage in these homes due to the larger budget and the great number of architectural features. If builders see the ENERGY STAR Homes program limiting their ability to sell high end housing we will lose these builders and the home they produce.

2) Has any one considered the great amount of paperwork and time commitment the 6 new check lists will create? Looking at the items proposed and considering the 3 on each check list the builder can sign off on, my company would have to make an additional 4 more trips to each job site to verify these items. Scheduling these visits to correspond with the time this work is done would be very difficult.

3) The HVAC do most of their design on site and do not generally do a paper version of manual J, D, S, & T calculations for each home. Remember that these companies do not have large office staffs to create paperwork and will be very resistant to filling in checklists. It would be very time consuming to chase these contractors for the completed check lists and will limit the number of contractors willing to work with us.

4) Many of the items proposed will not result in a short term ROI to offset energy savings. For example look at the cost of requiring raised heel trusses. If we are doing an R-50 attic the heel would have to be 20 inches. While this is a good idea, it is expensive. The cost for using the raised heel would also have to include the costs for the impact the change would have on other parts of the building, such as, additional sheathing and exterior finishes. The potential reduction in energy use annually is very low, less than \$15 on most homes.

5) It also looks like the EPA folks have forgotten that the contractors doing verifications are trying to earn a reasonable living doing this type of work and there is a limit to the resources the market currently has available for this service. My company would need to double the current fees for rating services in order to cover the expense of tracking all of the paper work. In this market we would be out of business.

Thermo-Scan Inspections – Dunn, Travis

Although in theory I agree with all the new proposed requirements and wish all builders could implement them, I'm afraid most high volume builders in Indiana will drop out of the program if all these are required. In the current economy builders are removing almost everything that is not absolutely necessary in the home, so asking them to increase expenses is not wise.

Some of the requirements our builders are strongly opposed to are:

- 1. No building cavities used for returns
- 2. Ductwork in attic must be insulated to R-8
- 3. Raised heel trusses must be used to allow maximum insulation
- 4. Either insulated R-board must be installed OR advanced framing techniques must be used (California corners, insulated headers, etc.)
- 5. Every kitchen must have an exhaust ducted to the outside
- 6. Downspouts must drain water at least five feet away from the foundation.
- 7. No furnaces allowed in the garage

We do have some builders that want more than Energy Star, though. Why couldn't you have a second level, an ""Energy Star Plus"" type rating, in 2011 where these items are required? That way builders could see that these things are on the map and may become requirements for basic Energy Star certification in the future and it would allow progressive builders to differentiate themselves with this higher standard program.

I think it would be a big mistake to implement this many new requirements at once.

TJH Energy Consulting – Krawczyk, Tom

I am a recent (3 year) HERS rater from Wisconsin and have discussed your Proposed Energy Star 3 requirements with a number of my builder clients.

These requirements are overwhelming and builders will not invest the capital to meet Energy Star 3. This will also put me out of business as far as the new residential homes certification services I currently provide.

It has been a challenge just to get my Wisconsin builders up to the WI 2009 IECC Codes and whole house ventilation requirements. Your proposal is not viable in today's depressed housing market, especially in the Midwest.

Since Energy Star certification is only reaching 17% of the new 2008 home builds, I feel that more work is to be done promoting and certifying to Energy Star 2.

If Energy Star 3 is passed in its current form, you will loose builders, energy raters and dramatically drop your certification percentage nationwide.

Please review and thank for considering these comments.

Trendmaker Homes – Walton, David

It appeared to me that the requirements discussed will raise the cost of building a home significantly with little cost effective reduction in the cost of the energy required to operate the home. Our buyers will not willingly pay for non cost effective energy saving features.

U.S. Green Building Council – Metalitz, Batya

Please find the attached comments from the U.S. Green Building Council on the ENERGY STAR 2011 revisions.

The Environmental Protection Agency's (EPA) ENERGY STAR for Homes Program (ESH) has played an important role in market leadership. It has provided the homebuilding community with an option that is both 'above-code' but not LEED. USGBC believes EPA should be raising the bar for voluntary above code energy efficiency upgrades in response to the recent IECC update, but we have significant concerns regarding the approach to the proposed update to ESH.

To date, LEED for Homes has embedded ESH into its prerequisites has worked hand-in-hand with EPA to help promote ESH as it is a leveraged step toward more comprehensive green building practice. Since LEED for Homes is so reliant on ESH and since the changes are so dramatic in ENERGY STAR 2011, USGBC may need to eliminate ESH as a prerequisite in the LEED for Homes program.

Therefore, USGBC requests that EPA reconsider its approach to ENERGY STAR 2011.

Our comments are provided below, grouped into the following 4 categories:

- Market adoption obstacles
- Non-energy related measures
- Technical Issues
- Timina

1. Market Adoption Obstacles

ESH is currently a prerequisite for LEED certification. We believe this is an excellent connection between ESH and LEED. Typically, ESH has represented approximately 15% better energy performance than is required by the national energy code. This level of energy performance is about half-way to the entry level performance tier for LEED Homes, or "Certified".

ENERGY STAR 2011 includes several additional energy measures beyond those required in ESH 2006, including a set of requirements that all ESH labeled homes must have:

- Continuous sheathing, w/ Grade 1 installation (or advanced framing)
- ES Windows
- □ ES HVAC Equipment
- □ ES DHW Equipment
- ES ALP
- ES Appliances

In the current LEED for Homes Rating System, these changes in ENERGY STAR 2011 would cause ESH labeled homes to achieve approximately 60% of the available Energy and Atmosphere (EA) credit 1 points, thereby making ENERGY STAR 2011 not usable as a prerequisite in LEED.

In order to maintain the close connection between ESH and LEED, USGBC suggests that EPA align ENERGY STAR 2011 with performance levels that more closely align with our current approach. This will allow LEED for Homes to align with ENERGY STAR 2011 as a prerequisite under the next planned update of the LEED for Homes Rating System.

2. Non-Energy Related Measures

ENERGY STAR 2011 also promotes a number of upgrade measures that provide a wide range of non-energy benefits, including:

- a. Exterior water management Improved durability
- b. Wet room measures
- Improved durability Improved durability
- c. Dryer exhaust to outdoors d. Low flow shower heads
- e. Hot water distribution systems
- f. Advanced framing
- a. CO monitor

- Improved water efficiency
- Improved water efficiency
 - Improved material use efficiency
- Improved air guality / occupant health

- h. No HVAC in garage
- i. Fresh air ventilation
- j. Moisture control
- k. Air distribution system

Improved air quality / occupant health Improved air quality / occupant health Improved comfort / durability Improved comfort

With the inclusion of this broad set of largely non-energy measures, ENERGY STAR 2011 is now focused on both energy and non-energy issues. Accordingly, ENERGY STAR 2011 will likely be perceived as a "light green" home building program.

USGBC is currently promoting all of these non-energy measures in the LEED for Homes program. These nonenergy measures collectively represent approximately six existing LEED for Homes prerequisites and approximately eight LEED points. Collectively, these non-energy measures represent approximately one third of the overall requirements for entry level certification of a LEED for Homes project.

If all of these energy and non-energy measures become mandatory within ENERGY STAR 2011, then ENERGY STAR 2011 is no longer a viable prerequisite in the LEED for Homes program.

USGBC suggests that EPA remove non-energy related measures in ENERGY STAR 2011. We also suggest that USGBC and EPA continue to work closely to communicate the value of the energy efficiency measures in ENERGY STAR 2011.

3. Technical Issues

Several of the ENERGY STAR 2011 measures are not verifiable. They have highly subjective requirements language.

USGBC Foundations Documents state that all prerequisites and credits be written to be:

- Clear
- Concise
- Objective
- Doable
- Documentable
- Verifiable

USGBC has worked very closely with the home building industry to develop (and refine) specific credit language over the last 5 years. ENERGY STAR 2011 includes language that represents a significant departure from our past working relationship.

We are convinced that the environment and the building industry are best served by USGBC and EPA continuing along the current path of mutual compatibility. This means not adding imbedded and difficult to verify language in ENERGY STAR 2011.

4. Timing

Energy raters do not understand many of these new ENERGY STAR 2011 measures and related requirements. As a result, these energy raters are not yet qualified to assess whether such upgrade measures are properly installed.

Further, due to the inherent complexity of some measures, it is likely that most energy raters will not ever be qualified to verify proper installation of some ENERGY STAR 2011 measures. Specialized expert credentials may be needed for some measures (e.g., durability measures).

HERS Raters will need to be re-trained to perform these new services (i.e., size adjustment factor, fresh air ventilation systems, hot water distribution systems, durability / water management, and 5 new checklists)

This re-training may require as much as 2 years - to develop new curriculum (6-12 months) and for the training to be delivered to the majority of the existing 5,000 HERS Raters (12-24 months)

Specific examples of these technically challenging credits (for HERS Raters) include:

□ ASHRAE 62.2 compliance

- □ Worst case exhaust air flow test
- ACCA Manual J, D, S, and T basic familiarity
- Durability measures

For each of these types of measures, HERS Raters need to be trained:

- □ To ensure that these measures are appropriately designed-in,
- On the timing of the installation of the measures (and hence verification), and
- □ On specific verification procedures.

Most project teams are not familiar with these mandatory (i.e., deal breaker) measures. Hence, the HERS Rater has the primary responsibility to educate the designer, the contractor and the trades on these new ENERGY STAR 2011 measures - as well as the responsibility for verification itself.

USGBC suggests that EPA - delay or reconsider the adoption of the ENERGY STAR 2011 measures that either:

- a. Require substantial retraining of HERS raters, or
- b. Exceed the technical competency of HERS raters.

United Way of Long Island – Wertheim, Rick

I applaud the EPA for guiding the industry to build healthier, affordable, durable and sustainable housing with Energy Efficiency ""built in"" from the start. It is more important than ever to proactively transform the industry to achieve measurable energy savings in the housing industry as a pathway to energy independence.

In the ""special needs and affordable housing"" world, it is vital and our responsibility to build better homes. Some of our residents suffer from chronic illness, are frail/elderly, and are low income individuals and families where disposable income is non-existent. From a financial standpoint; operating costs (especially energy) of housing units have become unmanageable. Having dealt with builders, developers, architects, engineers, raters, rater providers, building departments, municipalities, and utilities on a regular basis, I will limit my comments to what I feel is the ""weak link"" of the compliance path. That is, the dynamic between the aforementioned players in the Energy Star process.

The compliance path from plan review on is fragmented. While I'm sure it cannot be mandated, it should be recommended that a licensed professional architect or engineer be responsible for plan review, energy modeling, HVAC calculations (ACCA manual J,D, etc). Most commercial projects use this approach. The inconsistency of the Raters training and experience, especially when it comes to technical details around architecture/engineering/building science, necessitates this role. Building departments will be more comfortable with a licensed professional stamping and approving the submission. Architects and engineers can do the ACCA calculations and the design parameters would be detailed and specified PRIOR to full plan development and submission. In essence, the residential HVAC portion of the project will be ""right sized"" before it leaves the drawing board.

If a licensed building professional is involved in the compliance pathway, a form should be developed that streamlines and facilitates this process. For those not choosing this particular approach, I would suggest that either towns, municipalities, utilities, or Not for Profit organizations be eligible for funding to provide ""Energy Case Management"". These entities can serve to provide ""Rebate/incentive portfolio management"", pre-design and design Charrettes, technical assistance and high efficiency equipment selection, incorporating Renewable strategies, Kw reducing strategies above and beyond Energy Star, bulk purchase programs for appliances, equipment, CFL lighting, technology, and Green furnishings. While most scattered site special needs housing projects (non-profit restrictions) cannot utilize tax credits to offset the additional cost of Energy Star detailing and renewable, it would be beneficial to offer Not for Profit organizational and units of local Government some level of Government incentive to make it more affordable to build affordable housing.

While I have many other comments to offer, from my perspective, these are the most important. Thank you for the opportunity to comment and if you have any questions, please feel free to contact me.

Uponor, Inc. - Stroud, Dale

To summarize our discussion:

- Consider adoption of a minimum performance criteria instead of defining the plumbing system design. It is
 possible to install both 'good' and 'bad' systems (with respect to water/energy conservation) with each of the three
 types of currently-specified designs. Classify hot water as 105 degF.
- Incorporate a consecutive use requirement in which a second draw must deliver water much more rapidly (with less water waste) than a first draw (from a cold start). A well designed plumbing layout can maximize second draw (and subsequent) performance.
- Limit the requirement to kitchen and lav faucets (full bath and powder room) and showerheads.

One thing I neglected to mention during our meeting was the energy saving potential of radiant floor heating. Though it is likely too late for EnergyStar 2011, it would be a good addition to future editions of Energy Star. Radiant floor heating can also contribute significantly to thermal comfort and IEQ.

I would be more than happy to participate in any future discussions or forums about EnergyStar 2011.

Once again, thanks for your time and consideration.

Please do not hesitate to contact me if you need any additional information or have any questions.

Section 3 (Water Efficiency) of Exhibit 1 (ENERGY STAR Mandatory Requirements for All Qualified Homes). In Section 3, it is stipulated that:

"Hot water distribution system shall use demand pumping, manifold, or core layout"

Comment:

Specifying that the hot water distribution system be demand pumping, manifold, or core layout does NOT assure that water and associated energy waste will be minimized. With any of the three options listed, it is possible to design/install a plumbing system that is highly inefficient, contributing to water and energy waste. Hence, it is recommended that the requirement be changed to instead stipulate a "contained volume" maximum regardless of the system design that is employed. It is further recommended that a requirement for efficient 'consecutive use' be incorporated into the requirements.

Contained volume refers to the amount of water that is contained within the distribution system between the hot water source and a fixture (faucet). The amount of contained volume is influenced by the length and diameter of the piping used in the distribution system. It is possible to achieve an equivalent amount of contained volume, regardless of the configuration of a distribution system. Thus, specifying the configuration (i.e., demand pumping, manifold, core layout, etc.) should not be the primary criteria. Rather, allow the installer or plumbing designer select the configuration that is most suitable for the home in question with the proviso that the contained volume meets the established requirement.

In addition to achieving a contained volume criteria, a well designed hot water distribution system should also minimize the amount of water wasted in consecutive-use situations. In other words, hot water should arrive very quickly at a hot water fixture that is used shortly after another nearby hot water fixture has been previously used (and assuming that hot water was actually delivered to the first fixture). If it takes a lengthy period of time for water to arrive at the 'second' fixture in a consecutive use situation, the plumbing system has not been well designed and water and energy are unnecessarily wasted.

It is suggested that ENERGY STAR 2011 consider utilizing a contained volume requirement similar to that being proposed for the EPA WaterSense program. Though the WaterSense program is currently undergoing possible revision as result of a public comment period, the WaterSense concept of limiting contained volume to 0.6 gallons has merit.

Additional consideration should be given a requirement for insulation (minimum R2) on the trunk and branch lines of the hot water distribution system.

Suggested wording:

The hot water distribution system shall have a contained volume of no more than 0.6 gallons in the piping (including fittings, valves, and manifolds) between the hot water source and any 'qualified' fixture. The contained volume shall be confirmed by a flow test that requires that, during a first use from a cold start, no more than 0.8 gallons of water may be discharged from a hot water fixture prior to the time that 105 F water flows from the fixture. In addition, a second hot water fixture in the same 'fixture group' (i.e., a nearby fixture and/or a fixture in the same room) shall be fully opened

within 10 minutes after the 0.8 gallon flow test is completed and no more than 8 seconds may lapse before 105 F flows from that second fixture.

"Qualified" fixtures include showerheads, lavatory faucets, and kitchen faucets.

Timed or continuous recirculation systems are not permitted. On-demand recirculation systems that affect each qualified fixture may be employed. If on-demand recirculation is used, the hot water source is defined as the main 'trunk' line and the contained volume requirement is limited to 0.2 gallons with the confirming flow test limited to 0.25 gallons. The consecutive use requirement applies.

The following table is provided to assist in the design of systems that comply with the contained volume requirement:

Volume of Water Distribution Tubing Materials

Ounces of water per foot length of tubing												
Nominal Size (inch)	Copper M	Copper L	Copper K	CPVC CTS SDR 11	CPVC SCH 40	PEX-AL- PEX ASTM F 1281	PEX CTS SDR 9					
3/8"	1.06	0.97	0.84	NA	1.17	0.63	0.64					
1/2"	1.69	1.55	1.45	1.25	1.89	1.31	1.18					
3/4"	3.43	3.22	2.90	2.67	3.38	3.39	2.35					
1"	5.81	5.49	5.17	4.43	5.53	5.56	3.91					
1-¼"	8.70	8.36	8.09	6.61	9.66	8.49	5.81					
1-1/2"	12.18	11.83	11.45	9.22	13.20	13.88	8.09					
2"	21.08	20.58	20.04	15.79	21.88	21.48	13.86					

0.6 gallons = 76.8 ounces

Respectfully submitted, Dale Stroud Director of Business Development Uponor, Inc

Utah Division of Housing and Community Development - Glenn, Mike

Our division received the Excellence in Affordable Housing 2008 Award from EPA for our support of ENERGY STAR. We have loans for almost 2200 units of affordable housing that are or will be ENERGY STAR-qualified. These projects serve the poorest of Utah's poor with an average AMI of 38%. ENERGY STAR is a firm standard adopted by our Governor-appointed board to help keep units affordable to the poor.

We have reviewed the changes suggested to the ENERGY STAR New Homes Program. While we understand the need to maintain high levels of program integrity and keep the ENERGY STAR standard one step beyond code, we are concerned with the costs associated with the changes. We are particularly concerned about the checklists and offer our comment and suggestion.

When serving the very low income populations, the additional costs for raters to complete checklists (estimated at over \$1200 per home), could exclude us from ENERGY STAR participation based upon project economics. Raising the average cost for an ENERGY STAR rating only makes these affordable units even more difficult to cash flow for the nonprofit owners. Moreover, the additional costs exceed the utility incentives which serve as offsets to current ENERGY STAR rating costs.

We request that EPA consider less costly and less cumbersome means to maintain program integrity. One suggestion would be to require general contractors and subcontractors to certify that they will comply to certain construction standards (as in the checklists) during the preconstruction meeting with the understanding that random spot check by raters may occur during construction and prior to the final rating.

Vandemusser Design, IIc – Musser, Amy

I would like to add to the RESNET comments (which for the most part are excellent). Specifically I would like to address the issue with climate zone 4 under heating conditions. If their suggestion to make it more difficult to use heat pumps with the BOP is implemented I think it would have some negative and unintended consequences. Specifically, this is the recommendation that homes in CZ4 not be allowed to use the prescriptive path with heat pumps.

I have noticed for a while that there are some odd differences between gas and heat pumps in climate zone 4, where I work. I have concluded that a major reason why the problem on the graphs in your report occurs is that the HERS index (and energy star) compare homes to "code", which in the case of HVAC means the minimum federal efficiency for the fuel used. The AFUE for gas furnaces has not risen in decades, while the minimum efficiency for heat pumps has risen recently. This creates a situation that we have found mildly frustrating for some time – homes score MUCH better on their HERS index if gas is used, but there is no savings in terms of energy or money – in fact there is often a penalty.

Many homes in CZ 4, particularly affordable and multi-family homes – which NEED to have the prescriptive path available, since it's very difficult to get a home with a lot of attached walls to pass the performance path – are all-electric. To add gas to a home, there are additional costs to bring gas service to the home, install gas piping, and install the gas furnace. Since most homes in CZ4 also need air conditioning, it costs only a few hundred more dollars to get a heat pump. To add a gas furnace, piping, and gas service is in the thousands of dollars. Also, many homes in CZ4 are in rural areas without access to natural gas. To add propane requires the furnace, gas piping and a tank, which the customer either must buy and have buried, or rent monthly and incur another monthly cost.

So, in exchange for all of these costs, what is the benefit?

I have a prototype house located in Asheville, NC (CZ4) that I often use for examples when I teach courses, so I ran it with several HVAC systems. The simulations were done using REMrate software. The house is 1900 sf with a slab on grade foundation. What it shows is that if one takes on the significant added expense of upgrading to a gas furnace, heating energy consumption nearly doubles and heating energy cost increases by 70% if the home has access to natural gas. I've also run the simulation for propane at \$2.00 and \$3.30 per gallon, which represents the range of cost that we have seen in the past 2 years. With propane, energy costs are at best doubled and at worst more than tripled. If the furnace is added to the electric heat pump, site energy consumed is reduced only by a small percentage (17 vs. 17.2 MMBtu/year). Cost can be lower, but not dramatically so – with natural gas approximately 16%, which for an efficient house like this one is \$66 per year. The economic argument to add thousands of dollars of connection charges, piping, and equipment, plus a monthly service charge of typically \$8-10 (not included in the chart below) is weak. If one considers propane, the argument is even weaker. At the lowest rate we have seen in 2 years, there is a \$27 per year savings (this would be less than the cost of tank rental alone) and at the highest rate, the homeowner would save money to disconnect the propane furnace altogether.

		Annual energy		Annual energy		Estimated	CO2
		consumed (MM	Btu/year)	cost (\$/year)		lb CO2 per	r year
HVAC system type	gas type	heating	cooling	heating	cooling	heating	cooling
14.5 seer/8.5 hspf heat pump	none	17.2	3.6	417	93	3.1	0.6
90 afue furnace + 14.5 seer AC	natural	40	3.6	711	93	2.5	0.6
90 afue furnace + 14.5 seer AC	LP - \$2.00/gal.	40	3.6	876	93	2.5	0.6
90 afue furnace + 14.5 seer AC	LP - \$3.30/gal	40	3.6	1431	93	2.5	0.6
90 afue furnace + 14.5 seer/8.5 hspf heat pump	natural	17	3.6	351	93	1.9	0.6
90 afue furnace + 14.5 seer/8.5 hspf heat pump	LP - \$2.00/gal.	17	3.6	390	93	1.9	0.6
90 afue furnace + 14.5 seer/8.5 hspf heat pump	LP - \$3.30/gal	17	3.6	524	93	1.9	0.6

To be fair, I've also included CO2 emissions, because it's clear that primary energy is the only potential argument that favors gas versus electricity in our climate zone, and CO2 emissions are the most easily available (and relevant) surrogate for that. The gas furnaces do produce lower CO2 emissions. In the case of gas furnace with AC, there is a 19% reduction compared to the heat pump alone. With the heat pump, there is a 39% reduction. (I would like to note that although REMrate shows propane and natural gas with the same CO2 emissions, I have seen other data that estimate approximately 18% higher CO2 emissions for propane vs. natural gas. In this case, the propane furnace cases might be much closer to the electric heat pump.) I wish that I could say that homeowners and home builders are willing to add thousands of dollars to the cost of a home based on CO2 emissions alone, but I cannot. And since there are many ways to reduce CO2 emissions that do produce economic savings, I don't feel particularly compelled to push the argument.

To conclude, I understand that basing the HERS index on the minimum federal efficiency for the fuel in question is the most logical way to handle different fuels. However, the low federal minimum for gas furnaces is what creates this

problem, and the problem is exacerbated when using the performance model for very small and attached homes. A fix that impedes the ability to use a heat pump in the prescriptive path makes it nearly impossible to certify some of these homes.

An example:

Condo units with 3 attached walls and one exterior wall. Almost no savings can be made using exterior envelope because there is so little of it, and the envelope is further penalized for having too much glass because all of the windows are loaded up on one exterior wall (yes, there has been a recent fix to this problem, but it doesn't seem to go far enough if there are many adiabatic walls). There is a strong desire not to bring natural gas to the building (due to cost). The home is not going to pass the performance path without efficient appliances. Tankless gas water heater is out (no gas), and heat pump water heater is unlikely due to space and acoustic considerations and concerns over the mass-marketing appeal (since they are still not an off the shelf technology). At most, we have refrigerator and dishwasher and 20% CFL lighting to work with, but those aren't going to shave more than 2 points off the HERS index. Solar hot water is out because the tanks are too big, and because it's hard to sell tax credits to the first time homebuyers and retirees who move into condos. So the only thing left to reduce the HERS is PV, which is also close to impossible to do with condos due to the question of roof space and the aforementioned concerns with tax credits. Also, would the rule that says PV cannot be used to get a home to pass prevent this from even being a possibility? Right now the prescriptive path is the only path we have that makes energy star possible for a building like this. Considering the environmental benefits of reduced envelope loads, urban density, and smaller square footage, it seems that these homes should be able to participate without taking extreme measures beyond what is required for single family homes. I would like to keep the performance path available as a possible pathway for them.

The problem also exists for small single family homes as well, for many of the same reasons, but some of the problems above are less pronounced. However, I have concerns over adding this much cost to affordable housing for minimal (or negative) operating cost benefit. "

The following are our comments on the Energy Star 2011 proposed requirements. The first page summarizes our concerns on the overall philosophy and approach of the new changes:

1) *Increased complexity*: Changes that make the program more complex should be made ONLY if there is no other way to make the Energy Star program better. We understand that the current HERS index has some flaws, but the new proposed method creates new flaws and is considerably more complex. For reasons that we detail in the following pages, we feel that the new "reference home" method has flaws that are as serious as the HERS index, but its increased complexity is also likely to create implementation problems that are worse than the current problems with the HERS index.

Lowering the HERS index and setting HERS indices by state would be a far better way to address the existing problems.

2) **Rating cost**: Levels of complexity that create more work for the rater will necessarily increase rating costs. These things should be considered carefully - it is difficult for people to see value in oversight work, and they can have "sticker shock". In the published cost study, it looks like the estimated cost for a couple of the new checklists was \$50. Was that for the rating, or was that the cost to meet the checklist items? Adding 5 checklists, likely additional site visits, and a lot of potential liability (see my later comments) will more than double the cost of a rating. Add to that the fact that a high percentage of homes that attempt to meet this standard will fail, but the rater will still need to get paid for the work that they do, and you have a frustrating situation for builders and raters.

3) **Focus drift:** We are concerned that requirements are drifting away from purely "energy" requirements. Many of the requirements are good to do and create quality buildings, but not all people have the same concerns, and someone should not be precluded from building an Energy Star home just because they don't care as much about the indoor air quality or water-efficiency. Participating in the program (as it is now) makes homes better. If you push these people to "I'll just build it to the energy specs but not certify it" the quality of those homes will go down. We strongly support co-labeled programs such as Indoor airPLUS for water efficiency, indoor air quality, and durability.

4) **Expected drop-out rate:** I am concerned that a high percentage of builders will drop out of the program if this change takes place. The current level of Energy Star saves energy over what builders would build outside the program. If a lot of builders drop out, and only a few upgrade to these new requirements, it will be an overall step **backward**. I feel that the geographic area where we work is ahead of the curve nationally with green building – but we have no builder clients who meet all of these standards all of the time. This seems like an excessive step forward that would be tolerated better as a series of incremental steps forward rather than one big leap.

5) *Expected failure rate*: I think it's important to understand that no project is perfect in every way. Things get missed and forgotten. Framing subs forget to do advanced framing and it's not caught until later. If that happens, does the whole

house need to fail? It seems too extreme a "punishment" to me. "Must-do" requirements that cannot be fixed later should be considered very carefully. Even with the best intentions, there are some things that just don't happen. Our estimate is that 9 of 10 projects that started trying to meet these requirements would miss at least one item along the way and have to be thrown out. No builder is going to stick with a program after getting burned a couple of times. That is why every other comprehensive green program (which is what this new guideline is) is based on a point system, not a list of "have-tos".

6) *Practicality and liability*: It seems obvious that builders and raters were excluded from developing this specification. It seems to create very inflexible and complicated requirements, significant liabilities, and a large burden on both. EPA needs to make a statement similar to the USGBC's LEED program that raters are not responsible for overall construction quality and defects. Raters are simply not onsite often enough and cannot insure themselves well enough to make such a guarantee.

Our specific comments on the standard itself follow:

(1) I understand the need to address house size. However, EPA needs to understand that whatever rules they put in place become to a certain extent a "game" that builders and raters will learn to play to their advantage. One specific concern that we have is putting mechanical rooms inside conditioned space. We have spent years convincing builders to do this, and although it increases the volume of conditioned space, it often does not increase a home's surface area (when a mechanical room is "carved out" of a plan, the house often has the same surface area, and heat transfer occurs over surface areas, not volumes). There are additional benefits, such as putting ductwork and air handling units in conditioned space. Most air handlers leak like a sieve – in a well sealed duct system, they are often the leakiest component. We wonder if there could be an exception allowing mechanical space to be part of the insulated envelope of the home without penalizing square footage.

(2) There will need to be more guidance on what is "conditioned space". Is it anything inside the insulation? Is it finished space? Does there need to be supply air? What about a basement that is insulated and air sealed at the walls, not finished, and does not have supply air? How should raters handle situations that include "future" finished space? For example, bonus room is insulated and air sealed, but not yet finished, no mechanicals, with plans for the homeowner to finish it later when they have money. We are seeing more of this due to the economy.

(3) We are unconvinced that the "Benchmark home" is necessary and very concerned that it adds a layer of complexity that raters are not going to handle well. It appears as thought the rater is supposed to do two energy models of the home and compare them. This opens up twice as many possibilities to make an error or to model something incorrectly. If two different raters do a competent model of the same house, it's pretty common to get a difference of 2-3 in the HERS index. I think you multiply that by two when you have them run 2 models. There are also a number of technical problems that raters are likely to encounter. For example, if the house has all ducts inside conditioned space and no duct leakage to outdoors, how exactly do I move the ducts outside of conditioned space and add duct leakage for the "reference home"? A rater could put them in an attic (if you have one), basement, or crawlspace with very different results. Another rater might not even think to move them. Another example – it is very common here to spray foam at the roof deck with lesser R-value than one would use in a ceiling below an attic. Typically these homes model better because you're moving equipment into conditioned space and the temperature of the attic is lower. Can a rater model the real home sprayed at the roof deck, but the reference home with insulation in a ceiling under an attic? I do not feel comfortable with this level of interpretation left up to individual raters and/or providers in the field. My concern is that you will get inconsistent definition of "benchmark homes" that will lead to confusion in the marketplace and an overall negative impression of Energy Star. **Although the HERS index method is not perfect, it is easy to understand and more difficult to manipulate.**

(4) We are **VERY** concerned that the requirement for the "Benchmark home" to meet IECC 2009 *or* local code (whichever is more stringent) is not as cut and dried a requirement as it sounds like it is. A problematic example:

a. Nebraska: Current local code is 2003 IECC. We are performing a study of the 2009

IECC to determine whether it is more or less stringent than 2003 and the study is not yet complete. However, we performed a study in the past that showed that the 2006 IECC was LESS stringent than the 2003 IECC. How can this be? Climate zones were consolidated/changed between the 2003 and 2006 IECC, and penalties on window to wall ratio were dropped in the 2006 IECC. For a home with window to wall ratio of 18%, the 2003 IECC required a wall R-value of 22-25 depending on the city in Nebraska. The 2006 IECC required R19 or R13+5 in all cases. Overall, we found that the 2003 was more stringent for homes in two Nebraska cities. In a third Nebraska city, we found that the 2003 was more stringent above 15% window to wall ratio, and the 2006 was more stringent below 15%. My expectation would be that most raters in Nebraska would fail to properly define the benchmark home. To determine which code has more stringent requirements will, in many states, require a complex analysis of the code that most raters are not qualified (or compensated adequately) to do. Raters and providers will not interpret the requirements uniformly because of this. The result will be MORE confusion and LESS consistency in the marketplace – the **opposite** of what is trying to be accomplished.

b. I am also not convinced that the problem of more stringent codes in some locations is a huge problem. If the standard becomes tighter everywhere, then if a few states that are ahead of the curve have more qualified homes, why should that be a problem? There are still a lot of items that are in Energy star (thermal bypass checklist, etc.) that are not part of code. It's still a better home.

c. It would also be possible to increment down the HERS requirement overall, and possibly more for certain states. Again, it is our opinion that it would be worth being close to code in some locations than to introduce significant confusion into the process.

(5) Water efficiency: requirement for demand pumping, manifold or core layout. Does this add significantly to cost? While we agree it's a good idea to do these things, production homebuilders will be faced with the choice of (a) add \$\$ to put in demand pumping or manifold, (b) scrap their current designs, (c) not do Energy Star. Are we sure we want to just throw this out? Also, how is "core layout" defined? Raters will need an objective criterion (I suggest length to fixture) to determine this. If the length to fixture method is used, and it is long enough to allow most small homes to quality, I withdraw my objection.

(6) Lighting and appliances: We support the change to allow Energy Star qualified bulbs in lieu of light fixtures. The pinbased CFLs are difficult to find in some areas, and builders and the public in our area generally dislike them. We also expect that replacement LED lamps will not be produced to replace the pin-based CFL lamps, possibly making some fixtures obsolete.

(7) Lighting and appliances: Energy Star ceiling fan requirement: This is an awkward requirement that we have had trouble with on our BOP houses. Ceiling fans without light fixtures are easy to find as Energy Star. Selection is much lower if they have lights because the lighting fixture part may not be pin-based CFL, and thus not rated. Sometimes you can find a combo unit where the fan part is rated separately from the lighting part. It seems sort of capricious and random to push people toward only installing fans without lights.

a. Question: We are assuming that a house can still be energy star if the builder doesn't supply all of the appliances (i.e., refrigerator, washing machine). However, what happens if the homeowner buys a non-energy star model or moves in their old one from their previous house and it is there when the final rating inspection takes place? I cannot imagine how angry a builder would be if they met all of the guidelines, paid for the rating, and then failed over a refrigerator that the homeowner purchased after buying the home.

(8) Showerheads – this is a deal breaker for many people. There are not that many designer showerheads out there that go this low. Do we really want to throw them completely out over it? Although this is more relevant to an energy program than moisture and IAQ items (due to the energy use of hot water, and the energy required to deliver municipal water), this still seems to be somewhat of a topic drift. We would rather see a water co-labeling program like Indoor airPlus.

(9) IAQ and durability: I don't understand including these items at all. The downsides are: a. It confuses the brand for the Energy Star program to include mandatory, non-energy items.

b. A co-labeling program (Indoor airPlus) already exists that includes all these requirements. Why even have that program if you're making 90% of them mandatory in Energy Star?

c. Not everyone cares about indoor air quality, and those people should be able to build a rated, labeled, energy-efficient house. We are constantly surprised by the number of homeowner clients for custom jobs who are interested only in one or two categories of "green building" and are not willing to spend even \$100 more to do better or get a rating for any other area. We can't change their minds, we just try to help them make the most energy efficient home possible if that is what they want to do.

d. By adding durability and indoor air quality, it creates greater likelihood that the public will see Energy Star as a guarantee program for their home and start suing raters for anything that goes wrong in a home. With a rater onsite only 3 times during construction, many of the items that can go wrong won't be caught by them. *If Energy Star does intend to go down this road into durability, they need to issue a statement (similar to the USGBC's LEED program) that the rater is not responsible for design or construction and that the program is not a guarantee program.*

(10) Heating equipment: why 92% AFUE and not 90%? 90% is widely available and a significant improvement over code minimum.

(11) Heating equipment: I see a number of potential problems here:
a. Requirement to model with 92 AFUE furnace or 8.5 HSPF, 14.5 SEER heat pump.

Modeling with gas vs. electric gives dramatically different HERS indices (usually gas is better). Raters could play games by modeling the reference home with one and the actual home with another. Is there going to be guidance/requirement on this?

b. We sometimes see homes where people install radiant floor heating with a boiler for primary heating, but install a heat pump instead of AC for cooling. This is very common because a heat pump is only a couple hundred more dollars over AC, and it gives people an optional backup heating in case the boiler needs repair. It seems patently unfair to make these people upgrade to a high efficiency heat pump when they could buy a code-minimum AC.

c. Also, it doesn't seem very fair to allow 13 SEER AC in mixed/cold climates, but then require 14.5 SEER for heat pumps. Cooling energy is a fairly small contribution to energy use in these climate zones anyway, and SEER and HSPF do not go up in lockstep with one another. We have seen 14 SEER/HSPF 9.0 that would be vastly superior to 14.5 SEER/8.5 heat pumps. Why not just have an HSPF requirement?

d. Energy Star needs to start thinking about/addressing new products in the HVAC industry. In particular, guidance that dismisses entire types of products should be avoided, as it ignores the fact that innovation can occur. Specifically, note 9 recommends against air source heat pumps in cold climates. However, there are some innovative systems, such as the Hallowell heat pump (www.gotohallowell.com) that seem appropriate for these climates.

(12) Note 13: Is there any way to allow higher SHGC for passive solar homes but still allow them to use the prescriptive path? If the modeling path is going to get so much more complex, people will want to stay prescriptive as much as possible.

(13) Water heaters – why list odd sizes like 52 gal in the table? 50 gallons is much more typical. Also, why is a 40-gallon electric tank not listed at all? Also, we have noticed that a 0.93 40 gallon water heater can cost \$300 more than a 0.92 40 gallon water heater. For a 50 gallon water heater, big jump according to our builders is between .91EF and .92EF. Combine this with negligible annual energy savings – the last house we looked at saved something like \$2 a year to go from .91EF to .92EF – it ended up being a 100-year payback. This is probably the #1 reason most of our builders currently don't use the BOP. It kicks many people out of the current BOP and into modeling. Again, since modeling looks like it's going to become less appealing and more costly to do, we'd like to see some of these single item, low payback things get easier in the prescriptive path. We don't understand why small tank water heaters need to be more efficient to begin with – anyone who has ever had a 40 gallon tank knows they use less hot water because it runs out, so why are we cutting a break to people with gigantic houses who put in 100 gallon tanks?

(14) Ductwork: most codes have a lower R-value requirement for return ductwork. This is a small thing, but could easily create a costly and expensive implementation problem because HVAC contractors will forget that supply ducts can be installed to code but returns must be higher. Also, code does not usually differentiate between unconditioned attics and crawlspaces.

It would be much simpler to change it to read "all supply ducts in unconditioned space to be minimum R-8, all returns to be minimum R-6"

(15) For modeling the "reference home" with an Energy Star refrigerator – what size? Since refrigerators are rated based on their size, a large refrigerator that's Energy Star could use more energy than a small refrigerator that isn't. Will the HERS rater now have to add an extra step to look up the energy star minimum efficiency for the actual installed size? Is this easy and straightforward to do? What size refrigerator does the "reference home" have? For that matter, how do we model the proposed home if it is a spec with no installed refrigerator? Most spec homes do not come with refrigerators.

(16) Note 2: 17% framing factor for walls and 7% for ceilings is being assumed as baseline? Based on the current REMrate defaults, this means we are now penalizing people for using conventional ceiling framing (trusses are not always an option depending on the design) and walls 16" o.c. Sometimes structural requirements dictate 16" o.c., but there is no way to get 17% framing factor with walls16" o.c. according to this table. Also, since framing factor

(17) Note 4 – We understand what it means, but in practicality, I can see it being confusing to apply. I think you'd have to do 3 models of the house. Reference, no power generation, and with power generation to show that the power generation added only a certain amount to the HERS index.

(18) Note 6 - We can't even imagine what other products exist that aren't already required.

tends to be lower for 10' walls than 8' walls, are we now rewarding people for using 10' high walls?

(19) Requirement for "grade 1" insulation. Some rater trainers and providers claim that it is "impossible" to achieve "grade 1" with fiberglass insulation. They teach that if there is even one minor defect in an entire home, fiberglass must be given grade 2. (This is not the RESnet requirement if you actually read it). However, a lot of raters work for spray foam installers, and they use this to penalize people who choose to use fiberglass. We have found that with proper attention to air sealing, fiberglass can perform as well as foam in some applications (such as walls) and think it has a place in the marketplace. By requiring grade 1, some builders in some areas will essentially be forced away from using fiberglass, which typically will increase the cost of the home. This HAS to be changed to allow grade 2 installations but to take the hit in the energy model or to provide clearer guidelines on the use of fiberglass; otherwise it will ostracize low-income and affordable builders that want to do Energy Star in many areas.

(20) Note 15. I have a strong criticism of this requirement. I do not understand why it is necessary to penalize attached and below grade housing when both strategies are MORE efficient ways to build. I have noticed that it is currently nearly impossible to get an attached unit to pass the performance method, when it is built to specs that would qualify for the tax credit if it were a 6,000 sf house. Why is this happening? Examples

a. Condos that have only one exterior wall. Of course that one wall will be loaded up with glass. But the other 3, and possibly floor and ceiling are adiabatic. Why do we need to de-rate the amount of glass at all? The overall environmental benefit of being attached, having less surface area, and of being dense construction is so many orders of magnitude more than letting it have 18% glass it's ridiculous.

b. Homes that are bermed. Why penalize these homes when they are inherently more efficient? We have had clients specifically earth-berm homes on the north side. Would this be treated as a below grade wall and penalize their allowed window percentage? If so, the builder is actually being penalized for berming the house.

c. It is also common to build homes with walkout basements in our area. This creates the same effect as berming. We live in such a home ourselves. 2 of its 3 bedrooms are in the lower level, which is all conditioned and live-able square footage just like it would be if it were above grade. Of course our home is going to have the same number of windows as a typical home, and why should it be penalized for a strategy that is inherently more energy efficient? Like it or not, Energy Star becomes a "game" that builders know how to work. Why are we penalizing these very good strategies? We don't understand how this makes building more efficient.

(21) Note 23: this is the first place I see "average size home" referred to. Is this how the size of the benchmark home was determined?

(22) Thermal bypass checklist.

a. I have concern about cutting this from the original 6 items down to 4 items that the builder can verify. We like to make the builder verify some items as a matter of course (for example, piping penetrations – because as soon as the rater leaves they are likely to cut another one, so we can never guarantee everything is air sealed, and this puts the responsibility on the builder). Likewise, we check one or 2 cans or supply ducts are sealed to the drywall, but in a house with 100 cans or cans that are 40 feet off the floor, we're not checking them all and like to be able to have the builder sign off. 1.2 primarily provides a mechanism for foam installers to harass builders who are using fiberglass. I would not always be able to sign off on 1.4 (slab insul.), 4.2, and 5.4. In addition, 2.2, 2.7, and 2.8 can be problematic if the drywaller is the one assigned to provide the interior side air barrier. This forces us into an additional inspection or relying on the builder to get extensive photographs, which are not even technically allowed to replace an actual visual inspection. We suspect that much of the time if raters will sign off on some of these items, they're not doing so responsibly – no rater can be onsite that often. *We would rather see raters sign fewer items but do so responsibly, than to sign more items that they could not possibly really have fully verified.*

b. I am concerned with some of the wording that it may place too much liability on the rater. Wording "proper density" for blown insulation – how is a rater supposed to verify this? We can look at it and see that it's firm, but we don't know how many bags went in, if it's over-filled, or slightly under-filled. Should this really become the rater's potential liability?

(23) Framing checklist:

a. Most "raised heel" trusses do not allow full depth for R-38 insulation. Most are only 6" or so. Most homes would fail this requirement. This is also a significant cost increase to the builder. This is of particular concern for low-income and affordable housing. Payback is often better to take the hit on the truss framing factor and make it up elsewhere.

b. Insulated headers – not sure this is possible with a 2x4 header (unless someone has come out with an R-10 per inch rigid board). You have 3.5 inches to work with, two 1x give you 3", so you have ½" left which will give you R 2.5 with most board insulations. Many framers don't like to do 1 sided headers for structural reasons, and sometimes solid headers are needed over big windows for structural reasons. It makes me very uncomfortable to have raters requiring things that can impact structure – they are not trained to do this.

c. –Note 7: many homes don't have a structural engineering layout but local code would require multiple adjacent members. Do we really want raters effectively mandating this in the field? Framing is difficult and costly to re-do later, and structural integrity is a serious thing.

d. Double walls – must they be offset if we are also filling the cavity? If I have a house with all 2x4 walls and R-13 insulation, and then a double wall with 2 layers of R-13, even if we have the thermal bridging of not offsetting the framing, the double wall is still better. I don't have a problem with offsetting it, but it's an easily forgotten item and if someone forgets, should we fail the whole house for this when the wall will be performing better than a single wall?

e. It is impossible for a rater to know whether foam insulation is sandwiched in the middle of a header if they aren't there when it is being built. Raters can't be onsite for this – needs to be builder verifiable.

f. Raised platform for HVAC air handler – it will force us as raters in most cases to builder-verify that insulation was installed under the platform (unless you want us to perform another inspection as the insulator insulates – that will be fun). I assume you want us to use one of our four allowed builder-verifications on this, correct?

g. Note 5: Two king/jack studs... on each side, or total? Also, who is determining what is structurally needed / required / allowed? The rater? We know that code officials here are often requiring more. We strongly object to the rater being involved in any way where structure is concerned.

h. We have some concerns about the ability of modular and panelized homes to meet all of the framing requirements. Most modular manufacturers we know use solid headers but size for the load, so the header may be smaller, but is solid. It can also be more difficult to do a 2 stud corner for stability reasons during transport. Also marriage walls may violate the adjacent member rule. If these guidelines might be used for modular or panelized, there needs to be a way to make it possible for those builders to comply.

(24) HVAC checklist

a. We are not in favor of requiring manual D. Most people we know who are good engineers/installers don't trust it. It tends to undersize runs far from the air handler and requires a lot of dampering near the air handler. You have to run it and then change the design to actually work. We're not convinced that it's better than a ductilator. For our green programs, we use ASHRAE equal friction, which we like a lot more. Most HVAC contractors don't do Manual D now, and this will add to cost. The local prevailing rate is \$1000 average to do Manual D calculation. Once again, you are severely impacting the ability to do Energy Star-certified low-income or affordable housing.

b. My preference would be to not have this as a requirement (Manual D)

c. If it is required, recommend to specifically name methods from ASHRAE (such as equal friction) and to be specific as to whether a *software method* is required.

d. Be specific as to whether ductilator is or is not allowed. Contractors always try to say that ductilator is Manual D.

e. THANK YOU for changing the language on multi-stage heat pumps. We do not prefer the wording "adequate humidity control" as there can be situations where a dehumidifier is needed regardless of the heat pump size. I would prefer that they be sized with a stage within 6 or 9,000 Btu/hr of the cooling load. This takes some potential liability off the designer if humidity control is not achieved for reasons not related to the heat pump.

f. You're going to need to provide guidance on how the field verification items must be performed.

g. This is going to add significantly to cost.

h. Note 1 reads as though heat pumps over 65,000 btu's are exempt from meeting these requirements... is this correct?

(25) Rater HVAC checklist

a. Please specify that rater is checking HVAC installer's checklist, NOT responsible for checking his work. Again, limit rater's liability for work he didn't perform, and avoid conflicts between raters who are not licensed to do some of the work on the list potentially interfering with the work of licensed installers or engineers. Depending on state law, there could be legal ramifications related to interference with the practice of a licensed profession.

b. 2.1: Ducts without bends greater than 90 degrees. This is a great thing to shoot for, and every mechanical installer tries. But sometimes you aren't given space and you have to do something non-ideal. Truss engineers know nothing about ductwork. You can't require this. When it happens, it's usually not the installer's fault.

c. Excess/looped ductwork is a common method of limiting flow to diffusers close to the air handler without using noisy boot dampers. This does not add to overall pressure drop of the system unless it occurs on the longest run – it instead pushes air to longer runs where it is needed. It is sometimes also helpful to reduce noise transmission between adjacent returns to bedrooms. Good designers sometimes do this, and the checklist shouldn't prohibit it.

d. I hate building cavities used as returns as much as anyone, but sometimes, there just isn't any choice – the framer/designer does not give you space. In this case, you can line or partially line it with sheet metal, and mastic it like crazy and it can be tight.

e. Bedroom pressure balance - even indoor airPLUS allows testing as an alternative.

f. Why have total and outdoor duct leakage requirements? 6% total will probably require caulking boots to floors/ceilings even if located in conditioned space – is this really necessary?

g. Implementation problem: 6% total duct leakage can be difficult to guarantee, and is preferable to test at framing if the unit is set so that problems can be fixed prior to covering with drywall. 4% duct leakage to outdoors can also be difficult to get, and really can only be tested at the final inspection. What this creates for the rater is a situation where really the test needs to be done at the end, but then if the 6% total fails, it may be impossible to find/fix indoor problems. Or it forces us into doing 2 duct blaster tests – one at framing and one at final, which will increase certification costs. Is the indoor requirement really necessary? Could it be higher if it is (8%)?

h. 1.6, 1.7, 1.8, and 1.10: can these measurements even be made to an accuracy of 5%? I would question whether the ability to measure it is that accurate.

i. 2.3 is extremely vague – technically, any flex duct running through a floor truss has some minimal amount of compression. What defines an unacceptable amount? Flex will compress somewhat under its own weight hanging from its hangers.

j. 2.7 – See note 15 from general requirement comments. Why the difference between unconditioned attics (R-8) and unconditioned crawl spaces (R-6)? This is unnecessarily confusing and HVAC installers will forget. It would be much simpler to change it to read "all supply ducts in unconditioned space to be minimum R-8, and all returns to be minimum R-6"

(26) IAQ checklist: This seems mostly to duplicate indoor airPLUS and it belongs in a separate program that people can choose. IAQ and energy are not the same thing. People should be able to build an energy efficient house without requiring all of this. If this remains,

a. State that supply air connected to return of AHU must have a controller or other automatic timed device to comply with Standard 62.2. There are some large providers and trainers who are telling people to do it without a controller, while not counting it as a duct leakage penalty, and this system absolutely does not comply with Standard 62.2. It needs to be clearly spelled out.

b. Are bath and kitchen fan flows "rated" or "measured" flows? Do **not** make it measured flow. We have a local program that gives points for measured flow and many homes do not pass. You can't have someone go through all of the other extensive requirements and expense for this program and then fail them at the end over a 49 cfm bath fan. Even LEED uses rated flow.

c. Fan sound ratings - is there really a need for separate sone restrictions when all fans have to be Energy Star rated?

d. Isn't 5.2 a bit subjective? You can plant anything anywhere and someday it might get really high.

e. 8.2 – does this only apply if supply ventilation comes through the system?

(27) Water managed construction checklist: Again, why even have Indoor airPLUS if all of its requirements are now part of Energy Star? We support 2 separate co-labeled packages.

a. Item 1.8: I am hearing from my builders that this is in conflict with some things they normally do. Apparently there are some drainage products that do not require wrapping or gravel.

b. Think about how superior walls should be handled in terms of capillary breaks. I don't think it would be possible to put poly under it without ripping it up, but you can put a break (like sill seal) on top of it. This checklist gets into a lot of construction details that vary around the country a lot. It's a lot to specifically require each and every time.

c. *There are many more than 3 items that the rater will not normally be able to see*: We found 11 total items that raters are either usually not on site to see, often not on site to see, or should not be signing off on because they are "ongoing" quality control items for which the rater should have no responsibility or liability. Even adding a 4th inspection would not help much, capillary breaks, foundation drainage, and slab insulation happen at slightly different times and are covered up quickly.

i. All capillary breaks – rater is not onsite for an under slab or under wall inspection. Sometimes if there is a break like sill seal used on top of a foundation wall, we can see it stick out. But we can't tell how continuous it is (2 items – keep in mind some homes have slab and crawlspace so this could be 2 items)

ii. Below grade waterproofing: sometimes we see it, often it is backfilled at least partially, and we can't tell how continuous it is or how well it is done – so should be the ones signing our name that it was done?

iii. 1.8 protected drain tile – we are never onsite to see this go in.

iv. Some homes get sided before we inspect them, so the fully sealed drainage plane and window/door flashing we don't always see. And again, since these items are written such that these items are done correctly rather than just done, should we be signing our names and inspecting every one with a fine tooth comb? Seems more appropriate for the builder to us. What if the tyvek gets ripped after I leave? (2 items)

v. Roof flashing – roofing is often on when we come to do our framing inspection, and many roofs you would need to climb up to look. Raters do not typically go on the roof, and I am concerned about safety and equipment (raters do not usually carry ladders high enough to get you on a roof). This item should be builder verified. (3 potential items)

vi. Items 4.5 and 4.6 – it really doesn't seem appropriate for the rater to sign either of these. The rater is not there when drywall goes on and is not notified if it is delayed. If something happens between insulation and drywall, then what? And should the rater be taking any liability for builders' water problems? Are raters supposed to be checking moisture content of materials? How would they even do this? How does the rater even know how long it will be until drywall goes on? *This is an item that as a rater we would just make the builder sign off on every time* – it's his responsibility, and he's the one who's paid to be onsite every day. (2 items)

d. 1.1 and 1.2 – Is the rater really supposed to sign off on this as being done correctly? Should we bring a civil engineer with us to shoot grade? Is the rater supposed to watch them backfill it and tamp it? The builder would have to verify this.

e. 4.3 – does this mean R-4 pipe insulation, or can uninsulated pipes be installed in insulated walls (i.e. spray foam)?

f. 2.1 could be difficult to verify, and many builders do not currently do this. There are a lot of systems out there that may be affected by this comment.

Amy Musser, Ph.D., P.E., HERS rater Matthew Vande, architect, HERS rater Vandemusser Design, PLLC and S-squared Design, PLLC

VEIC on behalf of NYSERDA, LIPA, NYSBA, LIBI

On behalf of the following organizations from the State of New York, we are writing to provide our comments on the "Draft ENERGY STAR Qualified Homes 2011 National Program". The New York State Energy Research and Development Authority (NYSERDA), Long Island Power Authority (LIPA), New York State Builders Association (NYSBA) and Long Island Builders Institute (LIBI) jointly submit these comments, representing the ENERGY STAR Homes programs, home buyers and builders in the State of New York. First of all, we would like to convey our support for the Environmental Protection Agency (EPA) pro-actively taking the initiative to move the threshold up for ENERGY STAR Homes.

Given the success of the label over the past few years and the level of uptake, we agree that the time is right for beginning to ramp up the standard, but, at the same time, caution that prudency is warranted. We also applaud the EPA implementing the size adjustment factor (SFA) into the performance path of verification.

Like the rest of the country, the New York housing market is in freefall and builders and buyers are economically hardpressed. As we make significant changes to the ENERGY STAR Homes standard, we want to be sure that we consider all of the impacts this will have on our markets. Taking a restrained and phased-in approach would seem to be the best way to move forward in order to address this situation.

Phased-In Approach

Like the EPA, all of the New York stakeholders noted herein want to ensure the future success of the ENERGY STAR Program. Towards this end, we have some concerns about the timeframe for implementing the requirements that the EPA has proposed in the 2011 standard. We need to avoid participation attrition by implementing a standard that the current ENERGY STAR builders may not be able to meet. We urge a more measured approach regarding those aspects of the proposed standard that don't yet have much market traction.

Anticipating that the Heating, Ventilating and Cooling industry will come up to speed and adopt Quality Installation and Verification standards for all ENERGY STAR Homes is a reasonable expectation, but one year is too short a time for this to happen statewide. Additionally, the standards should not specify product specific technologies for verifying installed measures.

Structured plumbing makes sense, but until there are some standards to reference and certifications for system designs, it seems premature to require this cutting-edge approach.

It is worthy to expect all insulation to be Grade 1 in ENERGY STAR Homes, but we do not believe we can train all participating insulators by 2011. The same concern applies to the training of all ENERGY STAR builders on Optimal Value Engineering (OVE) framing.

For these and the other more cutting-edge components of the standard we suggest a phased-in approach that moves from voluntary to mandatory as the industry is trained and can demonstrate successful implementation of these measures via increased educational incentives. We suggest that the concept of rewarding for certain measures be considered, rather than starting off requiring them. We recommend only moving to make them mandatory as the market progresses. We believe that allowing this phased-in approach makes sense.

Long Island has a situation not seen in most of the country in that ENERGY STAR is mandated in ten of the thirteen towns. So, as ENERGY STAR changes, so do the local codes. There will be a huge need for education of the design community, building industry, and most importantly government and the public. This provides an important reason for phasing this program in over time.

We suggest introducing the new requirements and checklists that will necessitate the most training to get builders and contractors up to speed be introduced with the 2011 version and be required to be completed as part of the labeling, but that they not be required for ENERGY STAR certification until later in 2011 or even 2012, depending on the training development and roll-out schedule.

Focus on Tried and True Energy Saving Measures

While we support a more stringent standard in terms of saving more energy, we are very concerned about putting more demands on an extremely contracted new homes market. We want to avoid layering on too many requirements that aren't proven energy savers or that potentially cost too much to verify. As an example, we are especially concerned with the water-managed checklist items. While these are all good building science approaches, they will be difficult to justify for energy saving programs and will add to our implementation costs with no energy benefit. We urge a focused approach in this new standard to just those measures that are tried and true energy savers and urge discipline in keeping the standard

focused on energy issues. Perhaps providing these items as an optional package will enable flexibility for programs that need to focus strictly on energy savings.

Training Resources and Timeframe

The impact of training requirements from both a cost and time perspective for Builders and Raters is significant enough to express concern, especially in a soft housing market as we are currently experiencing. We feel it is imperative that the EPA take the lead to support programs, providers, raters, builders and subcontractors with robust training and financial resources. We cannot afford to develop all of the materials, resources and curricula that will be necessary to train the industry. In terms of timeframe, we think it seems reasonable for a two to three year timeframe to be provided in order to train all of our affected trades and builders after these materials have been developed and our trainers have been trained.

Home Energy Rating System (HERS)

Just when we have the building industry thinking about HERS does not seem like the right time to modify the standard to something that is not only more complex to explain, but will also cause some real concerns in terms of Quality Assurance (see more below). While we understand the issues with HERS when comparing across homes and across the country, we think that it can serve as an effective standard within climate zones. While HERS may not technically be the best threshold measure, it would pose a great challenge to us to lose the market recognition and metric that it has become. It would appear that the checklists should be able to make up for any deficiencies with HERS by establishing prescriptive minimums. Additionally, since New York's programs reward for energy performance at tiers higher than ENERGY STAR, we will need to continue to use HERS for those levels. Putting in place different metrics for different tiers would just complicate the marketplace and cause unnecessary confusion. We suggest that you keep HERS as part of the standard instead of coming up with a completely new approach.

Quality Assurance Issues

Our programs in New York State rely on an open market of HERS providers and raters to deliver ratings and services to builders, and then the programs provide quality assurance over those providers and raters. While other states that don't have such a QA system in place may now have to figure out who is going to police completion of the checklists since that is outside of Residential Energy Services Network's (RESNET's) jurisdiction, New York would seem to have this covered. However, a QA concern we do have is how programs are going to be able to oversee and check on whether or not a home actually meets the performance threshold without having to completely

re-run the rating to determine the ENERGY STAR Reference Design Home. Without a fixed HERS score, programs are going to have a very difficult time providing cost-effective quality assurance on ratings performed under them.

NYS Energy Efficiency Portfolio Standard

There is some concern over the potential impact that may result from even a marginal or

temporary loss of participation with current ENERGY STAR® Home Builders, and the difficulty of recruitment of new builders into the program to replace those resources. The Impact on the NYS Energy Efficiency Portfolio Standard (EEPS) initiative of 15% energy reduction by 2015 needs to be minimized via a more gradual "phasing in" of these new measures as noted in the phased-in approach section above.

Consideration of Local Conditions

One size doesn't fit all for many aspects of this national standard. We urge EPA to allow for a process of appeal for local conditions with due cause. If a locality wishes to set the bar higher, that should be permitted. However, for a location like Long Island with stringent hurricane standards, some of the items in the framing checklist won't be allowed by local code (e.g. corners fully insulated and exterior wall intersections). Requiring all homes to apply insulated sheathing, SIPS, ICFs, or double-walls does not seem like a reasonable approach. Making specific allowances for these types of requirements would help our builders. As an overarching concluding comment, we feel that there are enough substantive issues that we urge EPA to put a revised version of this proposed 2011 standard out for another round of comments and review process. We look forward to working with you throughout this second process to arrive at a new standard that will achieve greater energy savings, but that takes into account all of the issues we have raised above.

Thank you for considering our comments.

Veridian Homes, LLC – Zajicek, Gary (on behalf of company president)

While I applaud the US Environmental Protection Agency for wanting to improve their Energy Star program as outlined in the Energy Star Qualified Homes 2011 Guidelines, I feel that it is imperative to provide insight from a builder's perspective on the proposed changes and how it could affect builder participation in the program.

Veridian Homes, located in Dane County, Wisconsin, is committed to building green and energy efficient homes. In fact, the name Veridian is derived from the Latin word for green. Since 2001, Veridian Homes, and formerly Don Simon Homes, have built every home to both Energy Star and Wisconsin Green Built Homes standards and certification. Our commitment to building green is embedded in our mission statement – which guides the company in making its decisions. We believe it is the right thing to do; and we committed to this in 2001 so that we could provide leadership to other builders on how to build green.

To date, Veridian Homes has built over 3,000 Energy Certified homes and we have proudly watched Wisconsin's participation in the program grow from just a few homebuilders at the start of the century to over 500 builders today. In fact, last December, Veridian Homes and one of its new homeowners helped celebrate the 10,000 Energy Star home with a press conference at their home. And Veridian Homes has been recognized with various Energy Star awards from the EPA.

All of this is to say that we are proud to be a partner with Energy Star. However, we are concerned with the upcoming changes to the program. Our concerns are outlined below.

- The Energy Star program is currently affordable for builders to participate in and we believe that most builders understand the value of being part of the program. The proposed program will force a majority of builders out of the Energy Star program due to the costs associated with the proposal. One of your competitive programs, the LEED for Homes program focuses on the top 25 percent of the builders (Gary can you clarify what you want to say here then I'll rewrite it). However, currently only 17 percent of new homes are being built to Energy Star standards. We believe that the new proposal will force more builders to abandon the Energy Star program and instead build LEED certified homes.
- If the purpose of these changes it to generate additional revenue, we suggest that you refocus your attention on
 educating the public on the benefits of an Energy Star home while keeping the cost of participating in the program
 and the cost of the home low. In addition, the current program helps both new homebuilders and remodelers
 implement energy efficient and green practices into their work. Rather than making more stringent changes, you
 should seek to gain more participants into the current program.
- The cost of building a new home or remodeling continues to increase, while the value of homes continues to
 decrease. The cost of the proposed Energy Star change will not bring value to a homeowner. It is highly unlikely
 that an average homeowner will be willing to pay an additional \$5,000 to have an energy star certified home. Nor
 will builders be able to absorb this cost. In addition, the incremental cost in the Energy Star program will not have
 a positive impact on home appraisals nor lending institutions. Thereby the value to the homeowner will be even
 less.

The current Energy Star program provides energy saving results for homeowners and for the environment. We ask that you maintain this course of action. Let other agencies or programs focus on other green aspects to the homebuilding process, such as the National Association of Home Builders Green Building Standards or LEED for Homes.

We regret that if the EPA does decide to modify the current program, Veridian Homes will continue to build homes to the current Energy Star program. However will not be able to absorb the additional cost associated with the new program and will therefore be forced to officially leave the program. We ask that you continue with the current program and instead focus your attention on getting more builders to participate in the program and to increase consumer interest and awareness of Energy Star homes.

Vermont Energy Investment Corporation – Gordon, Chris (on behalf of VEIC)

Thank you for the opportunity to comment on the new 2011 ENERGY STAR specifications. Attached please find Efficiency Vermont's comments on the proposal. The attachment consists of overview comments on the spec as well as specific input embedded into the ""2011 National Program Requirements"" and the ""2011 Proposed Checklists"".

We hope you will find this feedback valuable and appreciate the chance to weigh in. Efficiency Vermont (a program of Vermont Energy Investment Corporation) has also been a participant in developing comments for RESNET, Consortium for Energy Efficiency, and the NE HERS Alliance. Their comments should be forthcoming.

Please let us know if you have questions or would like clarification on any aspects of our submission.

Attachment 1

Vinyl Siding Institute – Dobson, Matt

The Vinyl Siding Institute (VSI) is the trade association for manufacturers of vinyl and other polymeric siding and suppliers to the industry. As a result of our May meetings with Sam Rashkin and Doug Anderson, our organization would like to propose the following amendments to the DRAFT ENERGY STAR Qualified Homes 2011 Inspection Checklists.

Proposal

We recommend adding the following text to Section 2 Exterior Above-Grade Walls: 2.5 Double wall framing⁸ OR; 2.5 Insulated Siding⁹

9. Siding system with integral insulating material must have a minimal thermal resistance of R-2.

Substantiation

Insulated siding has been commercially available for at least twelve years. Current insulated siding profiles, as well as other types of insulated claddings, are now being tested to show actual field R-values. Many of these tests are being conducted using the appropriate testing methodology of the "hot box" test or ASTM C1363 test method. Insulated vinyl siding is a viable option to enhance energy efficiency, including the reduction of thermal bridging. The proposed minimal performance R-value is consistent with the minimal requirements to establish products legitimacy as a home insulation or insulation.

Included with this proposal is an example of testing that has been completed using the ASTM C1363 test method, as well as recent research co-funded by VSI through the New York State Energy Research and Development Authority's (NYSERDA) High Performance Residential Development Challenge program. Both testing and research support performance of insulated siding to help increase the energy efficiency of buildings, including the reduction of thermal bridging.

Please review the testing and research attached to the proposal for additional information.

Testing relative to moisture and water management issues indicated that use of insulated siding has no negative effect on the performance of the wall panels in relationship to moisture absorption. In field studies where insulated vinyl siding had been installed for nearly ten years there were no indications of any moisture entrapment related issues. Furthermore, the industry knows of no claims or complaints relating to moisture issues and performance of insulated siding.

Please don't hesitate to contact me if you have questions or comments.

Attachment 1 Attachment 2

Vox Energy Solutions – McLynden, Shane

My name is Shane McLynden and I am a HERS Rater from PA who is also Green Rater accredited for LEED for homes. The proposed changes add money not only to the cost of building a new Energy Star home (and LEED home for that matter) but the amount of additional time it will take to verify these measures will add significant cost to the ratings themselves. There are also several things such as the French drains that are the responsibility of the Rater to verify. This seems impractical to me.

WaterFurnace International, Inc. – Niesse, Tom

Suggested change to:

Draft energy Star Qualified Homes 2011 National Program Requirements, Exhibit 2: Mixed or Cold Climates

- Suggested addition: add an EER rating in addition to the SEER rating as in the Hot Climates section "

Winchester Homes Inc. and Camberley Homes - Melvin, Randy

Winchester Homes Inc. and Camberley Homes appreciate the opportunity to comment on the proposed DRAFT <u>National</u> <u>Program Requirements for Energy Star 2011 for Homes</u>. We are a production builder who has built over 18,000 homes in the metropolitan Washington DC area the past 30 years and who incorporates a high degree of custom design modification into our homes. All of our Camberley Homes, built to date, have been Energy Star qualified to the existing (2006) version of Energy Star.

Abstract of Comments:

A growing critical mass of builders, raters and consumers are becoming familiar with the existing (2006) voluntary Energy Star program and gaining in their proficiency to effectively execute the program. The current (2006) version of Energy Star, although requiring a substantial learning curve and being some what burden some to execute, we have found it not to be overly broad in scope nor overly complex. Maintaining a focused limited scope, simplicity and cost effectiveness will be the key to the programs on-going success. As Energy Star 2006 for homes is clearly, " not broken", and is a good balance of simplicity and technical merit, no fundamental changes to the existing (2006) program are suggested for the 2011 version. We recommend Energy Star 2011 should effectively replicate the 2006 program with the exception of the following incremental changes:

- Maintain Energy Star's 15% stretch above the predominant prevailing energy code at time of implementation.
- Other than the thermal by-pass checklist (with minor revisions), a few fundamental items form the HVAC design requirements, and adding some simple provision for adding make-up air, the newly proposed 2011 required checklist for; framing, indoor air quality, HVAC, water management, and the home size adjustment factor should be removed. These items are too interrelated to the holistic design of the home, beyond the direct scope of the program, and are already the responsibility of the building codes, design professional, builder, consumer and market place to balance and address. In addition, many of these checklist items are impractical, too onerous, too costly, and too cumbersome to verify and thus will effectively destroy the practicality and applicability of the entire Energy Star program.
- Aggressively restate Energy Star's position to local jurisdictions and states that Energy Star 2011 for Homes is not designed nor intended to be a mandatory program. The programs good-will and success is based on being a voluntary, market driven, above code program that works cooperatively with the building community and consumers.
- Provide additional guidance and training for approved third party rating agencies in an effort to help maintain consistency between raters and to continue to build the reliability/credibility of the program.

Proposed 2011 Draft Threatens Energy Stars Favorable Attributes, Appeal and Applicability

Favorable attributes and much of the appeal of the current (2006) version of Energy Star include; a limited focused scope, voluntary cooperative above code participation, cost effective return on improvements made, (In energy Star 2011, as the energy efficiency bar is raised and builder choices on how they achieve them become much more restrictive, energy saved per dollar spent will rapidly reach the point of diminishing returns) flexible choices with minimal mandatory items, not overly complex, (Good balance of simplicity and generally technical correct benefit after the initial learning curve) it is reasonably credible, has good and growing brand recognition and it is incentivized by some utilities. While we understand increasing energy efficiency threshold requirements for an Energy Star home to approximately 30% above the 2004 International Energy Conservation Code (IECC), as it is essential to ensuring Energy Star remains 15% above the predominate energy code at time of release, and an above code program, we are concerned that the other aspects of expansion of the proposed 2011 draft version of Energy Star will seriously erode, if not entirely destroy the programs, favorable attributes/appeal, and will precipitously erode the 17% \pm market share Energy Star for Homes has worked to achieve. We offer the following comments in hopes of maintaining the viability of the Energy Star program.

Limit Scope and Maintain Simplicity. Substantially Eliminate the New; Framing, Water Management, HVAC, Indoor Air Quality Checklists and House Size Adjustment Factor:

Historically the scope of the Energy Star program for Homes was on the reduction of general environmental pollutants associated with the corresponding reduction in home energy consumption. The proposed 2011 draft of Energy Star for homes greatly expands the scope of the existing program by venturing into personal residents indoor air quality, comfort, water management, home size, framing and structure and even targets specific means to save energy that

favor some architectural designs, materials, equipment and methods over others. While it is believed the scope of energy star 2011 has in part been expanded, because energy savings cannot be looked at in a vacuum independent of the other variables in the home, ultimately the overall balancing of design is the expertise, responsibility of, and already being well addressed by the building codes, design professionals, (e.g. engineers, architects, building scientists) material suppliers, builders, consumers and market place. In addition, an above code ANSI green building standard and other programs are already in place to address these expanded issues. While some advisories and education related to areas in home building, beyond the direct scope of energy, may be appropriate, neither direct or indirect requirements for framing, water management, house size or indoor air quality are appropriate.

Maintain Voluntary Cooperative Above Code Participation:

Because various jurisdictions have chose to mandated Energy Star, unfortunately the Energy Star program can no longer just be viewed as a cooperative voluntary program. We appreciate Energy Stars cooperative voluntary market driven approach and their efforts to discourage others from mandating the program.

Allow Maximum Flexibility and Create a Level Playing Field for all Methods and Materials to Save Energy

Energy star 2011 should provide the greatest degree of flexibility and freedom in how the 30% improvement in energy savings are ultimately achieved. While education and suggestions on how energy savings might be achieved are appropriate, Energy Star 2011 should not be any more directive or have any more substantial checklists than Energy Star 2006 in specifying how the required energy reductions are achieved or verified. By not being any more directive on how the final net energy savings are achieved. Energy Star 2011 will provide the builder and consumer the most cost effective and flexible means of achieving the energy efficiency improvements desired, while not providing preferential treatment of one material or method over another. For example the new mandatory Qualified Framing Checklist is not essential to achieving energy saving and greatly interacts and interferes with structural, architectural design and numerous other critical variables impacting the dwelling. If it were allowed under Energy Star 2011, a builder could much more readily and cost effectively, without impacting the structure, reduce or offset the impacts of thermal bridging by reducing fenestration area or otherwise by installing higher R-value insulation in the walls. Requirements for two stud "California corners" form the checklist are not allowed under the 2006 International Residential Code (IRC) and 2009 IRC when the very practical, popular, and cost effective continuous sheathing method is chosen as a means of providing shear transfer. Three stud corners with specific nailing and nail schedules are required. Please see section R 602.10.5 from the 2006 International Residential Code (IRC) and section R602.10.4.4 from the 2009 IRC. Many other engineered structural designs require posts in corners and heavy, solid (not insulated) continuous headers to create portal frames necessary to maintain important design features and to provide adequate compression, bending and shear transfer. In addition in panelized wall construction, two studs will always be located adjacent to one another at butt joints between adjoining panels. Forcing exterior insulation, over structural sheathing, without a drain plane between is extremely problematic, and adding a drain plane defeats the purpose of adding the insulation. Designers and builders should not and cannot be forced into having energy trump all other equally or more important aspects of design. In short, the Quality Framing Checklist requirements of energy star 2011 are extremely problematic, on a number of levels, and should be removed in their entirety.

Eliminate House Size Adjustment Factor

If six (6) people live in a 3600 sq./ft 4 bedroom home and one person lives in a three bedroom 2000 sq./ft. home, both of equivalent energy efficiency per cubic foot of space, on a per person basis the 3600 sq./ft. six bedroom home is more energy than the 2000 sq./ft 3 bedroom home, yet in Energy Star 2011 the size adjustment factor inappropriately proposes additional energy conservation requirements on the larger home and not the smaller one. In addition two weeks after settlement the in-laws may move into one of these homes changing the equation. Size adjustments are well beyond the scope of Energy Star and will likely preclude many large home builders who otherwise may have participated in the program.

Eliminate and Revise Checklists

Thermal Bypass Inspection Checklist. Retain this list with the exception of item 1.2, which should read, Grade I or II insulation installation. It is not practical to anticipate grade I insulation installations with batt insulation. To retain the allowable use of cost effective batt installation, Grade II insulation installations should be added. Clarify on note 8. that gaskets are an acceptable means of sealing recessed light fixtures to drywall.

Quality Framing Checklist. Eliminate in its entirety. Structure and balancing the overall needs of design, including framing and structure, are beyond the scope of Energy Star and address by codes and respective material providers. The framing checklist forces equally or more important design variables to be trumped by energy such that complexity of the redesign and verification process will be entirely unmanageable and cost prohibitive. The framing checklist creates an unlevel

playing field for various method and materials to save energy. This checklist is completely impractical when all the section is o is entirely impractical intricacies of framing and corresponding energy (See Allow Maximum Flexibility and Create a Level Playing Field for all Methods and Material for Saving Energy section above for specific examples.)

Indoor Air Quality Checklist. Eliminate all but item 1.1., "Ventilation rate meets requirement of ASHRE Std. 62.2 2007, Section 4.4" or otherwise appropriate volume of make up air /ventilation. Make up air can be important in exceptionally tight energy efficient homes and thus has been recommend for retention. All other items are beyond the core scope of Energy Star. Building codes and above code, green building standards and programs are already in place to address these expanded issues.

Water Managed Construction Checklist. Eliminate in its entirety. It is beyond the core scope of Energy Star. Building codes and above code, green building standards and programs are already in place to address these expanded issues.

HVAC Quality Installation Contractor Checklist. Eliminate all but sections 1 and 2.

HVAC Quality Installation Rater Checklist. Eliminate in its entirety.

Winter Sun Construction, LLC – Pader, James

Please find my response to the Energy Star 2011 proposed requirements. General comments are below followed by VandeMusser Design's comments with my additions in blue*. Please take these comments into full and due consideration while crafting a new standard.

Thank you James Pader Winter Sun Construction, LLC 828-342-0873

- Why not have the HERS indexed to climate zones? having it indexed to states would also create a disparity. in NC, there are three major climate zone divisions. this map is subdivided between the normal regions. http://www.usna.usda.gov/Hardzone/hzm-se1.html
- Being that cost is currently STILL the major barrier to widespread adoption of these policies, it would be highly counterproductive to further raise the cost. While I support the idea that standards need to be updated so the ES label carries a distinction (like the current flap among window manufacturers), I STRONGLY OPPOSE regulations that would increase cost of certification by more than 10 to 15%.
- 3. I also OPPOSE broadening of the standard to other foci. When I first started this, I was surprised to learn how narrowly focused Energy Star was. But then it made sense, ES is concerned with ENERGY. Healthy Built Homes, LEED and others are more than able to handle other certification requirements. Energy Star should retain its narrow focus on energy efficiency trumping all other concerns.
- 4. Vandemusser Design makes a good point about Asheville being ahead of the curve. While I recognize the need to update standards (above), <u>why not maintain two standards: ES 1 and ES 2</u>? I'm guessing that the increased failure rate would be touted as separating the wheat from the chaff. If the new standard results in fewer certifications, then what good does a regressive policy do?! Two standards does not mean a double standard but would instead allow the whole nation to first achieve ES before having to meet some new batch of requirements.

* These are Pader's responses to VandeMusser comments. To see VandeMusser Design full comments, look under "VandeMusser."

VandeMusser: (2) There will need to be more guidance on what is "conditioned space". Is it anything inside the insulation? Is it finished space? Does there need to be supply air? What about a basement that is insulated and air sealed at the walls, not finished, and does not have supply air? How should raters handle situations that include "future" finished space? For example, bonus room is insulated and air sealed, but not yet finished, no mechanicals, with plans for the homeowner to finish it later when they have money. We are seeing more of this due to the economy.

Winter Sun: Will closed crawlspaces be considered in this square footage calculation?

VandeMusser: (5) Water efficiency: requirement for demand pumping, manifold or core layout. Does this add significantly to cost? While we agree it's a good idea to do these things, production homebuilders will be faced with the choice of (a) add \$\$ to put in demand pumping or manifold, (b) scrap their current designs, (c) not do Energy Star. Are we sure we want to just throw this out? Also, how is "core layout" defined? Raters will need an objective criterion (I suggest length to fixture) to determine this. If the length to fixture method is used, and it is long enough to allow most small homes to quality, I withdraw my objection.

Winter Sun: What does water usage have to do with energy efficiency? I understand that water resources are energy intensive but isn't this shifting the focus away from the HOUSE'S performance onto a local utility. Isn't there a new watersense by ES label anyhow? Why is water usage included in ES?

VandeMusser: 6) Lighting and appliances: We support the change to allow Energy Star qualified bulbs in lieu of light fixtures. The pin-based CFLs are difficult to find in some areas, and builders and the public in our area generally dislike them. We also expect that replacement LED lamps will not be produced to replace the pin-based CFL lamps, possibly making some fixtures obsolete.

Winter Sun: Pin-based lights? I'm still trying to convince people that it's worth the extra three bucks for CFLs!!!

VandeMusser: (7) Lighting and appliances: Energy Star ceiling fan requirement: This is an awkward requirement that we have had trouble with on our BOP houses. Ceiling fans without light fixtures are easy to find as Energy Star. Selection is much lower if they have lights because the lighting fixture part may not be pin-based CFL, and thus not rated. Sometimes you can find a combo unit where the fan part is rated separately from the lighting part. It seems sort of capricious and random to push people toward only installing fans without lights.

a. Question: We are assuming that a house can still be energy star if the builder doesn't supply all of the appliances (i.e., refrigerator, washing machine). However, what happens if the homeowner buys a non-energy star model or moves in their old one from their previous house and it is there when the final rating inspection takes place? I cannot imagine how angry a builder would be if they met all of the guidelines, paid for the rating, and then failed over a refrigerator that the homeowner purchased after buying the home.

Winter Sun: I feel that if ES is going to mandate something in there program, they should include due diligence in the background research. People don't pick ceiling fans based on an energy rating. These choices are based on aesthetics and emotion and few people are turned on by energy. This goes back to an old state vs. fed gripe: unfunded mandates. More and more people are asking me if it's ok to supply their own appliances, fixtures, etc. people are looking to save a buck. There are many issues with this and I address some of them contractually, like warranty and liability. Now this....

VandeMusser: (8) Showerheads – this is a deal breaker for many people. There are not that many designer showerheads out there that go this low. Do we really want to throw them completely out over it? Although this is more relevant to an energy program than moisture and IAQ items (due to the energy use of hot water, and the energy required to deliver municipal water), this still seems to be somewhat of a topic drift. We would rather see a water co-labeling program like Indoor airPlus.

Winter Sun: What about the water sense label? I'll be honest: when we moved to our old house about six years ago, I took one shower, then went to the habitat store and bought a showerhead (for two or three bucks). It is NOT low flow. This would be a deal breaker for me, definitely.

VandeMusser: (11) Heating equipment: I see a number of potential problems here: a. Requirement to model with 92 AFUE furnace or 8.5 HSPF, 14.5 SEER heat pump. Modeling with gas vs. electric gives dramatically different HERS indices (usually gas is better). Raters could play games by modeling the reference home with one and the actual home with another. Is there going to be guidance/requirement on this? b. We sometimes see homes where people install radiant floor heating with a boiler for primary heating, but install a heat pump instead of AC for cooling. This is very common because a heat pump is only a couple hundred more dollars over AC, and it gives people an optional backup heating in case the boiler needs repair. It seems patently unfair to make these people upgrade to a high efficiency heat pump when they ould buy a code-minimum AC. c. Also, it doesn't seem very fair to allow 13 SEER AC in mixed/cold climates, but then require 14.5 SEER for heat pumps. Cooling energy is a fairly small contribution to energy use in these climate zones anyway, and SEER and HSPF do not go up in lockstep with one another. We have seen 14 SEER/HSPF 9.0 that would be vastly superior to 14.5 SEER/8.5 heat pumps. Why not just have an HSPF requirement? d. Energy Star needs to start thinking about/addressing new products in the HVAC industry. In particular, guidance that dismisses entire types of products should be avoided, as it ignores the fact that innovation can occur. Specifically, note 9 recommends against air source heat pumps in cold climates. However, there are some innovative systems, such as the Hallowell heat pump (www.gotohallowell.com) that seem appropriate for these climates.

Winter Sun: Wouldn't separating ratings by climate zone help with these tech issues? Manufacturers could rate their product by zone to help people (ME) pick products that were appropriate.

VandeMusser: (13) Water heaters – why list odd sizes like 52 gal in the table? 50 gallons is much more typical. Also, why is a 40-gallon electric tank not listed at all? Also, we have noticed that a 0.93 40 gallon water heater can cost \$300 more than a 0.92 40 gallon water heater. For a 50 gallon water heater, big jump according to our builders is between .91EF and .92EF. Combine this with negligible annual energy savings – the last house we looked at saved something like \$2 a year to go from .91EF to .92EF – it ended up being a 100-year payback. This is probably the #1 reason most of our builders currently don't use the BOP. It kicks many people out of the current BOP and into modeling. Again, since modeling looks like it's going to become less appealing and more costly to do, we'd like to see some of these single item, low payback things get easier in the prescriptive path. We don't understand why small tank water heaters need to be more efficient to begin with – anyone who has ever had a 40 gallon tank knows they use less hot water because it runs out, so why are we cutting a break to people with gigantic houses who put in 100 gallon tanks?

Winter Sun: "So why are we cutting a break to people with gigantic houses who put in 100 gallon tanks?" have you seen any of the NAHB green homes? Every year's showcase house recently has seemed to be "green" and "6000 sq ft". are these two mutually exclusive? One pictured on the cover of Builder Mag had a rooftop PV array that was shaded by part of the structure. On the cover shot. Killing system production. VandeMusser: j. 2.7 – See note 15 from general requirement comments. Why the difference between unconditioned attics (R-8) and unconditioned crawl spaces (R-6)? This is unnecessarily confusing and HVAC installers will forget. It would be much simpler to change it to read "all supply ducts in unconditioned space to be minimum R-8, and all returns to be minimum R-6"

Winter Sun: I had a problem like this in a recent spec house. Boots were sealed to the subfloor but the gap in between subfloor and finish was not sealed. When we did the first duct blaster, the readings were totally off. When matt got out the smoke machine though, the problem was immediately apparent. But this leakage was inside the envelope. I know for next time but I feel my test results were unfavorably skewed by this.

Winter Sun: I have a question about drainage planes being fully sealed? What about all those siding nails?! No tyvek tape over those. How can any drainage plane be "fully sealed" unless its peel and stick?

Wisconsin Energy Conservation Corporation – Dedolph, Carter (on behalf of WECC)

Please except this submission on behalf of Wisconsin Energy Conservation Corporation. **14 page attachment.**

Attachment 1

Witham, Rick

Dear EPA Staff,

First thank you for the work that you do. With leadership from you and Energy Star, HUD and PATH, LEED, and so on , legitimately noble changes are being made at the bedrock of the energy savings and healthy living efforts.

1. With regard to the proposed changes to Energy Star, You are at risk of throwing out the baby with the bathwater...

Please, STOP and take note.

- Energy Star, per se, has moved building practices, manufacturer specs, and consumer awareness. Bravo!
- Energy Star is one of the de facto standards. By upgrading the "standard" because some agencies/others have adopted or improved on it either risks or eliminates the benefits of the class of early Energy Star adopters.
 - 1. When they sell their Energy Star home do they claim it to be Energy Star? Of course, <u>that's what they</u> <u>cheerfully created</u>!
 - 2. When the buyer, now in the era of the "new " Energy Star, begins and then continues to discover it was the old standard she/he bought, who will the buyer sue?
 - 3. Will either of them voice favorable comments on the "Energy Star" brand? No, they were both misled/deceived. <u>Will both anticipate it happening again</u> to them as they cannot be sure of the basis of the standard.
 - 4. "Let the buyer beware" may be offered as the counter, no, then you will have lost the benefit of your years of work to instill bottom line piece-of-mind.
- <u>What you want is the integrity</u> of UL Approval". Right? Instead, what you will have (with the wholesale redefining of "Energy Star") is the first point of undermining confidence in the brand JUST AS CLEARLY as when the gold standard was dropped as the backing for the U.S. dollar. The dollar's value became based on good-faith. <u>Truly you want "Energy Star" to be solid, something to count on, something the consumer can count on!</u>
- So, <u>keep "Energy Star" pure as the bottom line in housing and related products</u>...just like UL. And, yes, subtle improvements are allowed → as knowledge improves incorporate it into the true gold standard of housing, Energy Star.
- 2. With regard to <u>the new standard which has measurable economic value</u> (installed cost financed vs. monthly savings with today's (probably) low energy costs basis).

Again, BRAVO! What a lot of work to synthesize all of the "competing" standards and offer <u>a prescription</u> for an energy wise home. We need that too!

Heck, if they and you play the cards right, they would get an Energy Star certificate <u>and the award for the new</u> <u>prescription</u>. (EPA Nova, EPA Wise Move, ...program).

The essence is you want to ensure that the highest percentage of new housing stock has the greatest applicable standard.

Legislating it is a tax. Incentivizing it will cost too. The challenge then is to find a market force which will compel its use.]

Those market forces are the mortgage banks and credit unions.

So, What can you call the new standard? NO, NOT ENERGY STAR 80% of builders will never deal with the EPA's standards again. Sure, make them do it!? NO, get them to want to do it.

C. With regard to HERS:

- "A HERS national Score understates the true energy savings". GREAT, finally, again, <u>something</u> I and <u>the consumer can count on</u>!
 Getting more than what I expected. Improve it, yes, but DON'T TAKE THE CHANCE THAT YOU WILL OVERSTATE THE BENEFITS.
 "Understatement sells", Dale Carnegie.
- The fixed reference target is fine. When HERS/RESNET/BPI etc. can upgrade their capability to better model a home let them. If they can't or won't the market will replace them.

Finally, you are in the government...

If a home is rated, have the rating (in a manner as simple to understand as the 'yellow appliance' label) be part of the public domain as part of the deed, property survey, sales disclosure forms, etc. something that puts the advantage of Energy Star and the new, Wise Move program:

- 1. in the hands of a motivated buyer, "Oh this house isn't energy rated?", and/or
- 2. in the hands of the enlightened owner, "This home is energy rated and it costs 45% less to live here than any other home in the neighborhood".

Now, market forces will take over and Wise Move will be institutionalized and praised too...

Good luck with your work.

Please let me know if I can help as you prepare us for the future.

Sincerely,

Rick Witham Builder. Engineer. Homeowner, Taxpayer

Wisznia & Associates – Katz, Myron

Exhibit 2

Thermostat & Ductwork

EnergyStar qualified Thermostat:

- This can cause problems in my climate (New Orleans), short-cycling of conventional AC created by thermostats which don't have at least 2 or 3 degrees F of swing can drastically lower dehumidification and decrease the life of the Equipment.
- Duct leakage can be besides the point in unconditioned attics in New Orleans. When metal ducts that don't leak are wrapped with non-air-tight insulation (which is the most common situation), the insulation will fill with water in the summer. This can cause major building durability problems. Ductless mini-split systems don't have ducts so they'll pass all such tests, but they also come with their own thermostats... Can we use them in an EnergyStar home, if their SEER > 14.5?

Thermal Bypass Checklist

- #3 & #5. Although proper density of blown-in insulation is required test of #3 it is not a required test for #5. Why?
- All blown-in insulation should be covered with 1-2 mil visqueen for blown-in insulation on the floor of an attic.
- You have no proscription against attic-fans. You should have it. No attic fans should ever be installed in an EnergyStar home!
- Recessed lighting cans should not be sealed in a home with a cathedralized attic. If you do this you will lower the efficiency of the CFL lamp.

Quality Framing Checklist

Attic framing:

Do you have any problems with rafters instead of trusses?

Exterior Above-Grade Walls

2.2 Continuous Insulated Sheathing...

Continuous insulated Sheathing is a great idea. I employ it, but it creates problems I don't think you've considered:

- 1. If you decide to put all of your insulation exterior to the framing, you'll get the best system R-Value. But this requires 2" of PolyIsoCyanurate to get R-14 continuous.
- 2. 2" of foam on the outside of the framing makes installing a window a challenge since most new windows are only 2.125" deeper than their flanges. Leaving only 1/8" between framing!
- 3. Because this insulation off-gasses noxious stuff, two layers of airflow barriers should be employed just exterior to the studs and interior to the foam.
- 4. In the water-managed checklist you effectively recommend a pressure-equalized rain-plane for the weatherboards. This is terrific for shedding water, but lengthens the screws needed to reach the studs by another 1/2 in. It also makes it more challenging to get the hardiboards under the edges of the windows and above the flanges.
- 5. TO get the best results, you'll have to specify another set of flanges, deeper inset windows and higher sitting edges to make your EnergyStar windows applicable to your EnergyStar homes!

However, R-14 continuous insulated sheathing makes the best job for R-Values and allows the stud cavity to be used for all kinds of plumbing, wiring etc without jeopardizing the insulation or other weather barriers. If a home uses only continuous insulated sheathing, it should have no framing restrictions.

HVAC quality Installation Contractor Checklist

Equipment

- How do you accept a Ductless Mini Split system?
- 2.1.2, Indoor Setpoint should include a relative humidity value/range near 50%.

Your specifications have no accommodations for partial-load conditions which dominate the cooling season. At such times, the equipment can be 200% oversized. I think you should require any of:

- A. Independent dehumidification.
- B. Two speed equipment or two AC's cooling one home. OR
- C. BEST: Variable-Refrigerant-Volume systems -- often found in Ductless MiniSplit systems (usually associated with the phrase "inverter Technology". They are also making their way into the US conventional AC product lines.
- D. However, my favorite is in my home: Distributed Fan-Coils which dehumidify at all times during the cooling system. HYDRONIC with fan-coils.

Indoor Air Quality Checklist

1.2 Hot-humid ventilation brings in Water Vapor that is a pollutant. See comment just above about AC dehumidification challenges.

1.4 Whole-house mechanical ventilation exceeds infiltration rate MEANS when it operates, the Rater can measure a 1 PA positive pressure.

2.6 Clothes dryers should not be allowed to vent up at all. I have had to solve a problem at a home with a clothes dryer that vented up 12 feet to a roof. It was completely clogged with lint.. in less than 3 years!

- 2.7 Crank-timer controlled exhaust fans for bathrooms and laundry room.
- 2.8 No Jenair-type, down-drafting kitchen exhaust allowed.

6.2 Attached garages should be incompatible with EnergyStar homes. They are far too dangerous for indoor air quality. Attached carports should be all that is needed.

7.2 Distinguish between a CO detector and a CO alarm.. They are not the same. Homeowners need both if they have ANY combustion appliances. The more so, the tighter the home is.

8.x I conjecture that AC systems with SHR < .3 don't really need filters. I have such a system in my home. But they do need large-diameter condensate lines.

- 9. Vapor Barriers in homes in ZONE 1, 2 and perhaps 3.
 - 1. There should be no vinyl wallpaper on the inside surfaces of exterior walls.
 - 2. If there are Vapor barriers, they should be outside of insulation.
 - 3. Crawl spaces should be enclosed: ground graded to avoid ponding water, covered with 6 mil visqueen, a moisture meter detector/sensor in 3 places in the crawl space's volume. If you're not going to monitor it, you may need to add a dehumidifier and a circulating fan or AC supply vent to the crawl space.
 - 4. Perforated radiant barriers if installed touching bottom of roof deck.

10. Home's AC should be able to reach 50% RH at all temperatures between 70 and 80 degrees F and all partial-load conditions, including: no cooling load .i.e. when it is raining and it is 75 deg F.

- 11. NO CARPETS!
- 12. Whole-house vacuum cleaner that exhausts directly to outside.

Water-Managed Construction Checklist

1.9 Concrete or Stone walkways within 5 feet of home should be avoided or underlain with R15 insulation.

2.2 I call this a pressure-equalized rain-plane. See comment regarding Continuous Insulation Sheathing. We need this for New Orleans climate, but I find it challenging with modern new windows.

2.3 Window flashing details from Dow-Tyvek have been upgraded past what you're recommending now.

3.5 Gutters need leaf guards or other products like GUTTER TOPPER to allow them to operate near trees. This is to be presumed in my climate.

4.3 Insulated Piping? I assuming you only mean supply piping? Since the code allows PEX, I don't think it needs to be insulated.

4.7 Wallboard, Gypsum, Sheet Rock should be mold-resistant for use in bathrooms or kitchens; the boards should not extend to lower than 1" above the top of the floor. USE: Either with no paper facing or backing or with borate-treated paper.

4.8 Hardwood floors may not be installed until the home has been closed and the HVAC operated long enough until the moisture content of the subfloor is between 5-15% and a value that is within 1% of what it will be in steady-state on average for conditioned homes in that locale.

Wisznia & Associates - Katz, Myron

How can I find copies of the extra checklists referred to but not included in the PDF file?

Although I have a general idea about the suggestion of making two runs of RESNET approved software. I am still unclear on the details. Please provide an example.

We in Louisiana have experience with raters having to set arbitrary values in a reference home values in order to reach a given HERS score and have found that it is not hard to GAME the system. I think the process should ONLY be automated. But the definition of how that is done deserves public comment. The PDF file you sent does not spell things out well enough for that discussion.

I applaud the mention of MOISTURE as a place for a CHECKLIST LONG OVERDUE. However, this is probably a baby step. There are three problems with this:

- a. Raters are not required to understand EVAPO-TRANSPIRATION as an energy flow. So they will have some fundamental science work to do to understand the issue.
- b. Even after you've done this work, you are only slightly competent to advise people on moisture-related building degradation issues. Otherwise why did the WUFI program get built?
- c. I don't think EPA begins to understand the problems associated with cooling a home below the outside dewpoint... as is common where I live! The same can probably be said about BPI's Home Performance with Energy Star program.

We can even get houses to appraise high enough now to sell them or to build new homes. This is going to add more costs for us to build. How can we sell them?

I'm not comfortable with the direction the EPA is going on 'large' house penalties. Weaving carbon footprint politics into the ENERGY STAR brand is a bad idea and will have a negative impact.

I believe ENERGY STAR construction guidelines should focus on incorporating the best building science practices, period. Regardless of the size of the structure, good building science is good building science. 'Adjusting' for carbon footprints has nothing to do with

These comments are in regard to the proposed ENERGY STAR 2011 guidelines and the mandatory changes that have been outlined. While we feel it is necessary to make concessions on most of the proposed items, there are a few about which we would like to comment.

1. Water Efficiency. Hot water distribution system shall use demand pumping, manifold, or core layout..

While the idea in and of itself is not at all bad in theory, a mandatory requirement of this nature would negatively impact us in two ways. First, we would need to redesign our 60+ house styles to incorporate a core layout which is not a practical option. Secondly, it isn't cost effective to pass along the additional expenses that would be incurred if using a manifold system. While we could install a manifold system in most of our house styles with minimal design change, we would have additional costs.

2. Quality Framing Checklist. Raised-heel truss installed in the attic.

The requirement of a raised-heel truss on every truss would not be cost effective for us. Not only would this change increase the price of our roof system, it would, in many cases, require us to re-design some of our plans with regard to the elevation. In some cases, raising the heels would cause the ridge to exceed the maximum building height as prescribed in our zoning ordinances. This would also require additional finish materials such as brick or vinyl siding which would increase our costs of material and labor.

3. Quality Framing Checklist. Continuous insulated sheathing, OR, Structural Insulated Panels, OR, Insulated Concrete Forms.

The mandated use of this product will, as mentioned on other items, would not be cost effective. While this would not affect the design of our plans, it would impact the cost which would in turn be passed on to the homeowner.

4. Water-Managed Construction Checklist.Guttering and downspouts empty to lateral piping that deposits water on sloping finish grade > 5 ft. from foundation or to underground catchment system > 10 ft. from foundation.. While it is always good to divert water away from foundations, we are not in agreement with this particular item. We use gutters and downspouts that deposit water onto a splash block which directs the water away from the house. Requiring it to be at least 5. from the house would not only affect the cost (materials and labor) but it could possibly cause problems in the future with drainage. In cases where houses are 6. apart, emptying water 5. from the house is almost impossible with exception to the front or rear which could very likely lead to headaches and call-backs in the future.

Thank you for your time in this matter. We appreciate the opportunity to voice our opinions on the draft of the proposed 2011 ENERGY STAR requirements. As an ENERGY STAR partner, we constructed 487 ENERGY STAR compliant homes in 2008 and were awarded an .ENERGY STAR for Homes Leadership in Housing Award. We are poised to achieve that mark again in 2009. While we would like to remain an ENERGY STAR partner/builder, these additional costs and requirements may drive us, and perhaps other builders, out of the program given the tough economic times in which we are trying to build.

I appreciate the intent of the proposed revisions and the effort expended in researching and developing the proposal. I also agree with the intent of the effort to revise the program: it is necessary for the ENERGY STAR label to signify a higher level of energy performance in the marketplace than codes and common practice now routinely achieve. The means by which these proposals attempt to "raise the bar," however, are more likely to reduce the level of participation by builders in the ENERGY STAR program than move the market for residential energy efficiency forward.

For the sake of brevity I will not address the numerous technical difficulties of implementing the certification process under this proposal, however onerous I find them. The additional areas of home construction the proposal addresses would require a substantial investment in the energy rater's toolkit on many levels, as well as those of the builders. My major concern at this point is that implementing these revisions would drive the cost of both building and certifying a home as ENERGY STAR too high for most prospective homeowners and builders to bear.

As a self-employed energy rater working in a rural area with the ENERGY STAR program for the past five years, I have found builders to be very reluctant to invest even the modest amount of money necessary for a certification even when the homes they build likely already qualify. The comments I have heard from builders is that there is no market demand for ENERGY STAR certification; that is, prospective homeowners are neither demanding nor inquiring about the benefits of ENERGY STAR certification. Participating builders in this area feel they are setting themselves up for a future when this type of certification will matter to home buyers- they are confident their efforts today will lead to a more profitable business tomorrow. (That is, when homebuyers are demanding high-performance homes.) All this occurs in the backdrop of a \$2000 energy efficient homebuilder's tax credit, which renders the costs for certification free.

While there is no doubt that a high quality, high-performance home would result from a home built to the specifications of the 2011 proposal, the effort to push the market to this level of performance is a case of "too much, too early." The emphasis on air quality, HVAC and framing would definitely involve additional costs to builders they feel are unacceptable, particularly in the current home-building market. Advising a homeowner that his multiple showerhead bathroom is not allowed won't lend to the cancellation of the shower head order, it will lead to the home being removed from ENERGY STAR certification. I believe my fee for certification would double or more. An increase of \$5,000 in the base price of a new home is significant. Spec home builders may be able to implement some of these changes, but custom homebuilders, who comprise 100% of my business base, will not.

My hope is that mandatory grade 1 insulation, quality framing checklist, HVAC quality check lists, indoor air quality checklist, water managed construction checklist and the individually designed reference home will all be removed from final revisions. With these proposals there are far too many ways that a home enrolled in the ENERGY STAR for homes program will fail to certify. Once a builder commits the extra financial resources to certify home under the proposed plan and misses the standard by one item, resulting in an uncertifiable home, he will be unlikely to enroll another home.

I am in favor of utilizing the rating software to improve the energy efficiency rating process. The HERS index is becoming well known and is the cornerstone of the builders challenge program. This is not the time to alter the rating system to a point where it is undecipherable. There must be a means of adjusting the index for climate and house size that would provide a suitable measurement of the actual energy efficiency of the building. Likewise, there should be a means to include measurements of water heating and delivery components that are more accurate than the software currently uses. Upgrading the detail of the software is a far less costly option that can be revised to keep up with energy related building technology improvements.

If the proposed changes are adopted in their current form, I am quite sure that my business of certifying new homes for ENERGY STAR will end.

Thank you for considering my comments.

I am writing in regards to the proposed changes to the Energy Star New Homes program. As an engineer, a HERS rater, and a LEED AP, I truly believe that the proposed changes will benefit the future home owner significantly not just in energy efficiency but also in the added benefits of high quality construction. Most of my concerns align with those submitted by RESNET, in addition though I do think that there will be training requirements for both builders and raters throughout 2010 to ramp up for 2011, and pending the finalized changes that could be difficult. However, that is bridge that can be crossed when we get there.

However, my biggest concern was what I think is a missing component of change, additional ethics. I believe that there are some loop holes in the program that allow some builders to get around actually rating homes. For example, I think that there is a conflict of interest when you have insulation companies or building companies that employee their own providers and raters (when everyone is owned by the same parent company). Essentially, that is not a third party that is going out and inspecting the homes. I think that a lack of policing the program is letting homes that might not meet Energy Star requirements slip through the cracks and get an Energy Star label. If such things are occurring by companies choosing to behave unethically it could potentially be causing significant damage to the integrity of the program and in the end takes advantage of the home buyers. I think that in the proposed changes for 2011, there needs to be some sort of additional quality assurance added to the program where a true third party is actually checking a certain percentage of homes that are selected totally at random. Ideally the team that would be doing quality assurance in a true third party circumstance would be a team of EPA employees who have no connections to the contractors, raters, or providers. Whether or not that is realistic, I am not sure, but I am sure that there needs to more policing of this program.

Thank you for this opportunity to provide my comments on this program, and as stated previously, I am excited about the direction that the EPA is moving the Energy Star New Homes program.

I'd like to submit a few inquiries regarding the proposed 2011 ESTAR for homes guidelines, starting w/ issues on the requirements document, and then going to the checklists. Overall impression, The new program tends to take a lot of the performance options out of the performance path.

My choice would be that the comments be published as a general inquiry, name not published.

National Program Requirements Prescriptive and Performance Paths

In assessing whether to use the prescriptive path or the performance path, and the eligibility of a home to be built for either path, the conditioned floor area of a home to be built is required to be determined. I've found recently that there is some discrepancy in determining conditioned floor area of a rated home. Some HERS personnel and documents suggest that unfinished spaces w/ an air barrier and insulation is part of the conditioned floor area to be counted, vs. finished spaces w/ an air barrier and insulation. Can you provide your input on this question, and would you suggest a published standard for determining CFA, such as ANSI Z765 - 2003 or other? The initial question should be discussed, and then the term "finished" may need to be defined. This has consequences for duct leakage thresholds also.

National Program Requirements Exhibit 1

Lighting and appliances;

Appliances;

The refrig, dishwasher and clothes washer requirement to be all ESTAR certified is to too tough and problematic. Many people bring their refrig and clothewasher w/ them when moving, especially if they're only a year or 2 old. It's not resource efficient to dump either 1 or 2 of them in the name of ESTAR certification

Lighting;

A better, more widespread and financially committed program of recycling of CFL and ESTAR bulbs is required before houses s/b mandated to install 80% CFL's or ALP..I'd rather penalize the HERS index, at least at the outset of the new program.

National Program Requirements Exhibit 2

Envelope windows and doors / infiltration;

I'd like to see some discussion on mandatory ACH50 requirements, based on the volumes of houses. 5ACH50 in a lg volume house (35000 cubic ft) is pretty easy to get, while 5ACH50 in a small but complex house (bungalow) can be tough to get. Maybe there s/b a cap of 4ACH50 on a larger house w/ lots of volume, and a little more generous allowance on smaller houses

Water Heaters

Thresholds / Minimums are too low, too easy.

Thermal Bypass Inspection Checklist

1 Overall Air barrier and Thermal Alignment

The initial note implies that the attic floor and /or the basement ceiling insulation has to be bound and in contact w/ both the interior and exterior air barrier. It's impractical to expect the attic floor insulation to be in contact w/ the external air barrier. Should it be clarified that this note primarily applies to walls, not attic floors?

1 Overall Air barrier and Thermal Alignment

Climate zones 4 and higher

1.4 Slab edge insulation: Is this a typo? Shouldn't slab edge insulation note be 1.5, as "Attic eaves baffle" is 1.4? Then Best Practices Encouraged - Air barrier at band joists would be 1.6

1.4 Slab edge insulation: Should a footnote be added that this requirement is also focused on conditioned basements where part of the slab floor is at grade (walkout) ?

3 Floors between conditioned and exterior spaces;

3.1 I request that enough batt insulation be installed to the full depth of the garage ceiling cavity (when adjacent to warm space above) in order to guarantee that the insulation will never fall away from maintaining permanent contact w/ the sub floor it is insulating. If a little gets compressed, so be it. The "staves" or "picks" generally used to hold up the insulation batts are not reliable. I suggest this wherever floor insulation is going to be permanently covered like a garage ceiling.

3.2 I request that enough batt insulation be installed to the full depth of the cantilever cavity over ambient (when adjacent to warm space above) in order to guarantee that the insulation will never fall away from maintaining permanent contact w/ the sub floor it is insulating. If a little gets compressed, so be it. The "staves" or "picks" generally used to hold up the insulation batts are not reliable. I suggest this wherever floor insulation is going to be permanently covered like a cantilever hanging over outside.

5 Attic / Ceiling Interface

5.1 This is too much to expect sheet to do well at all intersections. Can a pressure zone test across the ceiling / attic floor, showing 50 pascals difference, suffice?

Quality Framing Checklist

1 Attic framing

1.1 Since raised heel trusses are required, shouldn't conventional framed roofs also be required to be built on top of an additional rim / band joist, Not just roof rafters sitting on the top plate of the upper most wall? This will insure full insulation levels at the perimeter of conventional framed roofs.

2 Exterior Above Grade Walls;

2.1.5 Who is to define "unnecessary"?

HVAC Quality Installation Contractor Checklist

Equipment Specification, Design, and Documentation

Does the HVAC contractor checklist only apply to homes w/ AC installed? It appears to speak to only heat gain / AC equipment issues.

HVAC Quality Installation Rater Checklist;

Inspection Guidelines;

1. Review of HVAC Quality Installation Contractor Checklist

This inspection checklist for the rater, regarding items 1.1 - 1.14 seems redundant. It restates what the contractor signed off on.

2. Duct Quality Installation;

The duct quality installation portion of the HVAC rater checklist is very good and worthwhile.

Footnote # 4; If ductesting is waived due to all ducts in envelope, and envelope tests lower than 3 ACH50, Please reiterate what is the proper input in the duct leakage entry in the HERS software.

I have a comment regarding the upcoming 2011 guidelines.

It appears that the 2009 IECC has prohibited ""tradedowns"" in the building shell in lieu of HI EFF HVAC equipment, as per bullet # 5 on the attached slide.

I'd suggest some discussion is worthwhile on this approach, regarding ESTAR certification, as I see that HI EFF furnaces are used to pass some poor to ordinary total UA building shells. What do you think?

Is it advisable to require better building UA values for ESTAR compliance, regardless of the efficiency of the heating system?

Attachment 1

My opinion is that the Energy Star system is a great benefit to a buyer with the third party testing and inspection process at a realistic cost. It allows companies and consumers the ability to participate in energy efficiency without the substantial (and sometimes uncontrollable) cost of the LEAD Certified system.

The framing checklist will significantly increase the costs of the program and provide very little additional benefit to the consumer. These are building code issues.

The HVAC Quality Installation Rater Checklist and the Indoor Air Quality Checklists seem to make sense to me and are already a part of FL Bldg Code.

Please reconsider the use of Energy Star dictating the water management procedures in the checklist.

The main parts of our water management system are installed either before or after an Energy Star Rater will be on site and will hold us up in construction and therefore increase the cost to our buyer.

If the EPA wishes to impact construction procedures I would hope that the organization would see the benefit of adding input to the next building code update and not trying to bypass the importance of the code review and interpretation process.

These are items already inspected by an inspector and at some point we have to rely on our local building officials to selfgovern. They already charge a very high amount in permit fees, there is no reason we should pay a third party inspector to do their job.

I have severe doubts that the qualifying criteria in the reference design home will be able to provide an accurate savings of 15% on every home. Changing a qualifying criteria is dangerous when there is so much evidence to support otherwise.

Thanks for your time and I hope we can come together to benefit the consumers in the best possible way in this economy.

My fear is that the cost analysis is not accurate and that exceeding the new guidelines will be more than the estimated range of \$4 to \$5K and that the utility savings will not make up for the incremental monthly cost. I am worried about how these Energy Star 2011 homes will appraise and be compared with other homes of similar square footage.

As difficult as it is for homebuilders to remain in business in 2009 adding costs may continue to stifle sales and put additional companies out of business – furthering the recession. I do not disagree with the intent of the program, I worry about the costs and the timeframe to implement.

I am in favor of making homes energy efficient or I wouldn't be in this business. We are struggling here in PA to get a couple of builder on board with this program as part of what looks like a very slow recovery of the building market. Most of the contractors in my immediate area are not willing to look at anything that increases cost regardless. A few are seeing the advantages of building a better more efficient home and the niche market it may create for them. These new additional requirements only further complicate my trying to sell this to them, not only are there more items to be concerned with but the obvious additional cost. If these are adopted I can kiss this part of my business good by.

I just had one of my builder call me not 2 hours ago responding to a punch list of corrections he needs to address before closing up the walls and he want to drop out of the program. They are watching ever dime they are spending right now. I am slowly shifting most of my business over to working with existing homes. That is not what I intended to do when I started this over 3 years ago but the economy and now more regulations is driving me there.

As you say much of this is all based out of good sound building science but it may be a few year premature especially given the economic time we are in. I also feel that many of these issues are not directly related to energy and should perhaps be address and enforce by the building code and enforcement officers. For example how are we as raters expected to correct and or monitor water run off around the house. This is something that environmental and soils engineers deal with here in PA when you submit a plot plan to you local municipality. We can't control lot slopes, house locations and elevations. I believe water management and land use is addressed in LEED Green homes. Is that where this are going?

Stick to your knitting, EPA!

Get out of the energy business, EPA, and do more on the environment.

Let the Department of Energy handle energy.

You, EPA, are muddying the waters and fueling growing confusion with your Energy Star program.

DOE, you need to take the Energy Star Program from the EPA. When you do, just use the HERS Index without multiplying by additional factors.