



2012 Update - National Green Building Standard™

Proposed changes to 2008 NGBS

February 2011

Table of Contents

TG-1: ADMINISTRATION, COMPLIANCE, AND OPERATION & OWNER EDUCATION.....	2
CHAPTER 1 – SCOPE AND ADMINISTRATION	2
CHAPTER 2 – DEFINITIONS	2
CHAPTER 3 – COMPLIANCE METHOD	2
CHAPTER 10 – OPERATION, MAINTENANCE, AND BUILDING OWNER EDUCATION.....	3
TG-2: SITE AND LOT DEVELOPMENT.....	6
CHAPTER 2 – DEFINITIONS	6
CHAPTER 3 – COMPLIANCE METHODS	7
CHAPTER 4 – SITE DESIGN AND DEVELOPMENT	8
CHAPTER 5 – LOT DESIGN, PREPARATION, AND DEVELOPMENT	20
TG-3: RESOURCE EFFICIENCY AND INDOOR ENVIRONMENTAL QUALITY.....	33
CHAPTER 2 – DEFINITIONS	33
CHAPTER 6 – RESOURCE EFFICIENCY	34
CHAPTER 9 – INDOOR ENVIRONMENTAL QUALITY	74
TG-4: WATER EFFICIENCY	90
CHAPTER 3 – COMPLIANCE METHOD	90
CHAPTER 8 – WATER EFFICIENCY	90
TG-5: ENERGY EFFICIENCY	99
CHAPTER 2 – DEFINITIONS	99
CHAPTER 3 – COMPLIANCE METHOD	99
CHAPTER 7 – ENERGY EFFICIENCY	99
CHAPTER 11 – REFERENCED DOCUMENTS	117
TG-6: MULTIFAMILY	118
CHAPTER 2 – DEFINITIONS	118
CHAPTER 3 – COMPLIANCE METHOD	118
TG-7: RENOVATIONS AND ADDITIONS	119
CHAPTER 2 – DEFINITIONS	119
CHAPTER 3 – COMPLIANCE METHOD	119
ENTIRE DOCUMENT	120
CHAPTER 7 – ENERGY EFFICIENCY	127
CHAPTER 8 – WATER EFFICIENCY	129
CHAPTER 9 – INDOOR AIR QUALITY	129
CHAPTER 10 – OPERATION, MAINTENANCE, AND BUILDING OWNER EDUCATION.....	130

TG-5: Energy Efficiency

Chapter 2 – Definitions

ID	Name Company Entity Represented	Section Number And Requested Action	Proposed Change	Reason	Task Group Action	Reason for TG action
399	Robert Hill NAHB Research Center NAHB Research Center	202 Definitions Revise as follows	Mass Walls. Walls constructed of concrete block, concrete, insulated concrete form (ICF), masonry cavity, brick, earth (adobe, compressed earth block, rammed earth), and/or solid timber/logs, with a minimum of 50 percent of the required R-value on the exterior <u>side</u> of the wall's <u>centerline</u> .	Some of the examples cited in the original definition technically do not meet the definition. This change allows those examples to meet the definition.		
259	Thomas Stroud HPBA HPBA	202 Definitions Add new as follows	Hydronic heater — an indoor or outdoor appliance intended to supply hot water or steam for space heating, process heating, or power. (CSA B415) Note: <i>Hydronic heaters can have a pressurized or atmospherically vented vessel containing a liquid heat transfer medium.</i>	It is essential for biomass hydronic heaters to allowed in this standard and this definition specifically will allow pressurized or atmospherically vented appliances.		

Chapter 3 – Compliance Method

ID	Name Company Entity Represented	Section Number And Requested Action	Proposed Change	Reason	Task Group Action	Reason for TG action
223	Craig Conner, Gary Klein Building Quality / Affiliated International Management selves	303.1 Green buildings Revise as follows	Adjust the bronze, silver, gold, emerald points such that when combined with the changes in Chapter 7 the levels are roughly 10%, 20%, 30% and 40% respectively above the 2012 IECC. The silver level should be about 50% more energy efficient than the 2006 IECC.	This is part of adapting ICC 700 to be an improvement relative to the newest version of the most commonly used model energy code (IECC). ICC 700 includes end uses outside the IECC, for example efficient appliances, which should be taken as a contribution to energy efficiency. HVAC and water heater efficiency should be included in the savings. Contributions from renewables and energy recaptured from waste should be included in the savings. If would be useful if one level, presumably silver, was about 50% more energy efficient than the 2006 IECC, as that level represents a target for a variety of uses.		
412	Robert Hill NAHB Research Center NAHB Research Center	303.1 Green buildings Revise as follows	(3) In addition to Section 701, either Section 702 (Performance Path) or Section 703 (Prescriptive Path) shall be used to establish the threshold Performance Level under Category 3 (Energy Efficiency).	It is not clear between this section and section 701.1.1 and 701.1.2 if the threshold level in Table 303 for Chapter 7 must be met only using points from 702 or 703 and not counting any points from 704. If the intent is to require the achievement level threshold points to come only from 702 or 703 then that should be part of 701.1.1 or 701.1.2. The current wording also ignores the alternate bronze path.		
67	Steve Hale Build Green NM Build Green NM	303.1 Green buildings Add new as follows	In addition to Section 701 either Section 702 (Performance Path) or Section 703 (Prescriptive Path) shall be used to establish the threshold performance level under Category 3 (Energy Efficiency). <u>Section 704 Points shall go to Category 7 (Additional Points). Section 704 Points shall not raise the level in section 7 established by either 702 (Performance Path) or 703 (Prescriptive Path)</u>	The Energy Section of the NGBS should be set by the actual energy efficiency of the project. Additional testing and the other items in section 704 while beneficial to quality control do not in themselves raise the energy efficiency of the project. I believe this was the original intent of the 2009 NGBS		

Chapter 7 – Energy Efficiency

ID	Name Company Entity Represented	Section Number And Requested Action	Proposed Change	Reason	Task Group Action	Reason for TG action
209	Brian Ng US EPA EPA	701.1 Mandatory Requirements Revise as follows	For NAHB's consideration: ENERGY STAR Qualified New Homes should be the minimum threshold for any home	As stated above, given the importance of energy efficiency in labeling homes 'green', it would be a major shortcoming for any green label that did not ensure homes met this minimum level already used on nearly		

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			complying with the NAHB Green Building Standard (e.g., same as in USGBC's LEED for Homes and EarthCraft) . Given the importance of energy efficiency in labeling homes 'green', it would be a major shortcoming for any green label that did not ensure homes met this minimum level already used on nearly 25% of new homes constructed in the U.S.	25% of new homes constructed in the U.S.		
304	Eric Lacey RECA RECA	701.1 Mandatory Requirements Revise as follows	701.1 Mandatory requirements. The building shall comply with either Section 702 (Performance Path) or Section 703 (Prescriptive Path). Items listed as "mandatory" in Section 701.4 apply to both the Performance and Prescriptive Paths. <u>The building shall also be required to comply with the 2012 IECC.</u>	The IECC is the national model energy code for residential construction, and is developed by one of NAHB's partners in the NGBS process. Any green home, at a minimum, should also be required to meet the most recent version of the IECC. The NGBS Committee should ensure that the NGBS requirements do not conflict with IECC requirements in jurisdictions that adopt both the latest IECC and the NGBS. The 2012 IECC is expected to be published sometime in the middle of 2011, and it will be the relevant model energy code for residential construction when the NGBS update is published.		
305	Eric Lacey RECA RECA	701.1.1 Minimum Performance Path Requirements Revise as follows	701.1.1 Minimum Performance Path requirements. A building complying with Section 702 shall be required to meet all of the following: (a) <u>the building shall comply with all of the requirements of the 2012 IECC;</u> (b) <u>the building thermal envelope shall be required to meet or exceed the requirements of section 402 of the IECC;</u> (c) <u>the building shall exceed the baseline minimum performance required by the ICC 2012 IECC by 15 percent, and (d) the building shall include a minimum of two practices from Section 704.</u>	This proposal requires that when the performance path is selected, the building must comply with the 2012 IECC in general as well as specifically meet or exceed the thermal envelope criteria of the 2012 IECC. This approach will ensure that a green home has at least a reasonable level of energy performance from the thermal envelope. Since thermal envelope measures like insulation typically have a long useful life and directly affect comfort and other building performance issues, it is important that green homes have a reasonable minimum level of thermal envelope performance. This approach also echoes the requirements of Energy Star Homes Version 3.0. Homes built to the performance path of Energy Star 3.0 are required to meet or exceed the prescriptive thermal envelope requirements of the 2009 IECC, which was the most recent version of the IECC published at the time. The 2012 IECC is expected to be published sometime in the middle of 2011, and it will be the relevant model energy code for residential construction when the NGBS update is published.		
329	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	701.1.1 Minimum Performance Path Requirements Revise as follows	701.1.1 Minimum Performance Path requirements. A building complying with Section 702 shall exceed the baseline minimum performance required by the ICC IECC <u>by 15-at least 10</u> percent, and shall include a minimum of two practices from Section 704.	In order to maintain credibility as the residential "green" standard and consistency with the commercial green code (IgCC) this standard should aim to be more efficient than the most recent edition of the National Model Energy Code (2012 IECC). This proposal assumes the reference to the IECC in this standard is updated to the 2012 IECC. In that light, a 10% improvement over the IECC is consistent with the revisions recently approved for the Green code for buildings outside the scope of this standard (the International Green Construction Code). In the event the reference to the IECC is updated to the 2009 IECC in this standard, then this section should require a 25% improvement over the 2009 IECC.		
498	Robert Hill NAHB Research Center NAHB Research Center	701.1.1 Minimum Performance Path Requirements Revise as follows	A building complying with Section 702 shall <u>exceed</u> the baseline minimum performance required by the ICC IECC by 15 percent, and shall include a minimum of two practices from Section 704.	This practice seems inconsistent with 303.1(3). Was it intended that to achieve Emerald that the home had to exceed the IECC by 60% or is 15% acceptable as long as 120 points are achieved in Chapter 7?		
306	Eric Lacey RECA RECA	701.1.2 Minimum Prescriptive Path Requirements Revise as follows	701.1.2 Minimum Prescriptive Path requirements. A building complying with Section 703 shall <u>also be required to exceed the prescriptive requirements of the 2012 IECC, including sections 402, 403 and 404 of the IECC, and shall obtain a minimum of 30 points from Section 703, and shall include a minimum of two practices from Section 704.</u>	This proposal clarifies that when the prescriptive path for the NGBS is selected, the building must meet or exceed the requirements of the prescriptive path of the 2012 IECC as well. This approach will provide consistency with compliance under NGBS and the IECC. This approach will ensure that a green home has at least a reasonable level of energy performance from the thermal envelope. Since thermal envelope measures like insulation typically have a long useful life and directly affect comfort and other building performance issues, it is important that green homes have a reasonable minimum level of thermal envelope performance. It also echoes similar requirements contained in Energy Star Homes Version 3.0. For example, homes built to the prescriptive path of Energy Star 3.0 are required to meet or exceed the prescriptive insulation requirements of the 2009 IECC, which was the most recent version of the IECC published at the time. The 2012 IECC is expected to be published sometime in the middle of 2011. As a result, the 2012 IECC will be the relevant model energy code for residential construction when the NGBS update is published.		

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330	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	701.1.2 Minimum Prescriptive Path Requirements Revise as follows	701.1.2 Minimum Prescriptive Path requirements. A building complying with Section 703 shall obtain a minimum of 20 30 points from Section 703, and shall include a minimum of two practices from Section 704, and comply with the ICC IECC.	In order to maintain credibility as the residential "green" standard and consistency with the commercial green code (IgCC) this standard should aim to be more efficient than the most recent edition of the National Model Energy Code (2012 IECC). This proposal assumes the reference to the IECC in this standard is updated to the 2012 IECC. In that light, a minimum of 20 points from Section 703 appears to be consistent with the performance path revisions recently approved for the Green code for buildings outside the scope of this standard (the International Green Construction Code), and appears to be consistent with other proposed revisions to the minimum performance path requirements. Also, this prescriptive path should require compliance to the IECC as a baseline for energy performance. In the event the reference to the IECC is updated to the 2009 IECC in this standard, then this section should require 40 points over the 2009 IECC.										
232	Craig Conner, Gary Klein Building Quality / Affiliated International Management selves	701.1.3 Alternative Bronze Level Compliance Revise as follows	The new Energy Star requirements need to be compared with the new 2012 IECC and what will become the new ICC 700 to see if the assumption that Energy Star exceeds code by 10%(?) is still correct such that Energy Star can be deemed to be at least bronze.	This optional section was conceived as a convenience for those who had done the work to get an Energy Star approval, and were only targeting the lowest level of ICC 700 for energy. Energy Star and the IECC have both been upgraded significantly. It is not clear how Energy Star will compare to the new levels in the ICC 700.										
331	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	701.1.3 Alternative Bronze Level Compliance Delete without substitution	701.1.3 Alternative bronze level compliance. As an alternative, any building that qualifies as an ENERGY STAR Qualified Home or equivalent achieves the bronze level for Chapter 7.	Revisions to the ENERGY STAR for Homes 3.0 are still being finalized. Until finalized and analyzed for energy saving equivalency it is not appropriate to include this option. Once the ENERGY STAR for Homes equivalency is determined, this section could be re-introduced into this standard with appropriate requirements for equivalent performance.										
499	Robert Hill NAHB Research Center NAHB Research Center	701.1.3 Alternative Bronze Level Compliance Revise as follows	As an alternative, any building that qualifies as an ENERGY STAR Qualified Home or equivalent achieves the Bronze Level for Chapter 7.	Does ES require ES light fixtures/bulbs? If so, should points for these also be awarded in 704?										
81	Rich Backus Timber Ridge Craftsmen, Inc. Self	701.2 Emerald Level Points Add new as follows	Incorporate Passive House energy standard, as outlined in my email.	Please review my email on this topic. See Attachments file for supporting documents.										
134	Li Ling Young Vermont Energy Investment Corp self	701.4 Mandatory Practices Revise as follows	In the way that ENERGY STAR labeling can be used to show compliance for Mandatory measures in chapter 7 if the building is pursuing the Alternative Bronze-level Compliance, have ENERGY STAR labeling be an alternate compliance path for the mandatory measures for all buildings, even if they are pursuing a level higher than Bronze.	Performance testing involved in showing ENERGY STAR compliance is a better indicator of successful air sealing than the mandatory measures. Energy modeling (in the performance path) and prescriptive insulation requirements (in the prescriptive path) in ENERGY STAR version 3 ensure whole-building performance at the level of IECC 2009. Verification for ENERGY STAR labeling is duplicative of the mandatory measures in chapter 7. Allowing ENERGY STAR labeling to substitute for the mandatory measures in chapter 7 will not result in a lower performing building.										
184	Dan Buuck NAHB NAHB	701.4.1.1 Heating And Cooling Load Calculations Add new as follows	<table border="1"> <tr> <td>701.4.1.1 Space heating and cooling system/equipment is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent.</td> <td>Mandatory</td> </tr> <tr> <td>Addition and Renovation Note: Section 701.4.1.1 is mandatory for both additions and renovations where new HVAC equipment is installed.</td> <td>Mandatory</td> </tr> <tr> <td></td> <td>0 Additional Points</td> </tr> <tr> <td>Addition and Renovation Note: The additional points for Section 701.4.1.1 apply to additions or renovations that include one or both of the following: (1) a change to heating and cooling loads</td> <td>2 Additional Points</td> </tr> </table>	701.4.1.1 Space heating and cooling system/equipment is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent.	Mandatory	Addition and Renovation Note: Section 701.4.1.1 is mandatory for both additions and renovations where new HVAC equipment is installed.	Mandatory		0 Additional Points	Addition and Renovation Note: The additional points for Section 701.4.1.1 apply to additions or renovations that include one or both of the following: (1) a change to heating and cooling loads	2 Additional Points	Editorial change to item (1).		
701.4.1.1 Space heating and cooling system/equipment is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent.	Mandatory													
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239	Thomas Stroud HPBA HPBA	701.4.1.2 Radiant or Hydronic Load Calculations Add new as follows	701.4.1.2 Where installed as a primary heat source in the building, radiant or hydronic space heating system is designed using industry-approved guidelines (e.g. ACCA Manual J, GAMA H-22, EPA Hydronic Heater Voluntary Program, or an accredited design professional's and manufacturer's recommendations).	It is essential to have a certification program for biomass hydronic heaters to allow for clean-burning alternative systems.										

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500	Robert Hill NAHB Research Center NAHB Research Center	701.4.2.1 Ducts are Sealed Revise as follows	Ducts are sealed with tape complying with UL 181, mastic, gaskets, or an approved system as required by the ICC IRC, Section M1601.3.1, or ICC IMC, Section 603.9 to reduce leakage.	The code only requires UL 181 on duct board. Is the intent to require either UL 181 or mastic on all types of duct work?		
913	JOHN STAPLETON NANO GREEN INSULATING PAINT SELF	701.4.3 Insulation and Air Sealing	Change "R" factor reference to WmK. "R" not changed since 1960's WmK would accomodate new NANO TECHNOLOGY PAINT INSULATION.	THREE COATS OF PAINT EQUALS R -30 BUT IS NOT ALLOWED UNDER THE IRS CODE FOR A TAX CREDIT. SAVINGS OF 20% TO 40% ARE RECORDED BY HOMEOWNERS		
332	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	701.4.3.1 Insulation and Air Sealing - General Revise as follows	701.4.3.1 General. Insulation and air sealing is in accordance with the following: Insulation. Insulation is installed in accordance with the manufacturer's instructions <u>and</u> or local code, as applicable. Air sealing. Shafts (duct shaft, piping shaft/penetrations, flue shaft). The building thermal envelope shall be sealed to comply with ICC IECC, Section 402.4. Openings to unconditioned space are fully sealed with solid blocking or flashing and any remaining gaps are sealed with caulk or foam. Fire-rated sealing materials collars and caulking are installed where required.	In order to maintain credibility as the residential "green" standard and consistency with the commercial green code (IgCC) this standard should, minimally, be at least as efficient as than the most recent edition of the National Model Energy Code (2012 IECC). In this "general" section for mandatory requirements for this standard, much more than shafts should be sealed. The 2012 IECC addresses air sealing requirements of the building envelope. This proposal would ensure this vital energy savings practice would be mandatory in both the performance path and prescriptive path. If desired the air sealing requirements in the IECC could be added to this section.		
333	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	701.4.3.2 Floors, Foundations, Crawlspace Revise as follows	701.4.3.2 Floors, foundations, and crawlspaces Floors. (including insulated floors above garages and cantilevered floors) Insulation is installed to maintain permanent contact with the underside of the subfloor decking, enveloping any attached ductwork <u>and plumbing</u> within the thermal envelope without compression or air gaps in the insulation. This practice does not apply to ducts or other mechanical equipment that is adjacent to the underside of the subfloor. Batt and loose-fill insulation is held in place by permanent attachments or systems in accordance with the manufacturer's instructions <u>and shall not be compressed or create air gaps.</u> Crawlspace. Where insulated, crawlspace wall insulation is permanently attached to the walls. Exposed earth in unvented crawlspaces is covered with continuous vapor retarder with overlapping joints that are taped <u>or otherwise sealed masticed.</u>	Proposed revisions in (1) are to include requirements to enclose plumbing in floor insulation requirements, and editorially revising the language for improved understanding. The proposed revisions in (2) adds the requirement for overlapping joints in the vapor retarder and allowing sealing of the joints by methods other than tape.		
334	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	701.4.3.3 Walls Revise as follows	701.4.3.3 Walls (1) Windows and doors. Windows and doors are sealed to comply with Section 701.4.3.1(2). Caulking, gasketing, adhesive flashing tape, foam sealant, or weatherstripping is installed forming a complete air barrier. Renovation Note: Existing windows and doors are <u>sealed to comply with Section 701.4.3.1(2), weather stripped and sealed.</u> (2) Band joist and rim joists. Band and rim joists <u>shall comply with above grade exterior wall insulation and air sealing requirements in ICC IECC</u> are insulated and air sealed. Renovation Note: Existing uninsulated rim and/or band joists are insulated <u>to comply with above grade exterior wall requirements in ICC IECC.</u> (3) Between foundation and sill plate bottom plate. (a) Sill sealer or other material that will expand and contract is installed between foundation and sill plate. (b) Caulk, <u>foam sealant</u> , or the equivalent is installed to seal the bottom plate of exterior walls. Renovation Note: Existing perimeter sill plates <u>and bottom plates</u> are sealed. (4) Skylights and knee walls. Skylight shafts and knee walls are insulated <u>to comply with above grade exterior wall requirements in ICC IECC.</u> the same level as the exterior walls. Renovation Note: Existing skylight shafts and knee walls are insulated <u>to comply with above grade exterior wall requirements in ICC IECC.</u>	In order to maintain credibility as the residential "green" standard and consistency with the commercial green code (IgCC) this standard should, minimally, aim to be at least as efficient as the most recent edition of the National Model Energy Code – the 2012 IECC. The proposed revisions in (1) refer back to the General requirements of sealing the building thermal envelope per the requirements of the IECC, as otherwise proposed by XPSA. The requirements for band joints and rim joists in (2) are proposed to be revised to reduce ambiguity by explicitly requiring insulation and sealing to comply with the IECC. The proposed revisions in (3) include foam sealant as an alternative for sealing the bottom plate and adds bottom plates to the renovation note. The proposed revisions in (4) clarify these walls are required to be insulated to the same requirements of other exterior walls. To reduce ambiguity, the IECC is proposed to be explicitly referenced in (5). <i>(NAHB RC Note: the proposed change is also provided to TG-7 to review the remodeling language)</i>		

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			(5) Exterior architectural features. ICC IECC Code -required building envelope insulation and air sealing are not disrupted at exterior architectural features such as stairs and decks.																																																																								
502	Robert Hill NAHB Research Center NAHB Research Center	701.4.3.3 Walls Add new as follows	(4) Skylight and knee walls are insulated to the same level as the exterior walls. <u>Knee wall insulation has air barrier on all 6 sides.</u>	Knee wall insulation with out something to prevent air movement on the back side loses significant R-value.																																																																							
344	Steve Vollstedt HERS-NM, LLC Self	701.4.3.3 Walls Delete and substitute as follows	Skylight shaft walls. Skylight shaft walls are to be air sealed and insulated to at least the minimum R-values specified for walls in Table 402.1.1 in IECC 2006. Knee walls. Knee walls are to be air sealed and insulated to at least the same R-value as the conditioned to ambient exterior wall with the least R-value.	Because skylight shaft walls are a small area relative to other wall areas, the shafts are generally between conditioned spaces and at least partially insulated attic areas, and it is difficult to insulate skylight shaft walls the same as exterior walls, I believe a little more leniency should be allowed. With respect to specifying the insulation level of knee walls, because there may be numerous exterior wall configurations, I believe saying the least insulated value provides more clarity.																																																																							
307	Eric Lacey RECA RECA	701.4.4.1 Fenestration Specifications Revise as follows	<p>701.4.4.1 NFRC-certified U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in shall not exceed the values listed in accordance with ENERGY STAR, or equivalent, or Table 701.4.4.1. Decorative fenestration elements with a <u>combined total</u> maximum area of 15 square feet (1.39 m²) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</p> <p style="text-align: center;">Table 701.4.4.1</p> <p style="text-align: center;">Fenestration Specifications</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Climate Zones</th> <th colspan="2">U-Factor</th> <th colspan="2">SHGC</th> </tr> <tr> <th colspan="4">Windows and Exterior Doors (maximum certified ratings)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.50</td> <td></td> <td>0.25</td> <td></td> </tr> <tr> <td>1 and 2</td> <td>0.65</td> <td>0.40</td> <td>0.40</td> <td>0.25</td> </tr> <tr> <td>3</td> <td>0.40</td> <td>0.35</td> <td>0.40</td> <td>0.25</td> </tr> <tr> <td>4 to 8</td> <td>0.35</td> <td>0.32</td> <td>Any</td> <td>0.40</td> </tr> <tr> <td>5 to 8</td> <td>0.30</td> <td></td> <td>Any</td> <td></td> </tr> <tr> <td colspan="5" style="text-align: center;">Skylights and TDDs</td> </tr> <tr> <td colspan="5" style="text-align: center;">(maximum certified ratings)</td> </tr> <tr> <td>1 to 3</td> <td>0.75</td> <td>0.70</td> <td>0.40</td> <td>0.30</td> </tr> <tr> <td>2</td> <td>0.65</td> <td></td> <td>0.30</td> <td></td> </tr> <tr> <td>3 4 to 8</td> <td>0.60</td> <td>0.55</td> <td>Any</td> <td>0.30</td> </tr> <tr> <td>4</td> <td>0.55</td> <td></td> <td>0.40</td> <td></td> </tr> <tr> <td>5 to 8</td> <td>0.55</td> <td></td> <td>Any</td> <td></td> </tr> </tbody> </table> <p>Addition and Renovation Note: Section 701.4.4.1 is mandatory for both additions and renovations where new windows are installed.</p>	Climate Zones	U-Factor		SHGC		Windows and Exterior Doors (maximum certified ratings)				1	0.50		0.25		1 and 2	0.65	0.40	0.40	0.25	3	0.40	0.35	0.40	0.25	4 to 8	0.35	0.32	Any	0.40	5 to 8	0.30		Any		Skylights and TDDs					(maximum certified ratings)					1 to 3	0.75	0.70	0.40	0.30	2	0.65		0.30		3 4 to 8	0.60	0.55	Any	0.30	4	0.55		0.40		5 to 8	0.55		Any		<p>First, this proposal corrects an omission in the fenestration requirements for additions and renovations. Although nearly every mandatory practice under Section 701.4 of the 2008 NGBS applies to additions and renovations, Section 701.4.4 is silent on window requirements for additions and renovations. Where an addition or renovation includes the installation or replacement of windows, it is reasonable to require that these windows meet the same mandatory requirements as in new construction. Second, this proposal updates the window efficiency requirements to Energy Star Version 5.0 or the 2012 IECC, whichever is more efficient. This proposal will ensure that the window requirements of the NGBS will not conflict with the 2012 IECC. The approach is consistent with the approach taken in the last version of the NGBS and will also continue to ensure that energy efficient fenestration is required for green homes.</p> <p><i>(NAHB RC Note: the proposed change is also provided to TG-7 to review the remodeling language)</i></p>		
Climate Zones	U-Factor		SHGC																																																																								
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138	Nils Petermann Alliance to Save Energy Alliance to Save Energy	701.4.4.1 Fenestration Specifications Revise as follows	<p>701.4.4.1 NFRC-certified U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with ENERGY STAR, or equivalent, or Table 701.4.4.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m²) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</p> <p style="text-align: center;">Table 701.4.6</p> <p style="text-align: center;">Fenestration Specifications</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Climate Zones</th> <th colspan="2">U-Factor</th> <th colspan="2">SHGC</th> </tr> <tr> <th colspan="4">Windows and Exterior Doors (maximum certified ratings)</th> </tr> </thead> <tbody> <tr> <td>1 and 2</td> <td>0.65</td> <td>0.60</td> <td>0.40</td> <td>0.27</td> </tr> <tr> <td>3</td> <td>0.40</td> <td>0.35</td> <td>0.40</td> <td>0.30</td> </tr> <tr> <td>4 to 8</td> <td>0.35</td> <td>0.32</td> <td>Any</td> <td>0.40</td> </tr> <tr> <td>5 to 8</td> <td>0.30</td> <td></td> <td>Any</td> <td></td> </tr> <tr> <td colspan="5" style="text-align: center;">Skylights and TDDs</td> </tr> </tbody> </table>	Climate Zones	U-Factor		SHGC		Windows and Exterior Doors (maximum certified ratings)				1 and 2	0.65	0.60	0.40	0.27	3	0.40	0.35	0.40	0.30	4 to 8	0.35	0.32	Any	0.40	5 to 8	0.30		Any		Skylights and TDDs					In 2010, new ENERGY STAR for Windows, Doors and Skylights criteria came into effect. My proposed revision of Table 701.4.4.1 would ensure equivalence with these new criteria, which can be viewed at http://www.energystar.gov/index.cfm?c=windows_doors.pr_anat_window .																																					
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345	Steve Vollstedt HERS-NM, LLC Self	701.4.4.1 Fenestration Specifications Add new as follows	ADD AT END OF NARRATIVE, BEFORE THE TABLE: Alternatively, evidence that the overall UA (weighted average U-factor based on total fenestration area) for the fenestration is not greater than the U-factors shown in Table 701.4.4.1 may be submitted to demonstrate compliance with this section.	Homeowners and builders often prefer, for example, to use a custom-built front entry door for their homes. This fenestration may not comply but if the overall fenestration performance is very good, then we should allow this kind of exception.																	
346	Steve Vollstedt HERS-NM, LLC Self	701.4.4.1 Fenestration Specifications Delete without substitution	SEE COMMENT IN NEXT SECTION.	Consider moving this fenestration requirement to Section 703, the Prescriptive Path section. If a project can achieve acceptable energy reductions and a sufficiently low HERS index by applying other energy reduction practices, then these fenestration requirements should not be required for a project which is following the Performance Path.																	
213	Thomas Culp Birch Point Consulting LLC Aluminum Extruders Council	701.4.4.1 Fenestration Specifications Revise as follows	Add: <u>Exception: Fenestration in residential buildings four stories or more in height above grade, hotels, and motels shall meet the requirements of Chapter 5 of the IECC.</u>	The IBC, IRC, IECC, ASHRAE 90.1, ASHRAE 90.2, and ASHRAE 189 standards all draw a consistent line between residential building types, with detached homes and apartment buildings three stories or less on one side, and highrise residential buildings, hotels, and motels on the other side. This is because each group has very significant differences in construction and energy performance. It would be prudent for the NGBS to also be consistent with this dividing line. Nevertheless, I understand the committee would like the NGBS to apply as widely as possible, and do not wish to limit the NGBS scope. However, if this is the case, the committee must at least recognize and account for the very different construction methods and materials used in highrise residential buildings, hotels, and motels as compared to detached homes and lower apartment buildings. In this particular section, the draft NGBS is making a mandatory requirement for fenestration to meet the current Energy Star criteria. As specifically stated in the program requirements from the U.S. DOE and EPA, the Energy Star Windows program only applies to residential buildings "that are three stories or less in height", and specifically does not apply to highrise residential buildings, hotels, or motels. [see attached ENERGY STAR® Program Requirements for Residential Windows, Doors, and Skylights – Version 5.0] The design loads, durability requirements, and resulting heavy commercial and architectural grade products are significantly different. This is clearly recognized by different prescriptive criteria in Chapter 4 and Chapter 5 of the IECC, ASHRAE 90.1, and ASHRAE 90.2. Applying a mandatory requirement in conflict with Energy Star program requirements is not appropriate, and in the worst case, could cause significant specification and construction problems. To fix this problem, the mandatory requirement has been modified to specify that as a baseline, fenestration in these building types must meet the requirements of chapter 5 of the IECC. These criteria were significantly advanced for the 2012 IECC, and are very stringent yet accounts for heavy commercial and architectural grade products. Furthermore, credit for even better performance will be encouraged through section 702 or 703. (see Attachments file for ENERGY STAR® Program Requirements for Residential Windows, Doors, and Skylights – Version 5.0)																	
914	Tom Werst GDS Associates, Inc Self	702.2 Energy Cost Performance Levels	Remove the current discrete levels (1), (2), (3), and (4) and replace with the following: <u>Points earned are determined by multiplying by 4 the percentage that the building exceeds the designated ICC IECC. (A specific IECC should be referenced)</u> If it is decided to eliminate the prescriptive path, then wording such as the following could be added to section 702: "The Adopting Entity will designate the ICC IECC to be used based on a periodic review of those that are then available and how widely they have been adopted among the states."	The current discrete steps and cap at 120 points are arbitrary and limit the ability of a builder to achieve additional points toward the "Additional Points from any category" requirement. This change would allow someone that is above one threshold, but not up to the next to still gain credit that can be applied to the additional point requirements. For example, someone with a home that is 45% better than the IECC and qualifies for Silver in all other areas, will have 60 points toward Silver in Energy Efficiency plus another 30 points toward the additional 100 required. The current system instead of saying – "great job, you went significantly beyond silver so here are some extra points" says "too bad,																	

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				<p>you didn't make it to 50% better, so you are only getting 60 points". There are no such discrete steps or caps for the prescriptive path, why have them for the performance path? Increasing the ratio of points to % above ICC IECC is an attempt to equalize the points that can be achieved via the performance path with those that can be achieved with the prescriptive path. The Energy Efficiency section of the NGBS currently has a gross bias in favor of the prescriptive path over the performance path. Prescriptive rating systems for energy efficiency are notoriously poor predictors of actual performance. It is currently A LOT easier to gain points using the prescriptive path than the performance path under the NGBS. This is the exact opposite to the way many building performance experts say it should be. A house is a system, and if you do a lot of things right, but fail miserably on others, your home is not going to be energy efficient. For example, you can use all kinds of advanced framing techniques, lots of insulation, great windows and doors, efficient appliances, super efficient furnace & DHW, insulate foundation and slab, but do a bad job air sealing or have very leaky duct work, and building performance will be poor. Or as above and also do a great job on air sealing and duct sealing, but undersize and poorly install a geothermal system and your electric bills will be through the roof due to electric resistance back-up kicking in. For example, for a building that I am performing both HERS Rating and Green Building Verification, which is well built with a well insulated and air sealed envelope, high efficiency mechanical equipment and no duct work: • HERS Rating of 62 = 38% better = Silver (if accepted) • IECC 2006 = 17.3% better = Bronze • Prescriptive Path = 138 points = Emerald + 18 points toward additional Given the above choices, what builder wouldn't go the prescriptive path?? Besides being a poor predictor of true performance, the prescriptive path also requires more effort to verify, driving up verification costs. The current Section 702 is mute on which version ICC IECC to use, and provides no guidance on which one to select. It appears that the NGBS was written so that the current IECC(now, or soon to be 2009 in most states because IECC 2009 adoption is required to receive American Recovery and Reinvestment Act funding) is to be used for the performance path, so as the bar is raised with subsequent IECCs, buildings will need to be more energy efficient in order to achieve the same certification levels, which seems makes sense, at first blush. However, there is no such automatic raising of the bar for the prescriptive path. So as it gets more difficult to achieve a given level with the performance path, the few builders who might have chosen the performance path will quickly switch to the prescriptive path. If there are provisions for raising the bar on the performance path, there should be similar provisions for the prescriptive path. Since this would require significant review of the new IECC vs the prescriptive practices, this is best left to a revision of the NGBS. Since only raising the bar on the performance path will simply result in builders switching to the prescriptive path, doing so is at best futile, and at worst, counterproductive if the goal is to have more efficient homes built. Also, changing the basis of scoring under a particular version of the standard, rather than waiting until the next revision of ICC 700, will make it more difficult to compare buildings that have been measured against the standard – i.e. a newer Silver rated building under ICC700-2008 could perform better than a gold rated building under ICC700-2008 that was evaluated against an older IECC, creating confusion in the market. If it is decided to eliminate the prescriptive path, and allow the IECC that is being used to change without updating the version of the NGBS, then wording such as the following should be added to section 702 to provide guidance around which IECC to use: "The Adopting Entity will designate the ICC IECC to be used based on a periodic review of those that are then available and how widely they have been adopted among the states."</p>		
335	John Woestman Kellen Company	702.2 Energy Cost Performance	702.2 Energy cost performance levels. Energy efficiency features are implemented to achieve energy cost performance that exceeds the ICC IECC by the following. A	In order to maintain credibility as the residential "green" standard and consistency with the commercial green code (IgCC) this standard should		

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	Extruded Polystyrene Foam Association (XPSA)	Levels Revise as follows	documented analysis using software in accordance with ICC IECC, Section 404, or ICC IECC Section 506.2 through 506.5, applied as defined in the ICC IECC, is required. (1) 10 45 percent (2) 20 30 percent (3) 30 50 percent (4) 40 60 percent	aim to be more efficient than the most recent edition of the National Model Energy Code (2012 IECC). Assuming this standard updates the IECC reference to the 2012 IECC, these improvement targets should be revised in recognition of the significantly increased performance requirements of the 2012 IECC over the 2006 IECC.		
45	Steve Hale Build Green NM Build Green NM	702.2 Energy Cost Performance Levels Revise as follows	702.2 Energy cost performance levels. Energy efficiency features are implemented to achieve a HERS index prior to adding alternative energy sources (such as PV) as follows. HERS 80 30 pts HERS 70 40 pts HERS 60 60 pts HERS 50 85 pts add 3 points to 85 for each point below HERS 50 (These are suggested point ranges and could be modified by committee)	This could replace or be a supplement to 702.2. The HERS index is tied to a standard reference. The IECC is a floating value such that is it hard to compare homes based on this differing reference. As an alternative the HERS index requirement could become more stringent in subsequent revisions based on a more stringent IECC. As program director for Build Green NM, I have certified well over 100 homes at the Silver and Gold levels yet most score in the 20% to 30% improvement based on the 2006 IECC. The HERS Index for these homes ranges from HERS 60 to HERS 49. Related to this, Section 704 should not count to raise the level of energy efficiency beyond level achieved in either 702 or 703. These points should go to the "extra" points needed.		
347	Steve Vollstedt HERS-NM, LLC Self	702.2 Energy Cost Performance Levels Delete and substitute as follows	SEE FOLLOWING COMMENT.	Consider simplifying this requirement by awarding points based on energy performance improvements compared to the HERS index rather than energy cost performance improvements measured against the IECC. Many builders and homeowners can now at least generally understand the HERS index system, so why complicate it with the IECC stuff when the HERS index does substantially the same thing?		
309	Eric Lacey RECA RECA	703.1.1 Total Building Thermal Envelope UA Revise as follows	703.1.1 Where the total building thermal envelope UA is less than required by ICC the 2012 IECC, Section 402.1.4, the total building thermal envelope UA is in accordance with Table 703.1.1. Where insulation is used to achieve these percentages, a third-party grading of the installation as achieving Grade 1 is required. A documented analysis is performed using a version of REScheck version 4.0.1 or later that is based on the 2012 IECC, or equivalent compliance software, based on a comparison to the ICC IECC, IRC, or IBC.	This proposal updates the requirement to use the appropriate version of REScheck (or equivalent software) when calculating the Total UA improvement in the proposed design. While REScheck typically offers the option to calculate compliance according to earlier versions of the IECC, the NGBS should ensure that the program is keyed to the 2012 IECC to show compliance.		
336	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	703.1.1 Total Building Thermal Envelope UA Revise as follows	703.1.1 Where the total building thermal envelope UA is less than required by ICC IECC, Section 402.1.4, points may be awarded the total building thermal envelope UA is in accordance with Table 703.1.1. Percentage of UA improvement over the ICC IECC shall be verified with a compliance report generated using the most recent version of REScheck. Where insulation is used to achieve these percentages, insulation must achieve a Grade 1 installation as verified by a third-party grading of the installation as achieving Grade 1 is required. A documented analysis is performed using REScheck version 4.0.1 or later, or equivalent, based on a comparison to the ICC IECC, IRC, or IBC. Renovation Note: The existing whole building thermal envelope UA is evaluated. One of the following is selected based on the evaluation. If the overall thermal performance meets or exceeds the requirements of ICC IECC, Section 401.1.4, Section 703.1.1 applies to the renovation. If the existing overall thermal performance is below the requirements of ICC IECC, Section 402.1.4, the overall thermal performance of the whole building thermal envelope UA is improved a minimum of the following: 15 percent 30 percent 45 percent, or meets the requirements of ICC IECC, Section 402.1.4	This proposal editorially revises the first section for ease of use and understanding. The proposed revision in (2) c. recommends deleting language that conflicts with the statement in (2). (NAHB RC Note: the proposed change is also provided to TG-7 to review the remodeling language)		
348	Steve Vollstedt HERS-NM, LLC Self	703.1.1 Total Building Thermal Envelope UA Revise as follows	SEE COMMENT BELOW.	There is too much of a jump in points from achieving a 10% reduction to a 20% reduction. The table should be expanded to provide points for 11%, 12%, 13%, etc.		
915	Raymond Fiehler Retired self	703.1.1 Total Building Thermal Envelope UA	Revise frame/foundation connection for low rise residential construction. Supporting documents sent to standards@nahbr.com Frame/Foundation Change for Low Rise Residential For more than 100 years the template for low rise residential construction has been	Improve energy efficiency in residential homes See Attachments file for supporting documents.		

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			<p>PLATFORM FRAMING. Platform framing is a building system dating back to the 19th century and still used today for most low rise commercial and residential construction. This system is intrinsically flawed and restrictive to innovation and is mostly responsible for the fragmentation endemic to residential construction. Basic elements of this system are shown in figure 1. The assembly order for walls in platform framing is such that services hardware and insulation can be added only after an open sided wall is installed, thus restricting innovative approaches. Additionally, please note the vulnerability for unwanted air infiltration. Seismic activity and distortions of the wooden components in the frame/foundation connection from temperature and humidity variations cause openings to develop around the building perimeter to allow unwanted air infiltration. Engineering design considerations to correct this basic flaw have never been addressed. For "net zero energy" to succeed, it is imperative that a flexible insulating gasket becomes part of this junction. Attaching a wooden component directly to a concrete foundation is simply bad engineering. Good engineering always requires an appropriate interface when dealing with dissimilar materials.</p> <p>Consider instead a revised system illustrated in figures 2 and 3. Modifying the frame/foundation connection, not only stop all unwanted air infiltration it also leads to true panelized construction. By adopting this simplified connection, all envelope components including walls, roof and floor are factory produced and delivered to the job site for assembly by a trained work crew. Sprinkler plumbing, insulation and other service hardware are all pre-installed before delivery. Inter-connection of the various utilities imbedded in the panels is done after the envelope is complete and the assembly crew is gone (See figure 3)</p> <p>Advantages include:</p> <ol style="list-style-type: none"> 1. Simplifies and strengthens the load path between the roof and foundation 2. Provides a convenient electric wiring chase for all wiring. In addition to basic wiring, modern homes require high speed internet cables to connect the home to the outside world. This also includes wiring for heating control, surveillance cameras, computers, printers, music and home theater systems. 3. The closed cell, insecticide laced insulating gasket shown in the frame/foundation connection also provides an insect barrier. 4. Forms the basis for true panelized construction where all envelope components are factory produced in a factory controlled environment and assembled on the job site by a trained work crew. 5. Insulation: Study after study has shown cellulose insulation to be a far better than fiberglass. "On site" builders continue to use fiberglass for convenience. 6. Energy conservation. The new frame/foundation connection stops all unwanted air infiltration in the frame/foundation connection. 7. Moisture control: Controlling air infiltration also controls damaging moisture accumulation. 8. Load bearing strength. In this new configuration, loading is transferred away from framing studs to the panel skins. This reduces framing lumber requirements and increases load strength. 9. Quality. All components for this structure are factory produced in a controlled environment before they are delivered to the job site for assembly. 10. Resale value. Quality design and low energy usage will enhance the resale value of structures using this design. 11. Lower insurance rates. Time will show that these structures are less vulnerable to damage from natural forces. 			

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			<p>12. Home comfort. This construction method results in reduced noise levels, and provides for homogeneous temperature distribution.</p> <p>13. Blower door test. With proper fenestration management, this structure will comfortably pass all blower door tests throughout its' lifetime</p>			
229	Craig Conner, Gary Klein Building Quality / Affiliated International Management selves	703.1.2 Insulation Installation Grades Revise as follows	Delete descriptions of grade 2 and 3 insulation. Require grade 1 insulation as mandatory without points. Retain the inspection requirement. Add specifications for correctly installed foundation insulation.	The insulation and air sealing requirements of the 2012 IECC are strong enough that it is unlikely some grade 2 and 3 homes would even meet code, much less qualify as an exemplary residence. Insulation needs to be installed completely and correctly, otherwise the high levels of insulation being specified in new homes is compromised.		
337	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	703.1.2 Insulation Installation Grades Revise as follows	<p>703.1.2 The insulation installation is graded by a third party and <u>must achieve a Grade 1 or Grade 2 installation</u> in accordance with Sections 703.1.2.1, 703.1.2.2, 703.1.2.3, and/or 703.1.2.4, as applicable. <u>(Grade 3 installations shall not be permitted.)</u> (Points not awarded in this section if already awarded under Section 703.1.1)</p> <p>Delete Grade 3 from table 703.1.2.</p> <p>703.1.2.1 Both Grade 1 and Grade 2 installations are in accordance with the following:</p> <p>Grading applies to Grades <u>Grading applies to cavity fill insulation, continuous rigid insulation, and any other field-installed insulation products.</u></p> <p>Grading applies to ceilings, walls, <u>floors, band joists</u>, rim joists, conditioned <u>attics</u>, basements and crawlspaces, except as specifically noted. Inspection is conducted before insulation is covered.</p> <p>(2) Insulation is installed in accordance with manufacturer's installation instructions and/or industry standards.</p> <p>(3) (4) Any air permeable wall cavity <u>Air permeable insulation is enclosed on all six sides and is in substantial contact with the sheathing material on one or more sides (interior or exterior) of the cavity. Air permeable insulation in ceilings is not required to be enclosed when the insulation is installed in substantial contact with the surfaces it is intended to insulate.</u></p> <p>703.1.2.2 Grade 1 installation is in accordance with the following:</p> <p>(1) <u>Cavity insulation</u> uniformly fills each cavity side-to-side and top-to-bottom, without substantial gaps or voids around obstructions (such as blocking or bridging).</p> <p>(2) Cavity insulation, c <u>Compression or incomplete fill amounts to 2 percent or less, presuming the compressed or incomplete areas are compression or fill is a minimum of 70 percent of the intended fill thickness; occasional small gaps are acceptable.</u></p> <p>(3) Exterior rigid insulation has substantial contact with the structural framing members or sheathing materials and is tightly fitted at joints.</p> <p>(4) Cavity insulation is split, installed and/or fitted tightly around wiring and other services.</p> <p>(5) Exterior sheathing is not visible from the interior through gaps in the cavity insulation.</p> <p>(6) Faced batt insulation is permitted to have side-stapled tabs, provided the tabs are stapled neatly with no buckling, and provided the batt is compressed only at the edges of each cavity to the depth of the tab itself.</p> <p>(7) Where properly installed <u>and undamaged</u>, ICFs, SIPs, and other wall systems that provide integral insulation are deemed in compliance with the Grade 1 insulation installation requirements.</p> <p>(8) Grade 1 insulation meets or exceeds all requirements for Grade 2 insulation.</p>	The proposal suggests deleting Grade 3 insulation text from this standard as the language / requirements do not add incremental value to the standard. Changes also add clarity to the type of insulation to which the requirements apply.		

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			<p>703.1.2.3 Grade 2 installation is in accordance with the following:</p> <p>(1) A maximum of 2 percent of the surface area of insulation is missing. Compression or incomplete fill amounts to 10 percent or less, presuming the compressed or incomplete areas are compression or fill is a minimum of 70 percent of the intended fill thickness.</p> <p>(2) In conditioned basements or crawlspaces the following apply: Insulation is installed in complete contact with the subfloor surfaces. Floor insulation over vented or ambient conditions is enclosed on all six sides.</p> <p>Floor insulation over unconditioned basements is not required to be enclosed on six sides. Ceiling insulation is not required to be enclosed when the insulation is installed in complete contact with the drywall or plywood surfaces it is intended to insulate.</p> <p>(4) Eave baffles or equivalent construction is installed to prevent wind washing.</p> <p>(5) Installation with occasional installation defects is permitted: gaps around wiring, electrical outlets, plumbing and other intrusions; rounded edges or shoulders.</p> <p>703.1.2.4 Grade 3 installation is in accordance with the following: Standard insulation installation not in accordance with Grade 1 or Grade 2 criteria.</p>			
214	Amy Schmidt The Dow Chemical Company Dow Building Solutions	703.2.1.1 General Revise as follows	703.2.1.1.3 Narrow cavities. Narrow cavities filled and with foam or batts are cut to fit.	The existing language is limiting to other solutions. It should be made clear that there are other applications that are available and that meet this requirement.		
323	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	703.2.1.1 General Revise as follows	<p>703.2.1.1.1.</p> <p>(1) Thermal insulation is installed in substantial contact with interior and exterior the air barrier to provide continuous alignment of the insulation with the air barrier. The following are deemed to be their own air barrier:</p> <p>(a) Any spray or rigid foam insulation with an air permeance of 0.02 L/s·m² or less at 75 Pa. Insulation with an air permeability no greater than 0.02 L/s·m² (0.004 cfm/ft²) under a pressure differential of 75 Pa (0.3 in. water) when tested in accordance with ASTM E2178.</p> <p>(b) ICFs , SIPS, and other wall systems that provide their own air barrier, except at interfaces with other materials or assemblies, or penetrations.</p> <p>(c) Spray foam that complies with all of the following: (i) continuously attached to the top, bottom and both sides of the cavity. (ii) continuous in the cavity without any unrepaired breaks. (iii) air impermeable, installed at a minimum thickness that meets the requirements of 703.2.1.1.1(a)</p> <p>(d) Air impermeable insulation.</p>	For the first proposed revision, the exterior envelope may have only an air barrier (may not have interior and exterior air barriers). The second proposed revision adds the appropriate test requirement of ASTM E2178, and editorially revises the language. The proposed revisions in (c) revise the undefined term of “air impermeable” in favor of the performance requirement of 703.2.1.1.1(a). The last proposed revision in this section deletes (d) as this language is unneeded in lieu of the performance requirements of (a). Also, “air impermeable” is undefined in this standard. An alternative to the revisions proposed here would be to incorporate into this section of this standard revisions approved for the 2012 IECC for requirements for insulation and air barriers.		
324	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	703.2.1.1 General Revise as follows	<p>703.2.1.1.1</p> <p><i>Unchanged sections not shown.</i></p> <p>(4) Any exterior Rigid insulation is tightly fitted or interlocking at the joints that are sealed, in accordance with the manufacturer's instructions for an air barrier.</p>	Joints in the rigid insulation should be sealed to ensure the insulation performs as an air and thermal barrier. And, it is already stated in Section 701.4.3 that insulation is installed per manufacturer's instructions; to repeat it here is redundant.		
325	John Woestman Kellen Company Extruded	703.2.1.2 Air Barriers Revise as follows	703.2.1.2 Interior Air barriers. Interior Air barrier is installed at any exterior edge of insulation at floors, foundations, and crawlspaces including insulated floors above garages and cantilevered floors.	This language is vague. This requirement may be appropriate for an interior air barrier, and would be inappropriate for an exterior air barrier. This proposed change is suggested in that light. However, if our		

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	Polystyrene Foam Association (XPSA)			assumption is incorrect, we suggest deleting this language as it is too vague as to what is required and where.																																																																																																								
326	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	703.2.1.3 Walls Revise as follows	703.2.1.3 <i>Unchanged sections not shown.</i> (5) Fireplace walls: <u>Insulated to the same requirements as other exterior walls and with an air barrier that is aligned in contact with insulation; with any gaps are sealed with caulk or foam and -</u>	This proposal clarifies fireplace walls should be insulated to the same requirements of other exterior walls, and the air barrier is to be in contact with the insulation with the gaps sealed. These areas of the exterior envelope should provide performance consistent with exterior envelope requirements.																																																																																																								
327	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	703.2.1.4 Ceilings / Attics Revise as follows	703.2.1.4 Ceilings and attics (1) At dropped ceilings and soffits, the air barrier is substantially <u>aligned in contact with the insulation and any gaps are sealed with caulk, foam, or tape.</u>	This proposal revises the language to require the air barrier to be in contact with the insulation, and deletes the prescriptive requirement of sealing with caulk, foam, or tape. The performance requirement for air barrier gaps to be sealed adequately describes enforceable requirements.																																																																																																								
141	Nils Petermann Alliance to Save Energy Alliance to Save Energy	703.3.1 Fenestration Specifications Revise as follows	703.3.1 The NFRC-certified (or equivalent) U-factor and SHGC for windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with Table 703.3.2(a) or (b). Decorative fenestration elements with a maximum area of 15 square feet (1.39 m2) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice. Enhanced Fenestration Specifications Table 703.3.1(a) <table border="1"> <thead> <tr> <th rowspan="2">Climate Zones</th> <th colspan="2">U-Factor</th> <th>SHGC</th> </tr> <tr> <th colspan="3">Windows and Exterior Doors (maximum certified ratings)</th> </tr> </thead> <tbody> <tr> <td>1 and 2</td> <td>0.45</td> <td>0.30</td> <td><u>0.25</u></td> </tr> <tr> <td>3</td> <td>0.35</td> <td>0.30</td> <td>0.30</td> </tr> <tr> <td>4 to 8</td> <td>0.30</td> <td><u>0.27</u></td> <td><u>Any 0.40</u></td> </tr> <tr> <td>5 to 8</td> <td>0.27</td> <td><u>0.27</u></td> <td><u>Any</u></td> </tr> <tr> <td colspan="4">Skylights and TDDs (maximum certified ratings)</td> </tr> <tr> <td>1 and 2 to 3</td> <td>0.55</td> <td>0.35</td> <td>0.30</td> </tr> <tr> <td>3 4 to 8</td> <td>0.55</td> <td><u>0.50</u></td> <td><u>Any 0.30</u></td> </tr> <tr> <td>4</td> <td>0.50</td> <td>0.35</td> <td>0.35</td> </tr> <tr> <td>5 to 8</td> <td>0.50</td> <td>0.35</td> <td><u>Any</u></td> </tr> <tr> <td colspan="4">Points</td> </tr> <tr> <td colspan="2">Zones 1-3</td> <td colspan="2">8</td> </tr> <tr> <td colspan="2">Zones 4-5</td> <td colspan="2">5</td> </tr> <tr> <td colspan="2">Zones 6-8</td> <td colspan="2">6</td> </tr> </tbody> </table> Enhanced Fenestration Specifications Table 703.3.1(b) <table border="1"> <thead> <tr> <th rowspan="2">Climate Zones</th> <th colspan="2">U-Factor</th> <th>SHGC</th> </tr> <tr> <th colspan="3">Windows and Exterior Doors (maximum certified ratings)</th> </tr> </thead> <tbody> <tr> <td>1 and 2</td> <td>0.45</td> <td>0.35</td> <td>0.25</td> </tr> <tr> <td>3</td> <td>0.35</td> <td>0.30</td> <td>0.25</td> </tr> <tr> <td>4 to 8</td> <td>0.25</td> <td><u>0.22</u></td> <td><u>Any 0.40</u></td> </tr> <tr> <td>5 to 8</td> <td>0.22</td> <td><u>0.22</u></td> <td><u>Any</u></td> </tr> <tr> <td colspan="4">Skylights and TDDs (maximum certified ratings)</td> </tr> <tr> <td>1 and 2 to 3</td> <td>0.50</td> <td>0.35</td> <td><u>0.25</u></td> </tr> <tr> <td>3 4 to 8</td> <td>0.50</td> <td>0.45</td> <td><u>Any 0.30</u></td> </tr> <tr> <td>4</td> <td>0.45</td> <td>0.35</td> <td>0.35</td> </tr> <tr> <td>5 to 8</td> <td>0.45</td> <td>0.35</td> <td><u>Any</u></td> </tr> </tbody> </table>	Climate Zones	U-Factor		SHGC	Windows and Exterior Doors (maximum certified ratings)			1 and 2	0.45	0.30	<u>0.25</u>	3	0.35	0.30	0.30	4 to 8	0.30	<u>0.27</u>	<u>Any 0.40</u>	5 to 8	0.27	<u>0.27</u>	<u>Any</u>	Skylights and TDDs (maximum certified ratings)				1 and 2 to 3	0.55	0.35	0.30	3 4 to 8	0.55	<u>0.50</u>	<u>Any 0.30</u>	4	0.50	0.35	0.35	5 to 8	0.50	0.35	<u>Any</u>	Points				Zones 1-3		8		Zones 4-5		5		Zones 6-8		6		Climate Zones	U-Factor		SHGC	Windows and Exterior Doors (maximum certified ratings)			1 and 2	0.45	0.35	0.25	3	0.35	0.30	0.25	4 to 8	0.25	<u>0.22</u>	<u>Any 0.40</u>	5 to 8	0.22	<u>0.22</u>	<u>Any</u>	Skylights and TDDs (maximum certified ratings)				1 and 2 to 3	0.50	0.35	<u>0.25</u>	3 4 to 8	0.50	0.45	<u>Any 0.30</u>	4	0.45	0.35	0.35	5 to 8	0.45	0.35	<u>Any</u>	The mandatory criteria for fenestration in Section 701.4.4.1 form the baseline for fenestration performance based on Energy Star. The ENERGY STAR for Windows, Doors and Skylights criteria have changed in 2010. My proposed changes would ensure that the improved fenestration criteria in section 703.3.1 remain more stringent than Energy Star. The most stringent proposed criteria are feasible and can be met by many existing products, including the products that are part of DOE's High-performance Windows Volume Purchase Program (includes on U-factor 0.22 limit) and windows with low-solar-gain low-E coatings that can meet the 0.25 SHGC limit set by the 2012 IECC for Southern climates.		
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212	Thomas Culp Birch Point Consulting LLC Aluminum Extruders Council	703.3.1 Fenestration Specifications Revise as follows	<p>703.3.1 For fenestration in detached homes and apartment buildings three stories or less above grade, the NFRC-certified U-factor and SHGC for windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with Table 703.3.2(a) or (b).</p> <p>Exception: Decorative fenestration elements up to 15 square feet or 10% of the total glazing area, whichever is less.</p> <p>Enhanced Fenestration Specifications</p> <p>Table 703.3.1(a) <i>(unchanged)</i></p> <p>Table 703.3.1(b) <i>(unchanged)</i></p> <p>For fenestration in residential buildings four stories or more in height above grade, hotels, and motels, the U-factor and SHGC shall meet the requirements of Chapter 7 of ASHRAE 189.1.</p> <p>Points:</p> <p>8 in Zones 1-3</p> <p>5 in Zones 4-5</p> <p>6 in Zones 6-8</p>	Although the NGBS is focused on residential housing and apartments, the NGBS scope has not been limited, and can be interpreted as including highrise residential buildings, hotels, and motels. These buildings have very significant differences in construction and energy performance. Heavy commercial and architectural grade windows are simply not the same as lightweight residential windows, because of the requirements for higher structural performance and durability. This is clearly recognized by different prescriptive criteria in Chapter 4 vs. Chapter 5 of the IECC, ASHRAE 90.1 or 189.1 vs. ASHRAE 90.2, etc. The values in Tables 703.3.1(a) and (b) are simply not appropriate for heavy commercial and architectural grade windows. Therefore, this modification awards points for these products by meeting the values in the ASHRAE 189.1, the green construction standard for commercial buildings including highrise residential, hotels, and motels. ASHRAE 189.1 sets similarly aggressive values while also accounting for heavy commercial products, and is currently being updated at the same time as the NGBS. Alternately, the IgCC could also be referenced, but is still in 2nd draft form, and not yet complete.										
503	Robert Hill NAHB Research Center NAHB Research Center	703.4.1 Combo System Revise as follows	HVAC equipment efficiency	A number of homes have two or more HVAC systems serving separate zones. Additional guidance is needed on how are points awarded when there are two or more HVAC systems in a home? Should points be based on the efficiency of the system servicing the largest portion of the home or should it be based on the lowest efficiency system or should it be a weighted average?										
916	Steve Rosenstock Edison Electric Institute self	703.4.6 Ground Source Heat Pump	<p>(1) Open Loop: ≥ 16.2 EER / ≥ 3.6 COP 20 <u>30</u></p> <p>(2) Closed Loop: ≥ 14.1 EER / ≥ 3.3 COP 20 <u>30</u></p> <p>(3) Direct Expansion: ≥ 15.0 EER / ≥ 3.5 COP 20 <u>30</u></p> <p>(4) Any type: ≥ 24 EER, / ≥ 4.3 COP 30 <u>40</u></p> <p>(5) Any type (open, closed, direct expansion): > 28 EER / > 4.8 COP <u>50</u></p>	Geothermal energy systems save much more energy than fossil fuel systems, and higher efficiency systems should receive more points. There are multiple systems that are rated at over 30 EER and 5.0 COP, and they should receive more points.										
504	Robert Hill NAHB Research Center NAHB Research Center	703.5.1 Water Heater Energy Factor Revise as follows	Water heating design, equipment and installation	Some homes have two or more water heaters. Additional guidance is needed on how are points awarded when there are two or more in a home? Should points be based on the efficiency of the system servicing the largest portion of the home or should it be based on the lowest efficiency system or should it be a weighted average?										

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130	Steve Hale Build Green NM Build Green NM	704.1 Additional Practice Points Revise as follows	704.1 Application of additional practice points. Points from Section 704 can be added to points earned in section 702 (Performance Path), Section 703 (Prescriptive Path), or Section 701.1.3 (Alternative bronze level compliance) All points earned in section 704 shall go toward points earned in Category 7; additional points from any category.	Section 702 the performance path or 703 the prescriptive path are measurable. Section 704 is most quality control of the practices earned in 702 or 703 but do not in them selves raise the energy efficiency of the project. See also suggested changes to Chapter 3 303.1 (3) and changes to table 303 submitted seperately.								
917	Steve Rosenstock Edison Electric Institute self	703.5.1 Water Heater Energy Factor	Add a new line in Table 703.5.1(4): <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>Energy Factor</td> <td>Points</td> </tr> <tr> <td>Heat Pump</td> <td>1.2</td> <td>5</td> </tr> </table>		Energy Factor	Points	Heat Pump	1.2	5	This will increase water heating efficiency by over 25%, and should earn points in this system. Also, this type of system could have lower initial costs to builders and homeowners.		
	Energy Factor	Points										
Heat Pump	1.2	5										
918	Steve Williams Buildinggreener LLC Self	703.5.1 Water Heater Energy Factor	Remove Solar Water Heating from 704.3.2.4 and add it to Water Heating <u>703.5.1 (5)</u> .	The scope and points are great, but this type of heating needs to be in the same category as the other types of water heating to show its benefits by making it easy to compare and give the impression that it is becoming the norm and is a legitimate form of water heating.								
920	Don Carr NAHB Research Center	704.2.1 Hard Wired Lighting	Add points value for (3) A min of 80% ext ltg wattage has efficiency of 40 lumens per watt min or be a solar powered light fixture.	Current copy of std has no point value assigned and thus the scoring tool has ignored this practice and so there is nop encouragement of this good green practice.								
296	Roger L. LeBrun VELUX America Inc. VELUX America Inc.	704.2.4 Skylights Add new as follows	704.2.4.x Daylighting Analysis Perform analysis that compares the substitution of toplighting for planned compliant sidelighting for providing sufficient midroom daylight. 1 point if kitchen and other rooms in living areas are analyzed 2 points if all rooms with windows and attic space above are analyzed 1 additional point per room where the glazed area is reduced by at least 15%, based on the results of the analysis, without increasing the base whole building energy performance.	New studies from Europe indicate that highly efficient skylights (and probably tubular daylighting devices as well) can improve the energy performance and livability of homes by reducing the direct lighting energy and heating energy losses. The indirect benefit of reducing losses is realized by the reduction of glazing areas that can be achieved. This is particularly promising as a new way to save significant year-round energy, particularly in the upper two-thirds of the U.S. (see Attachments for substantiating documents).								
310	Eric Lacey RECA RECA	704.3.1.1 Sun-Tempered Design Revise as follows	704.3.1.1 Sun-tempered design. Building orientation, sizing of glazing, and design of overhangs are in accordance with all of the following: (1) The long side (or one side if of equal length) of the building faces within 20 degrees of true south. (2) Vertical glazing area is between 5 and 7 percent of the gross conditioned floor area on the south face [also see Section 704.3.1.1(8)]. (3) Vertical glazing area is less than 2 percent of the gross conditioned floor area on the west face, and glazing is ENERGY STAR compliant or equivalent <u>meets the requirements of Section 701.4.4.1</u> . (4) Vertical glazing area is less than 4 percent of the gross conditioned floor area on the east face, and glazing is ENERGY STAR compliant or equivalent <u>meets the requirements of Section 701.4.4.1</u> . (5) Vertical glazing area is less than 8 percent of the gross conditioned floor area on the north face, and glazing is ENERGY STAR compliant or equivalent <u>meets the requirements of Section 701.4.4.1</u> . (6) Skylights, where installed, are in accordance with the following: (a) shades and insulated wells are used, and all glazing is ENERGY STAR compliant or equivalent <u>meets the requirements of Section 701.4.4.1</u> . (No change to remainder of Section 704.3.1.1)	This proposal clarifies that the under the sun-tempered design approach, the glazing requirements for all windows (other than those subject to the exception for south-facing glazing) will meet or exceed the minimum requirements set out in the NGBS, specifically Table 701.4.4.1. The proposal does not affect the exception for south-facing glazing, which must still meet a minimum 0.40 SHGC.								
921	Steve Williams Buildinggreener LLC Self	704.3.2.1 Solar Water Heater	No Mention of <u>Solar Water Radiant Heating</u> Please add. 704.4.2 could be used, but no specific details. Suggestions would be nice.	This form of radiant heating is not very much talked about, but popular with the people I have heard use it.								

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567	Robert Hill NAHB Research Center NAHB Research Center	704.3.3.1 Photovoltaic Panels Revise as follows	(Points awarded per 1/10 kW <u>per dwelling unit</u>)	Clarify that for multi-unit buildings that the points are based on a per dwelling unit energy generation rather than per building.		
234	JAMES LYONS NEWPORT PARTNERS SELF	704.3.3.2 Other Renewable Energy Add new as follows	Add new subsection to Section 704.3: "Solar Powered Attic Ventilators: Any motorized attic ventilator fan shall be powered exclusively by solar energy." This requirement would also apply to Additions and Renovations.	Solar PAVs are highly effective in providing attic ventilation at times when it is needed. Product designs allow for their use regardless of roof orientation or style. As an example, the State of Georgia amended the 2009 IECC to include this same provision.		
568	Robert Hill NAHB Research Center NAHB Research Center	704.3.3.2 Other Renewable Energy Revise as follows	(Points awarded per 1/10 kW <u>per dwelling unit</u>)	Clarify that for multi-unit buildings that the points are based on a per dwelling unit energy generation rather than per building.		
240	Thomas Stroud HPBA HPBA	704.3.3.2 Other Renewable Energy Add new as follows	704.3.3.2 Other on-site energy source is installed (e.g. wind energy, on-site micro-hydro power, active solar space heating <u>and biomass space heating systems</u>).	It is essential to allow for biomass as an on-site renewable energy source. Wood burning is a valid alternative and has more products in usage currently than all other renewable energy sources.		
506	Robert Hill NAHB Research Center NAHB Research Center	704.4.1 Duct System Revise as follows	Ducts	How should buildings that have a combination of ductless systems and a system with ducts be treated? Can they get points for both or should just the major system get points? Does this include ventilation duct work for bath/kitchen fans or building ventilation if the HVAC is ductless?		
349	Steve Vollstedt HERS-NM, LLC Self	704.4.1 Duct System Revise as follows	CEE COMMENT BELOW.	There is way too many points allowed throughout the NGBS if ducted HVAC systems are used as compared to the points allowed if an HVAC system with no ducting is used. This needs to be evened-up a bit. Practices providing points for HVAC ducting include: 704.4.1 (5 points), 704.4.4 (12 points), 704.4.5 (5 points), 704.5.5 (4 points), 704.6.2.2 (15 points), 704.6.2.3 (8 points), 901.1.2 (5 points), 902.2.3 (3 points), 902.4 (3 points) and 903.6 (2 points). This is a total of 62 points that can be earned for using ducted HVAC systems. Practices providing points for HVAC systems with no ducting include: 704.4.2 (15 points) and 704.4.3 (15 points). This is a total of 30 points that can be earned for using HVAC systems with no ducts.		
314	Gregg Achman Hearth & Home Technologies Hearth & Home Technologies	704.4.2 Space Heating Without Ducts Add new as follows	Space heating is provided by a system that does not include air ducts. <u>Addition note: natural gas and propane fireplace heaters that are direct vented or powervented, are equipped with permanently fixed glass fronts or gasketed doors and comply with ANSI Z21.88/CSA 2.33 are included space heating equipment.</u>	Fireplace heaters provide space heating without the use of air ducts.		
507	Robert Hill NAHB Research Center NAHB Research Center	704.5.4 HCFCs Delete without substitution	704.5.4 HVAC equipment operates using an alternate refrigerant containing no HCFCs (Hydrochlorofluorocarbons). Points are awarded only until January 20, 2010	Awarded only until January 20, 2010.		
215	Amy Schmidt The Dow Chemical Company Dow Building Solutions	704.6.2.1 Third Party Testing - Building Envelope Leakage Revise as follows	704.6.2 Third party testing is conducted to verify performance. 704.6.2.1 Building envelope leakage rate is demonstrated by blower door test. In addition to the test, the following practices are required: (1) Whole building ventilation is provided in accordance with Section 902.2. (2) Fossil fuel furnace and water heater is sealed combustion or power vented in accordance with Section 901.1. (3) Fireplaces and fuel-burning appliances are in accordance with Section 901.2.	IECC reference should be updated to the 2012 version. This will keep ICC 700 in line with other green code development (IgCC). With this update air leakage testing is required for all residential buildings (3 ACH50 requirement). The additional requirements in this section are an added improvement and there for should be encouraged. However the level of air leakage rate needs to be updated.		

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			(4) The maximum leakage rate is in accordance with: a. 35 ACH50 b. 24 ACH50 c. 13 ACH50 d. 2 ACH50 e. 1 ACH50			
233	JAMES LYONS NEWPORT PARTNERS SELF	704.6.2.1 Third Party Testing - Building Envelope Leakage Revise as follows	Update the building envelope air leakage limits in this section to match or exceed the 2012 IECC required levels. Points should only be awarded for going beyond the 2012 IECC-mandated ACH50 levels: 5 ACH50 for CZ1-2 and 3 ACH50 for CZ 3-8. 2012 IECC-maximum envelope leakage levels must be Mandatory items, not optional. Whole building mechanical ventilation (WBMV) must be required < 5.0 ACH50, consistent with 2012 IRC.	This currently optional provision awards points for a tighter building shell and simultaneously kicks in a requirement for WBMV. It needs to be changed to reflect new envelope leakage limits in the 2012 IECC. WBMV must be made mandatory as well, as the max allowable leakage under the 2012 IECC will trigger a requirement for WBMV in the 2012 IRC. Baseline for NGBS should at least be 2012 I-Codes.		
66	Michael Chandler Chandler Design-Build Inc self	704.6.2.1 Third Party Testing - Building Envelope Leakage Revise as follows	<p>704.6.2.1 Building envelope leakage rate is demonstrated by blower door test. In addition to the test, the following practices are required: 1. Mechanical ventilation is provided in accordance with 902.5. 2. Fossil fuel furnace and water heater is sealed combustion or power vented in accordance with 801.1. 3. Fireplaces and Fuel Burning Appliances are in accordance with 901.2</p> <p>The maximum leakage rate is in accordance with: MANDATORY 7 ACH50 (a) 5 ACH50 (b) 4 ACH50 (c) 3 ACH50 (d) 2 ACH50 (e) 1 ACH50</p> <p>702.6.2.1</p>	As Energy Star becomes more stringent it seems likely that builders will elect to opt out and participate in NGBS exclusively. Builders who choose the prescriptive path should not be permitted to avoid doing a third party blower door confirmation of their draft stopping practices.		
508	Robert Hill NAHB Research Center NAHB Research Center	704.6.2.1 Third Party Testing - Building Envelope Leakage Revise as follows	(3) Fireplaces and fuel burning appliances are in accordance with <u>the mandatory practices of</u> Section 901.2.	Clarify the practice.		
321	Lorraine Ross L Ross Consulting Inc The Dow Chemical Company	Add New Section Add new as follows	<p>Part 1: Chapter 2 Definitions</p> <p>Add new Chapter 2 Definitions</p> <p><u>BUILDING INTEGRATED PHOTOVOLTAIC (BIPV) SYSTEM.</u> A system that incorporates photovoltaic modules, which covert solar radiation into energy, into the building envelope.</p> <p><u>PHOTOVOLTAIC PANEL SYSTEM.</u> A system that incorporates photovoltaic modules,</p>	Renewable Energy Systems are crucial to our goal for net zero energy buildings. This proposal adds a new separate section regarding Building Renewable Energy Systems in order to bring clarity and enforceability to the use of renewable energy on buildings and building sites. Companion changes to this new section rewrite requires changes for Chapter 2 Definitions and Table 303, which are submitted as part of this proposal. The following is a breakdown of the reasons for this proposed change: Section 701.6 1. The charging paragraph clearly states that there is a minimum of 2% of the buildings energy use to be provided by renewable energy systems, along with a requirement for metering of these systems. 2. Instructions for demonstrating compliance are given for both performance and compliance paths. This section describes the various types of renewable energy systems that may be used individually or in combination to satisfy the 2% minimum set forth in Section 701.6. Photovoltaic systems and wind energy systems are the two major types of renewable energy systems proposed for inclusion in the NGBS. Photovoltaic systems are further broken down into three types, each with "pointers" to applicable installation requirements in the International		

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			<p><u>which covert solar radiation into energy, into discrete panels that are installed on a building site or mounted on a building.</u></p> <p>WIND ENERGY SYSTEM. A system installed on the building site or on the building that converts wind into energy.</p> <p>Part 2: Table 303</p> <p>Add new provision to Table 303</p> <p>Table 303 Renewable Energy. Where renewable energy is utilized in accordance with Section 701.5, the rating of the building shall be increased to the next level.</p> <p>Part 3: Add new Section to Chapter 7</p> <p>701.6 Renewable energy systems requirements. Each building or building site shall be equipped with one or more renewable energy systems in accordance with Section 701.6.3 that have the capacity to provide at least two percent of the annual energy use of the building. These systems shall be metered.</p> <p>701.6.1 Building performance-based compliance. Performance-based compliance shall be based on building annual energy use calculations.</p> <p>701.6.2 Building prescriptive compliance. Prescriptive compliance, shall be based on building annual energy use calculations or demonstrate that the renewable energy system provides not less than 1.75 Btu/hr or not less than 0.50 watts per square foot of conditioned floor area.</p> <p>701.6.3 Renewable energy systems. Renewable energy systems shall meet the requirements of Section 701.6.3.1 roof-mounted solar photovoltaic panel systems, Section 701.6.3.2 site located photovoltaic panel system, Section 701.6.3.3 building integrated solar photovoltaic systems, or Section 701.6.3.4 wind energy systems.</p> <p>701.6.3.1 Roof-mounted photovoltaic panel systems. Roof-mounted photovoltaic panel systems shall be designed, constructed, and installed in accordance with the International Residential Code and NFPA 70.</p> <p>701.6.3.2 Site located photovoltaic panel systems. Site located photovoltaic panel</p>	<p>Residential Code. Definitions for each type of PV system are proposed for Chapter 2. Photovoltaic Panels are PV modules incorporated into discrete panels that are installed either on the building or on the building site. In the case of roof top mounted systems, installation details are listed in the IRC. Panels located on the building site are installed in accordance with the manufacturer's installation instructions. Building integrated photovoltaic systems (BIPV) are PV modules incorporated into the building envelope such that, in the case of roof BIPV, the system not only generates electricity but also forms the roof covering. Because these products provide dual function, BIPV installation must also meet roof covering requirements found in the IRC. Wind energy systems are recognized as another renewable energy source and must be placed in accordance with the manufacturer's installation instructions. Chapter 2: Definitions are added to Chapter 2 to clearly distinguish between the different types of renewable energy systems that have entered the marketplace. Table 303 The revision to Table 303 is submitted to provide incentive for the use of renewable energy by increasing one level for those projects that utilize these systems in accordance with Section 701.5. It is important to will ensure that the energy efficiency of the building will not be degraded because of the use of renewable energy.</p>		

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			<p><u>systems shall be designed, constructed, and installed in accordance with manufacturer's instructions.</u></p> <p>701.6.3.3 Building integrated solar photovoltaic systems. <i>Building integrated solar photovoltaic systems shall be designed, constructed and installed in accordance with the International Residential Code and NFPA 70.</i></p> <p>701.6.3.4 Wind energy systems. <i>Wind energy systems shall be designed, constructed and installed in accordance with manufacturer's instructions.</i></p>			
922	Bill Klaproth Next Level Glentronics, Inc.	Other (include section number and title below)	705.3 Basement Sump Pump	<p>The United States Green Building Council says in the United States alone, buildings account for 72% of electricity consumption, so it makes sense that our biggest opportunity to save energy comes with energy efficient homes. And the consumer/builder should be alerted to the most energy efficient products available - including sump pumps! Compared to ordinary sump pumps, pumps that use energy efficient PSC motors offer enhanced energy efficiency - resulting in lower utility costs for the homeowner and lower demand on fossil fuels which pollute our air, without sacrificing performance. The key to this is highly efficient PCS (permanent split capacitor) motors that use substantially fewer amps compared with other pumps. That means they are considerably less expensive for a homeowner to operate. For example the average cost savings earned when using a sump pump with a PSC motor varies between \$50 and \$75 per year depending on model - in essence these pumps pay for themselves. As you know less amps mean less kWh reducing CO2 emissions as well. To give you an example, to date, Glentronics pumps (maker of the PHCC Pro Series that use PSC motors) have saved 25.1 million kWh or enough energy to power 2,369 homes for one year, in addition to ridding the environment of 17,887 metric tons of carbon. That's just one manufacturer - many others use PSC motors as well: Little Giant (several systems) http://www.lgpc.com/ Zoeller (M, N or D264) http://www.zoeller.com/zcopump/Products/zcoproducts.htm Hydromatic (B75-M1 or -V1) http://www.hydromatic.com/sump/sump_effluent.html Barnes/Crane (SP BP and EP Series) http://www.cranepumps.com/index.php Gould (SP02, SP03, LSP03, LSP07) http://www.goulds.com/ Grundfos/Paco http://www.grundfos.us/web/HOMEus.NSF http://www.pacopumps.com/HomePages/PacoHome.asp Imagine if all new construction and retrofit projects in the U.S. employed sump pumps with energy efficient PSC motors, the energy savings would be hard to ignore. For that reason we feel energy efficient sump pumps that use PSC motors should be included in the NGBS. Thank you very much for your time!</p>		
923	Tom Werst GDS Associates, Inc Self	Other (include section number and title below)	Either completely remove section 703 - Prescriptive Path(Preferred) or reduce all points assigned by at least a factor of 4	<p>Prescriptive rating systems for energy efficiency are notoriously poor predictors of actual performance. It is currently A LOT easier to gain points using the prescriptive path than the performance path under the NGBS. This is the exact opposite to the way many building performance experts say it should be. A house is a system, and if you do a lot of things right, but fail miserably on others, your home is not going to be energy efficient. For example, you can use all kinds of advanced framing techniques, lots of insulation, great windows and doors, efficient appliances, super efficient furnace & DHW, insulate foundation and slab, but do a bad job air sealing or have very leaky duct work, and building performance will be poor. Or as above and also do a great job on air sealing and duct sealing, but undersize and poorly install a geothermal system and your electric bills will be through the roof due to electric resistance back-up kicking in. The bottom line is that a prescriptive scoring system for energy efficiency is a poor predictor of true performance. For example, for a building that I am performing both HERS Rating and Green Building Verification: • HERS Rating of 62 = 38% better = Silver (if accepted) • IECC 2006 = 17.3% better = Bronze(NGBS) • Prescriptive Path = 138 points = Gold + 38 points toward additional Given the above choices, what builder wouldn't go the</p>		

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				prescriptive path?? Besides being a poor predictor of true performance, the prescriptive path also requires more effort to verify. Some states, for example New Hampshire, only allow performance based ratings for their ENERGY STAR programs specifically because the prescriptive based ratings are such notoriously poor predictors of actual building performance. In addition, it appears that the NGBS was written so that the current IECC(now, or soon to be 2009 in most states because IECC 2009 adoption is required to receive American Recovery and Reinvestment Act funding) is to be used for the performance path, so as the bar is raised with subsequent IECCs buildings will need to be more energy efficient in order to achieve the same certification levels, which makes sense. However, there is no such automatic raising of the bar for the prescriptive path. So as it gets more difficult to achieve a given level with the performance path, the few builders who might have chosen the performance path will quickly switch to the prescriptive path. In summary, the prescriptive path should be done away with – it is a poor indicator of true performance and will eventually give NGBS a bad name, just like USGBC has gotten a black eye recently over poor energy performance of LEED rated buildings.		
222	Craig Conner, Gary Klein Building Quality / Affiliated International Management Selves	Entire Chapter 7 Revise as follows	Revise the energy portion of ICC 700 to be based on exceeding the most current version of the IECC, the 2012 IECC. Points should be adjusted such that there are points for exceeding the levels in the 2012 IECC, but not for levels at or below the 2012 IECC. Some of the new items in the 2012 IECC would become mandatory without points. The concept of tradeoffs should be retained, such that it is possible to put in elements of the building that are below the ICC 700, or even the 2012 IECC, provided the overall building meets the energy goal.	The energy levels in the ICC 700 were based on exceeding the efficiency required by the 2006 IECC. Since the ICC 700 was written there have been major changes leading to the 2012 IECC. The new basis for the ICC 700 should be the 2012 IECC.		

Chapter 11 – Referenced Documents

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311	Eric Lacey RECA RECA	1102 Referenced Documents Revise as follows	<p style="text-align: center;">Chapter 11</p> <p style="text-align: center;">Referenced Documents</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">IBC</td> <td style="width: 10%;">2006 2012</td> <td style="width: 20%;">International Building Code</td> <td style="width: 60%;">202, 602.3.1, 602.9, 602.10, 703.1.1, 901.2.1(2)(e), 1001.1(10)</td> </tr> <tr> <td>IECC</td> <td>2004</td> <td>International Energy Conservation Code</td> <td>B201.1</td> </tr> <tr> <td>IECC</td> <td>2006 2012</td> <td>International Energy Conservation Code</td> <td>701.1, 701.1.1, 701.1.2, 702.2, 703.1.1</td> </tr> <tr> <td>IMC</td> <td>2006 2012</td> <td>International Mechanical Code</td> <td>701.4.2.1, 704.6.1(1)</td> </tr> <tr> <td>IPC</td> <td>2006 2012</td> <td>International Plumbing Code</td> <td>903.5.3</td> </tr> <tr> <td>IRC</td> <td>2006 2012</td> <td>International Residential Code</td> <td>202, 3035.1, 601.1, 602.3.1, 602.9, 602.10, 701.4.2.1, 703.1.1, 704.6.1(1), 802.1, 902.3, 903.2.1(3), 1001.1(10)</td> </tr> </table>	IBC	2006 2012	International Building Code	202, 602.3.1, 602.9, 602.10, 703.1.1, 901.2.1(2)(e), 1001.1(10)	IECC	2004	International Energy Conservation Code	B201.1	IECC	2006 2012	International Energy Conservation Code	701.1, 701.1.1, 701.1.2, 702.2, 703.1.1	IMC	2006 2012	International Mechanical Code	701.4.2.1, 704.6.1(1)	IPC	2006 2012	International Plumbing Code	903.5.3	IRC	2006 2012	International Residential Code	202, 3035.1, 601.1, 602.3.1, 602.9, 602.10, 701.4.2.1, 703.1.1, 704.6.1(1), 802.1, 902.3, 903.2.1(3), 1001.1(10)	The National Green Building Standard should reference only the latest versions of the International Codes wherever possible. Because the 2012 generation of International Codes will be available prior to publication of the updated NGBS, the updated NGBS should reference the 2012 versions.		
IBC	2006 2012	International Building Code	202, 602.3.1, 602.9, 602.10, 703.1.1, 901.2.1(2)(e), 1001.1(10)																											
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328	John Woestman Kellen Company Extruded Polystyrene Foam Association (XPSA)	1102 Referenced Documents Revise as follows	<p>ICC 2006 2012 International Energy Conservation Code</p> <p>ICC 2006 2012 International Energy Conservation Code</p>	Updating this reference code to the latest edition of the IECC In order to maintain credibility as the residential “green” standard and consistency with the commercial green code (IgCC) this standard should reference the most recent edition of the National Model Energy Code – the 2012 IECC																										