2012 Update - National Green Building Standard™
Proposed changes to 2008 NGBS
February 2011

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TG-7: Renovations and Additions

Chapter 2 – Definitions

ID	Name Company Entity Represented	Section Number And Requested Action	Proposed Change	Reason	Task Group Action	Reason for TG action
391	Robert Hill NAHB Research Center NAHB Research Center	202 Definitions Revise as follows	Building, Existing. Building <u>completed and occupied</u> prior to any renovation considered under this standard.~~the adoption of this Standard or one for which a legal building permit has been issued~~.	The inclusion of buildings for which permits have been issued would allow a building that had not yet been constructed to be certified as a renovation. The original wording also would have been confusing as time goes on implying that a building built after the standard was originally introduced could not be remodeled to meet the standard.		
401	Robert Hill NAHB Research Center NAHB Research Center	202 Definitions Revise as follows	<u>New Construction - Construction of a new building or construction that completely replaces more than 75% of an existing building.</u>	There have been a number of situations where it was not clear if the construction should be considered as new construction or a renovation. Examples would include completely demolishing the buildign but rebuilding on the same basement foundation or a gut rehab were everything is removed except the structure. Teh task group should determine the actual percentage to be used but the impact on the mandatory requirements should be considered. There are some mandatory new construction practices related to the foundaton that will require substantial effort to meet if the building must follow the new construction guidelines.		
406	Robert Hill NAHB Research Center NAHB Research Center	202 Definitions Revise as follows	Renovation. the process of restoring or improving an existing building or dwelling unit that may include changes to the landscape and hardscape. <u>A renovation may also include an addition.</u>	There have been questions regarding additions as part of a renovation.		

Chapter 3 – Compliance Method

ID	Name Company Entity Represented	Section Number And Requested Action	Proposed Change	Reason	Task Group Action	Reason for TG action
140	Steve Hale Build Green NM Build Green NM	305.1 Applicability (Green Renovations & Additions) Delete without substitution	~~305.1 Applicability~~	There should be a seperate "green remodeling" guide the Standard is not workable for renovations (other than "gut" rehabs).		
906	Michael "Mick" Dalrymple Green Environmental Building Supplies self	305.5 Green Remodel Path	305.5.4(2) Water consumption: Water consumption shall be based on the estimated annual use. Reduction in water consumption shall be evaluated based on improvements to water using fixtures and alterations to landscaping, employing consistent and reasonable pre- and post-remodel occupant activity assumptions.	(Format icons are not present) Existing language of "based on points in Chapter 8" does not have enforceable or useful meaning in this case.		
907	Michael "Mick" Dalrymple Green Environmental Building Supplies self	305.5 Green Remodel Path	305.5.4(1) Energy consumption: Energy consumption shall be based on the estimated annual energy use due to heating, cooling, water heating, lights/appliances and renewable energy as determined by a third party energy audit.	(Formatting icons are not working) In order to mainstream this as much as possible, it is most useful to include the standard elements of an energy audit, which includes lights/appliances and renewable energy. This reduces the work of creating a non-standard energy audit, or making calculations based upon portions of an energy audit. I believe standard energy audits are being used in practice, anyway.		
908	Michael "Mick" Dalrymple Green Environmental Building Supplies self	305.5 Green Remodel Path	305.5.5: (Add) The post-remodel building or dwelling unit must achieve a minimum 99 HERS score. To achieve Silver certification, the building or dwelling unit must achieve a minimum 85 HERS score.	(Formatting icons not working) I am in the process of finishing a certification on a single family home with a post-remodel HERS score of 188. Not only is it embarassing to call this a certified green remodel, it severely dilutes the brand value of a certified new green home. I was recently interviewed by a national publication regarding an Emerald remodel that I verified, asking why there are not more Emerald certified homes. It took careful wording to explain that an Emerald remodel is not equivalent to an Emerald new build and that the two should not be confused. While the achievement of improving the existing building stock is possibly more important in the big picture than building new homes significantly more green than new codes, it is important in the marketplace that energy performance be meaningful across the board if		

				the homes are going labeled as "green". If I was a builder of new green certified homes, I would also see it as a matter of competitive fairness.		
909	Michael Grothe NAHB Research Center NAHB Research Center	305.5 Green Remodel Path	Include language to state that only the requirements in sections 305.5.3 and 305.5.4 and 305.5.5 have to be met for certification.	The language in section 305.5 doesn't make it clear that no other sections or requirements outside of the ones mentioned in 305.5 are required. One can assume that you have to comply with other chapters as well.		
566	Robert Hill NAHB Research Center NAHB Research Center	305.5 Green Remodel Path Delete and substitute as follows	Completely restructure how remodeling, renovations, and additions are handled. See separate document after all proposed changes.	See separate document after the table.		
230	Craig Conner, Gary Klein Building Quality / Affiliated International Management selves	Other (include section number and title below) Revise as follows	All sections on renovations and additions need to be reviewed and most revised.	The renovations and additions sections are often confusing as to what is required and the assigned points don't always make sense. Would it help to make these a separate section of ICC 700? Maybe or maybe not.		

Entire Document

ID	Name Company Entity Represented	Section Number And Requested Action	Proposed Change	Reason	Task Group Action	Reason for TG action
564	Steven Orlowski National Association of Home Builders NAHB	Entire Chapter 6	The National Green Building Standard's broad applicability to a range of project types is a key strength to the document and the impact that it will have on the growth of green residential construction. In fact, by including guidance for existing buildings, the NGBS can be a good resource in addressing the issue of older buildings requiring more energy and other resources to operate (when compared to new construction.) However, the current system of using modifications to the practices and scoring for new construction can be a cumbersome and confusing process when scoring renovation and addition projects. Simplifying the document and removing extraneous information so that practitioners can more readily focus on the practices and scoring that relate to their particular project could increase the practical utility of the standard for older buildings. An example of how this approach would change the standard is provided in this proposal , where Chapter 6 has been revised by removing all of the addition and revisions notes from the chapter and a new chapter 12 has been created to consolidate all of the renovation notes into its own chapter.			
			CHAPTER 6 **RESOURCE EFFICIENCY** **NEW CONSTRUCTION PROJECTS** Remove all construction and renovation notes **CHAPTER 12** **RESOURCE EFFICIENCY** **RENOVATION PROJECTS** Renovation notes are updated as follows. **GREEN BUILDING PRACTICES** | **POINTS** **1201** **QUALITY OF CONSTRUCTION MATERIALS AND WASTE** **1201.0 Intent.** Design and construction practices that minimize the environmental impact of the building materials are incorporated, environmentally efficient building systems and materials are incorporated, and waste generated during construction is reduced.			

1201.1 Conditioned floor area. Conditioned floor area, as defined by ICC IRC and calculated in accordance with NAHBRC Z765, is limited. Dwelling unit size is to be calculated in accordance with NAHBRC Z765. Only the conditioned floor area for stories above grade plane is to be included in the calculation.	
(1) less than or equal to 1,000 square feet (93 m^2)	**15**
(2) less than or equal to 1,500 square feet (139 m^2)	**12**
(3) less than or equal to 2,000 square feet (186 m^2)	**9**
(4) less than or equal to 2,500 square feet (232 m^2)	**6**
(5) greater than 4,000 square feet (372 m^2) **(For every 100 square feet (9.29 m^2) over 4,000 square feet (372 m^2), one point is to be added in Table 303, Category 7 for each performance level.)**	**Mandatory**
When renovations increase the total existing building or dwelling unit area by 1 percent or less, points are awarded as follows:	
(a) The total area of the existing building or dwelling unit is less than or equal to 2500 square feet (232 m2).	**6 Additional Points**
(b) The total area of the existing building or dwelling unit is greater than 2500 square feet (232 m2).	**1 Additional Point**
***Multi-Unit Building Note**: For a multi-unit building, use a weighted average of the individual unit sizes in qualifying for available points.*	

1201.2 Material usage. Building-code-compliant structural systems or advanced framing techniques are implemented that optimize material usage. **(Points awarded for each system or framing technique implemented.)**	**3** **9 Points Max**

1201.3 Building dimensions and layouts. Building dimensions and layouts are designed to reduce material cuts and waste. This practice is used for a minimum of 80 percent of the following areas:	
(1) floor area	**3**
(2) wall area	**3**
(3) roof area	**3**
(4) cladding or siding area	**3**
(5) penetrations or trim area	**1**

601.4 Framing and structural plans. Detailed framing or structural plans, material quantity lists and on-site cut lists for framing, structural materials, and sheathing materials are provided.	**4**

1201.5 Prefabricated components. Precut or preassembled components, or panelized or precast assemblies are utilized for a minimum of 90 percent for the following system or building:	
(1) floor system	**4**
(2) wall system	**4**
(3) roof system	**4**
(4) modular construction for the entire building located above grade	**13**

(5) manufactured home construction for the entire building located above grade	**13**

1201.6 Stacked stories. Stories above grade are stacked, such as in 1½-story, 2-story, or greater structures. The area of the upper story is a minimum of 50 percent of the area of the story below, based on areas with a minimum ceiling height of 7 feet (2134 mm).	**8 Points Max**
(1) first stacked story	**4**
(2) for each additional stacked story	**2**

1201.7 Site applied finishing materials. Building materials or assemblies are utilized that do not require additional site applied material for finishing.	**12 Points Max**
(1) 90 percent or more of the installed building material or assembly listed below:	**5**
(Points awarded for each material or assembly.)	
(2) 50 percent to less than 90 percent of the installed building material or assembly listed below:	**2**
(Points awarded for each material or assembly.)	
(a) pigmented, stamped, decorative, or final finish concrete or masonry **(b)** trim not requiring paint or stain **(c)** window, skylight, and door assemblies not requiring paint or stain on exterior and/or interior surfaces **(d)** wall coverings or systems not requiring paint or stain or other type of finishing application	

1201.8 Foundations. Foundations, such as frost-protected shallow foundations, pier and pad foundations, post foundations and other similar foundation types, are designed and constructed.	**3**

1201.9 Above grade wall systems. One or more of the following above grade wall systems that provide sufficient structural and thermal characteristics are used for a minimum of 75 percent of the gross exterior wall area of the building:	**4**
(1) adobe **(2)** concrete and/or masonry **(3)** logs **(4)** rammed earth	

1202

ENHANCED DURABILITY AND REDUCED MAINTENANCE

1202.0 Intent. Design and construction practices are implemented that enhance the durability of materials and reduce in-service maintenance.

1202.1 Exterior doors. Entries at exterior door assemblies, inclusive of side lights, are covered by one of the following methods to protect the building from the effects of precipitation and solar radiation. A projection factor of 0.375 minimum is provided. Eastern and western facing entries in Climate Zones 1, 2, and 3, as determined in accordance with Figure 6(1), have a projection factor of 1.0 minimum, unless otherwise protected from direct solar radiation by other means (e.g., screen wall, vegetation).	**5 Points Max**
(a) installing a porch roof or awning **(b)** extending the roof overhang **(c)** recessing the exterior door	
(1) main entrance door	**3**
(2) additional covered door assembly	**1**

1202.2 Roof overhangs. If a renovation alters the existing roof, then roof overhangs, based on	**5**

inches rainfall in Table 602.2, are provided over a minimum of 90 percent of exterior walls to protect the building envelope.

Table 602.2
Minimum Roof Overhang for One- & Two-Story Buildings

Inches Rainfall (1)	Eave Overhang (Inches)	Rake Overhang (Inches)
Less than 20	12	12
21 to 40	12	12
41 to 70	18	12
More than 70	24	12

(1) Average annual inches of rainfall are in accordance with Figure 6(2)

For SI: 1 foot = 304.8 mm

1202.3 Foundation drainage.	
1202.3.1 Where required by the ICC IRC or IBC for habitable and usable spaces below grade, exterior drain tile is installed.	**Mandatory**
1202.3.2 If a renovation involves the demolition/reconfiguration of exterior walls and/or modification of the existing foundation drainage system, then interior and exterior foundation perimeter drains are installed and sloped to discharge to daylight, dry well, or sump pit.	**6**

1202.4 Drip edge. Drip edge is installed at eaves and gable roof edges.	**3**

1202.5 Roof water discharge. A gutter and downspout system or splash blocks and effective grading are provided to carry water a minimum of 5 feet (1524 mm) away from perimeter foundation walls.	**5**

1202.6 Finished grade. Finish grade at all sides of building is sloped to provide a minimum of 6 inches (150 mm) of fall within 10 feet (3048 mm) of the edge of the building. Where lot lines, walls, slopes, or other physical barriers prohibit 6 inches (152 mm) of fall within 10 feet (3048 mm), the final grade is sloped away from the edge of the building at a minimum slope of 5 percent and the water is directed to drains or swales to ensure drainage away from the structure.	**2**

1202.7 Termite barrier. Continuous physical foundation termite barrier used with or without low toxicity treatment is installed in geographical areas that have subterranean termite infestation potential determined in accordance with Figure 6(3).	**4**
(1) new non-chemical termite barrier is provided	**1 Additional Point**
(2) existing chemical barrier is removed and replaced with a non-chemical barrier	**3 Additional Points**

1202.8 Termite-resistant materials. Termite-resistant materials are used as follows: _	
(1) In areas of slight to moderate termite infestation probability (as defined by Figure 6(3)) for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings within the first 2 feet (610 mm) above the top of the foundation.	**2**
(2) In areas of moderate to heavy termite infestation probability (as defined by Figure 6(3)) for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings within the first 3 feet (914 mm) above the top of the foundation.	**4**

(3) In areas of very heavy termite infestation probability (as defined by Figure 6(3)) for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings.	**6**

1202.9 Water-resistive barrier. If a renovation includes exterior veneer and/or siding replacement, then where required by the ICC IRC or IBC, a water-resistive barrier and/or drainage plane system is installed behind exterior veneer and/or siding.	**Mandatory**

1202.10 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier is installed in accordance with the ICC IRC or IBC at roof eaves and extends at a minimum of 24 inches (610 mm) inside the exterior wall line of the building.	**Mandatory**

1202.11 Foundation waterproofing. If a renovation involves the demolition/reconfiguration of exterior walls, modification of the foundation wall, or an effort to improve foundation waterproofing, then enhanced foundation waterproofing is installed: **(1)** rubberized coating, or **(2)** drainage mat	**6**

1202.12 Flashing. Flashing details are shown on plans and flashing is installed at all of the following locations, as applicable: **(1)** around exterior fenestrations, skylights and doors **(2)** roof valleys **(3)** deck/balcony to building intersections **(4)** at roof-to-wall intersection and at roof-to-chimney intersections **(5)** a drip cap is provided above windows and doors that are not flashed or protected by covering in accordance with Section 602.1	**6**

1202.13 Roof surfaces. If a renovation includes roof replacement, then a minimum of 90 percent of roof surfaces are constructed of one or both of the following:	**3**
(1) products that are in accordance with the ENERGY STAR® cool roof certification or equivalent **(2)** a green (landscaped) roof system	

1202.14 Recycling. Occupant recycling is facilitated by one or more of the following methods:	
(1) A built-in collection space in each kitchen and an aggregation/pick-up space in a garage, covered outdoor space, or other area for recycling containers	**3**
(2) Compost facility provided on-site	**3**

1203

REUSED OR SALVAGED MATERIALS

1203.0 Intent. Practices that reuse or modify existing structures, salvage materials for other uses, or use salvaged materials in the building's construction are implemented.

1203.1 Reuse of existing building. Existing buildings and structures are reused, modified, or deconstructed in lieu of demolition. **(Points awarded for every 200 square feet (18.5 m^2) of floor area.)**	**1** **12 Points Max**

1203.2 Salvaged materials. Reclaimed and/or salvaged materials and components are used. The total material and labor cost of salvaged materials is equal to or exceeds 1 percent of the total construction cost.	**3**
1203.3 Scrap materials. Facilitation for sorting and reuse of scrap building material (e.g., provide a central storage area or dedicated bins).	**4**

1204

RECYCLED-CONTENT BUILDING MATERIALS

1204.1 Recycled content. Building materials with recycled content are used for two minor and/or two major components of the building.	**Points per Table 604.1**

Table 604.1

Recycled Content

Material Percentage Recycled Content	Points Per 2 Minor	Points Per 2 Major
25% to less than 50%	**1**	**2**
50% to less than 75%	**2**	**4**
more than 75%	**3**	**6**

1205

RECYCLED CONSTRUCTION WASTE

1205.0 Intent. Waste generated during construction is recycled. All waste classified as hazardous shall be properly handled and disposed. **(Points not awarded for hazardous waste removal.)**	
1205.1 Construction waste management plan. A construction waste management plan <u>including information on the proper handling and disposal of hazardous waste</u> is developed, posted at the jobsite, and implemented.	**<u>Mandatory</u>** **<u>2 Points</u>**
The <u>posted and implemented</u> construction waste management plan includes a goal of recycling or salvaging a minimum of 50 percent (by weight) of construction and land-clearing waste.	**<u>6 Additional Points</u>**
1205.2 On-site recycling. <u>All waste classified as hazardous waste is properly handled and disposed of. The weight of this material is exempted from landfill diversion when Section 605.2 is applied to existing buildings.</u>	**<u>Mandatory</u>**
<u>On-site recycling measures following applicable regulations and codes are implemented, such as the following:</u> (a) <u>Materials are ground or otherwise safely applied on-site as soil amendment or fill. A minimum of 50 percent (by weight) of construction and land-clearing waste is diverted from landfill.</u> (b) <u>Alternative compliance methods approved by the Adopting Entity</u>	**<u>7</u>**
1205.3 Recycled construction materials. Construction materials (e.g., wood, cardboard, metals,	**6 Points Max**

drywall, plastic, asphalt roofing shingles, or concrete) are recycled offsite.	
(1) a minimum of two types of materials are recycled	**3**
(2) for each additional recycled material	**1**

1206
RENEWABLE MATERIALS

1206.0 Intent. Building materials derived from renewable resources are used.

1206.1 Biobased products. The following biobased products are used: **(a)** certified solid wood in accordance with Section 606.2 **(b)** engineered wood **(c)** bamboo **(d)** cotton **(e)** cork **(f)** straw **(g)** natural fiber products made from crops (soy-based, corn-based) **(h)** products with the minimum biobased contents of the USDA 7 CFR Part 2902 **(i)** other biobased materials with a minimum of 50 percent biobased content (by weight or volume)	**8 Points Max**
1206.1(1) Two types of biobased materials are used, each for more than 0.5 percent of the project's projected building material cost.	**3**
1206.1(2) Two types of biobased materials are used, each for more than 1 percent of the project's projected building material cost.	**6**
1206.1(3) For each additional biobased material used for more than 0.5 percent of the project's projected building material cost.	**1** **2 Points Max**

1206.2 Wood-based products. Wood or wood-based products are certified to the requirements of one of the following recognized product programs:- **(a)** AFF *American Tree Farm System®* **(b)** Canadian Standards Association's *Sustainable Forest Management System Standards* (CSA Z809) **(c)** *Forest Stewardship Council* (FSC) **(d)** *Program for Endorsement of Forest Certification Systems* (PEFC) ***(e)*** *Sustainable Forestry Initiative® Program (SFI)* **(f)** other product programs mutually recognized by PEFC	
1206.2(1) Where a minimum of two certified wood-based products are used for minor elements of the building, such as all trim, cabinetry, or millwork.	**3**
1206.2(2) Where a minimum of two certified wood-based products are used in major elements of the building, such as walls, floors, or roof.	**4**

1206.3 Manufacturing energy. Materials are used for major components of the building that are manufactured using a minimum of 33 percent of the primary manufacturing process energy derived from renewable sources, combustible waste sources, or renewable energy credits (RECs). **(2 points awarded per material.)**	**6 Points Max**

1207
RESOURCE-EFFICIENT MATERIALS

1207.1 Products containing fewer materials are used to achieve the same end-use requirements as conventional products, including but not limited to: **(3 points awarded for each material.)**	**9 Points Max**

			(1) lighter, thinner brick with bed depth less than 3 inches and/or brick with coring of more that 25 percent **(2)** engineered wood or engineered steel products **(3)** roof or floor trusses			
			1208 **INDIGENOUS MATERIALS**			
			1208.1 Indigenous materials are used for major elements of the building.	**10 Points Max**		
			(1) one type of material	**2**		
			(2) for each additional material	**2**		
			1209 **LIFE CYCLE ANALYSIS**			
			1209.1 A more environmentally preferable product or assembly is selected for an application based upon the use of a Life Cycle Assessment (LCA) tool compliant with ISO 14044 or other recognized standards that compare the environmental impact of building materials, assemblies, or the whole building.	**15 Points Max**		
			(1) per product/system comparison	**3**		
			(2) whole building LCA analysis	**15**		
			1210 **INNOVATIVE PRACTICES**			
			1210.1 Manufacturer's environmental management system concepts. Product manufacturer's operations and business practices include environmental management system concepts, and the production facility is ISO 14001 certified or equivalent. The aggregate value of building products from ISO 14001 certified or equivalent production facilities is 1 percent or more of the estimated total building materials cost. **(1 point awarded per percent.)**	**10 points Max**		

Chapter 7 – Energy Efficiency

ID	Name Company Entity Represented	Section Number And Requested Action	Proposed Change	Reason	Task Group Action	Reason for TG action
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 sealed to comply with Section 701.4.3.1(2). ~~weather-stripped and sealed.~~ (2) Band joist and rim joists. Band and rim joists shall comply with above grade exterior wall insulation and air sealing requirements in ICC IECC ~~are insulated and air sealed~~. Renovation Note: Existing uninsulated rim and/or band joists are insulated to comply with above grade exterior wall requirements in ICC IECC.	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).		

			(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, foam sealant, or the equivalent is installed to seal the bottom plate of exterior walls. Renovation Note: Existing perimeter sill plates and bottom plates are sealed. (4) Skylights and knee walls. Skylight shafts and knee walls are insulated to comply with above grade exterior wall requirements in ICC IECC. ~~the same level as the exterior walls.~~ Renovation Note: Existing skylight shafts and knee walls are insulated to comply with above grade exterior wall requirements in ICC IECC. (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.	*(NAHB RC Note: the proposed change is also provided to TG-5 to review the new construction language)*		
307	Eric Lacey RECA RECA	701.4.4.1 Fenestration Specifications Revise as follows	**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 combined total maximum area of 15 square feet (1.39 m^2) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice. **Table 701.4.4.1** **Fenestration Specifications** (see table below) **Addition and Renovation Note:** Section 701.4.4.1 is mandatory for both additions and renovations where new windows are installed.	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. *(NAHB RC Note: the proposed change is also provided to TG-5 to review the new construction language)*		
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:	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-5 to review the new construction language)*		

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

			15 percent 30 percent 45 percent~~, or meets the requirements of ICC IECC, Section 402.1.4~~			

Chapter 8 – Water Efficiency

ID	Name Company Entity Represented	Section Number And Requested Action	Proposed Change	Reason	Task Group Action	Reason for TG action
928	Michael Grothe NAHB Research Center NAHB Research Center	801.4 Showerheads	Addition and Renovation Note: Existing showerhead is replaced with a showerhead that has a flow rate in accordance with Section ~~804.1.1~~	Section 804.1.1 does not exist in the NGBS		
121	Steve Hale Build Green NM Build Green NM	Add New Section Add new as follows	Retrofit Toilets within the limits of the local jurisdiction 4 points per toilet limit 12 points	Suggest adding offsetting existing water use within the jurisdiction or water service area like retrofitting existing high water use toilets, faucets, or adding cisterns off site. The City of Santa Fe has been requiring this for about 8 years and the water savings has been amazing.		

Chapter 9 – Indoor Air Quality

ID	Name Company Entity Represented	Section Number And Requested Action	Proposed Change	Reason	Task Group Action	Reason for TG action
197	Steven Orlowski National Association of Home Builders NAHB	901.0 Intent (Pollutant Source Control) Delete and substitute as follows	***901.15 Renovation Note:*** *For buildings constructed prior to 1978, all contractors must adhere to the EPA regulations for lead-safe work practices ~~are used~~ during renovation, remodeling, painting, and demolition.* — ***Mandatory 0 Additional Points***	Proposed language will clarify that all lead-safe work is in accordance with the EPA regulations and guidelines. It is important that all contractors and subcontractors are aware that the federal guidelines supersede any local jurisdictional requirements or methods outlined in this standard.		
198	Steven Orlowski National Association of Home Builders NAHB	902.2.3 MERV Filters Delete and substitute as follows	**902.2.3** MERV filters 8 or greater are installed on central air systems. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of MERV 8 filters. — **3** ***Addition Note:*** *Section 902.2.3 applies only to additions that include a new HVAC system.* — ***0 Additional Points*** ***Renovation Note:*** *Section 902.2.3 applies only to renovations that ~~replace an~~ continue to use the existing HVAC system.* — ***1 Additional Point***	Many HVAC systems can be dramatically improved by upgrading the air filters, without having to replace the entire HVAC system. The current renovation note for section 902.2.3 seems to conflict with the base language. Section 902.2.3 allows designers to replace the filter with a MERV filter 8 or greater, after they verify that the HVAC system can handle the pressure drop with the more restrictive filter. The renovation note only permits the additional credit when the HVAC system is replaced.		
289	Kelly Wedell US EPA US EPA	Add New Section Add new as follows	**Ban of Asbestos within new facilities:** Final products (articles) to be installed in new residential buildings shall not contain asbestos ***Addition and Renovation Note:*** Inspect building for asbestos-containing building material on an ongoing basis, and prepare a management plan to prevent or reduce asbestos hazards. The building inspection and management plan shall satisfy the requirements under the implementing rules of the Asbestos Hazard Emergency Response Act (AHERA) for schools, as published in the Code of Federal Regulations, Chapter 40, Part 763, Subpart E. All buildings, regardless of building type, shall meet these requirements. Before undertaking demolishing or renovating activities, notify the appropriate	Given that the standard has requirements intended for renovations and additions to existing buildings, many of which contain legacy chemicals of concern, EPA would like to see the renovation process trigger verification that asbesto is addressed as suggested as additions to Chapter 9. *(NAHB RC Note: This proposed change is also provided to TG-3 to approve the new construction portion)*		

				authorities as required by the Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP), found at 40 CFR Part 61, Subpart M. Dispose of any asbestos waste in accordance with the regulations. If minimum amounts of regulated asbestos will be removed or disturbed, such that the demolition or renovation activity does not trigger the requirements of the regulation, the owner/operator must adequately wet and carefully remove the asbestos components, keeping them wet until collected for disposal. Reporting: Provide a copy of inspection results and all documentation required under AHERA regulations. Provide documentation of all disposal measures, including disposal companies used and final destination of waste materials.			
294	Kelly Wedell US EPA US EPA	Add New Section Add new as follows		**PCBs in Caulk: Addition and Renovation Note:** **For all buildings constructed prior to 1978, conduct an indoor air quality test for PCBs, following EPA's Compendium Method TO-4A (high air volume) or Compendium Method TO-10A (low air volume). In addition to or in place of the air quality test, test caulking for PCBs as well if it is peeling or visibly deteriorating. Testing of caulk should follow the procedures outlined in EPA's Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.** **If PCBs are present in indoor air in concentrations above background levels or are present in caulk in concentrations greater than or equal to 50 ppm, take steps to minimize exposure and remove and replace the caulking as soon as practicable. Interim steps to reduce exposure should follow EPA best practices, as found at http://www.epa.gov/pcbsincaulk/caulkinterim.htm. Disposal of caulk or other building products contaminated by PCB-bearing caulk must follow regulatory guidelines for PCB bulk product waste, as defined at 40 CFR 761.62.** **Reporting: provide copies of all testing results. Provide documentation of all disposal measures, including disposal companies used and final destination of waste materials.**	Given that the standard has requirements intended for renovations and additions to existing buildings, many of which contain legacy chemicals of concern, EPA would like to see the renovation process trigger verification that PCBs are addressed as suggested above as additions to Chapter 9.		

Chapter 10 – Operation, Maintenance, and Building Owner Education

ID	Name Company Entity Represented	Section Number And Requested Action	Proposed Change		Reason	Task Group Action	Reason for TG action
199	Steven Orlowski National Association of Home Builders NAHB	1001.1 Homeowner's Manual Delete and substitute as follows	***Renovations Note:*** *A building owners' manual that includes the following:*	***Mandatory*** ***0 Additional Points***	To ensure that the standard does not reference specific EPA documents that may be outdated or discontinued, the standard should simple reference that the homeowner should receive a copy of an EPA approved document applicable to home renovations.		
			(1) *all mandatory items listed in Section 1001.1* ***(2)*** *a minimum of six of the non-mandatory items listed in Section 1001.1* ***(3)*** *the EPA approved consumer pamphlets on lead renovation ~~publications "Reducing Lead Hazards When Remodeling Your Home" and "Asbestos in Your Home: A Homeowner's Guide"~~*				
204	Steven Orlowski National Association of Home Builders NAHB	1003.2 Operations Manuals Revise as follows	**1003.2 Operations manual.** Operations manuals are created and distributed to the responsible parties in accordance with Section 1003.0. Between all of the operation manuals, five or more of the following options are included.	**1**	Points should be accredited to renovators and remodelers that provide all of the mandatory items and two of the non-mandatory items to the owner as listed in section 1003.2. There is no reason that renovation projects should be required to provide the documentation and not receive the same points that new construction projects receive for providing the same documentation.		
			Addition and Renovation Note: An operations manual that includes the following:	***~~0~~ 1 Additional Points***			
			(1) *all mandatory items listed in Section 1003.2* ***(2)*** *a minimum of three of the non-mandatory items listed in Section 1003.2*				
203	Steven Orlowski National Association of Home Builders	1003.3 Maintenance Manuals	1003.3 Maintenance manual. Maintenance manuals are created and distributed to the responsible parties in accordance with Section 1003.0. Between all of the maintenance manuals, five or	**1**	Points should be accredited to renovators and remodelers that provide all of the mandatory items and three of the non-mandatory items to the owner as listed in section 1003.3. There is no reason that renovation		

	NAHB	Revise as follows	more of the following options are included. Addition and Renovation Note: A maintenance manual that includes the following: *(1) all mandatory items listed in Section 1003.3.* *(2) a minimum of three of the non-mandatory items listed in Section 1003.3.*	~~***0***~~ ***1 Additional Points***	projects should be required to provide the documentation and not receive the same points that new construction projects receive for providing the same documentation.	

Proposed Change 566 by Robert Hill - NAHB Research Center. Section 305.5 Green Remodel Path: Completely restructure how remodeling, renovations, and additions are handled.

Proposed Changes to the National Green Building Standard for Remodeling

Background

The 2008 original version of the Standard provided two paths for renovations and addition projects to comply with the Standard. The Green Building Path (section 305.4) required that buildings follow essentially the same path as required for new construction except that a number of the practices (and point values) were modified with Renovation Notes and/or Addition Notes. The alternate path, the Green Remodel path, was available only to homes built prior to 1980 and was a much more streamlined process that required only showing threshold levels of reduction in energy and water usage and compliance with 5 indoor environment quality practices.

While there was significant interest in having remodeling projects certified to the Standard, only 1.3 percent of the certified buildings used the Green Building path. And only 2.6 percent followed the Green Remodel path. There was significant confusion among remodelers about the pathway choices and how to follow them. There was also significant confusion regarding how to read and interpret the Addition Notes and Renovation Notes if one was considering the Green Building path. The proper interpretation was especially confusing when there was both a renovation and an addition. Also the mandatory requirements of the Green Building path often appeared to require destroying and rebuilding parts of the structure (e.g. to install foundation drainage) regardless if there was a problem with the existing structure. This did not seem to be the “green” thing to do. Because the Green Remodel path only focused on energy, water and just touched upon IEQ there was some concern that this was not a truly green path. The Green Remodel path also had some significant holes such as no requirement for the proper handling of hazardous waste.

The existing housing market offers a significant potential for significant environmental impact but a clearer approach is needed to make it effective for the remodelers.

The following proposal is for the task group’s and committee’s consideration. This proposal would eliminate the Green Building Path but allow all buildings to be remodeled following an approach similar to the existing Green Remodel path. This path would be broadened and strengthened with the addition of mandatory requirements in chapters 6,7,9, and 10. A new chapter 11 has been added to define the mandatory requirements and to clearly distinguish the application between new and existing construction. The threshold levels for improvement in energy and water would remain the same and would be the determining factor in establishing the level (Bronze, Silver Gold, and Emerald) of compliance. All the current Renovation Notes and Addition Notes would be deleted from the Standard.

Buildings post 1980 would be eligible for in this new version but they would have a greater challenge in meeting the energy and water thresholds since those buildings likely would have been built to more stringent codes. Additions would also be included in the green building path but those as well would have a greater challenge in meeting the energy and water thresholds since the enlarged building would normally require more energy and water. Minimal renovations (e.g. a kitchen remodel) would not likely meet the standard due to the energy and water thresholds.
The current section 305 is deleted and replaced with new section 305

305 Green Remodeling

305.1 Applicability. This section shall apply to any existing building where improvements are made via renovation and/or addition. Existing buildings that are essentially torn down and rebuilt (e.g. only the foundation is saved) must follow the new construction path of section 303 or 304 including all appropriate mandatory requirements.

305.2 Mandatory Practices. The building shall comply with all applicable mandatory practices in Chapter 11[new].

305.3 Consumption for both energy and water shall be estimated for both before and after the remodeling. The occupancy and life style assumed and the method of making the consumption comparison should be the same for both estimates.

(1) Energy consumption: Energy consumption shall be based on the estimated annual energy use due to heating, cooling, and water heating as determined by a third-party energy audit or analysis.

(2) Water consumption: Water consumption shall be based on the estimated annual use as determined by audit or analysis.

305.4 Consumption in both categories of Section 305.3(1) and (2) shall be reduced to achieve the desired performance level of Table 305.4.

Table 305.4
Threshold Ratings for Green Remodels

Green Remodel Practice	Performance Level			
	BRONZE	SILVER	GOLD	EMERALD
Reduction in energy and water consumption in accordance with Section 305.3	20%	34%	43%	50%

GREEN REMODELING PRACTICES (Renovations and/or Additions)	POINTS
[redacted]	
11.0 Intent This chapter sets the mandatory green practices for any remodeling project done pursuant to this standard. A remodeling project can consist of renovating an existing building, constructing an addition to an existing building, or both. Most practices have slightly different requirements depending on if the construction is new or if it is part of renovating existing structure. Practices identified as New Construction apply to work that is part of an addition or any work that involves a substantial rebuilding of the structure of an existing building. Practices identified as Existing Construction apply to renovation activities on an existing building.	
11.1 Foundation drainage. (Ref. 602.3.1) **11.1.1 New Construction.** Habitable or usable new space below grade has exterior drain tile is installed where required by the ICC IRC or IBC.. **11.1.2 Existing Construction.** Habitable or usable existing space below grade has exterior drain tile is installed where required by the ICC IRC or IBC if there is evidence of moisture issues in the space.	**Mandatory**
11.2 Finished grade. (Ref. 602.6) **11.2.1 New and Existing Construction.** Finish grade at all sides of the construction is sloped to provide a minimum of 6 inches (150 mm) of fall within 10 feet (3048 mm) of the edge of the building. Where lot lines, walls, slopes, or other physical barriers prohibit 6 inches (152 mm) of fall within 10 feet (3048 mm), the final grade is sloped away from the edge of the building at a minimum slope of 5 percent and the water is directed to drains or swales to ensure drainage away from the structure.	**Mandatory**
11.3 Water-resistive barrier. (Ref. 602.9) **11.3.1 New Construction.** Where required by the ICC IRC or IBC, a water-resistive barrier and/or drainage plane system is installed behind exterior veneer and/or siding. **11.3.2 Existing Construction.** Where required by the ICC IRC or IBC, a water-resistive barrier and/or drainage plane system is installed behind all newly installed exterior veneer and/or siding..	**Mandatory**
11.4 Ice barrier. (Ref. 602.10) **11.4.1 New Construction.** In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier is installed in accordance with the ICC IRC or IBC at roof eaves and extends at a minimum of 24 inches (610 mm) inside the exterior wall line of the building. **11.4.2 Existing Construction. .** When the existing building has a history of ice forming along the eaves causing a backup of water, an ice barrier is installed in accordance with the ICC IRC or IBC at roof eaves and extends at a minimum of 24 inches (610 mm) inside the exterior wall line of the building.	**Mandatory**
11.5 Construction waste management plan. (Ref. 605.1) **11.5.1 New Construction and Existing Construction.** A construction waste management plan is developed, posted at the jobsite, and implemented that includes provisions for proper handling and disposal of hazardous wastes.	**Mandatory**
11.7 HVAC systems. (Ref. 701.4.1)	**Mandatory**
11.7.1 New Construction. Space heating and cooling system/equipment is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent. **11.7.2 Existing Construction.** When the HVAC system is modified, space heating and cooling system/equipment is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent.	
11.8 HVAC Systems (Ref. 701.4.1.2) **11.8.1 New Construction.** 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, or an accredited design professional's and manufacturer's recommendations). **11.8.2 Existing Construction.** Where an existing radiant or hydronic space heating system serves as the primary heat source in the existing portion of the building and it is modified, the modified system is designed using industry-approved guidelines (e.g., ACCA Manual J, GAMA H-22, or an accredited design professional's and manufacturer's recommendations).	**Mandatory**
11.9 Duct systems. (Ref. 701.4.2.1) **11.9.1 New Construction.** 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. **11.9.2 Existing Construction.** Ducts that are modified as part of the remodel 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.	**Mandatory**
11.10 Supply Duct Systems. (Ref. 701.4.2.2) **11.10.1 New Construction.** Building cavities are not used as supply ducts. **11.10.2 Existing Construction.** No additional building cavities are not used as supply ducts.	**Mandatory**
11.11 Insulation and air sealing. (Ref. 701.4.3.1(1)) **11.11.1 New Construction. General.** Insulation and air sealing is in accordance with the following: **(1) Insulation.** Insulation is installed in accordance with the manufacturer's instructions or local code, as applicable. **11.11.2 Existing Construction. General.** Insulation and air sealing is in accordance with the following: **(1) Insulation.** Newly installed Insulation is installed in accordance with the manufacturer's instructions or local code, as applicable.	**Mandatory**
11.12 Shafts (duct shaft, piping shaft/penetrations, flue shaft). (Ref. 701.4.3.1(2)) **11.12.1 New Construction.** Openings to unconditioned space are fully sealed with solid blocking or flashing and any remaining gaps are sealed with caulk or foam. Fire-rated collars and caulking are installed where required. **11.12.2 Existing Construction.** Openings to unconditioned space that become accessible during the remodeling are fully sealed with solid blocking or flashing and any remaining gaps are sealed with caulk or foam. Fire-rated collars and caulking are installed where required.	**Mandatory**
11.13 Floors, foundations, and crawlspaces (Ref. 701.4.3.2 (1)) **11.13.1** **(1) New Construction.** (including insulated floors above garages and cantilevered floors) **(a)** Insulation is installed to maintain permanent contact with the underside of the subfloor decking, enveloping any attached ductwork	**Mandatory**

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. **(b)** Batt and loose-fill insulation is held in place by permanent attachments or systems in accordance with the manufacturer's instructions.	
11.13.2	
(1) **Existing Construction.** (including insulated floors above garages and cantilevered floors)	
(a) Newly installed Insulation is installed to maintain permanent contact with the underside of the subfloor decking, enveloping any attached ductwork 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. **(b)** Newly installed Batt and loose-fill insulation is held in place by permanent attachments or systems in accordance with the manufacturer's instructions.	

11.14.1 Crawlspace. (Ref. 701.4.3.2 (2))	
(2) **New and Existing Construction.** 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 or masticed.	**Mandatory**

11.15 Windows and doors. (Ref. 701.4.3.3(1)) **11.15.1**	
(1) **New Construction.** Caulking, gasketing, adhesive flashing tape, foam sealant, or weatherstripping is installed forming a complete air barrier.	**Mandatory**
11.15.2	
(1) **Existing Construction.** Newly installed doors and windows have caulking, gasketing, adhesive flashing tape, foam sealant, or weather stripping installed forming a complete air barrier. Existing windows and doors are inspected and any air barrier weaknesses are corrected.	**Mandatory**

11.16 Band joist and rim joists. (Ref. 701.4.3.3(2))	
11.16.1	
(2) **New Construction.** Band and rim joists are insulated and air sealed.	**Mandatory**
11.16.2	
(2) **Existing Construction.** Band and rim joists which become accessible during the remodeling are insulated and air sealed.	

11.17 Between foundation and sill plate bottom plate. (Ref. 701.4.3.3(3))	
11.17.1	
(3) **New Construction.**	
(a) Sill sealer or other material that will expand and contract is installed between foundation and sill plate and **(b)** Caulk or the equivalent is installed to seal the bottom plate of exterior walls.	**Mandatory**
11.17.2	
(3) **Existing Construction.**	
(a) When the bottom plate of exterior walls is exposed during the remodeling caulk or the equivalent is installed to seal the bottom plate of exterior walls.	

11.18 Skylights and knee walls. (Ref. 701.4.3.3(4))	
11.18.1	
(4) **New Construction.** Skylight shafts and knee walls are insulated to the same level as the exterior walls.	**Mandatory**
11.18.2	
(4) **Existing Construction.** Newly installed skylight shafts and knee walls are insulated to the same level as the exterior walls.	

11.19 Exterior architectural features. (Ref. 701.4.3.3(5))	
11.19.1	
(5) **New Construction.** Code required building envelope insulation and air sealing are not disrupted at exterior architectural features such as stairs and decks.	**Mandatory**

11.20 Ceilings and attics. Attic access (except unvented attics). (Ref. 701.4.3.4(1)) **11.20.1**	
(1) **New and Existing Construction.** Attic access, knee wall door, or drop-down stair is covered with insulation and gasketed. Knee wall door is an insulated unit or is covered with insulation.	**Mandatory**

11.21 Ceilings and attics. Recessed lighting. (Ref. 701.4.3.4(2))	
11.21.1	
(2) **New Construction.** Recessed light fixtures that penetrate the thermal envelope are airtight, IC-rated, and sealed with gasket, caulk, or foam.	**Mandatory**
11.21.2	
(2) **Existing Construction.** Recessed light fixtures that penetrate the thermal envelope that can be accessed during the remodeling are airtight, IC-rated, and sealed with gasket, caulk, or foam.	

11.22 Ceilings and attics. Eave vents. (Ref. 701.4.3.4(3))	
11.22.1	
(3) **New Construction.** Where ceiling/attic assemblies or designs have eave vents, baffles or other means are implemented to minimize air movement into or under the insulation.	**Mandatory**

11.23 Fenestration (Ref. 701.4.4.1)	
11.23.1 New Construction. NFRC-certified U-factor and SHGC 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 m^2) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice. **Table 701.4.4.1** **Fenestration Specifications** Climate Zones / U-Factor / SHGC Windows and Exterior Doors (maximum certified ratings) 1 and 2: 0.65 / 0.40 3: 0.40 / 0.40 4 to 8: 0.35 / Any Skylights and TDDs (maximum certified ratings) 1 to 3: 0.75 / 0.40 4 to 8: 0.60 / Any	**Mandatory**
11.23.2 Existing Construction. Newly installed windows, doors and TDDs are NFRC-certified U-factor and SHGC 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 m^2) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice. **Table 701.4.4.1** **Fenestration Specifications**	

Climate Zones	U-Factor	SHGC
	Windows and Exterior Doors (maximum certified ratings)	
1 and 2	0.65	0.40
3	0.40	0.40
4 to 8	0.35	Any
	Skylights and TDDs (maximum certified ratings)	
1 to 3	0.75	0.40
4 to 8	0.60	Any

11.24 Lighting and Appliances. (Ref. 704.2.2)	
11.24.1 New Construction. The number of recessed light fixtures that penetrate the thermal envelope are less than 1 per 400 square feet (37.16 m^2) of total conditioned floor area and are in accordance with Section 701.4.3.4(2).	**Mandatory**

11.25 Ducts (Ref. 704.4.1)	**Mandatory**
11.25.1 New Construction. Duct system is sized, designed, and installed in accordance with ACCA Manual D or equivalent.	
11.25.2 Existing Construction. Modifications to the existing duct system are sized, designed, and installed in accordance with ACCA Manual D or equivalent.	

11.26 Space and water heating options (Ref. 901.1.1)	
11.26.1 New Construction. Natural draft space heating or water heating equipment is not located in conditioned spaces, including conditioned crawlspaces. Natural draft equipment is permitted to be installed within the conditioned spaces if located in a mechanical room that has an outdoor air source, and is otherwise sealed and insulated to separate it from the conditioned space(s).	**Mandatory**

11.27 Fireplaces and fuel-burning appliances. Fireplaces and fuel-burning appliances (except cooking appliances, clothes dryers, water heaters, and furnaces) located in conditioned space are in accordance with the following: (Ref. 901.2) **[Section 901.2.1(2)(a) is not mandatory.]**	**Mandatory**
11.27.1 New Construction. Fireplaces and natural draft fuel-burning appliances are code compliant, vented to the outdoors, and have adequate combustion and ventilation air provided to minimize spillage or back-drafting, in accordance with the following, as applicable. (Ref. 901.2.1)	
(1) Natural gas and propane fireplaces that are power vented or direct vented, are equipped with permanently fixed glass fronts or gasketed doors, and comply with CSA Z21.88a/CSA 2.33a or CSA Z21.50/CSA 2.22.	**Mandatory**
(2) Solid fuel-burning appliances are in accordance with the following requirements:	
(a) Wood-burning fireplaces are equipped with gasketed doors designed to operate with the doors closed, outside combustion air, and a means is provided for sealing the flue to minimize interior air (heat) loss when not in operation.	**Mandatory**
(b) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are EPA certified.	**Mandatory**
(c) Wood stove and fireplace inserts, as defined in UL 1482 Section 3.8, are in accordance with the certification requirements of UL 1482 and are in accordance with the emission requirements of the EPA Certification and the State of Washington WAC 173-433-100(3).	**Mandatory**
(d) Pellet (biomass) stoves and furnaces are in accordance with the requirements of ASTM E1509 or are EPA certified.	**Mandatory**
(e) Masonry heaters are in accordance with the definitions in ASTM E1602 and ICC IBC, Section 2112.1.	**Mandatory**

11.28 Garages. (Ref. 901.3)	
11.28 .1 New Construction. Garages are in accordance with the following:	
(1) Attached garage	
(a) Where installed in the common wall between the attached garage and conditioned space, the door is tightly sealed and gasketed.	**Mandatory**
(b) A continuous air barrier is provided between walls and ceilings separating the garage space from the conditioned living spaces.	**Mandatory**
11.28 .2 Existing Construction. Garages are in accordance with the following:	
(1) Attached garage	
(a) Where installed in the common wall between the attached garage and conditioned space, the door is tightly sealed and gasketed.	**Mandatory**

11.29 Wood materials. (Ref. 901.4)	
11.29.1 New Construction.: Structural plywood used for floor, wall, and/or roof sheathing is compliant with DOC PS 1 and/or DOC PS 2. OSB used for floor, wall, and/or roof sheathing is compliant with DOC PS 2. The panels are made with moisture-resistant adhesives. The trademark indicates these adhesives as follows: Exposure 1 or Exterior for plywood, and Exposure 1 for OSB.	**Mandatory**
11.29.2 Existing Construction. Newly installed structural plywood used for floor, wall, and/or roof sheathing is compliant with DOC PS 1 and/or DOC PS 2. OSB used for floor, wall, and/or roof sheathing is compliant with DOC PS 2. The panels are made with moisture-resistant adhesives. The trademark indicates these adhesives as follows: Exposure 1 or Exterior for plywood, and Exposure 1 for OSB.	

11.30 Carpets. (Ref. 901.5)	
11.30.1 New and Existing Construction. Wall-to-wall carpeting is not installed adjacent to water closets and bathing fixtures.	

11.31 Architectural coatings. (Ref. 901.8.1)	
11.31.1 New and Existing Construction. When the building is occupied during the remodeling, a minimum of 85 percent of the newly applied site applied architectural coatings are in accordance with one or more of the following standards:	**Mandatory**
(1) Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)	

(2) CARB *Suggested Control Measure for Architectural Coatings* **(3)** GS-11 **(4)** VOC limits in accordance with: **(a)** 50 grams/liter flat **(b)** 100 grams/liter non flat **(c)** 350 grams/liter clear wood varnish **(d)** 550 grams/liter clear wood lacquer	

11.33 Spot ventilation. (Ref. 902.1.1)	
11.33.1 New Construction. Spot ventilation is in accordance with the following:	
(1) Bathrooms are vented to the outdoors. The minimum ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms.	**Mandatory**
(2) Clothes dryers are vented to the outdoors.	**Mandatory**
11.33.2 Existing Construction. Spot ventilation is in accordance with the following:	
(2) Clothes dryers are vented to the outdoors.	**Mandatory**

11.34 Radon control. (Ref. 902.3)	
11.34.1 New Construction. Passive or active radon control measures are in accordance with ICC IRC Appendix F for buildings in Zone 1. Zones are defined in Figure 9(1).	**Mandatory**
11.34.2 Existing Construction. Buildings in zone 1 are tested and buildings exceeding the EPA acceptable limit have radon control measures in accordance with ICC IRC Appendix F implemented. Zones are defined in Figure 9(1).	

11.35 HVAC system protection. (Ref. 902.4)	
11.35.1 New and Existing Construction. When the building is occupied during remodeling, measures are taken to prevent contaminants from the construction processs from entering the HVAC system.	**Mandatory**

11.36 Tile backing materials. (Ref. 903.1)	
11.36.1 New Construction. Tile backing materials installed under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325.	**Mandatory**
11.36.2 Existing Construction. Existing tiled surfaces in wet areas are inspected and any areas with evidence of moisture damaged are repaired with tile backing materials installed under tiled surfaces are in accordance with ASTM C1178, C1278, C1288, or C1325.	

11.37 Capillary breaks (Ref. 903.2.1)	
11.37.1 New Construction. A capillary break and vapor retarder are installed at all concrete slabs in accordance with Sections 903.2.1(1) or 903.2.1(2), as modified by Section 903.2.1(3): **(1)** A minimum 4-inch-thick (102 mm) bed of ½-inch (13 mm) diameter or greater clean aggregate, covered with polyethylene or polystyrene sheeting in direct contact with the concrete slab, with the sheeting joints lapped in accordance with Section 903.3. **(2)** A minimum 4-inch-thick (102 mm) uniform layer of sand, overlain with a layer or strips of geotextile drainage matting, covered with polyethylene sheeting, with the sheeting joints lapped in accordance with Section 903.3. **(3)** Modification: **(a)** In areas with free-draining soils, identified as Group 1 in the ICC IRC by a certified hydrologist, soil scientist, or engineer through a site visit, a gravel bed or geotextile matting is not required. **(b)** In Dry climate locations, as defined by Figure 6(1), polyethylene sheeting is not required unless required for radon resistance (Section 902.3).	**Mandatory**
11.37.2 Existing Construction. A capillary break and vapor retarder are installed at newly installed concrete slabs in accordance with Sections 903.2.1(1) or 903.2.1(2), as modified by Section 903.2.1(3): **(1)** A minimum 4-inch-thick (102 mm) bed of ½-inch (13 mm) diameter or greater clean aggregate, covered with polyethylene or polystyrene sheeting in direct contact with the concrete slab, with the sheeting joints lapped in accordance with Section 903.3. **(2)** A minimum 4-inch-thick (102 mm) uniform layer of sand, overlain with a layer or strips of geotextile drainage matting, covered with polyethylene sheeting, with the sheeting joints lapped in accordance with Section 903.3. **(3)** Modification: **(a)** In areas with free-draining soils, identified as Group 1 in the ICC IRC by a certified hydrologist, soil scientist, or engineer through a site visit, a gravel bed or geotextile matting is not required. **(b)** In Dry climate locations, as defined by Figure 6(1), polyethylene sheeting is not required unless required for radon resistance (Section 902.3).	

11.38 Crawlspaces (Ref. 903.3.1) **11.38.1 New Construction.** Crawlspace vapor retarder is in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 inches (152 mm) and are taped. Walls. Damp-proof walls are provided below finished grade.	**Mandatory**
11.38.2 Existing Construction. Existing crawlspace is inspected and when there is evidence of a moisture problem a crawlspace vapor retarder is installed in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 inches (152 mm) and are taped. Damp-proof walls are provided below finished grade.	

11.39 Moisture control measures (Ref. 903.4.1.) **11.39.1 New and Existing Construction.** Walls are not enclosed (e.g., with drywall) if the insulation has a high moisture content. Wet insulation products are dry before enclosing.	**Mandatory**

11.40 Moisture control measures. (Ref. 903.4.2)	
11.40.1 New Construction. Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the finish flooring to be applied.	**Mandatory**

11.42 Duct insulation. (Ref. 903.6)	
11.42.1 New Construction. All HVAC ducts, plenums, and trunks in unconditioned attics, basements, and crawl spaces are insulated to a minimum of R-6. Outdoor air supplies to ventilation systems are insulated to a minimum of R-6.	**Mandatory**
11.42.2 Existing Construction. All HVAC ducts, plenums, and trunks in unconditioned attics, basements, and crawl spaces that become accessible during the remodeling are insulated to a minimum of R-6. Outdoor air supplies to ventilation systems are insulated	

to a minimum of R-6.	

11.43 *(Ref. 904.3)*	
11.43.1 New and Existing Construction. All gas dryer vents are sealed and vented outdoors.	**Mandatory**

11.46 Training of Building Owners (Ref. 1002.1)	
11.46.1 Building owners/occupants are familiarized with the green building goals and strategies implemented and the impacts of the occupants' practices on the costs of operating the building. Training is provided to the responsible party(ies) regarding all newly installed equipment operation and control systems. Systems include, but are not limited to, the following: HVAC filters, thermostat, appliances, water heater, and fan controls.	**Mandatory**

11.47 Multi-unit Building Operations	
11.47.1 Maintenance and operations Manuals: The operations and maintenance manuals for multi-family buildings are updated to reflect the remodeling changes and are provided to the responsible parties.	**Mandatory**