

NAHB Research Center

# Consensus Committee Meeting – February 21-23, 2012

## Washington, DC

2012 National Green Building Standard

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## Chapter 2 Definitions

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
001	732	Howard Fortunato LandmarkJCM self	201.2 Interchangeability Delete and substitute as follows	Our staff Wetlands Scientist reviewed the definition and had these suggestions. She has re-written the definition based on the following comments: 1) Marshes and swamps are a type of wetland so I would not say "wetlands, marsh, or swamp. 2) In general, "constructed wetlands" and "restored wetlands" mean 2 different things, but since there is not a separate definition for "restored wetland" in the document, it is probably fine if they are lumped together in this definition. 3) I revised the wording for the last sentence for it to flow better.	<b>CONSTRUCTED WETLAND.</b> An artificial wetland system (such as a marsh or swamp) created as new and/or restored habitat for native wetland plant and wildlife communities, as well as to provide and/or restore wetland functions to the area. Constructed wetlands are often created as compensatory mitigation for ecological disturbances that result in a loss of natural wetlands such as anthropogenic discharge for wastewater, stormwater runoff, or sewage treatment; for land reclamation after mining; refineries; or for wetland losses associated with development	Accepted	Added language to highlight use as compensatory mitigation for ecological disturbances
002	731	Howard Fortunato LandmarkJCM self	201.2 Interchangeability Delete and substitute as follows	a homebuilder client (that builds with ICF's) drew exception to the proposed definition with regard to the wood chips and has proposed this definition, below all of which is intended to replace the existing definition.	ICF: would define ICF as, "Insulating Concrete Form (ICF) is a system of formwork for concrete that stays in place as permanent building insulation for energy-efficient, cast-in-place, reinforced concrete walls, floors, and roofs. The forms are interlocking modular units that are dry-stacked (without mortar) and filled with concrete. The forms lock together somewhat like Lego bricks and serve to create a form for the structural walls or floors of a building. Concrete is pumped into the cavity to form the structural element of the walls. Usually reinforcing steel (rebar) is added before concrete placement to give the concrete flexural strength, similar to bridges and high-rise buildings made of concrete (see Reinforced concrete). After the concrete has cured, the forms are left in place permanently, for the following reasons: (1) Thermal and acoustic insulation; (2) Space to run electrical conduit and plumbing. The form material on either side of the walls can easily accommodate electrical and plumbing installations. (3) Backing for gypsum boards on the interior and stucco, brick, or other siding on the exterior."	Reject	The level of detail in the proposed definition is more appropriate for commentary. The current definition is appropriate.
003	759	Paul Sullivan The Sullivan Company, Inc. Task Group 7	202 Definitions Revise as follows	After a meeting between Task Group 7 chairs and NAHB Research Center, it was determined that two of the definitions would become obsolete and one new definition would be needed as it concerns remodeling.	The deletions and additional definition are being forwarded in a separate document to "standards"  <b>Staff Note: The revised remodeling provisions are appended at the end of the document due to the large size of the submission.</b>	Accept	
004	644	Robert Hill NAHB Research Center NAHB Research Center	202 Definitions Revise as follows	Primers should be explicitly included since VOC guidelines for primers are provided in chapter 9	<b>ARCHITECTURAL COATINGS.</b> A material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, primers, paints, varnishes, sealers, and stains. An architectural coating is a material applied to stationary structures or their appurtenances at the site of installation. Coatings applied in shop applications, sealants and adhesives are not considered architectural coatings.	Accept	
005	645	Robert Hill NAHB Research Center NAHB Research Center	202 Definitions Revise as follows	Infrastructure needs to be defined. It is not clear what "application to the NGBS" means and why it is appropriate. It was discussed the "existing" developments be retained because there were some developments that were halted midway thru the process due to the economic downturn. The original wording of the definition would allow new developments not to begin the verification process until the infrastructure was completed. This would make verification of new developments more difficult for both the developer and the verifier. The dates can be chosen by the committee or task group such that it would encompass those developments that have been halted mid way.	<b>EXISTING SUBDIVISION.</b> An area of land defined as "Site" in this Chapter, that has received all development approvals and has been platted and all infrastructure (roads, sewer, and utilities) is completed between <<date>> and <<date>> at time of application to the NGBS.	Rejected	The suggested dates are arbitrary and the existing language is sufficient
006	604	Chris Allison City of Longmont City of Longmont	202 Definitions Revise as follows	The definition from the IECC is for High Efficacy Lamps and P020 should be changed to reflect this definition or the term High Efficiency Lighting should be a new definition in the NGBS.	Replace the definition for High Efficiency Lighting with the definition of High Efficacy Lamps from the IECC or define both terms	Disapproved	Vote: A=0; D=4; Ab=0 Definition and terminology from 2009 IECC is already included.
007	646	Robert Hill NAHB Research Center NAHB Research Center	202 Definitions Revise as follows	If additional infrastructure capacity is required it defeats the benefits of using an infill site. The standard should make it explicit that lots within an infill site qualify as infill lots even if additional roads, sewer, etc are needed to get to the lot.	<b>INFILL.</b> A location including vacant or underutilized land that may apply to either a Site or a lot and is located in an area served by existing infrastructure (such as centralized water and sewer connections, roads, drainage, etc.), with the capacity to serve the development and the site boundaries are adjacent to existing development on at least one side. Lots within an infill site are considered infill lots.	Rejected	The language is redundant. The existing language already states this

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
008	647	Robert Hill NAHB Research Center NAHB Research Center	202 Definitions Revise as follows	Some minimum amount of material needs to be specified or else some builder will claim credit for using miniscule amounts of material. The 3% number seems appropriate as it would typically allow trim to be considered a minor material.	<del>MINOR COMPONENT. Building materials or systems that are not considered major.</del> <u>Building materials or systems that are typically applied as a part of at least 3% of the surface area of the foundation, wall, floor, ceiling, or roof assemblies.</u>	Reject	Reason for rejecting: The introduction of the 3% in the definition will contradict the limits set in the body of the Standard such as Section 606.2(1) that requires "all trim".
009	TG3-3	Task Group 3	Section 202 Add new definitions as follows	To clarify allocation of points under Sections 603, 604, and 605, Task Group 3 proposed two new definitions.	<b>Recycle.</b> To recover and reprocess manufactured goods into new products. <b>Reuse.</b> To recover a material or product for use again without reprocessing.	Accept	
010	648	Robert Hill NAHB Research Center NAHB Research Center	202 Definitions Revise as follows	There is some confusion about how to deal with manufactured products produced from raw materials that are not necessarily local. If the practice is intended to only apply to materials (e.g. lumber, stone, etc) then this definition should be explicit. If the practice can apply to manufactured products (e.g. windows, carpet, tile, etc) then the definition needs to define how to account for the source of raw materials.	<u>REGIONAL MATERIAL. Material that is originated, produced, grows naturally, or occurs naturally within 500 miles (804.7 km) of the construction site if transported by truck or 1500 miles (2414 km) of the construction site if transported for not less than 80% of the total transport distance by rail or water. Products that are assembled or produced from multiple raw materials are considered regional materials if the weighted average of the raw materials and distance transported in the product meet the criteria.</u>	Accept as modified Vote 7-1-0	<u>REGIONAL MATERIAL. Material that is originated, produced, grows naturally, or occurs naturally within 500 miles (804.7 km) of the construction site if transported by truck or 1500 miles (2414 km) of the construction site if transported for not less than 80% of the total transport distance by rail or water. Products that are assembled or produced from multiple raw materials are considered regional materials if the weighted average of the raw materials (by weight or volume) and distance transported for the product meet the criteria.</u>

## Chapter 3 Compliance Method

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
011	649	Robert Hill NAHB Research Center NAHB Research Center	304.1 Multi-unit buildings Revise as follows	It is not practical for the common areas of the building to be required to meet all the same thresholds for each chapter. For example, how does a garden apartment building with only common hallways meet the chapter 8 thresholds? Section 601.1 allows the use of a weighted average to determine the conditioned square footage to be applied to the practice. A similar approach should be allowed for practices such as 801.4, .5, and .6 where points available depend on the number of bathrooms. It does not seem logical that the entire building be penalized when there is a one bathroom unit in a building full of 3 bedroom units? Chapter 8 has been the chapter that the thresholds are typically toughest to meet. Allowing a weighted average for the plumbing fixtures will help in this area. Other practices should be examined to determine when a weighted average note is appropriate.	<b>304.1 Multi-unit buildings.</b> All residential portions of a building shall meet the requirements of this Standard and partial compliance shall not be allowed. <del>Unless otherwise noted, a</del> All units and residential common areas within a multi-unit building shall: 1) meet all mandatory requirements; and 2) achieve the threshold number of points required for the chosen environmental rating level in accordance with Table 303; and 3) achieve the same environmental rating level. <u>Mandatory practices and practices for which points are awarded for the dwelling units must also be implemented for common residential areas when applicable.</u> For multi-unit buildings, points for the green building practices that apply to multiple units shall be credited once for the entire building. Where points are credited, practices shall be implemented in all units, as applicable. <u>Unless noted that a weighted average is used,</u> where application of a prescribed practice allows for a different number of points for different units in a multi-unit building, the fewer number of points shall be awarded.	Accept as Modified.	The existing Standard language should be maintained, as it clarifies the compliance requirements for multi-unit buildings, and explains that dwelling units and common areas must meet the same environmental performance requirements. This aligns the Standard with other well-established green building programs and standards (such as LEED, Green Communities and ASHRAE 189.1), which do not provide for separate treatment of residential common spaces.  The limited cases where different compliance methods are necessary for common space and dwellings are best dealt with through notation in individual provisions. TG 6 agrees with commenter that several provisions would benefit from the use of a weighted average to accommodate differences in the size and configuration of units in a multifamily building.  As Modified: 304.1 Multi-unit buildings. All residential portions of a building shall meet the requirements of this Standard and partial compliance shall not be allowed. Unless otherwise noted, all units and residential common areas within a multi-unit building shall: 1) meet all mandatory requirements; and 2) achieve the threshold number of points required for the chosen environmental rating level in accordance with Table 303; and 3) achieve the same environmental rating level. For multi-unit buildings, points for the green building practices that apply to multiple units shall be credited once for the entire building. Where points are credited, <u>including where a weighted average is used,</u> practices shall be implemented in all units, as applicable. Where application of a prescribed practice allows for a different number of points for different units in a multi-unit building, the fewer number of points shall be awarded, <u>unless noted that a weighted average is used.</u>
012	664	Jamie Hager Southern Energy Management self	304.1 Multi-unit buildings Revise as follows	Many points in Chapter 7 such as building envelope testing, duct system design and testing, and even performance path compliance are calculated differently in common areas of a multi-unit building (such as hallways or corridors or lounge or laundry or gym areas, etc). While whole buildings can be evaluated to include common areas in the test results, it is more complicated and difficult and time consuming (ie costly) and worthy of points but could be a barrier to participation if made to be a mandatory item for multi-unit projects. Recommend striking it as a mandatory item to keep things simple, or at least excluding Chapter 7 compliance as mandatory for the common areas.	<b>304.1 Multi-unit buildings.</b> All residential portions units of a building shall meet the requirements of this Standard and partial compliance shall not be allowed. Unless otherwise noted, all units and residential common areas within a multi-unit building shall: 1) meet all mandatory requirements; and 2) achieve the threshold number of points required for the chosen environmental rating level in accordance with Table 303; and 3) achieve the same environmental rating level. For multi-unit buildings, points for the green building practices that apply to multiple units shall be credited once for the entire building. Where points are credited, practices shall be implemented in all units, as applicable. Where application of a prescribed practice allows for a different number of points for different units in a multi-unit building, the fewer number of points shall be awarded.	Reject.	The existing Standard language should be maintained, as it clarifies the compliance requirements for multi-unit buildings, and explains that dwelling units and common areas must meet the same environmental performance requirements. This aligns the Standard with other well-established green building programs and standards (such as LEED, Green Communities and ASHRAE 189.1), which do not provide for separate treatment of residential common spaces. The limited cases where different compliance methods are necessary for common space and dwellings are best dealt with through notation in individual provisions..
013	692	Robert Hill NAHB Research Center NAHB Research Center	305 Green Remodeling Delete and substitute as follows	The requirement that each remodeling project receive a certain percentage of points from "applicable" practices will result in the need for much project specific interpretations by the adopting entity making the approach unworkable. There are too many qualifiers needed to clearly indicate if a particular practice is applicable to a particular project.	Task Group 7 is working on a revised version that I believe will address my concerns. That version should be substituted for the current section 305.	Accept	
014	687	Jamie Hager Southern Energy Management self	305 Green Remodeling Delete and substitute as follows	305.2.3 performance levels should not be the same as new construction and instead could use the star system like the Green Subdivision Category. Having verified remodeling projects to the current NGBS, we have had projects achieve Emerald ratings by installing code compliant measures simply because the original structure performed so poorly. The % improvement in performance was high, but compared to a new construction home it was not even to the current building code (it was a	Change Table 305.2.3 performance levels from Bronze, Silver, Gold and Emerald to One Star, Two Star, Three Star, and Four Star	Reject	Reject. Rejected so that the rating levels match those of the GBS in nomenclature

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason																								
				historic remodel that could not replace windows). From a consumer perspective, one home (new construction) is Bronze and the other (remodel) is Emerald even though the actual "green-ness" of the homes are not apples to apples. I believe this creates confusion in the market and does not send a clear message to the consumer, realtor or appraisal community as to the value of "Bronze", "Silver", "Gold" or "Emerald"																											
015	693	Jamie Hager Southern Energy Management self	305 Green Remodeling Delete and substitute as follows	Section 305.2.4, although understandably an attempt to be fair in evaluating a remodel, adds an extra layer of complication by requiring projects to do a calculation to determine their point thresholds. It is not an easy calculation to grasp first time reading it and seems fairly subjective, which translates to lots of room for human error as well as a quagmire for Verification as Verifiers and the Administrating Certification Body will have to provide a lot of guidance and review just to be sure projects have followed the process correctly, adding time and cost to a process without direct value to the project. Most Builders and remodelers will not read through directions three times just to see if they can even play, they mostly want to know what it is they have to do. From a first impression standpoint, Section 305.2.4 will turn away many potential participants as they weigh the value of the certification vs just the time to figure it out how to participate. Table 305.2.4 could easily be redone with point minimums for each rating level and avoid the process of creating a % improvement threshold in terms of Site Work (11.5), Materials (11.6) and Indoor Air Quality measures (11.9). This would be much simpler to understand and eliminate the extra step of a point percentage calculation for these sections. By keeping the One Star level at zero additional green practice points, base level certification can be achieved for projects with limited scopes of work.	Delete all of Section 305.2.4 as it stands right now and replace with the following:  <u>305.2.4 Additional Green Practices</u> Additional green practices shall be selected from sections 11.5, 11.6 and 11.9 to achieve the point threshold levels listed in table 305.2.4. Projects can achieve One Star certification without additional points in these sections to allow for variability in scopes of work among remodel projects.  <u>Table 305.2.4</u>  Threshold Ratings for Green Remodels <table border="1"> <thead> <tr> <th rowspan="2">Green Remodel Practice from Section 11</th> <th colspan="4">Minimum Points Needed</th> </tr> <tr> <th>One Star</th> <th>Two Star</th> <th>Three Star</th> <th>Four Star</th> </tr> </thead> <tbody> <tr> <td>Site Work (11.5)</td> <td>0</td> <td>TBD</td> <td>TBD</td> <td>TBD</td> </tr> <tr> <td>Materials (11.6)</td> <td>0</td> <td>TBD</td> <td>TBD</td> <td>TBD</td> </tr> <tr> <td>Indoor Air Quality (11.9)</td> <td>0</td> <td>TBD</td> <td>TBD</td> <td>TBD</td> </tr> </tbody> </table>	Green Remodel Practice from Section 11	Minimum Points Needed				One Star	Two Star	Three Star	Four Star	Site Work (11.5)	0	TBD	TBD	TBD	Materials (11.6)	0	TBD	TBD	TBD	Indoor Air Quality (11.9)	0	TBD	TBD	TBD	Reject	for consistency with 68 so that the rating levels match those of the GBS in nomenclature
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Indoor Air Quality (11.9)	0	TBD	TBD	TBD																											
016	760	Paul Sullivan The Sullivan Company, Inc. Task Group 7	305 Green Remodeling Revise as follows	After a meeting of Task Group 7 Chairs and NAHB Research Center a need for a completely revised Remodeling section was determined.	A draft of the revision is being sent under separate cover to "standards"  <b>Staff Note: The revised remodeling provisions are appended at the end of the document due to the large size of the submission.</b>	Accept																									
017	900	Robert Hill NAHB Research Center	Chapter 3, Section 305 Green Remodeling	This update is provided in support of the public comment submitted by Task Group 7 to revise the remodeling provisions (PC 016 / LogID 760).	<u>Table 305.2.5 Prescriptive Threshold Point Ratings</u> <table border="1"> <thead> <tr> <th></th> <th>Bronze Silver Gold Emerald</th> <th>Bronze Silver Gold Emerald</th> <th>Bronze Silver Gold Emerald</th> <th>Bronze Silver Gold Emerald</th> </tr> </thead> <tbody> <tr> <td>Chapter 11 prescriptive practices</td> <td>20%</td> <td>34%</td> <td>43%</td> <td>50%</td> </tr> </tbody> </table>		Bronze Silver Gold Emerald	Bronze Silver Gold Emerald	Bronze Silver Gold Emerald	Bronze Silver Gold Emerald	Chapter 11 prescriptive practices	20%	34%	43%	50%	TG-7 to review															
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018	781	Bridget Herring Mathis Consulting Company Mathis Consulting Company	305.2.2 Energy and water consumption Revise as follows	HERS comparisons before and after can be problematic without a benchmark, especially in projects involving change of occupancy. Energy star version 3.0 provides a well established, solid, and familiar benchmark to guarantee a basic minimum level of energy performance for the results of a retrofit. LEED suffered in early versions for the mistake of not employing a minimum energy standard and lost credibility in the marketplace accordingly. This system simplifies compliance with the use of familiar equipment.	<b>(1)Energy consumption comparison:</b> Energy consumption must comply with the performance requirements for Energy Star Version e3.0 or achieve a HERS index at or below Energy Star Version 3.0 index target.	Reject	based on Task Group's action on PC 019 / Log ID 796																								
019	796	Amy Schmidt The Dow Chemical Company Dow Building Solutions	305.2.2 Energy and water consumption Revise as follows	Every effort should be made to analyze the actual consumption. Estimating seems too loose a word. Also items such as lighting should also be included in the analysis and therefore the analysis should not be limited to heating cooling and water heating.	<b>305.2.2 Consumption for both energy and water consumption shall be compared 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 comparisons estimates.</b>  <b>(1) Energy consumption comparison:</b> Energy consumption shall be based on the estimated building's annual energy use due to heating, cooling, and water heating as determined by a third-party energy audit or analysis. The comparison is based on the percentage difference between the HERS index before  and the HERS index after the remodeling	Accept with modification	Keep first suggested change. Reject second change because lighting is already addressed within the standard in 11.701.4.4																								

## Chapter 4 Site Design and Development

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
020	810	Bridget Herring Mathis Consulting Company Mathis Consulting Company	401.4 Low-slope site Delete without substitution	This is a difficult standard to verify and inspect. Furthermore, automatic points should not be awarded for lots located in an area with little naturally occurring slope (many lots). If anything, a requirement deducting points for building on steeper slopes would be appropriate.	<del>401.4 Low-slope site. A site with an average slope calculation of less than 15% is selected. TBD</del>	Rejected	TG and CC have discussed this extensively and decided this action is valid for points
021	901	Ed Tombari NAHB	403.6 (13) Landscape Plan Revise as follows	A percentage figure was never included here (indicated by X). The task group then decided that they would rather eliminate the language altogether than determine a percentage. Because this is for Chapter 4 site development, this would be for common areas, therefore this would be a minor practice. Therefore, it was determined that determining a "Percentage" was not as critical in awarding points for this practice as it would be for a "lot."	(13) Cisterns, rain barrels, and similar tanks are structures designed to intercept and store runoff. These systems may be above or below ground, and they may drain by gravity or be pumped. Stored water may be slowly released to a pervious area, and used for irrigation of lawn, trees, and gardens located in common areas. <del>X percent of site area is to be irrigated by these means and demonstrated on the site plan.</del>	Accepted	TG Housekeeping issue. Delete last line.
022	627	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	403.10 Existing and Recycled Materials Revise as follows	Points acquired for this section rely more on the waste of existing and recycled materials on, or being removed, from the site; Therefore, "demolition" has been added to acknowledge materials acquired from structure removal	<b>403.10 Existing and recycled materials.</b> Existing or recycled materials are used as follows. (Points awarded for every 10 percent of total building construction <u>and</u> demolition materials that are reused, deconstructed, and/or salvaged. The percentage is consistently calculated on a weight, volume, or cost basis.)  (1) Existing pavements, curbs, and aggregates are salvaged or reincorporated into the development.  (2) Recycled asphalt or concrete is utilized in the project.	Accepted	Demolition is a good addition to this criteria
023	666	Robert Hill NAHB Research Center NAHB Research Center	403.3 Slope Disturbance Revise as follows	0 percent is less than 25% and points should not be given for not avoiding any slope disturbance.	<b>403.3 Slope disturbance.</b> Slope disturbance is minimized by one or more of the following: (2) All or a percentage of roads are aligned with natural topography to reduce cut and fill. (a) <del>less than 10% to 25 percent</del> (b) 25 percent to 75 percent (c) greater than 75 percent	Accepted	TG agrees that 10% is a better minimum threshold for this activity
024	667	Robert Hill NAHB Research Center NAHB Research Center	403.5 Storm Water Management Revise as follows	0 percent is less than 25% and points should not be given for not using any permeable materials.	<b>403.5 Storm water management.</b> Storm water is managed using management design includes one or more of the following low-impact development techniques: (3) Permeable materials are selected/specified for common area roads, driveways, parking areas, walkways, and patios. (a) <del>less than 10% to 25 percent</del> (b) 25 percent to 75 percent (c) greater than 75 percent	Accepted	TG agrees that 10% is a better minimum threshold for this activity
025	733	Howard Fortunato LandmarkJCM self	403.5 Storm Water Management Revise as follows	403.5 (4) as a verifier, the language of "volume of the 95th percentile storm event" would not be readily accessible or clear to verify. Stormwater plans will not necessarily refer to this and an stormwater engineer told me the verifier would need to look at engineering calculations to verify this. Perhaps there is some other reference which shows on stormwater plans that could be referenced.	see comments above.	Rejected	This is already federal requirement, therefore is redundant
026	790	Shari Hendley J.S. Hovnanian & Sons J.S. Hovnanian & Sons	403.5 Storm Water Management Revise as follows	"volume of the 95th percentile storm event" in 403.5(4) sounds excessive and difficult to prove or disprove	Suggest another type of test or reference that may be more readily found on the site/stormwater plans.	Rejected	This is already federal requirement, therefore is redundant
027	668	Robert Hill NAHB Research Center NAHB Research Center	403.6 Landscape Plan Revise as follows	Add the word "or" to clarify that both uses are not required.	<b>403.6 Landscape plan.</b> A landscape plan is developed to limit water and energy use in common areas while preserving or enhancing the natural environment utilizing one or more of the following.  (13) Cisterns, rain barrels, and similar tanks are structures designed to intercept and store runoff. These systems may be above or below ground, and they may drain by gravity or be pumped. Stored water may be slowly released to a pervious area, and/or used for irrigation of lawn, trees, and/or gardens located in common areas. X percent of site area is to be irrigated by these means and demonstrated on the site plan.	Accepted	Accept as a housekeeping item
028	717	Brent Mecham Irrigation Association Irrigation Association	403.6 Landscape Plan Delete and substitute as follows	The limitation of turf seems to be arbitrary and does not consider the climate where the project is located. Often turfgrass is used in storm water management for its ability to stabilize the soil and to offer improved permeability and infiltration, evapotranspiration. Especially useful in climates with high natural precipitation	Delete all of the following The percentage of all turf areas are limited as part of the landscaping. (a) 0 percent 4 (b) greater than 0 percent to less than 25 20 percent 3 (c) 25 20 percent to less than 50 40 percent 2 (d) 50 40 percent to 75 60 percent Add: Use EPA WaterSense Water Budget Tool for New Homes 4 points	Accept as Modified	keep existing language the same except add "or EPA Water Sense Water Budget Tool for New Homes" to 4 (a)

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029	737	Greg Johnson Greg Johnson Consulting Outdoor Power Equipment Institute	403.6 Landscape Plan Revise as follows	The Outdoor Power Equipment Institute became aware of the NGBS standards activity after the first round of comments had closed; otherwise we would have commented to strike all of Sections 403.6. (4) and 503.5 (3). Instead, since points are still open for comment, we request that the points for turf limitations in Sections 403.6. (4) and 503.5 (3) be stricken and reallocated to other more appropriate sustainable practices within their respective sections. The proposed revisions to Sections 403.6 (4) and 503.5 (3) that expand disincentives for turfgrass areas conflict with the intent of the NGBS and aren't consistent with other trends in landscape regulation. The 'less turf-more points' formula suggests a negative environmental value to turfgrass and completely discounts its positive social, safety, and environmental attributes. Limiting turfgrass also limits builder flexibility in installing landscapes for the best site specific environmental performance and inhibits offering a green residential building able to compete on an apples-to-apples basis for curbside appeal. There is extensive scientific documentation of the valuable roles that turfgrass plays in stormwater management, for both erosion control and filtration; the control of wind erosion; carbon sequestration; and the mitigation of heat island effects. (end note 1.) Consider, for example, the cooling benefits of turfgrass. In some instances, ground level temperatures of grass-covered land areas are 30 to 40 degrees cooler than bare soil. They are also 50 to 70 degrees cooler than hardscaped (asphalt or concrete) areas. Reducing turfgrass only contributes to the 'heat island' effect which in turn increases demand for energy.(end note 2.) In addition to its cooling properties, managed turfgrass plays a positive role in our efforts to confront climate change. A well maintained, growing lawn that is fed by nutrients from grass clippings sequesters carbon from the atmosphere and helps to minimize the property's carbon footprint (end note 3.). Reducing turf areas and replacing them with mulch or hardscape makes active carbon 'sinks' inactive, potentially increasing the carbon released back into the atmosphere by exposing soils or using non-growing, decaying materials such as mulch. These alternative methods can be aesthetically appealing and help control water run-off and use, but they do not share the turfgrass benefit of contributing to the reduction of greenhouse gas emissions. The benefits of turfgrass in regard to soil erosion are also well documented. Research shows that a healthy, well-managed lawn with dense turfgrass has near zero storm water runoff and provides an effective infiltration mechanism. In his public comment to GG 243-11 of the International Green Construction Code, Dr. Brian Horgan, assistant professor of horticulture at the University of MN, wrote that "The thatch-forming capabilities of turfgrass in combination with a permanent and dense plant structure yields a less channelized pathway for water movement, which increases resistance, horizontal spread, and infiltration of surface runoff." For people who want to review the technical issues in depth, an extensive bibliography accompanies Dr. Horgan's IGCC 243-11 comment. That comment can be found on page 404 of the IGCC Final Action Agenda at: <a href="http://www.iccsafe.org/cs/IGCC/Pages/2011FinalActionAgenda">www.iccsafe.org/cs/IGCC/Pages/2011FinalActionAgenda</a> Dr. Horgan's bibliography is offered in contrast to the complete absence of scientific foundation that was offered when turfgrass disincentives were suggested through public comment to the initial draft of the NGBS when the commenter merely referred to a few local green building programs in arid regions and stated: "Seems reasonable to give credit for both limited grass, as well as almost or no grass." Similarly, in this cycle of ICC-700, the EPA comment to create stronger disincentives for turfgrass installation was presented with arbitrary targets with no scientific justification. In the EPA comment the statement was made that "EPA supports the inclusion of a practice restricting turf areas in landscaping..." This conflicts with the EPA's August 12, 2011 public comment to GG 243-11 of the IGCC in which the agency asks for turf area restrictions to be eliminated, saying instead that "... a water budget approach would be preferable to guide landscape design, irrespective of the source of irrigation..." It also conflicts with the October 21, 2011 WaterSense Notification of Intent in which the EPA announced its intent to remove the 40% turf limitation from the WaterSense Specification and the White House's Council on Environmental Quality's October 31, 2011 Guidance for Federal Agencies on Sustainable Practices for Designed Landscapes which has no prescriptive turf limitation and in fact recommends the use of turf for certain circumstances. This philosophical approach parallels the action of the International Code Council's membership which overwhelmingly rejected all turf limitations at the final action hearings for the IGCC on November 3, 2011. The best way to facilitate a market approach to green building demand is to offer features that the public wants while providing buildings and sites with superior environmental performance. There was extensive discussion during the development of the first edition of the NGBS about prohibiting fire places and swimming pools from green residential buildings or awarding 'negative points' to buildings that	Award 0 points for limiting the percentage of all turf areas as part of the landscaping <ul style="list-style-type: none"> <li>(1) A plan is formulated to restore or enhance natural vegetation that is cleared during construction. Landscaping is phased to coincide with achievement of final grades to ensure denuded areas are quickly vegetated. <span style="float: right;">5 <u>6</u></span></li> <li>(2) On-site native or regionally appropriate trees and shrubs are conserved, maintained and reused for landscaping to the greatest extent possible. <span style="float: right;">5 <u>6</u></span></li> <li>(3) Turf grass species, other vegetation, and trees that are native or regionally appropriate for local growing conditions are selected. <span style="float: right;">4 <u>6</u></span></li> <li>(4) The percentage of all turf areas are limited as part of the landscaping. <ul style="list-style-type: none"> <li>(a) 0 percent <span style="float: right;">4 <u>0</u></span></li> <li>(b) greater than 0 percent to less than 20 <span style="float: right;">3 <u>0</u></span></li> <li>(c) 20 percent to less than 40 percent <span style="float: right;">2 <u>0</u></span></li> <li>(d) 40 percent to 60 percent <span style="float: right;">1 <u>0</u></span></li> </ul> </li> </ul>	Rejected	We have addressed this by accepting modified language based on PC 028 / LogID 717



PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
				<p>offered those amenities. The committee wisely rejected approaches that created disincentives to demand for green residential buildings. Turfgrass is a similar amenity. For many people the maintenance of a lawn is a hobby of choice and a matter of pride. It's also affordable, for both installation and maintenance, which can help foster more green building demand. Simply, many people like turfgrass and many would want to own or live in a green residential building with the amenity. Beyond amenities, turfgrass has larger societal benefits as well. It is the superior vegetative surface material for athletic activity, both organized and informal. It is unparalleled as a vegetative surface for viewing performances and other outdoor assembly uses and social gatherings. It is the most accessible traveling surface, other than hardscapes, as it allows for unobstructed, omni-directional movement. Where public safety is a concern, it is an inviting feature because it doesn't permit undesirable lurking. For fire safety purposes turfgrass serves as defensible space for compliance with the Wildland Urban Interface Code and, when used with Grasscrete or similar materials, is suitable for use as a fire access lane. Finally, the division of points in our proposed change doesn't reduce the total amount of points available for providing a landscape plan designed to limit water and energy use. Instead those points are allocated to other practices that demonstrably preserve or enhance the natural environment and which can benefit from the inclusion of turfgrass as an environmentally sound landscape strategy. Note that the greatest point increase is given to providing vegetation that is native or regionally appropriate for local growing conditions which is the best option in these sections for fostering water efficiency. Notes: 1. University of Minnesota. 2006. Environmental Benefits of a Healthy, Sustainable Lawn. Sustainable Urban Landscape Information Series. <a href="http://www.sustland.umn.edu/maint/benefits.htm">http://www.sustland.umn.edu/maint/benefits.htm</a> 2. Beard, J.B. and R.L. Green. 1994. The Role of Turfgrasses in Environmental Protection and Their Benefits to Humans. Journal of Environmental Quality. Vol 23:3 3. Sahu, R. 2008. Technical Assessment of the Carbon Seguestration Potential of Managed Turfgrass in the United States. Outdoor Power Equipment Institute (OPEI). Alexandria, VA.</p>			
030	752	Derek Huetinck BeaconCrest Homes MNCBIA Green Building Committee	405.9 Open Space Revise as follows	While awarding points for open space is appropriate, the reason for the open space should not be a factor in the awarding of points as open space provides the same benefits irrespective of its reason. Moreover, by calibrating points for open space against local codes, projects in different jurisdictions will be held to different standards which will take away from the uniformity of the standard.	Open Space. A portion of the gross area of the community has been set aside as open space: 1 point for every 10% of the community set aside as open space; <del>beyond local code requirement.</del>	Acceptt	Accept removing the language beyond local code requirement

## Chapter 5 Lot Design, Preparation and Development

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
031	650	Steve Hale Build Green NM Build Green NM	501.1 Lot Revise as follows	There are over 170 points available for certifying a subdivision in chapter 4 of the NGBS. A certified subdivision will be easier to build a sustainable home on but there is a disconnect between chapter 4 and chapter 5 of the NGBS.(use the simple example of how proper lot orientation helps with the heating and cooling needs of the home) With so many practices available that can help the builder get a head start on their certification there is a definite need to incentivize a developer to build a certified subdivision. The best incentive is to give more points in chapter 5 to a builder that chooses to build in a certified subdivision. I suggest changing the point structure of this practice.	<b>501.1 Lot. The lot is selected to minimize environmental impact by one or more of the following:</b> <b>(1) The builder selects a lot within an NGBS certified green community or equivalent on which to build.</b> <b>4 20 for 4-star</b> <b>3 15 for 3-star</b> <b>2 10 for 2-star</b> <b>1 5 for 1-star</b>  <b>green community</b>	Rejected	We are no longer proposing a point gradation for this activity, so comment is no longer applicable.
032	811	Bridget Herring Mathis Consulting Company Mathis Consulting Company	501.1 Lot Delete without substitution	This is a difficult standard to verify and inspect. Furthermore, automatic points should be awarded for lots located in an area with little naturally occurring slope(many lots). If anything, a requirement deducting points for building on steeper slopes would be appropriate.	<del>501.1 (5) Low slope site. A site with an average slope calculation of less than 15% is selected. TBD</del>	Rejected	TG and CC have discussed this extensively and decided this action is valid for points
033	669	Robert Hill NAHB Research Center NAHB Research Center	503.2 Slope Disturbance Revise as follows	0 percent is less than 25% and points should not be given for not aligning any of the driveway. Is the intent of this practice to provide 5 points to any driveway on a flat lot? If not then the practice should be modified to reflect that.	<b>503.2 Slope disturbance.</b> Slope disturbance is minimized by the use of terrain adaptive architecture including terracing, retaining walls, landscaping, or other re-stabilization techniques. <b>(2)</b> All or a percentage of driveways and parking are aligned with natural topography to reduce cut and fill. <b>(a)</b> less than 10% to 25 percent <b>(b)</b> 25 percent to 75 percent <b>(c)</b> greater than 75 percent	Accepted	TG agrees that 10% is a better minimum threshold for this activity
034	902	Ed Tombari NAHB	503.2 Slope disturbance	This was merely an organizational error of the structure of the language. Please revise the structure so that these are listed as 5 practices rather than as four as indicated below.	<b>503.2 Slope disturbance.</b> Slope disturbance is minimized by:  <del>(1) The use of terrain adaptive architecture including terracing, retaining walls, landscaping, or other re-stabilization techniques. one or more of the following.</del> <del>(Points awarded only if there are developable steep slopes on the lot.)</del>  <del>(1) All or a percentage of development on steep slopes is avoided.</del> <del>(a) less than 25 percent 2</del> <del>(b) 25 percent to 75 percent 3</del> <del>(c) greater than 75 percent 4</del> <del>(2)</del> (2) Hydrological/soil stability study for steep slopes is completed and used to guide the design of all buildings on the site. <del>(3)</del> (3) All or a percentage of roads/driveways and parking are aligned with natural topography to reduce cut and fill. <b>(a)</b> less than 25 percent 1 <b>(b)</b> 25 percent to 75 percent 3 <b>(c)</b> greater than 75 percent 5 <del>(4)</del> (4) Long-term erosion effects are reduced through the design and implementation of terracing, retaining walls, landscaping, and or restabilization techniques <del>(5)</del> (5) Underground parking uses the natural slope for parking entrances.	Accept a Modified	3(a) is modified to be consistent with 10% minimum threshold accepted from PC 023 / LogID 666
035	797	Shari Hendley J.S. Hovnanian & Sons J.S. Hovnanian & Sons	503.4 Storm Water Management Revise as follows	503.4(5) "volume of the 95th percentile storm event" sounds excessive and difficult to prove or disprove.	Suggest another type of test or reference that may be more readily found on the site/stormwater plans.	Rejected	This is already federal requirement, therefore is redundant
036	738	Greg Johnson Greg Johnson Consulting Outdoor Power Equipment Institute	503.5 Landscape Plan Revise as follows	The Outdoor Power Equipment Institute became aware of the NGBS standards activity after the first round of comments had closed; otherwise we would have commented to strike all of Sections 403.6. (4) and 503.5 (3). Instead, since points are still open for comment, we request that the points for turf limitations in Sections 403.6. (4) and 503.5 (3) be stricken and reallocated to other more appropriate sustainable practices within	Award 0 points for the elimination or restriction of turfgrass areas  (1) Where a lot is less than 50% turf, a plan is formulated to restore or enhance natural vegetation that is cleared during construction. Landscaping is phased to coincide with achievement of final grades 5 6	Rejected	We have addressed this by accepting modified language based on PC 028 / LogID 717

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				<p>their respective sections. The proposed revisions to Sections 403.6 (4) and 503.5 (3) that expand disincentives for turfgrass areas conflict with the intent of the NGBS and aren't consistent with other trends in landscape regulation. The 'less turf-more points' formula suggests a negative environmental value to turfgrass and completely discounts its positive social, safety, and environmental attributes. Limiting turfgrass also limits builder flexibility in installing landscapes for the best site specific environmental performance and inhibits offering a green residential building able to compete on an apples-to-apples basis for curbside appeal. There is extensive scientific documentation of the valuable roles that turfgrass plays in stormwater management, for both erosion control and filtration; the control of wind erosion; carbon sequestration; and the mitigation of heat island effects. (end note 1.) Consider, for example, the cooling benefits of turfgrass. In some instances, ground level temperatures of grass-covered land areas are 30 to 40 degrees cooler than bare soil. They are also 50 to 70 degrees cooler than hardscaped (asphalt or concrete) areas. Reducing turfgrass only contributes to the 'heat island' effect which in turn increases demand for energy.(end note 2.) In addition to its cooling properties, managed turfgrass plays a positive role in our efforts to confront climate change. A well maintained, growing lawn that is fed by nutrients from grass clippings sequesters carbon from the atmosphere and helps to minimize the property's carbon footprint (end note 3.). Reducing turf areas and replacing them with mulch or hardscape makes active carbon 'sinks' inactive, potentially increasing the carbon released back into the atmosphere by exposing soils or using non-growing, decaying materials such as mulch. These alternative methods can be aesthetically appealing and help control water run-off and use, but they do not share the turfgrass benefit of contributing to the reduction of greenhouse gas emissions. The benefits of turfgrass in regard to soil erosion are also well documented. Research shows that a healthy, well-managed lawn with dense turfgrass has near zero storm water runoff and provides an effective infiltration mechanism. In his public comment to GG 243-11 of the International Green Construction Code, Dr. Brian Horgan, assistant professor of horticulture at the University of MN, wrote that "The thatch-forming capabilities of turfgrass in combination with a permanent and dense plant structure yields a less channelized pathway for water movement, which increases resistance, horizontal spread, and infiltration of surface runoff." For people who want to review the technical issues in depth, an extensive bibliography accompanies Dr. Horgan's IGCC 243-11 comment. That comment can be found on page 404 of the IGCC Final Action Agenda at: <a href="http://www.iccsafe.org/cs/IGCC/Pages/2011FinalActionAgenda">www.iccsafe.org/cs/IGCC/Pages/2011FinalActionAgenda</a> Dr. Horgan's bibliography is offered in contrast to the complete absence of scientific foundation that was offered when turfgrass disincentives were suggested through public comment to the initial draft of the NGBS when the commenter merely referred to a few local green building programs in arid regions and stated: "Seems reasonable to give credit for both limited grass, as well as almost or no grass." Similarly, in this cycle of ICC-700, the EPA comment to create stronger disincentives for turfgrass installation was presented with arbitrary targets with no scientific justification. In the EPA comment the statement was made that "EPA supports the inclusion of a practice restricting turf areas in landscaping..." This conflicts with the EPA's August 12, 2011 public comment to GG 243-11 of the IGCC in which the agency asks for turf area restrictions to be eliminated, saying instead that "... a water budget approach would be preferable to guide landscape design, irrespective of the source of irrigation..." It also conflicts with the October 21, 2011 WaterSense Notification of Intent in which the EPA announced its intent to remove the 40% turf limitation from the WaterSense Specification and the White House's Council on Environmental Quality's October 31, 2011 Guidance for Federal Agencies on Sustainable Practices for Designed Landscapes which has no prescriptive turf limitation and in fact recommends the use of turf for certain circumstances. This philosophical approach parallels the action of the International Code Council's membership which overwhelmingly rejected all turf limitations at the final action hearings for the IGCC on November 3, 2011. The best way to facilitate a market approach to green building demand is to offer features that the public wants while providing buildings and sites with superior environmental performance. There was extensive discussion during the development of the first edition of the NGBS about prohibiting fire places and swimming pools from green residential buildings or awarding 'negative points' to buildings that offered those amenities. The committee wisely rejected approaches that created disincentives to demand for green residential buildings. Turfgrass is a similar amenity. For many people the maintenance of a lawn is a hobby of choice and a matter of pride. It's also affordable, for both installation and maintenance, which can help foster more green building demand. Simply, many people like turfgrass and many would want to own</p>	<p>to ensure denuded areas are quickly vegetated.</p> <p>(2) Turf grass species, other vegetation, and trees are selected and specified on the lot plan that are native or regionally appropriate for local growing conditions. 4 6</p> <p>(3) The percentage of turf areas that is designed to be mowed is limited and shown on the lot plan. The percentage is based on the landscaped area of the lot not including the home footprint, hardscape, and any undisturbed natural areas.</p> <p>(a) 0 percent 4 0</p> <p>(b) greater than 0 percent to less than 20 3 0</p> <p>(c) 20 percent to less than 40 percent 2 0</p> <p>(d) 40 percent to 60 percent 4 0</p> <p>Practices 4 through 6 unchanged</p> <p>(6) Vegetative wind breaks or channels are designed to protect the lot and immediate surrounding lots as appropriate for local conditions. 4 5</p>		

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				or live in a green residential building with the amenity. Beyond amenities, turfgrass has larger societal benefits as well. It is the superior vegetative surface material for athletic activity, both organized and informal. It is unparalleled as a vegetative surface for viewing performances and other outdoor assembly uses and social gatherings. It is the most accessible traveling surface, other than hardscapes, as it allows for unobstructed, omni-directional movement. Where public safety is a concern, it is an inviting feature because it doesn't permit undesirable lurking. For fire safety purposes turfgrass serves as defensible space for compliance with the Wildland Urban Interface Code and, when used with Grasscrete or similar materials, is suitable for use as a fire access lane. Finally, the division of points in our proposed change doesn't reduce the total amount of points available for providing a landscape plan designed to limit water and energy use. Instead those points are allocated to other practices that demonstrably preserve or enhance the natural environment and which can benefit from the inclusion of turfgrass as an environmentally sound landscape strategy. Note that the greatest point increase is given to providing vegetation that is native or regionally appropriate for local growing conditions which is the best option in these sections for fostering water efficiency. Notes: 1. University of Minnesota. 2006. Environmental Benefits of a Healthy, Sustainable Lawn. Sustainable Urban Landscape Information Series. <a href="http://www.sustland.umn.edu/maint/benefits.htm">http://www.sustland.umn.edu/maint/benefits.htm</a> 2. Beard, J.B. and R.L. Green. 1994. The Role of Turfgrasses in Environmental Protection and Their Benefits to Humans. Journal of Environmental Quality. Vol 23:3 3. Sahu, R. 2008. Technical Assessment of the Carbon Seguestration Potential of Managed Turfgrass in the United States. Outdoor Power Equipment Institute (OPEI). Alexandria, VA.			
037	753	Derek Huetinck BeaconCrest Homes MNCBIA Green Building Committee	503.5 Landscape Plan Revise as follows	The new language creates unnecessarily complicated calculations that will add unneeded costs to the certification process. The original language is better than the proposed new language.	Species and locations for trees or tree planting of at least 3 trees are identified on the lot plan that will provide summer shading of streets, parking areas, and buildings to moderate temperatures within 5 years of completion of the building.	Rejected	The existing language has been extensively vetted and wordsmithed by the full committee
038	748	Jamie Hager Southern Energy Management self	504.3 Soil disturbance and erosion implementation Delete without substitution	504.3.8 is the exact same item as 503.3.2. Recommend deleting one of the items or if the intent is to award 10 total pts, just award the points and list the item once.	Delete 504.3.8 because it is the same item as 503.3.2 (utility installation strategy points)	Accept as Modified	503.3(a) - "at least 75% of the total length of the <del>installed</del> utilities on the lot are <del>installed</del> designed to use a more alternative means."
039	639	John Gant Glen Raven Inc self	505.2 Heat Island Mitigation Revise as follows	The proposed "(3)Permeable Hardscaping" is a consideration of storm water management and does not belong in this section. Delete from here, as they are absolutely not directly related and certainly not substitutable as alternatives for this credit.	Reject (3) as proposed.	Rejected	The existing language has been extensively vetted and wordsmithed by the full committee
040	640	John Gant Glen Raven Inc self	505.2 Heat Island Mitigation Revise as follows	The moment of evaluation is given as "summer solstice at noon" which is one month earlier than the peak cooling moment, and which is a high sun angle that does not optimize performance of shading which should be designed to work for the insulation endured for the hours from 10 am to 4 pm. A change should be made so that south-side shading is more valued than north-side shading (over a parking lot for instance), which is very true.	Substitute "July 20th at 4 pm" for "summer solstice at noon".	Rejected	"Summer Solstice" is a widely accepted industry term for for measuring solar reflectivity. July 20th is an arbitrary date
041	641	John Gant Glen Raven Inc self	505.2 Heat Island Mitigation Revise as follows	Item (4) should recognize roof areas that are specifically dedicated to solar electric or solar thermal equipment.	Add "(c)Areas immediately occupied by solar thermal or solar electric systems."	Accept as Modified	(4) Roofs: Not less than 75% of the <u>exposed</u> surface of the roof meets one or a combination of the following methods.
042	670	Robert Hill NAHB Research Center NAHB Research Center	505.2 Heat Island Mitigation Revise as follows	There is now a sub practice related to roof surfaces. Since roofs do not meet the definition of hardscape, roofs should explicitly be included in the areas targets to meet the 50% threshold.	<b>505.2 Heat island mitigation.</b> Heat island mitigation. Any combination One or more of the following strategies are provided for a minimum of 50 percent of the <u>total</u> horizontal surface area of the hardscape <u>and roofs</u> on the lot:	Rejected	This language would "lower the bar" by combining the roof and hardscape areas
043	704	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	505.2 Heat Island Mitigation Revise as follows	No guidance as to whose numbers we can use to determine solar reflectance.	505.2(2) – Heat island mitigation via materials with solar reflectance of 29.	Rejected	The proposed language is not substantial enough. It does not even address the concern cited

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
044	835	Craig Conner Building Quality self	505.2 Heat Island Mitigation Delete and substitute as follows	Use more appropriate cool roof requirements. Cover both high and low slope roofs.	602.2 Roof surfaces. Delete and replace with  <b>Roof solar reflectance and thermal emittance.</b> In climate zones 1, 2, and 3 roof coverings shall comply with this section. Roof requirements in Section C402.2.1.1 of the <i>International Energy Conservation Code</i> shall apply, including the exceptions. Where not exempted, high sloped roofs, with a slope less than of 2 units vertical in 12 horizontal or more shall comply with IECC Section 502.2.1.1. Roofs with other slopes shall comply with at least one of the four options in Table.  <b>MINIMUM REFLECTANCE AND EMITTANCE FOR OTHER THAN LOW HIGH-SLOPED ROOFS</b>  a. The use of area-weighted averages to meet these requirements shall be permitted. Materials lacking initial tested values for either <i>solar reflectance</i> or <i>thermal emittance</i> , shall be assigned both an initial <i>solar reflectance</i> of 0.10 and an initial <i>thermal emittance</i> of 0.90. Materials lacking three-year aged tested values for either <i>solar reflectance</i> or <i>thermal emittance</i> shall be assigned both a three-year aged <i>solar reflectance</i> of 0.10 and a three-year aged <i>thermal emittance</i> of 0.90.  b. Tested solar reflectance and thermal emittance shall be in accordance with CRRC-1 Standard. c. Solar reflectance index (SRI) shall be determined in accordance with ASTM E1980 using a convection coefficient of 2.1 BTU/h-ft <sup>2</sup> -F (12W/m <sup>2</sup> .K). Calculation of aged SRI shall be based on aged tested values of solar reflectance and thermal emittance. Calculation of initial SRI shall be based on initial tested values of solar reflectance and thermal emittance.	Rejected	This comment addresses Chapter 6 - not applicable
045	749	Jamie Hager Southern Energy Management self	505.4 Mixed-use development Revise as follows	505.4 is not clear how this may apply to typical single family lots, is this just a multi-family item? Also not clear what would be an acceptable mixed-use building on the lot, provide examples. Recommend making it applicable to single family lots by awarding points for the lot being within X distance (to be determined by task group) of a mixed use building or within a mixed use community.	Recommend making it applicable to single family lots by awarding points for the lot being within X distance (to be determined by task group) of a mixed use building or within a mixed use community and providing examples/definition of "mixed-use".	Rejected	This comment addresses Mixed-Use Environment, not Mixed-Use development. Should only be for onsite actions
046	751	Jamie Hager Southern Energy Management self	505.5 Community Garden(s) Revise as follows	While this makes sense for multi-family lots, this is also not clear how it might apply to a typical single family lot. Seems worthy of pts if could revise to allow single family lots within X distance of a community garden to receive the points or be located in a community that provides a garden plot.	Revise to include a way for this item to be applicable to single family lots, such as pts awarded for lot being within X distance of a community garden or located in a community that provides access to a community garden plot.	Rejected	Similarly, a builder should not get credit for an off-site activity that the verifier cannot verify whether it will be incorporated

Chapter 6 Resource Efficiency

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
047	799	Amy Schmidt The Dow Chemical Company Dow Building Solutions	601.1 Conditioned Floor Area Revise as follows	Materials in the building that are not part of the finished floor area still have an impact on the building.	<b>601.1 Conditioned floor area.</b> <del>Conditioned Finished</del> floor area, as defined by ICC IRC and calculated in accordance with NAHBRC Z765, of a dwelling unit is limited. <del>Dwelling unit size Finished floor area</del> is calculated in accordance with NAHBRC Z765. Only the <del>conditioned finished</del> floor area for stories above grade plane is included in the calculation.	Reject	This change was implemented in response to Proposed Changes submitted to address the issue of covering the houses that do not have conditioning equipment such as in Hawaii. The current language provides more flexibility to meet the intent of the practice over various geographical and climatic regions.
048	734	Howard Fortunato LandmarkJCM self	601.2 Material Usage Revise as follows	601.2 (1) (2) (3) these seem to be non-specific requirements, is sizes necessary for "strength and stiffness". As a verifier I am not clear how a builder would determine how to comply with this requirement and how as a verifier I would verify it	see above.	Reject	See action and reason on PC 049 / Log-ID 813.
049	813	Bridget Herring Mathis Consulting Company Mathis Consulting Company	601.2 Material Usage Delete without substitution	Inadequate language to reliably ensure intent.	<del>601.2 Material usage. Building code compliant Structural systems are designed or advanced framing construction techniques are implemented that reduce and optimize material usage. (Points awarded for each system or framing technique implemented.)</del>  <del>(1) Minimum structural member or element sizes necessary for strength and stiffness in accordance with advanced framing techniques or structural design standards are selected.</del>  <del>(2) Higher grade or higher strength of the same materials than commonly specified for structural elements and components in the building are used and element or component sizes are reduced accordingly.</del>  <del>(3) Performance based structural design is used to optimize lateral force resisting systems</del>	Reject	The practice involves the use of engineering and it requires the inherent degree of flexibility.
050	903	Eric DeVito Brickfield, Burchette, Ritts & Stone, P.C.	601.7 Site-applied finishing materials	This proposal clarifies the intent of Section 601.7 to award credit for window, doors, and skylight assemblies that do not require site-applied finishes on at least one surface (interior or exterior). The 2008 NGBS recognizes the value of popular fenestration products that may be pre-finished or metal-clad on the exterior side, while still preserving the design flexibility offered by an unfinished interior surface. Fenestration is distinct from other categories in the list of materials because each component actually has two surfaces – interior and exterior – which could require site-applied finishes. The latest NGBS public review draft revises the language in an attempt to clarify the application of this credit, but we believe code enforcers would benefit from some additional clarification on the subject. The modification below clarifies that credit is available for products that do not require site-applied finish on one of the two surfaces – interior or exterior.	<b>601.7 Site-applied finishing materials.</b> Building materials or assemblies listed below that do not require additional site-applied material for finishing are incorporated in the building. (1) 90 percent or more of the installed building materials or assemblies listed below: (Points awarded for each type (a-g) of material or assembly.) (2) 50 percent to less than 90 percent of the installed building material or assembly listed below: (Points awarded for each type (a-g) of material or assembly.) (3) 35 percent to less than 50 percent of the installed building material or assembly listed below: (Points awarded for each type (a-g) of material or assembly.)  (a) pigmented, stamped, decorative, or final finish concrete or masonry (b) interior trim not requiring paint or stain (c) exterior trim not requiring paint or stain (d) window, skylight, and door assemblies not requiring paint or stain on <u>one of the following surfaces:</u> 1. exterior surfaces or 2. interior surfaces (e) interior wall coverings or systems not requiring paint or stain or other type of finishing application (f) exterior wall coverings or systems not requiring paint or stain or other type of finishing application (g) pre-finished hardwood flooring	Accept	
051	740	Matthew Dobson Vinyl Siding Institute mdobson@vinylsiding.org	602.1 Moisture Management - Building Envelope Revise as follows	This additional provision will allow for recognized options of rainscreening techniques from the 2012 International Residential Code.	602.1.9 (5)  <u>OR (c ) Utilize a vented cladding system as defined by Section R702.7 of the International Residential Code.</u>	Reject	The proposed solution does not offer additional level of protection beyond the base code. Systems can be qualified under (a) or (b) that are currently in the document already. 7-0-1

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052	671	Robert Hill NAHB Research Center NAHB Research Center	602.1.1 Capillary breaks Revise as follows	The original text is not clear regarding basements. An unfinished basement might not qualify as living space but it could be finished later and then it would be too late to install a capillary break. If the intent is to exempt unfinished basements then the original text is OK.	<b>602.1.1.1</b> A capillary break and vapor retarder are installed at all concrete slabs adjoining living habitable and usable space in accordance with Sections 602.1.1.1(1) or 602.1.1.1(2), as modified by Section 602.1.1.1(3):	Accept as modified	Delete the entire section and replace with the following: <u>A capillary break and vapor retarder are installed at concrete slabs in accordance with IRC Sections R506.2.2 and R506.2.3 or IBC 1910 and 1805.4.1.</u> Reason: The public comment raises a good question but the best solution for this mandatory item is to refer to the building code where all these questions are adequately addressed.
053	696	Donn Thompson Portland Cement Association Portland Cement Association	602.1.1 Capillary breaks Revise as follows	Based on the recommendations of the American Concrete Institute, the minimum thickness of a vapor retarder should be at least 10 mils (25mm) to enable the retarder to maintain its integrity under construction loads.	602.1.1 Capillary breaks 602.1.1.1 A capillary break and vapor retarder are installed at all concrete slabs adjoining living space in accordance with Sections 602.1.1.1(1) or 602.1.1.1(2), as modified by Section 602.1.1.1(3): Mandatory (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, <u>minimum thickness 10 mil (25mm),</u> in direct contact with the concrete slab, with the sheeting joints lapped in accordance with Section 602.1.4. (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, <u>minimum thickness 10 mil (25mm),</u> with the sheeting joints lapped in accordance with Section 602.1.4. (3) Modification: 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.	Reject	The current draft does not preclude the use of 10 mil material. This is a mandatory item related to code without awarding points. The use of 10 mil in cold climate may not be appropriate. The benefit of changing from 6 to 10 mil does not justify mandatory status or points. Minor punctures from construction would not have a significant impact on performance..
054	674	Robert Hill NAHB Research Center NAHB Research Center	602.1.13 Drip Edge Delete without substitution	This practice should be deleted since it is already mandated in 602.1.9(1)(h).	<del>602.1.13 Drip edge. Drip edge is installed at eaves and gable roof edges.</del>	Accept	
055	605	Chris Allison City of Longmont City of Longmont	602.1.14 Ice barrier Revise as follows	Refer to IRC Figure R301.2(1) for the areas required to have ice barriers by this standard to avoid confusion.	Add or refer to the IRC Figure R301.2(1) to indicate areas required to have ice barriers.	reject	The current language is adequate. ICC 700 covers IBC in addition to IRC. IBC does not have a similar figure or table..
056	672	Robert Hill NAHB Research Center NAHB Research Center	602.1.4 Crawlspace Revise as follows	Is the intent here just to leave enough material available that the vapor barrier could be attached with furring strips or is the intent that the vapor barrier is actually attached with glue and furring strips?	<b>602.1.4.1</b> 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. <b>(1)</b> Floors. Minimum 6 mil vapor retarder installed on the crawlspace floor and extended up the wall <del>sufficient to allow</del> and the material <del>to be</del> is affixed with glue and furring strips	AM	Randy's proposal: <u>Minimum 6 mil vapor retarder installed on the crawlspace floor and extended at least 6 inches up the wall and is attached and sealed to the wall sufficient to allow the material to be affixed with glue and furring strips.</u>
057	TG3-1	Task Group 3	602.1.4.1 Crawlspace Modify as follows	This change is proposed by TG-3 as a result of the review of point assignments for Section 602.1.4 Crawlspace. This proposed change clarifies that Section 602.1.4.1 is intended to award points only for unconditioned crawlspaces.	<b>602.1.4.1</b> Vapor retarder in unconditioned crawlspace is in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 inches (152 mm) and are taped.	Accept	
058	697	Donn Thompson Portland Cement Association Portland Cement Association	602.1.4 Crawlspace Revise as follows	Based on the recommendations of the American Concrete Institute, the minimum thickness of membranes placed below concrete slabs should be at least 10 mils (25mm) to enable the retarder to maintain its integrity under construction loads. ACI also provides recommendations for the minimum lapping and tapping of seams.	602.1.4.2 Crawlspace that is built as a conditioned area is sealed to prevent outside air infiltration and provided with conditioned air at a rate not less than 0.02 cfm (.009 L/s) per square foot of horizontal area and one of the following is implemented: (1) a concrete slab over lapped <del>6</del> <u>10 mil (25mm)</u> polyethylene or polystyrene <u>sheeting,</u> lapped a minimum of 6 inches (152mm) and taped at the seams.	AM	Reject the change of thickness per reason in item Log-ID 696.. Accept the new additional language. (1) a concrete slab over lapped <del>6</del> <u>10 mil (25mm)</u> polyethylene or polystyrene <u>sheeting,</u> lapped a minimum of 6 inches (152mm) and taped or <u>sealed</u> at the seams.

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059	798	Ray Tonjes Ray Tonjes Builder, Inc. Self	602.1.5 Termite barrier Revise as follows	As there is no current definition of what constitutes a "continuous physical foundation termite barrier" there needs to be validation of the products and methods used to provide the termite infestation protection intended.	<b>Termite barrier.</b> Continuous physical foundation termite barrier used with low toxicity treatment or with no chemical treatment is installed in geographical areas that have subterranean termite infestation potential determined in accordance with Figure 6(3). <u>Material and installation methods to be validated by the State's pest control authority or ICC-ES Evaluation Report.</u>	Reject	The proposed language is unnecessary and the definition and validations are adequately covered by the building code. It is not recommended to list specific evaluation agencies in the body of the Standard.
060	673	Robert Hill NAHB Research Center NAHB Research Center	602.1.9 Flashing Revise as follows	Since (1)(a) is a mandatory requirement for flashing at all exteriors fenestrations it seems inconsistent to allow and exception to this mandatory requirement in (6) and also award 2 points for it.	<b>602.1.9 Flashing.</b> Flashing is provided to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details are provided in the construction documents and are in accordance with the fenestration manufacturer's instructions, the flashing manufacturer's instructions, or as detailed by a registered design professional. <b>(1)</b> Flashing are installed at all of the following locations, as applicable: <b>Mandatory (a)</b> around exterior fenestrations, skylights and doors  <del><b>(6)</b> A drip cap is provided above windows and doors that are not flashed or protected by covering in accordance with Section 602.4</del>	Accept	
061	706	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	602.4 Finished Grade Revise as follows	Builders should not be rewarded for building to code.	602.4 – Points for a drip edge are superfluous; that is all code now.	reject	The 2012 NGBS is using 2009 IRC as a base where this is not a requirements..
062	633	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	603.1 Reuse of Existing Building Revise as follows	Demolition is an act of nonsystematic structure removal; it does not address what happens to a material after the structure has been removed, so its inclusion in this section adds confusion to the intent. Demolition may yield fewer recycled or salvaged materials than a structure that has been deconstructed; it does not guarantee that there isn't some success, so this term has been removed.	<b>603.1 Reuse of existing building.</b> Existing Major elements or components of existing buildings and structures are reused, modified, or deconstructed for later use <del>in lieu of demolition.</del>	Accept	
063	675	Robert Hill NAHB Research Center NAHB Research Center	603.1 Reuse of Existing Building Revise as follows	603.1 and 603.2 can easily be confused. If the intent is this practice be limited to that existing buildings on the lot then the additional text will make it clear.	<b>603.1 Reuse of existing building.</b> Existing Major elements or components of existing buildings and structures <u>on the lot</u> are reused, modified, or deconstructed for later use in lieu of demolition.	Reject	It is not the intent of this section to limit this practice to the same lot. However, a change has been implemented to 603.2 to clarify that 603.2 and 603.1 should not award points to the same material as follows: <b>Materials, elements, or components awarded points under Section 603.1 shall not be awarded points under Section 603.2.</b>
064	676	Robert Hill NAHB Research Center NAHB Research Center	603.2 Salvaged Materials Revise as follows	603.1 and 603.2 are often confused. Unless these practices are clarified a builder might try to claim points for both of these practices when an on-site building is deconstructed.	<b>603.2 Salvaged materials.</b> Reclaimed and/or salvaged materials and components <u>obtained off site</u> are used. The total material value and labor cost of salvaged materials is equal to or exceeds 1 percent of the total construction cost.	Reject	It is not the intent of this section to limit this practice to off site applications. However, a change has been implemented to clarify that 603.2 and 603.1 should not award points to the same material as follows: <b>Materials, elements, or components awarded points under Section 603.1 shall not be awarded points under Section 603.2</b>
065	707	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	604.1 Recycled Content Revise as follows	Better definitions as to what are 'minor and major' building components are needed.	604--A list format would be better.	Reject	Draft standard includes definitions for major and minor/ The list is provided in the commentary document published in 2009.



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066	632	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	605.2 On-site Recycling Revise as follows	The intent of this section is unclear. Section 605.1 already addresses 50% construction waste diversion, and because the make-up of waste is so different, construction and land-clearing debris should not be included in the same diversion calculation; therefore, construction has been removed from this section. The encouragement of incineration does not meet the environmental intent of this standard.	<del>605.2 On-site recycling. On-site recycling measures following applicable regulations and codes are implemented, such as the following:</del>  <del>(a) Materials are ground or otherwise safely applied on-site as soil amendment or fill. A minimum of 50 percent (by weight) of construction and nonhazardous land-clearing waste is diverted from landfill.</del>  <del>(b) Alternative compliance methods approved by the Adopting Entity.</del>  <del>(c) Compatible untreated biomass material (lumber, posts, beams etc.) are set aside for combustion if a Solid Fuel Burning Appliance as per Section 901.2.1(2) will be available for on-site renewable energy.</del>	Reject	The intent of the inclusion of Item c is to substitute available bio-fuel energy for other fuels. It is not incineration. It is bio-mass renewable energy. The practice requires compliance with Section 901.2.1(2). 605.1 is a plan, while 605.2 is a method of implementation. They are not the same. 605.2 encourages recycling on site, while 605.1 allows recycling and salvaging off site.
067	TG3 -2	Task Group 3	607 RECYCLING Modify as follows	The Task Group relocated food waste disposers to Section 607 from Section 611.	<del>607.2 Food waste disposers. A minimum of one food waste disposer is installed at the primary kitchen sink. 1</del>  <del>611.4 Food waste disposers. A minimum of one food waste disposer is installed at the primary kitchen sink.</del>	Accept	
068	677	Robert Hill NAHB Research Center NAHB Research Center	609.1 Regional materials Revise as follows	A major element is not defined. The current definition of a major component is limited to the building itself. Is the intent for regional materials only to get points for use in the building or should points also be appropriate for major use on site (e.g. driveway construction)?	<del>609.1 Regional materials. Regional materials are used for major elements or components of the building construction.</del>	Reject	The intent of this practice is to limit this credit to the building only.
069	834	Craig Conner Building Quality self	609.1 Regional materials Delete without substitution	This is "free be" for concrete, since ready mix will always be very much closer than 500 miles, using local rocks and sand. Concrete always gets it. Will any use of local rock and sand get this? At 1500 miles I can take sand off the beach of very southern California and maybe northern Mexico and ship it to my city in inland Washington, almost Idaho, and call it indigenous. Ridiculous. Delete the whole item.	Delete all sections concerning "regional materials". Including:  <del>REGIONAL MATERIAL. Material that is originated, produced, grows naturally, or occurs naturally within 500 miles (804.7 km) of the construction site if transported by truck or 1500 miles (2414 km) of the construction site if transported for not less than 80% of the total transport distance by rail or water.</del>	Reject	The intent is to encourage the use of regional products that provide environmental benefit. The fact that there are readily-available materials that provide this benefit does not support rejecting the credit. The practice is self-limiting due to economical factors.  Also the intent of the public comment is outside of the scope of the proposed change.
070	698	Donn Thompson Portland Cement Association Portland Cement Association	610.1 Life Cycle Analysis Revise as follows	1) Delete individual product or assembly based comparative Life cycle assessment (LCA). LCA is intended to offer a comprehensive approach to evaluating and improving the environmental impacts of buildings. A project's environmental life cycle performance is dependent upon the whole project design with its individual components acting together as a system. A project's environmental life cycle performance should not be separated into the assessment of the individual components and assemblies. Conducting such a limited assessment will lead to conclusions and actions that are poorly informed. For example, looking at a comparison of wall assemblies, the differences in embodied energy, the energy associated with the extraction, manufacturing, and delivery of a product to the construction site, will likely be the primary consideration for selection. There would be no means of accurate assessment of in-place performance within the overall project. Only rough estimates of operational energy performance would be possible. A recent LCA study by MIT has demonstrated that the environmental impacts of the operational phase of a buildings life cycle is responsible for at least 88% of total emissions. Operational impacts can only be accurately assessed through a whole building LCA. Using component based LCA to superficially compare individual impacts is simplistic, inaccurate, and will often lead to decisions that result in greater environmental impacts over the full service life of the project. 2) Broaden the scope of the environmental impacts to be assessed: A complete cradle to grave LCA carried out according to the guidelines in "International Standard ISO 14044, Environmental Management – Life Cycle Assessment – Requirements and Guidelines" should not be limited to only a few impacts. At a minimum, the following life cycle impacts should be assessed: Human toxicity, Global warming potential, ozone depletion, acidification, eutrophication, photochemical smog, ecotoxicity of water, ecotoxicity of soil, bulk waste, hazardous waste, radioactive waste, human health respiratory effects potential from particulates and land use. The impact of fossil fuel consumption is addressed through analysis of global warming potential and need not be listed separately. 3) Suggest 15 points awarded for conducting a whole building life cycle analysis	<del>610.1 Whole-building Life cycle analysis. A whole building life cycle analysis (LCA) tool is used to select environmentally preferable products or assemblies, or an LCA using a life cycle assessment process and data compliant with ISO 14044 or other equivalent standards is conducted on the entire building. Points are awarded in accordance with 6040.1.1, 610.1.2(1), or 610.1.2(2). Only one method of analysis may be utilized. A reference service life for the building is to be of 60 years shall be used for any life cycle analysis tool. Results of the LCA are reported in the manual required in Section 1003.1(1) of this standard in terms of the environmental impacts listed in this practice. and it states if operating energy was included in its preparation. 610.1.1 Whole-building life cycle analysis. A whole building LCA is performed using a life cycle assessment and data compliant with ISO 14044 or other recognized standards.</del>  <del>609.1 610.1.2 Life cycle analysis for a product or assembly. A more An environmentally preferable product or assembly is selected for an application based upon the use of an Life Cycle Assessment (LCA) tool that incorporates data methods compliant with ISO 14044 or other recognized standards that compare the environmental impact of building materials, products or assemblies, or the whole building.</del>  <del>(1) per product/system comparison (2) whole building LCA analysis (1) Two products with the same intended use are compared based on LCA and the product with a 15% improvement in fossil fuel consumption and global warming potential is used.  (Points awarded per product/system comparison.) (2) An assembly is selected for the project that has environmental impact measures that are better than a functionally comparable assembly. The full life cycle, from resource extraction to demolition and disposal (including but not limited to on-site construction,</del>	Reject	The consensus committee repeatedly approved the use of LCA for components/systems. The proponent does not provide sufficient evidence to make this change.  The new proposed items have not been agreed upon by the LCA community.  With regard to the study by MIT which asserts that as much as 88% of the energy consumption due to a product when viewed over its life may be building operating energy, another study by Canada Mortgage and Housing Corp. Equilibrium Project shows the number for all residential to be less than 50%. Both Studies fail to account for the fact that any product used in a building under this standard will be included in a building which must meet the current energy code, obviating the need for further consideration of the operational energy. The proposed inclusion of new

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					<p><del>maintenance and replacement, material and product embodied acquisition, and process and transportation energy), is assessed. The assemblies considered include all structural elements, insulation, and wall coverings:</del></p> <p><del>(a) exterior walls (b) roof/ceiling (c) interior walls or ceilings (d) intermediate floors</del></p> <p><del>Exception: Electrical and mechanical equipment and controls, plumbing products, fire detection and alarm systems, elevators, and conveying systems are not included in the assessment.</del></p> <p><del>At a minimum, the following The environmental impacts shall be assessed: measures to be considered are chosen from the following:</del></p> <p><del>(a) Fossil fuel consumption (b a) Global warming potential (c b) Acidification potential (d c) Eutrophication potential (e d) Ozone depletion potential (f e) Human health respiratory effects potential from particulates (f) Human toxicity (g) Photochemical smog (h)ecotoxicity of water (i) ecotoxicity of soil (j) bulk waste (k) hazardous waste (l) radioactive waste (m)land use (Points are awarded based on the number of assemblies that improve upon environmental impact measures by 15%.) Table 610.1.2(2) Assembly LCA</del></p>		<p>items in the group now called environmental measures and the use of the term environmental impacts to describe that column is incorrect. The new items: Human toxicity, Photochemical smog, ecotoxicity of water, ecotoxicity of soil, bulk waste, hazardous waste, radioactive waste, and land use are not, of themselves, "environmental impacts". Moreover, no metric exists for these items and none are currently included in TRACI and other recognized sources.</p>								
071	750	Matthew Dobson Vinyl Siding Institute mdobson@vinylsiding.org	610.1 Life Cycle Analysis Revise as follows	<p>610.1.2 (1) The focus on global warming impact and fossil fuels use (which are usually very closely related) is far too narrow a focus for an LCA credit. It also seems very strange that only those two impacts are considered here while acidification, eutrophication, ozone depletion, and human health respiratory effects are also considered in 609.2.2. It makes far more sense to be consistent across all these credits. For both 609.2.1 and 609.2.2 something such as the list below should be provided: • Global Warming Potential - measured in kg of CO2 equivalents • Acidification Potential – measured in H+ moles equivalents • Eutrophication Potential – measured in kg N equivalents • Ozone Depletion Potential – measured in kg CFC-11 equivalents • Smog Potential – measured in g of NOX equivalents</p>	<p>and the product with a 15% improvement in overall average in the following areas is used.</p> <p><del>fossil fuel consumption and global warming potential is used.</del></p> <p><del>(a) Fossil fuel consumption (b) Global warming potential (c) Acidification potential (d) Eutrophication potential (e) Ozone depletion potential (f) Human health respiratory effects potential from particulates</del></p> <p><u>New Table per the modification:</u></p> <p><u>Table 610.1.1(2) Product LCA</u></p> <table border="1"> <tr> <td><u>Number of impact measures exceeding 15% improvement</u></td> <td><u>4 measures</u></td> <td><u>5 measures</u></td> <td><u>6 measures</u></td> </tr> <tr> <td><u>Points</u></td> <td><u>2</u></td> <td><u>3</u></td> <td><u>5</u></td> </tr> </table>	<u>Number of impact measures exceeding 15% improvement</u>	<u>4 measures</u>	<u>5 measures</u>	<u>6 measures</u>	<u>Points</u>	<u>2</u>	<u>3</u>	<u>5</u>	<p>Accept as modified</p> <p>Vote: 6 in support 1 abstention</p>	<p>Replace (1) with the following: <b><u>(1) Two products with the same intended use are compared based on LCA and the product with a 15% improvement is selected. Number of points awarded is based on the number of environmental impact measures improved in conformance with Table 610.1.1(2). 10 points max. (Points awarded per product comparison.)</u></b></p> <p><b><u>The environmental impact measures to be considered are chosen from the following: (a) Fossil fuel consumption (b) Global warming potential (c) Acidification potential (d) Eutrophication potential (e) Ozone depletion potential (f) Human health respiratory effects potential from particulates</u></b></p> <p><b><u>Table 610.1.1(2) Product LCA (see table on the left)</u></b></p>
<u>Number of impact measures exceeding 15% improvement</u>	<u>4 measures</u>	<u>5 measures</u>	<u>6 measures</u>												
<u>Points</u>	<u>2</u>	<u>3</u>	<u>5</u>												

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072	833	Craig Conner Building Quality self	610.1 Life Cycle Analysis Delete without substitution	Delete this item until it is made more usable. LCA is poorly defined. 15% of the whole building's energy used? Very few things can do that. 15% of the energy use from the product? Can I save 15% of the heat that flows through the door knob? It is trivial. To compare two products I just copy the manufacturer's analysis of their impacts and call it completed? What is the base case, what is the minimum? A politically correct concept, but not a criteria that is defined enough to used in the green standard. Energy savings is already covered in the energy chapter. Save considerable energy, as specified in the energy chapter, and the greenhouse gases will take care of themselves.	<del>610.1.2 Life cycle analysis for a product or assembly. An environmentally preferable product or assembly is selected for an application based upon the use of an Life Cycle Assessment (LCA) tool that incorporates data methods compliant with ISO 14044 or other recognized standards that compare the environmental impact of building materials, products or assemblies, or the whole building.</del>  40 Points Max  45 Points Max  (1) per product/system comparison 3  (2) whole building LCA analysis 15  (1) Two products with the same intended use are compared based on LCA and the product with a 15% improvement in fossil fuel consumption and global warming potential is used. 210 Points Max (Points awarded per product/system comparison.)	Reject	The practice is adequately defined for implementation. The consensus committee repeatedly supported LCA in the NGBS.
073	730	Josh Jacobs GREENGUARD Environmental Institute GREENGUARD Environmental Institute	611.1 Manufacturer's Environmental Management System Concepts Revise as follows	The proposed standard is aligned with the overall tenants of the existing 610.1. The standard touches on the following areas of sustainability for a product manufacturer: • Sustainability Governance: including sustainability strategic planning, board oversight, internal stakeholder engagement, ethics policies, and creating the infrastructure and fostering the behaviors that create a culture of sustainability • Environment: including product stewardship, sustainable resource use, environmental management systems, energy efficiency and carbon management, materials optimization, facilities and land use, habitat restoration, and waste prevention • Work Force: including professional development, workplace integrity, employee satisfaction and retention, workplace safety, and employee health and well-being • Customers and Suppliers: including fair marketing practices, product safety, customer support and complaint resolution, and sustainable supply chain management, monitoring and improvement • Community Engagement and Human Rights: including community impact assessment, community investment, and human rights issues Each domain includes prerequisites, core indicators, and leadership indicators, for a total of 1,003 possible points across all domains. The standard was put out for public comment and changed due to that public comment. It can be found here: www.comm-2000.com	<b>610.1 Manufacturer's environmental management system concepts.</b>  (a) 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.)  (b) The aggregate value of building products used in the building that is from UL 880 certified manufacturers is 1 percent or more of the estimated total building materials cost. (1 point awarded per percent)	Accept as modified	10 points max is retained for the entire section 611.1 such that the total number of points from (a) and (b) does not exceed 10.
074	724	Josh Jacobs GREENGUARD Environmental Institute GREENGUARD Environmental Institute	611.2 Sustainable Products Revise as follows	The standards named in this section focus on the sustainability of a product the same way that this document looks at the sustainability of a building – in total. To give individual attributes, such as biobased, recycled content, or certified wood more than triple the amount of points (at the minimum) is misunderstanding the focus of sustainability in building. Should sustainable buildings not also be built with the most sustainable products? Looking at the sustainable aspects of a product, in total, as these standards do, is a much better way of ensuring sustainable products are being used to build these homes, than attributes done on a case by case basis.	<b>611.2 Sustainable Products.</b> One or more of the following products are used for at least 30% of the floor or wall area of the entire dwelling unit, as applicable. Certification third-party agency is ISO Guide 65 accredited.  <b>4 10 Points Max</b>  (1) 50% or more of carpet installed (by square feet) is third-party certified to NSF/ANSI 140. <b>45</b>  (2) 50% or more of resilient flooring installed (by square feet) is third-party certified to NSF/ANSI 332. <b>45</b>  (3) 50% or more of the insulation installed (by square feet) is third-party certified to EcoLogo CCD-016. <b>45</b>  (4) 50% or more of interior wall coverings installed (by square feet) is third-party certified to NSF/ANSI 342 <b>45</b>	Withdrawn by proponent on Conference call of Task Group 3 on January 17, 2012.	

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
075	725	Josh Jacobs GREENGUARD Environmental Institute GREENGUARD Environmental Institute	611.2 Sustainable Products Revise as follows	Single attribute traits allow us to see valuable snapshots of a products impact on certain areas of the environment and they bring value to a building standard such as this one, but many product manufacturers and sustainability purchasers/experts are looking to multi-attribute standards as a way to show that a product, in total, addresses the triple bottom line of sustainability. Referencing these standards and awarding points would allow the homes built to this standard to show that some of the products chosen to build the building have been looked at in terms of their overall sustainable impact. As the document is written now, we only have standards for carpet, flooring, insulation, and wall coverings. I am proposing that we include references for standards that are being utilized and certified to in the marketplace for gypsum/wall board and door leafs. This would allow us to give more options to home builders/developers when trying to build these sustainable homes with more sustainable products.	<b>611.2 Sustainable Products.</b> One or more of the following products are used for at least 30% of the floor or wall area of the entire dwelling unit, as applicable. Certification third-party agency is ISO Guide 65 accredited. <b>4 Points Max</b>  (1) 50% or more of carpet installed (by square feet) is third-party certified to NSF/ANSI 140. <b>1</b>  (2) 50% or more of resilient flooring installed (by square feet) is third-party certified to NSF/ANSI 332. <b>1</b>  (3) 50% or more of the insulation installed (by square feet) is third-party certified to EcoLogo CCD-016. <b>1</b>  (4) 50% or more of interior wall coverings installed (by square feet) is third-party certified to NSF/ANSI 342 <b>1</b>  (5) <u>50% or more of the gypsum board installed (by square feet) is third-party certified to ULE ISR 100 1</u>  (6) <u>50% or more of the door leafs installed (by number of door leafs) is third-party certified to ULE ISR 102 1</u>	Accept as modified	Add:  (7) <u>50% or more of the tile installed (by square feet) is third-party certified to ANSI A138.1 Specifications for Sustainable Ceramic Tiles, Glass Tiles and Tile Installation Materials.</u>
076	805	Amy Schmidt The Dow Chemical Company Dow Building Solutions	611.2 Sustainable Products Revise as follows	I believe EcoLogo would be considered a proprietary program. We should not be picking winners and losers.	<b>611.2 Sustainable Products.</b> One or more of the following products are used for at least 30% of the floor or wall area of the entire dwelling unit, as applicable. Certification third-party agency is ISO Guide 65 accredited. <b>4 Points Max</b>  (1) 50% or more of carpet installed (by square feet) is third-party certified to NSF/ANSI 140. <b>1</b>  (2) 50% or more of resilient flooring installed (by square feet) is third-party certified to NSF/ANSI 332. <b>1</b>  (3) 50% or more of the insulation installed (by square feet) is third-party certified to <del>EcoLogo-CCD-016.</del> <b>1</b>  (4) 50% or more of interior wall coverings installed (by square feet) is third-party certified to NSF/ANSI 342 <b>1</b>	Reject	At this time, this is the only standard available for insulation. This is an optional item in the Standard.
077		Curtis L Biggar Biggar Dev Ltd self	611.3 Universal Design Elements	I WOULD RECOMMEND THAT IN ADDITION TO THE RECOGNITION GIVEN TO AGING-IN-PLACE A POINT SHOULD BE GIVEN FOR EACH EXTERIOR ACCESSIBLE EXTERIOR THRESHOLD; AND EACH ACCESSIBLE ROOM. THAT WOULD AMOUNT TO LESS THAN 10 POINTS & ENSURE LONGEVITY; SUSTAINABILITY & HIGH FUTURE RESALE WITHOUT REMODELING. IT WOULD ALSO REDUCE THE HIGH COST OF PREMATURELY LEAVING ONES HOME FOR COSTLY PRIVATE OR GOVERNMENT CARE		Reject	The current language adequately allocates points for no-step entrances under Item (1).
078	809	Bridget Herring Mathis Consulting Company Mathis Consulting Company	611.4 Food waste disposers Delete without substitution	Food waste disposers do are not the clear green option for food waste disposal. Although they can sometimes reduce landfill waste, they add Biological Oxygen Demand to sewer systems, requiring additional treatment.	<del>611.4 Food waste disposers. A minimum of one food waste disposer is installed at the primary kitchen sink. (1 point)</del>	Reject	The committee repeatedly supported retaining this practice for the reasons previously documented in response to proposed changes. No new information is provided. The practice is awarded only one point. .
079	832	Craig Conner Building Quality self	611.4 Food waste disposers Delete without substitution	This is green washing. A garbage disposal is not as good as composting. I thought the committee had voted this out of the document.	<del>611.4 Food waste disposers. A minimum of one food waste disposer is installed at the primary kitchen sink. (1 point)</del>	Reject	The committee repeatedly supported retaining this practice for the reasons previously documented in response to proposed changes. No new information is provided. The practice is awarded only one point.

## Chapter 7 Energy Efficiency

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
080	712	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	701.1 Mandatory Requirements Revise as follows	ACCA Manual J is not equipped to take into account the cooling effects of breezes through the structure in calculating cooling loads.	Requiring floor insulation over unconditioned crawl space would actually be counter-productive in a passively cooled home. A good post and pier design actually encourages air infiltration from the cooler underside of the home into the living space for cooling purposes.	Disapproved	Vote: A=0; D=9; Ab=0 ACCA Manual J is a requirement in the 2009 IRC and the infiltration rate can be adjusted in Manual J to model high infiltration homes.
081	710	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	701.1.1 Minimum Performance Path Requirements Revise as follows	These requirements are geared to everywhere else, except Hawaii, where all new construction must have some type of mechanical system--either heating/cooling, or both. The Standard as it is now, actually encourages putting in a mechanical system where none is needed because more points can be gained. Many of the mandatory air sealing practices are less needed for a home without mechanical cooling. Here in Hawaii, most of our homes are passively cooled.	Performance path is difficult to use with passive cooled homes.	Disapproved	Vote: A=0; D=9; Ab=0 NAHB is encouraging good air sealing practices and no adequate language was proposed to address this issue..
082	711	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	701.1.2 Minimum Prescriptive Path Requirements Revise as follows	These requirements are geared to everywhere else, except Hawaii, where all new construction must have some type of mechanical system--either heating/cooling, or both. The Standard as it is now, actually encourages putting in a mechanical system where none is needed because more points can be gained. Many of the mandatory air sealing practices are less needed for a home without mechanical cooling. Here in Hawaii, most of our homes are passively cooled.	Prescriptive path has so many points dedicated to mechanical systems, that it is hard to find points to meet minimums for passively cooled homes.	Disapproved	Vote: A=0; D=9; Ab=0 NAHB is encouraging good sealing practices and better guidance needs to be provided to address passively cooled homes for future versions of this standard.
083	678	Robert Hill NAHB Research Center NAHB Research Center	701.1.3 Alternative Bronze Level Compliance Revise as follows	The standard should clarify that if the alternate path is used what limitations and benefits are involved.	<b>701.1.3 Alternative bronze level compliance.</b> As an alternative, any building that qualifies as an ENERGY STAR Version 3.0 Qualified Home or demonstrates compliance with the 2012 IECC or Chapter 11 of the 2012 IRC is deemed to meet all mandatory practices of Chapter 7 and achieves the bronze level for Chapter 7. <u>The buildings achieving compliance under Section 701.1.3 are not eligible for achieving a rating level above bronze.</u>	Approved	Vote: A=9; D=0; Ab=0
084	789	Bridget Herring Mathis Consulting Company Mathis Consulting Company	701.1.3 Alternative Bronze Level Compliance Revise as follows	Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable.	<b>701.1.3 Alternative bronze level compliance.</b> As an alternative, any building that qualifies as an Energy Star Version 3.0 Qualified Home achieves the bronze level for Chapter 7.	Disapproved	Vote: A=0; D=8; Ab=1 2009 IECC has been set as the base standard because the 2012 IECC was not published at the time of developing this standard.
085	709	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	701.4 Mandatory Practices Revise as follows	Homes in Hawaii are mostly passively cooled by our tradewinds with no mechanical cooling.	Mandatory requirements specify both HVAC system checklists. What about passively cooled homes with no mechanical cooling?	Disapproved	Vote: A=0; D=9; Ab=0 These mandatory practices are based on 2009 IECC requirements which is the baseline for this standard.
086	735	Howard Fortunato LandmarkJCM self	701.4.1.1 HVAC system sizing Delete without substitution	Making mandatory for ACCA Manual S for selecting equipment will be problematic with hvac contractors that have never heard of Manual S; and it removes point opportunity for builders that presently use it and receive points in 704.5.1	see above	Disapproved	Vote: A=0; D=9; Ab=0 Manual S is required as part of the 2009 code and should be followed as part of this standard. The 2009 code has been set as the baseline for this standard.
087	800	Shari Hendley J.S. Hovnanian & Sons J.S. Hovnanian & Sons	701.4.1.1 HVAC system sizing Delete without substitution	"Equipment is selected using ACCA Manual S or equivalent" - Many hvac contractors do not use this program for selecting equipment. Making this mandatory not only decreases point possibilities (from previous item 704.5.1) for builders, but may require them to switch from otherwise high quality and reliable hvac contractors.	Equipment is selected using ACCA Manual S or equivalent.	Disapproved	Vote: A=0; D=9; Ab=0 Manual S is required as part of the 2009 code and should be followed as part of this standard. The 2009 code has been set as the baseline for this standard
088	736	Howard Fortunato LandmarkJCM self	701.4.2.3 Duct system sizing Delete without substitution	Making mandatory for ACCA Manual D for size and design of duct system will be problematic with hvac contractors that have never heard of Manual D; and it removes point opportunity for builders that presently use it and receive points in 704.4.1	see above	Disapproved	Vote: A=0; D=9; Ab=0 Manual D is required as part of the 2009 code which has been set as the baseline for this standard. ACCA training is available to HVAC contractors to learn how to size ductwork per Manual D.

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason				
089	801	Shari Hendley J.S. Hovnanian & Sons J.S. Hovnanian & Sons	701.4.2.3 Duct system sizing Revise as follows	Many hvac contractors do not use Manual D for sizing duct systems. Making this mandatory not only decreases point possibilities (5 points from previous item 704.4.1) for builders, but may require them to switch from otherwise high quality and reliable hvac contractors	<b>Mandatory 5 points</b>	Disapproved	Vote: A=0; D=9; Ab=0 Manual D is required as part of the 2009 code which has been set as the baseline for this standard. ACCA training is available to HVAC contractors to learn how to size ductwork per Manual D				
090	657	Jamie Hager Southern Energy Management self	701.4.3.2 Air sealing and insulation Delete and substitute as follows	Delete "and insulation" from all language in 701.4.3.2. Based on what is currently written, a Grade 3 insulation job could be installed and still meet all the criteria. Recommend separating air sealing and insulation installation into separate mandatory items. Recommend Grade 2 insulation installation become mandatory, but 3rd party inspection is not mandatory (keep points in 703.1.2 for having it graded by a 3rd party.	<del>701.4.3.2 Air sealing and insulation. Insulation and Air Sealing. Building envelope insulation must be installed to meet Grade 2 installation criteria as defined in 703.1.2.3.</del>  The compliance of the building envelope air tightness and <del>insulation installation</del> is demonstrated in accordance with Section 701.4.3.2(1) or 701.4.3.2(2).  <b>(1) Testing option.</b> Building envelope tightness <del>and insulation installation</del> is considered acceptable when tested air leakage is less than seven air changes per hour (ACH) when tested with a blower door at a pressure of 33.5 psf (50 Pa). Testing is conducted after <del>rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances, the requirements of 701.4.3.1 Building Thermal Envelope have been met.</del> (keep a - g the same under this section)  <b>(2) Visual inspection option.</b> Building envelope tightness <del>and insulation installation are</del> is considered acceptable when the items listed in Table 701.4.3.2(2) applicable to the method of construction, are field verified.	Approved as modified	Vote: AM=9; D=0; Ab=0 Section has been re-written for clarity (see below) and restricts Grade 3 insulation from being used.:  <b>701.4.3.2 Air sealing and insulation Grade 3 insulation installation is not permitted.</b>  The compliance of the building envelope air tightness and insulation installation is demonstrated in accordance with Section 701.4.3.2(1) or 701.4.3.2(2).  <b>(1) Testing option.</b> Building envelope tightness and insulation installation is considered acceptable when tested air leakage is less than seven air changes per hour (ACH) when tested with a blower door at a pressure of 33.5 psf (50 Pa). Testing is conducted after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances. (keep a - g the same under this section)  <b>(2) Visual inspection option.</b> Building envelope tightness and insulation installation are considered acceptable when the items listed in Table 701.4.3.2(2) applicable to the method of construction, are field verified.				
091	777	Amanda Evans Santa Fe self	701.4.3.2 Air sealing and insulation Delete and substitute as follows	Change seven AHC 50 to five ACH 50 or lower. A green building standard should be above and beyond code and the 2012 IECC code requires 3ACH50 in some climate zones. Seven is just too leaky these days.	Remove <del>seven</del> and add five.	Disapproved	Vote: A=2; D=7; Ab=0 2009 IECC sets 7 ACH 50 as the minimum and the 2009 IECC is the baseline set for this standard.				
092	802	Bridget Herring Mathis Consulting Company Mathis Consulting Company	701.4.3.2 Air sealing and insulation Revise as follows	Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable.	<b>701.4.3.2 Air sealing and insulation:</b> The compliance of the building envelope air tightness and insulation installation is demonstrated in accordance with Section 701.4.3.2.  <del>(2) Visual inspection option. Building envelope tightness and insulation installation are considered acceptable when the items listed in Table 701.4.3.2(2) applicable to the method of construction, are field verified.</del>  Table 701.4.3.2(2) Air Barrier and Insulation Inspection Component Criteria  <table border="1"> <thead> <tr> <th>COMPONENT</th> <th>CRITERIA</th> </tr> </thead> <tbody> <tr> <td>Air barrier and thermal barrier</td> <td>Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired. Air permeable insulation is not used as a sealing material.</td> </tr> </tbody> </table>	COMPONENT	CRITERIA	Air barrier and thermal barrier	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired. Air permeable insulation is not used as a sealing material.	Disapproved	Vote: A=0; D=8; Ab=1 2009 IECC has the visual inspection option available and should be an option for the NGBS as a baseline mandatory item.
COMPONENT	CRITERIA										
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					<table border="1"> <tr> <td></td> <td>Air permeable insulation is inside of an air barrier.</td> </tr> <tr> <td>Ceiling/attic</td> <td>Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed.</td> </tr> <tr> <td></td> <td>Attic access (except unvented attic), knee wall door, or drop-down stair is sealed.</td> </tr> <tr> <td>Wall</td> <td>Corners and headers are insulated. Junction of foundation and sill plate is sealed.</td> </tr> <tr> <td>Windows and door</td> <td>Space between window/door jambs and framing is sealed.</td> </tr> <tr> <td>Rim joists</td> <td>Rim joists are insulated and include an air barrier.</td> </tr> <tr> <td>Floors</td> <td>Insulation is installed to maintain permanent contact with underside of subfloor decking.</td> </tr> <tr> <td>(including abovegarage and cantilevered floors)</td> <td>Air barrier is installed at any exposed edge of insulation.</td> </tr> <tr> <td>Crawl space walls</td> <td>Insulation is permanently attached to walls.</td> </tr> <tr> <td></td> <td>Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.</td> </tr> <tr> <td>Shafts, penetrations</td> <td>Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.</td> </tr> <tr> <td>Narrow cavities</td> <td>Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.</td> </tr> <tr> <td>Garage separation</td> <td>Air sealing is provided between the garage and conditioned spaces.</td> </tr> <tr> <td>Recessed lighting</td> <td>Recessed light fixtures are air tight, IC rated, and sealed to drywall.</td> </tr> <tr> <td></td> <td>Exception — fixtures in conditioned space</td> </tr> <tr> <td>Plumbing and wiring</td> <td>Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.</td> </tr> <tr> <td>Shower/tub on exterior wall</td> <td>Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.</td> </tr> <tr> <td>Electrical/phone box on exterior walls</td> <td>Air barrier extends behind boxes or air sealed-type boxes are installed.</td> </tr> <tr> <td>Common wall</td> <td>Air barrier is installed in common wall between dwelling units.</td> </tr> <tr> <td>HVAC register boots</td> <td>HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.</td> </tr> <tr> <td>Fireplace</td> <td>Fireplace walls include an air barrier.</td> </tr> </table>		Air permeable insulation is inside of an air barrier.	Ceiling/attic	Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed.		Attic access (except unvented attic), knee wall door, or drop-down stair is sealed.	Wall	Corners and headers are insulated. Junction of foundation and sill plate is sealed.	Windows and door	Space between window/door jambs and framing is sealed.	Rim joists	Rim joists are insulated and include an air barrier.	Floors	Insulation is installed to maintain permanent contact with underside of subfloor decking.	(including abovegarage and cantilevered floors)	Air barrier is installed at any exposed edge of insulation.	Crawl space walls	Insulation is permanently attached to walls.		Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.	Shafts, penetrations	Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.	Narrow cavities	Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.	Garage separation	Air sealing is provided between the garage and conditioned spaces.	Recessed lighting	Recessed light fixtures are air tight, IC rated, and sealed to drywall.		Exception — fixtures in conditioned space	Plumbing and wiring	Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.	Shower/tub on exterior wall	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.	Electrical/phone box on exterior walls	Air barrier extends behind boxes or air sealed-type boxes are installed.	Common wall	Air barrier is installed in common wall between dwelling units.	HVAC register boots	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.	Fireplace	Fireplace walls include an air barrier.		
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093	803	Bridget Herring Mathis Consulting Company Mathis Consulting Company	701.4.3.2 Air sealing and insulation Revise as follows	Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable.	(4) <b>Testing.</b> Building envelope tightness and insulation installation is considered acceptable when tested air leakage is less than three air changes per hour (ACH) when tested with a blower door at a pressure of 33.5psf (50 Pa). Testing is conducted after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances.	Disapproved	Vote: A=1; D=6; Ab=0 2009 IECC has listed 7 ACH50 as the baseline. 2009 IECC is the baseline code for this version of standard.																																										

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094	659	Jamie Hager Southern Energy Management self	701.4.4 High-efficacy lighting Revise as follows	Need more definition for reference of high-efficacy lighting. Recommend including language from the ICC for reference on lamps that qualify, otherwise builders will have no idea what you mean in areas that have not adopted the 2009 IECC or where it is not enforced well.	<b>701.4.4 High-efficacy lighting.</b> A minimum of 50 percent of the total hard-wired lighting fixtures, or the bulbs in those fixtures, qualify as high efficacy or equivalent. <u>ICC defines high efficacy as: 60 lumens/W for lamps over 40W; 50 lumens/W for lamps over 15W to 40W; 40 lumens/W for lamps 15W or less.</u>  <b>Lamp Efficiency</b> ≤15W 40 lumens/W >15W-40W 50 lumens/W >40W 60 lumens/W <u>High-Efficacy Lamps</u>	Disapproved	Vote: A=0; D=7; Ab=0 High Efficacy lighting is defined in Section 2 and the 2009 IECC definition was used.
095	804	Bridget Herring Mathis Consulting Company Mathis Consulting Company	701.4.4 High-efficacy lighting Revise as follows	Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable.	<b>701.4.4 High-efficacy lighting.</b> A minimum of 75percent of the total hard-wired lighting fixtures, or the bulbs in those fixtures, qualify as high efficacy or equivalent.	Disapproved	Vote: A=1; D=6; Ab=0 2009 IECC is the baseline code for this standard which states the minimum at 50%.
096	792	Bridget Herring Mathis Consulting Company Mathis Consulting Company	702.1 Point Allocation (Performance Path) Revise as follows	Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable.	<b>702.2.1 ICC IECC analysis.</b> Energy efficiency features are implemented to achieve energy cost performance that meets the 2012 ICCIECC. A documented analysis using software in accordance with 2012 ICCIECC, Section <u>R405</u> , or <u>2012 ICC IECC Section C407.2 506.2</u> through <u>C407.5 506.5</u> , applied as defined in the 2012 ICC IECC, is required.	Disapproved	Vote: A=1; D=6; Ab=0 2009 IECC has been set as the base standard because the 2012 IECC was not published at the time of developing this standard.
097	793	Bridget Herring Mathis Consulting Company Mathis Consulting Company	702.2 Energy Cost Performance Levels Revise as follows	Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable.	<b>702.2.2 Energy cost performance analysis.</b> Savings levels above the 2012 ICCIECC are determined through an analysis that includes improvements in building envelope, air infiltration, heating system efficiencies, cooling system efficiencies, duct sealing, water heating system efficiencies, <u>and lighting.</u> <del>and appliances.</del>	Disapproved	Vote: A=1; D=6; Ab=0 2009 IECC has been set as the base standard because the 2012 IECC was not published at the time of developing this standard.
098	795	Bridget Herring Mathis Consulting Company Mathis Consulting Company	702.2 Energy Cost Performance Levels Revise as follows	Appliances are not included in the referenced analysis and should be left out of this method as there is no standard reference design baseline. Furthermore, there are point awards elsewhere in the document for high efficiency appliances.	<b>702.2.2Energy cost performance analysis.</b> Savings levels above the ICC IECC are determined through an analysis that includes improvements in building envelope, air infiltration, heating system efficiencies, cooling system efficiencies, duct sealing, water heating system efficiencies, <u>and lighting,</u> <del>and appliances</del>	Disapprove	Vote: A=0; D=9; Ab=0 In the proposed change, Points for appliances would only be awarded in the prescriptive path. Points are currently awarded for appliances in either the performance or prescriptive path. This allows for an equivalent analysis in the performance method.
099	836	Craig Conner Building Quality self	702.2 Energy Cost Performance Levels Delete without substitution	Comment: All occurrences of "ICC IECC" should be just "IECC".	<b>702.2.1 ICC IECC analysis.</b> Energy efficiency features are implemented to achieve energy cost performance that meets the <del>ICC</del> IECC. A documented analysis using software in accordance with <del>ICC</del> IECC, Section <u>405</u> , or <del>ICC</del> IECC Section <u>506.2</u> through <u>506.5</u> , applied as defined in the <del>ICC</del> IECC, is required.	Approved	Vote: A=7; D=0; Ab=0
100	602	Nils Petermann Alliance to Save Energy Alliance to Save Energy	703.1.1 UA improvement (building envelope) Revise as follows	Table 703.1.1: in the "Climate Zone" column, the bottom row states "7 and 9". This is a typo, as no climate zone 9 exists in the IECC.	Table 703.1.1: bottom row of the "Climate Zone" column: 7 and <del>9</del>	Approved	Vote: A=7; D=0; Ab=0



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101	819	Bridget Herring Mathis Consulting Company Mathis Consulting Company	703.1.1 UA improvement (building envelope) Revise as follows	Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable	<p><del>703.1.1 UA improvement. Where the total building thermal envelope UA is less than required by ICC IECC, Section 402.1.4, the total building thermal envelope UA is in accordance with Table 703.1.1. The total building thermal envelope UA is in accordance with Table 703.1.2 and is less than or equal to the total UA resulting from the U-factors provided in Table 703.1.1. Where insulation is used to achieve these percentages UA improvements, 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. Total UA is documented using RESCheck or equivalent report and supplied to verify the baseline and the UA improvement.</del></p> <p>Table 703.1.1: Equivalent U-Factors</p> <table border="1"> <thead> <tr> <th>Climate Zone</th> <th>Fenestration U-Factor</th> <th>Skylight U-Factor</th> <th>Ceiling U-Factor</th> <th>Frame Wall U-Factor</th> <th>Mass Wall U-Factor</th> <th>Floor U-Factor</th> <th>Basement Wall U-Factor</th> <th>Crawl Space Wall U-Factor</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.50</td> <td>.75</td> <td>.035</td> <td>.082</td> <td>.197</td> <td>.064</td> <td>.36</td> <td>.477</td> </tr> <tr> <td>2</td> <td>0.40</td> <td>0.65</td> <td>0.030</td> <td>.082</td> <td>.165</td> <td>.064</td> <td>.36</td> <td>.477</td> </tr> <tr> <td>3</td> <td>0.35</td> <td>0.55</td> <td>0.030</td> <td>0.057</td> <td>0.098</td> <td>.047</td> <td>0.091</td> <td>.136</td> </tr> <tr> <td>4 except Marine</td> <td>.35</td> <td>0.55</td> <td>0.026</td> <td>0.057</td> <td>0.098</td> <td>.047</td> <td>.059</td> <td>.065</td> </tr> <tr> <td>5 and Marine 4</td> <td>0.32</td> <td>0.55</td> <td>0.026</td> <td>.057</td> <td>.082</td> <td>.033</td> <td>.059</td> <td>0.055</td> </tr> <tr> <td>6</td> <td>0.32</td> <td>0.55</td> <td>.026</td> <td>0.048</td> <td>.06</td> <td>.033</td> <td>.05</td> <td>0.055</td> </tr> <tr> <td>7 and 8</td> <td>0.32</td> <td>0.55</td> <td>.026</td> <td>0.048</td> <td>.057</td> <td>.028</td> <td>.05</td> <td>0.055</td> </tr> </tbody> </table>	Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor	1	0.50	.75	.035	.082	.197	.064	.36	.477	2	0.40	0.65	0.030	.082	.165	.064	.36	.477	3	0.35	0.55	0.030	0.057	0.098	.047	0.091	.136	4 except Marine	.35	0.55	0.026	0.057	0.098	.047	.059	.065	5 and Marine 4	0.32	0.55	0.026	.057	.082	.033	.059	0.055	6	0.32	0.55	.026	0.048	.06	.033	.05	0.055	7 and 8	0.32	0.55	.026	0.048	.057	.028	.05	0.055	Disapprove	Vote: A=1; D=6; Ab=0  2009 IECC has been set as the base standard because the 2012 IECC was not published at the time of developing this standard. The U factors listed are from the 2009 IECC.
Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor																																																																							
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102	679	Robert Hill NAHB Research Center NAHB Research Center	703.1.2 Insulation installation Delete and substitute as follows	703.1.2 should be moved to the 701 mandatory section. It seems that the committee intended to require at least grade 2 installation in order to be certified. But as written the practice is optional for the prescriptive path. There is no way to tell if the insulation is grade two or 3 unless it becomes a mandatory practice. Since installation quality impacts the home's performance regardless of the prescriptive or performance path, it is reasonable to require this inspection for both paths. (Note: if this becomes 701.4.3.3 then the remaining 701.4.3 practices need to be renumbered.)	<b>701.4.3.3 Insulation installation.</b> The insulation installation is graded by a third party and is in accordance with Sections 703.1.2.1, 703.1.2.2, and/or 703.1.2.3, and/or 703.1.2.4, as applicable. Grade 3 insulation installation is not permitted. Grade 2 installation is permitted only for bronze level buildings. <u>Mandatory</u>	Disapproved	Vote: A=0; D=7; Ab=0 This item was addressed in comment 657 by adding "Grade 3 insulation installation is not permitted" to this section .																																																																								
103	807	Bridget Herring Mathis Consulting Company Mathis Consulting Company	703.1.2 Insulation installation Delete without substitution	Green standards are universally understood and expected to be above code programs. The building code does not allow for substandard insulation installation. Level 1 should be mandatory. No options than less than proper insulation installation should be allowed.	Delete section 703.1.2 in its entirety	Disapproved	Vote: A=0; D=7; Ab=0 Grade 2 insulation is the minimum within this standard.																																																																								
104	838	Craig Conner Building Quality self	703.1.2 Insulation installation Delete and substitute as follows	Remove Grade 3 insulation (it is not allowed) and delete points (zero points) for Grade 2 insulation. Grade 2 insulation is not point worthy in a green program.	In Section 703.1.2 table, remove Grade 3 insulation (it is not allowed) and delete points (zero points) for Grade 2 insulation. Grade 2 insulation is not point worthy in a green program.	Approved	Vote: A=7; D=0; Ab=0																																																																								
105	680	Robert Hill NAHB Research Center NAHB Research Center	703.1.4 Radiant Barrier Revise as follows	Limit the use of radiant barrier to attic applications where it is most beneficial.	<b>703.1.4</b> A radiant barrier with an emittance of 0.05 or less is used <u>in the attic</u> . The product is tested in accordance with ASTM C-1371-98 or ASTM E408-71 (2002) and is installed in accordance with the manufacturer's installation specifications.	Approved	Vote: A=7; D=0; Ab=0																																																																								
106	808	Bridget Herring Mathis Consulting Company Mathis Consulting Company	703.1.4 Radiant Barrier Revise as follows	Radiant Barriers only work as long as their lowE surface is protected.	<b>703.1.4.</b> A radiant barrier with an emittance of 0.05 or less is used. The product is tested in accordance with ASTM C-1371-98 or ASTM E408-71 (2002), <del>and</del> is installed in accordance with the manufacturer's installation specifications, <u>and is permanently protected against the accumulation of dust or risk of corrosion for the life of the products.</u>	Disapproved	Vote: A=0; D=6; Ab=1 It is difficult to enforce "permanently protected against the accumulation of dust or risk of corrosion" without guidelines. Following manufacturer's installation specifications should be sufficient to protect the radiant barrier.																																																																								

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107	TG5-1	Task Group 5	703.1.4 Radiant barrier	Delete reference to ASTM E408. ASTM C1371 is the most recent version.	Delete ASTM E408	Accept																																							
108	662	Jamie Hager Southern Energy Management self	703.1.5 Building envelope leakage Revise as follows	Add "3rd party" to language. These test results should be provided by a 3rd party with so many points available for specific envelope leakage test results. Item 704.5.2.1 could then be deleted to avoid double dipping with points.	<a href="#">703.1.5 Building envelope leakage. The maximum leakage rate is tested by a 3rd party to be found to be in accordance with the following: ....</a>	Disapproved	Vote: A= 0; D=9; Ab=0 This is already included in section 704.5.2.1 and available to either the performance or the prescriptive path																																						
109	681	Robert Hill NAHB Research Center NAHB Research Center	703.1.5 Building envelope leakage Revise as follows	The prerequisite for appropriate ventilation for very tight buildings apparently was dropped during the revision. Proper ventilation is appropriate for tight houses.	<b>703.1.5 Building envelope leakage.</b> Whole building ventilation is provided in accordance with section 902.2 and the maximum leakage rate is in accordance with the following: (a) 5 ACH50 (b) 4 ACH50 (c) 3 ACH50 (d) 2 ACH50 (e) 1 ACH50	Approve as modified	Vote: AM= 9; D=0; Ab=0 The maximum leakage rate is in accordance with the following. (a) 5 ACH50 (b) 4 ACH50 (c) 3 ACH50 (d) 2 ACH50 (e) 1 ACH50  <u>Whole building ventilation is provided in accordance with section 902.2.1 if building envelope leakage rate is 5ACH50 or less.</u>  For clarification, the sentence should be moved to the end of this practice and add a qualifier for 5ACH50 or less.																																						
110	812	Bridget Herring Mathis Consulting Company Mathis Consulting Company	703.1.5 Building envelope leakage Delete and substitute as follows	Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable. No points should be awarded for meeting the minimum code.	<b>703.1.5 Building envelope leakage.</b> The maximum leakage rate is in accordance with the following: <table border="1"> <tr><td>5 ACH</td><td>3</td></tr> <tr><td>4 ACH</td><td>6</td></tr> <tr><td>3 ACH</td><td>9</td></tr> <tr><td>2 ACH</td><td>12</td></tr> <tr><td>1 ACH</td><td>15</td></tr> </table>	5 ACH	3	4 ACH	6	3 ACH	9	2 ACH	12	1 ACH	15	Disapproved	Vote: A= 1; D=8; Ab=0 This is based on the 2009 IECC not the 2012 IECC therefore these points are not appropriate.																												
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111	765	Eric Lacey RECA RECA	703.1.6.1 Fenestration Specifications Revise as follows	The 2008 edition of the National Green Building Standard recognized the critical role of efficient windows, doors, and skylights in sustainable building practice. The 2008 NGBS required windows in any green-certified home to meet or exceed the Energy Star requirements then effective (version 4.0). For some reason, the latest Public Comment Draft has removed fenestration from the list of mandatory provisions. We believe that efficient windows, doors, and skylights are crucial elements in any sustainable project, and propose restoring this section to the mandatory provisions. Since the publication of the 2008 NGBS, the IECC window requirements have been updated and improved. Consistent with RECA's previous submissions to the Committee, we believe that the 2012 IECC requirements are the logical foundation for the energy requirements of the NGBS, and we have incorporated those requirements into the proposal below. However, if the Committee decides to use the 2009 IECC as its baseline, we have included the 2009 values as a second option. At a minimum, we recommend maintaining the mandatory Energy Star requirements that are currently in the 2008 NGBS to ensure that there is no backsliding in the latest edition of the NGBS. Recognizing that any of the recommended standards represent an improvement in energy efficiency, we have also added the flexibility of an area-weighted average – something not available in the 2008 NGBS fenestration requirements.	<b>701.4.4.1 NFRC-certified U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) on an area-weighted average basis are in accordance with Table 701.4.4.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m<sup>2</sup>) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</b>  [Option 1: 2012 IECC]  <b>Table 701.4.4.1 Fenestration Specifications</b> <table border="1"> <thead> <tr> <th rowspan="2">Climate Zones</th> <th>U-Factor</th> <th>SHGC</th> </tr> <tr> <th colspan="2">Windows and Exterior Doors (maximum certified ratings)</th> </tr> </thead> <tbody> <tr><td>1</td><td>0.50</td><td>0.25</td></tr> <tr><td>2</td><td>0.40</td><td>0.25</td></tr> <tr><td>3</td><td>0.35</td><td>0.25</td></tr> <tr><td>4</td><td>0.35</td><td>0.40</td></tr> <tr><td>5 to 8</td><td>0.32</td><td>Any</td></tr> <tr> <th colspan="3">Skylights and TDDs</th> </tr> <tr><td>1</td><td>0.75</td><td>0.25</td></tr> <tr><td>2</td><td>0.65</td><td>0.25</td></tr> <tr><td>3</td><td>0.55</td><td>0.25</td></tr> <tr><td>4</td><td>0.55</td><td>0.40</td></tr> <tr><td>5 to 8</td><td>0.55</td><td>Any</td></tr> </tbody> </table> <sup>1</sup> Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.  [Option 2: 2009 IECC]  <b>Table 701.4.4.1 Fenestration Specifications</b>	Climate Zones	U-Factor	SHGC	Windows and Exterior Doors (maximum certified ratings)		1	0.50	0.25	2	0.40	0.25	3	0.35	0.25	4	0.35	0.40	5 to 8	0.32	Any	Skylights and TDDs			1	0.75	0.25	2	0.65	0.25	3	0.55	0.25	4	0.55	0.40	5 to 8	0.55	Any	Disapprove	Vote: A= 2; D=7; Ab=0  Option 1: Withdrawn by proponent (there was a straw poll vote on the 2012 IECC A:1, D:7, AB:1)  The group felt they wanted options for the performance path and this would limit the options for the performance path. In addition, as long as the house has the performance level the group recommends that the Standard should not limit the options.
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112	766	Eric Lacey RECA RECA	703.1.6.1 Fenestration Specifications Revise as follows	<p>The 2008 edition of the National Green Building Standard recognized the critical role of efficient windows, doors, and skylights in sustainable building practice. Since the publication of the 2008 NGBS, the IECC window requirements have been updated and improved. Consistent with RECA's previous submissions to the Committee, we believe that the 2012 IECC requirements are the logical foundation for the energy requirements of the NGBS, for both prescriptive and performance paths, and RECA has submitted another proposal that would restore these requirements to the "mandatory" section of the NGBS. However, if the Committee decides not to adopt RECA's first proposal, we propose requiring at least that homes built to the prescriptive option meet the 2012 IECC fenestration requirements. The proposal also clarifies that all windows installed must be NFRC-certified, again consistent with the previous edition of the NGBS. There is no "equivalent" to NFRC certification. NFRC is the standard-setting organization designated by Congress to rate residential and commercial fenestration, and NFRC labels are well-understood and widely used by all major manufacturers. A single, consistent standard that applies to all fenestration will simplify compliance and promote quality building. Recognizing that any of the recommended standards represent an improvement in energy efficiency, we have also added the flexibility of an area-weighted average – something not available in the 2008 NGBS fenestration requirements. The proposal also provides one additional table of "enhanced fenestration values" for additional points. Given the improvement in the 2012 IECC, it would not make sense to propose two additional "for points" tables in the NGBS. The values in the enhanced table represent roughly a 10% improvement in efficiency requirements – a moderate improvement consistent with the 10% improvement in fenestration efficiency required by the International Green Construction Code for commercial construction. If the Committee decides that the 2009 IECC should be the baseline for the prescriptive compliance path, then we recommend adopting the 2012 IECC table as the first set of enhanced requirements for points, followed by an additional enhanced fenestration table. This scenario is outlined in "Option 2" below.</p>	<p><b>703.1.6 Fenestration</b></p> <p><b>703.1.6.1</b> NFRC-certified (or equivalent) U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) on an area-weighted average basis are in accordance with Table 703.1.6.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m<sup>2</sup>) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</p> <p><b>[Option 1: 2012 IECC mandatory, with one enhanced fenestration option]</b></p> <p><b>Table 703.1.6.1 Fenestration Specifications</b></p> <table border="1"> <thead> <tr> <th>Climate Zones</th> <th>U-Factor</th> <th>SHGC</th> </tr> <tr> <td></td> <td colspan="2">Windows and Exterior Doors (maximum certified ratings)</td> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.65-0.50</td> <td>0.30-0.25</td> </tr> <tr> <td>2</td> <td>0.65 0.40</td> <td>0.30-0.25</td> </tr> <tr> <td>3</td> <td>0.40 0.35</td> <td>0.30-0.25</td> </tr> <tr> <td>4 to 8</td> <td>0.35 0.35</td> <td>Any 0.40</td> </tr> <tr> <td>5 to 8</td> <td>0.32</td> <td>Any</td> </tr> <tr> <td></td> <td colspan="2">Skylights and TDDs</td> </tr> <tr> <td>1 and 2</td> <td>0.75</td> <td>0.30 0.25</td> </tr> <tr> <td>2</td> <td>0.65</td> <td>0.25</td> </tr> <tr> <td>3</td> <td>0.65 0.55</td> <td>Any 0.25</td> </tr> <tr> <td>4</td> <td>0.55</td> <td>0.40</td> </tr> <tr> <td>45 to 8</td> <td>0.60 0.55</td> <td>Any</td> </tr> </tbody> </table> <p><sup>1</sup> Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.</p> <p>Delete Table 703.1.6.2(a) and replace with the following:</p> <p><b>Table 703.1.6.2(a) Enhanced Fenestration Specifications</b></p> <table border="1"> <thead> <tr> <th>Climate Zones</th> <th>U-Factor</th> <th>SHGC</th> </tr> <tr> <td></td> <td colspan="2">Windows and Exterior Doors (maximum certified ratings)</td> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.45</td> <td>0.25</td> </tr> <tr> <td>2</td> <td>0.35</td> <td>0.25</td> </tr> <tr> <td>3</td> <td>0.32</td> <td>0.25</td> </tr> <tr> <td>4</td> <td>0.30</td> <td>0.40</td> </tr> </tbody> </table>	Climate Zones	U-Factor	SHGC		Windows and Exterior Doors (maximum certified ratings)		1	0.65-0.50	0.30-0.25	2	0.65 0.40	0.30-0.25	3	0.40 0.35	0.30-0.25	4 to 8	0.35 0.35	Any 0.40	5 to 8	0.32	Any		Skylights and TDDs		1 and 2	0.75	0.30 0.25	2	0.65	0.25	3	0.65 0.55	Any 0.25	4	0.55	0.40	45 to 8	0.60 0.55	Any	Climate Zones	U-Factor	SHGC		Windows and Exterior Doors (maximum certified ratings)		1	0.45	0.25	2	0.35	0.25	3	0.32	0.25	4	0.30	0.40	Mandatory	Approve as modified	<p>Vote: AM= 9; D=0; Ab=0</p> <p>NFRC-certified (or equivalent) U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with Table 703.1.6.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m<sup>2</sup>) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice. No changes to the tables.</p> <p>Option 1: <b>Withdrawn</b> by proponent (there was a straw poll vote on the 2012 IECC A:1, D:7, AB:1)</p> <p>Option 2: <b>Disapprove</b> Vote: A= 1; D=7; Ab=1 This makes the first tier of points above ENERGY STAR and</p>
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113	824	Bridget Herring Mathis Consulting Company Mathis Consulting Company	703.1.6.1 Fenestration Specifications Revise as follows	Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable.	703.1.6.1 NFRC-certified (or equivalent) U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with Table 703.1.6.1. Decorative fenestration elements with a combined total maximum area of 15 square feet (1.39 m <sup>2</sup> ) or 10percent of the total glazing area, whichever is less, are not required to comply with this practice.  <b>Table 703.1.6.1:Fenestration Specifications</b> <table border="1"> <thead> <tr> <th>Climate Zones</th> <th>U-Factor</th> <th>SHGC</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.65</td> <td>0.25 -0.30</td> </tr> <tr> <td>2</td> <td>0.40 0.65-</td> <td>0.25 0.30-</td> </tr> <tr> <td>3</td> <td>0.35 0.40</td> <td>0.25 0.30-</td> </tr> <tr> <td>4-8</td> <td>0.32 -0.35</td> <td>Any</td> </tr> <tr> <td colspan="3">Skylights and TDDs</td> </tr> <tr> <td>1 and 2</td> <td>0.65 0.75-</td> <td>0.30</td> </tr> <tr> <td>3</td> <td>0.55 0.65-</td> <td>0.30</td> </tr> <tr> <td>4-8</td> <td>0.55 -0.60-</td> <td>0.40 Any</td> </tr> <tr> <td>5-8</td> <td>0.55</td> <td>Any</td> </tr> </tbody> </table>	Climate Zones	U-Factor	SHGC	1	0.65	0.25 -0.30	2	0.40 0.65-	0.25 0.30-	3	0.35 0.40	0.25 0.30-	4-8	0.32 -0.35	Any	Skylights and TDDs			1 and 2	0.65 0.75-	0.30	3	0.55 0.65-	0.30	4-8	0.55 -0.60-	0.40 Any	5-8	0.55	Any	Disapprove	Vote: A= 0; D=8; Ab=1  2009 IECC is the base of the Standard
Climate Zones	U-Factor	SHGC																																			
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114	837	Craig Conner Building Quality self	703.1.6.1 Fenestration Specifications Add new as follows.	There are designs where a higher SHGC saves energy, or where a higher SHGC on a specific orientation saves energy. Dynamic glazing that can adapt to use the higher and lower SHGC as appropriate could save more energy than either high or low SHGC.	Add new text after existing text in 703.1.6.1 <u>There is no SHGC minimum where simulation analysis of the proposed design shows that a higher SHGC would reduce energy use. There is no SHGC requirement for any glazing which changes SHGC and which is controlled by automated controls.</u>	Disapprove	Vote: A= 0; D=9; Ab=0  The first sentence is withdrawn by proponent.  This does not specify a metric for SHGC.																														
115	601	Nils Petermann Alliance to Save Energy Alliance to Save Energy	703.1.6.2 Enhanced Fenestration Specifications Revise as follows	The maximum SHGC for skylights in climate zone 3 as proposed in Table 703.1.6.2(b) exceeds the mandatory maximum SHGC for skylights in this climate zone as shown in Table 703.1.6.1. The enhanced SHGC specifications should be at least as stringent as the mandatory specifications.	<b>Table 703.1.6.2(b)</b>  <b>Enhanced Fenestration Specifications</b>  Skylights and TDDs (maximum certified ratings)  Climate Zone 3; U-factor 0.50; SHGC 0.350.30 TBD	Approve	Vote: A= 9; D=0; Ab=0																														
116	642	John Gant Glen Raven Inc self	703.1.6.2 Enhanced Fenestration Specifications Revise as follows	It is incorrect to assume that a reduced SHGC in Zone 4 is an improvement. Heating is more expensive than cooling in these areas, and so solar gain is good. Shading can be provided to provide control as needed beyond what any static window could ever provide.	In proposed Table 703.1.6.2.a, the Zone 4 SHGC value should be "Any", in two places, and the footnote should be "4-8" rather than "5-8".	Disapprove	Vote: A= 0; D=9; Ab=0  The intent of enhanced table A is to be equivalent with ENERGY STAR. Therefore updating one number in the table would be inconsistent with the intent of the table.																														
117	822	Bridget Herring Mathis Consulting Company Mathis Consulting Company	703.1.6.2 Enhanced Fenestration Specifications Delete and substitute as follows	To maintain validity as an above code program these values need to be adjusted to be consistent with an above-code option compared with values in the latest national mode code, the 2012 IECC.	Delete tables 703.1.6.2 (a) and (b) and substitute one table as follows:  <b>Table 703.1.6.2: Enhanced Fenestration Specifications</b> <table border="1"> <thead> <tr> <th>Climate Zones</th> <th>U-Factor</th> <th>SHGC</th> </tr> </thead> <tbody> <tr> <td colspan="3">Windows and Exterior Doors (maximum certified ratings)</td> </tr> <tr> <td>1</td> <td>0.65</td> <td>0.25</td> </tr> <tr> <td>2</td> <td>0.35</td> <td>0.25</td> </tr> <tr> <td>3</td> <td>0.32</td> <td>0.25</td> </tr> <tr> <td>4</td> <td>0.32</td> <td>0.30</td> </tr> <tr> <td>5-8</td> <td>0.32</td> <td>N/R</td> </tr> <tr> <td colspan="3">Skylights and TDDs (Maximum certified ratings)</td> </tr> <tr> <td>1-4</td> <td>0.50</td> <td>0.30</td> </tr> <tr> <td>5-8</td> <td>0.50</td> <td>N/R</td> </tr> </tbody> </table>	Climate Zones	U-Factor	SHGC	Windows and Exterior Doors (maximum certified ratings)			1	0.65	0.25	2	0.35	0.25	3	0.32	0.25	4	0.32	0.30	5-8	0.32	N/R	Skylights and TDDs (Maximum certified ratings)			1-4	0.50	0.30	5-8	0.50	N/R	Disapprove	Vote: A= 1; D=8; Ab=0  2009 IECC is the base of the Standard and the two tables for points are currently based on ENERGY STAR and DOE window program specifications
Climate Zones	U-Factor	SHGC																																			
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PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
118	619	Robert Brown WaterFurnace Int'l Waterfurnace International	703.2.6 Ground Source Heat Pump Revise as follows	1) Energy Efficiency levels are so high that certain sizes of equipment will be precluded from installation. For instance only a 3 ton geothermal unit can pass the criteria if the home requires a 5 ton what is the resolution? 2)EER/COP should be the average of Part Load and Full Load for capacity modulated equipment. 3) Efficiencies are too high to represent any cross section of product. Below I have detailed out that (4) represents essentially the top tier of single speed units with ECM fan motors in the full range of 1 thru 6 ton. (5) represents the top tier of dual or variable speed capacity units with ECM fan motors and is averaging the part load and full load efficiencies of the full line from 1-6 ton. 4) AHRI 13256-1 should be referenced for all water to air product, 13256-2 should be referenced for all water to water product. AHRI 870 should be referenced for all direct exchange product. 5) Significant differences between Water to Air and Water to Water product efficiencies and conditions. Each should be detailed out.	<u>W-A = Water to Air ISO/AHRI 13256-1 GLHP</u> <u>W-W= Water to Water ISO/AHRI 13256-2 GLHP</u> <b>(1) <u>W-A</u> Open loop: ≥ 16.2 EER / ≥ 3.6 COP 20</b> <u>W-W Open loop: ≥ 16.0 EER / ≥ 3.4 COP 20</u>  <b>(2) <u>W-A</u> Closed loop: ≥ 14.1 EER / ≥ 3.3 COP 20</b> <u>W-W Closed loop: ≥ 14.0 EER / ≥ 2.8 COP 20</u>  <b>(3) Direct expansion: ≥ 15.0 EER / ≥ 3.5 COP 20</b>  <b>(4) <u>W-A</u> Any type (open, closed, direct expansion): ≥ 24 18 EER / ≥ 4.3 3.7 COP 30</b> <u>W-W Any type (open, closed, direct expansion): ≥ 15.7 EER / ≥ 3.1 COP 30</u>  <b>(5) <u>W-A</u> Any type (open, closed, direct expansion): ≥ 28 20EER / ≥ 4.8 4.0 COP 35</b> <u>W-W Any type (open, closed, direct expansion): ≥ 17.5 EER / ≥ 3.2 COP 35</u>	Disapprove	Vote: A= 0; D=8; Ab=0  There are lower levels that get points, but the higher points are intended to have a stringent efficiency rating.  In addition, there are new ENERGY STAR numbers and although the task group thinks this is a good idea, these numbers should align with ENERGY STAR.
119	817	Bridget Herring Mathis Consulting Company Mathis Consulting Company	703.3 Duct Systems Revise as follows	Electric resistance heating does not meet the intention of this section.	703.3.1 All space heating is provided by a system(s) that does not include air ducts. <u>Electric resistance heating does not comply with this section.</u>	Disapprove	Vote: A= 0; D=8; Ab=0  There are some good designs with small loads that can use the electric resistance heating.
120	658	Jamie Hager Southern Energy Management self	703.3.4 Duct Leakage Revise as follows	Clarification needed if duct leakage is measured as total leakage of the system or leakage outside of conditioned space?	<b>703.3.4 Duct Leakage. The entire central HVAC duct system, including air handlers and register boots, is tested by a third party for total leakage at a pressure differential of 0.1 inches w.g. (25 Pa). The maximum leakage as a percent of the system design flow rate is in accordance with the following:</b>	Approve	Vote: A= 8; D=0; Ab=0  This seems like good clarification.
121	826	Bridget Herring Mathis Consulting Company Mathis Consulting Company	703.3.4 Duct Leakage Revise as follows	Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable. Testing needs to be mandatory and points shall be given for above code performance.	703.3.4 Duct Leakage. The entire central HVAC duct system, including air handlers and register boots, is tested by a third party for leakage at a pressure differential of 0.1 inches w.g. (25 Pa). The maximum leakage as <del>a cfm per 100 square feet percent of the system design flow rate</del> is in accordance with the following:  <b>(1) <u>2 cfm</u> for ductwork entirely outside the building's thermal envelope</b>  <b>(2) <u>3 cfm</u> for ductwork entirely inside the building's thermal envelope</b>  <b>(3) <u>2 cfm</u> for ductwork both inside and outside the building's thermal envelope</b>	Disapprove	Vote: A= 0; D=8; Ab=0  The percentage method is used by raters and is more recognized.
122	741	Susan Gitlin US Environmental Protection Agency US Environmental Protection Agency	703.5.3 Appliances Revise as follows	This section awards points for the installation of ENERGY STAR® or equivalent refrigerators, dishwashers, and washing machines. For refrigerators, proper disposal of old units should also be a factor. Taking old, inefficient refrigerators, freezers, window air conditioners and dehumidifiers off the grid contributes measurable energy savings. Replacing an older appliance with a new ENERGY STAR® unit can save more than 700 kilowatt-hours (kWh) per year. By saving energy, residents also save money: removing an energy-inefficient appliance translates to savings of more than \$140 per year per household. Reduced electricity generation brings down the emissions of some criteria air pollutants, resulting in improved air quality and increased environmental and health benefits for communities.	UUU	Disapprove	Vote: A= 0; D=8; Ab=0  There is no proposed language for this item

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
123	611	Curtis L Biggar Biggar Dev Ltd self	703.6 Passive solar design Revise as follows	I have over 50 years experience in passive design including the AIA passive studio in 1980. Many of my work employees octagonal floor plans allowing the sun to enter the interior space in the morning & in the afternoon. This increases the solar gain substantially. I also use transoms above the south glass from 2' high up to complete 2 story spaces. This is done with in-floor heat coils. I also use natural lighting & ventilation with vertical glass on the sides of cupolas or clerestory windows above halls ways electrically or pole operated. This eliminates airconditioning in Wisconsin. & should be considered natural whole house ventilation. I believe the remodeling chapter should also address passive solar additions & the other features above. I am pleased with the quality of the original standard & the changes being proposed. These additions could be under special points initiatives because of the lack of passive information available. Please check out my website @ WWW.CURTISLBIGGARARCHITECT.COM & check out my green page. Curtis L Biggar Architect/CGP  [See the Additional Documents file for more information]			Disapprove  Vote: A= 0; D=8; Ab=0  There is no proposed language for this item
124	608	Chris Allison City of Longmont City of Longmont	704.2 Lighting Revise as follows	Change this section to reflect that more than 50% of the hard-wired lighting fixtures or bulbs in those fixtures qualify as high efficacy to gain compliance with this section.	Should points only be awarded if they exceed the code minimum of 50%?	Disapprove	Vote: A= 0; D=8; Ab=0 There is no proposed language for this item. In addition, this is already covered in the mandatory section
125	663	Jamie Hager Southern Energy Management self	704.5.2.1 Building envelope leakage testing Delete without substitution	Revise Item 703.1.5 to include 3rd Party testing and then 704.5.2.1 Building envelope leakage could just be deleted as it adds confusion and seems like double dipping with points. Points are not lost to Performance Pathway projects as infiltration testing to determine the savings levels above the IECC is usually performed by a 3rd party.	Delete this item entirely	Disapprove	Vote: A= 0; D=8; Ab=0 The intent is to award points for testing and encourage third-party testing.
126	762	Gary Klein Affiliated International Management, LLC Self	704.5.3 Insulating hot water pipes Revise as follows	The content of the section is fine. However, since it is about water heating it would make sense for the pipe insulation to be in the water heating section.	Move to be a section within Section 703.4 Water Heating	Disapprove	Vote: A= 0; D=8; Ab=0 The intent of the current location is to give this point s for insulation for both the performance and the prescriptive path
127	764	Gary Klein Affiliated International Management, LLC Self	704.5.3 Insulating hot water pipes Revise as follows	It seems useful to more clearly describe where the lengths in the table are to be measured from.	<a href="#">Revise the footnote to Table 704.5.3</a>  <a href="#">Table 704.5.3</a> <a href="#">Maximum Pipe Run Length</a>  <a href="#">1. Total length of all piping from the source of hot water (either a water heater or distribution manifold (or tee) on a trunk line or a recirculation loop) to a point of use.</a>	Approve	Vote: A= 8; D=0; Ab=0
128	814	Amy Schmidt The Dow Chemical Company Dow Building Solutions	705.1 Energy Consumption Control Revise as follows	A two year commitment is extremely small in comparison to other energy savings measures. Either the time commitment should be altered or points altered.	<b>705.2 Renewable energy service plan.</b> Renewable energy service plan is provided as follows:  <b>(1)</b> Builder selects a renewable energy service plan provided by the local electrical utility for interim (temporary) electric service. The builder's local administrative office has renewable energy service. <b>2</b>  <b>(2)</b> The buyer of the building selects a renewable energy service plan provided by the utility prior to occupancy of the building. <b>with a minimum <del>two</del> twenty year commitment. 5</b>	Disapprove	Vote: A= 3; D=6; Ab=0 The majority felt that 20 years was too long of a commitment and that two years is appropriate.

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
129	816	Amy Schmidt The Dow Chemical Company Dow Building Solutions	705.5.1 Photovoltaic Revise as follows	As long as renewable energy systems are producing the required 100W per sq/ft they should get the same amount of points. BIPV systems should be included in the list of systems.	<p><b>705.5 Additional renewable energy options</b></p> <p><b>705.5.1 Renewable Energy System is Photovoltaic panels are installed on the property (e.g., solar photovoltaic panels, building integrated photovoltaics, wind energy, on-site micro-hydro power, active solar space heating systems, solar thermal hydronic heating system, photovoltaic hybrid heating system). 1</b></p> <p><b>(Points awarded per 100 W of system rating per 2,000 square feet of total conditioned floor area of the building.)</b></p> <p><del><b>705.5.2 Other on-site renewable energy source is installed (e.g., wind energy, on-site micro-hydro power, active solar space heating systems solar thermal hydronic heating system, photovoltaic hybrid heating system). One-half (Points awarded per 100 W of system rating per 2,000 square feet of total conditioned floor area of the building.)</b></del></p>	Approve	Vote: A= 8; D=1; Ab=0



## Chapter 8 Water Efficiency

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
130	603	Dale Stroud Uponor, Inc. Uponor, Inc.	801.1 Indoor Hot Water Usage Revise as follows	The points awarded in this section are NOT proportional to the amount of water that is potentially wasted. For example, 3.a results in a theoretical waste of 4 cups and receives 6 points; 3.b could waste up to 17 cups (due to the 15 feet of supply to the manifold and the volume within the manifold body itself*) and receives 6 points; and 3.c could waste up to 6 cups and receives 8 points. *If the manifold is supplied with 1-inch PEX pipe that is 15 feet in length, approximately 7.3 cups is contained in the supply line. In addition, a typical manifold may contain 1.5 cups within its body. If a 3/4 inch line is used to supply the manifold (15 feet), that line contains about 4.4 cups.	Allot points as follows: 3.a = 8 points 3.b = 1 point if a 1" line supplies the manifold; 2 points of a 3/4" line supplies the manifold. If the manifold supply line is less than 8 feet, double the points. 3.c = 6 points-	Rejected  Unanimous	Agree in principle. Rejected in favor of a modified version of Log ID 776.
131	776	Gary Klein Affiliated International Management, LLC Self	801.1 Indoor Hot Water Usage Delete and substitute as follows	The existing language is imprecise and the points awarded are internally inconsistent. In particular, the points should be awarded relative to the amount of water wasted while waiting for the hot water to arrive for each "cold start" event and for subsequent "hot start" events where the trunk or the branch to the fixture is already hot. (3) (a) allows 4 cups from the source to the use. (3) (b) allows 15 feet from the water heater to the manifold and an additional 8 cups from the manifold to the use. The 15 feet can be either 3/4 or 1 inch so the volume is between 5 and 8 cups, including the volume in the manifold. Total for this method is 13-16 cups. Both 3a and 3b are awarded the same number of points in the existing language. (3) (c) allows a maximum of 6 cups and is awarded 8 points. (3) (d) allows a maximum of 8 cups from the manifold to the uses. Points are currently TBD (4) (a) the language for the location of a tankless water heater does not take into account that the unit needs to be closer to the fixtures it serves than the water is wastes while ramping up to temperature. (4) (b) has language on demand pumps that more properly belongs in the Energy chapter under water heating, as the content is about energy, not water. This proposal awards points based on reducing the volume of water in the piping from the source of hot water to the uses. The system that reduces the waste the most gets the most points. Additional points have been proposed when the volume in the trunk line is reduced for demand circulation systems and when the water heater starts out with hot water or can ramp up to full temperature within 5 seconds. This recognizes that tankless water heaters run cold water through them as they ramp up to temperature. This water runs down the drain and is additional to the water in the hot water piping that must also run down the drain before the hot water can arrive a fixture. It is important to correlate this section with the section in Energy on insulating hot water pipes. I am willing to assist with this.  [See the Additional Documents file for more information]	Please strike the entire section  <del>801.1 Indoor hot water usage</del>  and Replace with the following  (1) Minimum Requirements  Piping must be sized in accordance with local plumbing code  Maximum length to fixture furthest from water heater is 80 feet  All hot waterlines must be insulated to at least R-4  More than one water heater is allowed  More than one hot water distribution zone is allowed  (2) The maximum volume from the water heater to the furthest fixture is 1 gallon Points awarded 1  (3) The maximum volume from the water heater to the furthest fixture is 0.5 gallons Points awarded 2  (4) The maximum volume from the water heater to the furthest fixture is 0.25 gallons Points awarded 4  (5) A demand controlled hot water priming pump is installed on the trunk line and the maximum volume from the trunk line to the furthest fixture is 0.125 gallons (0.19 gallons for island, peninsula and under-window kitchen sinks when foundation is slab-on-grade) Points awarded 8  When the volume in the trunk line to the branch for the furthest fixture is no more than 1 gallon Additional points 1  (6) Add to each hot water distribution system credit when a water heater with at least 0.5 gallon of storage is installed. The storage may be internal or external to a tankless water heater. Tankless water heaters that ramp up to at least 110F within 5 seconds do not need storage. Points awarded 1	Accept as modified  Unanimous	(see modification below)

**PC 131 Modification**

Delete existing 801.1 and replace with the following:

<b>801.1 Indoor hot water usage</b>	
<p><b>801.1.1</b> Indoor hot water supply system is in accordance with one of the practices listed in items (1) through (5). The maximum length and volume from the source of hot water to the termination of the fixture supply is determined in accordance with Tables 801.1(1) or 801.1(2).</p> <p><b>(Where more than one water heater or boiler is used or where more than one type of hot water supply system, including multiple circulation loops, is used, points are awarded based on the system that qualifies for the minimum number of points.)</b>  <b>(Systems with circulation loops are eligible for points only if pumps are demand controlled. Circulation systems with timers or aquastats and constant-on circulation systems are not eligible to receive points.)</b>  <b>(Points for multiple systems are not additive.)</b>  <b>(The points are awarded only if the pipes are insulated in accordance with Section 704.5.3.)</b></p>	
<b>(1)</b> The maximum volume from the water heater or boiler to the termination of the fixture supply at furthest fixture is 128 ounces (1 gallon or 3.78 liters)	<b>11</b>
<b>(2)</b> The maximum volume from the water heater or boiler to the termination of the fixture supply at furthest fixture is 64 ounces (0.5 gallon or 1.89 liters)	<b>17</b>
<b>(3)</b> The maximum volume from the water heater or boiler to the termination of the fixture supply at furthest fixture is 32 ounces (0.25 gallon or 0.945 liters)	<b>29</b>
<b>(4)</b> A demand controlled hot water priming pump is installed on the main supply pipe of the circulation loop and the maximum volume from this supply pipe to the furthest fixture is 24 ounces (0.19 gallons or 0.71 liters)	<b>35</b>
<b>(a)</b> The volume in the circulation loop (supply) from the water heater or boiler to the branch for the furthest fixture is no more than 128 ounces (1 gallon or 3.78 liters).	<b>4 Additional Points</b>
<b>(5)</b> A central hot water recirculation system is implemented in multi-unit buildings in which the hot water line distance from the recirculating loop to the engineered parallel piping system (i.e., manifold system) is less than 30 feet (9144 mm) and the parallel piping to the fixture fittings contains a maximum of 64 ounces (1.89 liters) (115.50 cubic inches) (0.50 gallons).	<b>9</b>
<b>(6)</b> Tankless water heater(s) or boiler(s) with at least 0.5 gallon (1.89 liters) of storage are installed or a tankless water heater that ramps up to at least 110F within 5 seconds is installed. The storage may be internal or external to the tankless water heater.	<b>4 Additional Points</b>

**Table 801.1(1)**  
**Maximum Pipe Length (ft.)**

Nominal Pipe Size (inch)	Liquid Ounces per Foot of Length	Main, Branch and Fixture Supply Systems				Branch and Fixture Supply from Circulation Loop
		128 ounces (1 gallons)	64 ounces (0.5 gallon)	32 ounces (0.25 gallon)	24 ounces (0.19 gallon)	
1/4 <sup>b</sup>	0.33	50	50	50	50	
5/16 <sup>b</sup>	0.5	50	50	50	48	
3/8 <sup>b</sup>	0.75	50	50	43	32	
1/2	1.5	50	43	21	16	
5/8	2	50	32	16	12	
3/4	3	43	21	11	8	
7/8	4	32	16	8	6	
1	5	26	13	6	5	
1 1/4	8	16	8	4	3	
1 1/2	11	12	6	3	2	
2	18	7	4	2	1	

a. Maximum pipe length figures apply when the entire pipe run is one nominal diameter only. Where multiple pipe diameters are used, the combined volume shall not exceed the volume limitation in Section 801.1

b. The maximum flow rate through 1/4 inch nominal piping shall not exceed 0.5 gpm. The maximum flow rate through 5/16 inch nominal piping shall not exceed 1 gpm. The maximum flow rate through 3/8 inch nominal piping shall not exceed 1.5 gpm.

**Table 801.1(2)**  
**Common Hot Water Tubing Internal Volumes**

Size Nominal, Inch	OUNCES OF WATER PER FOOT OF TUBE								
	Copper Type M	Copper Type L	Copper Type K	CPVC CTS SDR 11	CPVC SCH 40	CPVC SCH 80	PE-RT SDR 9	Composite ASTM F 1281	PEX CTS SDR 9
3/8"	1.06	0.97	0.84	N/A	1.17	N/A	0.64	0.63	0.64
1/2"	1.69	1.55	1.45	1.25	1.89	1.46	1.18	1.31	1.18
3/4"	3.43	3.22	2.9	2.67	3.38	2.74	2.35	3.39	2.35
1"	5.81	5.49	5.17	4.43	5.53	4.57	3.91	5.56	3.91
1 1/4"	8.7	8.36	8.09	6.61	9.66	8.24	5.81	8.49	5.81
1 1/2"	12.18	11.83	11.45	9.22	13.2	11.38	8.09	13.88	8.09
2"	21.08	20.58	20.04	15.79	21.88	19.11	13.86	21.48	13.86

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
132	682	Robert Hill NAHB Research Center NAHB Research Center	801.4 Showerheads Revise as follows	The NGBS already recognizes that multi-unit buildings should not be limited in the ability to earn points because the building contains units of various sizes. Practice 601.1 allows the use of a weighted average for determining the conditioned area. It is reasonable to extend that approach to water saving fixtures. Awarding additional points for on a per shower compartment basis seems unusual since the vast majority of shower compartments have only one showerhead. It is more important to make all shower compartments in the building comply.	<b>801.4 Showerheads.</b> Showerheads are in accordance with the following: <b>(1)</b> The total maximum combined flow rate of all showerheads controlled by a single valve at any point in time in a shower compartment is 1.6 to less than 2.5 gpm. Maximum of two valves are installed per shower compartment. The flow rate is tested at 80 psi (552 kPa) in accordance with ASME A112.18.1. Showerheads are served by an automatic compensating valve that complies with ASSE 1016 or ASME A112.18.1 and specifically designed to provide thermal shock and scald protection at the flow rate of the showerhead. <b>(Points awarded per shower compartment. In multi-unit buildings, a weighted average of bathrooms is used to calculate the number of points available for this practice (rounded down to a whole number).)</b> <b>(2)</b> All showerheads shower compartments in the dwelling unit and common areas meet the requirements of 801.4(1). <b>(Points awarded per shower compartment based on 801.4(2)(a) or 801.4(2)(b).)</b>	Note: Comment is also submitted to TG-6 Multifamily Accept as amended (defer to TG6) Unanimous	Change "average of bathrooms" to "average of shower compartments" and "rounded down to a whole number" to "rounded to the nearest whole number".
133	682	Robert Hill NAHB Research Center NAHB Research Center	801.4 Showerheads Revise as follows	The NGBS already recognizes that multi-unit buildings should not be limited in the ability to earn points because the building contains units of various sizes. Practice 601.1 allows the use of a weighted average for determining the conditioned area. It is reasonable to extend that approach to water saving fixtures. Awarding additional points for on a per shower compartment basis seems unusual since the vast majority of shower compartments have only one showerhead. It is more important to make all shower compartments in the building comply.	<b>801.4 Showerheads.</b> Showerheads are in accordance with the following: <b>(1)</b> The total maximum combined flow rate of all showerheads controlled by a single valve at any point in time in a shower compartment is 1.6 to less than 2.5 gpm. Maximum of two valves are installed per shower compartment. The flow rate is tested at 80 psi (552 kPa) in accordance with ASME A112.18.1. Showerheads are served by an automatic compensating valve that complies with ASSE 1016 or ASME A112.18.1 and specifically designed to provide thermal shock and scald protection at the flow rate of the showerhead. <b>(Points awarded per shower compartment. In multi-unit buildings, a weighted average of bathrooms is used to calculate the number of points available for this practice (rounded down to a whole number).)</b> <b>(2)</b> All showerheads shower compartments in the dwelling unit and common areas meet the requirements of 801.4(1). <b>(Points awarded per shower compartment based on 801.4(2)(a) or 801.4(2)(b).)</b>	Note: Comment is also submitted to TG-4 Water efficiency Accept as Modified.	TG 6 agrees that a weighted average should be used to accurately measure a building's efficiency improvements, while accounting for differences in the size and configuration of multifamily units.  As Modified: 801.4 Showerheads. Showerheads are in accordance with the following: (1) The total maximum combined flow rate of all showerheads controlled by a single valve at any point in time in a shower compartment is 1.6 to less than 2.5 gpm. Maximum of two valves are installed per shower compartment. The flow rate is tested at 80 psi (552 kPa) in accordance with ASME A112.18.1. Showerheads are served by an automatic compensating valve that complies with ASSE 1016 or ASME A112.18.1 and specifically designed to provide thermal shock and scald protection at the flow rate of the showerhead. (Points awarded per shower compartment. In multi-unit buildings, a weighted average of shower compartments is used to calculate the number of points available for this practice (rounded to the nearest whole number).) (2) All showerheads shower compartments in the dwelling unit and common areas meet the requirements of 801.4(1). (Points awarded per shower compartment based on 801.4(2)(a) or 801.4(2)(b).)

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
134	830	Mark Dyer DCI Homes Inc Self	801.4 Showerheads Revise as follows	This question came about because of the loss of a high scoring emerald opportunity because a mandatory item that should not apply to the house that I am building based on the fact that it is a well and septic home. I am not sure where this is in this section and am out of time to look this up. please forgive the non direct request for change on the subject. Somewhere in the sections shower heads and water closets one is forced to use low flow toilets and faucets mandatorily or they cannot receive an emerald level of certification. I think this should only be mandatory for houses that are located in and using city water and sewer. The intent is to reduce the amount of energy used in providing water and cleaning sewage. This is not the case in houses on property using soley well and septic. In the case of well and septic usage. The water comes from the ground and goes directly back into the ground. Maybe if there is no mandatory change for other reasons not listed than maybe there could be other points listed for well and septic usage because of the energy saved by not using city water and sewage. I however, would love to receive an emerald level on this home but cannot because a mandatory item that should not apply in this houses case.	See above	Reject  Unanimous	The intent is to reduce the amount of water (and the energy involved in hot water) used regardless of the source.
135	683	Robert Hill NAHB Research Center NAHB Research Center	801.5 Faucets Revise as follows	The NGBS already recognizes that multi-unit buildings should not be limited in the ability to earn points because the building contains units of various sizes. Practice 601.1 allows the use of a weighted average for determining the conditioned area. It is reasonable to extend that approach to water saving fixtures.	<b>801.5.1</b> Water-efficient lavatory faucets with 1.5 gpm (5.68 L/m) or less maximum flow rate when tested at 60 psi (414 kPa) in accordance with ASME A112.18.1 are installed: <b>(1)</b> a bathroom (all faucets in a bathroom are in compliance) <b>(Points awarded for each bathroom. In multi-unit buildings, a weighted average of bathrooms is used to calculate the number of points available for this practice (rounded down to a whole number).)</b> <b>(2)</b> all lavatory faucets in the dwelling unit and common areas	Note: Comment is also submitted to TG-6 Multifamily  Accept as amended (defer to TG6)  Unanimous	Change "rounded down to a whole number" to "rounded to the nearest whole number".
136	683	Robert Hill NAHB Research Center NAHB Research Center	801.5 Faucets Revise as follows	The NGBS already recognizes that multi-unit buildings should not be limited in the ability to earn points because the building contains units of various sizes. Practice 601.1 allows the use of a weighted average for determining the conditioned area. It is reasonable to extend that approach to water saving fixtures.	<b>801.5.1</b> Water-efficient lavatory faucets with 1.5 gpm (5.68 L/m) or less maximum flow rate when tested at 60 psi (414 kPa) in accordance with ASME A112.18.1 are installed: <b>(1)</b> a bathroom (all faucets in a bathroom are in compliance) <b>(Points awarded for each bathroom. In multi-unit buildings, a weighted average of bathrooms is used to calculate the number of points available for this practice (rounded down to a whole number).)</b> <b>(2)</b> all lavatory faucets in the dwelling unit and common areas	Note: Comment is also submitted to TG-4 Water efficiency  Accept as Modified.	TG 6 agrees that a weighted average should be used to accurately measure a building's efficiency improvements, while accounting for differences in the size and configuration of multifamily units.  As modified: 801.5.1 Water-efficient lavatory faucets with 1.5 gpm (5.68 L/m) or less maximum flow rate when tested at 60 psi (414 kPa) in accordance with ASME A112.18.1 are installed: (1) a bathroom (all faucets in a bathroom are in compliance) (Points awarded for each bathroom. <u>In multi-unit buildings, a weighted average of bathrooms is used to calculate the number of points available for this practice (rounded to the nearest whole number).</u> ) (2) all lavatory faucets in the dwelling unit and common areas.

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
137	684	Robert Hill NAHB Research Center NAHB Research Center	801.6 Water closets and urinals Revise as follows	The NGBS already recognizes that multi-unit buildings should not be limited in the ability to earn points because the building contains units of various sizes. Practice 601.1 allows the use of a weighted average for determining the conditioned area. It is reasonable to extend that approach to water saving fixtures.	<b>801.6 Water closets and urinals.</b> Water closets and urinals are in accordance with the following: <b>(1)</b> Gold and emerald levels: All water closets and urinals are in accordance with Section 801.6. <b>(2)</b> A water closet is installed with an effective flush volume of 1.28 gallons (4.85 L) or less when tested in accordance with ASME A112.19.2 (all water closets) or when tested in accordance with ASME A112.19.14 (all dual flush water closets), and is in accordance with EPA WaterSense <i>Tank-Type High-Efficiency Toilet</i> , or <b>(Points awarded per fixture. In multi-unit buildings, a weighted average of fixtures per unit is used to calculate the number of points available for this practice (rounded down to a whole number))</b> <b>(3)</b> All water closets are in accordance with Section 801.6(2). <b>(a)</b> Dual flush (or other) water closets are used that have a flush volume of 1.2 gallons or less and comply with 801.6(2); and all other water closets comply with 801.6(2). <b>(Points awarded per toilet In multi-unit buildings, a weighted average of fixtures per unit is used to calculate the number of points available for this practice (rounded down to a whole number))</b>	Note: Comment is also submitted to TG-6 Multifamily Accept as amended (defer to TG6) Unanimous	Change "rounded down to a whole number" to "rounded to the nearest whole number".
138	684	Robert Hill NAHB Research Center NAHB Research Center	801.6 Water closets and urinals Revise as follows	The NGBS already recognizes that multi-unit buildings should not be limited in the ability to earn points because the building contains units of various sizes. Practice 601.1 allows the use of a weighted average for determining the conditioned area. It is reasonable to extend that approach to water saving fixtures.	<b>801.6 Water closets and urinals.</b> Water closets and urinals are in accordance with the following: <b>(1)</b> Gold and emerald levels: All water closets and urinals are in accordance with Section 801.6. <b>(2)</b> A water closet is installed with an effective flush volume of 1.28 gallons (4.85 L) or less when tested in accordance with ASME A112.19.2 (all water closets) or when tested in accordance with ASME A112.19.14 (all dual flush water closets), and is in accordance with EPA WaterSense <i>Tank-Type High-Efficiency Toilet</i> , or <b>(Points awarded per fixture. In multi-unit buildings, a weighted average of fixtures per unit is used to calculate the number of points available for this practice (rounded down to a whole number))</b> <b>(3)</b> All water closets are in accordance with Section 801.6(2). <b>(a)</b> Dual flush (or other) water closets are used that have a flush volume of 1.2 gallons or less and comply with 801.6(2); and all other water closets comply with 801.6(2). <b>(Points awarded per toilet In multi-unit buildings, a weighted average of fixtures per unit is used to calculate the number of points available for this practice (rounded down to a whole number))</b>	Note: Comment is also submitted to TG-4 Water efficiency Accept as Modified.	TG 6 agrees that a weighted average should be used to accurately measure a building's efficiency improvements, while accounting for differences in the size and configuration of multifamily units.  As modified: 801.6 Water closets and urinals. Water closets and urinals are in accordance with the following: (1) Gold and emerald levels: All water closets and urinals are in accordance with Section 801.6. (2) A water closet is installed with an effective flush volume of 1.28 gallons (4.85 L) or less when tested in accordance with ASME A112.19.2 (all water closets) or when tested in accordance with ASME A112.19.14 (all dual flush water closets), and is in accordance with EPA WaterSense Tank-Type High-Efficiency Toilet, or <b>(Points awarded per fixture. In multi-unit buildings, a weighted average of bathrooms is used to calculate the number of points available for this practice (rounded to the nearest whole number).)</b> (3) All water closets are in accordance with Section 801.6(2). (a) Dual flush (or other) water closets are used that have a flush volume of 1.2 gallons or less and comply with 801.6(2); and all other water closets comply with 801.6(2). <b>(Points awarded per toilet In multi-unit buildings, a weighted average of bathrooms is used to calculate the number of points available for this practice (rounded to the nearest whole number).)</b>
139	720	Brent Mecham Irrigation Association Irrigation Association	801.7.1 High DU rotating spray heads Revise as follows	Use correct generic term for nozzle	801.7.1 Delete: High-Distribution Uniformity (DU) rotating spray heads are installed in lieu of spray heads for turf or landscaping. Add: Multi-stream, multi-trajectory rotating nozzles in lieu of spray nozzles for turf or landscaping.	Accept Unanimous	
140	716	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	801.7.3 Landscape plan and implementation Revise as follows	A self-sustaining landscape helps to reduce water consumption. Hawaii has many indigenous plants that do not require a lot of water.	Points should be had for self-sustaining landscaping.	Reject Unanimous	Points are already awarded for no irrigation system (801.7.5 (3)).

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
141	721	Brent Mecham Irrigation Association Irrigation Association	801.7.4 Drip irrigation zones Revise as follows	provide credit for using in shrub beds only and additional credit if used for turf areas	Delete: 801.7.2 Drip Irrigation installed for each landscape type. 8 points Add: 801.7.2 Drip Irrigation installed for: landscape beds 4 points subsurface drip for turfgrass areas 4 points	Reject Unanimous	No technical justification was given.
142	685	Robert Hill NAHB Research Center NAHB Research Center	801.7.5 Irrigation System Smart Controller Revise as follows	Practices 801.7.4(3), 801.7.4(a), and 801.7.4(b) do not exist in the draft standard.	<b>801.7. 5</b> The irrigation system(s) is controlled by a smart controller. <del>(Points for 801.7.4(3) are not additive with points for 801.7.4(a) or 801.7.4(b).)</del>	Accept with modification Unanimous	Replace with <b>(Points for 801.7.5(3) are not additive with points for 801.7.5(1) or 801.7.5(2).)</b>

## Chapter 9 Indoor Environmental Quality

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
143	609	Chris Allison City of Longmont City of Longmont	901.1 Space and Water Heating Options Revise as follows	This item should reference the International Fuel Gas Code (IFGC) to avoid confusion.	This item should reference the International Fuel Gas Code (IFGC).	AM	Add IFGC to Section 901.1.4 as an option
144	688	Robert Hill NAHB Research Center NAHB Research Center	901.1.1 Natural draft furnaces, boilers, or water heaters Delete and substitute as follows	Suggest deleting 901.1.1 and incorporating the idea in 901.1.3. There is often confusion with both builders and verifiers trying to claim points for 901.1.1 for not having natural draft equipment in conditioned space when they do not have any natural draft equipment. Often times they also claim points for not having natural draft equipment and also points for having a heat pump. The old 901.1.1 and 901.1.4 should be combined into one practice that awards points for the appropriate system but does not allow for this confusion.	<del>901.1.3</del> The following <del>combustion</del> space heating and or water heating equipment is installed <del>within conditioned space</del> as follows: (points awarded for only 1 practice for heating systems and for water heaters). <del>(1) all direct vent furnaces or all boilers 5</del> <del>(a) power vent furnace(s) or boiler(s) are in conditioned space TBD</del> <del>(b) direct vent furnace(s) or boiler(s) are in conditioned space 5</del> <del>(c) Natural draft furnaces and boilers are not located in conditioned spaces, including conditioned crawlspaces. Natural draft furnaces, boilers and water heaters are 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).</del> <del>(2) all water heaters</del> <del>(a) power vent water heater(s) are in conditioned space 3</del> <del>(b) direct vent water heater(s) are in conditioned space</del> <del>(c) Natural draft water heaters are not located in conditioned spaces, including conditioned crawlspaces. Natural draft water heaters are 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).</del> <del>(3) all heat pump air handlers are installed in</del> <del>(a) unconditioned space</del> <del>(b) conditioned space</del>	AM	Include a points note to Section 901.1.1: Points are awarded only for buildings that use combustion space and water heating equipment.
145	763	Bridget Herring Mathis Consulting Company Mathis Consulting Company	901.1.1 Natural draft furnaces, boilers, or water heaters Revise as follows	The above provisions are recommended to be mandatory for life safety reasons. As we build to tighter standards that are encouraged in this document, combustion safety needs to be prioritized. Tying these particular provisions to points implies that they are optional and not as critical as other mandatory practices. The same life-safety recommendation applies to 901.1.3, 901.1.4, 901.1.5, and 901.2.1. These should be mandatory practices where these appliances are used.	<del>901.1.1</del> Natural draft <del>space heating or water heating equipment</del> furnaces, boilers or water heaters <del>are</del> not located in conditioned spaces, including conditioned crawlspaces. Natural draft furnaces, boilers and water heaters <del>are</del> 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).  <del>5-Mandatory</del>	Reject	Compliance with the minimum codes per section 901.1.4 provides for safe equipment operation. Natural draft equipment can be installed in homes of different tightness and can operate safely.
146	651	Don Denton Vent-Free Gas Products Alliance Section Vent-Free Gas Products Alliance Section	901.1.4 Gas fireplaces and direct heating equipment vented outdoors Revise as follows	Section should be revised to allow unvented gas-fired fireplaces. They are green as a result of high efficiency and clean combustion. No other gas product permitted by the NGBS has as high an efficiency. Numerous independent, peer-reviewed, research projects have documented that national indoor air quality guidelines for carbon monoxide, carbon dioxide, nitrogen dioxide, oxygen, and water vapor are met. The products' safety record is outstanding and without peer, with 20 million units installed in American homes over the last 30 years. No technical justification exists for excluding them. The products are accepted by the major applicable codes.	<del>901.1.4</del> Gas-fired fireplaces and direct heating equipment is listed and is installed in accordance with the National Fuel Gas Code or the applicable local gas appliance installation code. <del>Gas-fired fireplaces and direct heating equipment are vented to the outdoors.</del>	Accept Y – N - A 4 – 1 – 0	

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
147	694	kenneth belding empire comfort systems empire comfort systems	901.1.4 Gas fireplaces and direct heating equipment vented outdoors Delete and substitute as follows	Section 901.1.4; delete, "Gas fired fireplaces and direct heating equipment are vented to the outdoors." Substitute with, "Gas fired unvented direct heating equipment must comply with ANSI Standard Z.21.11.2." My company manufactures and markets vented and vent free direct heating products. We have manufactured vented direct heating products for almost 80 years and the first company to certify vent free products almost 30 years ago. Empire has many competing companies manufacturing and marketing vented and vent free as well. The track record for vent free products, relative to emissions, is outstanding. Twenty-one million units have been installed in American homes over the past 30 years with proven performance and safety record. Of those, we have been fortunate enough to sell about 1 million units. I have been in charge of Empire's product liability department for 25 years and have not had a reported death or substantiated illness attributed to our vent free products due to emissions. All vent free products sold in the United States have been certified by agencies such as UL and CSA to an ANSI National Standard which includes the requirements for safety, performance, and construction. It is astounding the products approved to or by the National Center for Disease Control, World Health Organization, DOE, OSHA, EPA, and the CPSC are threatened by a code without any substantiated evidence which, in the end, keeps consumers from making the ultimate green choice. We would ask that you support this code proposal. Two primary criteria for being green: energy efficiency and indoor air quality Energy efficiency: Vent free is more energy efficient than any gas or wood product allowed by the code; on a source basis, vent free is more energy efficient than any electric product allowed by the code. Indoor air quality: vent free complies with Federal IAQ guidelines as confirmed by independent scientific groups. The IGCC IAQ working group has never claimed that Federal IAQ guidelines are inadequate or defined what alternative IAQ guidelines would be acceptable. The code's current disallowance is based upon subjective impressions rather than objective analysis. CPSC staff has confirmed that no emissions related fatalities have ever occurred involving a vent free product. CSA, the Secretariat of the vent free national product standard, has acknowledged that vent free is arguably the safest gas product in existence. Since the beginning of the I-codes, vent free has always been accepted. Vent free performs better relative to IAQ as structures become tighter as confirmed by independent peer-reviewed research--both a unique and important attribute for green construction.	901.1.4 Gas-fired fireplaces and direct heating equipment is listed and is installed in accordance with the National Fuel Gas Code or the applicable local gas appliance installation code. <del>Gas-fired fireplaces and direct heating equipment are vented to the outdoors.</del> Gas-fired unvented direct heating equipment must comply with ANSI Standard Z.21.11.2.	Accept 4-1-0	
148	773	Frank A. Stanonik AHRI AHRI	901.1.4 Gas fireplaces and direct heating equipment vented outdoors Revise as follows	This sentence precludes the installation of a gas-fired vent free fireplace or heater in a "Green" home. This prohibition is unjustified and not technically supported. Green buildings include a variety of design and component features. Some of those features affect the ventilation rate of the house. There are several provisions that address the actual measurement of the air change rate of the home. Given that information, other parameters and the information found in the applicable installation code, a determination can be made as to what design features or components, if any, should be added to accommodate the installation of a gas-fired vent free heaters. As an example, if the natural air change rate is .35 per hour, then a properly sized, listed gas-fired vent free heater can be installed per the referenced installation code without any adverse effect on the indoor air quality. The deletion of this sentence does not promote the installation gas-fired vent-free heaters. It merely reflects the fact that millions of such products are being safely used in homes today. If a builder has chosen to include a gas-fired vent-free heaters in a "Green" home and has taken the steps to ensure that it is installed properly and will have an adequate supply of combustion air, there is no rational reason to dictate that such a home is automatically disqualified from carrying any level of "Green" designation. The choice should be left up to the builder. The standard does not limit the size, number or type of bathtubs and showers that can be provided in a Green home because of moisture concerns. Rather, it requires ventilation to address that moisture concern. The same approach should be applied to gas-fired vent-free heaters.	Gas-fired fireplaces and direct heating equipment is listed and is installed in accordance with the National Fuel Gas Code or the applicable local gas appliance installation code. <del>Gas-fired fireplaces and direct heating equipment are vented to the outdoors.</del>	Accept	
149	778	Gregg Achman Hearth & Home Technologies Hearth & Home Technologies	901.1.5 Gas fireplaces power vented or direct vent vented Revise as follows	Section 901.1.4 refers to gas fired fireplaces and direct heating equipment, therefore, in section 901.1.5 where it is defining requirements and certification standards it should also address the certification standard used by direct heating equipment (ANSI Z21.86/CSA 2.32). Also, the wording for power venting and direct venting for gas fired fireplaces and direct heating equipment is consistent with requirements of section 901.1.3 for heating equipment installed within a conditioned space. The point scale for gas fireplaces and direct heating should be consistent with power vented and direct vented furnaces/boilers/water heaters in how they affect the indoor environmental quality.	<del>901.1.5</del> Natural gas and propane fireplaces and direct heating equipment that are shall be power vented or direct vented and have permanently fixed glass fronts or gasketed doors, and comply with ANSI Z21.88/CSA 2.33, or ANSI Z21.50/CSA 2.22, or ANSI Z21.86/CSA2.32.	Reject	This section is intended only for fireplaces. The proposed language is outside the scope of this section.



PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason								
150	TG3-4	Task Group 3	901.1.5 Natural gas and propane fireplaces Modify as follows	Points cannot be awarded for power vents for fireplaces with gasketed doors.	<b>901.1.5</b> Natural gas and propane fireplaces are direct vented, have permanently fixed glass fronts or gasketed doors, and comply with ANSI Z21.88/CSA 2.33 or ANSI Z21.50/CSA 2.22	Accept									
151	780	Gregg Achman Hearth & Home Technologies Hearth & Home Technologies	901.2.1 Fireplaces, inserts, stoves, and heaters Revise as follows	Add another category for factory built wood-burning fireplaces that are UL 127 certified but not EPA certified, but have outside air and a means of sealing the flue so as to minimize interior air (heat) loss when not in operation just like a site built masonry wood burning fireplace [901.2.1(1)]. There is no reason to allow one and not the other when outfitted properly they perform the same. This product would have the same point scale as the site built masonry wood burning fireplace of 4 points.	<b>901.2.1 (6)</b> Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are <del>EPA certified</del> <u>equipped with outside combustion air and a means of sealing the flue and the combustion air outlets to minimize interior air (heat) loss when not in operation.</u>  Points = 4.	Reject	It is appropriate to require EPA certification for factory-built fireplaces.								
152	713	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	901.2.2 Not installed Revise as follows	This requirement ignores the mild climate of Hawaii.	Point for not having fireplaces or woodstoves or equivalent in Hawaii.	Reject	The committee recognizes that this credit will be common in some areas of the country. The practice provides environmental benefit in those climate zones as well.								
153	723	Josh Jacobs GREENGUARD Environmental Institute GREENGUARD Environmental Institute	901.5 Cabinets Delete and substitute as follows	As the KCMA is a certification program that has added features on the base standard (CARB), it should be placed in appendix D with the other programs of the product emission section.	<b>901.5 Cabinets.</b> A minimum of 85 percent of installed kitchen and bath vanity cabinets are in accordance with <del>KCMA ESP 04 (or equivalent)</del> or CARB <i>Composite Wood Air Toxic Contaminant Measure Standard</i> or certified by a program such as but not limited to, those in Appendix D.  Appendix D  901.5 Cabinets <u>KCMA ESP 04</u>  <b>3</b>	Accept									
154	689	Robert Hill NAHB Research Center NAHB Research Center	901.6 Carpets Revise as follows	This change requires a minimum amount of carpet in order to receive the points and is consistent with how hard surface flooring is now treated in the draft.	<b>901.6 Carpets.</b> Carpets are in accordance with the following: <b>(1)</b> Wall-to-wall carpeting is not installed adjacent to water closets and bathing fixtures. <b>Mandatory</b> <b>(2)</b> A minimum of <u>10% of the conditioned floor space has carpet and at least 85 percent of installed carpet area, carpet cushion (padding), and carpet adhesives are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D.</u>	Accept									
155	729	Josh Jacobs GREENGUARD Environmental Institute GREENGUARD Environmental Institute	Appendix D Examples of third-party programs for Chapter 9 Revise as follows	As we are referencing numerous different standards and compliance pathways for architectural coatings VOC content minimization, we should give manufacturers and builders options. The EcoLogo's certification program to their CCD -047 is a internationally recognized through the Global EcoLabelling Network's membership and has around 2,000 products certified through it from large and small paint manufacturers. Similar to the currently referenced Green Seal, EcoLogo certifications looks at multiple areas for architectural coatings including performance, minimization of harmful chemicals (both to humans and to the environment), and VOC content minimization. Finally you will find the VOC content requirements equal to or below the requirements already called-out in the document.	901.8 Architectural coatings  GREENGUARD Environmental Institute Children & Schools Certification Program  Scientific Certification Systems (SCS) Indoor Advantage Gold Program  Green Seal  EcoLogo	Accept as modified	Modify as follows: 901.8 Architectural coatings  GREENGUARD Environmental Institute Children & Schools Certification Program  Scientific Certification Systems (SCS) Indoor Advantage Gold Program  Green Seal- <u>11 Standard for Paints and Coatings</u>  EcoLogo <u>CCD-047</u>								
156	656	Naveen Berry SCAQMD SCAQMD	901.9 Architectural Coatings Add new as follows	Include a section on VOC limitations for colorants. Earlier this year, the SCAQMD Board adopted VOC limits for colorants added at the point of sale, since the addition of conventional colorants can add a significant amount of VOCs to a low-VOC coating. SCAQMD Rule 1113 section (c)(2), stipulates that the addition of colorants must not exceed the VOC limit of the corresponding coatings. At the point of manufacture, any colorant added is considered part of the overall VOC content of the coating. However, once the product reaches the retail or wholesale market, any colorant added at that point of sale is not considered as part of the total VOC of the product. Therefore, colorants are subject to their own VOC limits.	<table border="1"> <thead> <tr> <th>COLORANT</th> <th>Limit</th> </tr> </thead> <tbody> <tr> <td>Architectural Coatings, excluding IM Coatings</td> <td>50</td> </tr> <tr> <td>Solvent-Based IM</td> <td>600</td> </tr> <tr> <td>Waterborne IM</td> <td>50</td> </tr> </tbody> </table>	COLORANT	Limit	Architectural Coatings, excluding IM Coatings	50	Solvent-Based IM	600	Waterborne IM	50	Accept	
COLORANT	Limit														
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PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
157	722	Josh Jacobs GREENGUARD Environmental Institute GREENGUARD Environmental Institute	901.9 Architectural Coatings Revise as follows	As we are referencing numerous different standards and compliance pathways for architectural coatings VOC content minimization, we should give manufacturers and builders options. The EcoLogo's CCD-047 is a consensus developed standard, which is internationally recognized through the Global EcoLabelling Network's membership and has around 2,000 products certified to it. Similar to the currently referenced Green Seal-11, CCD-047 is a multi-attribute standard for architectural coatings which focuses on performance, minimization of harmful chemicals (both to humans and to the environment), and VOC content minimization. Finally you will find the VOC content requirements equal to or below the requirements already called-out in the document.	(1) Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method) (2) GreenSeal GS-11 Standard for Paints and Coatings (3) EcoLogo CCD-047 Architectural Surface Coatings <del>(4) CARB Suggested Control Measure for Architectural Coatings (see Table 901.9.1).</del>	Withdrawn by proponent during TG-3 conference call on January 19, 2012.	
158	652	Naveen Berry SCAQMD SCAQMD	901.9.1 Site applied interior architectural coatings Delete and substitute as follows	Disagree with various VOC content limits for architectural coating categories. AQMD's Rule 1113 Architectural Coatings was recently amended on June 3, 2011. The following changes should be made to reflect the current R1113 VOC limits.	Table 901.9.1 VOC Content Limits For Architectural Coatings,  Non-Flats Coatings – <del>400</del> <u>50</u> Non-Flat High Gloss Coatings – <del>450</del> <u>50</u> Aluminum Roof Coatings – <del>400</del> <u>100</u> Concrete Curing Compounds – <del>350</del> <u>100</u>  Floor Coatings – <del>400</del> <u>50</u> Industrial Maintenance Coatings – <del>250</del> <u>100</u>  Rust Preventative Coatings – <del>250</del> <u>100</u>  Tub and Tile Refinish Coatings – <del>420</del> <u>250</u>  Waterproofing Membranes – <del>250</del> <u>100</u>  Zinc-Rich Primers – <del>340</del> <u>100</u>	Reject	The CARB limits are preferred by the committee for use in the NGBS.
159	818	Amy Schmidt The Dow Chemical Company Dow Building Solutions	901.9.1 Site applied interior architectural coatings Delete without substitution	This section is supposed to be related to site-applied architectural coatings however the requirements especially the table list many other items that are not architectural coatings. Also not all VOC's are hazardous. This section needs a lot of work. For now it should be deleted until better guidance can be developed.	Delete section	Reject	Based on action on PC 163 / LogID 821.
160	613	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	901.9.2 Site applied interior products Revise as follows	Replace with the term "products" in order to make the language consistent with 901.9.1 and to distinguish architectural coatings from adhesives and sealants.	<b>901.9.2</b> Site-applied interior <del>products</del> <b>architectural coatings, which are inside the water proofing envelope</b> , are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 01350, as certified by a third party program such as the GREENGUARD Environmental Institute's <i>Children and Schools Certification Program</i> or the Scientific Certification Systems <i>Indoor Advantage Gold Program</i> when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D.	Accept as modified	Use this language:  <b>901.9.2</b> Site-applied interior <del>products</del> <b>architectural coatings, which are inside the water proofing envelope</b> , are in accordance with the emission levels of CDPH...
161	820	Amy Schmidt The Dow Chemical Company Dow Building Solutions	901.9.2 Site applied interior products Delete without substitution	Manufacturer's should not be forced to test if they do not have emissions. It adds unnecessary cost.	Delete section	Reject	Based on actions on PC 159 / LogID 818 and PC 163 / LogID 821.
162	653	Naveen Berry SCAQMD SCAQMD	901.10 Adhesives and sealants Delete and substitute as follows	Clarification regarding reference to SCAQMD Rule 1168. Certain adhesives and sealants sold in 16 ounce containers or less, e.g. PVC solvent cement, are not regulated by CARB and, therefore, fall under SCAQMD R1168 requirements.	<del>(3) SCAQMD Rule 1168 (see Table 901.10.2), excluding products that are purchased in containers that are less than 16 ounces sold in 16 ounce containers or less and are regulated by the California Air Resources Board (CARB) Consumer Products Regulation.</del>	Accept	
163	821	Amy Schmidt The Dow Chemical Company Dow Building Solutions	901.10 Architectural Coatings Delete without substitution	901.10 should be deleted. It is impractical and costly to test products that do not have hazardous VOCs.	Delete	Reject	There is scientific evidence that chemicals emitted from products can be harmful to humans.
164	823	Amy Schmidt The Dow Chemical Company Dow Building Solutions	901.11 Architectural Coatings Delete without substitution	901.11 should be deleted. Insulation is encapsulated in the wall and many types do not have hazardous emissions levels. Manufacturers should not be required to perform expensive testing and certification when their products do not have hazardous emissions.	delete section	Reject	There is scientific evidence that chemicals emitted from products can be harmful to humans. There are areas of home where insulation can be exposed to humans and emissions also can reach humans by seeping through the air barrier.
165	TG3-5	Task Group 3	901.11 Insulation. Modify as follows	The 85% allowance is added to enable inclusion of this practice into the Bronze Level threshold.	Emissions of 85 percent of wall, ceiling, and floor insulation materials are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1....	Accept	

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
166	715	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	902.2.1 Building Ventilation Systems Revise as follows	This requirement should take into consideration Hawaii's warm climate and how many of our homes are passively cooled by our tradewinds.	Many points given here for systems that are not available to passively cooled homes.	Reject	Passive ventilation does not always provide sufficient ventilation for control of air quality and moisture levels in Hawaii. Also passively cooled homes can accrue points in other parts of the Standard.
167	610	Chris Allison City of Longmont City of Longmont	903.1 Plumbing Revise as follows	P535 Section 903.5.1 should clarify which sprinkler lines are not allowed in wall cavities (lawn irrigation or fire suppression) or state that all water lines are not allowed in wall cavities.	Clarify which sprinkler lines are not allowed in wall cavities (lawn irrigation or fire suppression) or state that all water lines are not allowed in wall cavities to avoid confusion.	Withdrawn by proponent per email dated January 19, 2012.	
168	TG3- 6	Task Group 3	903.2 Duct insulation. Modify as follows	This change aligns point allocations with the new building code requirements.	<b>903.2 Duct insulation.</b> (1) All HVAC ducts, plenums, and trunks in are conditioned space. <b>1</b> (2)  All HVAC ducts, plenums, and trunks in are conditioned space. All HVAC ducts are insulated to a minimum of R4. <b>3</b>	Accept	

## Chapter 10 Operation, Maintenance and Building Owner Education

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
169	TG1-1	Task Group 1	1001.1 Building owners manual	Move item #13 to be item #4 and move all other items down. Substantiation: The task group thought item #13 should be raised in importance.	Per comment	Accept	
170	743	Susan Gitlin US Environmental Protection Agency US Environmental Protection Agency	1002.1 Training of Building Owners Revise as follows	We are glad to see that recycling practices was added to the training topics. Proper handling of refrigerant-containing appliances in particular should be mentioned. Common refrigerants and insulating foam found in refrigerators and freezers are not only ozone-depleting but are also powerful greenhouse gases. For example, the refrigerant CFC-12 has more than 10,000 times the effect of carbon dioxide in the atmosphere. Further, releasing 1 pound of CFC-11 from the foam in a refrigerator is equivalent to releasing 4,750 pounds of carbon dioxide. Ensuring proper recovery and handling of refrigerant and appliance foam results in benefits to the ozone layer and climate system.		Reject	This section of the standard is meant as a broad education point to do more with the operation of the building and household waste management. The comment is too specific and not in the scope of this section of the standard. Additionally, other portions of the standard will likely address these types of issues already – Section 1001.1(4).

## Chapter 11 Remodeling

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
171	690	Robert Hill NAHB Research Center NAHB Research Center	11.1 Intent Delete and substitute as follows	The requirement that each remodeling project receive a certain percentage of points from "applicable" practices will result in the need for much project specific interpretations by the adopting entity making the approach unworkable. There are too many qualifiers needed to clearly indicate if a particular practice is applicable to a particular project.	Task Group 7 is working on a revised version that I believe will address my concerns.	Accept as modified	per TG-7 PC 003/016/193/216 Log ID 757-760
172	745	Susan Gitlin US Environmental Protection Agency US Environmental Protection Agency	11.1000 (Occupant education practices) Revise as follows	It is especially important that operations manuals for remodeling address proper handling of old appliances. Replacing old refrigerators and freezers with ENERGY STAR® appliances and properly disposing of the old refrigerators and freezers should be added to the list of options.	.	Reject	because this event occurs during remodeling and is not a function of the homeowner
173	634	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	11.600 (Resource efficiency practices) Delete without substitution	Sections 11.603, 11.605, 12.1.1.1(b), 12.4.2.5 should all be removed or the specific requirements removed and they all make a general reference back to waste diversion requirements in chapter 6. The conflicts between sections are confusing and make it seem as though the sections have been written by different authors that have not shared information. For example, 12.1 is the first place where demolition waste diversion is addresses, but why should only bathroom remodels have the opportunity to recycle or salvage, when that could be applied to any project. Please coordinate and clarify these sections.	<del>11.603.0 Intent. Practices that reuse or modify existing structures, salvage materials for other uses, or use salvaged materials in the building's construction are implemented.</del> <del>11.603.1 New Work – Reuse of existing building. Major elements of existing buildings and structures are reused, modified, or deconstructed for later use in lieu of demolition. Possibly calculate by percentage of materials re-used</del> <del>11.603.2 Salvaged materials. Reclaimed and/or salvaged materials and components are used. The total material value and labor cost of salvaged materials is equal to or exceeds 1 percent of the total construction cost.</del> <del>11.603.3 Scrap materials. Facilitation for sorting and reuse of scrap building material (e.g., provide a central storage area or dedicated bins) are provided on site and used during construction.</del>	Reject	These items were addressed in the TG-7 PC 003/016/193/216 Log ID 757-760 at end of public comments
174	635	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	11.600 (Resource efficiency practices) Delete without substitution	Sections 11.603, 11.605, 12.1.1.1(b), 12.4.2.5 should all be removed or the specific requirements removed and they all make a general reference back to waste diversion requirements in chapter 6. The conflicts between sections are confusing and make it seem as though the sections have been written by different authors that have not shared information. For example, 12.1 is the first place where demolition waste diversion is addresses, but why should only bathroom remodels have the opportunity to recycle or salvage, when that could be applied to any project. Please coordinate and clarify these sections.	<del>11.605.0 All waste classified as hazardous shall be properly handled and disposed.</del> <del>11.605.1 Construction waste management plan. A construction waste management plan is developed, posted at the jobsite, and implemented with a goal of recycling or salvaging a minimum of 50 percent (by weight) of construction and land-clearing waste.</del>	Reject	These items were addressed in the TG-7 PC 003/016/193/216 Log ID 757-760 at end of public comments
175	727	Josh Jacobs GRENGUARD Environmental Institute GRENGUARD Environmental Institute	11.600 (Resource efficiency practices) Revise as follows	Single attribute traits allow us to see valuable snapshots of a products impact on certain areas of the environment and they bring value to a building standard such as this one, but many product manufacturers and sustainability purchasers/experts are looking to multi-attribute standards as a way to show that a product, in total, addresses the triple bottom line of sustainability. Referencing these standards and awarding points would allow the homes built to this standard to show that some of the products chosen to build the building have been looked at in terms of their overall sustainable impact. Adding it in renovations would also make this section agree with chapter 6 on which it is modeled after.	<b>11.610.2 Sustainable Products.</b> One or more of the following products are used for at least 30% of the floor or wall area of the entire dwelling unit, as applicable. Certification third-party agency is ISO Guide 65 accredited. <b>10 Points Max</b> <u>(1) 50% or more of carpet installed (by square feet) is third-party certified to NSF/ANSI 140. 5</u> <u>(2) 50% or more of resilient flooring installed (by square feet) is third-party certified to NSF/ANSI 332. 5</u> <u>(3) 50% or more of the insulation installed (by square feet) is third-party certified to EcoLogo CCD-016. 5</u> <u>(4) 50% or more of interior wall coverings installed (by square feet) is third-party certified to NSF/ANSI 342 5</u> <u>(5) 50% or more of the gypsum board installed (by square feet) is third-party certified to ULE ISR 100 5</u> <u>(6) 50% or more of the door leafs installed (by number of door leafs) is third-party certified to ULE ISR 102 5</u>	Accept as modified	The modification will be based on the final version of the corresponding section of NGBS unless there is a material difference in that section as it pertains to remodeling.
176	643	John Gant Glen Raven Inc self	11.700 (Energy efficiency practices) Revise as follows	Section 11.701.4.4.1 Fenestration, add section to select "Window Attachments" to increase thermal comfort, visual comfort, and solar control via the installation of appropriate devices as delineated on "www.windowattachments.org" as created by Berkeley Labs, DOE, and BuildingGreen.	Add 11.701.4.4.1 Window Attachments should be identified using the product selection tool on www.windowattachments.com in order to optimize the benefits of dynamic attachments to manage daylighting and solar heat gain according to user and seasonal needs. At least one attachment should be installed on every window. Mandatory Points = 2.	Accept as modified	Add the words "or equivalent" after the .com. Strike last sentence. Make it a points option. Points to be assigned.
177	767	Eric Lacey RECA RECA	11.700 (Energy efficiency practices) Revise as follows	One of the most critical improvements to a renovated building's energy efficiency is high-efficiency fenestration. The renovations chapter makes improved fenestration mandatory in many scenarios, but cites values from an outdated Energy Star standard.	<b>11.701.4.4.1 Fenestration</b> <b>New Work.</b> NFRC-certified U-factor and SHGC windows, exterior doors, skylights, and	Accept as modified	The modification will be based on the final version of the corresponding section of NGBS

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				Consistent with RECA's other proposals, we urge the Committee to adopt the superior fenestration requirements in the 2012 IECC. However, if the Committee determines that the 2009 IECC is the appropriate baseline, we recommend at least updating the mandatory fenestration efficiency requirements to the 2009 IECC to maintain consistency with the new construction requirements of the NGBS. For convenience, both options are outlined below. Recognizing that any of the recommended standards represent an improvement in energy efficiency, we have also added the flexibility of an area-weighted average – something not available in the 2008 NGBS fenestration requirements.	<p>tubular daylighting devices (TDDs) on an area-weighted average basis are in accordance with <del>ENERGY STAR, or equivalent, or Table 701.4.4.1</del> 11.701.4.4.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m<sup>2</sup>) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</p> <p><b>[Option 1: 2012 IECC]</b></p> <p><b>Table 11.701.4.4.1 Fenestration Specifications</b></p> <table border="1"> <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 colspan="2">0.50</td> <td colspan="2">0.25</td> </tr> <tr> <td><del>1 and 2</del></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>0.35</td> <td colspan="2">Any 0.40</td> </tr> <tr> <td>5 to 8</td> <td colspan="2">0.32</td> <td colspan="2">Any</td> </tr> <tr> <td colspan="5">Skylights and TDDs</td> </tr> <tr> <td><del>1 to 3</del></td> <td>0.75</td> <td>0.75</td> <td>0.40</td> <td>0.25</td> </tr> <tr> <td>2</td> <td colspan="2">0.65</td> <td colspan="2">0.25</td> </tr> <tr> <td><del>3 4 to 8</del></td> <td>0.60</td> <td>0.55</td> <td colspan="2">Any 0.25</td> </tr> <tr> <td>4</td> <td colspan="2">0.55</td> <td colspan="2">0.40</td> </tr> <tr> <td>5 to 8</td> <td colspan="2">0.55</td> <td colspan="2">Any</td> </tr> </tbody> </table> <p><sup>1</sup> Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.</p> <p><b>[Option 2: 2009 IECC]</b></p> <p><b>Table 11.701.4.4.1 Fenestration Specifications</b></p> <table border="1"> <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 colspan="2">1.20</td> <td colspan="2">0.30</td> </tr> <tr> <td><del>1 and 2</del></td> <td colspan="2">0.65</td> <td>0.40</td> <td>0.30</td> </tr> <tr> <td>3</td> <td>0.40</td> <td>0.50</td> <td>0.40</td> <td>0.30</td> </tr> <tr> <td>4 to 8</td> <td colspan="2">0.35</td> <td colspan="2">Any</td> </tr> <tr> <td colspan="5">Skylights and TDDs</td> </tr> <tr> <td><del>1 to 3</del></td> <td>0.75</td> <td>0.75</td> <td>0.40</td> <td>0.30</td> </tr> <tr> <td>2</td> <td colspan="2">0.75</td> <td colspan="2">0.30</td> </tr> <tr> <td><del>3 4 to 8</del></td> <td>0.60</td> <td>0.65</td> <td colspan="2">Any 0.30</td> </tr> <tr> <td>4 to 8</td> <td colspan="2">0.60</td> <td colspan="2">Any</td> </tr> </tbody> </table> <p><b>Re-Work.</b> NFRC-certified U-factor and SHGC windows, exterior doors, skylights, and tubular daylighting devices (TDDs) on an area-weighted average basis are in accordance with <del>ENERGY STAR, or equivalent, or Table 701.4.4.1</del> 11.701.4.4.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m<sup>2</sup>) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</p>	Climate Zones	U-Factor		SHGC		Windows and Exterior Doors (maximum certified ratings)				1	0.50		0.25		<del>1 and 2</del>	0.65	0.40	0.40	0.25	3	0.40	0.35	0.40	0.25	4 to 8	0.35	0.35	Any 0.40		5 to 8	0.32		Any		Skylights and TDDs					<del>1 to 3</del>	0.75	0.75	0.40	0.25	2	0.65		0.25		<del>3 4 to 8</del>	0.60	0.55	Any 0.25		4	0.55		0.40		5 to 8	0.55		Any		Climate Zones	U-Factor		SHGC		Windows and Exterior Doors (maximum certified ratings)				1	1.20		0.30		<del>1 and 2</del>	0.65		0.40	0.30	3	0.40	0.50	0.40	0.30	4 to 8	0.35		Any		Skylights and TDDs					<del>1 to 3</del>	0.75	0.75	0.40	0.30	2	0.75		0.30		<del>3 4 to 8</del>	0.60	0.65	Any 0.30		4 to 8	0.60		Any		Mandatory		unless there is a material difference in that section as it pertains to remodeling.
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178	612	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	11.900 (IEQ practices) Revise as follows	11.901.8 refers to 901.8.1 and 901.8.2. 11.901.8.1 and 11.901.8.2 regurgitates the language from 901.8.1 and 901.8.2, so there is no need to have it in two places. Plus, it appears as though 11.901.8.1 and 11.901.8.2 have not been updated	<del>11.901.8 Architectural coatings. A minimum of 85 percent of the newly applied architectural coatings are in accordance with either Section 901.8.1 or Section 901.8.2, not both: .</del>  <del>11.901.8.1 Site-applied interior products are in accordance with one or more of the following standards:</del>  <del>(1) Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)</del>  <del>(2) CARB Suggested Control Measure for Architectural Coatings</del>  <del>(3) GS-11</del>  <del>(4) VOC limits in accordance with:</del>  <del>(a) 50 grams/liter flat</del>  <del>(b) 100 grams/liter non-flat</del>  <del>(c) 350 grams/liter clear wood varnish</del>  <del>(d) 550 grams/liter clear wood lacquer</del>  <del>11.901.8.2 Site-applied interior products are in accordance with the emissions levels of CDPH 01350, as certified by a third party program such as the GREENGUARD Environmental Institute's Children and Schools Certification Program or the Scientific Certification Systems Indoor Advantage Gold Program.</del>	Reject	Remodeling is a standalone chapter and TG7 desires to keep all the information in one place for remodelers.
179	614	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	11.900 (IEQ practices) Revise as follows	901.9.1 and 901.9.2 applies to Architectural Coatings, so they have been replaced with the appropriate reference: 901.10.	<del>11.901.9 Adhesives and sealants. A minimum of 85 percent of newly applied site-applied adhesives and sealants are in accordance with Section 901.9.1 and/or Section 901.9.2. 901.10.</del>	Accept as modified	The modification will be based on the final version of the corresponding section of NGBS unless there is a material difference in that section as it pertains to remodeling.
180	620	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	11.900 (IEQ practices) Revise as follows	901 appears to be where all IEQ thresholds are placed and other sections in 11.901 refer back to 901; in order to be consistent and reduce redundancies, 11.901.9.2 has been modified to refer back to 901.10 – which also identifies an 85% requirement	<del>11.901.9.2 Interior low-VOC adhesives and sealants. A minimum of 85 percent of s Site-applied products low-VOC adhesives and sealants used within the interior of the building are in accordance with 901.10 one of the following, as applicable.</del>  <del>(1) CDPH 01350, as certified by a third party program, such as the GREENGUARD Environmental Institute's Children and Schools Certification Program or the Scientific Certifications Systems Indoor Advantage Gold Program.</del>  <del>(2) GS-36</del>		<b>Staff Note:</b> No TG Action Submitted. This item will be addressed at the meeting.
181	621	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	11.900 (IEQ practices) Revise as follows	901 appears to be where all IEQ thresholds are placed and other sections in 11.901 refer back to 901. In order to be consistent and reduce redundancies, 11.901.9.1 has been modified to refer back to 901.10 – which also identifies an 85% requirement	<del>11.901.9.1 Exterior low-VOC adhesives and sealants: A minimum of 85 percent of s Site-applied exterior low-VOC adhesives and sealants products used for the installation of subfloors and on the exterior of the project are in accordance with one of the following: 901.10.2.</del>  <del>(1) The California Air Resources Board consumer products regulation as follows:</del>  <del>(a) Construction Adhesives: VOC content not to exceed 7 percent by weight or 75 grams/liter, whichever is greater.</del>  <del>(b) The VOC content of reactive sealants (i.e., silicones, polyurethanes, and hybrids, such as MS Polymer and silylated polyurethane resin or SPUR) not to exceed 4 percent by weight or 50 grams/liter, whichever is greater.</del>	Reject	Remodeling is a standalone chapter and TG7 desires to keep all the information in one place for remodelers.



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					<p><del>(c) The VOC content of all other caulks and sealants not to exceed 2 percent by weight or 30 grams/liter, whichever is greater.</del></p> <p><del>(d) The VOC content of contact adhesives not to exceed 55 percent by weight or 480 grams/liter, whichever is greater.</del></p> <p><del>(2) GS-36</del></p> <p>New Section:  <u>901.10.2 41-901.9.4 Exterior low-VOC adhesives and sealants: A minimum of 85 percent of exterior low-VOC adhesives and sealants used for the installation of subfloors and on the exterior of the project are in accordance with one of the following:</u></p> <p><u>(1) The California Air Resources Board consumer products regulation as follows:</u></p> <p><u>(a) Construction Adhesives: VOC content not to exceed 7 percent by weight or 75 grams/liter, whichever is greater.</u></p> <p><u>(b) The VOC content of reactive sealants (i.e., silicones, polyurethanes, and hybrids, such as MS Polymer and silylated polyurethane resin or SPUR) not to exceed 4 percent by weight or 50 grams/liter, whichever is greater.</u></p> <p><u>(c) The VOC content of all other caulks and sealants not to exceed 2 percent by weight or 30 grams/liter, whichever is greater.</u></p> <p><u>(d) The VOC content of contact adhesives not to exceed 55 percent by weight or 480 grams/liter, whichever is greater.</u></p> <p><u>(2) GS-36</u></p>		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
182	699	Donn Thompson Portland Cement Association Portland Cement Association	11.900 (IEQ practices) Revise as follows	Based on the recommendations of the American Concrete Institute, the minimum thickness of a vapor retarder should be at least 10 mils (25mm) to enable the retarder to maintain its integrity under construction loads. Correct references to portions of section 903 which no longer cover capillary break and vapor retarders. Refer to appropriate portions of section 602.	11.903.2.1 Capillary breaks 11.37.1 New Work. A capillary break and vapor retarder are installed at all concrete slabs in accordance with Sections <del>903.2.4(4)</del> 602.1.1.1(1) or <del>903.2.4(2)</del> 602.1.1.1(2), as modified by Section <del>903.2.4(3)</del> 602.1.1.1(3); Mandatory (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, <u>minimum thickness 10 mil (25mm)</u> , in direct contact with the concrete slab, with the sheeting joints lapped in accordance with Section <del>903.3</del> 602.1.4. (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, minimum thickness 10 mil (25mm), with the sheeting joints lapped in accordance with Section 903.3 602.1.4. (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). 11.37.2 Re-Work. A capillary break and vapor retarder are installed at newly installed concrete slabs in accordance with Sections <del>903.2.4(4)</del> 602.1.1.1(1) or <del>903.2.4(2)</del> 602.1.1.1(2), as modified by Section <del>903.2.4(3)</del> 602.1.1.1(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 <u>minimum thickness 10 mil (25mm)</u> , in direct contact with the concrete slab, with the sheeting joints lapped in accordance with Section <del>903.3</del> 602.1.4. (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, <u>minimum thickness 10 mil (25mm)</u> , with the sheeting joints lapped in accordance with Section <del>903.3</del> 602.1.4. (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).	Reject	based on TG-3 rejecting same item for new construction and to stay aligned with NGBS
183	700	Michael Cudahy PPFA PPFA	11.900 (IEQ practices) Delete and substitute as follows	VOC sections in renovations do not match VOC sections in new construction. This could become an issue. For consistency, please revise to match, or simply refer back to the relevant section.	<del>11.901.9 Adhesives and sealants. A minimum of 85 percent of newly applied site-applied adhesives and sealants are in accordance with Section 901.9.1 and/or Section 901.9.2.</del> <del>11.901.9.1 Exterior low-VOC adhesives and sealants: A minimum of 85 percent of site-applied products used for the installation of subfloors and on the exterior of the project are in accordance with one of the following:</del> <del>5</del> <del>(1) The California Air Resources Board consumer products regulation as follows:</del> <del>(a) Construction Adhesives: VOC content not to exceed 7 percent by weight or 75 grams/liter, whichever is greater.</del> <del>(b) The VOC content of reactive sealants (i.e., silicones, polyurethanes, and hybrids, such as MS Polymer and silylated polyurethane resin or SPUR) not to exceed 4 percent by weight or 50 grams/liter, whichever is greater.</del> <del>(c) The VOC content of all other caulks and sealants not to exceed 2 percent by weight or 30 grams/liter, whichever is greater.</del> <del>(d) The VOC content of contact adhesives not to exceed 55 percent by weight or 480 grams/liter, whichever is greater.</del> <del>(2) GS-36</del> <del>11.901.9.2 Interior low-VOC adhesives and sealants. A minimum of 85 percent of site-applied products used within the interior of the building are in accordance with one of the following, as applicable.</del> <del>5</del> <del>(1) CDPH 01350, as certified by a third party program, such as the GREENGUARD Environmental Institute's Children and Schools Certification Program or the Scientific Certifications Systems Indoor Advantage Gold Program.</del> <del>(2) GS-36</del>  Replace section with language from 901.10 OR refer to section 901.10	Accept as modified	The modification will be based on the final version of the corresponding section of NGBS unless there is a material difference in that section as it pertains to remodeling.

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
184	774	Amanda Evans Santa Fe self	11.900 (IEQ practices) Revise as follows	11.902.1 Whole house ventilation should be required for remodel new construction. There is also no provision for mandatory kitchen fans for new construction in this section	(Follow the requirements for new construction)	Reject	In lieu of PC 193 / LogID 757 which covers this item
185	775	Amanda Evans Santa Fe self	11.900 (IEQ practices) Revise as follows	11.901.12 Carbon Monoxide alarms should be mandatory. Particularly when people are remodeling - and often tightening - existing buildings, there can be negative consequences to pressures in the house that can cause water heaters and other naturally rafting appliances to backdraft and spill carbon monoxide into the house. CO monitors should be mandatory if there are combustion appliances or fireplaces in the house	Make CO monitors mandatory here, instead of awarding points	Accept as modified	Add "battery operated are acceptable if not detectors are not required by local code".
186	782	Gregg Achman Hearth & Home Technologies Hearth & Home Technologies	11.900 (IEQ practices) Revise as follows	Need better clarification that in a remodel a "fireplace" means all wood burning (masonry and factory built) and gas, and to be consistent with 901.1.4, includes direct heating equipment. The statement Section 901.2.1(2)(a) is a potential safety issue and should not be included in the standard. This will be covered in a separate comment.	<b>11.901.2 Wood-burning and gas Fireplaces and fuel-burning direct heating equipment appliances.</b> Wood-burning and gas Fireplaces and fuel-burning appliances-direct heating equipment (except cooking appliances, clothes dryers, water heaters, and furnaces) located in conditioned space are in accordance with the following:  <b>Mandatory</b>  <del>[Section 901.2.1(2)(a) is not mandatory.]</del>	Reject	in deference to decisions by corresponding task groups at which time this will be reviewed to verify the final section is applicable to remodeling without further edits.
187	783	Gregg Achman Hearth & Home Technologies Hearth & Home Technologies	11.900 (IEQ practices) Revise as follows	11.901.2.1, as modified below, should be done as mandatory in a remodel to ensure that any fuel burning (wood and gas) appliances have the proper air for combustion and will not back draft. This section should not have an "in accordance with the following as applicable" because there is already a Re-work incentive to comply with 901.2.1, the intent of the section is to ensure that any existing appliances performance is not affected by the remodel and making it mandatory to ensure it but incentivizing them to upgrade to something complying to 901.2.1. All the other sub sections of 11.901.2.1 (other than the two re-work items) are not needed, they are what is being incented in the re-work. Also, 11.901.2.1(2)(a) is a safety issue, putting gasketed doors onto wood burning fireplaces can be a safety (fire hazard) issue, especially wood burning fireplaces that are not design certified for gasketed doors.	<b>11.901.2.1 New Work.</b> <del>Wood-burning Fireplaces and natural drafting gas fireplaces and direct heating equipment fuel-burning appliances</del> are code compliant, vented to the outdoors, and have adequate combustion and ventilation air provided to minimize spillage or back-drafting, <del>in accordance with the following, as applicable.</del> <u>Wood-burning fireplaces must have a means of sealing the flue to minimize interior air (heat) loss when not in operation.</u>  <b>Mandatory</b>	Reject	in deference to decisions by corresponding task groups at which time this will be reviewed to verify the final section is applicable to remodeling without further edits
188	784	Gregg Achman Hearth & Home Technologies Hearth & Home Technologies	11.900 (IEQ practices) Revise as follows	Section not needed, see comments on section 11.901.2.1	<del>11.901.2.1(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.</del>	Reject	in deference to decisions by corresponding task groups at which time this will be reviewed to verify the final section is applicable to remodeling without further edits
189	786	Gregg Achman Hearth & Home Technologies Hearth & Home Technologies	11.900 (IEQ practices) Revise as follows	All sections in and under 11.901.2.1(2) to be stricken, see previous comment to 11.901.2.1.	<del>11.901.1.2.1(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.  (b) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are EPA certified.  (c) Masonry heaters are in accordance with the definitions in ASTM E1602 and ICC-IBC, Section 2112.1.  (d) Pellet (biomass) stoves and furnaces are in accordance with the requirements of ASTM E1509 or are EPA certified.  (e) 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).</del>	Reject	in deference to decisions by corresponding task groups at which time this will be reviewed to verify the final section is applicable to remodeling without further edits
190	825	Amy Schmidt The Dow Chemical Company Dow Building Solutions	11.900 (IEQ practices) Delete without substitution	There should not be requirements for testing and certifying products that don't have IEQ issues.	Delete section	Reject	This section is consistent with the Standard for the new house provisions.

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
191	827	Amy Schmidt The Dow Chemical Company Dow Building Solutions	11.900 (IEQ practices) Revise as follows	The moisture content of wood is just as important as the moisture content of insulation. Both should be mandatory.	<b>11.903.4.2 Moisture control measures.</b>  Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the new finish flooring to be applied. <b>Mandatory</b>  <b>(1)</b> Building materials with visible mold are not installed or are cleaned or encapsulated prior to concealment and closing. <b>2</b>  <b>(3)</b> The moisture content of lumber is sampled to ensure it does not exceed 19 percent prior to the surface and/or wall cavity enclosure. <b>4-Mandatory</b>	Reject	based on this section being moved section 6 and that being consistent with Chapter 6
192	728	Josh Jacobs GREENGUARD Environmental Institute GREENGUARD Environmental Institute	Other for Chapter 11 (include section number and title below) Revise as follows	This comment should apply to all of Chapter 11 & 12 (all product emission sections (11.901.4, 11.901.5, 11.901.6, 11.901.7, 11.901.8, 11.901.9, 11.901.10, 11.901.11, 12.1.1.4 (b)/(c), 12.1.2.2(a), 12.2.2, 12.2.7, 12.2.9, 12.4.4.6, 12.4.4.7)) A great deal of work was done by work group 3 on chapter 9 to ensure that the correct information, standards, and details were used in the product emission section. I would ask that the information in chapter 9 be used to update all product emission sections of the renovation chapters.	Please use product emission credits in chapter 9 as substitutes for all relevant renovation chapters' product emission credits.	Accept	This has been addressed in PC 193 / LogID 757
193	757	Paul Sullivan The Sullivan Company, Inc. Task Group 7	Other for Chapter 11 (include section number and title below) Revise as follows	Comprehensive review of Chapter 11 by Task Group 7 chairs and NAHB Research Center has resulted in a series of proposed edits, many of which are a result of incorporating the changes made by other Task Groups in their respective sections. TG7 could not complete their revisions without the revisions of the other task groups in place so this work is put forth as public comment even though it is the task group work	See separate document sent to "standards" for Chapters 11 and 12  <b>Staff Note: The revised remodeling provisions are appended at the end of the document due to the large size of the submission.</b>	Accept	

## Chapter 12 Small Renovations

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
194	622	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	12.1 Bathroom renovations Revise as follows	The term "products" has been replaced to clarify that this section is addressing architectural coatings rather than sealants. Also, the compliance standards in 12.1.1.4(b) are the same as section 901.9.1, so in order to reduce redundancy, they have been removed and reference made to 901.9.1. Is this section supposed to include a threshold for 85% like other similar sections?	<del>12.1.1.4(b) Newly applied interior architectural coatings, which are inside the water proofing envelope, products are in accordance with section 901.9.1 one or more of the following standards:</del>  <del>Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)</del>  <del>CARB Suggested Control Measure for Architectural Coatings</del>  <del>GS-11</del>  <del>VOC limits in accordance with:</del>  <del>(a) 50 grams/liter flat</del>  <del>(b) 100 grams/liter non flat</del>  <del>(c) 350 grams/liter clear wood varnish</del>  <del>(d) 550 grams/liter clear wood lacquer</del>  <del>CDPH 01350, as certified by a third party program such as the GREENGUARD Environmental Institute's Children and Schools Certification Program or the Scientific Certification Systems Indoor Advantage Gold Program</del>	Accept	This has been addressed in PC 193 / LogID 757
195	623	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	12.1 Bathroom renovations Revise as follows	Replace the ambiguous term "products" with what the product is. Make reference to section 901.10 instead of repeating the resource references, including the 85% threshold requirement.	<del>12.1.1.4(c) Interior low-VOC adhesives and sealants. A minimum of 85 percent of newly applied low-VOC adhesives and sealants products used within the interior of the building are in accordance with section 901.10 one of the following, as applicable:</del>  <del>CDPH 01350, as certified by a third party program, such as the GREENGUARD Environmental Institute's Children and Schools Certification Program or the Scientific Certifications Systems Indoor Advantage Gold Program.</del>  <del>GS-36</del>	Accept	This has been addressed in PC 193 / LogID 757
196	636	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	12.1 Bathroom renovations Delete without substitution	Sections 11.603, 11.605, 12.1.1.1(b), 12.4.2.5 should all be removed or the specific requirements removed and they all make a general reference back to waste diversion requirements in chapter 6. The conflicts between sections are confusing and make it seem as though the sections have been written by different authors that have not shared information. For example, 12.1 is the first place where demolition waste diversion is addresses, but why should only bathroom remodels have the opportunity to recycle or salvage, when that could be applied to any project. Please coordinate and clarify these sections.	<del>12.1.1.4(b) Demolition Waste. All waste classified as hazardous generated during demolition shall be properly handled and disposed.</del>  <del>12.1.1.4(c) Demolition Waste. At least 50% of demolition waste not classified as hazardous is diverted from landfill.</del>	Accept	This has been addressed in PC 193 / LogID 757
197	701	Michael Cudahy PPFA PPFA	12.1 Bathroom renovations Delete and substitute as follows	VOC sections in small renovations do not match VOC sections in new construction. This could become an issue. For consistency, please revise to match, or simply refer back to the relevant section.	<del>12.1.1.4(c) Interior low-VOC adhesives and sealants. A minimum of 85 percent of newly applied products used within the interior of the building are in accordance with one of the following, as applicable:</del> <del>CDPH 01350, as certified by a third party program, such as the GREENGUARD Environmental Institute's Children and Schools Certification Program or the Scientific Certifications Systems Indoor Advantage Gold Program.</del> <del>GS-36</del>  Refer to, or replace with, language from section 901.10	Accept	This has been addressed in PC 193 / LogID 757

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason																																																																						
198	768	Eric Lacey RECA RECA	12.1 Bathroom renovations Revise as follows	One of the most critical improvements to a renovated building's energy efficiency is high-efficiency fenestration. The renovations chapter makes improved fenestration mandatory in many scenarios, but cites values from an outdated Energy Star standard. Consistent with RECA's other proposals, we urge the Committee to adopt the superior fenestration requirements in the 2012 IECC. However, if the Committee determines that the 2009 IECC is the appropriate baseline, we recommend at least updating the mandatory fenestration efficiency requirements to the 2009 IECC to maintain consistency with the new construction requirements of the NGBS. For convenience, both options are outlined below. Recognizing that any of the recommended standards represent an improvement in energy efficiency, we have also added the flexibility of an area-weighted average – something not available in the 2008 NGBS fenestration requirements.	<p><b>12.1.1.2(a) Fenestration.</b> NFRC-certified U-factor and SHGC windows, exterior doors, skylights, and tubular daylighting devices (TDDs) on an area-weighted average basis are in accordance with <del>ENERGY STAR, or equivalent, or Table 701.4.4.4 12.1.1.2(a)</del>. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m<sup>2</sup>) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</p> <p><b>[Option 1: 2012 IECC]</b></p> <p><b>Table 701.4.4.4 12.1.1.2(a) Fenestration Specifications</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Climate Zones</th> <th>U-Factor</th> <th>SHGC</th> </tr> <tr> <th colspan="2">Windows and Exterior Doors (maximum certified ratings)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.50</td> <td>0.25</td> </tr> <tr> <td><del>1 and 2</del></td> <td><del>0.65</del> 0.40</td> <td><del>0.40</del> 0.25</td> </tr> <tr> <td>3</td> <td>0.40 0.35</td> <td>0.40 0.25</td> </tr> <tr> <td>4 to 8</td> <td>0.35 0.35</td> <td>Any 0.40</td> </tr> <tr> <td>5 to 8</td> <td>0.32</td> <td>Any</td> </tr> <tr> <td colspan="3">Skylights and TDDs</td> </tr> <tr> <td><del>1 to 3</del></td> <td><del>0.75</del> 0.75</td> <td>0.40 0.25</td> </tr> <tr> <td>2</td> <td>0.65</td> <td>0.25</td> </tr> <tr> <td><del>3 4 to 8</del></td> <td><del>0.60</del> 0.55</td> <td>Any 0.25</td> </tr> <tr> <td>4</td> <td>0.55</td> <td>0.40</td> </tr> <tr> <td>5 to 8</td> <td>0.55</td> <td>Any</td> </tr> </tbody> </table> <p><sup>1</sup> Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.</p> <p><b>[Option 2: 2009 IECC]</b></p> <p><b>Table 701.4.4.4 12.1.1.2(a) Fenestration Specifications</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Climate Zones</th> <th>U-Factor</th> <th>SHGC</th> </tr> <tr> <th colspan="2">Windows and Exterior Doors (maximum certified ratings)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1.20</td> <td>0.30</td> </tr> <tr> <td><del>1 and 2</del></td> <td>0.65</td> <td><del>0.40</del> 0.30</td> </tr> <tr> <td>3</td> <td><del>0.40</del> 0.50</td> <td><del>0.40</del> 0.30</td> </tr> <tr> <td>4 to 8</td> <td>0.35</td> <td>Any</td> </tr> <tr> <td colspan="3">Skylights and TDDs</td> </tr> <tr> <td><del>1 to 3</del></td> <td><del>0.75</del> 0.75</td> <td>0.40 0.30</td> </tr> <tr> <td>2</td> <td>0.75</td> <td>0.30</td> </tr> <tr> <td><del>3 4 to 8</del></td> <td><del>0.60</del> 0.65</td> <td>Any 0.30</td> </tr> <tr> <td>4 to 8</td> <td>0.60</td> <td>Any</td> </tr> </tbody> </table>	Climate Zones	U-Factor	SHGC	Windows and Exterior Doors (maximum certified ratings)		1	0.50	0.25	<del>1 and 2</del>	<del>0.65</del> 0.40	<del>0.40</del> 0.25	3	0.40 0.35	0.40 0.25	4 to 8	0.35 0.35	Any 0.40	5 to 8	0.32	Any	Skylights and TDDs			<del>1 to 3</del>	<del>0.75</del> 0.75	0.40 0.25	2	0.65	0.25	<del>3 4 to 8</del>	<del>0.60</del> 0.55	Any 0.25	4	0.55	0.40	5 to 8	0.55	Any	Climate Zones	U-Factor	SHGC	Windows and Exterior Doors (maximum certified ratings)		1	1.20	0.30	<del>1 and 2</del>	0.65	<del>0.40</del> 0.30	3	<del>0.40</del> 0.50	<del>0.40</del> 0.30	4 to 8	0.35	Any	Skylights and TDDs			<del>1 to 3</del>	<del>0.75</del> 0.75	0.40 0.30	2	0.75	0.30	<del>3 4 to 8</del>	<del>0.60</del> 0.65	Any 0.30	4 to 8	0.60	Any	Reject	to stay consistent with mandatory fenestration requirements of Chapter 7
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199	624	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	12.2 Green kitchen remodel Revise as follows	The term "paint products" has been clarified. Also, the compliance standards in 12.2.2 are the same as section 901.9.1, so in order to reduce redundancy, they have been removed and reference made to 901.9.1. Is this section supposed to include a threshold for 85% like other similar sections?	<del>12.2.2 Newly applied interior architectural coatings, which are inside the water proofing envelope, paint products are in accordance with one or more of the following standards:</del>  <del>Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)</del>  <del>CARB Suggested Control Measure for Architectural Coatings</del>  <del>GS-11</del>  <del>VOC limits in accordance with:</del>  <del>(a) 50 grams/liter flat</del>  <del>(b) 100 grams/liter non flat</del>  <del>(c) 350 grams/liter clear wood varnish</del>  <del>(d) 550 grams/liter clear wood lacquer</del>  <del>CDPH 01350, as certified by a third party program such as the GREENGUARD Environmental Institute's Children and Schools Certification Program or the Scientific Certification Systems Indoor Advantage Gold Program</del>	Reject	Remodeling is a stand alone chapter and TG7 desires to keep all the information in one place for remodelers.
200	625	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	12.2 Green kitchen remodel Revise as follows	Replace the ambiguous term "products" with what the product is. Make reference to section 901.10 instead of repeating the resource references. Is there supposed to be an 85% threshold requirement such as is in other similar sections?	<del>12.2.9 Interior low-VOC adhesives and sealants. All newly applied low-VOC adhesives and sealants products used within the interior of the building are in accordance with section 901.10, one of the following, as applicable.</del>  <del>CDPH 01350, as certified by a third party program, such as the GREENGUARD Environmental Institute's Children and Schools Certification Program or the Scientific Certifications Systems Indoor Advantage Gold Program.</del>  <del>GS-36</del>	Reject	Remodeling is a stand alone chapter and TG7 desires to keep all the information in one place for remodelers.
201	702	Michael Cudahy PPFA PPFA	12.2 Green kitchen remodel Delete and substitute as follows	VOC sections in small renovations do not match VOC sections in new construction. This could become an issue. For consistency, please revise to match, or simply refer back to the relevant section.	<del>12.2.9 Interior low-VOC adhesives and sealants. All newly applied products used within the interior of the building are in accordance with one of the following, as applicable.</del> <del>CDPH 01350, as certified by a third party program, such as the GREENGUARD Environmental Institute's Children and Schools Certification Program or the Scientific Certifications Systems Indoor Advantage Gold Program.</del> <del>GS-36</del>  Replace section with language from 901.10 OR refer to section 901.10	Accept	This has been addressed in PC 193 / LogID 757
202	746	Susan Gitlin US Environmental Protection Agency US Environmental Protection Agency	12.2 Green kitchen remodel Revise as follows	a) Section 12.2.12 states that all hazardous material that is removed or disturbed must be properly handled and disposed. This section should be further refined to note that this includes refrigerators and freezers, which contain hazardous materials subject to regulatory disposal requirements. b) Section 12.2.13 states that practice details for the disposal of an existing kitchen are to be determined. EPA suggests that the practice details specify that refrigerators and freezers be sent to a local recycling facility that handles the refrigerant, foam, hazardous materials and recyclables in accordance with the requirements of the RAD Program.	.	Accept as modified	All original kitchen appliances must be disposed of per EPA guidelines

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203	770	Eric Lacey RECA RECA	12.2 Green kitchen remodel Revise as follows	One of the most critical improvements to a renovated building's energy efficiency is high-efficiency fenestration. The renovations chapter makes improved fenestration mandatory in many scenarios, but cites values from an outdated Energy Star standard. Consistent with RECA's other proposals, we urge the Committee to adopt the superior fenestration requirements in the 2012 IECC. However, if the Committee determines that the 2009 IECC is the appropriate baseline, we recommend at least updating the mandatory fenestration efficiency requirements to the 2009 IECC to maintain consistency with the new construction requirements of the NGBS. For convenience, both options are outlined below. This proposal also maintains consistency with other fenestration requirements in the NGBS by requiring NFRC certification of the fenestration efficiency. This will ensure that the windows are objectively certified to meet the listed criteria and will simplify enforcement. Recognizing that any of the recommended standards represent an improvement in energy efficiency, we have also added the flexibility of an area-weighted average – something not available in the 2008 NGBS fenestration requirements.	<p><b>12.2.3 Fenestration.</b> Newly installed windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are <u>NFRC-certified and in accordance with ENERGY STAR, or equivalent, or Table 701.4.4.4 12.1.1.2(a), on an area-weighted average basis.</u> Decorative fenestration elements with a maximum area of 15 square feet (1.39 m<sup>2</sup>) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</p> <p><b>[Option 1: 2012 IECC]</b></p> <p><b>Table 701.4.4.4 12.2.3 Fenestration Specifications</b></p> <table border="1"> <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 colspan="2">0.50</td> <td colspan="2">0.25</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 colspan="2">0.35 0.35</td> <td colspan="2">Any 0.40</td> </tr> <tr> <td>5 to 8</td> <td colspan="2">0.32</td> <td colspan="2">Any</td> </tr> <tr> <td colspan="5">Skylights and TDDs</td> </tr> <tr> <td>1 to 3</td> <td>0.75</td> <td>0.75</td> <td>0.40</td> <td>0.25</td> </tr> <tr> <td>2</td> <td colspan="2">0.65</td> <td colspan="2">0.25</td> </tr> <tr> <td>3 4 to 8</td> <td>0.60</td> <td>0.55</td> <td>Any</td> <td>0.25</td> </tr> <tr> <td>4</td> <td colspan="2">0.55</td> <td colspan="2">0.40</td> </tr> <tr> <td>5 to 8</td> <td colspan="2">0.55</td> <td colspan="2">Any</td> </tr> </tbody> </table> <p><sup>1</sup> Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.</p> <p><b>[Option 2: 2009 IECC]</b></p> <p><b>Table 701.4.4.4 12.1.1.2(a) Fenestration Specifications</b></p> <table border="1"> <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 colspan="2">1.20</td> <td colspan="2">0.30</td> </tr> <tr> <td>1 and 2</td> <td colspan="2">0.65</td> <td>0.40</td> <td>0.30</td> </tr> <tr> <td>3</td> <td>0.40</td> <td>0.50</td> <td>0.40</td> <td>0.30</td> </tr> <tr> <td>4 to 8</td> <td colspan="2">0.35</td> <td colspan="2">Any</td> </tr> <tr> <td colspan="5">Skylights and TDDs</td> </tr> <tr> <td>1 to 3</td> <td>0.75</td> <td>0.75</td> <td>0.40</td> <td>0.30</td> </tr> <tr> <td>2</td> <td colspan="2">0.75</td> <td colspan="2">0.30</td> </tr> <tr> <td>3 4 to 8</td> <td>0.60</td> <td>0.65</td> <td>Any</td> <td>0.30</td> </tr> <tr> <td>4 to 8</td> <td colspan="2">0.60</td> <td colspan="2">Any</td> </tr> </tbody> </table>	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 0.35		Any 0.40		5 to 8	0.32		Any		Skylights and TDDs					1 to 3	0.75	0.75	0.40	0.25	2	0.65		0.25		3 4 to 8	0.60	0.55	Any	0.25	4	0.55		0.40		5 to 8	0.55		Any		Climate Zones	U-Factor		SHGC		Windows and Exterior Doors (maximum certified ratings)				1	1.20		0.30		1 and 2	0.65		0.40	0.30	3	0.40	0.50	0.40	0.30	4 to 8	0.35		Any		Skylights and TDDs					1 to 3	0.75	0.75	0.40	0.30	2	0.75		0.30		3 4 to 8	0.60	0.65	Any	0.30	4 to 8	0.60		Any		Mandatory	Reject	to stay consistent with mandatory fenestration requirements of Chapter 7
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204	828	Amy Schmidt The Dow Chemical Company Dow Building Solutions	12.2 Green kitchen remodel Revise as follows	12.2.4 Insulation should be consistent with the base code as a minimum.	Insert values at base code levels at a minimum.	Reject	Not all kitchen remodels will involve opening walls to replace the insulation. Substantial energy, water and material resource efficiency can be achieved without the removal of existing finishes that may be perfectly good and would only increase jobsite waste and consumption of virgin material																																																																																																																							



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205	626	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	12.3 Basement remodeling Revise as follows	12.3.13 states that it applies to paints and sealants but the reference standards appear to apply only to paints. Revise by referring to the actual sections 901.9.1 and 901.10. The term "products" has been clarified. Is this section supposed to include a threshold for 85% like other similar sections?	<b>12.3.13 Paint and Stain</b>  <del>Newly applied interior paint or stain products architectural coatings or low-VOC adhesives and sealants are in accordance with sections 901.9.1 or 901.10, as applicable one or more of the following standards:</del>  <del>Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)</del>  <del>CARB Suggested Control Measure for Architectural Coatings</del>  <del>GS-11</del>  <del>VOC limits in accordance with:</del>  <del>(a) 50 grams/liter flat</del>  <del>(b) 100 grams/liter non flat</del>  <del>(c) 350 grams/liter clear wood varnish</del>  <del>(d) 550 grams/liter clear wood lacquer</del>  <del>CDPH 01350, as certified by a third-party program such as the GREENGUARD Environmental Institute's Children and Schools Certification Program or the Scientific Certification Systems Indoor Advantage Gold Program</del>	Reject	Remodeling is a standalone chapter and TG7 desires to keep all the information in one place for remodelers
206	747	Susan Gitlin US Environmental Protection Agency US Environmental Protection Agency	12.3 Basement remodeling Revise as follows	Section 12.3.11: Appliances states that ENERGY STAR® appliances should be installed where available. In addition, to achieve maximum energy savings and environmental benefits, any old secondary refrigerators or freezers found in the basement should be disposed of properly.	.	Accept	
207	756	Jamie Hager Southern Energy Management self	12.3 Basement remodeling Revise as follows	12.3.7 regarding mold resistant sheetrock -- does this apply to interior and exterior walls? Since mold is a moisture problem, an alternative humidity management system should be allowed instead of mold resistant drywall	Offer an alternative to mold-resistant drywall since mold is a moisture issue more than a material issue. As an alternative, allow projects to provide at minimum a moisture management plan that includes a humidistat and dehumidification strategy if the basement space is unconditioned and there are no moisture issues due to site grading.	Reject	in favor of PC 193 / LogID 757.
208	829	Amy Schmidt The Dow Chemical Company Dow Building Solutions	12.3 Basement remodeling Revise as follows	12.3.6 insulation should be installed at base code values at a minimum.	Insert base code values at a minimum.	Reject	in favor of PC 193 / LogID 757.
209	637	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	12.4 Small addition Delete without substitution	Sections 11.603, 11.605, 12.1.1.1(b), 12.4.2.5 should all be removed or the specific requirements removed and they all make a general reference back to waste diversion requirements in chapter 6. The conflicts between sections are confusing and make it seem as though the sections have been written by different authors that have not shared information. For example, 12.1 is the first place where demolition waste diversion is addresses, but why should only bathroom remodels have the opportunity to recycle or salvage, when that could be applied to any project. Please coordinate and clarify these sections.	<del><b>12.4.2.5 Construction waste management plan:</b> A construction waste management plan is developed, posted at the jobsite, and implemented with a goal of recycling or salvaging a minimum of 50 percent (by weight) of construction and land-clearing waste. The construction waste management plan includes information on the proper handling and disposal of hazardous wastes</del>  <del><b>12.4.2.6 Hazardous waste:</b> All waste classified as hazardous waste is properly handled and disposed of.</del>	Accept in principle	See PC 193 / LogID 757.

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210	703	Michael Cudahy PPFA PPFA	12.4 Small addition Delete and substitute as follows	VOC sections in small renovations do not match VOC sections in new construction. This could become an issue. For consistency, please revise to match, or simply refer back to the relevant section.	<p><del>12.4.4.6 Adhesives and sealant when building is occupied (per 901.9)</del>  <del>Adhesives and sealants. When the building is occupied during the construction of the addition, a minimum of 85 percent of site-applied adhesives and sealants are in accordance with Section 901.9.1 and/or Section 901.9.2.</del>            901.9.1 Exterior low-VOC adhesives and sealants: A minimum of 85 percent of site-applied products used for the installation of subfloors and on the exterior of the project are in accordance with one of the following:            (1) The California Air Resources Board consumer products regulation as follows:            (a) Construction Adhesives: VOC content not to exceed 7 percent by weight or 75 grams/liter, whichever is greater.            (b) The VOC content of reactive sealants (i.e., silicones, polyurethanes, and hybrids, such as MS Polymer and silylated polyurethane resin or SPUR) not to exceed 4 percent by weight or 50 grams/liter, whichever is greater.            (c) The VOC content of all other caulks and sealants not to exceed 2 percent by weight or 30 grams/liter, whichever is greater.            (d) The VOC content of contact adhesives not to exceed 55 percent by weight or 480 grams/liter, whichever is greater.            (2) GS-36</p> <p>Replace section with language from 901.10 OR refer to section 901.10</p>	Accept in principle	Accept in principle. See PC 193 / LogID 757.																																																																																																																						
211	771	Eric Lacey RECA RECA	12.4 Small addition Revise as follows	One of the most critical improvements to a green building project is highly-efficient fenestration. The small additions chapter makes improved fenestration mandatory in many scenarios, but cites values from an outdated Energy Star standard. Consistent with RECA's other proposals, we urge the Committee to adopt the superior fenestration requirements in the 2012 IECC. However, if the Committee determines that the 2009 IECC is the appropriate baseline, we recommend at least updating the mandatory fenestration efficiency requirements to the 2009 IECC to maintain consistency with the new construction requirements of the NGBS. For convenience, both options are outlined below. This proposal also maintains consistency with other fenestration requirements in the NGBS by requiring NFRC certification of the fenestration efficiency. This will ensure that the windows are objectively certified to meet the listed criteria and will simplify enforcement. Recognizing that any of the recommended standards represent an improvement in energy efficiency, we have also added the flexibility of an area-weighted average – something not available in the 2008 NGBS fenestration requirements.	<p><del>12.4.3.4 Fenestration (per 701.4.4.1 703.1.6).</del> NFRC-certified U-factor and SHGC windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with <del>ENERGY STAR, or equivalent, or Table 701.4.4.4 12.4.3.4,</del> on an <del>area-weighted average basis.</del> Decorative fenestration elements with a maximum area of 15 square feet (1.39 m<sup>2</sup>) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</p> <p><b>[Option 1: 2012 IECC]</b>  <b>Table 701.4.4.4 12.4.3.4 Fenestration Specifications</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Climate Zones</th> <th colspan="2">U-Factor</th> <th colspan="2">SHGC</th> </tr> <tr> <th colspan="2">Windows and Exterior Doors (maximum certified ratings)</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>1</td> <td colspan="2">0.50</td> <td colspan="2">0.25</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>0.35</td> <td colspan="2">Any 0.40</td> </tr> <tr> <td>5 to 8</td> <td colspan="2">0.32</td> <td colspan="2">Any</td> </tr> <tr> <td colspan="5">Skylights and TDDs</td> </tr> <tr> <td>1 to 3</td> <td>0.75</td> <td>0.75</td> <td>0.40</td> <td>0.25</td> </tr> <tr> <td>2</td> <td colspan="2">0.65</td> <td colspan="2">0.25</td> </tr> <tr> <td>3 4 to 8</td> <td>0.60</td> <td>0.55</td> <td colspan="2">Any 0.25</td> </tr> <tr> <td>4</td> <td colspan="2">0.55</td> <td colspan="2">0.40</td> </tr> <tr> <td>5 to 8</td> <td colspan="2">0.55</td> <td colspan="2">Any</td> </tr> </tbody> </table> <p><sup>1</sup> Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.</p> <p><b>[Option 2: 2009 IECC]</b>  <b>Table 701.4.4.4 12.4.3.4 Fenestration Specifications</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Climate Zones</th> <th colspan="2">U-Factor</th> <th colspan="2">SHGC</th> </tr> <tr> <th colspan="2">Windows and Exterior Doors (maximum certified ratings)</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>1</td> <td colspan="2">1.20</td> <td colspan="2">0.30</td> </tr> <tr> <td>1 and 2</td> <td colspan="2">0.65</td> <td>0.40</td> <td>0.30</td> </tr> <tr> <td>3</td> <td>0.40</td> <td>0.50</td> <td>0.40</td> <td>0.30</td> </tr> <tr> <td>4 to 8</td> <td colspan="2">0.35</td> <td colspan="2">Any</td> </tr> <tr> <td colspan="5">Skylights and TDDs</td> </tr> <tr> <td>1 to 3</td> <td>0.75</td> <td>0.75</td> <td>0.40</td> <td>0.30</td> </tr> <tr> <td>2</td> <td colspan="2">0.75</td> <td colspan="2">0.30</td> </tr> <tr> <td>3 4 to 8</td> <td>0.60</td> <td>0.65</td> <td colspan="2">Any 0.30</td> </tr> <tr> <td>4 to 8</td> <td colspan="2">0.60</td> <td colspan="2">Any</td> </tr> </tbody> </table>	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	0.35	Any 0.40		5 to 8	0.32		Any		Skylights and TDDs					1 to 3	0.75	0.75	0.40	0.25	2	0.65		0.25		3 4 to 8	0.60	0.55	Any 0.25		4	0.55		0.40		5 to 8	0.55		Any		Climate Zones	U-Factor		SHGC		Windows and Exterior Doors (maximum certified ratings)				1	1.20		0.30		1 and 2	0.65		0.40	0.30	3	0.40	0.50	0.40	0.30	4 to 8	0.35		Any		Skylights and TDDs					1 to 3	0.75	0.75	0.40	0.30	2	0.75		0.30		3 4 to 8	0.60	0.65	Any 0.30		4 to 8	0.60		Any		Reject	to stay consistent with mandatory fenestration requirements of Chapter 7
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212	788	Gregg Achman Hearth & Home Technologies Hearth & Home Technologies	12.4 Small addition Revise as follows	Section 12.4.4.2 Fireplaces etc.. should be the same as 11.901.2 and all other requirements deleted. See my comments on 11.901.2.1.	12.4.4.2 Fireplaces, etc (per 901.2.1)  <u>Wood-burning Fireplaces and natural drafting gas fireplaces and direct heating equipment 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. Wood burning fireplaces must have a means of sealing the flue to minimize interior air (heat) loss when not in operation.</u>	Reject	in favor of PC 193 / LogID 757.
213	654	Naveen Berry SCAQMD SCAQMD	Other for Chapter 12 (include section number and title below) Delete and substitute as follows	Disagree with various VOC content limits for architectural coating categories. SCAQMD's Rule 1113 Architectural Coatings was recently amended on June 3, 2011. The following changes should be made to reflect the current R1113 VOC limits.	Section <u>12.3.13 Paint and Stain</u> ,  Non-Flat – <del>400</del> <u>50</u> Clear Wood Varnish – <del>350</del> <u>275</u> Clear Wood Lacquer – <del>550</del> <u>275</u>	Reject	in favor of the provisions approved by the Chapter 9 Task group.
214	655	Naveen Berry SCAQMD SCAQMD	Other for Chapter 12 (include section number and title below) Delete and substitute as follows	Disagree with various VOC content limits for architectural coating categories. SCAQMD's Rule 1113 Architectural Coatings was recently amended on June 3, 2011. The following changes should be made to reflect the current R1113 VOC limits.	Section <u>12.4.4.6 Architectural Coatings when building is occupied</u> ,  Non-Flat – <del>400</del> <u>50</u> Clear Wood Varnish – <del>350</del> <u>275</u> Clear Wood Lacquer – <del>550</del> <u>275</u>	Reject	in favor of the provisions approved by the Chapter 9 Task group.
215	691	Robert Hill NAHB Research Center NAHB Research Center	Other for Chapter 12 (include section number and title below) Delete and substitute as follows	The small project remodeling requirements are not complete. Although the intent was to have some mandatory practices and require a percentage of optional practices, some project types do not have any optional practices and others have too few to make it worthwhile.	Task Group 7 is working on a revised version that I believe will address my concerns. That version should be substituted for the current Chapter 12.	Accept with modifications	per PC 193 / LogID 757.
216	758	Paul Sullivan The Sullivan Company, Inc. Task Group 7	Other for Chapter 12 (include section number and title below) Revise as follows	Comprehensive review of Chapter 12 by Task Group 7 chairs and NAHB Research has resulted in a new Chapter 12. Previous Chapter 12 was accepted with the understanding that additional work would take place once the other task groups finished their revisions.	See separate document on Chapters 11 and 12 that is being sent to "standards"  <b>Staff Note: The revised remodeling provisions are appended at the end of the document due to the large size of the submission.</b>	Accept with modifications	per PC 193 / LogID 757.
217	831	Craig Conner Building Quality self	Other for Chapter 12 (include section number and title below) Revise as follows	The renovations section needs to be completed before it can get a realistic review. It should not go out with the rest of the standard. A few examples follow. 11.502.1 A knowledgeable team is established and team member roles are identified with respect to green lot design, preparation, and re-development. The project's green goals and objectives are written into a mission statement. ---What is a knowledgeable team? 11.505.2 (2) Light-colored hardscaping: Horizontal hardscaping materials are installed with a solar reflectance index of 29 or greater. ---SRI is an inappropriate measure of thermally massive materials like hardscape. Suggest reflectivity of 0.30 as appropriate. 11.610.1 Manufacturer's environmental management system concepts. Product manufacturer's operations and business practices include environmental management system concepts, and the production facility is certified to ISO 14001 or equivalent. The aggregate value of building products from certified ISO 14001 or equivalent production facilities is 1 percent or more of the estimated total building materials cost. (1 point awarded per percent.) ---This is trivial. It would be difficult not to meet this. 11.701.4.1.2 HVAC Systems TG 7 will need to see what the task group on this section changes in order to complete this. ---This is clearly not done. 11.902.1 (2) Clothes dryers are vented to the outdoors. ---So is the intention to ban condensing dryers, which are permitted by code? This is not ready. 12.1.1.1 (a) Recycled content. Building materials with recycled content are used for two minor or major components of the renovation. ---Any amount of recycled content? For many types of materials it would be hard not to meet this requirement. For example anything with steel in it would pass? ---When windows or equipment is replaced, the same efficiency requirements as in the energy chapter should apply. 12.1.1.6 Home Owner Education 12.1.1.6 (a) Building owners/occupants are familiarized with the green building goals and strategies implemented during the renovation and the impacts of the occupants' practices on the costs of operating the building. Training is provided to the responsible party(ies) regarding all equipment operation and control systems in the bathroom. ---This is vague and/or trivial. This says you train them in how to operate the bathroom? What are the control systems in the bathroom? 12.1.2.1(b) Recycled content. Building materials with recycled content are used in the renovation meeting one of the criteria in Table 12.1.2.1(a). These materials are in excess of those required to meet 12.1.1.1(e). Table 12.1.2.1(a) ---The goals in this table are trivial. 12.2.4 All gutted or newly constructed exterior walls and exterior ceilings must be insulated to a minimum R- value for the climate zone per table. "Can	Neither remodeling nor small renovations is not ready for review. It is a mistake to include these in a standard. Another public review is required when the draft of these sections is completed.	Reject	in lieu of PC 193 / LogID 757.

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
				<p>we insert values based on current code?" Minimum R-value Table has no values. --- This is clearly not ready for review. 12.2.11 A garbage disposal must be installed in the kitchen sink unless local regulations prohibit installation. ---Why would a green code require this? 12.2.12 All hazardous material that is removed or disturbed must be properly handled and disposed. 12.2.13 Lighting – practice details TBD 12.2.13 Disposal of Existing Kitchen – practice details TBD 12.2.14 Water Usage – practice details TBD ---Again not ready. The renovations section needs to be completed before it can get a realistic review. It should not go out with the rest of the standard. 11.502.1 A knowledgeable team is established and team member roles are identified with respect to green lot design, preparation, and re-development. The project's green goals and objectives are written into a mission statement. ---What is a knowledgeable team? 11.505.2 (2) Light-colored hardscaping: Horizontal hardscaping materials are installed with a solar reflectance index of 29 or greater. ---SRI is an inappropriate measure of thermally massive materials like hardscape. Suggest reflectivity of 0.30 as appropriate. 11.610.1 Manufacturer's environmental management system concepts. Product manufacturer's operations and business practices include environmental management system concepts, and the production facility is certified to ISO 14001 or equivalent. The aggregate value of building products from certified ISO 14001 or equivalent production facilities is 1 percent or more of the estimated total building materials cost. (1 point awarded per percent.) --- This is trivial. It would be difficult not to meet this. 11.701.4.1.2 HVAC Systems TG 7 will need to see what the task group on this section changes in order to complete this. ---This is clearly not done. 11.902.1 (2) Clothes dryers are vented to the outdoors. --- So is the intention to ban condensing dryers, which are permitted by code? This is not ready. 12.1.1.1 (a) Recycled content. Building materials with recycled content are used for two minor or major components of the renovation. ---Any amount of recycled content? For many types of materials it would be hard not to meet this requirement. For example anything with steel in it would pass? ---When windows or equipment is replaced, the same efficiency requirements as in the energy chapter should apply. 12.1.1.6 Home Owner Education 12.1.1.6 (a) Building owners/occupants are familiarized with the green building goals and strategies implemented during the renovation and the impacts of the occupants' practices on the costs of operating the building. Training is provided to the responsible party(ies) regarding all equipment operation and control systems in the bathroom. ---This is vague and/or trivial. This says you train them in how to operate the bathroom? What are the control systems in the bathroom? 12.1.2.1(b) Recycled content. Building materials with recycled content are used in the renovation meeting one of the criteria in Table 12.1.2.1(a). These materials are in excess of those required to meet 12.1.1.1(e). Table 12.1.2.1(a) ---The goals in this table are trivial. 12.2.4 All gutted or newly constructed exterior walls and exterior ceilings must be insulated to a minimum R- value for the climate zone per table: "Can we insert values based on current code?" Minimum R-value Table has no values. ---This is clearly not ready for review. 12.2.11 A garbage disposal must be installed in the kitchen sink unless local regulations prohibit installation. ---Why would a green code require this? 12.2.12 All hazardous material that is removed or disturbed must be properly handled and disposed. 12.2.13 Lighting – practice details TBD 12.2.13 Disposal of Existing Kitchen – practice details TBD 12.2.14 Water Usage – practice details TBD ---Again not ready.</p>			

**Chapter 13 Referenced Documents**

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason																								
218	772	Eric Lacey RECA RECA	1302 Referenced Documents Revise as follows	As a part of the 2012 family of International Codes, the National Green Building Standard should reference only the latest versions of the International Codes wherever possible. Because the all 2012 International Codes are currently available, and because a number of states are already beginning the process of adopting the 2012 International Codes, the updated NGBS should reference the 2012 versions.	<p style="text-align: center;">Chapter 13</p> <p style="text-align: center;">Referenced Documents</p> <table border="1"> <tr> <td>IBC</td> <td><del>2006</del>-2012</td> <td>International Building Code</td> <td>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><del>2004</del> 2012</td> <td>International Energy Conservation Code</td> <td>B201.1</td> </tr> <tr> <td>IECC</td> <td><del>2006</del>-2012</td> <td>International Energy Conservation Code</td> <td>701.1.1, 702.2, 703.1.1</td> </tr> <tr> <td>IMC</td> <td><del>2006</del>-2012</td> <td>International Mechanical Code</td> <td>701.4.2.1, 704.6.1(1)</td> </tr> <tr> <td>IPC</td> <td><del>2006</del>-2012</td> <td>International Plumbing Code</td> <td>903.5.3</td> </tr> <tr> <td>IRC</td> <td><del>2006</del>-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	<del>2006</del> -2012	International Building Code	202, 602.3.1, 602.9, 602.10, 703.1.1, 901.2.1(2)(e), 1001.1(10)	IECC	<del>2004</del> 2012	International Energy Conservation Code	B201.1	IECC	<del>2006</del> -2012	International Energy Conservation Code	701.1.1, 702.2, 703.1.1	IMC	<del>2006</del> -2012	International Mechanical Code	701.4.2.1, 704.6.1(1)	IPC	<del>2006</del> -2012	International Plumbing Code	903.5.3	IRC	<del>2006</del> -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)	Reject	Based on the action on items PC 096 and 097 / Log ID 792 and 793.
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219	787	Bridget Herring Mathis Consulting Company Mathis Consulting Company	1302 Referenced Documents Revise as follows	Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable.	<table border="1"> <tr> <td>IBC</td> <td><del>2006</del><del>2009</del>2012</td> <td>International Building Code</td> <td></td> </tr> <tr> <td>IECC</td> <td>2004</td> <td>International Energy Conservation Code</td> <td></td> </tr> <tr> <td>IECC</td> <td><del>2006</del><del>2009</del>2012</td> <td>International Energy Conservation Code</td> <td></td> </tr> <tr> <td>IMC</td> <td><del>2006</del><del>2009</del>2012</td> <td>International Mechanical Code</td> <td></td> </tr> <tr> <td>IPC</td> <td><del>2006</del><del>2009</del>2012</td> <td>International Plumbing Code</td> <td></td> </tr> <tr> <td>IRC</td> <td><del>2006</del><del>2009</del>2012</td> <td>International Residential Code</td> <td></td> </tr> </table>	IBC	<del>2006</del> <del>2009</del> 2012	International Building Code		IECC	2004	International Energy Conservation Code		IECC	<del>2006</del> <del>2009</del> 2012	International Energy Conservation Code		IMC	<del>2006</del> <del>2009</del> 2012	International Mechanical Code		IPC	<del>2006</del> <del>2009</del> 2012	International Plumbing Code		IRC	<del>2006</del> <del>2009</del> 2012	International Residential Code		Reject	Based on the action on items PC 096 and 097 / Log ID 792 and 793.
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**NATIONAL GREE BUILDING STANDARD 2012  
PUBLIC COMMENTS**

SUBMITTED BY: Paul Sullivan CGP as chair and on behalf of Task Group 7

**CHAPTER 2 Definitions**

Section 202

Action: Delete definitions for Major Remodeling and Minor Remodeling  
Reason: The public comment for Chapter 11 that follows makes both of these definitions obsolete

**CHAPTER 3 Compliance Method**

Action: Replace entire section 305 with the following new section 305.  
Reason: This new section will reflect the public comment suggestions made in chapters 11 and 12

NOTE: The language is NOT underlined for clarity.

**305 Remodeling of existing buildings**

**305.1 Compliance options.** The criteria for existing buildings shall be in accordance with Section 305.2 for whole-building ratings or Section 305.3 for compliance designations of building functional areas.

**305.2 Whole-building rating criteria**

**305.2.1 Applicability.** The provisions of Section 305.2 shall apply to remodeling of existing buildings. In addition to the foundation, at least one major structural system (such as walls) of the existing building shall remain in place after the remodel for the building to be eligible for compliance under Section 305.2.

**305.2.1.1 Additions.** For a remodeled building that includes an addition, the entire building including the addition shall comply with the criteria of Section 305.2. The total above-grade conditioned area added during a remodel shall not exceed 75% of the existing building's above-grade conditioned area. For multi-unit buildings, the above-grade conditioned area shall be based on the entire building including all dwelling units and common areas.

**305.2.2 Rating scope.** The building rating achieved under Section 305.2 and the associated compliance criteria apply to the entire building after the remodel including any additions.

**305.2.3 Mandatory practices.** The building, including any additions and common areas, shall satisfy all practices designated as mandatory in Chapter 11.

**305.2.4 Rating level.** A minimum rating level of Bronze shall be achieved in each of the following categories: Energy efficiency (Sections 305.2.5), Water efficiency (Section 305.2.6), and Prescriptive practices (Section 305.2.7). The building rating level shall be the lowest rating level achieved in Sections 305.2.5, 305.2.6, and 305.2.7.

**305.2.5 Energy efficiency.** The energy efficiency rating level shall be based on the reduction in energy consumption resulting from the remodel in accordance with Table 305.2.3.

**Table 305.2.3 Energy Rating Level Thresholds**

	Rating Level			
	Bronze	Silver	Gold	Emerald
Reduction in energy consumption	20%	34%	43%	50%

**305.2.5.1 Energy consumption reduction.** The reduction in energy consumption resulting from the remodel shall be based on the estimated annual energy cost savings due to heating, cooling, and water heating as determined by a third-party energy audit and analysis. The reduction shall be the percentage difference between the consumption before and after the remodel calculated as follows:

$$[(\text{consumption before remodel} - \text{consumption after remodel}) / \text{consumption before remodel}] * 100\%$$

The occupancy and life style assumed and the method of making the energy consumption estimates shall be the same for estimates before and after the remodel. The building configuration for the after-remodel estimate shall include any additions to the building or other changes to the configuration of the conditioned space. For multi-unit buildings, the energy consumption shall be based on the entire building including all dwelling units and common areas.

**305.2.6 Water efficiency.** The water efficiency rating level shall be based on the reduction in water consumption resulting from the remodel in accordance with Table 305.2.4.

**Table 305.2.4 Energy Rating Level Thresholds**

	Rating Level			
	Bronze	Silver	Gold	Emerald
Reduction in water consumption	20%	34%	43%	50%

**305.2.6.1 Water consumption reduction.** Water consumption shall be based on the estimated annual use as determined by audit or analysis. The reduction shall be the percentage difference between the consumption before and after the remodel calculated as follows:

$$[(\text{consumption before remodel} - \text{consumption after remodel}) / \text{consumption before remodel}] * 100\%$$

The occupancy and life style assumed and the method of making the water consumption estimates shall be the same for estimates before and after the remodel. The building configuration for the after-remodel estimate shall include any changes to the configuration of the building such as additions or new points of water use. For multi-unit buildings, the water consumption shall be based on the entire building including all dwelling units and common areas.

**305.2.7 Prescriptive practices.** The point thresholds for the environmental rating levels based on compliance with the Chapter 11 prescriptive practices shall be in accordance with Table 305.2.5. Any practice listed in Chapter 11 shall be eligible for contributing points to the prescriptive threshold ratings. The attributes of the existing building that were in compliance with the prescriptive practices of Chapter 11 prior to the remodel and remain in compliance after the remodel shall be eligible for contributing points to the prescriptive threshold ratings.

**Table 305.2.5 Prescriptive Threshold Point Ratings**

	Bronze	Silver	Gold	Emerald
Chapter 11 prescriptive practices	See PC 017	See PC 017	See PC 017	See PC 017

**305.3 Criteria for remodeled functional areas of buildings**

**305.3.1 Applicability.** The provisions of Section 305.3 shall apply to remodeling of one or more of the following functional areas of the existing building as follows:

1. Addition, kitchen, bathroom, or basement in buildings other than multi-unit buildings.
2. Kitchen or bathroom of an individual dwelling unit in a multi-unit building.

**305.3.1.1 Additions.** The total above-grade conditioned area added during a remodel shall not exceed 400 square feet.

**305.3.2 Compliant.** Small projects that meet all applicable requirements of Chapter 12 for that functional area shall be designated as *compliant*.

**305.3.3 Designation.** The designation achieved under Section 305.3 applies only to the specific functional area of the existing building. The existing building may have more than one *compliant* functional area.

**305.3.4 Additions.** A bathroom(s), kitchen, or finished basement included in an addition shall comply with all criteria specifically applicable to those functional areas in accordance with the provisions of Chapter 12.

**305.3.5 Mandatory.** Small projects shall satisfy all applicable practices designated as mandatory in Chapter 12.

**305.3.6 Existing attributes.** The attributes of the existing building that were in compliance with the applicable provisions of Chapter 12 prior to the remodel and remain in compliance after the remodel shall be eligible for contributing to demonstration compliance under Section 305.3.

**CHAPTER 11**

Action: Replace entire chapter 11 with the following:

Reason: The original proposal with various “applicable practices” and “new work” and “re-work” was deemed to be too confusing for practical implementation. This replacement chapter provides for the same mandatory requirements as originally intended and it also provides that building must go above the mandatory in some areas but eliminates the confusion. It also incorporates all the approved changes for new construction in order to be as consistent as possible between new construction and remodeling.

NOTE: The language is NOT underlined for clarity.

GREEN BUILDING PRACTICES		POINTS
<b>11.500 LOT DESIGN, PREPARATION, AND DEVELOPMENT</b>		
<b>11.500.0 Intent.</b> This section applies to the lot and changes to the lot due to remodeling of an existing building.		
<b>11.501 LOT SELECTION</b>		
<b>11.501.2 Multi-modal transportation.</b> A range of multi-modal transportation choices are promoted by one or more of the following:		
(1) The building is located within one-half mile (805 m) of pedestrian access to a mass transit system or within five miles (8046 m) of a mass transit station with provisions for parking.		<b>3</b>
(3) The building is located within one-half mile (805 m) of six or more community resources [e.g., recreational facilities (such as pools, tennis courts, basketball courts), parks, grocery store, post office, place of worship, community center, daycare center, bank, school, restaurant, medical/dental office, laundromat/dry cleaner].		<b>3</b>
(4) The building is on a lot located within a community that has rights-of-way specifically dedicated to bicycle use in the form of paved paths or bicycle lanes or on an infill lot located within 1/2 mile of a bicycle lane designated by the jurisdiction.		<b>TBD</b>
<b>11.502 PROJECT TEAM, MISSION STATEMENT, AND GOALS</b>		
<b>11.502.1 Project team, mission statement, and goals.</b> A knowledgeable team is established and team member roles are identified with respect to green lot design, preparation, and development. The project’s green goals and objectives are written into a mission statement.		<b>4</b>
<b>11.503 LOT DESIGN</b>		
<b>11.503.0 Intent.</b> The lot is designed to avoid detrimental environmental impacts first, minimize any unavoidable impacts, and mitigate for those impacts that do occur. The project is designed to minimize environmental impacts and to protect, restore, and enhance the natural features and environmental quality of the lot.		
		<b>(To be awarded points allocated for design the intent of the design is implemented.)</b>

GREEN BUILDING PRACTICES	POINTS
<b>11.503.1 Natural resources.</b> Natural resources are conserved by one or more of the following:	
(1) A natural resources inventory is completed under the direction of a qualified professional.	5
(2) A plan is implemented to conserve the elements identified by the resource inventory as high-priority resources.	6
(3) Items listed for protection in the resource inventory plan are protected under the direction of a qualified professional.	4
(4) Basic training in tree or other natural resource protection is provided for the on-site supervisor.	4
(5) All tree pruning on-site is conducted by a Certified Arborist.	2
(6) Ongoing maintenance of vegetation on the lot during construction is in accordance with TCIA A300 or locally accepted best practices.	3
(7) Where a lot adjoins a landscaped common area, a protection plan from the remodeling construction activities next to the common area is implemented.	5
<b>11.503.2 Slope disturbance.</b> Slope disturbance is minimized by the use of terrain adaptive architecture including terracing, retaining walls, landscaping, or other re-stabilization techniques.	
(1) Hydrological/soil stability study is completed and used to guide the design of any additions to buildings on the site.	5
(2) All or a percentage of new driveways and parking are aligned with natural topography to reduce cut and fill.	
(a) less than 25 percent	1
(b) 25 percent to 75 percent	3
(c) greater than 75 percent	5
(3) Long-term erosion effects are reduced through the design and implementation of terracing, retaining walls, landscaping, or restabilization techniques.	6
(4) Underground parking uses the natural slope for parking entrances.	4
<b>11.503.3 Soil disturbance and erosion.</b> Soil disturbance and erosion are minimized by one or more of the following: (also see Section 11.504.3)	
(1) Remodeling construction activities are scheduled to minimize length of time that soils are exposed.	5
(2) The newly installed utilities on the lot are installed using one or more alternative means:	5
(a) tunneling instead of trenching	
(b) use of smaller (low ground pressure) equipment or geomats to spread the weight of construction equipment	
(c) shared utility trenches or easements	

GREEN BUILDING PRACTICES	POINTS
(d) placement of utilities under paved surfaces instead of yards	
(3) Limits of any new clearing and grading are demarcated on the lot plan.	5
<b>11.503.4 Storm water management.</b> A storm water management design includes one or more of the following low-impact development techniques:	
(1) Natural water and drainage features are preserved and used.	6
(2) Facilities that minimize concentrated flows and simulate flows found in natural hydrology by the use of vegetative swales, french drains, wetlands, drywells, rain gardens, and similar infiltration features.	6
(3) All or a percentage of impervious surfaces are minimized and permeable materials are used for driveways, parking areas, walkways, and patios.	
(a) less than 25 percent	1
(b) 25 percent to 75 percent	3
(c) greater than 75 percent	5
(4) A minimum of 50 percent of the roof is vegetated (green roof) using technology capable of withstanding the climate conditions of the jurisdiction and the microclimate conditions of the building site. Invasive plant species are not permitted.	3
(5) Stormwater management practices that manage rainfall on-site and prevent the off-site discharge from all storms up to and including the volume of the 95th percentile storm event.	TBD
<b>11.503.5 Landscape plan.</b> A landscape plan for the lot is developed to limit water and energy use while preserving or enhancing the natural environment. <b>(Where "front" only or "rear" only plan is implemented, only half of the points (rounding down to a whole number) are awarded for items 1-6)</b>	
(1) Where a lot is less than 50% turf, a plan is formulated to restore or enhance natural vegetation that is cleared during construction. Landscaping is phased to coincide with achievement of final grades to ensure denuded areas are quickly vegetated.	5
(2) Turf grass species, other vegetation, and trees are selected and specified on the lot plan that are native or regionally appropriate for local growing conditions.	4
(3) The percentage of turf areas that is designed to be mowed is limited and shown on the lot plan. The percentage is based on the landscaped area of the lot not including the home footprint, hardscape, and any undisturbed natural areas.	
(a) 0 percent	4
(b) greater than 0 percent to less than 20 percent	3
(c) 20 percent to less than 40 percent	2
(d) 40 percent to 60 percent	1
(4) Plants with similar watering needs are grouped (hydrozoning) and shown on the lot plan.	5



GREEN BUILDING PRACTICES	POINTS
(5) Summer shading by planting installed to shade a minimum of 30% of building walls. To conform to summer shading, the effective shade coverage is the arithmetic mean of the shade coverage calculated at 10 am for eastward facing walls, noon for southward facing walls, and 3 pm for westward facing walls on the summer solstice five years after planting.	5
(6) Vegetative wind breaks or channels are designed to protect the lot and immediate surrounding lots as appropriate for local conditions.	4
(7) On-site (or community generated) tree trimmings or stump grinding of regionally appropriate trees are used on the site to provide protective mulch during construction or for landscaping.	3
(8) An integrated pest management plan is developed to minimize chemical use in pesticides and fertilizers.	4

<b>11.503.6 Wildlife habitat.</b> Measures are planned that will support wildlife habitat and include at least two of the following:	4
(1) Plants and gardens that will encourage wildlife, such as bird and butterfly gardens.	TBD
(2) Inclusion of a certified "backyard wildlife" program.	TBD
(3) Lots are adjacent to wildlife corridors, fish and game parks, or preserved areas and are designed with regard for this relationship.	TBD
(4) Outdoor lighting techniques are utilized with regard for wildlife.	TBD

<b>11.503.7 Environmentally sensitive areas.</b> Environmentally sensitive areas.	
(1) The lot does not contain any environmentally sensitive areas that are disturbed during remodeling.	3
(2) Environmentally sensitive areas compromised during remodeling are mitigated or restored.	3

**11.504 LOT CONSTRUCTION**

**11.504.0 Intent.** Environmental impact during construction is avoided to the extent possible; impacts that do occur are minimized, and any significant impacts are mitigated.

<b>11.504.1 On-site supervision and coordination.</b> On-site supervision and coordination is provided during clearing, grading, trenching, paving on the lot, and installation of utilities on the lot to ensure that specified green development practices are implemented. (also see Section 11.503.3)	4
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<b>11.504.2 Trees and vegetation.</b> Designated trees and vegetation are preserved by one or more of the following:	
(1) Fencing or equivalent is installed to protect trees and other vegetation.	3
(2) Trenching, significant changes in grade, and compaction of soil and critical root zones in all "tree save" areas as shown on the lot plan are avoided.	4

GREEN BUILDING PRACTICES	POINTS
(3) Damage to designated existing trees and vegetation is mitigated during construction through pruning, root pruning, fertilizing, and watering.	4

<b>11.504.3 Soil disturbance and erosion implementation.</b> On-site soil disturbance and erosion during remodeling are minimized by one or more of the following in accordance with the SWPPP or applicable plan: (also see Section 11.503.3)	
(1) Sediment and erosion controls are installed on the lot and maintained in accordance with the storm water pollution prevention plan, where required.	5
(2) Limits of clearing and grading are staked out on the lot.	5
(3) "No disturbance" zones are created using fencing or flagging to protect vegetation and sensitive areas on the lot from construction activity.	5
(4) Topsoil from either the lot or the site development is stockpiled and stabilized for later use and used to establish landscape plantings on the lot.	5
(5) Soil compaction from construction equipment is reduced by distributing the weight of the equipment over a larger area (laying lightweight geogrids, mulch, chipped wood, plywood, OSB, metal plates, or other materials capable of weight distribution in the pathway of the equipment).	3
(6) Disturbed areas on the lot that are complete or to be left unworked for 21 days or more are stabilized within 14 days using methods as recommended by the EPA, or in the approved storm water pollution prevention plan, where required.	3
(7) Soil is improved with organic amendments and mulch.	3
(8) Newly installed utilities on the lot are installed using one or more alternative means (e.g., tunneling instead of trenching, use of smaller equipment, use of low ground pressure equipment, use of geomats, shared utility trenches or easements).	5

**11.505 INNOVATIVE PRACTICES**

**11.505.0 Intent.** Innovative lot design, preparation and development practices are used to enhance environmental performance. Waivers or variances from local development regulations are obtained, and innovative zoning practices are used to implement such practices.

<b>11.505.1 Driveways and parking areas.</b> Driveways and parking areas are minimized by one or more of the following:	
(1) Off-street parking areas are shared or driveways are shared. Waivers or variances from local development regulations are obtained to implement such practices, if required.	4
(2) In a multi-unit project, parking capacity is not to exceed the local minimum requirements.	4

GREEN BUILDING PRACTICES	POINTS
<b>(3)</b> Structured parking is utilized to reduce the footprint of surface parking areas.	
<b>(a)</b> 25 % to less than 50%	2
<b>(b)</b> 50% to 75%	3
<b>(c)</b> greater than 75%	4
<b>11.505.2 Heat island mitigation.</b> One or more of the following strategies are provided for a minimum of 50 percent of the horizontal surface area of the hardscape on the lot:	<b>4</b>
<b>(1)</b> Shading of hardscaping: Shade is provided from existing or new vegetation (within five years) or from trellises. Shade of hardscaping is to be measured on the summer solstice at noon.	
<b>(2)</b> Light-colored hardscaping: Horizontal hardscaping materials are installed with a solar reflectance index of 29 or greater.	
<b>(3)</b> Permeable hardscaping: Permeable hardscaping materials are installed.	
<b>(4)</b> Roofs: Not less than 75 percent of the surface of the roof meets one or a combination of the following methods.	
<b>(a)</b> Minimum initial Solar Reflectance Index of 78 for a low-sloped roof (a slope less than or equal to 2:12) and a minimum initial Solar Reflectance Index of 29 for a steep-sloped roof (a slope of more than 2:12).	
<b>(b)</b> Roof is vegetated using technology capable of withstanding the climate conditions of the jurisdiction and the microclimate conditions of the building site. Invasive plant species are not permitted.	
<b>11.505.3 Density.</b> The average density on the lot on a net developable area basis is:	
<b>(1)</b> 7 to less than 14 dwelling units per acre (per 4047 m <sup>2</sup> )	<b>4</b>
<b>(2)</b> 14 to less than 21 dwelling units per acre (per 4047 m <sup>2</sup> )	<b>7</b>
<b>(3)</b> 21 or greater dwelling units per acre (per 4047 m <sup>2</sup> )	<b>10</b>
<b>11.505.4 Mixed-use development.</b> The lot contains a mixed-use building.	<b>6</b>
<b>11.505.5 Community Garden(s).</b> A portion of the lot is established as a community garden(s), available to residents of the lot, to provide for local food production to residents or area consumers.	<b>TBD</b>

GREEN BUILDING PRACTICES	POINTS
<b>11.601 QUALITY OF CONSTRUCTION MATERIALS AND WASTE</b>	
<b>11.601.0 Intent.</b> 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.	
<b>11.601.1 Conditioned floor area.</b> Finished floor area of a dwelling unit after the remodeling is limited. Finished floor area is calculated in accordance with NAHBRC Z765. Only the finished floor area for stories above grade plane is included in the calculation.	
<b>(1)</b> less than or equal to 1,000 square feet (93 m <sup>2</sup> )	<b>15</b>
<b>(2)</b> less than or equal to 1,500 square feet (139 m <sup>2</sup> )	<b>12</b>
<b>(3)</b> less than or equal to 2,000 square feet (186 m <sup>2</sup> )	<b>9</b>
<b>(4)</b> less than or equal to 2,500 square feet (232 m <sup>2</sup> )	<b>6</b>
<b>(5)</b> greater than 4,000 square feet (372 m <sup>2</sup> )	<b>Mandatory</b>
<b>(For every 100 square feet (9.29 m<sup>2</sup>) over 4,000 square feet (372 m<sup>2</sup>), one point is to be added in Table 305.2.4 for each performance level.)</b>	
<b>Multi-Unit Building Note:</b> For a multi-unit building, use a weighted average of the individual unit sizes in qualifying for available points.	
<b>11.601.2 Material usage.</b> Newly installed structural systems are designed or construction techniques are implemented that reduce and optimize material usage.	<b>9 Points Max</b>
(To be eligible for points, the newly installed portion of the structural system shall comprise at least 25 percent of the total area of the entire structural system after the remodel)	
<b>(1)</b> Minimum structural member or element sizes necessary for strength and stiffness in accordance with advanced framing techniques or structural design standards are selected.	<b>3</b>
<b>(2)</b> Higher-grade or higher-strength of the same materials than commonly specified for structural elements and components in the building are used and element or component sizes are reduced accordingly.	<b>3</b>
<b>(3)</b> Performance-based structural design is used to optimize lateral force-resisting systems.	<b>3</b>
<b>11.601.3 Building dimensions and layouts.</b> Building dimensions and layouts are designed to reduce material cuts and waste. This practice is used for a minimum of 80 percent of the newly installed areas:	
(To be eligible for points, the newly installed portion of the building shall comprise at least 25 percent of the total area of that entire element of the building after the remodel)	
<b>(1)</b> floor area	<b>3</b>
<b>(2)</b> wall area	<b>3</b>
<b>(3)</b> roof area	<b>3</b>
<b>(4)</b> cladding or siding area	<b>3</b>
<b>(5)</b> penetrations or trim area	<b>1</b>

GREEN BUILDING PRACTICES	POINTS
<b>11.601.4 Framing and structural plans.</b> Detailed framing or structural plans, material quantity lists and on-site cut lists for newly installed framing, structural materials, and sheathing materials are provided.	4
<b>11.601.5 Prefabricated components.</b> Precut or preassembled components, or panelized or precast assemblies are utilized for a minimum of 90 percent for the following system or building: (To be eligible for points, the newly installed portion of the building shall comprise at least 25 percent of the total area of that entire system of the building after the remodel)	
(1) floor system	4
(2) wall system	4
(3) roof system	4
(4) modular construction for any new construction located above grade	13
<b>11.601.6 Stacked stories.</b> 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
<b>11.601.7 Site-applied finishing materials.</b> Building materials or assemblies listed below that do not require additional site-applied material for finishing are incorporated in the building.	12 Points Max
(1) 90 percent or more (after the remodel) of the installed building materials or assemblies listed below: <b>(Points awarded for each type (a-g) of material or assembly.)</b>	5
(2) 50 percent to less than 90 percent (after the remodel) of the installed building material or assembly listed below: <b>(Points awarded for each type (a-g) of material or assembly.)</b>	2
(3) 35 percent to less than 50 percent (after the remodel) of the installed building material or assembly listed below: <b>(Points awarded for each type (a-g) of material or assembly.)</b>	1
(a) pigmented, stamped, decorative, or final finish concrete or masonry (b) interior trim not requiring paint or stain (c) exterior trim not requiring paint or stain (d) window, skylight, and door assemblies not requiring paint or stain on exterior or interior surfaces (e) interior wall coverings or systems not requiring paint or stain or other type of finishing application (f) exterior wall coverings or systems not requiring paint or stain or other type of finishing application (g) pre-finished hardwood flooring	
<b>11.601.8 Foundations.</b> A foundation system that minimizes soil disturbance, excavation quantities and material usage, such as frost-protected shallow foundations, isolated pier and pad foundations, deep foundations, post foundations, or helical piles is selected, designed, and constructed. The foundation is used on 25 percent or more of the building footprint after the remodel.	3

GREEN BUILDING PRACTICES	POINTS
<b>11.602 ENHANCED DURABILITY AND REDUCED MAINTENANCE</b>	
<b>11.602.0 Intent.</b> Design and construction practices are implemented that enhance the durability of materials and reduce in-service maintenance.	
<b>11.602.1 Moisture Management – Building Envelope</b>	
<b>11.602.1.1 Capillary breaks</b>	
<b>11.602.1.1.1</b> a capillary break and vapor retarder are installed at all concrete slabs adjoining living space in accordance with Sections 11.602.1.1.1(1) or 11.602.1.1.1(2), as modified by Section 11.602.1.1.1(3): <b>Exception: This practice is not mandatory for existing slabs without apparent moisture problem.</b>	Mandatory
(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 11.602.1.4. (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 11.602.1.4. (3) Modification: 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>11.602.1.1.2</b> Add a capillary break on footing to prevent moisture migration into foundation wall on all new foundations and not less than 25 percent of the total length of the foundation after the remodel.	3
<b>11.602.1.2 Foundation waterproofing.</b> Enhanced foundation waterproofing is installed on all new foundations and not less than 25 percent of the total length of the foundation after the remodel: (1) rubberized coating, or (2) drainage mat	4
<b>11.602.1.3 Foundation drainage.</b>	
<b>11.602.1.3.1</b> Where required by the ICC IRC or IBC for habitable and usable spaces below grade, exterior drain tile is installed. <b>Exception: This practice is not mandatory for existing space without apparent moisture problem.</b>	Mandatory
<b>11.602.1.3.2</b> Interior and exterior foundation perimeter drains are installed and sloped to discharge to daylight, dry well, or sump pit on all new foundations and not less than 25 percent of the total length of the foundation after the remodel.	4
<b>11.602.1.4 Crawlspace.</b>	

GREEN BUILDING PRACTICES	POINTS
<b>11.602.1.4.1</b> Crawlspace vapor retarder for all new foundations and not less than 25 percent of the total area after the remodel is in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 inches (152 mm) and are taped.	
<b>(1)</b> Floors. Minimum 6 mil vapor retarder installed on the crawlspace floor and extended up the wall sufficient to allow the material to be affixed with glue and furring strips.	<b>6</b>
<b>(2)</b> Walls. Damp-proof walls are provided below finished grade. <b>Exception: This practice is not mandatory for existing walls without apparent moisture problem.</b>	<b>Mandatory</b>
<b>11.602.1.4.2</b> For all new foundations and not less than 25 percent of the total area of the crawlspace after the remodel, crawlspace that is built as a conditioned area is sealed to prevent outside air infiltration and provided with conditioned air at a rate not less than 0.02 cfm (.009 L/s) per square foot of horizontal area and one of the following is implemented:	
<b>(1)</b> a concrete slab over lapped 6 mil polyethylene or polystyrene.	<b>10</b>
<b>(2)</b> 6 mil polyethylene sheeting, lapped a minimum of 6 inches (152 mm), and taped at the seams.	<b>8</b>
<b>11.602.1.5 Termite barrier.</b> Continuous physical foundation termite barrier used with low toxicity treatment or with no chemical treatment is installed in geographical areas that have subterranean termite infestation potential determined in accordance with Figure 6(3).	<b>4</b>
<b>11.602.1.6 Termite-resistant materials.</b> Termite-resistant materials are used as follows:	
<b>(1)</b> 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.	<b>2</b>
<b>(2)</b> 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.	<b>4</b>
<b>(3)</b> 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.	<b>6</b>
<b>11.602.1.7 Moisture control measures</b>	
<b>11.602.1.7.1</b> Moisture control measures are in accordance with the following:	
<b>(1)</b> Building materials with visible mold are not installed or are cleaned or encapsulated prior to concealment and closing.	<b>2</b>
<b>(2)</b> Insulation in cavities is dry in accordance with manufacturer's installation instructions when enclosed (e.g., with drywall).	<b>Mandatory 2</b>
<b>(3)</b> The moisture content of lumber is sampled to ensure it does not exceed 19 percent prior to the surface and/or cavity enclosure.	<b>4</b>

GREEN BUILDING PRACTICES	POINTS
<b>11.602.1.7.2</b> Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the finish flooring to be applied.	<b>2</b>
<b>11.602.1.8 Water-resistive barrier.</b> Where required by the ICC IRC or IBC, a water-resistive barrier and/or drainage plane system is installed behind newly installed exterior veneer and/or siding and where there is evidence of a moisture problem.	<b>Mandatory</b>
<b>11.602.1.9 Flashing.</b> Flashing is provided to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details are provided in the construction documents and are in accordance with the fenestration manufacturer's instructions, the flashing manufacturer's instructions, or as detailed by a registered design professional.	
To achieve points, practices (2)-(8) shall be implemented in all newly installed construction and not less than 25 percent of the applicable building elements for the entire building after the remodel.	
<b>(1)</b> Flashing are installed at all of the following locations, as applicable: <b>(a)</b> around exterior fenestrations, skylights and doors <b>(b)</b> at roof valleys <b>(c)</b> at deck, balcony, porch or stair to building intersections <b>(d)</b> at roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets. <b>(e)</b> at ends of and under masonry, wood, or metal copings and sills <b>(f)</b> above projecting wood trim <b>(g)</b> at built-in roof gutters <b>(h)</b> drip edge is installed at eaves and rake edges. <b>Exception: These practices are not mandatory for existing building elements without apparent moisture problem.</b>	<b>Mandatory</b>
<b>(2)</b> All window head and jamb flashing are self-adhered flashing complying with AAMA 711-07.	<b>2</b>
<b>(3)</b> Pan flashing is installed at sills of all exterior windows and doors	<b>2</b>
<b>(4)</b> Seamless, preformed kickout flashing, or prefabricated metal with soldered seams is provided at all roof-to-wall intersections. The type and thickness of the material used for roof flashing including but not limited kickout and step flashing is commensurate with the anticipated service life of the roofing material.	<b>2</b>
<b>(5)</b> A rainscreen wall design is used for exterior wall assemblies <b>(a)</b> a system designed with minimum 1/4" inch air space exterior to the water-resistive barrier, vented to the exterior at top and bottom of the wall and integrated with flashing details. OR <b>(b)</b> either a cladding material or a water-resistive barrier with enhanced drainage, meeting 75% drainage efficiency requirement of ASTM E2273.	<b>2 Points Max 2 1</b>
<b>(6)</b> A drip cap is provided above windows and doors that are not flashed or protected by covering in accordance with Section 11.602.1	<b>2</b>
<b>(7)</b> Through wall flashing is installed at transitions between wall cladding materials, or wall construction types.	<b>2</b>

GREEN BUILDING PRACTICES	POINTS												
<b>(8)</b> Flashing is installed at expansion joints in stucco walls	<b>2</b>												
<b>11.602.1.10 Exterior doors.</b> 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) or Appendix C, have a projection factor of 1.0 minimum, unless otherwise protected from direct solar radiation by other means (e.g., screen wall, vegetation).	<b>5 Points Max</b>												
<ul style="list-style-type: none"> <li>(a) installing a porch roof or awning</li> <li>(b) extending the roof overhang</li> <li>(c) recessing the exterior door</li> </ul>													
<b>(1)</b> main entrance door	<b>3</b>												
<b>(2)</b> additional covered door assembly	<b>1</b>												
<b>11.602.1.11 Tile backing materials.</b> Tile backing materials installed under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325. <b>Exception: This practice is not mandatory for existing tile surfaces without apparent moisture problem.</b>	<b>Mandatory</b>												
<b>11.602.1.12 Roof overhangs.</b> Roof overhangs, based on inches of rainfall in Table 11.602.2, are provided over a minimum of 90 percent of exterior walls to protect the building envelope.	<b>4</b>												
<p><b>Table 11.602.2</b> <b>Minimum Roof Overhang for One- &amp; Two-Story Buildings</b></p> <table border="1"> <thead> <tr> <th>Inches Rainfall <sup>(1)</sup></th> <th>Eave Overhang (Inches)</th> <th>Rake Overhang (Inches)</th> </tr> </thead> <tbody> <tr> <td>≤40</td> <td>12</td> <td>12</td> </tr> <tr> <td>&gt;41 and ≤70</td> <td>18</td> <td>12</td> </tr> <tr> <td>&gt; 70</td> <td>24</td> <td>12</td> </tr> </tbody> </table> <p>(1) Annual mean total precipitation in inches is in accordance with Figure 6(2). For SI: 12 inches = 304.8 mm</p>		Inches Rainfall <sup>(1)</sup>	Eave Overhang (Inches)	Rake Overhang (Inches)	≤40	12	12	>41 and ≤70	18	12	> 70	24	12
Inches Rainfall <sup>(1)</sup>	Eave Overhang (Inches)	Rake Overhang (Inches)											
≤40	12	12											
>41 and ≤70	18	12											
> 70	24	12											
<b>11.602.1.13 Drip edge.</b> Drip edge is installed at eaves and gable roof edges.	<b>3</b>												
<b>11.602.1.14 Ice barrier.</b> 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 of pitched roofs and extends at a minimum of 24 inches (610 mm) inside the exterior wall line of the building.	<b>Mandatory</b>												
<b>11.602.1.15 Architectural features.</b> Architectural features that increase the potential for the water intrusion are avoided:													
<b>(1)</b> No roof configurations that create horizontal valleys in roof design.	<b>2</b>												
<b>(2)</b> No recessed windows and architectural features that trap water on horizontal surfaces.	<b>2</b>												
<b>(3)</b> All horizontal ledgers are sloped away to provide gravity drainage as appropriate for the application.	<b>Mandatory</b>												

GREEN BUILDING PRACTICES	POINTS
<b>11.602.2 Roof surfaces.</b> A minimum of 90 percent of roof surfaces, not used for roof penetrations and associated equipment, on-site renewable energy systems such as photovoltaics or solar thermal energy collectors, or rooftop decks, amenities and walkways, are constructed of one or both of the following:	<b>3</b>
<ul style="list-style-type: none"> <li>(1) products that are in accordance with the ENERGY STAR® cool roof certification or equivalent</li> <li>(2) a vegetated roof system</li> </ul>	
<b>11.602.3 Roof water discharge.</b> 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.	<b>4</b>
<b>11.602.4 Finished grade.</b>	
<b>11.602.4.1</b> Finished grade at all sides of a 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 2 percent.	<b>Mandatory</b>
<b>11.602.4.2</b> The final grade is sloped away from the edge of the building at a minimum slope of 5 percent.	<b>1</b>
<b>11.602.4.3</b> Water is directed to drains or swales to ensure drainage away from the structure.	<b>1</b>
<b>11.603 REUSED OR SALVAGED MATERIALS</b>	
<b>11.603.0 Intent.</b> Practices that reuse or modify existing structures, salvage materials for other uses, or use salvaged materials in the building's construction are implemented.	
<b>11.603.1 Reuse of existing building.</b> Major elements or components of existing buildings and structures are reused, modified, or deconstructed for later use in lieu of demolition. <b>(Points awarded for every 200 square feet (18.5 m<sup>2</sup>) of floor area.)</b>	<b>1</b> <b>12 Points Max</b>
<b>11.603.2 Salvaged materials.</b> Reclaimed and/or salvaged materials and components are used. The total material value and labor cost of salvaged materials is equal to or exceeds 1 percent of the total construction cost. <b>(Points awarded per 1% of salvaged materials used based on the total construction cost.)</b>	<b>1</b> <b>9 Points Max</b>
<b>11.603.3 Scrap materials.</b> Facilitation for sorting and reuse of scrap building material (e.g., provide a central storage area or dedicated bins).	<b>4</b>
<b>11.604 RECYCLED-CONTENT BUILDING MATERIALS</b>	
<b>11.604.1 Recycled content.</b> Building materials with recycled content are used for two minor and/or two major components of the building.	<b>Points per Table 11.604.1</b>

GREEN BUILDING PRACTICES	POINTS
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Table 11.604.1 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

**11.605  
RECYCLED CONSTRUCTION WASTE**

**11.605.0 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.)**

<b>11.605.1 Construction waste management plan.</b> A construction waste management plan is developed, posted at the jobsite, and implemented with a goal of recycling or salvaging a minimum of 50 percent (by weight) of construction waste.	<b>6</b>
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<b>11.605.2 On-site recycling.</b> On-site recycling measures following applicable regulations and codes are implemented, such as the following:  (a) 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. (b) Alternative compliance methods approved by the Adopting Entity. (c) Compatible untreated biomass material (lumber, posts, beams etc.) are set aside for combustion if a Solid Fuel Burning Appliance as per Section 11.901.2.1(2) will be available for on-site renewable energy.	<b>7</b>
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<b>11.605.3 Recycled construction materials.</b> Construction materials (e.g., wood, cardboard, metals, drywall, plastic, asphalt roofing shingles, or concrete) are recycled offsite.	<b>6 Points Max</b>
(1) a minimum of two types of materials are recycled	<b>3</b>
(2) for each additional recycled material	<b>1</b>

<b>11.605.4 Hazardous Waste</b> The construction waste management plan shall include information on the proper handling and disposal of hazardous waste. All hazardous waste is properly handled and disposed.	<b>Mandatory</b>
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**11.606  
RENEWABLE MATERIALS**

**11.606.0 Intent.** Building materials derived from renewable resources are used.

GREEN BUILDING PRACTICES	POINTS
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<b>11.606.1 Biobased products.</b> The following biobased products are used:  (a) certified solid wood in accordance with Section 11.606.2 (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)	<b>8 Points Max</b>
(1) Two types of biobased materials are used, each for more than 0.5 percent of the project's projected building material cost.	<b>3</b>
(2) Two types of biobased materials are used, each for more than 1 percent of the project's projected building material cost.	<b>6</b>
(3) For each additional biobased material used for more than 0.5 percent of the project's projected building material cost.	<b>1 2 Points Max</b>

<b>11.606.2 Wood-based products.</b> Wood or wood-based products are certified to the requirements of one of the following recognized product programs:  (a) American Forest Foundation's <i>American Tree Farm System</i> ® (ATFS) (b) Canadian Standards Association's <i>Sustainable Forest Management System Standards</i> (CSA Z809) (c) <i>Forest Stewardship Council</i> (FSC) (d) <i>Program for Endorsement of Forest Certification Systems</i> (PEFC) (e) <i>Sustainable Forestry Initiative</i> ® Program (SFI) (f) other product programs mutually recognized by PEFC	
(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.	<b>3</b>
(2) Where a minimum of two certified wood-based products are used in major elements of the building, such as walls, floors, or roof.	<b>4</b>

<b>11.606.3 Manufacturing energy.</b> 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).  <b>(2 points awarded per material.)</b>	<b>6 Points Max</b>
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**11.607  
RECYCLING**

<b>11.607.1 Recycling.</b> 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	<b>3</b>

GREEN BUILDING PRACTICES	POINTS
(2) Compost facility provided on-site	3

**11.608 RESOURCE-EFFICIENT MATERIALS**

<b>11.608.1 Resource-efficient materials.</b> Products containing fewer materials are used to achieve the same end-use requirements as conventional products, including but not limited to:  <b>(3 points awarded for each material.)</b>	<b>9 Points Max</b>
(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	

**11.609 REGIONAL MATERIALS**

<b>11.609.1 Regional materials.</b> Regional materials are used for major elements or components of the building.	<b>10 Points Max</b>
(1) one type of material	2
(2) for each additional material	2

**11.610 LIFE CYCLE ANALYSIS**

<b>11.610.1 Life cycle analysis.</b> A life cycle analysis (LCA) tool is used to select environmentally preferable products or assemblies, or an LCA is conducted on the entire building. Points are awarded in accordance with 11.6010.1.1, 11.610.1.2(1), or 11.610.1.2(2). Only one method of analysis may be utilized. A reference service life for the building is to be 60 years for any life cycle analysis tool. Results of the LCA are reported in the manual required in Section 11.1003.1(1) of this standard in terms of the environmental impacts listed in this practice and it states if operating energy was included in its preparation.	<b>15 Points Max</b>
<b>11.610.1.1 Whole-building life cycle analysis.</b> A whole-building LCA is performed using a life cycle assessment and data compliant with ISO 14044 or other recognized standards.	<b>15</b>
<b>11.610.1.2 Life cycle analysis for a product or assembly.</b> An environmentally preferable product or assembly is selected for an application based upon the use of an LCA tool that incorporates data methods compliant with ISO 14044 or other recognized standards that compare the environmental impact of products or assemblies.	<b>10 Points Max</b>
(1) Two products with the same intended use are compared based on LCA and the product with a 15% improvement in fossil fuel consumption and global warming potential is used. <b>(Points awarded per product/system comparison.)</b>	<b>2 10 Points Max</b>
(2) An assembly is selected for the project that has environmental impact measures that are better than a functionally comparable assembly. The full life cycle, from resource extraction to demolition and disposal (including but not limited to on-site construction, maintenance and replacement, material and product embodied acquisition, and process and transportation energy), is assessed. The assemblies considered include all structural	<b>Points per Table 11.610.1.2(2) 10 Points Max</b>

<p>elements, insulation, and wall coverings:</p> <ul style="list-style-type: none"> <li>(a) exterior walls</li> <li>(b) roof/ceiling</li> <li>(c) interior walls or ceilings</li> <li>(d) intermediate floors</li> </ul> <p><b>Exception:</b> Electrical and mechanical equipment and controls, plumbing products, fire detection and alarm systems, elevators, and conveying systems are not included in the assessment.</p> <p>The environmental impact measures to be considered are chosen from the following:</p> <ul style="list-style-type: none"> <li>(a) Fossil fuel consumption</li> <li>(b) Global warming potential</li> <li>(c) Acidification potential</li> <li>(d) Eutrophication potential</li> <li>(e) Ozone depletion potential</li> <li>(f) Human health respiratory effects potential from particulates</li> </ul> <p style="text-align: center;"><b>(Points are awarded based on the number of assemblies that improve upon environmental impact measures by 15%.)</b></p> <p style="text-align: center;"><b>Table 11.610.1.2(2) Assembly LCA</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">4 Measures</th> <th style="text-align: center;">6 Measures</th> </tr> <tr> <th></th> <th colspan="2" style="text-align: center;">POINTS</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2 Assemblies</td> <td style="text-align: center;">3</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;">3 Assemblies</td> <td style="text-align: center;">4</td> <td style="text-align: center;">8</td> </tr> <tr> <td style="text-align: center;">4 Assemblies</td> <td style="text-align: center;">5</td> <td style="text-align: center;">10</td> </tr> </tbody> </table>		4 Measures	6 Measures		POINTS		2 Assemblies	3	6	3 Assemblies	4	8	4 Assemblies	5	10	
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**11.611 INNOVATIVE PRACTICES**

<b>11.611.1 Manufacturer's environmental management system concepts.</b> Product manufacturer's operations and business practices include environmental management system concepts, and the production facility is registered to ISO 14001 or equivalent. The aggregate value of building products from registered ISO 14001 or equivalent production facilities is 1 percent or more of the estimated total building materials cost.  <b>(1 point awarded per percent.)</b>	<b>10 points Max</b>
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<b>11.611.2 Sustainable Products.</b> One or more of the following products are used for at least 30% of the floor or wall area of the entire dwelling unit, as applicable. Certification third-party agency is ISO Guide 65 accredited.	<b>4 Points Max</b>
(1) 50% or more of carpet installed (by square feet) is third-party certified to NSF/ANSI 140.	1
(2) 50% or more of resilient flooring installed (by square feet) is third-party certified to NSF/ANSI 332.	1
(3) 50% or more of the insulation installed (by square feet) is third-party certified to EcoLogo CCD-016.	1
(4) 50% or more of interior wall coverings installed (by square feet) is third-party certified to NSF/ANSI 342	1

<b>11.611.3 Universal Design Elements.</b> Dwelling incorporates one or more of the following universal design elements.	<b>10 Points Max</b>
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(1) Any no-step entrance into the dwelling which is accessible from a substantially level parking or drop-off area (no more than 2%) via an accessible path which has no individual change in elevation or other obstruction of more than 1-1/2 inches in height, whose pitch does not exceed 1 in 12 and which provides a minimum 32-inch wide clearance into the dwelling.	3
(2) Minimum 36-inch wide accessible route from the no-step entrance into at least one visiting room in the dwelling and into at least one full or half bathroom which has a minimum 32 inch clear door width and a 30 inch by 48 inch clear area inside the bathroom outside the door swing.	3
(3) Minimum 36-inch wide accessible route from the no-step entrance into at least one bedroom which has a minimum 32 inch clear door width.	3
(4) Blocking or equivalent installed in the accessible bathroom walls for future installation of grab bars at commode and bathing fixture, if applicable.	1
<i>Note: Reasonable construction tolerances are allowed.</i>	
<b>11.611.4 Food waste disposers.</b> A minimum of one food waste disposer is installed at the primary kitchen sink.	1

GREEN BUILDING PRACTICES	POINTS
<b>11.701 MINIMUM ENERGY EFFICIENCY REQUIREMENTS</b>	
<b>11.701.4 Mandatory practices.</b>	
<b>11.701.4.1 HVAC systems.</b>	
<b>11.701.4.1.1 HVAC system sizing.</b> Newly installed or modified Space heating and cooling system is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent. New Equipment is selected using ACCA Manual S or equivalent.	<b>Mandatory</b>
<b>11.701.4.1.2 Radiant and hydronic space heating.</b> Where installed as a primary heat source in the building, new radiant or hydronic space heating system is designed using industry-approved guidelines and standards (e.g., ACCA Manual J, AHRI I=B=R, ANSI/ACCA 5 QI-2010, or an accredited design professional's and manufacturer's recommendations).	<b>Mandatory</b>
<b>11.701.4.2 Duct systems.</b>	
<b>11.701.4.2.1 Duct air sealing.</b> Newly installed, modified, or Ducts that are exposed during the remodel are air sealed. All duct sealing materials are rated to UL 181A or UL 181B specifications and are used in accordance with manufacturer's instructions.	<b>Mandatory</b>
<b>11.701.4.2.2 Supply ducts.</b> Building cavities are not used as supply ducts. Existing building cavities currently used as supply ducts exposed during the remodel are lined.	<b>Mandatory</b>
<b>11.701.4.2.3 Duct system sizing.</b> New or modified Duct system is sized and designed in accordance with ACCA Manual D or equivalent.	<b>Mandatory</b>
<b>11.701.4.3 Insulation and air sealing.</b>	
<b>11.701.4.3.1 Building Thermal Envelope.</b> The building thermal envelope exposed or created during the remodel is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. The following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film or solid material:	<b>Mandatory</b>
<ul style="list-style-type: none"> <li>(a) All joints, seams and penetrations.</li> <li>(b) Site-built windows, doors and skylights.</li> <li>(c) Openings between window and door assemblies and their respective jambs and framing.</li> <li>(d) Utility penetrations.</li> <li>(e) Dropped ceilings or chases adjacent to the thermal envelope.</li> <li>(f) Knee walls.</li> <li>(g) Walls and ceilings separating a garage from conditioned spaces.</li> <li>(h) Behind tubs and showers on exterior walls.</li> <li>(i) Common walls between dwelling units.</li> <li>(j) Attic access openings.</li> <li>(k) Rim joist junction.</li> <li>(l) Other sources of infiltration.</li> </ul>	
<b>11.701.4.3.2 Air sealing and insulation.</b> The compliance of the building envelope air tightness and insulation installation is demonstrated in accordance with Section 11.701.4.3.2(1) or 11.701.4.3.2(2).	<b>Mandatory</b>



GREEN BUILDING PRACTICES	POINTS																										
<p><b>(1) Testing option.</b> Building envelope tightness and insulation installation is considered acceptable when tested air leakage is less than seven air changes per hour (ACH) when tested with a blower door at a pressure of 33.5 psf (50 Pa). Testing is conducted after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances. During testing:</p> <p>(a) Exterior windows and doors, fireplace and stove doors are closed, but not sealed;                  (b) Dampers are closed, but not sealed, including exhaust, intake, makeup air, backdraft and flue dampers;                  (c) Interior doors are open;                  (d) Exterior openings for continuous ventilation systems and heat recovery ventilators are closed and sealed;                  (e) Heating and cooling system(s) is turned off;                  (f) HVAC ducts are not sealed; and                  (g) Supply and return registers are not sealed.</p>																											
<p><b>(2) Visual inspection option.</b> Building envelope tightness and insulation installation are considered acceptable when the items listed in Table 11.701.4.3.2(2) applicable to the method of construction and exposed and visible during the remodel, are field verified.</p> <p style="text-align: center;"><b>Table 11.701.4.3.2(2)</b>  <b>Air Barrier and Insulation Inspection Component Criteria</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: center;">COMPONENT</th> <th style="text-align: center;">CRITERIA</th> </tr> </thead> <tbody> <tr> <td>Air barrier and thermal barrier</td> <td>Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired. Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.</td> </tr> <tr> <td>Ceiling/attic</td> <td>Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.</td> </tr> <tr> <td>Walls</td> <td>Corners and headers are insulated. Junction of foundation and sill plate is sealed.</td> </tr> <tr> <td>Windows and doors</td> <td>Space between window/door jambs and framing is sealed.</td> </tr> <tr> <td>Rim joists</td> <td>Rim joists are insulated and include an air barrier.</td> </tr> <tr> <td>Floors (including above-garage and cantilevered floors)</td> <td>Insulation is installed to maintain permanent contact with underside of subfloor decking. Air barrier is installed at any exposed edge of insulation.</td> </tr> <tr> <td>Crawl space walls</td> <td>Insulation is permanently attached to walls. Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.</td> </tr> <tr> <td>Shafts, penetrations</td> <td>Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.</td> </tr> <tr> <td>Narrow cavities</td> <td>Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.</td> </tr> <tr> <td>Garage separation</td> <td>Air sealing is provided between the garage and conditioned spaces.</td> </tr> <tr> <td>Recessed lighting</td> <td>Recessed light fixtures are air tight, IC rated, and sealed to drywall. Exception—fixtures in conditioned space.</td> </tr> <tr> <td>Plumbing and wiring</td> <td>Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.</td> </tr> </tbody> </table>	COMPONENT	CRITERIA	Air barrier and thermal barrier	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired. Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.	Ceiling/attic	Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.	Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.	Windows and doors	Space between window/door jambs and framing is sealed.	Rim joists	Rim joists are insulated and include an air barrier.	Floors (including above-garage and cantilevered floors)	Insulation is installed to maintain permanent contact with underside of subfloor decking. Air barrier is installed at any exposed edge of insulation.	Crawl space walls	Insulation is permanently attached to walls. Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.	Shafts, penetrations	Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.	Narrow cavities	Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.	Garage separation	Air sealing is provided between the garage and conditioned spaces.	Recessed lighting	Recessed light fixtures are air tight, IC rated, and sealed to drywall. Exception—fixtures in conditioned space.	Plumbing and wiring	Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.	
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GREEN BUILDING PRACTICES	POINTS										
<table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">Shower/tub on exterior wall</td> <td>Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.</td> </tr> <tr> <td>Electrical/phone box on exterior walls</td> <td>Air barrier extends behind boxes or air sealed-type boxes are installed.</td> </tr> <tr> <td>Common wall</td> <td>Air barrier is installed in common wall between dwelling units.</td> </tr> <tr> <td>HVAC register boots</td> <td>HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.</td> </tr> <tr> <td>Fireplace</td> <td>Fireplace walls include an air barrier.</td> </tr> </table>	Shower/tub on exterior wall	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.	Electrical/phone box on exterior walls	Air barrier extends behind boxes or air sealed-type boxes are installed.	Common wall	Air barrier is installed in common wall between dwelling units.	HVAC register boots	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.	Fireplace	Fireplace walls include an air barrier.	
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HVAC register boots	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.										
Fireplace	Fireplace walls include an air barrier.										
<p><b>11.701.4.3.3 Fenestration air leakage.</b> Newly installed Windows, skylights and sliding glass doors have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m<sup>2</sup>), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/ m<sup>2</sup>), when tested according to NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled by the manufacturer.  <b>Exception:</b> Site built windows, skylights and doors.</p>	<b>Mandatory</b>										
<p><b>11.701.4.3.4 Recessed lighting.</b> Newly installed Recessed luminaires installed in the building thermal envelope are sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires are IC-rated and labeled as meeting ASTM E 283 when tested at 1.57 psf (75 Pa) pressure differential with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity. All recessed luminaires are sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.</p>	<b>Mandatory</b>										
<p><b>11.701.4.4 High-efficacy lighting.</b> A minimum of 50 percent of the newly installed hard-wired lighting fixtures, or the bulbs in those fixtures, qualify as high efficacy or equivalent.</p>	<b>Mandatory</b>										
<p><b>11.701.4.5 Boiler supply piping.</b> Boiler supply piping is insulated in unconditioned spaces accessible during the remodel.</p>	<b>Mandatory</b>										

**901  
POLLUTANT SOURCE CONTROL**

Action: Add section 11.901.0  
Reason: Omitted from draft

**901.0 Intent.** Pollutant sources are controlled.

Action: Replace 11.901.1.1 through 11.901.1.4 with the following  
Reason: Reflects accepted changes in chapter 9 and makes relevant to remodeling

GREEN BUILDING PRACTICES	POINTS
<b>11.901 POLLUTANT SOURCE CONTROL</b>	
<b>11.901.0 Intent.</b> Pollutant sources are controlled.	
<b>11.901.1 Space and water heating options</b>	
<b>11.901.1.1</b> Natural draft furnaces, boilers or water heaters are not located in conditioned spaces, including conditioned crawlspaces. Natural draft furnaces, boilers and water heaters are 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).	<b>5</b>
<b>11.901.1.2</b> Air handling equipment or return ducts are not located in the garage, unless placed in isolated, air-sealed mechanical rooms with an outside air source.	<b>5</b>
<b>11.901.1.3</b> The following combustion space heating or water heating equipment is installed within conditioned space:	
(1) all furnaces or all boilers	
(a) power vent furnace(s) or boiler(s)	<b>TBD</b>
(b) direct vent furnace(s) or boiler(s)	<b>5</b>
(2) all water heaters	
(a) power vent water heater(s)	<b>3</b>
(b) direct vent water heater(s)	<b>5</b>
<b>11.901.1.4 Newly installed</b> Gas-fired fireplaces and direct heating equipment is listed and is installed in accordance with the National Fuel Gas Code or the applicable local gas appliance installation code. Gas-fired fireplaces and direct heating equipment are vented to the outdoors.	<b>Mandatory</b>
<b>11.901.1.5</b> Natural gas and propane fireplaces that are power vented or direct vented have permanently fixed glass fronts or gasketed doors, and comply with ANSI Z21.88/CSA 2.33 or ANSI Z21.50/CSA 2.22.	<b>TBD</b>
<b>11.901.1.6</b> The following electric equipment is installed:	
(1) heat pump air handler in unconditioned space	<b>2</b>
(2) heat pump air handler in conditioned space	<b>5</b>

GREEN BUILDING PRACTICES	POINTS
<b>11.901.2 Solid fuel-burning appliances.</b>	<b>Mandatory</b>
<b>Exception: These practices are not mandatory for existing fuel burning appliances.</b>	
<b>11.901.2.1</b> Solid fuel-burning fireplaces, inserts, stoves and heaters are code compliant and are in accordance with the following requirements:	
(1) Site-built masonry wood-burning fireplaces are equipped with outside combustion air and a means of sealing the flue and the combustion air outlets to minimize interior air (heat) loss when not in operation.	
(2) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are EPA certified.	
(3) 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 <a href="#">WAC 173-433-100(3)</a> .	
(4) Pellet (biomass) stoves and furnaces are in accordance with the requirements of ASTM E1509 or are EPA certified.	
(5) Masonry heaters are in accordance with the definitions in ASTM E1602 and ICC IBC, Section 2112.1.	
(6) Removal of or rendering unusable an existing fireplace or fuel burning appliance that is not in accordance with 11.901.2.1 or replacement of each fireplace or appliance that is not in accordance with 11.901.2.1 with a compliant appliance.	
<b>11.901.2.2</b> Fireplaces, woodstoves, pellet stoves, or masonry heaters are not installed.	<b>7</b>
<b>11.901.3 Garages.</b> 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.	<b>Mandatory 2</b>
(b) A continuous air barrier is provided between walls and ceilings separating the garage space from the conditioned living spaces.	<b>Mandatory 2</b>
(c) For one- and two-family dwelling units, a 100 cfm (47 L/s) or greater ducted, or 70 cfm (33 L/s) cfm or greater unducted wall exhaust fan is installed and vented to the outdoors, designed and installed for continuous operation, or has controls (e.g., motion detectors, pressure switches) that activate operation for a minimum of 1 hour when either human passage door or roll-up automatic doors are operated. For ducted exhaust fans, the fan airflow rating and duct sizing are in accordance with Appendix A.	<b>8</b>
(2) A carport is installed, the garage is detached from the building, or no garage is installed.	<b>10</b>

GREEN BUILDING PRACTICES	POINTS
<b>11.901.4 Wood materials.</b> A minimum of 85 percent of newly installed material within a product group (i.e., wood structural panels, countertops, composite trim/doors, custom woodwork, and/or component closet shelving) is manufactured in accordance with the following:	<b>10 Points Max</b>
(1) 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.	<b>Mandatory</b>
(2) Particleboard and MDF (medium density fiberboard) is manufactured and labeled in accordance with CPA A208.1 and CPA A208.2, respectively. <b>(Points awarded per product group.)</b>	<b>2</b>
(3) Hardwood plywood in accordance with HPVA HP-1. <b>(Points awarded per product group.)</b>	<b>2</b>
(4) Particleboard, MDF, or hardwood plywood is in accordance with CPA 3. <b>(Points awarded per product group.)</b>	<b>3</b>
(5) Composite wood or agrifiber panel products contain no added urea-formaldehyde or are in accordance with the CARB <i>Composite Wood Air Toxic Contaminant Measure Standard</i> . <b>(Points awarded per product group.)</b>	<b>4</b>
(6) Non-emitting products. <b>(Points awarded per product group.)</b>	<b>4</b>
<b>11.901.5 Cabinets.</b> A minimum of 85 percent of newly installed kitchen and bath vanity cabinets are in accordance with KCMA ESP 04 (or equivalent) or CARB <i>Composite Wood Air Toxic Contaminant Measure Standard</i> .	<b>3</b>
<b>11.901.6 Carpets.</b> Carpets are in accordance with the following:	
(1) Wall-to-wall carpeting is not installed adjacent to water closets and bathing fixtures.	<b>Mandatory</b>
(2) A minimum of 85 percent of newly installed carpet area, carpet cushion (padding), and carpet adhesives are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D. <b>Exception:</b> Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m <sup>3</sup> (13.5 ppb).	
(a) carpet	<b>6</b>
(b) carpet cushion	<b>2</b>
(c) carpet adhesives	<b>2</b>

GREEN BUILDING PRACTICES	POINTS
<b>11.901.7 Hard-surface flooring.</b> A minimum of 10% of the conditioned floor space has pre-finished hard-surface flooring installed and at least 85 percent of all prefinished installed hard-surface flooring is in accordance with the emission concentration limits of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D. Where post-manufacture coatings or surface applications have not been applied, the following hard surface flooring types are deemed to comply with the emission requirements of this section: <b>Exception:</b> Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m <sup>3</sup> (13.5 ppb).	<b>6</b>
(a) Ceramic tile flooring (b) Organic-free, mineral-based flooring (c) Clay masonry flooring (d) Concrete masonry flooring (e) Concrete flooring (f) Metal flooring (g) Glass	
<b>11.901.8 Wall coverings.</b> When at least 10% of the interior wall surfaces are covered, a minimum of 85 percent of wall coverings are in accordance with the emission concentration limits of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D. <b>Exception:</b> Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m <sup>3</sup> (13.5 ppb).	<b>4</b>
<b>11.901.9 Architectural coatings.</b> A minimum of 85 percent of newly applied architectural coatings are in accordance with either Section 11.901.9.1 or Section 11.901.9.2, not both:	
<b>11.901.9.1</b> Site-applied interior architectural coatings, which are inside the water proofing envelope, are in accordance with one or more of the following:	<b>5</b>
(1) Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)	
(2) GreenSeal GS-11 Standard for Paints and Coatings	
(3) CARB <i>Suggested Control Measure for Architectural Coatings</i> (see Table 11.901.9.1).	

GREEN BUILDING PRACTICES	POINTS
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<b>Table 11.901.9.1 VOC Content Limits For Architectural Coatings<sup>c,d,e</sup></b>	
Coating Category	LIMIT <sup>a</sup> (g/l)
Flat Coatings	50
Non-flat Coatings	100
Non-flat - High Gloss Coatings	150
<b>Specialty Coatings:</b>	
Aluminum Roof Coatings	400
Basement Specialty Coatings	400
Bituminous Roof Coatings	50
Bituminous Roof Primers	350
Bond Breakers	350
Concrete Curing Compounds	350
Concrete/Masonry Sealers	100
Driveway Sealers	50
Dry Fog Coatings	150
Faux Finishing Coatings	350
Fire Resistive Coatings	350
Floor Coatings	100
Form-Release Compounds	250
Graphic Arts Coatings (Sign Paints)	500
High Temperature Coatings	420
Industrial Maintenance Coatings	250
Low Solids Coatings	120 <sup>b</sup>
Magnesite Cement Coatings	450
Mastic Texture Coatings	100
Metallic Pigmented Coatings	500
Multi-Color Coatings	250
Pre-Treatment Wash Primers	420
Primers, Sealers, and Undercoaters	100
Reactive Penetrating Sealers	350
Recycled Coatings	250
Roof Coatings	50
Rust Preventative Coatings	250
Shellacs, Clear	730
Shellacs, Opaque	550
Specialty Primers, Sealers, and Undercoaters	100
Stains	250
Stone Consolidants	450
Swimming Pool Coatings	340
Traffic Marking Coatings	100
Tub and Tile Refinish Coatings	420

GREEN BUILDING PRACTICES	POINTS
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GREEN BUILDING PRACTICES	POINTS								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Waterproofing Membranes</td><td>250</td></tr> <tr><td>Wood Coatings</td><td>275</td></tr> <tr><td>Wood Preservatives</td><td>350</td></tr> <tr><td>Zinc-Rich Primers</td><td>340</td></tr> </table> <p>a. Limits are expressed as VOC Regulatory (except as noted), thinned to the manufacturer's maximum thinning recommendation, excluding any colorant added to tint bases.                      b. Limit is expressed as VOC actual.                      c. The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.                      d. Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008.                      e. Table 11.806.3(1) architectural coating regulatory category and VOC content compliance determination shall conform to the California Air Resources Board <i>Suggested Control Measure for Architectural Coatings</i> dated February 1, 2008.</p>	Waterproofing Membranes	250	Wood Coatings	275	Wood Preservatives	350	Zinc-Rich Primers	340	
Waterproofing Membranes	250								
Wood Coatings	275								
Wood Preservatives	350								
Zinc-Rich Primers	340								
<p><b>11.901.9.2</b> Site-applied interior products are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D.</p> <p><b>Exception:</b> Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).</p>	<b>8</b>								
<p><b>11.901.9.3</b> When the building is occupied during the remodel a minimum of 85% of the newly applied interior architectural coatings are in accordance with either 11.901.9.1 or 11.901.9.2.</p>	<b>MANDATORY</b>								
<p><b>11.901.10 Adhesives and sealants.</b> Interior low-VOC adhesives and sealants located inside the water proofing envelope: A minimum of 85 percent of newly applied site-applied products used within the interior of the building are in accordance with one of the following, as applicable.</p> <p>(1) The emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D.</p> <p><b>Exception:</b> Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).</p>	<b>8</b>								
<p>(2) GreenSeal GS-36 Adhesives for Commercial Use OR</p>	<b>5</b>								
<p>(3) SCAQMD Rule 1168 (see Table 11.901.10.2), excluding products that are purchased in containers that are less than 16 ounces</p>	<b>5</b>								
<p><b>Table 11.901.10.2 Site Applied Adhesive And Sealants Voc Limits<sup>a,b</sup></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">ADHESIVE</th> <th style="width: 50%;">VOC LIMIT (g/l)</th> </tr> </thead> <tbody> <tr> <td>Indoor carpet adhesives</td> <td>50</td> </tr> </tbody> </table>	ADHESIVE	VOC LIMIT (g/l)	Indoor carpet adhesives	50					
ADHESIVE	VOC LIMIT (g/l)								
Indoor carpet adhesives	50								

GREEN BUILDING PRACTICES		POINTS
Carpet pad adhesives	50	
Outdoor carpet adhesives	150	
Wood flooring adhesive	100	
Rubber floor adhesives	60	
Subfloor adhesives	50	
Ceramic tile adhesives	65	
VCT and asphalt tile adhesives	50	
Dry wall and panel adhesives	50	
Cove base adhesives	50	
Multipurpose construction adhesives	70	
Structural glazing adhesives	100	
Single ply roof membrane adhesives	250	
Architectural Sealants	250	
Architectural Sealant Primer		
Non Porous	250	
Porous	775	
Modified Bituminous Sealant Primer	500	
Other Sealant Primers	750	
CPVC solvent cement	490	
PVC solvent cement	510	
ABS solvent cement	325	
Plastic Cement Welding	250	
Adhesive Primer for Plastic	550	
Contact Adhesive	80	
Special Purpose Contact Adhesive	250	
Structural Wood Member Adhesive	140	
<p>a. VOC limit less water and less exempt compounds in grams/liter                      b. For low-solid adhesives and sealants, the VOC limit is expressed in grams/liter of material as specified in Rule 1168. For all other adhesives and sealants, the VOC limits are expressed as grams of VOC per liter of adhesive or sealant less water and less exempt compounds as specified in Rule 1168.</p>		
<p><b>11.901.11 Insulation.</b> Emissions of newly installed wall, ceiling, and floor insulation materials are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D.</p> <p><b>Exception:</b> Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m<sup>3</sup> (13.5 ppb).</p>		<b>4</b>
<p><b>11.901.12 Carbon monoxide (CO) alarms.</b> Where not required by local codes, a carbon monoxide (CO) alarm is installed in a central location outside of each separate sleeping area in the immediate vicinity of the bedrooms. The CO alarm(s) is located in accordance with NFPA 720 and is hard-wired with a battery back-up. The alarm device(s) is certified by a third-party for conformance to either CSA 6.19 or UL 2034.</p>		<b>3</b>
<p><b>11.901.13 Building entrance pollutants control.</b> Pollutants are controlled at all main building entrances by one of the following methods:</p>		

GREEN BUILDING PRACTICES		POINTS
(1) Exterior grilles or mats are installed in a fixed manner and may be removable for cleaning.		<b>1</b>
(2) Interior grilles or mats are installed in a fixed manner and may be removable for cleaning.		<b>1</b>
<p><b>901.14 Non-smoking areas.</b> Environmental tobacco smoke is minimized by one or more of the following:</p>		
(1) All interior common areas of a multi-unit building are designated as non-smoking areas with posted signage.		<b>1</b>
(2) Exterior smoking areas of a multi-unit building are designated with posted signage and located a minimum of 25 feet from entries, outdoor air intakes, and operable windows.		<b>1</b>
<p><b>11.901.15</b> For buildings constructed before 1978, lead safe work practices are used during the remodeling.</p>		
<p><b>11.902 POLLUTANT CONTROL</b></p>		
<p><b>11.902.0 Intent.</b> Pollutants generated in the building are controlled.</p>		
<p><b>11.902.1 Spot ventilation.</b></p>		
<p><b>11.902.1.1</b> Spot ventilation is in accordance with the following:</p>		
(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.		<b>Mandatory</b>
(2) Clothes dryers are vented to the outdoors.		<b>Mandatory</b>
(3) Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation.		<b>8</b>
<p><b>11.902.1.2</b> Bathroom and/or laundry exhaust fan is provided with an automatic timer and/or humidistat:</p>		<b>11 Points Max</b>
(1) for first device		<b>5</b>
(2) for each additional device		<b>2</b>
<p><b>11.902.1.3</b> Kitchen range, bathroom, and laundry exhaust are verified to specification. Ventilation airflow at the point of exhaust is tested to a minimum of 100 cfm (47.2 L/s) intermittent or 25 cfm (11.8 L/s) continuous for kitchens, and 50 cfm (23.6 L/s) intermittent or 20 cfm (9.4 L/s) continuous for bathrooms and/or laundry.</p>		<b>8</b>
<p><b>11.902.1.4</b> Exhaust fans are ENERGY STAR, as applicable.</p>		<b>12 Points Max</b>
(1) ENERGY STAR, or equivalent, fans		<b>2</b>
<p><b>(Points awarded per fan.)</b></p>		

GREEN BUILDING PRACTICES	POINTS
(2) ENERGY STAR, or equivalent, fans operating at or below 1 sone (Points awarded per fan.)	3
<b>11.902.2 Building ventilation systems</b>	
<b>11.902.2.1</b> One of the following whole building ventilation systems is implemented and is in accordance with the specifications of Appendix B.	
(1) exhaust or supply fan(s) ready for continuous operation and with appropriately labeled controls	8
(2) balanced exhaust and supply fans with supply intakes located in accordance with the manufacturer's guidelines so as to not introduce polluted air back into the building	10
(3) heat-recovery ventilator	15
(4) energy-recovery ventilator	17
<b>11.902.2.2</b> Ventilation airflow is tested to achieve the design fan airflow at point of exhaust in accordance with Section 11.902.2.1.	8
<b>11.902.2.3</b> MERV filters 8 or greater are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of MERV 8 filters.	3
<b>11.902.3 Radon control.</b> Radon control measures are in accordance with ICC IRC Appendix F. Zones are defined in Figure 9(1). <b>Exception: This practice is not mandatory for existing structure that have been tested for radon and found to be below federal and local acceptable limits.</b>	
(1) Buildings located in Zone 1	<b>Mandatory</b>
(a) a passive radon system is installed	10
(b) an active radon system is installed	18
(2) Buildings located in Zone 2 or Zone 3	
(a) a passive or active radon system is installed	10
<b>11.902.4 HVAC system protection.</b> One of the following HVAC system protection measures is performed.	3
(1) HVAC supply registers (boots), return grilles, and rough-ins are covered during construction activities to prevent dust and other pollutants from entering the system.	
(2) Prior to owner occupancy, HVAC supply registers (boots), return grilles, and duct terminations are inspected and vacuumed. In addition, the coils are inspected and cleaned and the filter is replaced if necessary.	
<b>11.902.5 Central vacuum systems.</b> Central vacuum system is installed and vented to the outside.	5
<b>11.902.6 Living space contaminants.</b> The living space is sealed to prevent unwanted contaminants.	

GREEN BUILDING PRACTICES	POINTS
(1) Attic access, knee wall door, or drop down stair is caulked, gasketed, or otherwise sealed.	2
(2) All new penetrations or penetrations exposed during the remodel (e.g., top plates, HVAC register boots, recessed can lights) are sealed in the following areas:	
(a) attic/ceiling	2
(b) wall	2
(c) floors	2

**11.903 MOISTURE MANAGEMENT: VAPOR, RAINWATER, PLUMBING, HVAC**

**11.903.0 Intent.** Moisture and moisture effects are controlled.

<b>11.903.1 Plumbing</b>	
<b>11.903.1.1</b> Cold water pipes in unconditioned spaces are insulated to a minimum of R-4 with pipe insulation or other covering that adequately prevents condensation.	2
<b>11.903.1.2</b> Plumbing is not installed in unconditioned spaces.	5

<b>11.903.2 Duct insulation.</b> 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. <b>Exception: This practice is not mandatory for existing ducts that are not exposed or accessible during the remodel.</b>	
(1) insulated to a minimum of R-6	<b>Mandatory</b>
(2) insulated to a minimum of R-8	2

<b>11.903.3 Relative humidity.</b> In climate zones 1A, 2A, 3A, 4A, and 5A as defined by Figure 6(1), equipment is installed to maintain relative humidity (RH) at or below 60 percent using one of the following: <b>(Points not awarded in remaining climate zones.)</b>	8
(1) additional dehumidification system(s)	
(2) central HVAC system equipped with additional controls to operate in dehumidification mode	

**11.904 INNOVATIVE PRACTICES**

<b>11.904.1 Humidity monitoring system.</b> A humidity monitoring system is installed with a mobile base unit that displays a reading of temperature and relative humidity at the base unit with a minimum of two remote units. One remote unit is placed permanently inside the conditioned space in a central location, excluding attachment to exterior walls, and another remote unit is placed permanently outside of the conditioned space.	2
<b>11.904.2 Kitchen exhaust.</b> A kitchen exhaust unit(s) that equals or exceeds 400 cfm (189 L/s) is installed, and makeup air is provided.	2

GREEN BUILDING PRACTICES	POINTS
<b>11.1001 BUILDING OWNERS' MANUAL FOR ONE- AND TWO-FAMILY DWELLINGS</b>	
<b>11.1001.0 Intent.</b> Information on the building's use, maintenance, and green components is provided.	
<b>11.1001.1</b> A building owner's manual is provided that includes the following, as available and applicable.  <b>(Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)</b>	<b>1</b>
<b>(1)</b> A green building program certificate or completion document.	<b>Mandatory</b>
<b>(2)</b> List of green building features (can include the national green building checklist).	<b>Mandatory</b>
<b>(3)</b> Product manufacturer's manuals or product data sheet for newly installed major equipment, fixtures, and appliances. If product data sheet is in the building owners' manual, manufacturer's manual may be attached to the appliance in lieu of inclusion in the building owners' manual.	<b>Mandatory</b>
<b>(4)</b> Information on local recycling programs.	
<b>(5)</b> Information on available local utility programs that purchase a portion of energy from renewable energy providers.	
<b>(6)</b> Explanation of the benefits of using energy-efficient lighting systems [e.g., compact fluorescent light bulbs, light emitting diode (LED)] in high-usage areas.	
<b>(7)</b> A list of practices to conserve water and energy.	
<b>(8)</b> Local public transportation options.	
<b>(9)</b> A diagram showing the location of safety valves and controls for major building systems.	
<b>(10)</b> Where frost-protected shallow foundations are used, owner is informed of precautions including: <b>(a)</b> instructions to not remove or damage insulation when modifying landscaping. <b>(b)</b> providing heat to the building as required by the ICC IRC or IBC. <b>(c)</b> keeping base materials beneath and around the building free from moisture caused by broken water pipes or other water sources.	
<b>(11)</b> A list of local service providers that offer regularly scheduled service and maintenance contracts to ensure proper performance of equipment and the structure (e.g., HVAC, water-heating equipment, sealants, caulks, gutter and downspout system, shower and/or tub surrounds, irrigation system).	
<b>(12)</b> A photo record of framing with utilities installed. Photos are taken prior to installing insulation, clearly labeled, and included as part of the building owners' manual.	
<b>(13)</b> Maintenance checklist.	
<b>(14)</b> List of common hazardous materials often used around the building and instructions for proper handling and disposal of these materials.	

GREEN BUILDING PRACTICES	POINTS
<b>(15)</b> Information on organic pest control, fertilizers, deicers, and cleaning products.	
<b>(16)</b> Information on native landscape materials and/or those that have low-water requirements.	
<b>(17)</b> Information on methods of maintaining the building's relative humidity in the range of 30 percent to 60 percent.	
<b>(18)</b> Instructions for inspecting the building for termite infestation.	
<b>(19)</b> Instructions for maintaining gutters and downspouts and importance of diverting water a minimum of 5 feet away from foundation.	
<b>(20)</b> A narrative detailing the importance of maintenance and operation in retaining the attributes of a green-built building.	
<b>(21)</b> Where storm water management measures are installed on the lot, information on the location, purpose, and upkeep of these measures.  22 For buildings originally built before 1978, the EPA publications "Reducign Lad Hazards When Remodeling Your Home" and "Abestos in Your Home: A Homeowners Guide"	
<b>11.1002 TRAINING OF BUILDING OWNERS ON OPERATION AND MAINTENANCE FOR ONE- AND TWO-FAMILY DWELLINGS AND MULTI-UNIT BUILDINGS</b>	
<b>11.1002.1 Training of building owners.</b> Building owners are familiarized with the role of occupants in achieving green goals. On-site training is provided to the responsible party(ies) regarding newly installed equipment operation and maintenance, control systems, and occupant actions that will improve the environmental performance of the building. These include:	<b>Mandatory</b>
<b>(1)</b> HVAC filters <b>(2)</b> thermostat operation and programming <b>(3)</b> lighting controls <b>(4)</b> appliances operation <b>(5)</b> water heater settings and hot water use <b>(6)</b> fan controls <b>(7)</b> recycling practices	
<b>11.1003 CONSTRUCTION, OPERATION, AND MAINTENANCE MANUALS AND TRAINING FOR MULTI-UNIT BUILDINGS</b>	
<b>11.1003.0 Intent.</b> Manuals are provided to the responsible parties (owner, management, tenant, and/or maintenance team) regarding the construction, operation, and maintenance of the building. Paper or digital format manuals are to include information regarding those aspects of the building's construction, maintenance, and operation that are within the area of responsibilities of the respective recipient. One or more responsible parties are to receive a copy of all documentation for archival purposes.	

GREEN BUILDING PRACTICES	POINTS
<p><b>11.1003.1 Building construction manual.</b> A building construction manual, including five or more of the following, is compiled and distributed in accordance with Section 11.1003.0.  <b>(Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)</b></p>	<b>1</b>
<p><b>(1)</b> A narrative detailing the importance of constructing a green building, including a list of green building attributes included in the building. This narrative is included in all responsible parties' manuals.</p>	<b>Mandatory</b>
<p><b>(2)</b> A local green building program certificate as well as a copy of the <i>National Green Building Standard™</i>, as adopted by the Adopting Entity, and the individual measures achieved by the building.</p>	<b>Mandatory</b>
<p><b>(3)</b> Warranty, operation, and maintenance instructions for all equipment, fixtures, appliances, and finishes.</p>	<b>Mandatory</b>
<p><b>(4)</b> Record drawings of the building.</p>	
<p><b>(5)</b> A record drawing of the site including stormwater management plans, utility lines, landscaping with common name and genus/species of plantings.</p>	
<p><b>(6)</b> A diagram showing the location of safety valves and controls for major building systems.</p>	
<p><b>(7)</b> A list of the type and wattage of light bulbs installed in light fixtures.</p>	
<p><b>(8)</b> A photo record of framing with utilities installed. Photos are taken prior to installing insulation and clearly labeled.</p>	
<p><b>11.1003.2 Operations manual.</b> Operations manuals are created and distributed to the responsible parties in accordance with Section 11.1003.0. Between all of the operation manuals, five or more of the following options are included.  <b>(Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)</b></p>	<b>1</b>
<p><b>(1)</b> A narrative detailing the importance of operating and living in a green building. This narrative is included in all responsible parties' manuals.</p>	<b>Mandatory</b>
<p><b>(2)</b> A list of practices to conserve water and energy (e.g., turning off lights when not in use, switching the rotation of ceiling fans in changing seasons, purchasing ENERGY STAR appliances and electronics).</p>	<b>Mandatory</b>
<p><b>(3)</b> Information on methods of maintaining the building's relative humidity in the range of 30 percent to 60 percent.</p>	<b>Mandatory</b>
<p><b>(4)</b> Information on opportunities to purchase renewable energy from local utilities or national green power providers and information on utility and tax incentives for the installation of on-site renewable energy systems.</p>	
<p><b>(5)</b> Information on local and on-site recycling and hazardous waste disposal programs and, if applicable, building recycling and hazardous waste handling and disposal procedures.</p>	
<p><b>(6)</b> Local public transportation options.</p>	

GREEN BUILDING PRACTICES	POINTS
<p><b>(7)</b> Explanation of the benefits of using compact fluorescent light bulbs, LEDs, or other high-efficiency lighting.</p> <p><b>(8)</b> Information on native landscape materials and/or those that have low water requirements.</p> <p><b>(9)</b> Information on the radon mitigation system, where applicable.</p> <p><b>(10)</b> A procedure for educating tenants in rental properties on the proper use, benefits, and maintenance of green building systems including a maintenance staff notification process for improperly functioning equipment.</p>	
<p><b>11.1003.3 Maintenance manual.</b> Maintenance manuals are created and distributed to the responsible parties in accordance with Section 11.1003.0. Between all of the maintenance manuals, five or more of the following options are included.  <b>(Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)</b></p>	<b>1</b>
<p><b>(1)</b> A narrative detailing the importance of maintaining a green building. This narrative is included in all responsible parties' manuals.</p>	<b>Mandatory</b>
<p><b>(2)</b> A list of local service providers that offer regularly scheduled service and maintenance contracts to ensure proper performance of equipment and the structure (e.g., HVAC, water-heating equipment, sealants, caulks, gutter and downspout system, shower and/or tub surrounds, irrigation system).</p>	
<p><b>(3)</b> User-friendly maintenance checklist that includes:</p> <ul style="list-style-type: none"> <li><b>(a)</b> HVAC filters</li> <li><b>(b)</b> thermostat operation and programming</li> <li><b>(c)</b> lighting controls</li> <li><b>(d)</b> appliances and settings</li> <li><b>(e)</b> water heater settings</li> <li><b>(f)</b> fan controls</li> </ul>	
<p><b>(4)</b> List of common hazardous materials often used around the building and instructions for proper handling and disposal of these materials.</p>	
<p><b>(5)</b> Information on organic pest control, fertilizers, deicers, and cleaning products.</p>	
<p><b>(6)</b> Instructions for maintaining gutters and downspouts and the importance of diverting water a minimum of 5 feet away from foundation.</p>	
<p><b>(7)</b> Instructions for inspecting the building for termite infestation.</p>	
<p><b>(8)</b> A procedure for rental tenant occupancy turnover that preserves the green features.</p>	
<p><b>(9)</b> An outline of a formal green building training program for maintenance staff.</p>	
<p><b>11.1004 INNOVATIVE PRACTICES</b></p>	
<p><b>11.1004.1</b> (Reserved)</p>	



CHAPTER 12

Action: Replace entire chapter 12 with new chapter 12

Reason: Task group chairs met with Research Center and developed a new approach to this part of the standard which creates all mandatory items and eliminates scoring of these small projects.

NOTE: The language is NOT underlined for clarity.

12.0 This chapter sets forth the mandatory GREEN BUILDING PRACTICES for all Small Remodeling Projects.

12.0.1 Each applicable practice below must be met for any of the four Small Projects. Additionally the requirements that are specific to each of the four Small Projects must be met in order to qualify.

12.1.601.2 Material usage. Structural systems, as required for the remodel, are designed or construction techniques are implemented that reduce and optimize material usage using at least one of the following methods.

- (1) Minimum structural member or element sizes necessary for strength and stiffness in accordance with advanced framing techniques or structural design standards are selected.
- (2) Higher-grade or higher-strength of the same materials than commonly specified for structural elements and components in the building are used and element or component sizes are reduced accordingly.
- (3) Performance-based structural design is used to optimize lateral force-resisting systems.

12.1.602.1.7.1 Moisture control measures are in accordance with the following:

- (1) Building materials with visible mold are not installed or are cleaned or encapsulated prior to concealment and closing.
- (2) Insulation in cavities is dry in accordance with manufacturer's installation instructions when enclosed (e.g., with drywall).

12.1.602.1.7.2 Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the finish flooring to be applied.

12.1.602.1.11 Tile backing materials. Tile backing materials installed during the remodel under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325.

12.1.603.0 Intent. Environmentally friendly materials are used.. At least two types of materials chosen from 12.1.603.1, 12.1.604.1, 12.1.606.1 or 12.1.606.2 are used during the remodel.

12.1.603.1 Salvaged materials. Reclaimed and/or salvaged materials and components are used. The total material value and labor cost of salvaged materials is equal to or exceeds 1 percent of the total remodeling cost.

12.1.604.1 Recycled content. Newly installed Building materials with at least 25% recycled content are used for two components of the remodel. The total cost of materials with recycle content exceed 1% of the remodeling cost.

12.1.606.1 Biobased products. The following biobased products are used. The total cost of bio-based materials exceed 1% of the remodeling cost.

- (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)

12.1.606.2 Wood-based products. Wood or wood-based products are certified to the requirements of one of the following recognized product programs: The total cost of certified wood materials exceed 1% of the remodeling cost.

- (a) American Forest Foundation's American Tree Farm System® (ATFS)
- (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

12.1.605.05 All hazardous materials exposed during the remodel are removed or comply with federal and local regulations. All waste classified as hazardous shall be properly handled and disposed.

12.1.701.3 Adopting Entity review. A review by the Adopting Entity or designated third party shall be conducted to verify that the appropriate design will be implemented with respect to energy usage after the remodel.

12.1.701.4.1.1 HVAC system sizing. Newly installed or modified space heating and cooling system is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent. New Equipment is selected using ACCA Manual S or equivalent. When existing equipment is used, Manual J is used to verify the capacity is appropriate for the remodel.

12.1.701.4.2.1 Duct air sealing. Newly installed, modified, or ducts that are exposed during the remodel are air sealed. All duct sealing materials are rated to UL 181A or UL 181B specifications and are used in accordance with manufacturer's instructions.

12.1.701.4.2.2 Supply ducts. Building cavities are not used as supply ducts. Existing building cavities currently used as supply ducts exposed during the remodel are lined.

12.1.701.4.2.3 Duct system sizing. New or modified duct system is sized and designed in accordance with ACCA Manual D or equivalent.

12.1.701.4.3.1 Building Thermal Envelope. The building thermal envelope exposed or created during the remodel is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. The following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film or solid material:

- (a) All joints, seams and penetrations.
- (b) Site-built windows, doors and skylights.
- (c) Openings between window and door assemblies and their respective jambs and framing.
- (d) Utility penetrations.
- (e) Dropped ceilings or chases adjacent to the thermal envelope.
- (f) Knee walls.
- (g) Walls and ceilings separating a garage from conditioned spaces.
- (h) Behind tubs and showers on exterior walls.
- (i) Common walls between dwelling units.
- (j) Attic access openings.
- (k) Rim joist junction.
- (l) Other sources of infiltration.

12.1.701.4.3.2 Air sealing and insulation. The compliance of the building envelope exposed or created during the remodel for air tightness and insulation installation is demonstrated via Visual inspection. Building envelope tightness

and insulation installation are considered acceptable when the items listed in Table 701.4.3.2(2) applicable to the method of construction are field verified.

**Table 12.1.701.4.3.2(2)  
Air Barrier and Insulation Inspection Component Criteria**

COMPONENT	CRITERIA
Air barrier and thermal barrier	<ul style="list-style-type: none"> <li>Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier.</li> <li>Breaks or joints in the air barrier are filled or repaired.</li> <li>Air-permeable insulation is not used as a sealing material.</li> <li>Air-permeable insulation is inside of an air barrier.</li> </ul>
Ceiling/attic	<ul style="list-style-type: none"> <li>Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed.</li> <li>Attic access (except unvented attic), knee wall door, or drop down stair is sealed.</li> </ul>
Walls	<ul style="list-style-type: none"> <li>Corners and headers are insulated.</li> <li>Junction of foundation and sill plate is sealed.</li> </ul>
Windows and doors	<ul style="list-style-type: none"> <li>Space between window/door jambs and framing is sealed.</li> </ul>
Rim joists	<ul style="list-style-type: none"> <li>Rim joists are insulated and include an air barrier.</li> </ul>
Floors (including above-garage and cantilevered floors)	<ul style="list-style-type: none"> <li>Insulation is installed to maintain permanent contact with underside of subfloor decking.</li> <li>Air barrier is installed at any exposed edge of insulation.</li> </ul>
Crawl space walls	<ul style="list-style-type: none"> <li>Insulation is permanently attached to walls.</li> <li>Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.</li> </ul>
Shafts, penetrations	<ul style="list-style-type: none"> <li>Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.</li> </ul>
Narrow cavities	<ul style="list-style-type: none"> <li>Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.</li> </ul>
Garage separation	<ul style="list-style-type: none"> <li>Air sealing is provided between the garage and conditioned spaces.</li> </ul>
Recessed lighting	<ul style="list-style-type: none"> <li>Recessed light fixtures are air tight, IC rated, and sealed to drywall.</li> <li>Exception—fixtures in conditioned space.</li> </ul>
Plumbing and wiring	<ul style="list-style-type: none"> <li>Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.</li> </ul>
Shower/tub on exterior wall	<ul style="list-style-type: none"> <li>Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.</li> </ul>
Electrical/phone box on exterior walls	<ul style="list-style-type: none"> <li>Air barrier extends behind boxes or air sealed-type boxes are installed.</li> </ul>
Common wall	<ul style="list-style-type: none"> <li>Air barrier is installed in common wall between dwelling units.</li> </ul>
HVAC register boots	<ul style="list-style-type: none"> <li>HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.</li> </ul>
Fireplace	<ul style="list-style-type: none"> <li>Fireplace walls include an air barrier.</li> </ul>

12.1.701.4.3.3 Fenestration air leakage. Newly installed windows, skylights and sliding glass doors have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m<sup>2</sup>), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/ m<sup>2</sup>), when tested according to NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled by the manufacturer.

Exception: Site built windows, skylights and doors.

12.1.701.4.3.4 Recessed lighting. Newly installed recessed luminaires installed in the building thermal envelope are sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires are IC-rated and labeled as meeting ASTM E 283 when tested at 1.57 psf (75 Pa) pressure differential with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity. All recessed luminaires are sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

12.1.701.4.4 High-efficacy lighting. A minimum of 50 percent of the installed hard-wired lighting fixtures in the remodeled portion of the building, or the bulbs in those fixtures, qualify as high efficacy or equivalent.

12.1.701.4.5 Boiler supply piping. Boiler supply piping is insulated in unconditioned spaces accessible during the remodel.

12.1.703.5.3 Appliances. All major appliances in the remodeled portion of the building are ENERGY STAR or equivalent:

12.1.901.1.4 Gas-fired fireplaces and direct heating equipment in the remodeled portion of the building is listed and is installed in accordance with the National Fuel Gas Code or the applicable local gas appliance installation code. Gas-fired fireplaces and direct heating equipment are vented to the outdoors.

12.1.901.2.1 Solid fuel-burning fireplaces, inserts, stoves and heaters in the remodeled portion of the building are code compliant and are in accordance with the following requirements:

- (1) Site-built masonry wood-burning fireplaces are equipped with outside combustion air and a means of sealing the flue and the combustion air outlets to minimize interior air (heat) loss when not in operation.
- (2) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are EPA certified.
- (3) 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).
- (4) Pellet (biomass) stoves and furnaces are in accordance with the requirements of ASTM E1509 or are EPA certified
- (5) Masonry heaters are in accordance with the definitions in ASTM E1602 and ICC IBC, Section 2112.1.

12.1.901.3 Garages. Garages adjacent to the remodeled portion of the building 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.
  - (b) A continuous air barrier is provided between walls and ceilings separating the garage space from the conditioned living spaces.

12.1.901.4 Wood materials. A minimum of 85 percent of newly installed structural wood panels 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

12.1.901.5 Cabinets. A minimum of 85 percent of newly installed kitchen and bath vanity cabinets are in accordance with KCMA ESP 04 (or equivalent) or CARB Composite Wood Air Toxic Contaminant Measure Standard.

12.1.901.6 Carpets. Carpets in the remodeled portion of the building are in accordance with the following:

- (1) Wall-to-wall carpeting is not installed adjacent to water closets and bathing fixtures. Mandatory

(2) A minimum of 85 percent carpet area, carpet cushion (padding), and carpet adhesives are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D.

Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).

12.1.901.7 Hard-surface flooring. At least 85 percent of all prefinished installed hard-surface flooring in the remodeled portion of the building is in accordance with the emission concentration limits of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D. Where post-manufacture coatings or surface applications have not been applied, the following hard surface flooring types are deemed to comply with the emission requirements of this section:

Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).

- (a) Ceramic tile flooring
- (b) Organic-free, mineral-based flooring
- (c) Clay masonry flooring
- (d) Concrete masonry flooring
- (e) Concrete flooring
- (f) Metal flooring
- (g) Glass

12.1.901.8 Wall coverings. At least 85 percent of wall coverings in the remodeled portion of the building are in accordance with the emission concentration limits of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D. 4

Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).

12.1.901.9 Architectural coatings. A minimum of 85 percent of newly applied architectural coatings in the remodeled portion of the building are in accordance with either Section 12.1.901.9.1 or Section 12.1.901.9.2,

901.9.1 Site-applied interior architectural coatings, which are inside the water proofing envelope, are in accordance with one or more of the following:

- (1) Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)
- (2) GreenSeal GS-11 Standard for Paints and Coatings
- (3) CARB Suggested Control Measure for Architectural Coatings (see Table 901.9.1).

**Table 12.1.901.9.1  
VOC Content Limits For Architectural Coatingsc,d,e**

Coating Category	LIMITa (g/l)
Flat Coatings	50
Non-flat Coatings	100
Non-flat - High Gloss Coatings	150
Specialty Coatings:	
Aluminum Roof Coatings	400
Basement Specialty Coatings	400
Bituminous Roof Coatings	50
Bituminous Roof Primers	350

Bond Breakers	350
Concrete Curing Compounds	350
Concrete/Masonry Sealers	100
Driveway Sealers	50
Dry Fog Coatings	150
Faux Finishing Coatings	350
Fire Resistive Coatings	350
Floor Coatings	100
Form-Release Compounds	250
Graphic Arts Coatings (Sign Paints)	500
High Temperature Coatings	420
Industrial Maintenance Coatings	250
Low Solids Coatings	120b
Magnesite Cement Coatings	450
Mastic Texture Coatings	100
Metallic Pigmented Coatings	500
Multi-Color Coatings	250
Pre-Treatment Wash Primers	420
Primers, Sealers, and Undercoaters	100
Reactive Penetrating Sealers	350
Recycled Coatings	250
Roof Coatings	50
Rust Preventative Coatings	250
Shellacs, Clear	730
Shellacs, Opaque	550
Specialty Primers, Sealers, and Undercoaters	100
Stains	250
Stone Consolidants	450
Swimming Pool Coatings	340
Traffic Marking Coatings	100
Tub and Tile Refinish Coatings	420
Waterproofing Membranes	250
Wood Coatings	275
Wood Preservatives	350
Zinc-Rich Primers	340

a. Limits are expressed as VOC Regulatory (except as noted), thinned to the manufacturer's maximum thinning recommendation, excluding any colorant added to tint bases.  
 b. Limit is expressed as VOC actual.  
 c. The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.  
 d. Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008.  
 e. Table 806.3(1) architectural coating regulatory category and VOC content compliance determination shall conform to the California Air Resources Board Suggested Control Measure for Architectural Coatings dated February 1, 2008.

12.1.901.9.2 Site-applied interior products are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D.

Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).

12.1.901.10 Adhesives and sealants. Interior low-VOC adhesives and sealants located inside the water proofing envelope: A minimum of 85 percent of newly applied site-applied adhesive and sealant products used within the interior of the building are in accordance with one of the following, as applicable.

- (1) The emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D.

Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).

- (2) GreenSeal GS-36 Adhesives for Commercial Use

OR

- (3) SCAQMD Rule 1168 (see Table 901.10.2), excluding products that are purchased in containers that are less than 16 ounces

**Table 12.1.901.10.2  
Site Applied Adhesive And Sealants Voc Limitsa,b**

ADHESIVE	VOC LIMIT (g/l)
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesive	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Dry wall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single ply roof membrane adhesives	250
Architectural Sealants	250
Architectural Sealant Primer	
Non Porous	250
Porous	775
Modified Bituminous Sealant Primer	500
Other Sealant Primers	750
CPVC solvent cement	490
PVC solvent cement	510
ABS solvent cement	325
Plastic Cement Welding	250
Adhesive Primer for Plastic	550
Contact Adhesive	80
Special Purpose Contact Adhesive	250
Structural Wood Member Adhesive	140
a. VOC limit less water and less exempt compounds in grams/liter	
b. For low-solid adhesives and sealants, the VOC limit is expressed in grams/liter of material as specified in Rule 1168. For all other adhesives and sealants, the VOC limits are expressed as grams of VOC per liter of adhesive or sealant less water and less exempt compounds as specified in Rule 1168.	

12.1.901.11 Insulation. Emissions of newly installed wall, ceiling, and floor insulation materials are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D. 4

Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).

12.1.901.15 For buildings constructed before 1978, lead safe work practices are used during the remodeling.

12.1.902.1.1 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.

- (2) Clothes dryers are vented to the outdoors.

12.1.902.4 HVAC system protection. One of the following HVAC system protection measures is performed.

- (1) HVAC supply registers (boots), return grilles, and rough-ins are covered during construction activities to prevent dust and other pollutants from entering the system.

- (2) Prior to owner occupancy, HVAC supply registers (boots), return grilles, and duct terminations are inspected and vacuumed. In addition, the coils are inspected and cleaned and the filter is replaced if necessary.

12.1.903.2 Duct insulation. All HVAC ducts, plenums, and trunks in unconditioned attics, basements, and crawl spaces and exposed or modified during the remodel are insulated to a minimum of R-6. Outdoor air supplies to ventilation systems are insulated to a minimum of R-6.

**12.2.0 Kitchen Remodels**

In addition to the practices listed in section 12.1, the following practices are mandatory for all kitchen remodel projects.

12.2.607.1 Recycling. Recycling by the occupants with 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

12.2.611.3 Universal Design Elements. Dwelling incorporates a Minimum 36-inch wide accessible no step route from the building into the kitchen.

12.2.611.4 Food waste disposers. A minimum of one food waste disposer is installed at the primary kitchen sink.

**12.3.0 Bathroom Remodels**

In addition to the practices listed in section 12.1, the following practices are mandatory for all bathroom remodel projects.

12.3.611.3 Universal Design Elements. The bathroom incorporates Blocking or equivalent installed in the accessible bathroom walls for future installation of grab bars at commode and bathing fixture, if applicable.

12.3.801.4 Showerheads. The maximum combined flow rate of all showerheads installed in the remodeled bathroom controlled by a single valve at any point in time in a shower compartment is 1.6 to less than 2.5 gpm. Maximum of two valves are installed per shower compartment. The flow rate is tested at 80 psi (552 kPa) in accordance with ASME A112.18.1. Showerheads are served by an automatic compensating valve that complies with ASSE 1016 or ASME

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A112.18.1 and specifically designed to provide thermal shock and scald protection at the flow rate of the showerhead.

12.3.801.5.1 Water-efficient lavatory faucets with 1.5 gpm (5.68 L/m) or less maximum flow rate when tested at 60 psi (414 kPa) in accordance with ASME A112.18.1 are installed:

12.3.801.6 Water closets. All water closets installed in the remodeled bathroom have an effective flush volume of 1.28 gallons (4.85 L) or less when tested in accordance with ASME A112.19.2 (all water closets) or when tested in accordance with ASME A112.19.14 (all dual flush water closets), and is in accordance with EPA WaterSense Tank-Type High-Efficiency Toilet.

12.3.901.5 Cabinets. A minimum of 85 percent of newly installed kitchen and bath vanity cabinets are in accordance with KCMA ESP 04 (or equivalent) or CARB Composite Wood Air Toxic Contaminant Measure Standard.

12.3.902.1.1 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.
- (2) Clothes dryers are vented to the outdoors.

### 12.4.0 Basement Remodel

In addition to the practices listed in section 12.1, the following practices are mandatory for all basement remodel projects.

12.4.1 Prior to any construction activity the basement is inspected for evidence of moisture problems. Any identified moisture problems are corrected prior to covering any walls or floors.

12.4.2 When the basement remodel includes a kitchen, the remodel shall also comply with the practices in section 12.2.

12.4.3 When the basement remodel includes a bathroom, the remodel shall also comply with the practices in section 12.3.

### 12.5 Additions

In addition to the practices listed in section 12.1, the following practices are mandatory for all room addition remodel projects.

12.5.1 When the addition includes a kitchen, the remodel shall also comply with the practices in section 12.2.

12.5.2 When the addition includes a bathroom, the remodel shall also comply with the practices in section 12.3.

12.5.503.5 Landscape plan. When the addition disturbs more than 1000 square feet of the lot, a landscape plan for the lot is developed to limit water and energy use while preserving or enhancing the natural environment. Landscaping is phased to coincide with achievement of final grades to ensure denuded areas are quickly vegetated.

12.5.602.1.1.1 A capillary break and vapor retarder are installed at all concrete slabs adjoining living space in the addition in accordance with Sections 12.5.602.1.1.1(1) or 12.5.602.1.1.1(2), as modified by Section 12.5.602.1.1.1(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 602.1.4.
- (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 602.1.4.

- (3) Modification: 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.

12.5.602.1.3.1 Where required by the ICC IRC or IBC for habitable and usable spaces of the addition below grade, exterior drain tile is installed.

12.5.602.1.4.1 Crawlspace vapor retarder for the addition is in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 inches (152 mm) and are taped.

- (1) Floors. Minimum 6 mil vapor retarder installed on the crawlspace floor and extended up the wall sufficient to allow the material to be affixed with glue and furring strips.
- (2) Walls. Damp-proof walls are provided below finished grade.

12.5.602.1.8 Water-resistive barrier. 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 of the addition.

12.5.602.1.9 Flashing. Flashing is provided for the addition and for the intersection where the addition joins the existing building to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details are provided in the construction documents and are in accordance with the fenestration manufacturer's instructions, the flashing manufacturer's instructions, or as detailed by a registered design professional.

(1) Flashing are installed at all of the following locations, as applicable:

- (a) around exterior fenestrations, skylights and doors
- (b) at roof valleys
- (c) at deck, balcony, porch or stair to building intersections
- (d) at roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets.
- (e) at ends of and under masonry, wood, or metal copings and sills
- (f) above projecting wood trim
- (g) at built-in roof gutters
- (h) drip edge is installed at eaves and rake edges.

12.5.602.1.14 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 on the addition in accordance with the ICC IRC or IBC at roof eaves of pitched roofs and extends at a minimum of 24 inches (610 mm) inside the exterior wall line of the building.

12.5.602.1.15 Architectural features. New Architectural features that increase the potential for the water intrusion are avoided:

- (1) No roof configurations that create horizontal valleys in roof design.
- (2) No recessed windows and architectural features that trap water on horizontal surfaces.
- (3) All horizontal ledgers are sloped away to provide gravity drainage as appropriate for the application.

12.5.602.4.1 Finished grade at all sides of the addition 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 2 percent.

## CHAPTER 3 COMPLIANCE METHOD

### 301 - GENERAL

**301.1 Environmental rating levels.** The building, project, site, and/or development's environmental rating level shall consist of all mandatory requirements, plus points assessed using the point system specified within this Chapter. The rating level shall be in accordance with Table 302, 303, or 305.5, as applicable.

**301.2 Awarding of points.** Points shall be awarded as follows:

- (1) The maximum number of points that can be awarded for each practice is noted with that practice.
- (2) Point allocation for multi-unit buildings shall be as prescribed in Section 304.
- (3) The Adopting Entity shall allow new and innovative products and practices to be added where deemed to meet the intent of this Standard. Points assigned for any new product or practice shall be determined by the Adopting Entity. A maximum of 20 points may be awarded at the discretion of the Adopting Entity for innovative products or practices. Innovative practices and products shall fall under Categories 1-6 from Table 303; however points shall only be assigned under Category 7. Point values shall be determined by comparing the innovative product or practice to a practice or product already described in the Standard. The applicant shall supply demonstrable, quantified data to support the innovative product or practice and to determine the practice's functional equivalent in the Standard to determine the points to be awarded.

### 302 - GREEN SUBDIVISIONS

**302.1 Site design and development.** The threshold points required for the environmental rating levels to qualify a new or existing subdivision as green under this Standard shall be in accordance with Table 302 and based on points in Chapter 4.

**Table 302  
Threshold Point Ratings for Site Design and Development**

Green Subdivision Category		Rating Level Points			
		One Star	Two Stars	Three Stars	Four Stars
Chapter 4	Site Design and Development	<del>7995</del>	<del>404122</del>	<del>434149</del>	<del>475176</del>

### 303 - GREEN BUILDINGS

**303.1 Green buildings.** The threshold points required for the environmental rating levels for a green building shall be in accordance with Table 303. To qualify for one of these rating levels, all of the following shall be satisfied:

- (1) The threshold number of points, in accordance with Table 303, shall be achieved as prescribed in Categories 1 through 6. The lowest level achieved in any category shall determine the overall rating level achieved for the building.
- (2) In addition to the threshold number of points in each category, all mandatory provisions of each category shall be implemented.
- (3) In addition to the threshold number of points prescribed in Categories 1 through 6, the additional points prescribed in Category 7 shall be achieved from any of the categories. Where deemed appropriate by the Adopting Entity and based on regional conditions, additional points from Category 7 may be assigned to

another category (or categories) to increase the threshold points required for that category (or categories). Points shall not be reduced by the Adopting Entity in any of the six other categories.

**Table 303  
Threshold Point Ratings for Green Buildings**

Green Building Categories			Rating Level Points <sup>(1) (2)</sup>			
			BRONZE	SILVER	GOLD	EMERALD
1.	Chapter 5	Lot Design, Preparation, and Development	<del>3950</del>	<del>6664</del>	<del>9393</del>	<del>119121</del>
2.	Chapter 6	Resource Efficiency	<del>4543</del>	<del>7959</del>	<del>11389</del>	<del>146119</del>
3.	Chapter 7	Energy Efficiency	30	60	<del>10080</del>	<del>120100</del>
4.	Chapter 8	Water Efficiency	<del>1419</del>	<del>2639</del>	<del>4167</del>	<del>6097</del>
5.	Chapter 9	Indoor Environmental Quality	<del>3625</del>	<del>6542</del>	<del>10069</del>	<del>14097</del>
6.	Chapter 10	Operation, Maintenance, and Building Owner Education	8	10	11	12
7.		Additional Points from any category	50	100	100	100
<b>Total Points:</b>			<del>222226</del>	<del>406374</del>	<del>558509</del>	<del>697647</del>

- (1) In addition to the threshold number of points in each category, all mandatory provisions of each category shall be implemented.
- (2) For dwelling units greater than 4,000 square feet (372 m<sup>2</sup>), the number of points in Category 7 (Additional Points from any category) shall be increased in accordance with Section 601.1. The "Total Points" shall be increased by the same number of points.

**[Staff Note:** For committee's information the table below provides submissions from Task Groups before adjustments for Additional (i.e., flexible) points. This table is provided only for the purpose of facilitating the review process and it will not be part of the Standard.

**Task Group Thresholds before adjustment for flexible points**

Green Building Categories			Rating Level Points <sup>(1) (2)</sup>			
			BRONZE	SILVER	GOLD	EMERALD
1.	Chapter 5	Lot Design, Preparation, and Development	67	94	121	148
2.	Chapter 6	Resource Efficiency	58	87	116	146
3.	Chapter 7	Energy Efficiency	30	60	80	100
4.	Chapter 8	Water Efficiency	26	57	88	119
5.	Chapter 9	Indoor Environmental Quality	34	62	90	119
6.	Chapter 10	Operation, Maintenance, and Building Owner Education	<b>Task Group 1 did not change thresholds</b>			

*End of staff note.]*

### 304 - GREEN MULTI-UNIT BUILDINGS

**304.1 Multi-unit buildings.** All residential portions of a building shall meet the requirements of this Standard and partial compliance shall not be allowed. Unless otherwise noted, all units and residential common areas within a multi-unit building shall: 1) meet all mandatory requirements; and 2) achieve the threshold number of points required for the chosen environmental rating level in accordance with Table 303; and 3) achieve the same environmental rating level. For multi-unit buildings, points for the green building practices that apply to multiple units shall be credited once for the

#### COMPLIANCE METHOD

entire building. Where points are credited, practices shall be implemented in all units, as applicable. Where application of a prescribed practice allows for a different number of points for different units in a multi-unit building, the fewer number of points shall be awarded.

#### 305 - GREEN REMODELING

*[Staff note: Refer to Public Comment LogID 760 for the revised remodeling provisions developed by Task Group 7.]*

CHAPTER 4

SITE DESIGN AND DEVELOPMENT

GREEN BUILDING PRACTICES	POINTS
<b>400 SITE DESIGN AND DEVELOPMENT</b>	
<b>400.0 Intent.</b> This section applies to land development for the eventual construction of buildings or additions thereto that contain dwelling units. The rating earned under Section 303 based on practices herein, applies only to the site as defined in Chapter 2. The buildings on the site earn their own performance level by complying with the provisions of Section 303, 304, or 305.5, as applicable.	
<b>401 SITE SELECTION</b>	
<b>401.0 Intent.</b> The site is selected to minimize environmental impact by one or more of the following:	
<b>401.1 Infill site.</b> An infill site is selected.	<b>47</b>
<b>401.2 Greyfield site.</b> A greyfield site is selected.	<b>75</b>
<b>401.3 Brownfield site.</b> A brownfield site is selected.	<b>TBD8</b>
<b>401.4 Low-slope site.</b> A site with an average slope calculation of less than 15% is selected.	<b>TBD5</b>
<b>402 PROJECT TEAM, MISSION STATEMENT, AND GOALS</b>	
<b>402.0 Intent.</b> The site is designed and constructed by a team of qualified professionals trained in green development issues.	
<b>402.1 Team.</b> A knowledgeable team is established and team member roles are identified with respect to green lot design, preparation, and development. The project's green goals and objectives are written into a mission statement.	<b>4</b>
<b>402.2 Training.</b> Training is provided to on-site supervisors and team members regarding the green development practices to be used on the project.	<b>3</b>
<b>402.3 Project checklist.</b> A checklist of green development practices to be used on the project is created, followed, and completed by the project team regarding the site.	<b>Mandatory 34</b>
<b>402.4 Development Agreements.</b> Developer requires purchaser(s) of lots to build the homes to a minimum NGBS certified green building bronze level or equivalent through a developer agreement or equivalent.	<b>TBD6</b>
<b>403 SITE DESIGN</b>	
<b>403.0 Intent.</b> The project is designed to avoid detrimental environmental impacts, minimize any unavoidable impacts, and mitigate for those impacts that do occur. The project is designed to minimize environmental impacts and to protect, restore, and enhance the natural features and environmental quality of the site.	

GREEN BUILDING PRACTICES	POINTS
(To acquire points allocated for the design, the intent of the design is implemented.)	
<b>403.1 Natural resources.</b> Natural resources are conserved by one or more of the following:	
(1) A natural resources inventory is used to create the site plan.	<b>Mandatory 5</b>
(2) A plan to protect and maintain priority natural resources/areas during construction is created. (also see Section 404 for guidance in forming the plan.)	<b>Mandatory 5</b>
(3) Member of builder's project team participates in a natural resources conservation program.	<b>4</b>
(4) Streets, buildings, and other built features are located to conserve high priority vegetation.	<b>45</b>
<b>403.2 Building orientation.</b> A minimum of 75 percent of the building sites are designed with the longer dimension of the structure to face within 20 degrees of south.	<b>63</b>
<b>403.3 Slope disturbance.</b> Slope disturbance is minimized by one or more of the following:	
(1) Hydrological/soil stability study is completed and used to guide the design of all buildings on the site.	<b>45</b>
(2) All or a percentage of roads are aligned with natural topography to reduce cut and fill.	
(a) less than 25 percent	<b>1</b>
(b) 25 percent to 75 percent	<b>34</b>
(c) greater than 75 percent	<b>56</b>
(3) Long-term erosion effects are reduced by the use of clustering, terracing, retaining walls, landscaping, and restabilization techniques.	<b>6</b>
<b>403.4 Soil disturbance and erosion.</b> A site Stormwater Pollution Prevention Plan (SWPPP) is developed in accordance with applicable stormwater construction general permits. The plan includes one or more of the following:	
(1) Construction activities are scheduled to minimize length of time that soils are exposed.	<b>4</b>
(2) Utilities are installed by alternate means such as directional boring in lieu of open-cut trenching. Shared easements or common utility trenches are utilized to minimize earth disturbance. Low ground pressure equipment or temporary matting is used to minimize excessive soil consolidation.	<b>45</b>
(3) Limits of clearing and grading are demarcated.	<b>4</b>
<b>403.5 Storm water management.</b> Storm water management design includes one or more of the following low-impact development techniques:	
(1) Natural water and drainage features are preserved and used.	<b>67</b>
(2) Use of vegetative swales, French drains, wetlands, drywells, rain gardens, and similar infiltration features.	<b>6</b>



GREEN BUILDING PRACTICES	POINTS
(3) Permeable materials are selected/specified for common area roads, driveways, parking areas, walkways, and patios.	
(a) less than 25 percent	<del>12</del>
(b) 25 percent to 75 percent	<del>35</del>
(c) greater than 75 percent	<del>58</del>
(4) Stormwater management practices that manage rainfall on-site and prevent the off-site discharge from all storms up to and including the volume of the 95th percentile storm event.	<del>TBD7</del>
(5) A hydrologic analysis is conducted that results in the design of a stormwater management system that maintains the pre-development (stable, natural) runoff hydrology of the site throughout the development or redevelopment process. Post construction runoff rate, volume, and duration do not exceed predevelopment rates.	<del>TBD7</del>
(6) Storm water management features/structures are designed for the reduction of nitrogen, phosphorus and sediment.	<del>TBD7</del>
<b>403.6 Landscape plan.</b> A landscape plan is developed to limit water and energy use in common areas while preserving or enhancing the natural environment utilizing one or more of the following:	
(1) A plan is formulated to restore or enhance natural vegetation that is cleared during construction. Landscaping is phased to coincide with achievement of final grades to ensure denuded areas are quickly vegetated.	<del>56</del>
(2) On-site native or regionally appropriate trees and shrubs are conserved, maintained and reused for landscaping to the greatest extent possible.	<del>56</del>
(3) Turf grass species, other vegetation, and trees that are native or regionally appropriate for local growing conditions are selected.	<del>45</del>
(4) The percentage of all turf areas are limited as part of the landscaping.	
(a) 0 percent	<del>46</del>
(b) greater than 0 percent to less than 20 percent	<del>35</del>
(c) 20 percent to less than 40 percent	<del>23</del>
(d) 40 percent to 60 percent	<del>42</del>
(5) Plants with similar watering needs are grouped (hydrozoning).	<del>54</del>
(6) Species and locations for tree planting are identified and utilized to increase summer shading of streets, parking areas, and buildings and moderate temperatures.	<del>5</del>
(7) Vegetative wind breaks or channels are designed as appropriate to local conditions.	<del>4</del>
(8) On-site tree trimmings or stump grinding of regionally appropriate trees are used to provide protective mulch during construction or as base for walking trails, and cleared trees are recycled as sawn lumber or pulp wood.	<del>34</del>
(9) An integrated common area pest management plan to minimize chemical use in pesticides and fertilizers is developed.	<del>4</del>
(10) Plans for the common area landscape watering system include a weather-based or moisture-based controller. Required irrigation systems should be designed in	<del>6</del>

GREEN BUILDING PRACTICES	POINTS
accordance with the Irrigation Association's <i>Turf and Landscape Best Management Practices</i> .	
(11) Trees that might otherwise be lost due to site construction are transplanted to other areas on site or off site, using tree-transplanting techniques to ensure a high rate of survival.	<del>34</del>
(12) Greywater irrigation systems are used to water common areas. Greywater used for irrigation conforms to all criteria within Section 802.1.	<del>TBD7</del>
(13) Cisterns, rain barrels, and similar tanks are structures designed to intercept and store runoff. These systems may be above or below ground, and they may drain by gravity or be pumped. Stored water may be slowly released to a pervious area, and used for irrigation of lawn, trees, and gardens located in common areas. <del>X-percent of site area is to be irrigated by these means and demonstrated on the site plan.</del>	<del>TBD6</del>
<b>403.7 Wildlife habitat.</b> Measures are planned that will support wildlife habitat.	<del>56</del>
<b>403.8 Operation and maintenance plan.</b> An operation and maintenance plan (manual) is prepared and outlines ongoing service of common open area, utilities (storm water, waste water), and environmental management activities.	<del>56</del>
<b>403.9 Existing buildings.</b> Existing building(s) and structure(s) is/are preserved, reused, modified, or disassembled for reuse or recycling of building materials.	<del>68</del>
<b>403.10 Existing and recycled materials.</b> Existing or recycled materials are used as follows. (Points awarded for every 10 percent of total construction materials that are reused, deconstructed, and/or salvaged. The percentage is consistently calculated on a weight, volume, or cost basis.)	<del>43</del>
(1) Existing pavements, curbs, and aggregates are salvaged or reincorporated into the development.	
(2) Recycled asphalt or concrete is utilized in the project.	
<b>403.11 Environmentally sensitive areas.</b> Environmentally sensitive areas as follows:	
(1) Environmentally sensitive areas including steep slopes, prime farmland, critical habitats, and wetlands are avoided as follows:	
(a) < 25% of site undeveloped	<del>TBD2</del>
(b) 25% - 75% of site undeveloped	<del>TBD4</del>
(c) > 75% of site undeveloped	<del>TBD7</del>
(2) Compromised environmentally sensitive areas are mitigated or restored.	<del>34</del>
<b>404 SITE DEVELOPMENT AND CONSTRUCTION</b>	
<b>404.0 Intent.</b> Environmental impact during construction is avoided to the extent possible; impacts that do occur are minimized, and any significant impacts are mitigated.	
<b>404.1 On-site supervision and coordination.</b> On-site supervision and coordination is provided during clearing, grading, trenching, paving, and installation of utilities to ensure that	<del>45</del>

GREEN BUILDING PRACTICES	POINTS
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specified green development practices are implemented. (also see Section 403.4)	
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<b>404.2 Trees and vegetation.</b> Designated trees and vegetation are preserved by one or more of the following:	
(1) Fencing or equivalent is installed to protect trees and other vegetation.	4
(2) Trenching, significant changes in grade, compaction of soil, and other activities are avoided in critical root zones (canopy drip line) in "tree save" areas.	45
(3) Damage to designated existing trees and vegetation is mitigated during construction through pruning, root pruning, fertilizing, and watering.	4

<b>404.3 Soil disturbance and erosion.</b> On-site soil disturbance and erosion are minimized by implementation of one or more of the following:	
(1) Limits of clearing and grading are staked out prior to construction.	5
(2) "No disturbance" zones are created using fencing or flagging to protect vegetation and sensitive areas from construction vehicles, material storage, and washout.	4
(3) Sediment and erosion controls are installed and maintained.	5
(4) Topsoil is stockpiled and covered with tarps, straw, mulch, chipped wood, vegetative cover, or other means capable of protecting it from erosion for later use to establish landscape plantings.	5
(5) Soil compaction from construction equipment is reduced by distributing the weight of the equipment over a larger area by laying lightweight geogrids, mulch, chipped wood, plywood, OSB (oriented strand board), metal plates, or other materials capable of weight distribution in the pathway of the equipment.	4
(6) Disturbed areas are stabilized within the EPA recommended 14-day period.	4
(7) Soil is improved with organic amendments and mulch.	4

<b>404.4 Wildlife habitat.</b> Measures are implemented to support wildlife habitat.	
(1) Wildlife habitat is maintained.	5
(2) Measures are instituted to establish or promote wildlife habitat.	45
(3) Open space is preserved as part of a wildlife corridor.	56
(4) Builder or member of builder's project team participates in a wildlife conservation program.	5

<b>405 INNOVATIVE PRACTICES</b>
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<b>405.0 Intent.</b> Innovative site design, preparation, and development practices are used to enhance environmental performance. Waivers or variances from local development regulations are obtained, and innovative zoning practices are used to implement such practices, as applicable.	
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GREEN BUILDING PRACTICES	POINTS
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<b>405.1 Driveways and parking areas.</b> Driveways and parking areas are minimized by one or more of the following:	
(1) Off-street parking areas are shared or driveways are shared. An environmental and green approach to shared parking and driveways is achieved through the removal of driveways, and utilization of on-street parking and the use of alleys (shared common area driveways) for rear-loaded garages.	5
(2) In a multi-unit project, parking capacity is not to exceed the local minimum requirements.	5
(3) Structured parking is utilized to reduce the footprint of surface parking areas.	
(a) 25 % to less than 50%	23
(b) 50% to 75%	35
(c) greater than 75%	48

<b>405.2 Street widths.</b>															
(1) Street pavement widths are minimized per local code and are in accordance with Table 405.2.	6														
<p><b>Table 405.2</b> <b>Maximum Street Widths</b></p> <table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Facility Type</th> <th style="text-align: center;">Maximum Width</th> </tr> </thead> <tbody> <tr> <td>Collector street with parking (one side only)</td> <td style="text-align: center;">31 feet</td> </tr> <tr> <td>Collector street without parking</td> <td style="text-align: center;">26 feet</td> </tr> <tr> <td>Local access with parking (one side only)</td> <td style="text-align: center;">27 feet</td> </tr> <tr> <td>Local access street without parking</td> <td style="text-align: center;">20 feet</td> </tr> <tr> <td>Queuing (one-lane) streets with parking</td> <td style="text-align: center;">24 feet</td> </tr> <tr> <td>Alleys and queuing (one-lane) streets without parking</td> <td style="text-align: center;">17 feet</td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 5px;">For SI: 1 foot = 304.8 mm</p>		Facility Type	Maximum Width	Collector street with parking (one side only)	31 feet	Collector street without parking	26 feet	Local access with parking (one side only)	27 feet	Local access street without parking	20 feet	Queuing (one-lane) streets with parking	24 feet	Alleys and queuing (one-lane) streets without parking	17 feet
Facility Type	Maximum Width														
Collector street with parking (one side only)	31 feet														
Collector street without parking	26 feet														
Local access with parking (one side only)	27 feet														
Local access street without parking	20 feet														
Queuing (one-lane) streets with parking	24 feet														
Alleys and queuing (one-lane) streets without parking	17 feet														
(2) A waiver was secured by the developer from the local jurisdiction to allow for construction of streets below minimum width requirement.	TBD8														

<b>405.3 Cluster development.</b> Cluster development enables and encourages flexibility of design and development of land in such a manner as to preserve the natural and scenic qualities of the site by utilizing an alternative method for the layout, configuration and design of lots, buildings and structures, roads, utility lines and other infrastructure, parks, and landscaping.	10
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<b>405.4 Zoning.</b> Innovative zoning techniques are implemented in accordance with the following:	
(1) Innovative zoning ordinances or local laws are used or developed for permissible adjustments to population density, area, height, open space, mixed-use, or other provisions for the specific purpose of open space, natural resource preservation or protection and/or mass transit usage. Other innovative zoning techniques may be considered on a case-by-case basis.	68
(2) An increase to the permissible density, area, height, use, or other provisions of a local zoning law for a defined green benefit.	67

GREEN BUILDING PRACTICES	POINTS
(3) Place-based amenities such as plazas, squares, and attached greens, located around civic, commercial, and mixed-use property are accessible by sidewalks, on-street parking, or provide for bike racks, for the purpose of promoting higher density living.	<del>6</del> <u>7</u>
<b>405.5 Wetlands.</b> Constructed wetlands or other natural innovative wastewater or storm water treatment technologies are used.	<del>7</del> <u>8</u>
<b>405.6 Multi-modal transportation.</b> Multi-modal transportation access is provided in accordance with one or more of the following:	
(1) A site is selected with a boundary within one-half mile (805 m) of pedestrian access to a mass transit system or within five miles of a mass transit station with available parking.	<del>3</del> <u>5</u>
(2) A site is selected where all lots within the site are located within one-half mile (805 m) of pedestrian access to a mass transit system.	<del>TBD</del> <u>7</u>
(3) Walkways, bikeways, street crossings, and entrances designed to promote pedestrian activity are provided. New buildings are connected to existing sidewalks and areas of development.	<del>3</del> <u>5</u>
(4) Bicycle parking and racks are indicated on the site plan and constructed for mixed-use, multi-family buildings, and/or common areas.	<del>TBD</del> <u>4</u>
(5) Bike sharing programs participate with the developer, and their facilities are planned for and constructed.	<del>TBD</del> <u>5</u>

GREEN BUILDING PRACTICES	POINTS
(6) Car sharing programs participate with the developer, and their facilities are planned for and constructed.	<del>TBD</del> <u>5</u>
<b>405.7 Density.</b> The average density on a net developable area basis is:	
(1) 7 to less than 14 dwelling units per acre (per 4047 m2)	<del>4</del> <u>5</u>
(2) 14 to less than 21 dwelling units per acre (per 4047 m2)	7
(3) 21 or greater dwelling units per acre (per 4047 m2)	10
<b>405.8 Mixed-Use Development.</b> (1) Mixed-use development is incorporated, or (2) for single-use sites 20 acres or less in size with boundaries adjacent to a minimum of two uses containing retail, services, and employment may achieve the mixed-use points, given that a pedestrian network of streets, sidewalks, pathways, or plazas exist that connect a majority of lots within the site with the adjacent non-residential uses.	<del>TBD</del> <u>9</u>
<b>405.9 Open Space.</b> A portion of the gross area of the community is set aside as open space beyond local code requirement. (Points awarded for every 10 percent of the community set aside as open space beyond local code requirement)	<del>4</del> <u>5</u>
<b>405.10 Community Garden(s).</b> A portion of the site is established as a community garden(s), available to residents of the site, to provide for local food production to residents or area consumers.	<del>TBD</del> <u>6</u>

CHAPTER 5

LOT DESIGN, PREPARATION, AND DEVELOPMENT

GREEN BUILDING PRACTICES	POINTS
<b>500 LOT DESIGN, PREPARATION, AND DEVELOPMENT</b>	
<b>500.0 Intent.</b> This section applies to lot development for the eventual construction of residential buildings, multi-unit buildings, or additions thereto that contain dwelling units. The buildings on the lot earn their own performance level by complying with the provisions of Sections 303, 304, or 305.5, as applicable.	
<b>501 LOT SELECTION</b>	
<b>501.1 Lot.</b> The lot is selected to minimize environmental impact by one or more of the following:	
(1) The builder selects a lot within an NGBS certified green community or equivalent on which to build.	<del>4 for 4-star</del> <del>3 for 3-star</del> <del>2 for 2-star</del> <del>1 for 1-star</del> green community 6
(2) An infill lot is selected.	<del>68</del>
(3) An infill lot is selected that is a greyfield.	<del>87</del>
(4) An EPA-recognized brownfield lot is selected.	<del>109</del>
(5) A lot with an average slope calculation of less than 15% is selected.	<del>TBD9</del>
<b>501.2 Multi-modal transportation.</b> A range of multi-modal transportation choices are promoted by one or more of the following:	
(1) A lot is selected within one-half mile (805 m) of pedestrian access to a mass transit system or within five miles (8046 m) of a mass transit station with provisions for parking.	<del>34</del>
(2) Walkways, street crossings, and entrances designed to promote pedestrian activity are provided. New buildings are connected to existing sidewalks and areas of development.	<del>35</del>
(3) A lot is selected within one-half mile (805 m) of six or more community resources [e.g., recreational facilities (such as pools, tennis courts, basketball courts), parks, grocery store, post office, place of worship, community center, daycare center, bank, school, restaurant, medical/dental office, laundromat/dry cleaner].	<del>34</del>
(4) Bicycle use is promoted by building on a lot located within a community that has rights-of-way specifically dedicated to bicycle use in the form of paved paths or bicycle lanes or on an infill lot located within 1/2 mile of a bicycle lane designated by the jurisdiction.	<del>TBD5</del>

GREEN BUILDING PRACTICES	POINTS
<b>502 PROJECT TEAM, MISSION STATEMENT, AND GOALS</b>	
<b>502.1 Project team, mission statement, and goals.</b> A knowledgeable team is established and team member roles are identified with respect to green lot design, preparation, and development. The project's green goals and objectives are written into a mission statement.	<del>4</del>
<b>503 LOT DESIGN</b>	
<b>503.0 Intent.</b> The lot is designed to avoid detrimental environmental impacts first, minimize any unavoidable impacts, and mitigate for those impacts that do occur. The project is designed to minimize environmental impacts and to protect, restore, and enhance the natural features and environmental quality of the lot.  <b>(To be awarded points allocated for design the intent of the design is implemented.)</b>	
<b>503.1 Natural resources.</b> Natural resources are conserved by one or more of the following:	
(1) A natural resources inventory is completed under the direction of a qualified professional.	<del>5</del>
(2) A plan is implemented to conserve the elements identified by the resource inventory as high-priority resources.	<del>6</del>
(3) Items listed for protection in the resource inventory plan are protected under the direction of a qualified professional.	<del>4</del>
(4) Basic training in tree or other natural resource protection is provided for the on-site supervisor.	<del>4</del>
(5) All tree pruning on-site is conducted by a Certified Arborist.	<del>23</del>
(6) Ongoing maintenance of vegetation on the lot during construction is in accordance with TCIA A300 or locally accepted best practices.	<del>34</del>
(7) Where a lot adjoins a landscaped common area, a protection plan from construction activities next to the common area is implemented.	<del>5</del>
<b>503.2 Slope disturbance.</b> Slope disturbance is minimized by: <del>the use of terrain adaptive architecture including terracing, retaining walls, landscaping, or other re-stabilization techniques.</del>	
<del>(1) The use of terrain adaptive architecture including terracing, retaining walls, landscaping, or other re-stabilization techniques.</del>	<del>5</del>
<del>(1) Hydrological/soil stability study is completed and used to guide the design of all</del> <del>(2) buildings on the site.</del>	<del>64</del>
<del>(2) All or a percentage of driveways and parking are aligned with natural topography to</del> <del>(3) reduce cut and fill.</del>	
<del>(a) less than 25 percent</del>	<del>43</del>
<del>(b) 25 percent to 75 percent</del>	<del>34</del>
<del>(c) greater than 75 percent</del>	<del>56</del>

GREEN BUILDING PRACTICES	POINTS
<del>(3)</del> <del>(4)</del> Long-term erosion effects are reduced through the design and implementation of terracing, retaining walls, landscaping, or restabilization techniques.	<del>65</del>
<del>(4)</del> <del>(5)</del> Underground parking uses the natural slope for parking entrances.	<del>45</del>
<b>503.3 Soil disturbance and erosion.</b> Soil disturbance and erosion are minimized by one or more of the following: (also see Section 504.3)	
(1) Construction activities are scheduled to minimize length of time that soils are exposed.	5
(2) At least 75% of total length of the installed utilities on the lot are installed using one or more alternative means: (a) tunneling instead of trenching (b) use of smaller (low ground pressure) equipment or geomats to spread the weight of construction equipment (c) shared utility trenches or easements (d) placement of utilities under paved surfaces instead of yards	5
(3) Limits of clearing and grading are demarcated on the lot plan.	5
<b>503.4 Storm water management.</b> A storm water management design includes one or more of the following low-impact development techniques: <b>(For lots in a development, the points for items (1), (2), and (3) may be awarded for the lot when there is a community storm water management plan implemented and the builder does not violate that plan with respect to water leaving the lot.)</b>	
(1) Natural water and drainage features are preserved and used.	6
(2) Facilities that minimize concentrated flows and simulate flows found in natural hydrology by the use of vegetative swales, french drains, wetlands, drywells, rain gardens, and similar infiltration features.	<del>67</del>
(3) All or a percentage of impervious surfaces are minimized and permeable materials are used for driveways, parking areas, walkways, and patios. (a) less than 25 percent (b) 25 percent to 75 percent (c) greater than 75 percent	<del>12</del> <del>34</del> <del>56</del>
(4) A minimum of 50 percent of the roof is vegetated (green roof) using technology capable of withstanding the climate conditions of the jurisdiction and the microclimate conditions of the building site. Invasive plant species are not permitted.	<del>35</del>
(5) Stormwater management practices that manage rainfall on-site and prevent the off-site discharge from all storms up to and including the volume of the 95th percentile storm event.	<del>TBD6</del>
(6) Conduct a hydrologic analysis that results in the design of a stormwater management system that maintains the pre-development (stable, natural) runoff hydrology of the site throughout the development or redevelopment process. Post-construction runoff rate, volume, and duration cannot exceed predevelopment rates.	<del>TBD7</del>
<b>503.5 Landscape plan.</b> A landscape plan for the lot is developed to limit water and energy use while preserving or enhancing the natural environment. <b>(Where "front" only or "rear" only plan is implemented, only half of the points</b>	

GREEN BUILDING PRACTICES (rounding down to a whole number) are awarded for items 1-6)	POINTS
(1) Where a lot is less than 50% turf, a plan is formulated to restore or enhance natural vegetation that is cleared during construction. Landscaping is phased to coincide with achievement of final grades to ensure denuded areas are quickly vegetated.	<del>56</del>
(2) Turf grass species, other vegetation, and trees are selected and specified on the lot plan that are native or regionally appropriate for local growing conditions.	4
(3) The percentage of turf areas that is designed to be mowed is limited and shown on the lot plan. The percentage is based on the landscaped area of the lot not including the home footprint, hardscape, and any undisturbed natural areas. (a) 0 percent (b) greater than 0 percent to less than 20 percent (c) 20 percent to less than 40 percent (d) 40 percent to 60 percent	<del>45</del> <del>34</del> <del>23</del> <del>12</del>
(4) Plants with similar watering needs are grouped (hydrozoning) and shown on the lot plan.	5
(5) Summer shading by planting installed to shade a minimum of 30% of building walls. To conform to summer shading, the effective shade coverage is the arithmetic mean of the shade coverage calculated at 10 am for eastward facing walls, noon for southward facing walls, and 3 pm for westward facing walls on the summer solstice five years after planting.	5
(6) Vegetative wind breaks or channels are designed to protect the lot and immediate surrounding lots as appropriate for local conditions.	4
(7) On-site (or community generated) tree trimmings or stump grinding of regionally appropriate trees are used on the site to provide protective mulch during construction or for landscaping.	3
(8) An integrated pest management plan is developed to minimize chemical use in pesticides and fertilizers.	4
<b>503.6 Wildlife habitat.</b> Measures are planned that will support wildlife habitat and include at least two of the following:	4
(1) Plants and gardens that will encourage wildlife, such as bird and butterfly gardens.	<del>TBD3</del>
(2) Inclusion of a certified "backyard wildlife" program.	<del>TBD3</del>
(3) Lots are adjacent to wildlife corridors, fish and game parks, or preserved areas and are designed with regard for this relationship.	<del>TBD3</del>
(4) Outdoor lighting techniques are utilized with regard for wildlife.	<del>TBD3</del>
<b>503.7 Environmentally sensitive areas.</b> Environmentally sensitive areas.	
(1) The lot does not contain any environmentally sensitive areas that are disturbed by the construction.	<del>34</del>
(2) Compromised environmentally sensitive areas are mitigated or restored.	<del>34</del>
<b>504 LOT CONSTRUCTION</b>	

GREEN BUILDING PRACTICES	POINTS
<b>504.0 Intent.</b> Environmental impact during construction is avoided to the extent possible; impacts that do occur are minimized, and any significant impacts are mitigated.	
<b>504.1 On-site supervision and coordination.</b> On-site supervision and coordination is provided during clearing, grading, trenching, paving on the lot, and installation of utilities on the lot to ensure that specified green development practices are implemented. (also see Section 503.3)	4
<b>504.2 Trees and vegetation.</b> Designated trees and vegetation are preserved by one or more of the following:	
(1) Fencing or equivalent is installed to protect trees and other vegetation.	3
(2) Trenching, significant changes in grade, and compaction of soil and critical root zones in all "tree save" areas as shown on the lot plan are avoided.	45
(3) Damage to designated existing trees and vegetation is mitigated during construction through pruning, root pruning, fertilizing, and watering.	4
<b>504.3 Soil disturbance and erosion implementation.</b> On-site soil disturbance and erosion are minimized by one or more of the following in accordance with the SWPPP or applicable plan: (also see Section 503.3)	
(1) Sediment and erosion controls are installed on the lot and maintained in accordance with the storm water pollution prevention plan, where required.	5
(2) Limits of clearing and grading are staked out on the lot.	5
(3) "No disturbance" zones are created using fencing or flagging to protect vegetation and sensitive areas on the lot from construction activity.	5
(4) Topsoil from either the lot or the site development is stockpiled and stabilized for later use and used to establish landscape plantings on the lot.	5
(5) Soil compaction from construction equipment is reduced by distributing the weight of the equipment over a larger area (laying lightweight geogrids, mulch, chipped wood, plywood, OSB, metal plates, or other materials capable of weight distribution in the pathway of the equipment).	34
(6) Disturbed areas on the lot that are complete or to be left unworked for 21 days or more are stabilized within 14 days using methods as recommended by the EPA, or in the approved storm water pollution prevention plan, where required.	3
(7) Soil is improved with organic amendments and mulch.	3
(8) Utilities on the lot are installed using one or more alternative means (e.g., tunneling instead of trenching, use of smaller equipment, use of low ground pressure equipment, use of geomats, shared utility trenches or easements).	5
(9) Inspection reports of storm water best management practices are available.	TBD3

**505  
INNOVATIVE PRACTICES**

**505.0 Intent.** Innovative lot design, preparation and development practices are used to

GREEN BUILDING PRACTICES	POINTS
enhance environmental performance. Waivers or variances from local development regulations are obtained, and innovative zoning practices are used to implement such practices.	
<b>505.1 Driveways and parking areas.</b> Driveways and parking areas are minimized by one or more of the following:	
(1) Off-street parking areas are shared or driveways are shared. Waivers or variances from local development regulations are obtained to implement such practices, if required.	45
(2) In a multi-unit project, parking capacity is not to exceed the local minimum requirements.	45
(3) Structured parking is utilized to reduce the footprint of surface parking areas.	
(a) 25 % to less than 50%	24
(b) 50% to 75%	35
(c) greater than 75%	46
<b>505.2 Heat island mitigation.</b> One or more of the following strategies are provided for a minimum of 50 percent of the horizontal surface area of the hardscape on the lot:	4
(1) Shading of hardscaping: Shade is provided from existing or new vegetation (within five years) or from trellises. Shade of hardscaping is to be measured on the summer solstice at noon.	5
(2) Light-colored hardscaping: Horizontal hardscaping materials are installed with a solar reflectance index of 29 or greater.	4
(3) Permeable hardscaping: Permeable hardscaping materials are installed.	5
(4) Roofs: Not less than 75 percent of the surface of the roof meets one or a combination of the following methods.	
(a) Minimum initial Solar Reflectance Index of 78 for a low-sloped roof (a slope less than or equal to 2:12) and a minimum initial Solar Reflectance Index of 29 for a steep-sloped roof (a slope of more than 2:12).	5
(b) Roof is vegetated using technology capable of withstanding the climate conditions of the jurisdiction and the microclimate conditions of the building site. Invasive plant species are not permitted.	6
<b>505.3 Density.</b> The average density on the lot on a net developable area basis is:	
(1) 7 to less than 14 dwelling units per acre (per 4047 m <sup>2</sup> )	45
(2) 14 to less than 21 dwelling units per acre (per 4047 m <sup>2</sup> )	78
(3) 21 or greater dwelling units per acre (per 4047 m <sup>2</sup> )	1011
<b>505.4 Mixed-use development.</b> The lot contains a mixed-use building.	68
<b>505.5 Community Garden(s).</b> A portion of the lot is established as a community garden(s), available to residents of the lot, to provide for local food production to residents or area consumers.	TBD6

CHAPTER 6

RESOURCE EFFICIENCY

GREEN BUILDING PRACTICES	POINTS
<b>601</b>	
<b>QUALITY OF CONSTRUCTION MATERIALS AND WASTE</b>	
<b>601.0 Intent.</b> 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.	
<b>601.1 Conditioned floor area.</b> Finished floor area of a dwelling unit is limited. Finished floor area is calculated in accordance with NAHBRC Z765. Only the finished floor area for stories above grade plane is included in the calculation.	
(1) less than or equal to 1,000 square feet (93 m <sup>2</sup> )	15
(2) less than or equal to 1,500 square feet (139 m <sup>2</sup> )	12
(3) less than or equal to 2,000 square feet (186 m <sup>2</sup> )	9
(4) less than or equal to 2,500 square feet (232 m <sup>2</sup> )	6
(5) greater than 4,000 square feet (372 m <sup>2</sup> )	Mandatory
(For every 100 square feet (9.29 m <sup>2</sup> ) over 4,000 square feet (372 m <sup>2</sup> ), one point is to be added in Table 303, Category 7 for each performance level.)	
<i>Multi-Unit Building Note:</i> For a multi-unit building, use a weighted average of the individual unit sizes in qualifying for available points.	
<b>601.2 Material usage.</b> Structural systems are designed or construction techniques are implemented that reduce and optimize material usage.	9 Points Max
(1) Minimum structural member or element sizes necessary for strength and stiffness in accordance with advanced framing techniques or structural design standards are selected.	3
(2) Higher-grade or higher-strength of the same materials than commonly specified for structural elements and components in the building are used and element or component sizes are reduced accordingly.	3
(3) Performance-based structural design is used to optimize lateral force-resisting systems.	3
<b>601.3 Building dimensions and layouts.</b> 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

GREEN BUILDING PRACTICES	POINTS
<b>601.4 Framing and structural plans.</b> Detailed framing or structural plans, material quantity lists and on-site cut lists for framing, structural materials, and sheathing materials are provided.	4
<b>601.5 Prefabricated components.</b> Precut or preassembled components, or panelized or precast assemblies are utilized for a minimum of 90 percent for the following system or building:	Max 13 points
(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
<b>601.6 Stacked stories.</b> 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
<b>601.7 Site-applied finishing materials.</b> Building materials or assemblies listed below that do not require additional site-applied material for finishing are incorporated in the building.	12 Points Max
(1) 90 percent or more of the installed building materials or assemblies listed below: (Points awarded for each type (a-g) of material or assembly.)	5
(2) 50 percent to less than 90 percent of the installed building material or assembly listed below: (Points awarded for each type (a-g) of material or assembly.)	2
(3) 35 percent to less than 50 percent of the installed building material or assembly listed below: (Points awarded for each type (a-g) of material or assembly.)	1
(a) pigmented, stamped, decorative, or final finish concrete or masonry (b) interior trim not requiring paint or stain (c) exterior trim not requiring paint or stain (d) window, skylight, and door assemblies not requiring paint or stain on exterior or interior surfaces (e) interior wall coverings or systems not requiring paint or stain or other type of finishing application (f) exterior wall coverings or systems not requiring paint or stain or other type of finishing application (g) pre-finished hardwood flooring	
<b>601.8 Foundations.</b> A foundation system that minimizes soil disturbance, excavation quantities and material usage, such as frost-protected shallow foundations, isolated pier and pad foundations, deep foundations, post foundations, or helical piles is selected, designed, and constructed. The foundation is used on 50 percent or more of the building footprint.	3

GREEN BUILDING PRACTICES	POINTS
<b>601.9 Above grade wall systems.</b> 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:	<b>4</b>
(1) adobe (2) concrete and/or masonry (3) logs (4) rammed earth	

**602  
ENHANCED DURABILITY AND REDUCED MAINTENANCE**

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

602.1 Moisture Management – Building Envelope	
<b>602.1.1 Capillary breaks</b>	
<b>602.1.1.1</b> A capillary break and vapor retarder are installed at all concrete slabs adjoining living space in accordance with Sections 602.1.1.1(1) or 602.1.1.1(2), as modified by Section 602.1.1.1(3):	<b>Mandatory</b>
(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 602.1.4. (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 602.1.4. (3) Modification: 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>602.1.1.2</b> Add a capillary break on footing to prevent moisture migration into foundation wall.	<b>3</b>
<b>602.1.2 Foundation waterproofing.</b> Enhanced foundation waterproofing is installed:	<b>4</b>
(1) rubberized coating, or (2) drainage mat	
<b>602.1.3 Foundation drainage.</b>	
<b>602.1.3.1</b> Where required by the ICC IRC or IBC for habitable and usable spaces below grade, exterior drain tile is installed.	<b>Mandatory</b>
<b>602.1.3.2</b> Interior and exterior foundation perimeter drains are installed and sloped to discharge to daylight, dry well, or sump pit.	<b>4</b>
<b>602.1.4 Crawlspace.</b>	
<b>602.1.4.1</b> <del>Crawlspace</del> Vapor retarder <u>in unconditioned crawlspace</u> is in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 inches (152	

GREEN BUILDING PRACTICES	POINTS
mm) and are taped.	
(1) Floors. Minimum 6 mil vapor retarder installed on the crawlspace floor and extended up the wall sufficient to allow the material to be affixed with glue and furring strips.	<b>6</b>
(2) Walls. Damp-proof walls are provided below finished grade.	<b>Mandatory</b>
<b>602.1.4.2</b> Crawlspace that is built as a conditioned area is sealed to prevent outside air infiltration and provided with conditioned air at a rate not less than 0.02 cfm (.009 L/s) per square foot of horizontal area and one of the following is implemented:	
(1) a concrete slab over lapped 6 mil polyethylene or polystyrene.	<b>408</b>
(2) 6 mil polyethylene sheeting, lapped a minimum of 6 inches (152 mm), and taped at the seams.	<b>8Mandatory</b>
<b>602.1.5 Termite barrier.</b> Continuous physical foundation termite barrier used with low toxicity treatment or with no chemical treatment is installed in geographical areas that have subterranean termite infestation potential determined in accordance with Figure 6(3).	<b>4</b>
<b>602.1.6 Termite-resistant materials.</b> 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.	<b>2</b>
(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.	<b>4</b>
(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.	<b>6</b>
<b>602.1.7 Moisture control measures</b>	
<b>602.1.7.1</b> Moisture control measures are in accordance with the following:	
(1) Building materials with visible mold are not installed or are cleaned or encapsulated prior to concealment and closing.	<b>2</b>
(2) Insulation in cavities is dry in accordance with manufacturer's installation instructions when enclosed (e.g., with drywall).	<b>Mandatory 2</b>
(3) The moisture content of lumber is sampled to ensure it does not exceed 19 percent prior to the surface and/or cavity enclosure.	<b>4</b>
<b>602.1.7.2</b> Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the finish flooring to be applied.	<b>2</b>
<b>602.1.8 Water-resistive barrier.</b> 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.	<b>Mandatory</b>



GREEN BUILDING PRACTICES	POINTS
<b>602.1.9 Flashing.</b> Flashing is provided to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details are provided in the construction documents and are in accordance with the fenestration manufacturer's instructions, the flashing manufacturer's instructions, or as detailed by a registered design professional.	
(1) Flashing are installed at all of the following locations, as applicable: (a) around exterior fenestrations, skylights and doors (b) at roof valleys (c) at deck, balcony, porch or stair to building intersections (d) at roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets. (e) at ends of and under masonry, wood, or metal copings and sills (f) above projecting wood trim (g) at built-in roof gutters (h) drip edge is installed at eaves and rake edges.	<b>Mandatory</b>
(2) All window head and jamb flashing are self-adhered flashing complying with AAMA 711-07.	<b>2</b>
(3) Pan flashing is installed at sills of all exterior windows and doors.	<b>23</b>
(4) Seamless, preformed kickout flashing, or prefabricated metal with soldered seams is provided at all roof-to-wall intersections. The type and thickness of the material used for roof flashing including but not limited kickout and step flashing is commensurate with the anticipated service life of the roofing material.	<b>23</b>
(5) A rainscreen wall design is used for exterior wall assemblies	<b>2-4 Points Max</b>
(a) a system designed with minimum 1/4" inch air space exterior to the water-resistive barrier, vented to the exterior at top and bottom of the wall and integrated with flashing details. OR	<b>24</b>
(b) either a cladding material or a water-resistive barrier with enhanced drainage, meeting 75% drainage efficiency requirement of ASTM E2273.	<b>42</b>
(6) A drip cap is provided above windows and doors that are not flashed or protected by covering in accordance with Section 602.1	<b>2</b>
(7) Through wall flashing is installed at transitions between wall cladding materials, or wall construction types.	<b>2</b>
(8) Flashing is installed at expansion joints in stucco walls	<b>2</b>
<b>602.1.10 Exterior doors.</b> 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) or Appendix C, have a projection factor of 1.0 minimum, unless otherwise protected from direct solar radiation by other means (e.g., screen wall, vegetation).	<b>52 Points per exterior door</b>
(a) installing a porch roof or awning (b) extending the roof overhang (c) recessing the exterior door	<b>6 Points Max</b>

GREEN BUILDING PRACTICES	POINTS												
<del>(1) main entrance door</del>	<del>3</del>												
<del>(2) additional covered door assembly</del>	<del>4</del>												
<b>602.1.11 Tile backing materials.</b> Tile backing materials installed under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325.	<b>Mandatory</b>												
<b>602.1.12 Roof overhangs.</b> Roof overhangs, based on inches of rainfall in Table 602.2, are provided over a minimum of 90 percent of exterior walls to protect the building envelope.	<b>4</b>												
<b>Table 602.2</b> <b>Minimum Roof Overhang for One- &amp; Two-Story Buildings</b> <table border="1" style="margin: auto;"> <thead> <tr> <th>Inches Rainfall <sup>(1)</sup></th> <th>Eave Overhang (Inches)</th> <th>Rake Overhang (Inches)</th> </tr> </thead> <tbody> <tr> <td>≤40</td> <td>12</td> <td>12</td> </tr> <tr> <td>&gt;41 and ≤70</td> <td>18</td> <td>12</td> </tr> <tr> <td>&gt; 70</td> <td>24</td> <td>12</td> </tr> </tbody> </table> <p>(1) Annual mean total precipitation in inches is in accordance with Figure 6(2).            For SI: 12 inches = 304.8 mm</p>		Inches Rainfall <sup>(1)</sup>	Eave Overhang (Inches)	Rake Overhang (Inches)	≤40	12	12	>41 and ≤70	18	12	> 70	24	12
Inches Rainfall <sup>(1)</sup>	Eave Overhang (Inches)	Rake Overhang (Inches)											
≤40	12	12											
>41 and ≤70	18	12											
> 70	24	12											
<b>602.1.13 Drip edge.</b> Drip edge is installed at eaves and gable roof edges.	<b>Mandatory 3</b>												
<b>602.1.14 Ice barrier.</b> 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 of pitched roofs and extends at a minimum of 24 inches (610 mm) inside the exterior wall line of the building.	<b>Mandatory</b>												
<b>602.1.15 Architectural features.</b> Architectural features that increase the potential for the water intrusion are avoided:													
(1) No roof configurations that create horizontal valleys in roof design.	<b>2</b>												
(2) No recessed windows and architectural features that trap water on horizontal surfaces.	<b>2</b>												
(3) All horizontal ledgers are sloped away to provide gravity drainage as appropriate for the application.	<b>Mandatory 1</b>												
<b>602.2 Roof surfaces.</b> A minimum of 90 percent of roof surfaces, not used for roof penetrations and associated equipment, on-site renewable energy systems such as photovoltaics or solar thermal energy collectors, or rooftop decks, amenities and walkways, are constructed of one or both of the following:	<b>3</b>												
(1) products that are in accordance with the ENERGY STAR® cool roof certification or equivalent													
(2) a vegetated roof system													
<b>602.3 Roof water discharge.</b> 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.	<b>4</b>												
<b>602.4 Finished grade.</b>													
<b>602.4.1</b> Finished grade at all sides of a building is sloped to provide a minimum of 6 inches	<b>Mandatory</b>												

GREEN BUILDING PRACTICES	POINTS
(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 2 percent.	
<b>602.4.2</b> The final grade is sloped away from the edge of the building at a minimum slope of 5 percent.	<b>1</b>
<b>602.4.3</b> Water is directed to drains or swales to ensure drainage away from the structure.	<b>1</b>

**603  
REUSED OR SALVAGED MATERIALS**

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

<b>603.1 Reuse of existing building.</b> Major elements or components of existing buildings and structures are reused, modified, or deconstructed for later use in lieu of demolition. <b>(Points awarded for every 200 square feet (18.5 m<sup>2</sup>) of floor area.)</b>	<b>1 12 Points Max</b>
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<b>603.2 Salvaged materials.</b> Reclaimed and/or salvaged materials and components are used. The total material value and labor cost of salvaged materials is equal to or exceeds 1 percent of the total construction cost. <b>(Points awarded per 1% of salvaged materials used based on the total construction cost.)</b> <b>(Materials, elements, or components awarded points under Section 603.1 shall not be awarded points under Section 603.2.)</b>	<b>1 9 Points Max</b>
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<b>603.3 Scrap materials.</b> Facilitation for sorting and reuse of scrap building material (e.g., provide a central storage area or dedicated bins).	<b>4</b>
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**604  
RECYCLED-CONTENT BUILDING MATERIALS**

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

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

**605  
RECYCLED CONSTRUCTION WASTE**

**605.0 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.)**

<b>605.1 Construction waste management plan.</b> A construction waste management plan	<b>6</b>
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GREEN BUILDING PRACTICES	POINTS
is developed, posted at the jobsite, and implemented with a goal of recycling or salvaging a minimum of 50 percent (by weight) of construction waste.	

<b>605.2 On-site recycling.</b> On-site recycling measures following applicable regulations and codes are implemented, such as the following:  (a) 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. (b) Alternative compliance methods approved by the Adopting Entity. (c) Compatible untreated biomass material (lumber, posts, beams etc.) are set aside for combustion if a Solid Fuel Burning Appliance as per Section 901.2.1(2) will be available for on-site renewable energy.	<b>7</b>
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<b>605.3 Recycled construction materials.</b> Construction materials (e.g., wood, cardboard, metals, drywall, plastic, asphalt roofing shingles, or concrete) are recycled offsite.	<b>6 Points Max</b>
(1) a minimum of two types of materials are recycled	<b>3</b>
(2) for each additional recycled material	<b>1</b>

**606  
RENEWABLE MATERIALS**

**606.0 Intent.** Building materials derived from renewable resources are used.

<b>606.1 Biobased products.</b> 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)	<b>8 Points Max</b>
(1) Two types of biobased materials are used, each for more than 0.5 percent of the project's projected building material cost.	<b>3</b>
(2) Two types of biobased materials are used, each for more than 1 percent of the project's projected building material cost.	<b>6</b>
(3) For each additional biobased material used for more than 0.5 percent of the project's projected building material cost.	<b>1 2 Points Max</b>

<b>606.2 Wood-based products.</b> Wood or wood-based products are certified to the requirements of one of the following recognized product programs:  (a) American Forest Foundation's <i>American Tree Farm System</i> ® (ATFS) (b) Canadian Standards Association's <i>Sustainable Forest Management System Standards</i> (CSA Z809) (c) <i>Forest Stewardship Council</i> (FSC) (d) <i>Program for Endorsement of Forest Certification Systems</i> (PEFC)	
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GREEN BUILDING PRACTICES	POINTS
(e) Sustainable Forestry Initiative® Program (SFI) (f) other product programs mutually recognized by PEFC	
(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
(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

<b>606.3 Manufacturing energy.</b> 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). <b>(2 points awarded per material.)</b>	<b>6 Points Max</b>
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**607  
RECYCLING AND WASTE REDUCTION**

<b>607.1 Recycling.</b> 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
<b>607.2 Food waste disposers.</b> A minimum of one food waste disposer is installed at the primary kitchen sink.	1

**608  
RESOURCE-EFFICIENT MATERIALS**

<b>608.1 Resource-efficient materials.</b> Products containing fewer materials are used to achieve the same end-use requirements as conventional products, including but not limited to: <b>(3 points awarded for each material.)</b>	<b>9 Points Max</b>
(1) lighter, thinner brick with bed depth less than 3 inches and/or brick with coring of more than 25 percent	
(2) engineered wood or engineered steel products	
(3) roof or floor trusses	

**609  
REGIONAL MATERIALS**

<b>609.1 Regional materials.</b> Regional materials are used for major elements or components of the building.	<b>10 Points Max</b>
(1) one type of material	2
(2) for each additional material	2

**610  
LIFE CYCLE ANALYSIS**

<b>610.1 Life cycle analysis.</b> A life cycle analysis (LCA) tool is used to select environmentally preferable products or assemblies, or an LCA is conducted on the entire building. Points are awarded in accordance with 6010.1.1, 610.1.2(1), or 610.1.2(2). Only one method of analysis may be utilized. A reference service life for the building is to be 60 years for any life cycle analysis tool. Results of the LCA are reported in the manual required in Section 1003.1(1) of this standard in terms of the environmental impacts listed in this practice and it states if operating energy was included in its preparation.	<b>15 Points Max</b>
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<b>610.1.1 Whole-building life cycle analysis.</b> A whole-building LCA is performed using a life cycle assessment and data compliant with ISO 14044 or other recognized standards.	<b>15</b>
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<b>610.1.2 Life cycle analysis for a product or assembly.</b> An environmentally preferable product or assembly is selected for an application based upon the use of an LCA tool that incorporates data methods compliant with ISO 14044 or other recognized standards that compare the environmental impact of products or assemblies.	<b>10 Points Max</b>
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(1) Two products with the same intended use are compared based on LCA and the product with a 15% improvement in fossil fuel consumption and global warming potential is used. <b>(Points awarded per product/system comparison.)</b>	<b>2 10 Points Max</b>
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(2) An assembly is selected for the project that has environmental impact measures that are better than a functionally comparable assembly. The full life cycle, from resource extraction to demolition and disposal (including but not limited to on-site construction, maintenance and replacement, material and product embodied acquisition, and process and transportation energy), is assessed. The assemblies considered include all structural elements, insulation, and wall coverings: (a) exterior walls (b) roof/ceiling (c) interior walls or ceilings (d) intermediate floors	<b>Points per Table 610.1.2(2) 10 Points Max</b>
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**Exception:** Electrical and mechanical equipment and controls, plumbing products, fire detection and alarm systems, elevators, and conveying systems are not included in the assessment.

The environmental impact measures to be considered are chosen from the following:

- (a) Fossil fuel consumption
- (b) Global warming potential
- (c) Acidification potential
- (d) Eutrophication potential
- (e) Ozone depletion potential
- (f) Human health respiratory effects potential from particulates

**(Points are awarded based on the number of assemblies that improve upon environmental impact measures by 15%.)**

**Table 610.1.2(2)  
Assembly LCA**

	4 Measures	6 Measures
	POINTS	
2 Assemblies	3	6
3 Assemblies	4	8
4 Assemblies	5	10

**611 INNOVATIVE PRACTICES**

<p><b>611.1 Manufacturer's environmental management system concepts.</b> Product manufacturer's operations and business practices include environmental management system concepts, and the production facility is registered to ISO 14001 or equivalent. The aggregate value of building products from registered ISO 14001 or equivalent production facilities is 1 percent or more of the estimated total building materials cost.</p> <p style="text-align: center;"><b>(1 point awarded per percent.)</b></p>	<b>10 points Max</b>
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<p><b>611.2 Sustainable Products.</b> One or more of the following products are used for at least 30% of the floor or wall area of the entire dwelling unit, as applicable. Certification third-party agency is ISO Guide 65 accredited.</p>	<b>4-6 Points Max</b>
(1) 50% or more of carpet installed (by square feet) is third-party certified to NSF/ANSI 140.	<b>43</b>
(2) 50% or more of resilient flooring installed (by square feet) is third-party certified to NSF/ANSI 332.	<b>43</b>
(3) 50% or more of the insulation installed (by square feet) is third-party certified to EcoLogo CCD-016.	<b>43</b>
(4) 50% or more of interior wall coverings installed (by square feet) is third-party certified to NSF/ANSI 342.	<b>43</b>

<p><b>611.3 Universal Design Elements.</b> Dwelling incorporates one or more of the following universal design elements.</p>	<b>10 Points Max</b>
(1) Any no-step entrance into the dwelling which is accessible from a substantially level parking or drop-off area (no more than 2%) via an accessible path which has no individual change in elevation or other obstruction of more than 1-1/2 inches in height, whose pitch does not exceed 1 in 12 and which provides a minimum 32-inch wide clearance into the dwelling.	<b>3</b>
(2) Minimum 36-inch wide accessible route from the no-step entrance into at least one visiting room in the dwelling and into at least one full or half bathroom which has a minimum 32 inch clear door width and a 30 inch by 48 inch clear area inside the bathroom outside the door swing.	<b>3</b>
(3) Minimum 36-inch wide accessible route from the no-step entrance into at least one bedroom which has a minimum 32 inch clear door width.	<b>3</b>
(4) Blocking or equivalent installed in the accessible bathroom walls for future installation of grab bars at commode and bathing fixture, if applicable.	<b>1</b>
<i>Note: Reasonable construction tolerances are allowed.</i>	

<p><del><b>611.4 Food waste disposers.</b>— A minimum of one food waste disposer is installed at the primary kitchen sink.</del></p>	<b>4</b>
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**CHAPTER 7**  
**ENERGY EFFICIENCY**

GREEN BUILDING PRACTICES	POINTS
<b>701 MINIMUM ENERGY EFFICIENCY REQUIREMENTS</b>	
<b>701.1 Mandatory requirements.</b> 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.	
<b>701.1.1 Minimum Performance Path requirements.</b> A building complying with Section 702 shall exceed the baseline minimum performance required by the ICC IECC by 15 percent, and shall include a minimum of two practices from Section 704.	
<b>701.1.2 Minimum Prescriptive Path requirements.</b> A building complying with Section 703 shall obtain a minimum of 30 points from Section 703, and shall include a minimum of two practices from Section 704.	
<b>701.1.3 Alternative bronze level compliance.</b> As an alternative, any building that qualifies as an ENERGY STAR Version 3.0 Qualified Home or demonstrates compliance with the 2012 IECC or Chapter 11 of the 2012 IRC achieves the bronze level for Chapter 7.	
<b>701.2 Emerald level points.</b> The Performance Path shall be used to achieve the emerald level.	
<b>701.3 Adopting Entity review.</b> A review by the Adopting Entity or designated third party shall be conducted to verify design and compliance with Chapter 7.	
<b>701.4 Mandatory practices.</b>	
<b>701.4.1 HVAC systems.</b>	
<b>701.4.1.1 HVAC system sizing.</b> Space heating and cooling system is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent. Equipment is selected using ACCA Manual S or equivalent.	<b>Mandatory</b>
<b>701.4.1.2 Radiant and hydronic space heating.</b> Where installed as a primary heat source in the building, radiant or hydronic space heating system is designed using industry-approved guidelines and standards (e.g., ACCA Manual J, AHRI I=B=R, ANSI/ACCA 5 QI-2010, or an accredited design professional’s and manufacturer’s recommendations).	<b>Mandatory</b>
<b>701.4.2 Duct systems.</b>	
<b>701.4.2.1 Duct air sealing.</b> Ducts are air sealed. All duct sealing materials are rated to UL 181A or UL 181B specifications and are used in accordance with manufacturer’s instructions.	<b>Mandatory</b>
<b>701.4.2.2 Supply ducts.</b> Building cavities are not used as supply ducts.	<b>Mandatory</b>
<b>701.4.2.3 Duct system sizing.</b> Duct system is sized and designed in accordance with ACCA Manual D or equivalent.	<b>Mandatory</b>
<b>701.4.3 Insulation and air sealing.</b>	

GREEN BUILDING PRACTICES	POINTS								
<b>701.4.3.1 Building Thermal Envelope.</b> The building thermal envelope is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. The following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film or solid material:	<b>Mandatory</b>								
<ul style="list-style-type: none"> <li>(a) All joints, seams and penetrations.</li> <li>(b) Site-built windows, doors and skylights.</li> <li>(c) Openings between window and door assemblies and their respective jambs and framing.</li> <li>(d) Utility penetrations.</li> <li>(e) Dropped ceilings or chases adjacent to the thermal envelope.</li> <li>(f) Knee walls.</li> <li>(g) Walls and ceilings separating a garage from conditioned spaces.</li> <li>(h) Behind tubs and showers on exterior walls.</li> <li>(i) Common walls between dwelling units.</li> <li>(j) Attic access openings.</li> <li>(k) Rim joist junction.</li> <li>(l) Other sources of infiltration.</li> </ul>									
<b>701.4.3.2 Air sealing and insulation.</b> The compliance of the building envelope air tightness and insulation installation is demonstrated in accordance with Section 701.4.3.2(1) or 701.4.3.2(2).	<b>Mandatory</b>								
<b>(1) Testing option.</b> Building envelope tightness and insulation installation is considered acceptable when tested air leakage is less than seven air changes per hour (ACH) when tested with a blower door at a pressure of 33.5 psf (50 Pa). Testing is conducted after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances. During testing:									
<ul style="list-style-type: none"> <li>(a) Exterior windows and doors, fireplace and stove doors are closed, but not sealed;</li> <li>(b) Dampers are closed, but not sealed, including exhaust, intake, makeup air, backdraft and flue dampers;</li> <li>(c) Interior doors are open;</li> <li>(d) Exterior openings for continuous ventilation systems and heat recovery ventilators are closed and sealed;</li> <li>(e) Heating and cooling system(s) is turned off;</li> <li>(f) HVAC ducts are not sealed; and</li> <li>(g) Supply and return registers are not sealed.</li> </ul>									
<b>(2) Visual inspection option.</b> Building envelope tightness and insulation installation are considered acceptable when the items listed in Table 701.4.3.2(2) applicable to the method of construction, are field verified.									
<p><b>Table 701.4.3.2(2)</b> <b>Air Barrier and Insulation Inspection Component Criteria</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">COMPONENT</th> <th style="text-align: center;">CRITERIA</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Air barrier and thermal barrier</td> <td>Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired. Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.</td> </tr> <tr> <td style="text-align: center;">Ceiling/attic</td> <td>Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and anygaps are sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.</td> </tr> <tr> <td style="text-align: center;">Walls</td> <td>Corners and headers are insulated. Junction of foundation and sill plate is sealed.</td> </tr> </tbody> </table>		COMPONENT	CRITERIA	Air barrier and thermal barrier	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired. Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.	Ceiling/attic	Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and anygaps are sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.	Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.
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Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.								

GREEN BUILDING PRACTICES	POINTS
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Windows and doors	Space between window/door jambs and framing is sealed.	
Rim joists	Rim joists are insulated and include an air barrier.	
Floors (including above-garage and cantilevered floors)	Insulation is installed to maintain permanent contact with underside of subfloor decking. Air barrier is installed at any exposed edge of insulation.	
Crawl space walls	Insulation is permanently attached to walls. Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.	
Shafts, penetrations	Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.	
Narrow cavities	Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.	
Garage separation	Air sealing is provided between the garage and conditioned spaces.	
Recessed lighting	Recessed light fixtures are air tight, IC rated, and sealed to drywall. Exception—fixtures in conditioned space.	
Plumbing and wiring	Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.	
Shower/tub on exterior wall	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.	
Electrical/phone box on exterior walls	Air barrier extends behind boxes or air sealed-type boxes are installed.	
Common wall	Air barrier is installed in common wall between dwelling units.	
HVAC register boots	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.	
Fireplace	Fireplace walls include an air barrier.	

**701.4.3.3 Fenestration air leakage.** Windows, skylights and sliding glass doors have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m<sup>2</sup>), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/m<sup>2</sup>), when tested according to NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled by the manufacturer.

**Mandatory**

**Exception:** Site built windows, skylights and doors.

**701.4.3.4 Recessed lighting.** Recessed luminaires installed in the building thermal envelope are sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires are IC-rated and labeled as meeting ASTM E 283 when tested at 1.57 psf (75 Pa) pressure differential with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity. All recessed luminaires are sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

**Mandatory**

**701.4.4 High-efficacy lighting.** A minimum of 50 percent of the total hard-wired lighting fixtures, or the bulbs in those fixtures, qualify as high efficacy or equivalent.

**Mandatory**

**701.4.5 Boiler supply piping.** Boiler supply piping is insulated in unconditioned spaces.

**Mandatory**

**702 PERFORMANCE PATH**

**702.1 Point allocation.** Points from Section 702 (Performance Path) shall not be combined with points from Section 703 (Prescriptive Path).

**Mandatory**

**702.2 Energy cost performance levels.**

**702.2.1 ICC IECC analysis.** Energy efficiency features are implemented to achieve energy cost performance that meets the ICC IECC. A documented analysis using software in accordance with ICC IECC, Section 405, or ICC IECC Section 506.2 through 506.5, applied as defined in the ICC IECC, is required.

**TBD**

**702.2.2 Energy cost performance analysis.** Savings levels above the ICC IECC are

GREEN BUILDING PRACTICES	POINTS
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determined through an analysis that includes improvements in building envelope, air infiltration, heating system efficiencies, cooling system efficiencies, duct sealing, water heating system efficiencies, lighting, and appliances.	
(1) 15 percent	<b>30</b>
(2) 30 percent	<b>60</b>
(3) <del>50-40</del> percent	<del>10080</del>
(4) <del>60-50</del> percent	<del>120100</del>

**703 PRESCRIPTIVE PATH**

**703.1 Building envelope**

**703.1.1 UA improvement.** The total building thermal envelope UA is in accordance with Table 703.1.2 and is less than or equal to the total UA resulting from the U-factors provided in Table 703.1.1. Where insulation is used to achieve the UA improvements, a third-party grading of the installation as achieving Grade 1 is required. Total UA is documented using RESCheck or equivalent report and supplied to verify the baseline and the UA improvement.

**Points per Table 703.1.1**

Table 703.1.1  
Equivalent U-Factors<sup>a</sup>

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor <sup>b</sup>	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor <sup>c</sup>
1	1.2	0.75	0.035	0.082	0.197	0.064	0.36	0.477
2	0.65	0.75	0.035	0.082	0.165	0.064	0.36	0.477
3	0.5	0.65	0.035	0.082	0.141	0.047	0.91	0.136
4 except Marine	0.35	0.6	0.03	0.082	0.141	0.047	0.059	0.065
5 and Marine 4	0.35	0.6	0.03	0.057	0.082	0.033	0.059	0.065
6	0.35	0.6	0.026	0.057	0.06	0.033	0.05	0.065
7 and 9	0.35	0.6	0.026	0.057	0.057	0.028	0.05	0.065

a. Nonfenestration U-factors shall be obtained from measurement, calculation or an approved source.  
b. When more the half the insulation is on the interior, the mass wall U-factors is a maximum of 0.17 in Zone 1, 0.14 in Zone 2, 0.12 in Zone 3, 0.10 in Zone 4 except in Marine, and the same as the frame wall U-factor in Marine Zone 4 and Zones 5 through 8.  
c. Basement wall U-factor of 0.360 in warm-humid locations.

Table 703.1.2  
Improvement in Total Building Thermal Envelope UA

Minimum UA Improvement	Climate Zone							
	1	2	3	4	5-6	6	7-8	8
Points								
0 to < 5%	0	0	0	0	0	0	0	0
5% to <10%	0	52	63	74	87	5	93	4
10% to <15%	0	196	128	148	1611	12	189	10
15% to <20%	0	1510	1812	2413	2416	14	2711	12

GREEN BUILDING PRACTICES	POINTS
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≥20%	<u>02</u>	<u>2014</u>	<u>2417</u>	<u>2818</u>	<u>3218</u>	<u>17</u>	<u>3614</u>	<u>16</u>							
<p><b>703.1.2 Insulation installation.</b> The insulation installation is graded by a third party and is in accordance with Sections 703.1.2.1, 703.1.2.2, and/or 703.1.2.3 as applicable. Grade 3 insulation installation is not permitted. Grade 2 installation is permitted only for bronze level buildings.</p> <p style="text-align: center;"><b>(Points not awarded in this section if already awarded under Section 703.1.1.)</b></p> <p style="text-align: center;"><b>Table 703.1.2</b> <b>Insulation Installation Grades</b></p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Grade</th> <th style="text-align: center;">POINTS</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">15</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">10</td> </tr> </tbody> </table>										Grade	POINTS	1	15	2	10
Grade	POINTS														
1	15														
2	10														
<b>Points per Table 703.1.2</b> <u>2</u>															

- 703.1.2.1** Both Grade 1 and Grade 2 installations are in accordance with the following:
- (1) Grading applies to field-installed insulation products.
  - (2) Grading applies to ceilings, walls, floors, band joists, rim joists, conditioned attics basements and crawlspaces, except as specifically noted.
  - (3) Inspection is conducted before insulation is covered.
  - (4) 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.
- 703.1.2.2** Grade 1 installation is in accordance with the following:
- (1) Cavity insulation uniformly fills each cavity side-to-side and top-to-bottom, without substantial gaps or voids around obstructions (such as blocking or bridging).
  - (2) Cavity insulation compression or incomplete fill amounts to 2 percent or less, presuming the compressed or incomplete areas are a minimum of 70 percent of the intended fill thickness; occasional small gaps are acceptable.
  - (3) Exterior rigid insulation has substantial contact with the structural framing members or sheathing materials and is tightly fitted at joints.
  - (4) Cavity insulation is split, installed, and/or fitted tightly around wiring and other services.
  - (5) Exterior sheathing is not visible from the interior through gaps in the cavity insulation.
  - (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.
  - (7) Where properly installed, ICFs, SIPs, and other wall systems that provide integral insulation are deemed in compliance with the Grade 1 insulation installation requirements.
  - (8) Grade 1 insulation meets or exceeds all requirements for Grade 2 insulation.
- 703.1.2.3** Grade 2 installation is in accordance with the following:

GREEN BUILDING PRACTICES	POINTS
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- (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 a minimum of 70 percent of the intended fill thickness.
- (2) In unconditioned basements or crawlspaces insulation is installed in substantial contact with the subfloor surfaces.
  - (a) floor insulation over vented or ambient conditions is enclosed on six sides.
  - (b) floor insulation over unconditioned basements is not required to be enclosed on six sides.
- (3) Ceiling insulation is not required to be enclosed when the insulation is installed in substantial contact with the drywall or plywood surfaces it is intended to insulate.
- (4) Eave baffles or equivalent construction is installed to prevent wind intrusion.
- (5) Installation with occasional installation defects is permitted: gaps around wiring, electrical outlets, plumbing and other intrusions; rounded edges or shoulders.

**703.1.3 Mass walls.** More than 75 percent of the above-grade exterior opaque wall area of the building is mass walls.

**Table 703.1.3**  
**Exterior Mass Walls**

	Mass Construction	
	≥3 in. to <6 in.	≥6 in.
	POINTS	
<del>Climate Zones 1, 2, 3, 4 except marine, and 5 dry.</del>	4	6
<del>Climate Zones 4 marine, 5 except dry, and 6.</del>	3	5
<del>Climate Zones 7 and 8</del>	0	0

For SI: 1 inch = 25.4 mm

**Table 703.1.3**  
**Exterior Mass Walls**

Mass wall thickness	Climate Zone			
	1-4	5	6	7-8
	Points			
≥3 in. to <6 in.	5	4	3	0
> 6 inch	3	2	2	0

**703.1.4** A radiant barrier with an emittance of 0.05 or less is used. The product is tested in accordance with ASTM C-1371-98 or ASTM E408-71 (2002) and is installed in accordance with the manufacturer's installation specifications.

**Table 703.1.4**  
**Radiant Barriers**

Climate Zone	POINTS
1-3	2
4-3	13
4	1
5-8	0

- 703.1.5 Building envelope leakage.** The maximum leakage rate is in accordance with the following:

**Points per Table 703.1.5**

- (a) 5 ACH50
- (b) 4 ACH50
- (c) 3 ACH50
- (d) 2 ACH50
- (e) 1 ACH50

- 3
- 6
- 9
- 12
- 15

**Table 703.1.5  
Building Envelope Leakage**

Envelope leakage ACH50	Climate Zone							
	1	2	3	4	5	6	7	8
	<b>Points</b>							
5	2	3	3	4	6	7	8	9
4	3	4	5	7	10	12	13	14
3	3	5	6	9	13	15	17	19
2	4	6	8	11	15	18	20	23
1	4	5	8	12	17	19	22	24

**703.1.6 Fenestration**

**703.1.6.1** NFRC-certified (or equivalent) U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with Table 703.1.6.1. Decorative fenestration elements with a combined total maximum area of 15 square feet (1.39 m<sup>2</sup>) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.

**Mandatory**

**Table 703.1.6.1  
Fenestration Specifications**

Climate Zones	U-Factor	SHGC
	Windows and Exterior Doors (maximum certified ratings)	
1	0.65	0.30
2	0.65	0.30
3	0.40	0.30
4 to 8	0.35	Any
Skylights and TDDs (maximum certified ratings)		
1 and 2	0.75	0.30
3	0.65	0.30
4 to 8	0.60	Any

**703.1.6.2** The NFRC-certified (or equivalent) U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with Table 703.1.6.2(a) or (b). Decorative fenestration elements with a combined total maximum area of 15 square feet (1.39 m<sup>2</sup>) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.

**Points per Table 703.1.6.2(a) or Table 703.1.6.2(b) or Table 703.1.6.2(c)**

**Table 703.1.6.2(a)  
Enhanced Fenestration Specifications**

Climate Zones	U-Factor	SHGC	POINTS
	Windows and Exterior Doors (maximum certified ratings)		
4	0.25	0.40	5
5	0.22	Any	9
6	0.22	Any	9
7	0.22	Any	9
8	0.22	Any	9

1 and 2	0.60	0.27	TBD10
2	0.60	0.27	5
3	0.35	0.30	TBD6
4	0.32	0.40	TBD2
5 to 8	0.30	Any	TBD5
6	0.30	Any	5
7	0.30	Any	5
8	0.30	Any	5
Skylights and TDDs (maximum certified ratings)			
1 and 2	0.70	0.30	TBD
3	0.57	0.30	TBD
4	0.55	0.40	TBD
5 to 8	0.55	Any	TBD

For Climate Zones 5-8 an equivalent energy performance is permitted based on either (1) windows with a U-factor = 0.31 and an SHGC ≥ 0.35, or, a U-factor = 0.32 and an SHGC ≥ 0.40 or (2) windows meeting the ENERGY STAR Equivalent Energy Performance requirements.

**Table 703.1.6.2(b)  
Enhanced Fenestration Specifications**

Climate Zones	U-Factor	SHGC	Points
	Windows and Exterior Doors (maximum certified ratings)		
1 and 2	0.40	0.25	TBD13
2	0.40	0.25	9
3	0.30	0.25	TBD9
4	0.28	0.40	TBD4
4	0.25	0.40	TBD
5 to 8	0.25	Any	TBD8
6	0.25	Any	9
7	0.25	Any	9
8	0.25	Any	9
5 to 8	0.22	Any	TBD
Skylights and TDDs (maximum certified ratings)			
1 & 2	0.50	0.30	TBD
3	0.50	0.35	TBD
4	0.50	0.40	TBD
5 to 8	0.50	Any	TBD

**Table 703.1.6.2(c)  
Enhanced Fenestration Specifications**

Climate Zones	U-Factor	SHGC	Points
4	0.25	0.40	5
5	0.22	Any	9
6	0.22	Any	9
7	0.22	Any	9
8	0.22	Any	9

**703.2 HVAC equipment efficiency**

**703.2.1** Combination space heating and water heating system (combo system) is installed using either a coil from the water heater connected to an air handler to provide heat for the building or dwelling unit, or a space heating boiler using an indirect-fired water heater. Devices have a combined annual efficiency of 0.80.

**4**

**703.2.2** Furnace and/or boiler efficiency is in accordance with one of the following:



(Where multiple systems are used, points awarded based on the system with the lowest efficiency.)

(1) Gas and propane heaters:

Table 703.2.2(1)  
Gas and Propane Heaters

	Climate Zone							
	1	2	3	4	5	6-8	7	8
	<b>POINTS</b>							
≥ 90% AFUE	0	5-2	65	78	94	94	10	10
≥ 92% AFUE	0	5-2	86	99	112	115	12	12
≥ 94% AFUE	0	5-3	87	104	134	137	13	14
≥ 96% AFUE	1	6	10	11	14	14	15	16
≥ 98% AFUE	1	6	10	13	15	15	16	17

Points per Table 703.2.2(1)

(2) Oil furnace:

Table 703.2.2(2)  
Oil Furnace

	Climate Zone					
	1	2	3	4	5	6-8
	<b>POINTS</b>					
≥ 83.85% AFUE	0	-1	3	3	7	7
≥ 90% AFUE	0	2	5	8	11	14

Points per Table 703.2.2(2)

(3) Gas boiler:

Table 703.2.2(3)  
Gas Boiler

	Climate Zone					
	1	2	3	4	5	6-8
	<b>POINTS</b>					
≥ 85% AFUE	0	9-4	16-3	18-4	17-6	16-7
≥ 90% AFUE	10	10-2	17-5	198	18-11	17-14
≥ 94% AFUE	10	10-3	18-7	19-10	19-14	17-17
≥ 96% AFUE	1	10	18	20	19	18

Points per Table 703.2.2(3)

(4) Oil boiler:

Table 703.2.2(4)  
Oil Boiler

	Climate Zone					
	1	2	3	4	5	6-8
	<b>POINTS</b>					
≥ 85% AFUE	0	9-4	16-3	18-4	17-6	16-7
≥ 90% AFUE	10	10-2	17-5	198	18-11	17-14

Points per Table 703.2.2(4)

~~703.2.3 Boiler is equipped with temperature reset control or burner delay control.~~

4

703.2.4 Heat pump heating efficiency is in accordance with Table 703.2.4. Refrigerant charge is verified for compliance with manufacturer's instructions.

(Where multiple systems are used, points awarded based on the system with the lowest efficiency.)

Table 703.2.4  
Heat Pump Heating

	Climate Zone					
	1	2	3	4	5	6-8*
	<b>POINTS</b>					

Points per Table 703.2.4

8.2 HSPF (11.5 EER)	0	1	2	54	75*	75*
9.0 HSPF (12.5 EER)	0	23	56	409	4412*	12*
9.5 HSPF	0	4	7	12	16	16
10.0 HSPF	1	4	9	15	19	19

\* Equipment designed to operate in cold climates is recommended to minimize use of resistance heat when installing a heat pump in Zones 6-8. Zones 5-8 require consideration for use of resistance heat in cold climates when installing a heat pump.

703.2.5 Cooling efficiency is in accordance with one of the following. Refrigerant charge is verified for compliance with manufacturer's instructions.

(Where multiple systems are used, points awarded based on the system with the lowest efficiency.)

(1) Air conditioner and heat pump cooling:

Table 703.2.5(1)  
Air Conditioner and Heat Pump Cooling

	Climate Zone						
	1	2	3	4	5	6-8	7-8
	<b>POINTS</b>						
≥ 14 SEER (11.5 EER)	48	36	12	12	04	04	0
≥ 15 SEER (12.5 EER)	742	540	24	13	12	02	0
≥ 17 SEER (12.5 EER)	1248	844	46	24	13	13	0
≥ 19+ SEER (12.5 EER)	1624	1148	68	34	23	13	0
≥ 19+ SEER	19	14	7	3	2	1	0

Points per Table 703.2.5(1)

(2) Water source and cooled air conditioners:

Table 703.2.5(2)  
Water Source and Cooled Air Conditioners

	Climate Zone					
	1	2	3	4	5	6-8
	<b>POINTS</b>					
≥ 15 EER, 4.0 COP	1448	1844	226	304	373	373

Points per Table 703.2.5(2)

703.2.6 Ground source heat pump is installed by a Certified Geothermal Service Contractor in accordance with one of the following ENERGY STAR levels:

(Where multiple systems are used, points awarded based on the system with the lowest efficiency.)

Table 703.2.6  
Ground source heat pump\*

	Climate Zone					
	1	2	3	4	5	6-8
	<b>POINTS</b>					

Points per Table 703.2.6

<u>GSHP 16.2EER 3.6</u> <u>cop</u>	<u>17</u>	<u>18</u>	<u>20</u>	<u>27</u>	<u>33</u>	<u>33</u>
<u>GSHP 14.1EER 3.3</u> <u>cop</u>	<u>12</u>	<u>14</u>	<u>16</u>	<u>22</u>	<u>27</u>	<u>27</u>
<u>GSHP 15 EER 3.5</u> <u>cop</u>	<u>14</u>	<u>16</u>	<u>19</u>	<u>25</u>	<u>31</u>	<u>31</u>
<u>Any type 24 EER 4.3</u> <u>cop</u>	<u>29</u>	<u>28</u>	<u>29</u>	<u>35</u>	<u>42</u>	<u>42</u>
<u>Any type 28 EER 4.8</u> <u>cop</u>	<u>32</u>	<u>32</u>	<u>32</u>	<u>40</u>	<u>47</u>	<u>47</u>

\* The ground loop needs to be sized to account for the ground conductance and the incoming water temperature expected minimum to achieve rated performance.

<b>(1)</b> Open loop: $\geq 16.2$ EER / $\geq 3.6$ COP	<b>-20</b>
<b>(2)</b> Closed loop: $\geq 14.1$ EER / $\geq 3.3$ COP	<b>-20</b>
<b>(3)</b> Direct expansion: $\geq 15.0$ EER / $\geq 3.5$ COP	<b>-20</b>
<b>(4)</b> Any type (open, closed, direct expansion): $\geq 24$ EER / $\geq 4.3$ COP	<b>-30</b>
<b>(5)</b> Any type (open, closed, direct expansion): $\geq 28$ EER / $\geq 4.8$ COP	<b>-35</b>

<b>703.2.7</b> ENERGY STAR, or equivalent, ceiling fan(s) are installed. <b>(Points awarded per building.)</b>	<b>1</b>
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<b>703.2.8</b> Whole building or whole dwelling unit fan(s) with insulated louvers and a sealed enclosure is installed. <b>(Points awarded per building.)</b>	<b>Points per Table 703.2.8.2</b>
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<b>Table 703.2.8</b> <b>Whole dwelling unit fan</b>		
<b>Climate Zone</b>		
<b>1-3</b>	<b>4-6</b>	<b>7-8</b>
<b>POINTS</b>		
<b>5</b>	<b>3</b>	<b>0</b>

<b>703.2.9</b> In multi-unit buildings, an advanced electric and fossil fuel submetering system is installed to monitor electricity and fossil fuel consumption for each unit. At a minimum, the information is available to the occupants on a monthly basis.	
<b>(1)</b> Install a device providing monthly consumption information, or-	<b>1</b>
<b>(2)</b> Install a device that can provide near real-time energy consumption information.	<b>41</b>

<del><b>703.2.10</b> An ENERGY STAR, or equivalent, programmable thermostat is installed to control each heating and cooling zone.</del> <b>(Points awarded per dwelling unit.)</b>	<b>4</b>
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**703.3 Duct Systems**

<b>703.3.1</b> All space heating is provided by a system(s) that does not include air ducts.	<b>45 Points per Table 703.3.1</b>
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<b>Table 703.3.1</b> <b>Ductless heating system</b>						
<b>Climate Zone</b>						
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6-8</b>	

<b>POINTS</b>						
<b>0</b>	<b>4</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>2</b>	

<b>703.3.2</b> All space cooling is provided by a system(s) that does not include air ducts.	<b>45 Points per Table 703.3.2</b>
--	------------------------------------

<b>Table 703.3.2</b> <b>Ductless cooling system</b>						
<b>Climate Zone</b>						
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6-8</b>	
<b>POINTS</b>						
<b>10</b>	<b>7</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	

<b>703.3.3</b> Ductwork is in accordance with all of the following:	<b>Points per Table 703.3.3.2</b>
<b>(1)</b> Building cavities are not used as return ductwork.	
<b>(2)</b> Heating and cooling ducts and mechanical equipment are installed within the conditioned building space.	
<b>(3)</b> Ductwork is not installed in exterior walls.	

<b>Table 703.3.2</b> <b>Interior ducts</b>						
<b>Climate Zone</b>						
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6-8</b>	
<b>POINTS</b>						
<b>11</b>	<b>11</b>	<b>11</b>	<b>8</b>	<b>4</b>	<b>3</b>	

<b>703.3.4 Duct Leakage.</b> The entire central HVAC duct system, including air handlers and register boots, is tested by a third party for leakage at a pressure differential of 0.1 inches w.g. (25 Pa). The maximum leakage as a percent of the system design flow rate is in accordance with the following: <u>Table 703.3.4.</u>	<b>Points per Table 703.3.4</b>
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<b>(1)</b> 6 percent for ductwork entirely outside the building's thermal envelope	<b>15</b>
<b>(2)</b> 6 percent for ductwork entirely inside the building's thermal envelope	<b>5</b>
<b>(3)</b> 6 percent for ductwork both inside and outside the building's thermal envelope	<b>15</b>

<b>Table 703.3.4</b> <b>Duct Leakage</b>						
<b>System design flow rate</b>	<b>Climate Zone</b>					
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6-8</b>
<b>POINTS</b>						
<u>6 percent for ductwork entirely outside the building's thermal envelope</u>	<b>8</b>	<b>9</b>	<b>8</b>	<b>6</b>	<b>3</b>	<b>2</b>
<u>6 percent for ductwork entirely inside the building's thermal envelope</u>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>
<u>6 percent for ductwork both inside and outside the building's thermal envelope</u>	<b>5</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>2</b>

**703.4 Water heating design, equipment, and installation**

<b>703.4.1</b> Water heater Energy Factor (EF) is equal to or greater than the following: <b>(Where multiple systems are used, points awarded based on the system with the lowest efficiency.)</b>	
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<b>(1)</b> Gas water heating	<b>Points per</b>
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**Table 703.4.1(1)(a)  
Gas Water Heating**  
(Storage with input rate of 75,000 Btu/h or less or instantaneous input rate of 200,000 Btu/h or less)

Size (gallons)	Energy Factor	POINTS
30 to < 40	0.64	4
40 to < 50	0.62	4
50 to < 65	0.60	4
65 to < 75	0.58	4
≥75	0.56	4
Any	0.80	10

For SI: 1 gallon = 3.785 L

**Table 703.4.1(1)(b)  
Gas Water Heating**  
(Storage with input rate of greater than 75,000 Btu/h or instantaneous input rate greater than 200,000 Btu/h)

Size (gallons)	Thermal Efficiency	POINTS
Any	82-86%	4
Any	>86%	10

**Table 703.4.1(1)  
Gas Water Heating**

Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
≥0.80	7	7	5	4	5	4	2	2

**Table 703.4.1(1)(a) or Table 703.4.1(1)(b)**

**Points per Table 703.4.1(2)**

**Points per**

(2) Electric water heating

**Table 703.4.1(2)  
Electric Water Heating**

Size (gallons)	Energy Factor	POINTS
30 to < 40	0.95	4
40 to < 50	0.94	4
50 to < 65	0.92	4
65 to < 80	0.90	4
80 to < 100	0.88	4
≥100	0.86	4

For SI: 1 gallon = 3.785 L

**Table 703.4.1(2)  
Electric Water Heating**

Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
≥0.95	2	2	2	1	1	1	1	1

(3) Oil water heating

**Table 703.4.1(3)  
Oil Water Heating**

Size (gallons)	Energy Factor	POINTS
30 to < 50	0.59	4
≥50	0.55	4

For SI: 1 gallon = 3.785 L

**Table 703.4.1(3)  
Oil Water Heating**

Size (gallons)	Energy Factor	Climate Zone							
		1	2	3	4	5	6	7	8
30 to < 50	0.59	1	1	1	1	1	1	1	1
≥50	0.59	1	1	1	1	1	1	1	1

For SI: 1 gallon = 3.785 L

**Table 703.4.1(3)**

(4) Heat pump water heating

**Table 703.4.1(4)  
Heat Pump Water Heating**

	Energy Factor	POINTS
Heat Pump	1.5	7
Heat Pump	2.0	10

**Table 703.4.1(4)  
Heat Pump Water Heating**

Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
1.5	14	11	11	11	11	4	4	4
2.0	19	16	16	15	15	6	6	6
2.2	20	17	17	17	16	6	6	6

**Points per Table 703.4.1(4)**

703.4.2 Desuperheater is installed by a qualified installer or is pre-installed in the factory.

**Table 703.4.2  
Desuperheater**

	Climate Zone		
	Zone 1-4	Zone 2-5-8	6-8
Desuperheater	5	7	4

**Points per Table 703.4.2**

703.4.3 Drain-water heat recovery system is installed in multi-family units.

(Points awarded per building.)

2

703.4.4 Indirect-fired water heater storage tanks heated from boiler systems are installed.

1

703.4.5 **Solar water heater.** SRCC (Solar Rating & Certification Corporation) OG 300 rated, or equivalent, solar domestic water heating system is installed. Solar Energy Factor (SEF as defined by SRCC) is in accordance with Table 703.4.5.

**Points per Table 703.4.5**

**Table 703.4.5  
Solar Hot Water Systems**

<del>SEF</del> Electric Tank	<del>SEF</del> Gas Tank	<b>POINTS</b>
<del>1.30-1.50</del>	<del>0.85-1.00</del>	<b>8</b>
<del>1.51-1.80</del>	<del>1.01-1.20</del>	<b>14</b>
<del>1.81-2.30</del>	<del>1.21-1.50</del>	<b>14</b>
<del>2.31-3.00</del>	<del>1.51-2.00</del>	<b>17</b>
<del>≥3.01</del>	<del>≥2.01</del>	<b>20</b>

**Table 703.4.5  
Solar Hot Water Systems**

<b>SEF</b>	<b>Climate Zone</b>							
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
	<b>Points</b>							
<b>SEF 1.3</b>	<b>15</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>10</b>	<b>7</b>	<b>4</b>
<b>SEF 1.51</b>	<b>18</b>	<b>12</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>12</b>	<b>8</b>	<b>5</b>
<b>SEF 1.81</b>	<b>21</b>	<b>14</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>14</b>	<b>10</b>	<b>6</b>
<b>SEF 2.31</b>	<b>24</b>	<b>17</b>	<b>19</b>	<b>20</b>	<b>22</b>	<b>16</b>	<b>12</b>	<b>7</b>
<b>SEF 3.01</b>	<b>27</b>	<b>19</b>	<b>21</b>	<b>23</b>	<b>25</b>	<b>18</b>	<b>13</b>	<b>8</b>

**703.5 Lighting and appliances**

**703.5.1 Hard-wired lighting.** Hard-wired lighting is in accordance with one of the following:

- (1) A minimum ~~of 50~~ percent of the total hard-wired lighting fixtures qualify as ENERGY STAR or equivalent.

**-8 Points per Table 703.5.1**

<b>Minimum % fixtures</b>	<b>Climate Zone</b>							
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
	<b>Points</b>							
<b>75%</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>
<b>95%</b>	<b>9</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>

- (2) A minimum of 80 percent of the exterior lighting wattage has an efficiency of 40 lumens per watt minimum or be a solar-powered light fixture.

**1 TBD**

**703.5.2 Recessed lighting fixtures.** The number of recessed light fixtures that penetrate the thermal envelope are less than 1 per 400 square feet (37.16 m<sup>2</sup>) of total conditioned floor area and are in accordance with Section 701.4.3.4.

**2**

**703.5.3 Appliances.** ENERGY STAR or equivalent appliance(s) are installed:

- (1) Refrigerator

<b>Climate Zone</b>	<b>Points</b>							
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>

**5 Points per Table 703.5.3(1)**

(2) Dishwasher	<b>21</b>
(3) washing machine	<b>4</b>
<b>703.5.4 Induction cooktop.</b> Induction cooktop is installed.	<b>1</b>

**703.6 Passive solar design**

**703.6.1 Sun-tempered design.** Building orientation, sizing of glazing, and design of overhangs are in accordance with all of the following:

**5**

- (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 703.6.1(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.
- (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.
- (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.
- (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
  - (b) horizontal skylights are less than 0.5 percent of finished ceiling area
  - (c) sloped skylights on slopes facing within 45 degrees of true south, east or west are less than 1.5 percent of the finished ceiling area
- (7) Overhangs or adjustable canopies or awnings or trellises provide shading on south-facing glass for the appropriate climate zone in accordance with Table 703.6.1(7):

**Table 703.6.1(7)  
South-Facing Window Overhang Depth**

<b>Climate Zone</b>		<b>Vertical distance between bottom of overhang and top of window sill</b>				
		<b>≤ 7' 4"</b>	<b>≤ 6' 4"</b>	<b>≤ 5' 4"</b>	<b>≤ 4' 4"</b>	<b>≤ 3' 4"</b>
<b>Climate Zone</b>	<b>1 &amp; 2 &amp; 3</b>	2' 8"	2' 8"	2' 4"	2' 0"	2' 0"
	<b>4 &amp; 5 &amp; 6</b>	2' 4"	2' 4"	2' 0"	2' 0"	1' 8"
	<b>7 &amp; 8</b>	2' 0"	1' 8"	1' 8"	1' 4"	1' 0"

For SI: 1 inch = 25.4 mm

- (8) The south face windows have a SHGC of 0.40 or higher.
- (9) Return air or transfer grilles/ducts are in accordance with Section 704.3.

**703.6.2 Window shading.** Automated solar protection is installed to provide shading for windows.

**1**

**703.6.3 Passive cooling design.** Passive cooling design features are in accordance with three or more of the following:

**Points for three items: 3**  
**Points for one additional item: 1**

- (1) Exterior shading is provided on east and west windows using one or a combination of the following:
  - (a) Vine-covered trellises with the vegetation separated a minimum of 1 foot (305 mm) from face of building

<ul style="list-style-type: none"> <li>(b) moveable awnings or louvers</li> <li>(c) covered porches</li> <li>(d) attached or detached conditioned/unconditioned enclosed space that provides full shade of east and west windows (e.g., detached garage, shed, or building)</li> </ul>	
<p>(2) Overhangs are installed to provide shading on south-facing glazing in accordance with Section 703.6.1(7).</p> <p style="text-align: center;"><b>(Points not awarded if points are taken under Section 703.6.1.)</b></p>	
(3) Windows and/or venting skylights are located to facilitate cross ventilation.	
(4) Solar reflective roof or radiant barrier is installed in climate zones 1, 2, or 3 and roof material achieves a 3-year aged criteria of 0.50.	
<p>(5) Internal exposed thermal mass is a minimum of three inches (76 mm) in thickness. Thermal mass consists of concrete, brick, and/or tile that are fully adhered to a masonry base or other masonry material and is in accordance with one or a combination of the following:</p> <ul style="list-style-type: none"> <li>(a) A minimum of 1 square foot (0.09 m<sup>2</sup>) of exposed thermal mass of floor per 3 square feet (2.8 m<sup>2</sup>) of gross finished floor area.</li> <li>(b) A minimum of 3 square feet (2.8 m<sup>2</sup>) of exposed thermal mass in interior walls or elements per square foot (0.09 m<sup>2</sup>) of gross finished floor area.</li> </ul>	
(6) Roofing material is installed with a minimum 0.75 inch (19 mm) continuous air space offset from the roof deck from eave to ridge.	
<b>703.6.4 Passive solar heating design.</b> In addition to the sun-tempered design features in Section 703.6.1, all of the following are implemented:	<b>4</b>
(1) Additional glazing, no greater than 12 percent, is permitted on the south wall. This additional glazing is in accordance with the requirements of Section 703.6.1.	
<p>(2) Additional thermal mass for any room with south-facing glazing of more than 7 percent of the finished floor area is provided in accordance with the following:</p> <ul style="list-style-type: none"> <li>(a) Thermal mass is solid and a minimum of 3 inches (76 mm) in thickness. Where two thermal mass materials are layered together (e.g., ceramic tile on concrete base) to achieve the appropriate thickness, they are fully adhered to (touching) each other.</li> <li>(b) Thermal mass directly exposed to sunlight is provided in accordance with the following minimum ratios: <ul style="list-style-type: none"> <li>(i) Above latitude 35 degrees: 5 square feet (0.465 m<sup>2</sup>) of thermal mass for every 1 square foot (0.0929 m<sup>2</sup>) of south-facing glazing.</li> <li>(ii) Latitude 30 degrees to 35 degrees: 5.5 square feet (0.51 m<sup>2</sup>) of thermal mass for every 1 square foot (0.0929 m<sup>2</sup>) of south-facing glazing.</li> <li>(iii) Latitude 25 degrees to 30 degrees: 6 square feet (0.557 m<sup>2</sup>) of thermal mass for every 1 square foot (0.0929 m<sup>2</sup>) of south-facing glazing.</li> </ul> </li> <li>(c) Thermal mass not directly exposed to sunlight is permitted to be used to achieve thermal mass requirements of Section 703.6.4 (2) based on a ratio of 40 square feet (3.72 m<sup>2</sup>) of thermal mass for every 1 square foot (0.0929 m<sup>2</sup>) of south-facing glazing.</li> </ul>	
(3) In addition to return air or transfer grilles/ducts required by Section 703.6.1(9), provisions for forced airflow to adjoining areas are implemented as needed.	

**704  
ADDITIONAL PRACTICES**

**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).

<b>704.2 Lighting</b>	
<b>704.2.1 Occupancy sensors.</b> Occupancy sensors are installed on indoor lights, and photo or motion sensors are installed on outdoor lights to control lighting.	
(1) 25 percent of lighting	<del>2</del> <b>1</b>
(2) 50 percent of lighting	<del>4</del> <b>2</b>
<b>704.2.2 TDDs and skylights.</b> Tubular daylighting device (TDD) or a skylight with sealed, insulated, low-E glass is installed in rooms without windows.	<b>2</b>
<b>(Points awarded per building.)</b>	
<b>704.2.3 Lighting outlets.</b> Occupancy sensors are installed for a minimum of 80 percent of hard-wired lighting outlets.	<b>1</b>
<b>704.3 Return ducts and transfer grilles.</b> Return ducts or transfer grilles are installed in every room with a door. This practice does not apply to bathrooms, kitchens, closets, pantries, and laundry rooms.	<b>5</b>
<b>704.4 HVAC design and installation</b>	
<b>704.4.1</b> HVAC contractor and service technician are certified by a nationally or regionally recognized program (e.g., North American Technician Excellence, Inc. (NATE), Air Conditioning Contractors of Americas Quality Assured Program (ACCA/QA), Building Performance Institute (BPI), Radiant Panel Association, or manufacturers' training program).	<b>1</b>
<b>704.4.2</b> Performance of the heating and/or cooling system is verified by the HVAC contractor in accordance with all of the following:	<b>3</b>
<ul style="list-style-type: none"> <li>(1) Start-up procedure is performed in accordance with the manufacturer's instructions.</li> <li>(2) Refrigerant charge is verified by super-heat and/or sub-cooling method.</li> <li>(3) Burner is set to fire at input level listed on nameplate.</li> <li>(4) Air handler setting/fan speed is set in accordance with manufacturer's instructions.</li> <li>(5) Total airflow is within 10 percent of design flow.</li> <li>(6) Total external system static does not exceed equipment capability at rated airflow.</li> </ul>	
<b>704.4.4</b> Manufacturer's label or printed specifications for sealed air handler (except furnaces) indicates the leakage is less than or equal to 2 percent of design airflow at a pressure of 1-inch w.g. (1250 Pa). Air handlers are tested with inlets, outlets, and condensate drain ports sealed, and filter box in place.	<b>4</b>
<b>704.5 Installation and performance verification.</b>	
<b>704.5.1</b> Third-party on-site inspection is conducted to verify compliance with all of the following, as applicable. Minimum of two inspections are performed. One inspection after insulation is installed and prior to being covered, and another inspection upon completion of the project. Where multiple buildings or dwelling units of the same model are built by the same builder, a representative sample inspection of a minimum of 15 percent of the buildings or dwelling units is permitted.	<b>5</b>
<ul style="list-style-type: none"> <li>(1) Ducts are installed in accordance with the ICC IRC or IMC and ducts are sealed.</li> <li>(2) Building envelope air sealing is installed.</li> <li>(3) Insulation is installed in accordance with Section 703.1.2.</li> <li>(4) Windows, skylights, and doors are flashed, caulked, and sealed in accordance with manufacturer's</li> </ul>	

recommendations and in accordance with Section 701.4.3.									
<b>704.5.2 Testing.</b> Testing above mandatory requirements is conducted to verify performance.									
<b>704.5.2.1 Building envelope leakage testing.</b>									
(1) Both a blower door test and visual inspection are performed as described in 701.4.3.2.	5								
(2) Third-party verification is completed.	5								
<b>704.5.2.2 HVAC airflow testing.</b> Balanced HVAC airflows are demonstrated by flow hood or other acceptable flow measurement tool by a third party. Test results are in accordance with both of the following:	8								
(1) Measured flow at each supply and return register is within 25 percent of design flow.									
(2) Total airflow is within 10 percent of design flow.									
<b>704.5.3 Insulating hot water pipes.</b> Insulation with a minimum thermal resistance (R-value) of at least R-3 is applied to the following:	1								
(a) piping larger than 3/4 in. outside diameter (b) piping serving more than one dwelling unit (c) piping branches serving kitchen sinks (d) piping located outside the conditioned space (e) piping from the water heater to a distribution manifold (f) piping located under a floor slab (g) buried piping (h) piping in recirculation systems other than demand recirculation systems (i) all other piping except the piping that meets the length requirements of Table 704.5.3									
<p>Table 704.5.3 Maximum Pipe Run Length</p> <table border="1"> <thead> <tr> <th>Nominal Pipe Diameter of largest pipe in run (inches)</th> <th>Maximum pipe length (feet)<sup>1</sup></th> </tr> </thead> <tbody> <tr> <td>3/8</td> <td>30</td> </tr> <tr> <td>1/2</td> <td>20</td> </tr> <tr> <td>3/4</td> <td>10</td> </tr> </tbody> </table> <p>1. Total length of all piping from the distribution manifold or the recirculation loop to a point of use.</p>	Nominal Pipe Diameter of largest pipe in run (inches)	Maximum pipe length (feet) <sup>1</sup>	3/8	30	1/2	20	3/4	10	
Nominal Pipe Diameter of largest pipe in run (inches)	Maximum pipe length (feet) <sup>1</sup>								
3/8	30								
1/2	20								
3/4	10								

**705 INNOVATIVE PRACTICES**

<b>705.1 Energy consumption control.</b> A whole building or whole dwelling unit device is installed that controls or monitors energy consumption.	<b>7 Points Max</b>
(1) programmable communicating thermostat	<u>21</u>
(2) Energy-monitoring device	<u>42</u>
(3) energy management control system	<u>74</u>
<b>705.2 Renewable energy service plan.</b> Renewable energy service plan is provided as follows:	
(1) Builder selects a renewable energy service plan provided by the local electrical utility for interim (temporary) electric service. The builder's local administrative office has renewable energy service.	<u>21</u>
(2) The buyer of the building selects a renewable energy service plan provided by the utility prior to occupancy of the building with a minimum two year commitment.	<u>5</u>
(a) less than half of the dwelling's projected electricity and gas use is provided by renewable energy	<u>1</u>
(b) half or more of the of the dwelling's projected electricity and gas use is provided by renewable	<u>5</u>

<u>energy</u>	
<b>705.3 Smart Appliances and Systems.</b> Smart Appliances and Systems are installed as follows:	
(1) Refrigerator	TBD
(2) Freezer	TBD
(3) Dishwasher	TBD
(4) Clothes Dryer	TBD
(5) Clothes Washer	TBD
(6) Room Air Conditioner	TBD
(7) HVAC Systems	TBD
(8) Service Hot Water Heating Systems	TBD
A minimum of three (3) smart appliances installed	<u>1</u>
A minimum of six (6) smart appliances installed	<u>2</u>
<b>705.4 Pumps.</b>	
<b>705.4.1 Pool, spa, and water features equipped with filtration pumps as follows:</b>	
(1) Two-speed pump(s) is installed.	1
(2) Electronically controlled variable-speed pump(s) is installed (efficiencies 90% or greater).	3
<b>705.4.2 Sump pump(s) with electrically commutated motors (ECMs) or permanent split capacitor (PSC) motors is installed (efficiencies 90% or greater).</b>	1
<b>705.5 Additional renewable energy options</b>	
<b>705.5.1 Photovoltaic panels are installed on the property. (Points awarded per 100 W of system rating per 2,000 square feet of total conditioned floor area of the building.)</b>	1
<b>705.5.2 Other on-site renewable energy source is installed (e.g., wind energy, on-site micro-hydro power, active solar space heating systems solar thermal hydronic heating system, photovoltaic hybrid heating system). (Points awarded per 100 W of system rating per 2,000 square feet of total conditioned floor area of the building.)</b>	One-half
<b>705.6 Parking garage efficiency.</b> Structured parking garages are designed to require no mechanical ventilation for fresh air requirements.	2

## CHAPTER 8 WATER EFFICIENCY

GREEN BUILDING PRACTICES	POINTS
<b>801 INDOOR AND OUTDOOR WATER USE</b>	
<b>801.0 Intent.</b> Measures that reduce indoor and outdoor water usage are implemented.	
<b>801.1 Indoor hot water usage</b>	
<b>801.1.1</b> Indoor hot water usage is reduced by one of the following practices: <b>(Points awarded only for one of the items.)</b>	
(1) All hot water piping that runs to the plumbing fixtures in all kitchens and bathrooms is 40 feet (12,192 mm) or less in length from the water heater or multi-unit building's recirculating loop and is sized in accordance with the code for the specified application.	<del>2</del> <b>213</b>
(2) All hot water piping that runs to the plumbing fixtures in all kitchens and bathrooms is 30 feet (9144 mm) or less from the water heater or multi-unit building's recirculating loop and is sized in accordance with the code for the specified application.	<del>3</del> <b>315</b>
(3) One of the following piping system designs is implemented:	
(a) use of structured-type plumbing with demand-controlled hot water loops, in which the volume of water contained in the pipe and fixture fittings downstream of the recirculating trunk line is a maximum of 4 cups (0.95 liters) (57.75 cubic inches) (0.25 gallons), or	<del>6</del> <b>635</b>
(b) engineered parallel piping system (i.e., manifold system) in which the hot water line distance from the water heater to the parallel piping system is less than 15 feet (4570 mm) and the parallel piping to any fixture fittings contains a maximum of 8 cups (1.89 liters) (115.50 cubic inches) (0.50 gallons), or	<del>6</del> <b>611</b>
(c) central core plumbing system with all plumbing fixture fittings (e.g., faucets, showerheads) located such that the volume of water contained in each pipe run between the water heater and any fixture fitting is a maximum of 6 cups (1.42 liters) (86.63 cubic inches) (0.38 gallons).	<del>8</del> <b>825</b>
(d) central hot water recirculation system in multi-unit buildings in which the hot water line distance from the recirculating loop to the engineered parallel piping system (i.e., manifold system) is less than 30 feet (9144 mm) and the parallel piping to the fixture fittings contains a maximum of 8 cups (1.89 liters) (115.50 cubic inches) (0.50 gallons).	<del>TBD</del> <b>TBD9</b>
(4) Pipe runs exceeding 40 feet (12,192 mm) from the water heater to fixture locations are aided by one of the following:	<b>4</b>
(a) tankless water heater is installed at point of use and is served only by cold water or a solar-assisted system.	<del>2</del> <b>21</b>
(b) on-demand hot water recirculation system is installed with a water temperature sensor pump switch.	<del>3</del> <b>35</b>
<b>801.2 Water-conserving appliances.</b> ENERGY STAR or equivalent water-conserving appliances are installed.	

GREEN BUILDING PRACTICES	POINTS
(1) dishwasher	<b>2</b>
(2) washing machine, or	<del>8</del> <b>813</b>
(3) washing machine with a water factor of 6.0 or less	<del>12</del> <b>1224</b>
<i>Multi-Unit Building Note: Washing machines are installed in individual units or provided in common areas of multi-unit buildings.</i>	
<b>801.4 Showerheads.</b> Showerheads are in accordance with the following:	
(1) The maximum combined flow rate of all showerheads controlled by a single valve at any point in time in a shower compartment is 1.6 to less than 2.5 gpm. Maximum of two valves are installed per shower compartment. The flow rate is tested at 80 psi (552 kPa) in accordance with ASME A112.18.1. Showerheads are served by an automatic compensating valve that complies with ASSE 1016 or ASME A112.18.1 and specifically designed to provide thermal shock and scald protection at the flow rate of the showerhead.	<b>4 points for first compartment</b>  <b>1 point for each additional compartment in dwelling</b> <b>3</b>  <b>7 Points Max</b>
<b>(Points awarded per shower compartment.)</b>	
(2) All showerheads meet the requirements of 801.4(1).	
<b>(Points awarded per shower compartment based on 801.4(2)(a) or 801.4(2)(b).)</b>	
(a) 2.0 to less than 2.5 gpm	<b>11 Additional Point</b>
(b) 1.6 to less than 2.0 gpm	<del>2</del> <b>2-14 Additional Points</b>
(3) Any control that can shut off water flow without affecting temperature is installed.	<b>1</b> <b>3 Points Max</b>
<b>(Points awarded per shutoff.)</b>	
For SI: 1 gallon per minute = 3.785 L/m	
<b>801.5 Faucets</b>	
<b>801.5.1</b> Water-efficient lavatory faucets with 1.5 gpm (5.68 L/m) or less maximum flow rate when tested at 60 psi (414 kPa) in accordance with ASME A112.18.1 are installed:	
(1) a bathroom (all faucets in a bathroom are in compliance) <b>(Points awarded for each bathroom.)</b>	<b>1</b> <b>3 Points Max</b>
(2) all lavatory faucets in the dwelling unit and common areas	<del>2</del> <b>2-6 Additional Points</b>
<b>801.5.2</b> Self-closing valve, motion sensor, metering, or pedal-activated faucet is installed to enable intermittent on/off operation.	
<b>(Points awarded per fixture.)</b>	
<b>1</b> <b>3 Points Max</b>	

GREEN BUILDING PRACTICES	POINTS
<b>801.6 Water closets and urinals.</b> Water closets and urinals are in accordance with the following:	
(1) Gold and emerald levels: All water closets and urinals are in accordance with Section 801.6.	<b>Mandatory</b>
(2) A water closet is installed with an effective flush volume of 1.28 gallons (4.85 L) or less when tested in accordance with ASME A112.19.2 (all water closets) or when tested in accordance with ASME A112.19.14 (all dual flush water closets), and is in accordance with EPA WaterSense <i>Tank-Type High-Efficiency Toilet</i> , or <b>(Points awarded per fixture.)</b>	<del>62</del> <b>48-6 Points Max</b>
(3) All water closets are in accordance with Section 801.6(2).	<del>24-11</del> <b>Points</b>
(a) Dual flush (or other) water closets are used that have a flush volume of 1.2 gallons or less and comply with 801.6(2); and all other water closets comply with 801.6(2). <b>(Points awarded per toilet)</b>	<del>2-1</del> <b>Additional Points</b> <del>4-3</del> <b>Additional Points Max</b>
(b) One or more urinals are installed with a flush volume of 0.5 gallons (1.9L) or less when tested in accordance with ASME A112.19.2 and all other water closets comply with 801.6(2).	<del>2-1</del> <b>Additional Points</b>
(c) One or more composting or waterless toilets and/or urinals are installed and all other water closets comply with 801.6(2).	<del>8-6</del> <b>Additional Points</b>
<b>801.7 Irrigation systems</b>	
<b>801.7.1</b> High-Distribution Uniformity (DU) rotating spray heads are installed in lieu of spray heads for turf or landscaping.	<b>6</b>
<b>801.7.2</b> Drip Irrigation installed for each landscape type.	<b>8</b>
<b>801.7.3</b> Landscape Plan & Implementation are executed by a certified WaterSense Professional or equivalent as approved by adopting entity.	<b>5 Additional Points</b>
<b>801.7.4</b> Drip Irrigation Zones Implemented show plant type by name and water use or need for each emitter.	<del>5-10</del> <b>Additional Points</b>
<b>801.7.5</b> The irrigation system(s) is controlled by a smart controller. <b>(Points for 801.7.45(3) are not additive with points for 801.7.45(a1) or 801.7.45(b2).)</b>	
(1) Evapotranspiration (ET) based irrigation controller with a rain sensor.	<del>48</del>
(2) Soil moisture sensor based irrigation controller.	<del>48</del>
(3) No irrigation is installed and a landscape plan is developed in accordance with Section 503.5, as applicable.	<del>4525</del>
<b>801.8 Rainwater collection and distribution.</b> Rainwater collection and distribution is provided.	
<b>801.8.1</b> Rainwater is used for irrigation in accordance with the following:	

GREEN BUILDING PRACTICES	POINTS
(1) Rainwater is diverted for landscape irrigation without impermeable water storage, or	<b>5</b>
(2) Rainwater is diverted for landscape irrigation with impermeable water storage.	
(a) 50 - 499 gallon storage capacity, or	<b>5</b>
(b) 500 - 2499 gallon storage capacity, or	<b>10</b>
(c) 2500 gallon or larger storage capacity (system is designed by a professional certified by The American Rainwater Catchment Systems Association or equivalent), or	<b>15</b>
(d) All irrigation demands are met by rainwater capture (documentation demonstrating the water needs of the landscape is provided and the system is designed by a professional certified by The American Rainwater Catchment Systems Association or equivalent).	<b>25</b>
<b>801.8.2</b> Rainwater is used for interior demand in the following way (system is designed by a professional certified by The American Rainwater Catchment Systems Association or equivalent):	
(1) Rainwater provides for partial domestic demand (any locally approved uses). <b>(Points awarded per appliance or fixture.)</b>	<b>5</b> <del>20-15</del> <b>Points Max</b>
(2) Rainwater provides for total domestic demand.	<b>25</b>
<b>801.9 Sediment filters.</b> Water filter is installed to reduce sediment and protect plumbing fixtures for the whole building or whole dwelling unit.	<b>1</b>
<b>802 INNOVATIVE PRACTICES</b>	
<b>802.1 Reclaimed, gray, or recycled water.</b> Reclaimed, gray, or recycled water is used as permitted by applicable code. <b>(Points awarded for either Section 802.1(1) or 802.1(2), not both.)</b>	
(1) each water closet flushed by reclaimed, gray, or recycled water <b>(Points awarded per fixture or appliance.)</b>	<b>5</b> <b>20 Points Max</b>
(2) irrigation from reclaimed, gray, or recycled water on-site	<b>10</b>
<b>802.2 Automatic shutoff water devices.</b> One of the following automatic shutoff water supply devices is installed. Where a fire sprinkler system is present, installer is to ensure the device will not interfere with the operation of the fire sprinkler system.	<b>2</b>
(1) excess water flow automatic shutoff	
(2) leak detection system with automatic shutoff	
<b>802.3 Engineered Biological System or Intensive Bioremediation System.</b> An Engineered Biological System or Intensive Bioremediation System is installed and the treated water is used on site. Design and implementation is approved by appropriate regional authority.	<b>20</b>



GREEN BUILDING PRACTICES	POINTS
<b>802.4 Recirculating humidifier.</b> Where a humidifier is required, a recirculating humidifier is used in lieu of a traditional "flow through" type.	<b>1</b>
<b>802.5 Advanced wastewater treatment system.</b> Advanced wastewater (aerobic) treatment system is installed and treated water is used on site. <b>(Points awarded for either Section 802.5 or 802.1, not both.)</b>	<b>20</b>

CHAPTER 9

INDOOR ENVIRONMENTAL QUALITY

GREEN BUILDING PRACTICES	POINTS
<b>901 POLLUTANT SOURCE CONTROL</b>	
<b>901.0 Intent.</b> Pollutant sources are controlled.	
<b>901.1 Space and water heating options</b>	
<b>901.1.1</b> Natural draft furnaces, boilers or water heaters are not located in conditioned spaces, including conditioned crawlspaces. Natural draft furnaces, boilers and water heaters are 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).	5
<b>901.1.2</b> Air handling equipment or return ducts are not located in the garage, unless placed in isolated, air-sealed mechanical rooms with an outside air source.	5
<b>901.1.3</b> The following combustion space heating or water heating equipment is installed within conditioned space:	
(1) all furnaces or all boilers	
(a) power vent furnace(s) or boiler(s)	TBD3
(b) direct vent furnace(s) or boiler(s)	5
(2) all water heaters	
(a) power vent water heater(s)	3
(b) direct vent water heater(s)	5
<b>901.1.4</b> –Gas-fired fireplaces and direct heating equipment is listed and is installed in accordance with the National Fuel Gas Code or the applicable local gas appliance installation code. Gas-fired fireplaces and direct heating equipment are vented to the outdoors.	Mandatory
<b>901.1.5</b> Natural gas and propane fireplaces that are power-vented or direct vented, have permanently fixed glass fronts or gasketed doors, and comply with ANSI Z21.88/CSA 2.33 or ANSI Z21.50/CSA 2.22.	7
<b>901.1.6</b> The following electric equipment is installed:	
(1) heat pump air handler in unconditioned space	2
(2) heat pump air handler in conditioned space	5
<b>901.2 Solid fuel-burning appliances.</b>	Mandatory
<b>901.2.1</b> Solid fuel-burning fireplaces, inserts, stoves and heaters are code compliant and are in accordance with the following requirements:	Mandatory
(1) Site-built masonry wood-burning fireplaces are equipped with outside combustion air and a means of sealing the flue and the combustion air outlets to minimize interior air	4

GREEN BUILDING PRACTICES	POINTS
(heat) loss when not in operation.	
(2) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are EPA certified.	6
(3) 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).	6
(4) Pellet (biomass) stoves and furnaces are in accordance with the requirements of ASTM E1509 or are EPA certified.	6
(5) Masonry heaters are in accordance with the definitions in ASTM E1602 and ICC IBC, Section 2112.1.	6
<b>901.2.2</b> Fireplaces, woodstoves, pellet stoves, or masonry heaters are not installed.	7
<b>901.3 Garages.</b> 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 2
(b) A continuous air barrier is provided between walls and ceilings separating the garage space from the conditioned living spaces.	Mandatory 2
(c) For one- and two-family dwelling units, a 100 cfm (47 L/s) or greater ducted, or 70 cfm (33 L/s) cfm or greater unducted wall exhaust fan is installed and vented to the outdoors, designed and installed for continuous operation, or has controls (e.g., motion detectors, pressure switches) that activate operation for a minimum of 1 hour when either human passage door or roll-up automatic doors are operated. For ducted exhaust fans, the fan airflow rating and duct sizing are in accordance with Appendix A.	8
(2) A carport is installed, the garage is detached from the building, or no garage is installed.	10
<b>901.4 Wood materials.</b> A minimum of 85 percent of material within a product group (i.e., wood structural panels, countertops, composite trim/doors, custom woodwork, and/or component closet shelving) is manufactured in accordance with the following:	10 Points Max
(1) 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
(2) Particleboard and MDF (medium density fiberboard) is manufactured and labeled in accordance with CPA A208.1 and CPA A208.2, respectively. <b>(Points awarded per product group.)</b>	2
(3) Hardwood plywood in accordance with HPVA HP-1. <b>(Points awarded per product group.)</b>	2

GREEN BUILDING PRACTICES	POINTS
(4) Particleboard, MDF, or hardwood plywood is in accordance with CPA 3. <b>(Points awarded per product group.)</b>	3
(5) Composite wood or agrifiber panel products contain no added urea-formaldehyde or are in accordance with the CARB <i>Composite Wood Air Toxic Contaminant Measure Standard</i> . <b>(Points awarded per product group.)</b>	4
(6) Non-emitting products. <b>(Points awarded per product group.)</b>	4
<b>901.5 Cabinets.</b> A minimum of 85 percent of installed kitchen and bath vanity cabinets are in accordance with KCMA ESP 04 (or equivalent) or CARB <i>Composite Wood Air Toxic Contaminant Measure Standard</i> .	3
<b>901.6 Carpets.</b> Carpets are in accordance with the following:	
(1) Wall-to-wall carpeting is not installed adjacent to water closets and bathing fixtures.	<b>Mandatory</b>
(2) A minimum of 85 percent of installed carpet area, <u>and</u> carpet cushion (padding), <del>and carpet adhesives</del> are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D. <b>Exception:</b> Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m <sup>3</sup> (13.5 ppb).	
(a) carpet	6
(b) carpet cushion	2
(c) <del>carpet adhesives</del>	2
<b>901.7 Hard-surface flooring.</b> A minimum of 10% of the conditioned floor space has pre-finished hard-surface flooring installed and at least 85 percent of all prefinished installed hard-surface flooring is in accordance with the emission concentration limits of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D. <del>Where post-manufacture coatings or surface applications have not been applied, the following hard surface flooring types are deemed to comply with the emission requirements of this section:</del> <b>Exception:</b> Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m <sup>3</sup> (13.5 ppb). <del>Where post-manufacture coatings or surface applications have not been applied, the following hard surface flooring types are deemed to comply with the emission requirements of this section:</del>	6
(a) Ceramic tile flooring (b) Organic-free, mineral-based flooring (c) Clay masonry flooring (d) Concrete masonry flooring (e) Concrete flooring (f) Metal flooring (g) Glass	

GREEN BUILDING PRACTICES	POINTS
<b>901.8 Wall coverings.</b> When at least 10% of the interior wall surfaces are covered, a minimum of 85 percent of wall coverings are in accordance with the emission concentration limits of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D. <b>Exception:</b> Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m <sup>3</sup> (13.5 ppb).	4
<b>901.9 Architectural coatings.</b> A minimum of 85 percent of the architectural coatings are in accordance with either Section 901.9.1 or Section 901.9.2, not both:	
<b>901.9.1</b> Site-applied interior architectural coatings, which are inside the water proofing envelope, are in accordance with one or more of the following:	5
(1) Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)	
(2) GreenSeal GS-11 Standard for Paints and Coatings	
(3) CARB <i>Suggested Control Measure for Architectural Coatings</i> (see Table 901.9.1).	
<b>Table 901.9.1 VOC Content Limits For Architectural Coatings<sup>c,d,e</sup></b>	
<b>Coating Category</b>	<b>LIMIT<sup>a</sup> (g/l)</b>
Flat Coatings	50
Non-flat Coatings	100
Non-flat - High Gloss Coatings	150
<b>Specialty Coatings:</b>	
Aluminum Roof Coatings	400
Basement Specialty Coatings	400
Bituminous Roof Coatings	50
Bituminous Roof Primers	350
Bond Breakers	350
Concrete Curing Compounds	350
Concrete/Masonry Sealers	100
Driveway Sealers	50
Dry Fog Coatings	150
Faux Finishing Coatings	350
Fire Resistive Coatings	350
Floor Coatings	100
Form-Release Compounds	250
Graphic Arts Coatings (Sign Paints)	500
High Temperature Coatings	420
Industrial Maintenance Coatings	250
Low Solids Coatings	120 <sup>b</sup>
Magnesite Cement Coatings	450
Mastic Texture Coatings	100
Metallic Pigmented Coatings	500

GREEN BUILDING PRACTICES	POINTS
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Multi-Color Coatings	250
Pre-Treatment Wash Primers	420
Primers, Sealers, and Undercoaters	100
Reactive Penetrating Sealers	350
Recycled Coatings	250
Roof Coatings	50
Rust Preventative Coatings	250
Shellacs, Clear	730
Shellacs, Opaque	550
Specialty Primers, Sealers, and Undercoaters	100
Stains	250
Stone Consolidants	450
Swimming Pool Coatings	340
Traffic Marking Coatings	100
Tub and Tile Refinish Coatings	420
Waterproofing Membranes	250
Wood Coatings	275
Wood Preservatives	350
Zinc-Rich Primers	340

- a. Limits are expressed as VOC Regulatory (except as noted), thinned to the manufacturer's maximum thinning recommendation, excluding any colorant added to tint bases.
- b. Limit is expressed as VOC actual.
- c. The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.
- d. Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008.
- e. Table 806.3(1) architectural coating regulatory category and VOC content compliance determination shall conform to the California Air Resources Board *Suggested Control Measure for Architectural Coatings* dated February 1, 2008.

**901.9.2** Site-applied interior products are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D.

**8**

**Exception:** Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m<sup>3</sup> (13.5 ppb).

**901.10 Adhesives and sealants.** Interior low-VOC adhesives and sealants located inside the water proofing envelope: A minimum of 85 percent of site-applied products used within the interior of the building are in accordance with one of the following, as applicable.

**(1)** The emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D.

**8**

**Exception:** Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not

GREEN BUILDING PRACTICES	POINTS
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apply. Formaldehyde maximum allowable concentration is 16.5 µg/m<sup>3</sup> (13.5 ppb).

**(2)** GreenSeal GS-36 Adhesives for Commercial Use  
OR

**5**

**(3)** SCAQMD Rule 1168 (see Table 901.10.2), excluding products that are purchased in containers that are less than 16 ounces

**5**

**Table 901.10.2  
Site Applied Adhesive And Sealants Voc Limits<sup>a,b</sup>**

ADHESIVE	VOC LIMIT (g/l)
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesive	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Dry wall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single ply roof membrane adhesives	250
Architectural Sealants	250
Architectural Sealant Primer	
Non Porous	250
Porous	775
Modified Bituminous Sealant Primer	500
Other Sealant Primers	750
CPVC solvent cement	490
PVC solvent cement	510
ABS solvent cement	325
Plastic Cement Welding	250
Adhesive Primer for Plastic	550
Contact Adhesive	80
Special Purpose Contact Adhesive	250
Structural Wood Member Adhesive	140

- a. VOC limit less water and less exempt compounds in grams/liter
- b. For low-solid adhesives and sealants, the VOC limit is expressed in grams/liter of material as specified in Rule 1168. For all other adhesives and sealants, the VOC limits are expressed as grams of VOC per liter of adhesive or sealant less water and less exempt compounds as specified in Rule 1168.

**901.11 Insulation.** Emissions of 85 percent of wall, ceiling, and floor insulation materials are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D.

**4**

**Exception:** Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m<sup>3</sup> (13.5 ppb).

GREEN BUILDING PRACTICES	POINTS
<b>901.12 Carbon monoxide (CO) alarms.</b> Where not required by local codes, a carbon monoxide (CO) alarm is installed in a central location outside of each separate sleeping area in the immediate vicinity of the bedrooms. The CO alarm(s) is located in accordance with NFPA 720 and is hard-wired with a battery back-up. The alarm device(s) is certified by a third-party for conformance to either CSA 6.19 or UL 2034.	<b>3</b>
<b>901.13 Building entrance pollutants control.</b> Pollutants are controlled at all main building entrances by one of the following methods:	
(1) Exterior grilles or mats are installed in a fixed manner and may be removable for cleaning.	<b>1</b>
(2) Interior grilles or mats are installed in a fixed manner and may be removable for cleaning.	<b>1</b>
<b>901.14 Non-smoking areas.</b> Environmental tobacco smoke is minimized by one or more of the following:	
(1) All interior common areas of a multi-unit building are designated as non-smoking areas with posted signage.	<b>1</b>
(2) Exterior smoking areas of a multi-unit building are designated with posted signage and located a minimum of 25 feet from entries, outdoor air intakes, and operable windows.	<b>1</b>
<b>902 POLLUTANT CONTROL</b>	
<b>902.0 Intent.</b> Pollutants generated in the building are controlled.	
<b>902.1 Spot ventilation.</b>	
<b>902.1.1</b> 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. <b>(Points are awarded only where a code-compliant window is provided in addition to mechanical ventilation)</b>	<b>Mandatory</b> <b>1</b>
(2) Clothes dryers are vented to the outdoors.	<b>Mandatory</b>
(3) Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation.	<b>8</b>
<b>902.1.2</b> Bathroom and/or laundry exhaust fan is provided with an automatic timer and/or humidistat:	<b>11 Points Max</b>
(1) for first device	<b>5</b>
(2) for each additional device	<b>2</b>
<b>902.1.3</b> Kitchen range, bathroom, and laundry exhaust are verified to specification. Ventilation airflow at the point of exhaust is tested to a minimum of 100 cfm (47.2 L/s) intermittent or 25 cfm (11.8 L/s) continuous for kitchens, and 50 cfm (23.6 L/s) intermittent or 20 cfm (9.4 L/s) continuous for bathrooms and/or laundry.	<b>8</b>

<b>902.1.4</b> Exhaust fans are ENERGY STAR, as applicable.	<b>12 Points Max</b>
(1) ENERGY STAR, or equivalent, fans <b>(Points awarded per fan.)</b>	<b>2</b>
(2) ENERGY STAR, or equivalent, fans operating at or below 1 sone <b>(Points awarded per fan.)</b>	<b>3</b>
<b>902.2 Building ventilation systems</b>	
<b>902.2.1</b> One of the following whole building ventilation systems is implemented and is in accordance with the specifications of Appendix B.	<b>Mandatory where the maximum air infiltration rate is less than 5 ACH50 (see Section 703.1.5 of Chapter 7)</b>
(1) exhaust or supply fan(s) ready for continuous operation and with appropriately labeled controls	<b>83</b>
(2) balanced exhaust and supply fans with supply intakes located in accordance with the manufacturer's guidelines so as to not introduce polluted air back into the building	<b>106</b>
(3) heat-recovery ventilator	<b>157</b>
(4) energy-recovery ventilator	<b>847</b>
<b>902.2.2</b> Ventilation airflow is tested to achieve the design fan airflow at point of exhaust in accordance with Section 902.2.1.	<b>84</b>
<b>902.2.3</b> MERV filters 8 or greater are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of MERV 8 filters.	<b>3</b>
<b>902.3 Radon control.</b> Radon control measures are in accordance with ICC IRC Appendix F. Zones are defined in Figure 9(1).	
(1) Buildings located in Zone 1	<b>Mandatory</b>
(a) a passive radon system is installed	<b>107</b>
(b) an active radon system is installed	<b>1810</b>
(2) Buildings located in Zone 2 or Zone 3	
(a) a passive or active radon system is installed	<b>107</b>
<b>902.4 HVAC system protection.</b> One of the following HVAC system protection measures is performed.	<b>3</b>
(1) HVAC supply registers (boots), return grilles, and rough-ins are covered during construction activities to prevent dust and other pollutants from entering the system.	
(2) Prior to owner occupancy, HVAC supply registers (boots), return grilles, and duct terminations are inspected and vacuumed. In addition, the coils are inspected and cleaned and the filter is replaced if necessary.	

<b>902.5 Central vacuum systems.</b> Central vacuum system is installed and vented to the outside.	<b>53</b>
<b>902.6 Living space contaminants.</b> The living space is sealed <u>in accordance with Section 701.4.3.1</u> to prevent unwanted contaminants.	<b>Mandatory</b>
<del>(1) Attic access, knee wall door, or drop-down stair is caulked, gasketed, or otherwise sealed.</del>	<del>2</del>
<del>(2) All penetrations (e.g., top plates, HVAC register boots, recessed can lights) are sealed in the following areas:</del>	
<del>(a) attic/ceiling</del>	<del>2</del>
<del>(b) wall</del>	<del>2</del>
<del>(c) floors</del>	<del>2</del>

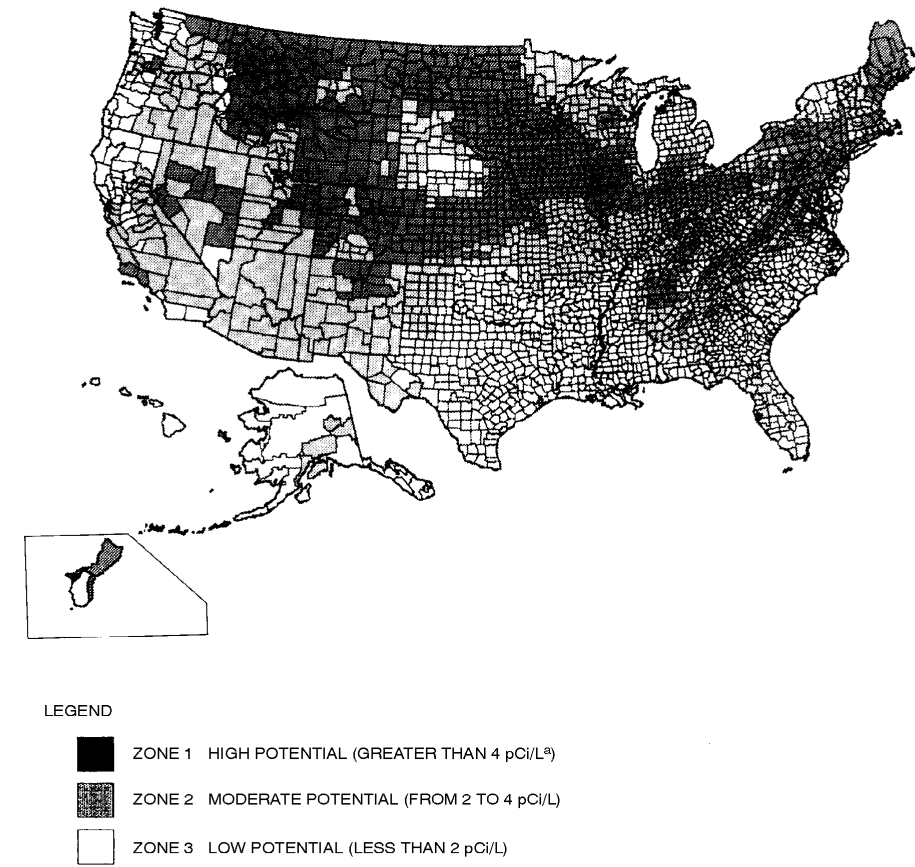
**903  
MOISTURE MANAGEMENT: VAPOR, RAINWATER, PLUMBING, HVAC**

<b>903.0 Intent.</b> Moisture and moisture effects are controlled.	
<b>903.1 Plumbing</b>	
<b>903.1.1</b> Cold water pipes in unconditioned spaces are insulated to a minimum of R-4 with pipe insulation or other covering that adequately prevents condensation.	<b>2</b>
<b>903.1.2</b> Plumbing is not installed in unconditioned spaces.	<b>5</b>
<b>903.2 Duct insulation.</b> <del>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.</del>	
<del>(1) insulated to a minimum of R-6</del> All HVAC ducts, plenums, and trunks in are conditioned space.	<b>1Mandatory</b>
<del>(2) insulated to a minimum of R-8</del> All HVAC ducts, plenums, and trunks in are conditioned space. All HVAC ducts are insulated to a minimum of R4.	<b>23</b>

<b>903.3 Relative humidity.</b> In climate zones 1A, 2A, 3A, 4A, and 5A as defined by Figure 6(1), equipment is installed to maintain relative humidity (RH) at or below 60 percent using one of the following: <p style="text-align: center;"><b>(Points not awarded in remaining climate zones.)</b></p>	<b>87</b>
(1) additional dehumidification system(s)	
(2) central HVAC system equipped with additional controls to operate in dehumidification mode	

**904  
INNOVATIVE PRACTICES**

<b>904.1 Humidity monitoring system.</b> A humidity monitoring system is installed with a mobile base unit that displays a reading of temperature and relative humidity at the base unit with a minimum of two remote units. One remote unit is placed permanently inside the conditioned space in a central location, excluding attachment to exterior walls, and another remote unit is placed permanently outside of the conditioned space.	<b>2</b>
<b>904.2 Kitchen exhaust.</b> A kitchen exhaust unit(s) that equals or exceeds 400 cfm (189 L/s) is installed, and makeup air is provided.	<b>2</b>



- a. pCi/L standard for picocuries per liter of radon gas. EPA recommends that all homes that measure 4 pCi/L and greater be mitigated.

The United States Environmental Protection Agency and the United States Geological Survey have evaluated the radon potential in the United States and have developed a map of radon zones designed to assist building officials in deciding whether radon-resistant features are applicable in new construction.

The map assigns each of the 3,141 counties in the United States to one of three zones based on radon potential. Each zone designation reflects the average short-term radon measurement that can be expected to be measured in a building without the implementation of radon control methods. The radon zone designation of highest priority is Zone 1. This Table lists the Zone 1 counties illustrated on the map. More detailed information can be obtained from state-specific booklets (EPA-402-R-93-021 through 070) available through State Radon Offices or from U.S. EPA Regional Offices.

**FIGURE 9(1)  
EPA MAP OF RADON ZONES**

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CHAPTER 10

OPERATION, MAINTENANCE, AND BUILDING OWNER EDUCATION

GREEN BUILDING PRACTICES	POINTS
<b>1001 BUILDING OWNERS' MANUAL FOR ONE- AND TWO-FAMILY DWELLINGS</b>	
<b>1001.0 Intent.</b> Information on the building's use, maintenance, and green components is provided.	
<b>1001.1</b> A building owner's manual is provided that includes the following, as available and applicable.  <b>(Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)</b>	<b>1</b> <b>Max 8 points</b>
<b>(1)</b> A green building program certificate or completion document.	<b>Mandatory</b>
<b>(2)</b> List of green building features (can include the national green building checklist).	<b>Mandatory</b>
<b>(3)</b> Product manufacturer's manuals or product data sheet for installed major equipment, fixtures, and appliances. If product data sheet is in the building owners' manual, manufacturer's manual may be attached to the appliance in lieu of inclusion in the building owners' manual.	<b>Mandatory</b>
<b>(4)</b> <del>Maintenance checklist.</del>	
<b>(45)</b> Information on local recycling programs.	
<b>(56)</b> Information on available local utility programs that purchase a portion of energy from renewable energy providers.	
<b>(67)</b> Explanation of the benefits of using energy-efficient lighting systems [e.g., compact fluorescent light bulbs, light emitting diode (LED)] in high-usage areas.	
<b>(78)</b> A list of practices to conserve water and energy.	
<b>(89)</b> Local public transportation options.	
<b>(910)</b> A diagram showing the location of safety valves and controls for major building systems.	
<b>(1011)</b> Where frost-protected shallow foundations are used, owner is informed of precautions including: <b>(a)</b> instructions to not remove or damage insulation when modifying landscaping. <b>(b)</b> providing heat to the building as required by the ICC IRC or IBC. <b>(c)</b> keeping base materials beneath and around the building free from moisture caused by broken water pipes or other water sources.	
<b>(1112)</b> A list of local service providers that offer regularly scheduled service and maintenance contracts to ensure proper performance of equipment and the structure (e.g., HVAC, water-heating equipment, sealants, caulks, gutter and downspout system, shower and/or tub surrounds, irrigation system).	
<b>(12)</b> A photo record of framing with utilities installed. Photos are taken prior to installing	

GREEN BUILDING PRACTICES	POINTS
<b>13</b> insulation, clearly labeled, and included as part of the building owners' manual.	
<del><b>(13)</b> Maintenance checklist.</del>	
<b>(14)</b> List of common hazardous materials often used around the building and instructions for proper handling and disposal of these materials.	
<b>(15)</b> Information on organic pest control, fertilizers, deicers, and cleaning products.	
<b>(16)</b> Information on native landscape materials and/or those that have low-water requirements.	
<b>(17)</b> Information on methods of maintaining the building's relative humidity in the range of 30 percent to 60 percent.	
<b>(18)</b> Instructions for inspecting the building for termite infestation.	
<b>(19)</b> Instructions for maintaining gutters and downspouts and importance of diverting water a minimum of 5 feet away from foundation.	
<b>(20)</b> A narrative detailing the importance of maintenance and operation in retaining the attributes of a green-built building.	
<b>(21)</b> Where storm water management measures are installed on the lot, information on the location, purpose, and upkeep of these measures.	
<b>1002 TRAINING OF BUILDING OWNERS ON OPERATION AND MAINTENANCE FOR ONE- AND TWO-FAMILY DWELLINGS AND MULTI-UNIT BUILDINGS</b>	
<b>1002.1 Training of building owners.</b> Building owners are familiarized with the role of occupants in achieving green goals. On-site training is provided to the responsible party(ies) regarding equipment operation and maintenance, control systems, and occupant actions that will improve the environmental performance of the building. These include:	<b>68</b>
<b>(1)</b> HVAC filters <b>(2)</b> thermostat operation and programming <b>(3)</b> lighting controls <b>(4)</b> appliances operation <b>(5)</b> water heater settings and hot water use <b>(6)</b> fan controls <b>(7)</b> recycling practices	
<b>1003 CONSTRUCTION, OPERATION, AND MAINTENANCE MANUALS AND TRAINING FOR MULTI-UNIT BUILDINGS</b>	
<b>1003.0 Intent.</b> Manuals are provided to the responsible parties (owner, management, tenant, and/or maintenance team) regarding the construction, operation, and maintenance of the building. Paper or digital format manuals are to include information regarding those aspects of the building's construction, maintenance, and operation that are within the area of responsibilities of the respective recipient. One or more responsible parties are to receive a copy of all documentation for archival purposes.	
<b>1003.1 Building construction manual.</b> A building construction manual, including five or more of the following, is compiled and distributed in accordance with Section 1003.0.	<b>1</b>

GREEN BUILDING PRACTICES	POINTS
(Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)	
(1) A narrative detailing the importance of constructing a green building, including a list of green building attributes included in the building. This narrative is included in all responsible parties' manuals.	Mandatory
(2) A local green building program certificate as well as a copy of the <i>National Green Building Standard™</i> , as adopted by the Adopting Entity, and the individual measures achieved by the building.	Mandatory
(3) Warranty, operation, and maintenance instructions for all equipment, fixtures, appliances, and finishes.	Mandatory
(4) Record drawings of the building.	
(5) A record drawing of the site including stormwater management plans, utility lines, landscaping with common name and genus/species of plantings.	
(6) A diagram showing the location of safety valves and controls for major building systems.	
(7) A list of the type and wattage of light bulbs installed in light fixtures.	
(8) A photo record of framing with utilities installed. Photos are taken prior to installing insulation and clearly labeled.	
<b>1003.2 Operations manual.</b> 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. (Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)	1
(1) A narrative detailing the importance of operating and living in a green building. This narrative is included in all responsible parties' manuals.	Mandatory
(2) A list of practices to conserve water and energy (e.g., turning off lights when not in use, switching the rotation of ceiling fans in changing seasons, purchasing ENERGY STAR appliances and electronics).	Mandatory
(3) Information on methods of maintaining the building's relative humidity in the range of 30 percent to 60 percent.	Mandatory
(4) Information on opportunities to purchase renewable energy from local utilities or national green power providers and information on utility and tax incentives for the installation of on-site renewable energy systems.	
(5) Information on local and on-site recycling and hazardous waste disposal programs and, if applicable, building recycling and hazardous waste handling and disposal procedures.	
(6) Local public transportation options.	
(7) Explanation of the benefits of using compact fluorescent light bulbs, LEDs, or other high-efficiency lighting.	
(8) Information on native landscape materials and/or those that have low water requirements.	

GREEN BUILDING PRACTICES	POINTS
(9) Information on the radon mitigation system, where applicable.	
(10) A procedure for educating tenants in rental properties on the proper use, benefits, and maintenance of green building systems including a maintenance staff notification process for improperly functioning equipment.	
<b>1003.3 Maintenance manual.</b> Maintenance manuals are created and distributed to the responsible parties in accordance with Section 1003.0. Between all of the maintenance manuals, five or more of the following options are included. (Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)	1
(1) A narrative detailing the importance of maintaining a green building. This narrative is included in all responsible parties' manuals.	Mandatory
(2) A list of local service providers that offer regularly scheduled service and maintenance contracts to ensure proper performance of equipment and the structure (e.g., HVAC, water-heating equipment, sealants, caulks, gutter and downspout system, shower and/or tub surrounds, irrigation system).	
(3) User-friendly maintenance checklist that includes: (a) HVAC filters (b) thermostat operation and programming (c) lighting controls (d) appliances and settings (e) water heater settings (f) fan controls	
(4) List of common hazardous materials often used around the building and instructions for proper handling and disposal of these materials.	
(5) Information on organic pest control, fertilizers, deicers, and cleaning products.	
(6) Instructions for maintaining gutters and downspouts and the importance of diverting water a minimum of 5 feet away from foundation.	
(7) Instructions for inspecting the building for termite infestation.	
(8) A procedure for rental tenant occupancy turnover that preserves the green features.	
(9) An outline of a formal green building training program for maintenance staff.	
<b>1004 INNOVATIVE PRACTICES</b>	
<b>1004.1 (Reserved)</b>	



CHAPTER 11  
**REMODELING**

Points for all practices in Chapter 11 will be carried over from the corresponding practices in Chapters 5 through 10 without modifications.

**CHAPTER 13**  
**REFERENCED DOCUMENTS**

**SECTION 1301 - GENERAL**

**1301.1** This chapter lists the codes, standards, and other documents that are referenced in various sections of this Standard. The codes, standards, and other documents are listed herein indicating the promulgating agency of the document, the document identification, the effective date and title, and the section or sections of this Standard that reference the document. Unless indicated otherwise, the first printing of the document is referenced.

**1301.2** The application of the referenced documents shall be as specified in Section 102.2.

*[Staff note: all section numbers referring to the provisions of the Standard that list the referenced documents will be updated editorially after the Standard is finalized.]*

**SECTION 1302 - REFERENCED DOCUMENTS**

<b><u>ACCA</u></b>			
		Air Conditioning Contractors of America 2800 Shirlington Road, Suite 300 Arlington, VA 22206 <a href="http://www.acca.org">www.acca.org</a>	(703) 575-4477
Manual D	<u>2006</u> <u>2009</u>	Residential Duct Systems	<u>701.4.2.3</u> <u>704.4.4</u>
Manual J	2006	Residential Load Calculation, Eighth Edition, Version 2	701.4.1.1, 701.4.1.2
Manual S	2004	Residential Equipment Selection	<u>701.4.1.1</u> <u>704.5.4</u>
Manual T	1983	Air Distribution Basics for Residential and Small Commercial Buildings	704.4.1
<u>5 QI</u>	<u>2010</u>	<u>HVAC Quality Installation Specification</u>	<u>701.4.1.2</u>

<b><u>AFF</u></b>			
		American Forest Foundation, Inc. 1111 Nineteenth Street, NW Suite 780 Washington, DC 20036 <a href="http://www.forestfoundation.org">www.forestfoundation.org</a>	(202) 463-2462
<u>2004</u> <u>2010</u> - <u>2008</u> - <u>2015</u> AFF Standards	<u>2004</u> <u>2010</u>	American Tree Farm System Standards for Sustainability for Forest Certification, including Performance Measures and Field Indicators	606.2(a)

<b><u>AMMA</u></b>			
		American Architectural Manufacturers Association <a href="http://www.aamanet.org/">http://www.aamanet.org/</a>	
<u>711</u>	<u>2007</u>	<u>The Voluntary Specification for Self Adhering Flashing Used for Installation of Exterior Wall Fenestration Products</u>	<u>602.1.9(2)</u>
<u>AAMA/WDMA/CSA 101/I.S.2/A440 UP3</u>	<u>2008</u>		<u>701.4.3.3</u>

<b><u>ASHRAE</u></b>			
		American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. 1791 Tullie Circle, N.E. Atlanta, GA 30329 <a href="http://www.ashrae.org">www.ashrae.org</a>	(404) 636-8400
52.2	<u>1999</u> <u>2007</u>	Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size	202

<b><u>ASCE</u></b>			
		American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191 <a href="http://www.asce.org">www.asce.org</a>	(800) 548-2723
32-01	2001	Design and Construction of Frost-Protected Shallow Foundations	202

<b><u>ASME</u></b>			
		American Society of Mechanical Engineers Three Park Avenue New York, NY 10016 <a href="http://www.asme.org">www.asme.org</a>	(800) 843-2763
A112.18.1	2005	Plumbing Supply Fittings	801.4, 801.5.1
A112.19.2/ <u>CSA B45.1</u>	<u>2003</u> <u>2008</u>	Vitreous China Plumbing Fixtures and Hydraulic Requirements for Water Closets and Urinals	801.6(2), 801.6(3)
A112.19.14	2006	Six-Liter Water Closets Equipped with a Dual Flushing Device	801.6(2)

<b><u>ASSE</u></b>			
		American Society of Sanitary Engineering 901 Canterbury, Suite A Westlake, OH 44145 <a href="http://www.asse-plumbing.org">www.asse-plumbing.org</a>	(440) 835-3040
1016	<u>2005</u> <u>2011</u>	<del>Performance Requirements for</del> Automatic Compensation Valves for Individual Showers and Tub/Shower Combinations	801.4

<b><u>ASTM</u></b>			
		ASTM International, Inc. 100 Barr Harbor Drive, PO Box C700 West Conshohocken, PA 19428 <a href="http://www.astm.org">www.astm.org</a>	(610) 832-9500
C1178	<u>2006</u> <u>2008</u>	Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel	<u>602.1.11</u> <u>903.4</u>
C1278 - <u>07a</u> / <u>1278M - 07a</u>	<u>2006</u> <u>2007</u>	Standard Specification for Fiber-Reinforced Gypsum Panel	<u>602.1.11</u> <u>903.4</u>
C1288	<u>2004</u> <u>2010</u>	Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets	<u>602.1.11</u> <u>903.4</u>
C1325	<u>2004</u> <u>2008</u>	Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement Substrate Sheets	<u>602.1.11</u> <u>903.4</u>
<u>C1371</u>	<u>2010</u>	<u>Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emisometers</u>	<u>703.1.4</u>
D6670	2007	Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions	901.10(3)

		from Indoor Materials/Products	
<a href="#">E283</a>	<a href="#">2004</a>	<a href="#">Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen</a>	<a href="#">701.4.3.4</a>
E1509	2005	Standard Specification for Room Heaters, Pellet Fuel-Burning Type	901.2.1(2)(d)
E1602	<a href="#">2003</a> <a href="#">2010</a>	Standard Guide for Construction of Solid Fuel Burning Masonry Heaters	<a href="#">901.2.1(5)</a> <a href="#">901.2.1(2)(e)</a>
<a href="#">E2273</a>	<a href="#">2011</a>	<a href="#">Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies</a>	<a href="#">602.1.9(5)b</a>

<b>CARB</b>		California Air Resources Board 1001 "I" Street P.O. Box 2815 Sacramento, CA 95812 <a href="#">www.arb.ca.gov</a>	(916) 322-2990
	2007	Composite Wood Air Toxic Contaminant Measure Standard	901.4(5), 901.10(2)
	<a href="#">2000</a> <a href="#">2008</a>	Suggested Control Measure for Architectural Coatings	<a href="#">901.9.1(3)</a> <a href="#">901.8.1(2)</a>

<b>CDPH</b>		California Department of Public Health 850 Marina Bay Parkway Richmond, CA 94804 <a href="#">www.cdph.ca.gov</a>	(510) 620-2864
<a href="#">01350</a>	<a href="#">2002</a> <a href="#">2010</a>	<a href="#">Portion of California Specification 01350: Standard Practice for the Testing of Volatile Organic Emissions from Various Sources using Small Scale Environmental Chambers Standard Method For The Testing And Evaluation Of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers Version 1.1.</a>	<a href="#">901.6(2)</a> , <a href="#">901.7</a> , <a href="#">901.8</a> , <a href="#">901.9.2</a> , <a href="#">901.10(1)</a> , <a href="#">901.11</a> <a href="#">901.5(2)</a> , <a href="#">901.6</a> , <a href="#">901.7</a> , <a href="#">901.8.2</a> , <a href="#">901.9.2(1)</a> , <a href="#">901.11(1)</a> , <a href="#">901.11(2)</a>

<b>CPA</b>		Composite Panel Association 18922 Premiere Court Gaithersburg, MD 20879-1574 <a href="#">www.pbmdf.com</a>	(301) 670-0604
A208.1	<a href="#">1999</a> <a href="#">2009</a>	Particleboard <a href="#">Standard</a>	901.4(2)
A208.2	<a href="#">2002</a> <a href="#">2009</a>	<a href="#">Medium-Density Fiberboard (MDF) for Interior Application Standard</a>	901.4(2)
CPA <a href="#">24</a>	<a href="#">2006</a> <a href="#">11</a>	<a href="#">The Eco-Certified Composite™ (ECC) Standard Environmentally Preferable Product Specification</a>	901.4(4)

<b>CSA</b>		CSA International 8501 East Pleasant Valley Road Cleveland, OH 44131-5575 <a href="#">www.csa-international.org</a>	(216) 524-4990
6.19	<a href="#">2004</a> <a href="#">2006</a>	Residential Carbon Monoxide Alarming Devices	901.12

<a href="#">Z21.50/CSA 2.22ANSI</a> <a href="#">Z21.50b/CSA 2.22b</a>	<a href="#">2007</a> <a href="#">2009</a>	Vented Gas Fireplaces	<a href="#">901.1.5</a> <a href="#">901.2.1(1)</a>
<a href="#">ANSI Z21.88/CSA 2.33Z21.88a-2007/CSA 2.33a</a>	<a href="#">2007</a> <a href="#">2009</a>	Vented Gas Fireplace Heaters <a href="#">w/ Addenda 1</a>	<a href="#">901.1.5</a> <a href="#">901.2.1(1)</a>
Z809	<a href="#">2002</a> <a href="#">2008</a>	Sustainable Forest Management Requirements and Guidance (SFM)	606.2(b)

<b>DOC</b>		United States Department of Commerce National Institute of Standards and Technology 100 Bureau Drive Stop 3460 Gaithersburg, MD 20899-3460 <a href="#">www.nist.gov</a>	(301) 975-2000
PS <a href="#">-1-09</a>	<a href="#">2007</a> <a href="#">2010</a>	Construction and Industrial Plywood	901.4(1)
PS <a href="#">-2-10</a>	<a href="#">2004</a> <a href="#">2011</a>	Performance Standard for Wood-based Structural-use Panels	901.4(1)

<b>DOE</b>		U.S. Department of Energy 1000 Independence Ave., SW Washington, DC 20585 <a href="#">www.energy.gov</a>	800-345-3363
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v. <a href="#">4-0-14.4.2</a>	<a href="#">2007</a> <a href="#">2011</a>	RESCheck	703.1.1
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<b>EcoLogo</b>		The EcoLogo Program 171 Nepean Street, Suite 400 Ottawa, ON, K2P 0B4, CANADA	(800) 478-0399
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<a href="#">CCD-016</a>	<a href="#">2005</a>	<a href="#">Thermal Insulation Materials</a>	<a href="#">611.2(3)</a>
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<b>EPA</b>		Environmental Protection Agency 1200 Pennsylvania Avenue, NW Washington, DC 20460 <a href="#">www.epa.gov</a>	(202) 564-4700
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EPA 747-K-97-001	1997	Reducing Lead Hazards When Remodeling Your Home	1001.1
Method 24	2000	Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings	<a href="#">901.9.1(1)</a> <a href="#">901.8.1(1)</a>
	1990	Asbestos in the Home: A Homeowner's Guide	1001.1

<b>ENERGY STAR® Documents</b>			
	<a href="#">September</a> <a href="#">August</a> <a href="#">729</a> , <a href="#">2005</a> <a href="#">2011</a>	ENERGY STAR <a href="#">for Homes</a> <a href="#">Version 3.0</a> Guidelines	701.1.3
	January 1, <a href="#">2007</a> <a href="#">2011</a>	ENERGY STAR Program Requirements for Clothes Washers, <a href="#">Version 5.1</a>	<a href="#">801.2(2)</a> , <a href="#">801.2(3)</a> <a href="#">704.2.5</a> , <a href="#">801.2</a>
	January <a href="#">420</a> , <a href="#">2007</a> <a href="#">2012</a>	ENERGY STAR Program Requirements for Dishwashers, <a href="#">Version 5.0</a>	<a href="#">801.2(1)</a> <a href="#">704.2.5</a> , <a href="#">801.2</a>
	<a href="#">April</a> <a href="#">December</a> 1, 2009	ENERGY STAR Program Requirements for Geothermal Heat Pumps – Eligibility Criteria <a href="#">Version 2.03.1</a>	<a href="#">703.2.6</a> <a href="#">703.4.6</a>

	1995	ENERGY STAR Program Requirements for Programmable Thermostats—Eligibility Criteria Version 1.	703.4.10
	August April 1, 2008	ENERGY STAR Program Requirements for Luminaires, Version 1.1 Residential Light Fixtures	703.5.1(1) 704.2.4
	August April 328, 2007	ENERGY STAR Program Eligibility Criteria for Residential Refrigerators and/or Freezers, Version 4.1	703.5.3(1) 704.2.5
	September April 1, 2006	ENERGY STAR Program Requirements for Residential Ceiling Fans – Eligibility Criteria Version 2-13.0	703.2.7 703.4.7
	October 1, 2003	ENERGY STAR Program Requirements for Residential Ventilating Fans – Eligibility Criteria Version 2-03.2	902.1.4 902.1.4(1) & (2)
	June 6 January 1, 2005	ENERGY STAR Program Requirements for Residential Windows, Doors, and Skylights – Eligibility Criteria Version 35.0	703.6.1(3),(4),(5),(6) 701.4.4.1, 704.3.1.4
	1999	ENERGY STAR Program Requirements for Roof Products – Eligibility Criteria Version 12.2	602.132
<b>WaterSense Documents</b>			
	January 24, 2007	WaterSense Specification for Tank-Type Toilets, Version 1.1	801.6(2)
	May 20, 2011	WaterSense: Tank-Type High-Efficiency Toilet Specification	
	October 27, 2006	WaterSense: Professionals in System Design, Installation & Maintenance, and System Auditing	801.7.23

<b>FSC</b>	Forest Stewardship Council FSC International Center Charles-de-Gaulle 5 53113 Bonn, Germany <a href="http://www.fsc.org">www.fsc.org</a>		49 228 367 66 0
FSC-STD-01-001 (Version 4-0) EN	2002	FSC Principles and Criteria for Forest Stewardship	606.2(c)

<b>GAMA</b>	GAMA-An Association of Appliance & Equipment Manufacturers Hydronics Institute Division 2107 Wilson Boulevard, Suite 600 Arlington, VA 22201 <a href="http://www.gamanet.org">www.gamanet.org</a>		(703) 525-7060
I=B=RH-22	2004	Heat Loss Calculation Guide	701.4.2.1

<b>GREENGUARD</b>	GREENGUARD Environmental Institute 1341 Capital Circle, Suite A Atlanta, Georgia 30067 <a href="http://www.greenguard.org">www.greenguard.org</a>		(800) 427-9681
GGPS.EC.010.R0	2001	GREENGUARD Emission Criteria – Systems Furniture	901.10(3)

<b>GS</b>	Green Seal 1001 Connecticut Avenue, NW Suite 827 Washington, DC 20036 <a href="http://www.greenseal.org">www.greenseal.org</a>		(202) 872-6400
GS-11	1993	Green Seal Environmental Standards: Paints and Coatings	901.9.1(2) 901.8.1(3)
GS-36	2000	Adhesives for Commercial Use Green Seal Environmental Standards: Commercial Adhesives	901.10(2) 901.9.1(2), 901.9.2(2)

<b>HPVA</b>	Hardwood Plywood Veneer Association 1825 Michael Faraday Drive Reston, VA 20190 <a href="http://www.hpva.org">www.hpva.org</a>		(703) 435-2900
HP-1	2004	American National Standard for Hardwood and Decorative Plywood	901.4(3)

<b>HUD</b>	U.S. Department of Housing and Urban Development 451 7th Street SW Washington, DC 20410 <a href="http://www.hud.gov">www.hud.gov</a>		(202) 708-1112
24 CFR, Part 3280	2005	Manufactured Home Construction and Safety Standards	202.901.4(3)

<b>ICC</b>	International Code Council 500 New Jersey Ave, NW, 6 <sup>th</sup> Floor Washington, DC 20001 <a href="http://www.iccsafe.org">www.iccsafe.org</a>		(888) 422-7233
IBC	2006	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	International Energy Conservation Code	701.1.1, 702.2, 703.1.1
IMC	2006	International Mechanical Code	701.4.2.1, 704.6.1(1)
IPC	2006	International Plumbing Code	903.5.3
IRC	2006	International Residential Code	202, 305.1, 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)

<b>ISO</b>	International Organization for Standardization 1, ch. de la Voie-Creuse, Case postale 56		41 22 749 01 11
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		CH-1211 Geneva 20, Switzerland <a href="http://www.iso.org">www.iso.org</a>	
14044	2006	Environmental management -- Life cycle assessment -- Requirements and guidelines	609.1
14001	2004	Environmental management systems -- Requirements with guidance for use	610.1
<a href="#">17025</a>	<a href="#">2005</a>	<a href="#">General requirements for the competence of testing and calibration laboratories</a>	<a href="#">901.6(2), 901.7, 901.8, 901.9.2, 901.10(1), 901.11</a>
<a href="#">Guide 65</a>	<a href="#">1996</a>	<a href="#">General requirements for bodies operating product certification systems</a>	<a href="#">901.6(2), 901.7, 901.8, 901.9.2, 901.10(1), 901.11</a>
<b><a href="#">KCMA</a></b>		<i>Kitchen Cabinet Manufacturers Association</i> (703) 264-1690 1899 Preston White Drive Reston, VA 20191 <a href="http://www.kcma.org">www.kcma.org</a>	
<a href="#">ESP 0404</a>	<a href="#">20062011</a>	Environmental Stewardship Certification Program	<a href="#">901.5</a> <a href="#">901.10(1)</a>
<b><a href="#">NAHBRC</a></b>		<i>NAHB Research Center</i> (800) 638-8556 400 Prince George's Boulevard Upper Marlboro, MD 20774 <a href="http://www.nahbrc.org">www.nahbrc.org</a>	
Z765	2003	Single-Family Residential Buildings - Square Footage - Method for Calculating	305.1, 601.1
<b><a href="#">NFPA</a></b>		<i>National Fire Protection Association</i> (617) 770-3000 1 Batterymarch Park Quincy, MA 02169 <a href="http://www.nfpa.org">www.nfpa.org</a>	
720	<a href="#">20052012</a>	Standard for the Installation of Carbon Monoxide (CO) <a href="#">Detection and Warning Equipment in Dwelling Units</a>	901.12
<a href="#">54</a>	<a href="#">2012</a>	<a href="#">National Fuel Gas Code</a>	<a href="#">901.1.4</a>
<b><a href="#">NFRC</a></b>		<i>National Fenestration Rating Council</i> (301) 589-1776 6305 Ivy Lane, Suite 140 Greenbelt, MD 20770 <a href="http://www.nfrc.org">http://www.nfrc.org</a>	
<a href="#">400</a>	<a href="#">2010</a>	<a href="#">Procedure for Determining Fenestration Product Air Leakage</a>	<a href="#">701.4.3.3</a>
<b><a href="#">NSF</a></b>		<i>NSF International</i> (800) 673-6275 P.O. Box 130140 789 N. Dixboro Road Ann Arbor, MI 48113-0140, USA <a href="http://www.nsf.org">www.nsf.org</a>	
<a href="#">NSF/ANSI 140</a>	<a href="#">2007</a>	<a href="#">Sustainable Carpet Assessment</a>	<a href="#">611.2(1)</a>

<a href="#">NSF/ANSI 332</a>	<a href="#">2010</a>	<a href="#">Sustainability Assessment for Resilient Floor Coverings</a>	<a href="#">611.2(2)</a>
<a href="#">NSF/ANSI 342</a>	<a href="#">2010</a>	<a href="#">Sustainability Assessment for Wallcovering Products</a>	<a href="#">611.2(4)</a>
<b><a href="#">PEFC</a></b>		<i>Pan European Forest Council</i> 352 26 25 90 59 2ème Etage 17 Rue des Girondins Merl-Hollerich L - 1626 Luxembourg <a href="http://www.pefc.org">www.pefc.org</a>	
GL 2	<a href="#">20072011</a>	PEFC Council Minimum Requirements Checklist	606.2(d) & (f)
<b><a href="#">RFCI</a></b>		<i>Resilient Floor Covering Institute</i> (301) 340-8580 401 East Jefferson Street, Suite 102 Rockville, Maryland 20850 <a href="http://www.rfci.com">www.rfci.com</a>	
SCS-EC-10	2004	Environmental Certification Program - Indoor Air Quality Performance	901.6
<b><a href="#">SCAQMD</a></b>		<i>South Coast AQMD</i> (909) 396-2000 21865 Copley Dr Diamond Bar, CA 91765	
<a href="#">Rule 1168</a>	<a href="#">2005</a>	<a href="#">Adhesive and Sealant Applications</a>	<a href="#">901.10</a>
<b><a href="#">SRCC</a></b>		<i>Solar Rating and Certification Corporation</i> (321) 638-1537 c/o FSEC 1679 Clearlake Road Cocoa, FL 32922-5703 <a href="http://www.solar-rating.org">www.solar-rating.org</a>	
OG 300	<a href="#">20022011</a>	Operating Guidelines and Minimum Standards for Certifying Solar Water Heating Systems	<a href="#">703.4.5</a> <a href="#">704.3.2.4</a>
<b><a href="#">SFI</a></b>		<i>Sustainable Forestry Initiative, Inc.</i> (703) 875-9500 1600 Wilson Boulevard Suite 810 Arlington, VA 22209 <a href="http://www.sfiprogram.org">www.sfiprogram.org</a>	
<a href="#">20052010-2009-2014</a>	<a href="#">20042010</a>	Sustainable Forestry Initiative Standard (SFIS) Standard	606.2(e)
<b><a href="#">TCIA</a></b>		<i>Tree Care Industry Association</i> (603) 314-5380 3 Perimeter Road, Unit 1 Manchester, NH 03103 <a href="http://www.tcia.org">www.tcia.org</a>	
A300	2001	Standards for Tree Care Operations - Tree, Shrub and Other Woody Plant Maintenance - Standard Practices	503.1

<b>UL</b>		Underwriters Laboratories Inc. 333 Pfingsten Road Northbrook, IL 60062-2096 <a href="http://www.ul.com">www.ul.com</a>	(877) 854-3577
127	<del>1996</del> 2011	<del>Standard for</del> Factory-Built Fireplaces	<del>901.2.1(2)</del> 901.2.1(2)(b)
181	2005	The Standard for Safety for Factory-Made Air Ducts and Air Connectors	701.4.2.1
1482	<del>1996</del> 2011	<del>Standard for</del> Solid-Fuel Type Room Heaters	<del>901.2.1(3)</del> 901.2.1(2)(c)
2034	<del>1996</del> 2007	Single and Multiple Station Carbon Monoxide Alarms	901.12

<b>USDA</b>		U.S. Department of Agriculture 1400 Independence Ave., SW Washington, DC 20250 <a href="http://www.usda.gov">www.usda.gov</a>	(202) 720-2791
7 CFR Part 2902	<del>2006</del> 2011	Designation of Biobased Items for Federal Procurement; Final Rule	606.1

<b>WSL</b>		Washington State Legislature 106 Legislative Building Olympia, WA 98504-0600 <a href="http://www.leg.wa.gov">www.leg.wa.gov</a>	(360) 786-7573
WAC 173-433-100(3)	2007	Solid Fuel Burning Devices - Emission Performance Standards	901.2.1(2)(c)

NAHB Research Center

# 2012 National Green Building Standard

HELD and Non-Responsive Public Comments – Draft 1

**Note:** *The comments listed in this document are not in the scope of the Public Comment Period on the Draft Standard (September 23, 2011). At the request of the submitter, the HELD comments can be retained and be processed as proposed changes during the next revision of the Standard. No further action will be taken on the comments classified as Non-Responsive because they are not relevant to any action that can be taken by the Consensus Committee.*

### Chapter 1 Scope and Administration

HPC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	Action	Reason
HPC 001	794	Shari Hendley J.S. Hovnanian & Sons J.S. Hovnanian & Sons	101.3 Intent Revise as follows	"This Standard shall establish practices for the design and construction of green residential buildings, building sites, subdivisions, and renovation thereof." While considering instituting these changes, please keep in mind that those who choose to continue to certify their sites, renovations and/or new construction are doing so in spite of the continued slow economy, and decreased home values and sales volumes.	Please take into consideration the continued slow economy, decreased sales volumes and increasing costs when determining the right time to institute some or all of these changes.	Non-responsive	Not in the scope of the public comment process. The Draft Standard does not include any changes to Section 101.3. Also, comments on implementation of the Standard are not in the purview of the consensus committee. As an informational item only, your comment will be forwarded to Michelle Desiderio who is the point of contact for the certification program. No further action will be taken on this comment.
HPC 002	739	Thomas Culp Birch Point Consulting LLC Aluminum Extruders Council	102.1 Applicability Revise as follows	Hotels and Motels. Currently, the standard does not use the same scope for residential buildings as the IECC or ASHRAE. I understand this is from the desire to cover apartment buildings not just below 3 stories. However, the generic term "residential" can be interpreted as also containing hotels and motels, which are R-1 occupancies, although these have very different construction and use than other residential buildings. For this reason, hotels and motels are treated as commercial buildings in the IECC. As just one example, hotels commonly use commercial windows and curtain wall assemblies rather than residential windows in lobby areas, rooms, or both. HVAC and lighting are also very different. My previous comments attempted to address this in the window section by pointing to the commercial sections of the IECC for these types of buildings. They were rejected because the committee felt windows should not be treated differently than the rest, and also stated "Hotels and motels are covered under commercial building." I agree, but since hotels and motels are group R-1, I think this proposed change in the Applicability section helps clarify this.	<b>102.1 Applicability.</b> The provisions of this Standard shall apply to design and construction of the residential portion(s) of any building not classified as an institutional use <u>or R-1 occupancy</u> in all climate zones. This Standard shall also be used for subdivisions, building sites, and the residential portions of alterations, additions, renovations, mixed-use residential buildings, and historic buildings, where applicable.  <i>or if you don't wish to use occupancy classes,</i>  <b>102.1 Applicability.</b> The provisions of this Standard shall apply to design and construction of the residential portion(s) of any building not classified as an institutional use, <u>hotel, or motel</u> in all climate zones. This Standard shall also be used for subdivisions, building sites, and the residential portions of alterations, additions, renovations, mixed-use residential buildings, and historic buildings, where applicable.	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).

### Chapter 3 Compliance Method

HPC#	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	Action	Reason
HPC 003	695	Drew Wallace econsultants, LLC self	301.2 Awarding of points Revise as follows	This is just a general comment. Does not particularly pertain to the Chapter and Section listed above. I would like to suggest that you take in to consideration low income housing projects when you decide on the timeline to implement the new standard. Energy Star did this with the new Version 3.0	Similar to the exception Energy Star used I would suggest that you allow low income housing projects to continue to certify to the 2008 Green Building Standard for an extended period of time.	Non-responsive	This public comment is unrelated to the contents of the Draft Standard (September 23, 2011). Also, comments on implementation of the Standard are not in the purview of the consensus committee. As an informational item only, your comment will be forwarded to Michelle Desiderio who is the point of contact for the certification program. No further action will be taken on this comment.



Chapter 6 Resource Efficiency

HPC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	Action	Reason
HPC 004	755	Derek Huetinck BeaconCrest Homes MNCBIA Green Building Committee	601.1 Conditioned Floor Area Delete without substitution	There is insufficient scientific data to demonstrate that the building of smaller homes leads to an overall decrease in energy efficiency. Smaller homes may house fewer people than larger homes, which could potentially result in more energy consumption per person than more people living in a larger home. It is inappropriate to penalize the building of larger homes without proper data to support the concept that they will lead to greater energy consumption.	[No change from 2008 language.]	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).
HPC 005	705	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	601.9 Above Grade Wall Systems Revise as follows	Bamboo is starting to take hold and is good for our mild climate.	601.9 – Would like an additional ‘wall system’ for bamboo	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).
HPC 006	629	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	605.0 Intent (Recycled Construction Waste) Revise as follows	The section 605 heading should be revised to include demolition.	RECYCLED CONSTRUCTION <u>and</u> DEMOLITION WASTE	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).
HPC 007	631	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	605.0 Intent (Recycled Construction Waste) Revise as follows	All nonhazardous waste should be recycled or reused, regardless of whether it is the result of construction or demolition activity. Should the term "hazardous" be defined?	<b>605.0 Intent.</b> Nonhazardous waste generated during construction and <u>demolition</u> is recycled <u>or</u> reused. All waste classified as hazardous shall be properly handled and disposed. (Points not awarded for hazardous waste removal.)	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).
HPC 008	638	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	605.0 Intent (Recycled Construction Waste) Revise as follows	General Comment: It would be good to see the waste diversion section further developed to include demolition and land-clearing diversion, higher percentages of diversion, the disallowance of alternative daily cover as diversion, and restrictions on percentage of diversion that can be used as fuel end markets.	None	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).
HPC 009	708	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	605.0 Intent (Recycled Construction Waste) Revise as follows	Hawaii’s recycling management is generally poor. Most builders simply “donate” to the bins at local schools for recycling, but have no receipts for doing so.	605 – accept builder photo documentation, or other proof, that material has been ‘donated’ for reuse or recycling rather than require proof from a certified recycler.	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).
HPC 010	628	Kathleen Petrie City of Seattle, Department of Planning and Development City of Seattle, Department of Planning and Development	605.1 Construction Waste Management Plan Revise as follows	There should be an attempt to recycle or reuse all nonhazardous waste, whether it be construction or demolition. There should be an attempt to recycle or reuse all nonhazardous waste, whether it be construction or demolition. The State of California, draft IgCC, Portland, OR, Chicago, IL and Boulder, CO all have a diversion rates of 50%, or greater	<b>605.1 Construction <u>and</u> demolition waste management plan.</b> A construction <u>and</u> demolition waste management plan is developed, posted at the jobsite, and implemented with a goal of recycling or salvaging a minimum of 50 percent (by weight) of <u>nonhazardous construction and demolition</u> waste.	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).

## Chapter 7 Energy Efficiency

HPC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	Action	Reason
HPC 011	754	Matthew Dobson Vinyl Siding Institute mdobson@vinylsiding.org	701.1.2 Minimum Prescriptive Path Requirements Revise as follows	Change for further clarity.	703.1.2.2 (3) Exterior rigid insulation <del>and sheathing or siding...</del>	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).
HPC 012	769	Gary Klein Affiliated International Management, LLC Self	703.4 Water heating design, equipment, and installation Revise as follows	Waiting for hot water to arrive at fixtures wastes energy as well as water. In fact, the waste of energy gets worse as the flow rate goes down because the amount of water wasted goes up as the flow rate goes down. In multi-family buildings, a demand recirculation system can reduce the hours of operation of a typical system to less than 2 hours per day in retrofit applications, even lower in new buildings where the hot water piping is installed in accordance with the NGBS. There is electricity saved by reduced pumping energy, but the big savings is in the reduced heat loss in the loop. The reason for the large number of points is that water heating in multi-family buildings is equal to or larger than space heating in much of the country now and will certainly be true in buildings built in accordance with the NGBS.	New Sections  Demand recirculation system is installed in single family units. Points awarded per circulation zone 1 Maximum points per building 2  Demand recirculation system is installed in multi-family units in place of a standard circulation pump and control. Points awarded per circulation zone 2 Maximum points per building 4	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).
HPC 013	761	Gary Klein Affiliated International Management, LLC Self	703.4.1 Water Heater Energy Factor Revise as follows	Electric instantaneous water heaters come in a wide variety of sizes (kW) and can be located very close to the points of use. This can reduce the energy needed for heating water by as much as 50 percent. Even when not located closer to the points of use, they are more efficient to operate than electric storage water heaters. They should be included in the table within the standard in the same way that gas instantaneous water heaters are.	Add a new line to Table 703.4.1(1)(b)  Size (gallons)      Energy Factor <sup>1</sup> POINTS Any                      0.97                      10  1. Electric instantaneous water heaters have either an Energy Factor (capacity less than or equal to 12 kW) or a Thermal Efficiency (capacity greater than 12kW)	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).

## Chapter 9 Indoor Environmental Quality

HPC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	Action	Reason
HPC 014	714	Gladys Quinto Marrone BIA Hawaii BIA Hawaii	901.3 Garages Revise as follows	Better definition of what constitutes a 'carport' is needed.	Better definition of what constitutes a 'carport' is needed. For example, the amount of enclosed space and amount of ventilation for garages with open block walls and windows.	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).

## Chapter 10 Operation, Maintenance and Building Owner Education

HPC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	Action	Reason
HPC 0015	726	Josh Jacobs GREENGUARD Environmental Institute GREENGUARD Environmental Institute	1001.1 Homeowner's Manual Revise as follows	This section discusses many things that can contribute to not only the buildings continued 'greenness', but also the sustainable footprint of the people that occupy it. One of the main things that can be detrimental to a home's sustainability following construction is the introduction of unhealthy/unsafe cleaning practices. These can directly impact not only the occupant's health, but also the natural environment around the home and even far afield. We should require information be provided to the homeowner on green cleaning practices.	(19) Instructions for maintaining gutters and downspouts and importance of diverting water a minimum of 5 feet away from foundation.  (20) A narrative detailing the importance of maintenance and operation in retaining the attributes of a green-built building.  (21) Where storm water management measures are installed on the lot, information on the location, purpose, and upkeep of these measures.  (22) Explanation of and benefits from green cleaning in the home.	Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).
HPC 016	742	Susan Gitlin US Environmental	1001.1 Homeowner's Manual	We are glad to see that this section includes information on local recycling programs. The section should also specify information identifying local	UUU	Held	The public comment is not relevant to the changes shown in

		Protection Agency US Environmental Protection Agency	Revise as follows	governments, utilities, retailers and manufacturers who offer proper disposal of refrigerators and freezers in partnership with EPA's Responsible Appliance Disposal (RAD) Program. RAD is an EPA partnership program that protects the ozone layer and reduces emissions of greenhouse gases ( <a href="http://www.epa.gov/ozone/partnerships/rad/">http://www.epa.gov/ozone/partnerships/rad/</a> ). The requirements of the RAD program include ensuring that: 1) refrigerant from appliances is recovered and either reclaimed or destroyed; 2) appliances' insulating foam, which contains harmful foam-blowing agents, is recovered and destroyed, or the blowing agent is recovered and reclaimed; 3) metals, plastic and glass are recycled; and 4) PCBs, mercury and used oil are recovered and properly disposed of.			the Draft Standard (September 23, 2011).
HPC 017	744	Susan Gitlin US Environmental Protection Agency US Environmental Protection Agency	1003.2 Operations Manuals Revise as follows	a) We are glad to see that this section includes information on local and on-site recycling and hazardous waste disposal programs. The section should specifically mention local recycling of refrigerators and freezers, which contain hazardous materials subject to proper management and storage requirements under Subtitle C of the Resource Conservation and Recovery Act. These materials include mercury, used oil, and PCBs (see 40 CFR Parts 273, 279 and 761). b) We are glad to see that this section includes a list of practices to conserve water and energy (e.g., turning off lights when not in use, switching the rotation of ceiling fans in changing seasons, purchasing ENERGY STAR appliances and electronics). The example of "purchasing ENERGY STAR® appliances and electronics" should be modified to state "replacing older, inefficient appliances and electronics with ENERGY STAR appliances and electronics" so as to capture the additional benefit associated with removing older appliances from the grid.		Held	The public comment is not relevant to the changes shown in the Draft Standard (September 23, 2011).

## 2012 NGBS: Scope Revision

**Staff Note:** In an effort to coordinate ICC-700 and IgCC, an expansion of scope of ICC-700 has been approved by the Executive Standards Committee of the NAHB Research Center to include structures accessory to residential use. The revised scope will allow adopting entities and jurisdictions to adopt both documents with a clear delineation of mandate over accessory structures. In addition, this revision streamlines the scoping provisions by reorganizing Scope, Intent, and Applicability sections. The revision is shown below in non-legislative and legislative formats to facilitate review of the changes and reorganization.

In accordance with the NAHB Research Center Procedures for Consensus Developed Standards, the scope of Standard is in the purview of the Executive Standards Committee. Therefore, the scope revision will not be voted on or balloted by the Consensus Committee.

To accommodate this scope revision, a new set of provisions for accessory structures has been developed for inclusion in the Standard and is [posted](#) as a separate item for consideration by the Consensus Committee.

**Status of Scope Revision:** Approved. Consensus Committee action is NOT needed.

### Non-legislative version:

#### SECTION 101 - GENERAL

**101.1 Title.** The title of this document is the *National Green Building Standard*<sup>TM</sup>, hereinafter referred to as “this Standard.”

**101.2 Scope.** The provisions of this Standard shall apply to design and construction of the residential portion(s) of any building, not classified as an institutional use, in all climate zones. This Standard shall also apply to subdivisions, building sites, building lots, accessory structures, and the residential portions of alterations, additions, renovations, mixed-use buildings, and historic buildings.

**101.3 Intent.** The purpose of this Standard is to establish criteria for rating the environmental impact of design and construction practices to achieve conformance with specified performance levels for green residential buildings, renovation thereof, accessory structures, building sites, and subdivisions. This Standard is intended to provide flexibility to permit the use of innovative approaches and techniques. This Standard is not intended to abridge safety, health, or environmental requirements contained in other applicable laws, codes, or ordinances.

**101.4 Referenced documents.** The codes, standards, and other documents referenced in this Standard shall be considered part of the requirements of this Standard to the prescribed extent of each such reference. The version of the codes, standard or other referenced documents shall be the version referenced in chapter 11.

**101.5 Appendices.** Where specifically required by a provision in this Standard, that appendix shall apply. Appendices not specifically required by a provision of this Standard shall not apply unless specifically adopted.

### Legislative version:

#### SECTION 101 - GENERAL

**101.1 Title.** The title of this document is the *National Green Building Standard*<sup>TM</sup>, hereinafter referred to as “this Standard.”

**101.2 Scope.** ~~This Standard provides criteria for rating the environmental impact of design and construction practices to achieve conformance with specified performance levels for green residential buildings. The provisions of this Standard shall apply to design and construction of the residential portion(s) of any building, not classified as an institutional use, in all climate zones. This Standard shall also be used for~~apply to subdivisions, building sites, building lots, accessory structures, and the residential portions of alterations, additions, renovations, mixed-use residential buildings, and historic buildings, where applicable.

**101.3 Intent.** ~~This Standard provides~~The purpose of this Standard is to establish criteria for rating the environmental impact of design and construction practices to achieve conformance with specified performance levels for green residential buildings, renovation thereof. This Standard shall establish practices for the design and construction of green residential buildings, accessory structures, building sites, and subdivisions, and renovation thereof. This Standard is intended to provide flexibility to permit the use of innovative approaches and techniques. This Standard is not intended to abridge safety, health, or environmental requirements contained in other applicable laws, codes, or ordinances.

#### ~~SECTION 102 - APPLICABILITY~~

~~**102.1 Applicability.** The provisions of this Standard shall apply to design and construction of the residential portion(s) of any building not classified as an institutional use in all climate zones. This Standard shall also be used for subdivisions, building sites, and the residential portions of alterations, additions, renovations, mixed-use residential buildings, and historic buildings, where applicable.~~

~~**102.101.2-4 Referenced documents.** The codes, standards, and other documents referenced in this Standard shall be considered part of the requirements of this Standard to the prescribed extent of each such reference. The version of the codes, standard or other referenced documents shall be the version referenced in chapter 11.~~

~~**102.101.3-5 Appendices.** Where specifically required by a provision in this Standard, that appendix shall apply. Appendices not specifically required by a provision of this Standard shall not apply unless specifically adopted.~~

## 2012 NGBS: Proposed Provisions for Accessory Structures

**Proposed by:**  
NAHB Research Center

**Reason:**

In an effort to coordinate ICC-700 and IgCC, an expansion of scope of ICC-700 has been approved by the Executive Standards Committee of the NAHB Research Center to include structures accessory to residential use. The revised scope will allow adopting entities and jurisdictions to adopt both documents with a clear delineation of mandate over accessory structures. This scope revision is posted as a separate item on the NGBS [website](#).

In support of this scope revision, new provisions for accessory structures are proposed as shown below. The new provisions include a definition of *accessory structure*, changing language in Chapter 3, and a new Appendix E summarizing criteria for accessory structures. The changing language of Chapter 3 allows the Adopting Entity to select mandatory or voluntary use of Appendix E. A single level of designation is available for accessory structures. The designation is available only if the residential building located on the same site or lot achieves a rating under ICC-700. The conformance criteria for the accessory structure are based on the design and construction methods used for the residential building. The criteria are located in an appendix to allow for voluntary use.

**Status and Process:** Submitted to TG-1 for review. At the February 21-23, 2012 meeting, the Consensus Committee will take a formal action on the proposed provisions. The formal action will be balloted through a letter ballot of the committee following the meeting.

### Add new provisions as follows:

#### DEFINITIONS

**Accessory Structure.** A structure, the use of which is customarily accessory to and incidental to that of the residential building; the structure is located on the same lot or site as the residential building; the structure does not contain a dwelling; and (1) is classified as Group U – Utility and Miscellaneous in accordance with the International Building Code; or (2) is classified as accessory to the residential use by a determination of the Adopting Entity.

#### 306 - ACCESSORY STRUCTURES

**306.1 Applicability.** The designation criteria for accessory structures shall be in accordance with Appendix E.

**306.2 Compliance.** Compliance with Appendix E shall be either mandatory or voluntary in accordance with this section.

**306.2.1 Mandatory Compliance.** If the Adopting Entity adopts Appendix E, it shall establish rules for compliance with Appendix E.

**306.2.2 Voluntary Compliance.** The voluntary use of Appendix E for accessory structures is permitted.

#### Appendix E – Accessory Structures

**E101.1 Applicability of Appendix A.** Appendix E is part of this Standard.

**E101.2 Scope.** The provisions contained in Appendix E provide the criteria necessary for complying with Section 306 for accessory structures. Accessory structures are to be in accordance with the applicable criteria of Appendix E. Text identified as “User Note” is not considered part of this Standard.

**E201 Conforming.** Accessory structures that meet all applicable requirements of this Appendix shall be designated as *conforming*. The *conforming* designation for the accessory structure is complementary to the rating achieved by the residential buildings located on the same site or lot. Where residential buildings located on the same lot have not achieved a rating in accordance with this Standard, the accessory structures shall not be eligible for designation under this Appendix. Each accessory structure shall seek a separate designation of *conforming* based on the rules established by the Adopting Entity in accordance with Section E102. The residential building shall not receive points for any practices implemented only for the accessory structure.

**E202 Conformance Criteria.** Accessory structures shall implement practices from Chapters 5 through 10 in accordance with Sections E202.1 through E202.7.

**E202.1** The practices that are mandatory for the residential building on the same site or lot shall be also mandatory for the accessory structure unless these practices are exempt under Sections E202.5 or E202.7.

**E202.2** All land development practices associated with construction of the accessory structure shall comply with the land development practices for the residential building located on the same lot.

**E202.3** For the accessory structures that use the same basic construction and mechanical systems as the residential buildings located on the same site or lot, the design and construction of the accessory structures shall meet the practices or the intent of the practices implemented to achieve compliance for the residential building located on the same site or lot.

**E202.4** For the accessory structures that use basic construction or mechanical systems that are different from the residential buildings located on the same site or lot, the design and construction of the accessory structures shall meet the intent of the practice implemented to achieve compliance for the residential building located on the same site or lot.

**E202.5** Where the residential buildings located on the same site or lot include construction methods or systems that do not have functionally equivalent counterparts as part of the accessory structure, the accessory structure does not need to comply with any of the practices implemented with regard to such construction methods or systems.

*User note: Examples of the practices that may be exempt from implementation in accessory structures include, but not limited to:*

- 1) Section 601.5 Prefabricated Components – accessory structure is not required to be modular if the residential building is modular.
- 2) Section 601.6 Stacked Stories – accessory structures is not required to have more than one story if the residential building is more than one story.
- 3) Section 602.2 Roof surfaces – if the residential building has a landscaped roof, the accessory structure is not required to have a landscaped roof.
- 4) Chapter 7 Energy efficiency – accessory structure is not required to comply with Chapter 7 unless it includes conditioned space.

**E202.6** Where the accessory structure includes construction methods or systems that do not have functionally equivalent counterparts as part of the residential buildings located on the same site or lot, the Adopting Entity shall review such construction methods and systems and shall establish an approach for meeting the overall intent of the Standard with regard to the minimum acceptable threshold.

**E202.7** Where the use of the accessory structure has an effect of the functionality of the specific practice, such practices may be exempt by the Adopting Entity.

*User note: Examples of the practices that may be exempt from implementation in accessory structures include, but not limited to:*

Section 602.1.14 Ice barrier – if the accessory structure does not contain conditioned space, ice barrier is not required.