NAHB Research Center

2012 National Green Building Standard

Public Comments on Draft 1

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Task Group 1

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
PC 001	743	Susan Gitlin US Environmental Protection Agency US Environmental Protection Agency	1002.1Training 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.	.		

Task Group 2

Chapter 2 Definitions

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 002	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.	**CONSTRUCTED WETLAND.** 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		
PC 003	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.	**EXISTING SUBDIVISION. 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.**		
PC 004	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.	**INFILL. 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.**		

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
PC 005	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.	~~401.4 Low-slope site. A site with an average slope calculation of less than 15% is selected~~. ~~TBD~~		
PC 006	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. ~~X percent of site area is to be irrigated by these means and demonstrated on the site plan.~~		
PC 007	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; Therefor, "demolition" has been added to acknowledge materials acquired from structure removal	**403.10 Existing and recycled materials.** Existing or recycled materials are used as follows. (Points awarded for every 10 percent of total building construction <u>and demolition</u> 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.		
PC 008	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.	**403.3 Slope disturbance.** 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)** ~~less than~~ <u>10% to</u> 25 percent **(b)** 25 percent to 75 percent **(c)** greater than 75 percent		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 009	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.	**403.5 Storm water management.** 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)** ~~less than~~ 10% to 25 percent **(b)** 25 percent to 75 percent **(c)** greater than 75 percent		
PC 010	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.		
PC 011	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.		
PC 012	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.	**403.6 Landscape plan.** 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.		
PC 013	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		
PC 014	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	Award 0 points for limiting the percentage of all turf areas as part of the landscaping (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. ~~5~~ 6 (2) On-site native or regionally appropriate trees and shrubs are conserved, maintained and reused for landscaping to the greatest extent possible. ~~5~~ 6 (3) Turf grass species, other vegetation, and trees that are native or regionally appropriate for local growing conditions are selected. ~~4~~ 6 (4) The percentage of all turf areas are limited as part of the landscaping. (a) 0 percent ~~4~~ 0 (b) greater than 0 percent to less than 20 ~~3~~ 0 (c) 20 percent to less than 40 percent ~~2~~ 0 (d) 40 percent to 60 percent ~~1~~ 0		

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				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: www.iccsafe.org/cs/IGCC/Pages/2011FinalActionAgenda 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 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. http://www.sustland.umn.edu/maint/benefits.htm 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 (OPE/). Alexandria, VA.			
PC 015	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~~, 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
PC 016	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.	**501.1 Lot. 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.** **~~4~~ 20 for 4-star** **~~3~~ 15 for 3-star** **~~2~~ 10 for 2-star** **~~1~~ 5 for 1-star** **green community**		
PC 017	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.	~~501.1 (5) Low-slope site. A site with an average slope calculation of less than 15% is selected. TBD~~		
PC 018	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.	**503.2 Slope disturbance.** Slope disturbance is minimized by the use of terrain adaptive architecture including terracing, retaining walls, landscaping, or other re-stabilization techniques. **(2)**All or a percentage of driveways and parking are aligned with natural topography to reduce cut and fill. **(a)** ~~less than~~ 10% to 25 percent **(b)** 25 percent to 75 percent **(c)** greater than 75 percent		
PC 019	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.	**503.2 Slope disturbance.** Slope disturbance is minimized by: (1) The use of terrain adaptive architecture including terracing, retaining walls, landscaping, or other re-stabilization techniques. ~~one or more of the following~~. **~~(Points awarded only if there are developable steep slopes on the lot.)~~** **~~(1) All or a percentage of development on steep slopes is avoided.~~** **~~(a) less than 25 percent 2~~** **~~(b) 25 percent to 75 percent 3~~** **~~(c) greater than 75 percent 4~~** ~~(21)~~ (2) Hydrological/soil stability study for steep slopes is completed and used to guide the design of all buildings on the site. ~~(32)~~ (3) All or a percentage of roads/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** ~~(43)~~ (4) Long-term erosion effects are reduced through the design and implementation of terracing, retaining walls, landscaping, and or restabilization techniques ~~(54)~~ (5) Underground parking uses the natural slope for parking entrances.		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 020	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.		
PC 021	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 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: www.iccsafe.org/cs/IGCC/Pages/2011FinalActionAgenda 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	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 to ensure denuded areas are quickly vegetated. ~~5~~ 6 (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 (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~~ 0 (b) greater than 0 percent to less than 20 ~~3~~ 0 (c) 20 percent to less than 40 percent ~~2~~ 0 (d) 40 percent to 60 percent ~~1~~ 0 Practices 4 through 6 unchanged (6) Vegetative wind breaks or channels are designed to protect the lot and immediate surrounding lots as appropriate for local conditions. ~~4~~ 5		

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				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 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. http://www.sustland.umn.edu/maint/benefits.htm 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 (OPE/). Alexandria, VA.			
PC 022	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.		
PC 023	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)		
PC 024	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.		
PC 025	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".		
PC 026	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."		
PC 027	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.	**505.2 Heat island mitigation.** 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:		
PC 028	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.		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 029	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 **Roof solar reflectance and thermal emittance.** In climate zones 1, 2,and 3 roof coverings shall comply with this section. Roof requirements in Section C402.2.1.1 of the *International Energy Conservation Code* 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. **MINIMUM REFLECTANCE AND EMITTANCE FOR OTHER THAN LOW HIGH-SLOPEDROOFS** a. The use of area-weighted averages to meet these requirements shall be permitted. Materials lacking initial tested values for either *solar reflectance* or *thermal emittance*, shall be assigned both an initial *solar reflectance* of 0.10 and an initial *thermal emittance* of0.90. Materials lacking three-year aged tested values for either *solar reflectance* or *thermal emittance* shall be assigned both a three-year aged *solar reflectance* of 0.10 and a three-year aged *thermal emittance* of 0.90. b. Tested solar reflectance and thermal emittance shall be in accordance with CRRC-1Standard. c. Solar reflectance index (SRI) shall be determined in accordance with ASTM E1980 using a convection coefficient of 2.1 BTU/h-ft2-F (12W/m2.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.		
PC 030	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".		
PC 031	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.		

Task Group 3

Chapter 2 Definitions

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 032	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	ARCHITECTURAL COATINGS. 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.		
PC 033	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.”		
PC 034	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.	MINOR COMPONENT. Building materials or systems that are not considered major. 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.		
PC 035	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.	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.		

Chapter 6 Resource Efficiency

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 036	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.	**601.1 Conditioned floor area.** Conditioned ~~Finished~~ floor area, as defined by ICC IRC ~~and calculated in accordance with NAHBRC Z765~~, of a dwelling unit is limited. Dwelling unit size ~~Finished floor area~~ is calculated in accordance with NAHBRC Z765. Only the conditioned ~~finished~~ floor area for stories above grade plane is included in the calculation.		
PC 037	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.	**601.7 Site-applied finishing materials.** 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		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
					(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> <u>1.</u> exterior <u>surfaces</u> ~~or~~ <u>2.</u> 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		
PC 038	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.		
PC 039	813	Bridget Herring Mathis Consulting Company Mathis Consulting Company	601.2 Material Usage Delete without substitution	Inadequate language to reliably ensure intent.	~~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.)~~ ~~(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~~		
PC 040	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>		
PC 041	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.	**602.1.1.1** A capillary break and vapor retarder are installed at all concrete slabs adjoining ~~living~~ <u>habitable and usable</u> 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):		
PC 042	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.		
PC 043	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).	**602.~~1.13~~Drip edge.** ~~Drip edge is installed at eaves and gable roof edges.~~		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 044	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.		
PC 045	672	Robert Hill NAHB Research Center NAHB Research Center	602.1.4 Crawlspaces 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?	**602.1.4.1** 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. **(1)** Floors. Minimum 6 mil vapor retarder installed on the crawlspace floor and extended up the wall ~~sufficient to allow~~ and the material ~~to be~~ is affixed with glue and furring strips		
PC 046	697	Donn Thompson Portland Cement Association Portland Cement Association	602.1.4 Crawlspaces 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 ~~6~~ 10 mil (25mm) polyethylene or polystyrene sheeting, lapped a minimum of 6 inches (152mm) and taped at the seams.		
PC 047	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.	**Termite barrier.** 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). Material and installation methods to be validated by the State's pest control authority or ICC-ES Evaluation Report.		
PC 048	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.	**602.1.9 Flashing.** 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: **Mandatory** **(a)** around exterior fenestrations, skylights and doors ~~**(6)** A drip cap is provided above windows and doors that are not flashed or protected by covering in accordance with Section 602.1~~		
PC 049	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.		
PC 050	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.	**603.1 Reuse of existing building.** Existing Major elements or components of existing buildings and structures are reused, modified, or deconstructed for later use ~~in lieu of demolition~~.		
PC 051	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.	**603.1 Reuse of existing building.** Existing Major elements or components of existing buildings and structures on the lot are reused, modified, or deconstructed for later use in lieu of demolition.		
PC 052	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.	**603.2 Salvaged materials.** Reclaimed and/or salvaged materials and components obtained off site are used. The total material value and labor cost of salvaged materials is equal to or exceeds 1 percent of the total construction cost.		
PC 053	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.		

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PC 054	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; therefor, construction has been removed from this section. The encouragement of incineration does not meet the environmental intent of this standard.	**605.2 On-site recycling.** ~~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~~ nonhazardous 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.~~		
PC 055	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)?	**609.1 Regional materials.** Regional materials are used for major ~~elements or~~ components of the ~~building~~ construction.		
PC 056	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: ~~REGIONAL MATERIAL. Material that is originated, produced, growsnaturally, or occurs naturally within 500 miles (804.7 km) of the constructionsite if transported by truck or 1500 miles (2414 km) of the construction siteif transported for not less than 80% of the total transport distance by rail orwater.~~		
PC 057	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	610.1 Whole-building ~~L~~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 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~~ 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.~~ ~~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.~~ ~~(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, 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~~ ~~Exception: Electrical and mechanical equipment and controls, plumbing products, fire~~		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
					~~detection and alarm systems, elevators, and conveying systems are not included in the assessment.~~ At a minimum, the following ~~The~~ environmental impacts shall be assessed: ~~measures to be considered are chosen from the following:~~ ~~(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~~		
PC 058	750	Matthew Dobson Vinyl Siding Institute mdobson@vinylsiding.org	610.1 Life Cycle Analysis Revise as follows	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	and the product with a 15% improvement in overall average in the following areas is used. ~~fossil fuel consumption and global warming potential is used.~~ (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		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 059	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.	~~610.1.2 Life cycleanalysis for a product or assembly. An environmentally~~ ~~preferable product orassembly is selected for an application based upon the use of an Life CycleAssessment (LCA) tool that incorporates data methods compliant with ISO 14044or other recognized standards that compare the environmental impact of building~~ ~~materials,products orassemblies, or the whole building.~~ ~~10 Points Max~~ ~~15 Points Max~~ ~~(1) per product/system comparison 3~~ ~~(2) whole building LCA analysis 15~~ ~~(1) Two products with thesame 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 perproduct/system comparison.)~~		
PC 060	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	**610.1 Manufacturer's environmental management system concepts.** (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)		
PC 061	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.	**611.2 Sustainable Products.** 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. **4 10 Points Max** **(1)** 50% or more of carpet installed (by square feet) is third-party certified to NSF/ANSI 140. ~~**15**~~ **15** **(2)** 50% or more of resilient flooring installed (by square feet) is third-party certified to NSF/ANSI 332. ~~**15**~~ **15** **(3)** 50% or more of the insulation installed (by square feet) is third-party certified to EcoLogo CCD-016. ~~**15**~~ **15** **(4)** 50% or more of interior wall coverings installed (by square feet) is third-party certified to NSF/ANSI 342 ~~**15**~~ **15**		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 062	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.	**611.2 Sustainable Products.** 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. **4 Points Max** **(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** **(5)** 50% or more of the gypsum board installed (by square feet) is third-party certified to ULE ISR 100 **1** **(6)** 50% or more of the door leafs installed (by number of door leafs) is third-party certified to ULE ISR 102 **1**		
PC 063	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.	**611.2 Sustainable Products.** 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. **4 Points Max** **(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**		
PC 064		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			
PC 065	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.	~~**611.4 Food waste disposers.** A minimum of one food waste disposer is installed at the primary kitchen sink. (1 point)~~		
PC 066	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.	~~611.4 Food waste disposers. A minimum of one food waste disposer isinstalled at the primary kitchensink. 1~~		

Chapter 9 Indoor Environmental Quality

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 067	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).		
PC 068	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.	**901.1.3** The following ~~combustion~~ space heating and or water heating equipment is installed ~~within conditioned space~~:as follows: (points awarded for only 1 practice for heating systems and for water heaters). **(1)** all ~~direct vent~~ furnaces or all boilers **5** **(a)** power vent furnace(s) or boiler(s) are in conditioned space **TBD** **(b)** direct vent furnace(s) or boiler(s) are in conditioned space **5** **(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). **(2)** all water heaters **(a)** power vent water heater(s) are in conditioned space **3** **(b)** direct vent water heater(s) are in conditioned space **(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). (3) all heat pump air handlers are installed in (a) unconditioned space (b) conditioned space		
PC 069	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.	**901.1.1** Naturaldraft ~~space heating or water heatingequipment~~ furnaces, boilers orwater heaters are~~is~~ not located in conditioned spaces, including conditioned crawlspaces. Natural draft furnaces, boilers and water heaters are ~~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). ~~5~~ Mandatory		
PC 070	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.	**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. ~~Gas-fired fireplaces and direct heating equipment are vented to the outdoors.~~		
PC 071	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,	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. ~~Gas-fired fireplaces and direct heating equipment are vented to the outdoors.~~ Gas-fired unvented direct heating equipment must comply with ANSI Standard Z.21.11.2.		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
				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 Enery 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.			
PC 072	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 Greeen 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. ~~Gas-fired fireplaces and direct heating equipment are vented to the outdoors.~~		
PC 073	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.	**901.1.5** 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.		
PC 074	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.	**(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.		
PC 075	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 outiffited properly they perform the same. This product would have the same point scale as the site built masonry wood burning fireplace of 4 points.	901.2.1 (6) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are ~~EPA certified.~~ 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. Points = 4.		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 076	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.		
PC 077	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.	**901.5 Cabinets.** A minimum of 85 percent of installed kitchen and bath vanity cabinets are in accordance with ~~KCMA ESP 04 (or equivalent) or~~ CARB *Composite Wood Air Toxic Contaminant Measure Standard* or certified by a program such as but not limited to, those in Appendix D. **3** Appendix D 901.5 Cabinets KCMA ESP 04		
PC 078	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 in now treated in the draft.	**901. 6 Carpets.** Carpets 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 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.		
PC 079	656	Naveen Berry SCAQMD SCAQMD	901.9 Architectural Coatings Revise 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><tr><th>COLORANT</th><th>Limit</th></tr><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></table>		
PC 080	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 ~~**(3)**~~ (4) CARB *Suggested Control Measure for Architectural Coatings* (see Table 901.9.1).		
PC 081	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		
PC 082	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		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 083	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 – ~~100~~ 50 Non-Flat High Gloss Coatings – ~~150~~ 50 Aluminum Roof Coatings – ~~400~~ 100 Concrete Curing Compounds – ~~350~~ 100 Floor Coatings – ~~100~~ 50 Industrial Maintenance Coatings – ~~250~~ 100 Rust Preventative Coatings – ~~250~~ 100 Tub and Tile Refinish Coatings – ~~420~~ 250 Waterproofing Membranes – ~~250~~ 100 Zinc-Rich Primers – ~~340~~ 100		
PC 084	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		
PC 085	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.	**901.9.2** Site-applied interior ~~products~~ architectural coatings, which are inside the water proofing envelope, 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 *Children and Schools Certification Program* or the Scientific Certification Systems *Indoor Advantage Gold Program* 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.		
PC 086	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		
PC 087	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.		
PC 088	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.		
PC 089	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		

Task Group 4

Chapter 8 Water Efficiency

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 090	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-		OK
PC 091	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 ~~801.1 Indoor hot water usage~~ 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, pennisula 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		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 092	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.	**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 bathrooms is used to calculate the number of points available for this practice (rounded down to a 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).)~~**	Note: Comment is also submitted to TG-6 Multifamily	
PC 093	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		
PC 094	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.	**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.** 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).**)** **(2)** all lavatory faucets in the dwelling unit and common areas	Note: Comment is also submitted to TG-6 Multifamily	
PC 095	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.	**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 **(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)**)** **(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). **(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)**)**	Note: Comment is also submitted to TG-6 Multifamily	
PC 096	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.		
PC 097	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.		
PC 098	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		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 099	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.	**801.7. 5** The irrigation system(s) is controlled by a smart controller. ~~**(Points for 801.7.4(3) are not addittive with points for 801.7.4(a) or 801.7.4(b).)**~~		

Task Group 5

Chapter 2 Definitions

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 100	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		

Chapter 7 Energy Efficiency

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 101	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.		
PC 102	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.		
PC 103	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.		
PC 104	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.	**701.1.3 Alternative bronze level compliance.** 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. The buildings achieving compliance under Section 701.1.3 are not eligible for achieving a rating level above bronze.		
PC 105	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.	**701.1.3 Alternative bronze level compliance**. As an alternative, any building thatqualifies as an Energy Star Version 3.0 Qualified Home ~~or equivalent demonstratescompliance with the 2012 IECC or Chapter 11 of the 2012 IRC~~achieves the bronze level for Chapter 7.		
PC 106	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?		
PC 107	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		
PC 108	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~~.		
PC 109	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		

<table>
<tr><th>PC #</th><th>Log ID</th><th>Full Name
Company Jurisdiction Entity Represented</th><th>Section Number
Requested Action</th><th>Comment</th><th>Proposed Resolution</th><th>TG Action</th><th>Reason</th></tr>
<tr><td>PC 110</td><td>801</td><td>Shari Hendley
J.S. Hovnanian & Sons
J.S. Hovnanian & Sons</td><td>701.4.2.3 Duct system sizing
Revise as follows</td><td>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</td><td><s>Mandatory</s> 5 points</td><td></td><td></td></tr>
<tr><td>PC 111</td><td>657</td><td>Jamie Hager
Southern Energy Management
self</td><td>701.4.3.2 Air sealing and insulation
Delete and substitute as follows</td><td>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.</td><td>701.4.3.2 <s>Air sealing and insulation</s> Insulation and Air Sealing. Building envelope insulation must be installed to meet Grade 2 installation criteria as defined in 703.1.2.3.

The compliance of the building envelope air tightness and <s>insulation installation</s> is demonstrated in accordance with Section 701.4.3.2(1) or 701.4.3.2(2).

(1) Testing option. Building envelope tightness <s>and insulation installation</s> 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 <s>rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances</s> the requirements of 701.4.3.1 Building Thermal Envelope have been met. (keep a - g the same under this section)

(2) Visual inspection option. Building envelope tightness <s>and insulation installation are</s> is considered acceptable when the items listed in Table 701.4.3.2(2) applicable to the method of construction, are field verified.</td><td></td><td></td></tr>
<tr><td>PC 112</td><td>777</td><td>Amanda Evans
Santa Fe
self</td><td>701.4.3.2 Air sealing and insulation
Delete and substitute as follows</td><td>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.</td><td>Remove <s>seven</s> and add five.</td><td></td><td></td></tr>
<tr><td>PC 113</td><td>802</td><td>Bridget Herring
Mathis Consulting Company
Mathis Consulting Company</td><td>701.4.3.2 Air sealing and insulation
Revise as follows</td><td>Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable.</td><td>701.4.3.2 Air sealingand insulation: The compliance of the building envelope air tightness and insulation installation is demonstrated in accordance with Section 701.4.3.2<s>(1) or 701.4.3.2 (2)</s>.

<s>(2) Visual inspection option. Building envelopetightness and insulation installation are considered acceptable when the items listed in Table 701.4.3.2(2) applicable to the method of construction, are fieldverified.</s>

<s>Table 701.4.3.2(2) Air Barrier and InsulationInspection Component Criteria</s>
<table>
<tr><th><s>COMPONENT</s></th><th><s>CRITERIA</s></th></tr>
<tr><td><s>Air barrier and thermal barrier</s></td><td><s>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.</s>

<s>Air-permeable insulation is inside of an air barrier.</s></td></tr>
<tr><td><s>Ceiling/attic</s></td><td><s>Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and anygaps are sealed.</s>

<s>Attic access (except unvented attic), knee wall door, or drop down stair is sealed.</s></td></tr>
<tr><td><s>Wall</s></td><td><s>Corners and headers are insulated.
Junction of foundation and sill plate is sealed</s></td></tr>
<tr><td><s>Windows and door</s></td><td><s>Space between window/door jambs and framing is sealed.</s></td></tr>
<tr><td><s>Rim joists</s></td><td><s>Rim joists are insulated and include an air barrier.</s></td></tr>
<tr><td><s>Floors

(including abovegarage and cantilevered floors)</s></td><td><s>Insulation is installed to maintain permanent contact with underside of subfloor decking.
Air barrier is installed at any exposed edge of insulation.</s></td></tr>
<tr><td><s>Crawl space walls</s></td><td><s>Insulation is permanently attached to walls.</s>

<s>Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.</s></td></tr>
</table></td><td></td><td></td></tr>
</table>

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
					~~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~~		
PC 114	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.	~~(1)~~ **Testing**~~option~~. Building envelope tightness and insulation installation is considered acceptable when tested air leakage is less than three~~seven~~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.		
PC 115	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.	**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. 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. **Lamp** **Efficiency** ≤15W 40 lumens/W >15W-40W 50 lumens/W >40W 60 lumens/W High-Efficacy Lamps		
PC 116	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.	**701.4.4 High-efficacy lighting**. A minimum of 75~~50~~percent of the total hard-wired lighting fixtures, or the bulbs in those fixtures, qualify as high efficacy or equivalent.		
PC 117	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.	**702.2.1 ICC IECC analysis**. 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 R405, or 2012 ICC IECC Section C407.2 ~~506.2~~ through C407.5 ~~506.5~~, applied as defined in the 2012 ICC IECC, is required.		
PC 118	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.	**702.2.2 Energy cost performance analysis**. 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, and lighting. ~~and appliances~~.		
PC 119	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.	**702.2.2Energy cost performance analysis**. 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, and lighting, ~~and appliances~~		

<table>
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<tr><td>PC 120</td><td>836</td><td>Craig Conner
Building Quality
self</td><td>702.2 Energy Cost Performance Levels
Delete without substitution</td><td>Comment: All occurrences of “ICC IECC” should be just “IECC”.</td><td>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 Section506.2 through 506.5, applied as defined in the ~~ICC~~ IECC, is required.</td><td></td><td></td></tr>
<tr><td>PC 121</td><td>602</td><td>Nils Petermann
Alliance to Save Energy
Alliance to Save Energy</td><td>703.1.1 UA improvement (building envelope)
Revise as follows</td><td>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.</td><td>Table 703.1.1: bottom row of the "Climate Zone" column: 7 and ~~9~~8</td><td></td><td></td></tr>
<tr><td>PC 122</td><td>819</td><td>Bridget Herring
Mathis Consulting Company
Mathis Consulting Company</td><td>703.1.1 UA improvement (building envelope)
Revise as follows</td><td>Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable</td><td>703.1.1 UA improvement. ~~Where the total building thermal envelope UA is less than requiredby ICC IECC, Section 402.1.4, the total building thermalenvelope 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 the~~se percentages~~ UA improvements, a third-party grading of the installation as achieving Grade 1 is required. ~~A documented analysis isperformed using RESCheck version 4.0.1 or later, or equivalent, based on acomparison 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.

Table703.1.1: Equivalent U-Factors
<table><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><tr><td>1</td><td>0.50 ~~1.2~~</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 ~~.65~~</td><td>0.65 ~~.75~~</td><td>0.030 ~~.035~~</td><td>.082</td><td>.165</td><td>.064</td><td>.36</td><td>.477</td></tr><tr><td>3</td><td>0.35 ~~.5~~</td><td>0.55 ~~.65~~</td><td>0.030 ~~.035~~</td><td>0.057 ~~.082~~</td><td>0.098 ~~.141~~</td><td>.047</td><td>0.091 ~~.91~~</td><td>.136</td></tr><tr><td>4 except Marine</td><td>.35</td><td>0.55 ~~.6~~</td><td>0.026 ~~.03~~</td><td>0.057 ~~.082~~</td><td>0.098 ~~.141~~</td><td>.047</td><td>.059</td><td>.065</td></tr><tr><td>5 and Marine 4</td><td>0.32 ~~.35~~</td><td>0.55 ~~.6~~</td><td>0.026 ~~.03~~</td><td>.057</td><td>.082</td><td>.033</td><td>.059</td><td>0.055 ~~.065~~</td></tr><tr><td>6</td><td>0.32 ~~.35~~</td><td>0.55 ~~.6~~</td><td>.026</td><td>0.048 ~~.057~~</td><td>.06</td><td>.033</td><td>.05</td><td>0.055 ~~.065~~</td></tr><tr><td>7 and 8</td><td>0.32 ~~.35~~</td><td>0.55 ~~.6~~</td><td>.026</td><td>0.048 ~~.057~~</td><td>.057</td><td>.028</td><td>.05</td><td>0.055 ~~.065~~</td></tr></table></td><td></td><td></td></tr>
<tr><td>PC 123</td><td>679</td><td>Robert Hill
NAHB Research Center
NAHB Research Center</td><td>703.1.2 Insulation installation
Delete and substitute as follows</td><td>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.)</td><td>701.4.3.3 Insulation installation. 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. Mandatory</td><td></td><td></td></tr>
<tr><td>PC 124</td><td>807</td><td>Bridget Herring
Mathis Consulting Company
Mathis Consulting Company</td><td>703.1.2 Insulation installation
Delete without substitution</td><td>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.</td><td>Delete section 703.1.2 in its entirety</td><td></td><td></td></tr>
<tr><td>PC 125</td><td>838</td><td>Craig Conner
Building Quality
self</td><td>703.1.2 Insulation installation
Delete and substitute as follows</td><td>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.</td><td>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.</td><td></td><td></td></tr>
<tr><td>PC 126</td><td>680</td><td>Robert Hill
NAHB Research Center
NAHB Research Center</td><td>703.1.4 Radiant Barrier
Revise as follows</td><td>Limit the use of radiant barrier to attic applications where it is most beneficial.</td><td>703.1.4 A radiant barrier with an emittance of 0.05 or less is used in the attic. 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.</td><td></td><td></td></tr>
</table>

<table>
<tr><th>PC #</th><th>Log ID</th><th>Full Name
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Requested Action</th><th>Comment</th><th>Proposed Resolution</th><th>TG Action</th><th>Reason</th></tr>
<tr><td>PC 127</td><td>808</td><td>Bridget Herring
Mathis Consulting Company
Mathis Consulting Company</td><td>703.1.4 Radiant Barrier
Revise as follows</td><td>Radiant Barriers only work as long as their lowE surface is protected.</td><td>703.1.4. A radiant barrier with an emittance of 0.05or less is used. The product is tested in accordance with ASTM C-1371-98 or ASTM E408-71 (2002)<u>.</u> ~~and~~ 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></td><td></td><td></td></tr>
<tr><td>PC 128</td><td>662</td><td>Jamie Hager
Southern Energy Management
self</td><td>703.1.5 Building envelope leakage
Revise as follows</td><td>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.</td><td>703.1.5 Building envelope leakage. The maximum leakage rate is <u>tested by a 3rd party to be found to be</u> in accordance with the following: ....</td><td></td><td></td></tr>
<tr><td>PC 129</td><td>681</td><td>Robert Hill
NAHB Research Center
NAHB Research Center</td><td>703.1.5 Building envelope leakage
Revise as follows</td><td>The prerequisite for appropriate ventilation for very tight buildings apparently was dropped during the revision. Proper ventilation is appropriate for tight houses.</td><td>703.1.5 Building envelope leakage. <u>Whole building ventilation is provided in accordance with section 902.2 and the</u> ~~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</td><td></td><td></td></tr>
<tr><td>PC 130</td><td>812</td><td>Bridget Herring
Mathis Consulting Company
Mathis Consulting Company</td><td>703.1.5 Building envelope leakage
Delete and substitute as follows</td><td>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.</td><td>703.1.5 Building envelope leakage. The maximum leakage rate is in accordance with the following:
<table><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~~ <u>0</u></td></tr><tr><td>2 ACH</td><td>12</td></tr><tr><td>1 ACH</td><td>15</td></tr></table></td><td></td><td></td></tr>
</table>

<table>
<tr><th>PC #</th><th>Log ID</th><th>Full Name
Company Jurisdiction Entity Represented</th><th>Section Number
Requested Action</th><th>Comment</th><th>Proposed Resolution</th><th>TG Action</th><th>Reason</th></tr>
<tr><td>PC 131</td><td>765</td><td>Eric Lacey
RECA
RECA</td><td>703.1.6.1 Fenestration Specifications
Revise as follows</td><td>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.</td><td><u>701.4.4.1</u> <u>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^2) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</u>

[Option 1: 2012 IECC]

<u>Table 701.4.4.1</u>
<u>Fenestration Specifications</u>

<table>
<tr><th><u>Climate Zones</u></th><th><u>U-Factor</u></th><th><u>SHGC</u></th></tr>
<tr><td></td><td colspan="2"><u>Windows and Exterior Doors (maximum certified ratings)</u></td></tr>
<tr><td><u>1</u></td><td><u>0.50</u></td><td><u>0.25</u></td></tr>
<tr><td><u>2</u></td><td><u>0.40</u></td><td><u>0.25</u></td></tr>
<tr><td><u>3</u></td><td><u>0.35</u></td><td><u>0.25</u></td></tr>
<tr><td><u>4</u></td><td><u>0.35</u></td><td><u>0.40</u></td></tr>
<tr><td><u>5 to 8</u></td><td><u>0.32</u></td><td><u>Any</u></td></tr>
<tr><td></td><td colspan="2"><u>Skylights and TDDs</u></td></tr>
<tr><td><u>1</u></td><td><u>0.75</u></td><td><u>0.25</u></td></tr>
<tr><td><u>2</u></td><td><u>0.65</u></td><td><u>0.25</u></td></tr>
<tr><td><u>3</u></td><td><u>0.55</u></td><td><u>0.25</u></td></tr>
<tr><td><u>4</u></td><td><u>0.55</u></td><td><u>0.40</u></td></tr>
<tr><td><u>5 to 8</u></td><td><u>0.55</u></td><td><u>Any</u></td></tr>
</table>
<u>Mandatory</u>

<u>[1] 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.</u>

[Option 2: 2009 IECC]

<u>Table 701.4.4.1</u>
<u>Fenestration Specifications</u>

<table>
<tr><th><u>Climate Zones</u></th><th><u>U-Factor</u></th><th><u>SHGC</u></th></tr>
<tr><td></td><td colspan="2"><u>Windows and Exterior Doors (maximum certified ratings)</u></td></tr>
<tr><td><u>1</u></td><td><u>1.20</u></td><td><u>0.30</u></td></tr>
<tr><td><u>2</u></td><td><u>0.65</u></td><td><u>0.30</u></td></tr>
<tr><td><u>3</u></td><td><u>0.50</u></td><td><u>0.30</u></td></tr>
<tr><td><u>4 to 8</u></td><td><u>0.35</u></td><td><u>Any</u></td></tr>
<tr><td></td><td colspan="2"><u>Skylights and TDDs</u></td></tr>
<tr><td><u>1</u></td><td><u>0.75</u></td><td><u>0.30</u></td></tr>
<tr><td><u>2</u></td><td><u>0.75</u></td><td><u>0.30</u></td></tr>
<tr><td><u>3</u></td><td><u>0.65</u></td><td><u>0.30</u></td></tr>
<tr><td><u>4 to 8</u></td><td><u>0.55</u></td><td><u>Any</u></td></tr>
</table>
<u>Mandatory</u></td><td></td><td>OK</td></tr>
<tr><td>PC 132</td><td>766</td><td>Eric Lacey
RECA
RECA</td><td>703.1.6.1 Fenestration Specifications
Revise as follows</td><td>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</td><td>703.1.6 Fenestration

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

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
				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.	**[Option 1: 2012 IECC mandatory, with one enhanced fenestration option]** **Table 703.1.6.1** **Fenestration Specifications** | 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 | | 5 to 8 | ~~0.60~~ 0.55 | Any | Mandatory [1] 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. Delete Table 703.1.6.2(a) and replace with the following: **Table 703.1.6.2(a)** **Enhanced Fenestration Specifications** | 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 | | 5 to 8 | 0.30 | Any | | | Skylights and TDDs | | | 1 and 2 | 0.60 | 0.25 | | 3 | 0.50 | 0.25 | | 4 | 0.50 | 0.35 | | 5 to 8 | 0.50 | Any | Points TBD Delete Table 703.1.6.2(b) in its entirety **[Option 2: 2009 IECC mandatory, with two enhanced fenestration options]** Delete Table 703.1.6.2(a) and replace with the following:		

<table>
<tr><th>PC #</th><th>Log ID</th><th>Full Name
Company Jurisdiction
Entity Represented</th><th>Section Number
Requested Action</th><th>Comment</th><th>Proposed Resolution</th><th>TG Action</th><th>Reason</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>
<u>Table 703.1.6.2(a)</u>
<u>Fenestration Specifications</u>

<table>
<tr><td><u>Climate Zones</u></td><td><u>U-Factor</u></td><td><u>SHGC</u></td></tr>
<tr><td></td><td colspan="2"><u>Windows and Exterior Doors (maximum certified ratings)</u></td></tr>
<tr><td><u>1</u></td><td><u>0.50</u></td><td><u>0.25</u></td></tr>
<tr><td><u>2</u></td><td><u>0.40</u></td><td><u>0.25</u></td></tr>
<tr><td><u>3</u></td><td><u>0.35</u></td><td><u>0.25</u></td></tr>
<tr><td><u>4</u></td><td><u>0.35</u></td><td><u>0.40</u></td></tr>
<tr><td><u>5 to 8</u></td><td><u>0.32</u></td><td><u>Any</u></td></tr>
<tr><td></td><td colspan="2"><u>Skylights and TDDs</u></td></tr>
<tr><td><u>1 and 2</u></td><td><u>0.75</u></td><td><u>0.25</u></td></tr>
<tr><td><u>2</u></td><td><u>0.65</u></td><td><u>0.25</u></td></tr>
<tr><td><u>3</u></td><td><u>0.55</u></td><td><u>0.25</u></td></tr>
<tr><td><u>4</u></td><td><u>0.55</u></td><td><u>0.40</u></td></tr>
<tr><td><u>5 to 8</u></td><td><u>0.55</u></td><td><u>Any</u></td></tr>
</table>
<u>Points TBD</u>

<u>[1] 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.</u>

Delete Table 703.1.6.2(b) and replace with the following:

<u>Table 703.1.6.2(b)</u>
<u>Enhanced Fenestration Specifications</u>

<table>
<tr><td><u>Climate Zones</u></td><td><u>U-Factor</u></td><td><u>SHGC</u></td></tr>
<tr><td></td><td colspan="2"><u>Windows and Exterior Doors (maximum certified ratings)</u></td></tr>
<tr><td><u>1</u></td><td><u>0.45</u></td><td><u>0.25</u></td></tr>
<tr><td><u>2</u></td><td><u>0.35</u></td><td><u>0.25</u></td></tr>
<tr><td><u>3</u></td><td><u>0.32</u></td><td><u>0.25</u></td></tr>
<tr><td><u>4</u></td><td><u>0.30</u></td><td><u>0.40</u></td></tr>
<tr><td><u>5 to 8</u></td><td><u>0.30</u></td><td><u>Any</u></td></tr>
<tr><td></td><td colspan="2"><u>Skylights and TDDs</u></td></tr>
<tr><td><u>1 and 2</u></td><td><u>0.60</u></td><td><u>0.25</u></td></tr>
<tr><td><u>3</u></td><td><u>0.50</u></td><td><u>0.25</u></td></tr>
<tr><td><u>4</u></td><td><u>0.50</u></td><td><u>0.35</u></td></tr>
<tr><td><u>5 to 8</u></td><td><u>0.50</u></td><td><u>Any</u></td></tr>
</table>
<u>Points TBD</u>
</td><td></td><td></td></tr>
<tr><td>PC 133</td><td>824</td><td>Bridget Herring
Mathis Consulting Company
Mathis Consulting Company</td><td>703.1.6.1 Fenestration Specifications
Revise as follows</td><td>Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable.</td><td>
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 m2) or 10percent of the total glazing area, whichever is less, are not required to comply with this practice.

Table 703.1.6.1:Fenestration Specifications

<table>
<tr><td>Climate Zones</td><td>U-Factor</td><td>SHGC</td></tr>
<tr><td><u>1</u></td><td>0.65</td><td><u>0.25</u> <s>0.30</s></td></tr>
<tr><td><u>2</u></td><td><u>0.40</u> <s>0.65</s></td><td><u>0.25</u> <s>0.30</s></td></tr>
<tr><td><u>3</u></td><td><u>0.35</u> <s>0.40</s></td><td><u>0.25</u> <s>0.30</s></td></tr>
<tr><td><u>4</u>-8</td><td><u>0.32</u> <s>0.35</s></td><td>Any</td></tr>
<tr><td>Skylights and TDDs</td><td></td><td></td></tr>
<tr><td><u>1 and 2</u></td><td><u>0.65</u> <s>0.75</s></td><td>0.30</td></tr>
<tr><td><u>3</u></td><td><u>0.55</u> <s>0.65</s></td><td>0.30</td></tr>
<tr><td><u>4</u><s>-8</s></td><td><u>0.55</u> <s>0.60</s></td><td><u>0.40</u> <s>Any</s></td></tr>
<tr><td><u>5</u><s>-8</s></td><td><s>0.55</s></td><td><u>Any</u></td></tr>
</table>
</td><td></td><td></td></tr>
</table>

<table>
<tr><th>PC #</th><th>Log ID</th><th>Full Name
Company Jurisdiction Entity Represented</th><th>Section Number
Requested Action</th><th>Comment</th><th>Proposed Resolution</th><th>TG Action</th><th>Reason</th></tr>
<tr><td>PC 134</td><td>837</td><td>Craig Conner
Building Quality
self</td><td>703.1.6.1 Fenestration Specifications
Add new as follows.</td><td>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.</td><td>Add new text after existing text in 703.1.6.1
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.</td><td></td><td></td></tr>
<tr><td>PC 135</td><td>601</td><td>Nils Petermann
Alliance to Save Energy
Alliance to Save Energy</td><td>703.1.6.2 Enhanced Fenestration Specifications
Revise as follows</td><td>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.</td><td>Table 703.1.6.2(b)

Enhanced Fenestration Specifications

Skylights and TDDs (maximum certified ratings)

Climate Zone 3; U-factor 0.50; SHGC ~~0.35~~0.30 TBD</td><td></td><td></td></tr>
<tr><td>PC 136</td><td>642</td><td>John Gant
Glen Raven Inc
self</td><td>703.1.6.2 Enhanced Fenestration Specifications
Revise as follows</td><td>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.</td><td>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".</td><td></td><td></td></tr>
<tr><td>PC 137</td><td>822</td><td>Bridget Herring
Mathis Consulting Company
Mathis Consulting Company</td><td>703.1.6.2 Enhanced Fenestration Specifications
Delete and substitute as follows</td><td>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.</td><td>Delete tables 703.1.6.2 (a) and (b) and substitute one table as follows:

Table 703.1.6.2: Enhanced Fenestration Specifications

<table>
<tr><td>Climate Zones</td><td>U-Factor</td><td>SHGC</td></tr>
<tr><td></td><td colspan="2">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></td><td>Skylights and TDDs (Maximum certified ratings)</td><td></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>
</table></td><td></td><td></td></tr>
<tr><td>PC 138</td><td>619</td><td>Robert Brown
WaterFurnace Int'l
Waterfurnace International</td><td>703.2.6 Ground Source Heat Pump
Revise as follows</td><td>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.</td><td>W-A = Water to Air ISO/AHRI 13256-1 GLHP
W-W= Water to Water ISO/AHRI 13256-2 GLHP

(1) W-A Open loop: ≥ 16.2 EER / ≥ 3.6 COP 20
W-W Open loop: ≥ 16.0 EER / ≥ 3.4 COP 20

(2) W-A Closed loop: ≥ 14.1 EER / ≥ 3.3 COP 20
W-W Closed loop: ≥ 14.0 EER / ≥ 2.8 COP 20

(3) Direct expansion: ≥ 15.0 EER / ≥ 3.5 COP 20

(4) W-A Any type (open, closed, direct expansion): ≥ ~~24~~ 18 EER / ≥ ~~4.3~~ 3.7 COP 30
W-W Any type (open, closed, direct expansion): ≥ 15.7 EER / ≥ 3.1 COP 30

(5) W-A Any type (open, closed, direct expansion): ≥ ~~28~~ 20EER / ≥ ~~4.8~~ 4.0 COP 35
W-W Any type (open, closed, direct expansion): ≥ 17.5 EER / ≥ 3.2 COP 35</td><td></td><td></td></tr>
<tr><td>PC 139</td><td>817</td><td>Bridget Herring
Mathis Consulting Company
Mathis Consulting Company</td><td>703.3 Duct Systems
Revise as follows</td><td>Electric resistance heating does not meet the intention of this section.</td><td>703.3.1 All space heating is provided by a system(s) that does not include air ducts. Electric resistance heating does not comply with this section.</td><td></td><td></td></tr>
</table>

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 140	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?	**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:		
PC 141	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 ~~a~~ cfm per 100 square feet ~~percent of thesystem design flow rate~~ is in accordance with the following: (1) ~~6 percent~~ 2 cfm for ductwork entirely outside the building's thermal envelope (2) ~~6 percent~~ 3 cfm for ductwork entirely inside the building's thermal envelope (3) ~~6 percent~~ 2 cfm for ductwork both inside and outside the building's thermal envelope		
PC 142	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		
PC 143	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 i8n 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 @ WWWCURTISLBIGGARARCHITECT.COM & check out my green page. Curtis L Biggar Architect/CGP [See the Additional Documents file for more information]			
PC 144	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%?		
PC 145	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		
PC 146	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		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 147	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.	Revise the footnote to Table 704.5.3 Table 704.5.3 Maximum Pipe Run Length 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 ~~the~~ recirculation loop) to a point of use.		
PC 148	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.	**705.2 Renewable energy service plan.** 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. **2** **(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~~ twenty year commitment. 5		
PC 149	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.	**705.5 Additional renewable energy options** **705.5.1 Renewable Energy System is ~~Photovoltaic panels are~~ installed on the property (e.g., solar photovoltiaic 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** **(Points awarded per 100 W of system rating per 2,000 square feet of** **total conditioned floor area of the building.)** **~~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.)~~**		

Task Group 6

Chapter 3

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 150	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.	**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, a~~ 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. Mandatory practices and practices for which points are awarded for the dwelling units must also be implemented for common residential areas when applicable. 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. Unless noted that a weighted average is used, 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.		
PC 151	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.	**304.1 Multi-unit buildings.** 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.		
PC 152	665	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 threshold values 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.	**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, a~~ 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. Mandatory practices and practices for which points are awarded for the dwelling units must also be implemented for common residential areas when applicable. 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. Unless noted that a weighted average is used, 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.		
PC 153	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.	**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 bathrooms is used to calculate the number of points available for this practice (rounded down to a 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).)~~**	Note: Comment is also submitted to TG-4 Water efficiency	
PC 154	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.	**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.** 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).**)** **(2)** all lavatory faucets in the dwelling unit and common areas	Note: Comment is also submitted to TG-4 Water efficiency	

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 155	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.	**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 **(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)**)** **(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). **(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)**)**	Note: Comment is also submitted to TG-4 Multifamily	

Task Group 7

Chapter 3 Compliance Method

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 156	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 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"	Change Table 305.2.3 performance levels from Bronze, Silver, Gold and Emerald to One Star, Two Star, Three Star, and Four Star		
PC 157	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.		
PC 158	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 and 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: 305.2.4 Additional Green Practices 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. Table 305.2.4 Threshold Ratings for Green Remodels Green Remodel Practice from Section 11 / Minimum Points Needed One Star: 0 / Two Star: TBD / Three Star: TBD / Four Star: TBD Site Work (11.5): 0 / TBD / TBD / TBD Materials (11.6): 0 / TBD / TBD / TBD Indoor Air Quality (11.9): 0 / TBD / TBD / TBD		
PC 159	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" ***Staff Note: The revised remodeling provisions are appended at the end of the document due to the large size of the submission.***		
PC 160	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.	**(1)Energy consumption comparison**: Energy consumption mustcomply with the performance requirements for Energy Star Version e3.0 orachieve a HERS index at or below Energy Star Version 3.0 index target ~~shallbe based on the estimated annual energy use due to heating, cooling, and waterheating as determined by a third-party energy audit or analysis. The comparison is based on the percentagedifference between the HERS index before and the HERS index after theremodeling calculated as follows: (HERSbefore-HERSafter)/HERSbefore*100.~~		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 161	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.	**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~~. **(1) Energy consumption comparison:** 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 calculated as follows: (HERSbefore-HERSafter)/HERSbefore*100.		

Chapter 11 Remodeling

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 162	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" ***Staff Note: The revised remodeling provisions are appended at the end of the document due to the large size of the submission.***		
PC 163	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.		
PC 164	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.	.		
PC 165	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.	~~**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.~~ ~~**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~~ ~~**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.~~ ~~**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.~~		
PC 166	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.	~~**11.605.0** All waste classified as hazardous shall be properly handled and disposed.~~ ~~**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.~~		
PC 167	727	Josh Jacobs GREENGUARD 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	**11.610.2 Sustainable Products.** 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. **10 Points Max**		

<table>
<tr><th>PC #</th><th>Log ID</th><th>Full Name
Company Jurisdiction Entity Represented</th><th>Section Number
Requested Action</th><th>Comment</th><th>Proposed Resolution</th><th>TG Action</th><th>Reason</th></tr>
<tr><td></td><td></td><td>GREENGUARD Environmental Institute</td><td></td><td>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.</td><td>(1) 50% or more of carpet installed (by square feet) is third-party certified to NSF/ANSI 140. 5

(2) 50% or more of resilient flooring installed (by square feet) is third-party certified to NSF/ANSI 332. 5

(3) 50% or more of the insulation installed (by square feet) is third-party certified to EcoLogo CCD-016. 5

(4) 50% or more of interior wall coverings installed (by square feet) is third-party certified to NSF/ANSI 342 5

(5) 50% or more of the gypsum board installed (by square feet) is third-party certified to ULE ISR 100 5

(6) 50% or more of the door leafs installed (by number of door leafs) is third-party certified to ULE ISR 102 5</td><td></td><td></td></tr>
<tr><td>PC 168</td><td>643</td><td>John Gant
Glen Raven Inc
self</td><td>11.700 (Energy efficiency practices)
Revise as follows</td><td>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.</td><td>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.</td><td></td><td></td></tr>
<tr><td>PC 169</td><td>767</td><td>Eric Lacey
RECA
RECA</td><td>11.700 (Energy efficiency practices)
Revise as follows</td><td>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.</td><td>11.701.4.4.1 Fenestration

New Work. 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 ~~ENERGY STAR, or equivalent, or~~ Table ~~701.~~4.4.1 11.701.4.4.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m^2) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.

[Option 1: 2012 IECC]

Table 11.701.4.4.1
Fenestration Specifications

<table>
<tr><td>Climate Zones</td><td>U-Factor</td><td>SHGC</td></tr>
<tr><td></td><td colspan="2">Windows and Exterior Doors (maximum certified ratings)</td></tr>
<tr><td>1</td><td>0.50</td><td>0.25</td></tr>
<tr><td>~~1 and~~ 2</td><td>~~0.65~~ 0.40</td><td>~~0.40~~ 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></td><td colspan="2">Skylights and TDDs</td></tr>
<tr><td>1 ~~to 3~~</td><td>~~0.75~~ 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>3 ~~4 to 8~~</td><td>~~0.60~~ 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>
</table>
[1] 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]

Table 11.701.4.4.1
Fenestration Specifications

<table>
<tr><td>Climate Zones</td><td>U-Factor</td><td>SHGC</td></tr>
<tr><td></td><td colspan="2">Windows and Exterior Doors (maximum certified ratings)</td></tr>
</table></td><td>Mandatory</td><td></td></tr>
</table>

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution			TG Action	Reason
					1	1.20	0.30	Mandatory	
					~~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		

Re-Work. 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 ~~ENERGY STAR, or equivalent, or~~ Table ~~701.4.4.1~~ 11.701.4.4.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m^2) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.

[Option 1: 2012 IECC]

Table 11.701.4.4.1
Fenestration Specifications

Climate Zones	U-Factor	SHGC	
	Windows and Exterior Doors (maximum certified ratings)		
1	0.50	0.25	Mandatory
~~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	

[1] 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]

Table 11.701.4.4.1
Fenestration Specifications

Climate Zones	U-Factor	SHGC	
	Windows and Exterior Doors (maximum certified ratings)		
1	1.20	0.30	Mandatory
~~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	

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 170	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	**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: . ~~**11.901.8.1** Site-applied interior products are in accordance with one or more of the following standards:~~ ~~**(1)** Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)~~ ~~**(2)** CARB *Suggested Control Measure for Architectural Coatings*~~ ~~**(3)** GS-11~~ ~~**(4)** VOC limits in accordance with:~~ ~~**(a)** 50 grams/liter flat~~ ~~**(b)** 100 grams/liter non flat~~ ~~**(c)** 350 grams/liter clear wood varnish~~ ~~**(d)** 550 grams/liter clear wood lacquer~~ ~~**11.901.8.2** 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*.~~		
PC 171	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.	**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.		
PC 172	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	**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~~. ~~**(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*.~~ ~~**(2)** GS-36~~		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 173	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	**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. ~~**(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~~ New Section: **901.10.2** ~~11.901.9.1~~ **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: **(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		
PC 174	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 ~~903.2.1(1)~~ 602.1.1.1(1)or ~~903.2.1(2)~~ 602.1.1.1(2), as modified by Section ~~903.2.1(3)~~ 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, minimum thickness 10 mil (25mm), in direct contact with the concrete slab, with the sheeting joints lapped in accordance with Section ~~903.3~~ 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		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
					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 ~~903.2.1(1)~~ 602.1.1.1(1) or ~~903.2.1(2)~~ 602.1.1.1(2), as modified by Section ~~903.2.1(3)~~ 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 minimum thickness 10 mil (25mm), in direct contact with the concrete slab, with the sheeting joints lapped in accordance with Section ~~903.3~~ 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).		
PC 175	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.	~~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.~~ ~~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:~~ ~~5~~ ~~(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~~ ~~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.~~ ~~5~~ ~~(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.~~ ~~(2) GS-36~~ Replace section with language from 901.10 OR refer to section 901.10		
PC 176	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)		
PC 177	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		
PC 178	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.	**11.901.2 Wood-burning and gas Fireplaces and ~~fuel-burning~~ direct heating equipment ~~appliances~~.** 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: **Mandatory** **~~[Section 901.2.1(2)(a) is not mandatory.]~~**		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 179	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.	**11.901.2.1 New Work.** 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. **Mandatory**		
PC 180	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	~~**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.~~		
PC 181	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.	~~**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.~~ ~~**(c)** Wood stove and fireplace inserts, as defined in UL 1482 Section 3.8, are in accordance with the certification requirements of UL 1482 and are in accordance with the emission requirements of the EPA Certification and the State of Washington WAC 173-433-100(3).~~		
PC 182	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		
PC 183	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.	**11.903.4.2 Moisture control measures.** Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the new finish flooring to be applied. **Mandatory** **(1)** Building materials with visible mold are not installed or are cleaned or encapsulated prior to concealment and closing. **2** **(3)** The moisture content of lumber is sampled to ensure it does not exceed 19 percent prior to the surface and/or wall cavity enclosure. ~~**4**~~ **Mandatory**		
PC 184	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.		
PC 185	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 ***Staff Note: The revised remodeling provisions are appended at the end of the document due to the large size of the submission.***		

Chapter 12 Small Renovations

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 186	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?	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~~: ~~Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)~~ ~~CARB *Suggested Control Measure for Architectural Coatings*~~ ~~GS-11~~ ~~VOC limits in accordance with:~~ ~~(a) 50 grams/liter flat~~ ~~(b) 100 grams/liter non flat~~ ~~(c) 350 grams/liter clear wood varnish~~ ~~(d) 550 grams/liter clear wood lacquer~~ ~~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*~~		
PC 187	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.	12.1.1.4(c) Interior low-VOC adhesives and sealants. ~~A minimum of 85 percent of n~~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.~~ ~~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*.~~ ~~GS-36~~		
PC 188	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.	~~**12.1.1.1(b)** Demolition Waste. All waste classified as hazardous generated during demolition shall be properly handled and disposed.~~ ~~**12.1.1.1(c)** Demolition Waste. At least 50% of demolition waste not classified as hazardous is diverted from landfill.~~		
PC 189	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.	~~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. 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. GS-36~~ Refer to, or replace with, language from section 901.10		

<table>
<tr><th>PC #</th><th>Log ID</th><th>Full Name
Company Jurisdiction Entity Represented</th><th>Section Number
Requested Action</th><th>Comment</th><th>Proposed Resolution</th><th>TG Action</th><th>Reason</th></tr>
<tr><td>PC 190</td><td>768</td><td>Eric Lacey
RECA
RECA</td><td>12.1 Bathroom renovations
Revise as follows</td><td>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.</td><td>
12.1.1.2(a) Fenestration. 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 ~~ENERGY STAR, or equivalent, or~~ Table ~~701.4.4.1~~ 12.1.1.2(a). Decorative fenestration elements with a maximum area of 15 square feet (1.39 m^2) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.

[Option 1: 2012 IECC]

Table ~~701.4.4.1~~ 12.1.1.2(a)
Fenestration Specifications
<table>
<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>
<tr><td>1</td><td>0.50</td><td>0.25</td></tr>
<tr><td>~~1 and~~ 2</td><td>~~0.65~~ 0.40</td><td>~~0.40~~ 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></td><td colspan="2">Skylights and TDDs</td></tr>
<tr><td>1 ~~to 3~~</td><td>~~0.75~~ 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>3 ~~4 to 8~~</td><td>~~0.60~~ 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>
</table>
[1] 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]

Table ~~701.4.4.1~~ 12.1.1.2(a)
Fenestration Specifications
<table>
<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>
<tr><td>1</td><td>1.20</td><td>0.30</td></tr>
<tr><td>~~1 and~~ 2</td><td>0.65</td><td>~~0.40~~ 0.30</td></tr>
<tr><td>3</td><td>~~0.40~~ 0.50</td><td>~~0.40~~ 0.30</td></tr>
<tr><td>4 to 8</td><td>0.35</td><td>Any</td></tr>
<tr><td></td><td colspan="2">Skylights and TDDs</td></tr>
<tr><td>1 ~~to 3~~</td><td>~~0.75~~ 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>3 ~~4 to 8~~</td><td>~~0.60~~ 0.65</td><td>~~Any~~ 0.30</td></tr>
<tr><td>4 to 8</td><td>0.60</td><td>Any</td></tr>
</table>
</td><td>Mandatory

Mandatory</td><td></td></tr>
</table>

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 191	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?	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:~~ ~~Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)~~ ~~CARB *Suggested Control Measure for Architectural Coatings*~~ ~~GS-11~~ ~~VOC limits in accordance with:~~ ~~(a) 50 grams/liter flat~~ ~~(b) 100 grams/liter non flat~~ ~~(c) 350 grams/liter clear wood varnish~~ ~~(d) 550 grams/liter clear wood lacquer~~ ~~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*~~		
PC 192	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?	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.~~ ~~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.*~~ ~~GS-36~~		
PC 193	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.	~~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.~~ ~~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.~~ ~~GS-36~~ Replace section with language from 901.10 OR refer to section 901.10		
PC 194	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.	.		

<table>
<tr><th>PC #</th><th>Log ID</th><th>Full Name
Company Jurisdiction Entity Represented</th><th>Section Number
Requested Action</th><th>Comment</th><th>Proposed Resolution</th><th>TG Action</th><th>Reason</th></tr>
<tr><td>PC 195</td><td>770</td><td>Eric Lacey
RECA
RECA</td><td>12.2 Green kitchen remodel
Revise as follows</td><td>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.</td><td>12.2.3 Fenestration. Newly installed windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are NFRC-certified and in accordance with ~~ENERGY STAR, or equivalent, or~~ Table ~~701.4.4.1~~ 12.1.1.2(a), on an area-weighted average basis. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m^2) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.

[Option 1: 2012 IECC]

Table ~~701.4.4.1~~ 12.2.3
Fenestration Specifications
<table><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><tr><td>1</td><td>0.50</td><td>0.25</td></tr><tr><td>~~1 and~~ 2</td><td>~~0.65~~ 0.40</td><td>~~0.40~~ 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></td><td colspan="2">Skylights and TDDs</td></tr><tr><td>1 ~~to 3~~</td><td>~~0.75~~ 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>3 ~~4 to 8~~</td><td>~~0.60~~ 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></table>[1] 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]

Table ~~701.4.4.1~~ 12.1.1.2(a)
Fenestration Specifications
<table><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><tr><td>1</td><td>1.20</td><td>0.30</td></tr><tr><td>~~1 and~~ 2</td><td>0.65</td><td>~~0.40~~ 0.30</td></tr><tr><td>3</td><td>~~0.40~~ 0.50</td><td>~~0.40~~ 0.30</td></tr><tr><td>4 to 8</td><td>0.35</td><td>Any</td></tr><tr><td></td><td colspan="2">Skylights and TDDs</td></tr><tr><td>1 ~~to 3~~</td><td>~~0.75~~ 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>3 ~~4 to 8~~</td><td>~~0.60~~ 0.65</td><td>~~Any~~ 0.30</td></tr><tr><td>4 to 8</td><td>0.60</td><td>Any</td></tr></table></td><td>Mandatory

Mandatory</td><td></td></tr>
<tr><td>PC 196</td><td>828</td><td>Amy Schmidt
The Dow Chemical Company
Dow Building Solutions</td><td>12.2 Green kitchen remodel
Revise as follows</td><td>12.2.4 Insulation should be consistent with the base code as a minimum.</td><td>Insert values at base code levels at a minimum.</td><td></td><td></td></tr>
</table>

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 197	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?	**12.3.13 Paint and Stain** 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~~: ~~Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)~~ ~~CARB *Suggested Control Measure for Architectural Coatings*~~ ~~GS-11~~ ~~VOC limits in accordance with:~~ ~~(a) 50 grams/liter flat~~ ~~(b) 100 grams/liter non flat~~ ~~(c) 350 grams/liter clear wood varnish~~ ~~(d) 550 grams/liter clear wood lacquer~~ ~~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*~~		
PC 198	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.	.		
PC 199	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.		
PC 200	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.		
PC 201	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.	~~**12.4.2.5 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. The construction waste management plan includes information on the proper handling and disposal of hazardous wastes~~ ~~**12.4.2.6 Hazardous waste:** All waste classified as hazardous waste is properly handled and disposed of.~~		

<table>
<tr><th>PC #</th><th>Log ID</th><th>Full Name
Company Jurisdiction Entity Represented</th><th>Section Number
Requested Action</th><th>Comment</th><th>Proposed Resolution</th><th>TG Action</th><th>Reason</th></tr>
<tr><td>PC 202</td><td>703</td><td>Michael Cudahy
PPFA
PPFA</td><td>12.4 Small addition
Delete and substitute as follows</td><td>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.</td><td>~~12.4.4.6 Adhesives and sealant when building is occupied (per 901.9)~~
~~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.~~
~~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~~

Replace section with language from 901.10 OR refer to section 901.10</td><td></td><td></td></tr>
<tr><td>PC 203</td><td>771</td><td>Eric Lacey
RECA
RECA</td><td>12.4 Small addition
Revise as follows</td><td>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.</td><td>12.4.3.4 Fenestration (per ~~701.4.4.1~~ 703.1.6). NFRC-certified U-factor and SHGC windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with ~~ENERGY STAR, or equivalent, or~~ Table ~~701.4.4.1~~ 12.4.3.4, on an area-weighted average basis. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m^2) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.

[Option 1: 2012 IECC]

Table ~~701.4.4.1~~ 12.4.3.4
Fenestration Specifications
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[Option 2: 2009 IECC]

Table ~~701.4.4.1~~ 12.4.3.4
Fenestration Specifications
<table><tr><td>Climate Zones</td><td>U-Factor</td><td>SHGC</td></tr><tr><td></td><td colspan="2">Windows and Exterior Doors (maximum certified ratings)</td></tr><tr><td>1</td><td>1.20</td><td>0.30</td></tr><tr><td>~~1 and~~ 2</td><td>0.65</td><td>~~0.40~~ 0.30</td></tr><tr><td>3</td><td>~~0.40~~ 0.50</td><td>~~0.40~~ 0.30</td></tr><tr><td>4 to 8</td><td>0.35</td><td>Any</td></tr><tr><td></td><td colspan="2">Skylights and TDDs</td></tr><tr><td>1 ~~to 3~~</td><td>~~0.75~~ 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>3 ~~4 to 8~~</td><td>~~0.60~~ 0.65</td><td>~~Any~~ 0.30</td></tr><tr><td>4 to 8</td><td>0.60</td><td>Any</td></tr></table></td><td>Mandatory</td><td></td></tr>
</table>

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
PC 204	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) 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.		
PC 205	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 12.3.13 Paint and Stain, Non-Flat – ~~100~~ 50 Clear Wood Varnish – ~~350~~ 275 Clear Wood Lacquer – ~~550~~ 275		
PC 206	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 12.4.4.6 Architectural Coatings when building is occupied, Non-Flat – ~~100~~ 50 Clear Wood Varnish – ~~350~~ 275 Clear Wood Lacquer – ~~550~~ 275		
PC 207	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.		
PC 208	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" ***Staff Note: The revised remodeling provisions are appended at the end of the document due to the large size of the submission.***		
PC 209	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 effiency 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	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.		

PC #	Log ID	Full Name Company Jurisdiction Entity Represented	Section Number Requested Action	Comment	Proposed Resolution	TG Action	Reason
				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. 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 effiency 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.			

Chapter 13 Referenced Documents

<table>
<tr><th>PC #</th><th>Log ID</th><th>Full Name
Company Jurisdiction Entity Represented</th><th>Section Number
Requested Action</th><th>Comment</th><th>Proposed Resolution</th><th>TG Action</th><th>Reason</th></tr>
<tr><td>PC 210</td><td>772</td><td>Eric Lacey
RECA
RECA</td><td>1302 Referenced Documents
Revise as follows</td><td>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.</td><td>Chapter 13

Referenced Documents

<table><tr><td>IBC</td><td><s>2006</s> 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><s>2004</s> 2012</td><td>International Energy Conservation Code</td><td>B201.1</td></tr><tr><td>IECC</td><td><s>2006</s> 2012</td><td>International Energy Conservation Code</td><td>701.1.1, 702.2, 703.1.1</td></tr><tr><td>IMC</td><td><s>2006</s> 2012</td><td>International Mechanical Code</td><td>701.4.2.1, 704.6.1(1)</td></tr><tr><td>IPC</td><td><s>2006</s> 2012</td><td>International Plumbing Code</td><td>903.5.3</td></tr><tr><td>IRC</td><td><s>2006</s> 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></td><td></td><td></td></tr>
<tr><td>PC 211</td><td>787</td><td>Bridget Herring
Mathis Consulting Company
Mathis Consulting Company</td><td>1302 Referenced Documents
Revise as follows</td><td>Green standards are universally understood and expected to be above code programs. Failure to reference the current minimum code is misleading and unacceptable.</td><td><table><tr><td>IBC</td><td><s>200620092012</s></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><s>200620092012</s></td><td>International Energy Conservation Code</td><td></td></tr><tr><td>IMC</td><td><s>200620092012</s></td><td>International Mechanical Code</td><td></td></tr><tr><td>IPC</td><td><s>200620092012</s></td><td>International Plumbing Code</td><td></td></tr><tr><td>IRC</td><td><s>200620092012</s></td><td>International Residential Code</td><td></td></tr></table></td><td></td><td></td></tr>
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Public Comment on Remodeling

Attached are proposed remodeling provisions submitted by Sullivan CGP as chair and on behalf of Task Group 7 (November 2011) for the following public comments:

1. PC159
2. PC162
3. PC185
4. PC208

PC159 / PC162 / PC185 / PC208

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:

[(consumption before remodel - consumption after remodel)/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:

[(consumption before remodel - consumption after remodel)/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	TBD	TBD	TBD	TBD

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 is 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
11.500 LOT DESIGN, PREPARATION, AND DEVELOPMENT	
11.500.0 Intent. This section applies to the lot and changes to the lot due to remodeling of an existing building.	
11.501 LOT SELECTION	
11.501.2 Multi-modal transportation. 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.	**3**
(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].	**3**
(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.	**TBD**
11.502 PROJECT TEAM, MISSION STATEMENT, AND GOALS	
11.502.1 Project team, mission statement, and goals. 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.	**4**
11.503 LOT DESIGN	
11.503.0 Intent. 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. **(To be awarded points allocated for design the intent of the design is implemented.)**	

GREEN BUILDING PRACTICES	POINTS
11.503.1 Natural resources. 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**
11.503.2 Slope disturbance. 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**
11.503.3 Soil disturbance and erosion. 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**

11.503.4 Storm water management. 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**

11.503.5 Landscape plan. A landscape plan for the lot is developed to limit water and energy use while preserving or enhancing the natural environment. **(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)**	
(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**

11.503.6 Wildlife habitat. 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**

11.503.7 Environmentally sensitive areas. 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.

11.504.1 On-site supervision and coordination. 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**

11.504.2 Trees and vegetation. 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**

11.504.3 Soil disturbance and erosion implementation. 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.

11.505.1 Driveways and parking areas. 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
(3) Structured parking is utilized to reduce the footprint of surface parking areas.	
(a) 25 % to less than 50%	2
(b) 50% to 75%	3
(c) greater than 75%	4

11.505.2 Heat island mitigation. 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.	
(2) Light-colored hardscaping: Horizontal hardscaping materials are installed with a solar reflectance index of 29 or greater.	
(3) Permeable hardscaping: Permeable hardscaping materials are installed.	
(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). **(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.	

11.505.3 Density. 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^2)	**4**
(2) 14 to less than 21 dwelling units per acre (per 4047 m^2)	**7**
(3) 21 or greater dwelling units per acre (per 4047 m^2)	**10**

11.505.4 Mixed-use development. The lot contains a mixed-use building.	**6**

11.505.5 Community Garden(s). 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.	**TBD**

GREEN BUILDING PRACTICES	POINTS

11.601
QUALITY OF CONSTRUCTION MATERIALS AND WASTE

11.601.0 Intent. Design and construction practices that minimize the environmental impact of the building materials are incorporated, environmentally efficient building systems and materials are incorporated, and waste generated during construction is reduced.

11.601.1 Conditioned floor area. 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.		
(1)	less than or equal to 1,000 square feet (93 m^2)	**15**
(2)	less than or equal to 1,500 square feet (139 m^2)	**12**
(3)	less than or equal to 2,000 square feet (186 m^2)	**9**
(4)	less than or equal to 2,500 square feet (232 m^2)	**6**
(5)	greater than 4,000 square feet (372 m^2)	**Mandatory**
	(For every 100 square feet (9.29 m^2) over 4,000 square feet (372 m^2), one point is to be added in Table 305.2.4for each performance level.)	
Multi-Unit Building Note*: For a multi-unit building, use a weighted average of the individual unit sizes in qualifying for available points.*		
11.601.2 Material usage. Newly installed structural systems are designed or construction techniques are implemented that reduce and optimize material usage.		**9 Points Max**
	(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)	
(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**

11.601.3 Building dimensions and layouts. Building dimensions and layouts are designed to reduce material cuts and waste. This practice is used for a minimum of 80 percent of the 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)	
(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
11.601.4 Framing and structural plans. 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**
11.601.5 Prefabricated components. Precut or preassembled components, or panelized or precast assemblies are utilized for a minimum of 90 percent for the following system or building:	
(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**
11.601.6 Stacked stories. Stories above grade are stacked, such as in 1½-story, 2-story, or greater structures. The area of the upper story is a minimum of 50 percent of the area of the story below, based on areas with a minimum ceiling height of 7 feet (2134 mm).	**8 Points Max**
(1) first stacked story	**4**
(2) for each additional stacked story	**2**
11.601.7 Site-applied finishing materials. 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: **(Points awarded for each type (a-g) of material or assembly.)**	**5**
(2) 50 percent to less than 90 percent (after the remodel) 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 (after the remodel) 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	
11.601.8 Foundations. 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
11.602 **ENHANCED DURABILITY AND REDUCED MAINTENANCE**	
11.602.0 Intent. Design and construction practices are implemented that enhance the durability of materials and reduce in-service maintenance.	
11.602.1 Moisture Management – Building Envelope	
11.602.1.1 Capillary breaks	
11.602.1.1.1 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):	**Mandatory**
Exception: This practice is not mandatory for existing slabs without apparent moisture problem.	
(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.	
11.602.1.1.2 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**
11.602.1.2 Foundation waterproofing. 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**
11.602.1.3 Foundation drainage.	
11.602.1.3.1 Where required by the ICC IRC or IBC for habitable and usable spaces below grade, exterior drain tile is installed.	**Mandatory**
Exception: This practice is not mandatory for existing space without apparent moisture problem.	
11.602.1.3.2 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**
11.602.1.4 Crawlspaces.	

GREEN BUILDING PRACTICES	POINTS
11.602.1.4.1 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.	
(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.	**6**
(2) Walls. Damp-proof walls are provided below finished grade.	**Mandatory**
Exception: This practice is not mandatory for existing walls without apparent moisture problem.	
11.602.1.4.2 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:	
(1) a concrete slab over lapped 6 mil polyethylene or polystyrene.	**10**
(2) 6 mil polyethylene sheeting, lapped a minimum of 6 inches (152 mm), and taped at the seams.	**8**
11.602.1.5 Termite barrier. 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).	**4**
11.602.1.6 Termite-resistant materials. Termite-resistant materials are used as follows:	
(1) In areas of slight to moderate termite infestation probability [as defined by Figure 6(3)] for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings within the first 2 feet (610 mm) above the top of the foundation.	**2**
(2) In areas of moderate to heavy termite infestation probability [as defined by Figure 6(3)] for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings within the first 3 feet (914 mm) above the top of the foundation.	**4**
(3) In areas of very heavy termite infestation probability [as defined by Figure 6(3)] for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings.	**6**
11.602.1.7 Moisture control measures	
11.602.1.7.1 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**
(2) Insulation in cavities is dry in accordance with manufacturer's installation instructions when enclosed (e.g., with drywall).	**Mandatory** **2**
(3) The moisture content of lumber is sampled to ensure it does not exceed 19 percent prior to the surface and/or cavity enclosure.	**4**

GREEN BUILDING PRACTICES	POINTS
11.602.1.7.2 Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the finish flooring to be applied.	**2**
11.602.1.8 Water-resistive barrier. Where required by the ICC IRC or IBC, a water-resistive barrier and/or drainage plane system is installed behind newly installed exterior veneer and/or siding and where there is evidence of a moisture problem.	**Mandatory**
11.602.1.9 Flashing. 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.	
(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 eave~~s~~ and rake edges.	**Mandatory**
Exception: These practices are not mandatory for existing building elements without apparent moisture problem.	
(2) All window head and jamb flashing are self-adhered flashing complying with AAMA 711-07.	**2**
(3) Pan flashing is installed at sills of all exterior windows and doors	**2**
(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.	**2**
(5) A rainscreen wall design is used for exterior wall assemblies	**2 Points Max**
(a) a system designed with minimum ¼" 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	**2**
(b) either a cladding material or a water-resistive barrier with enhanced drainage, meeting 75% drainage efficiency requirement of ASTM E2273.	**1**
(6) A drip cap is provided above windows and doors that are not flashed or protected by covering in accordance with Section 11.602.1	**2**
(7) Through wall flashing is installed at transitions between wall cladding materials, or wall construction types.	**2**

<table>
<tr><th>GREEN BUILDING PRACTICES</th><th>POINTS</th></tr>
<tr><td></td><td></td></tr>
<tr><td>(8) Flashing is installed at expansion joints in stucco walls</td><td>2</td></tr>
<tr><td></td><td></td></tr>
<tr><td>11.602.1.10 Exterior doors. Entries at exterior door assemblies, inclusive of side lights, are covered by one of the following methods to protect the building from the effects of precipitation and solar radiation. A projection factor of 0.375 minimum is provided. Eastern- and western-facing entries in Climate Zones 1, 2, and 3, as determined in accordance with Figure 6(1) 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).</td><td>5 Points Max</td></tr>
<tr><td></td><td></td></tr>
<tr><td>(a) installing a porch roof or awning
(b) extending the roof overhang
(c) recessing the exterior door</td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>(1) main entrance door</td><td>3</td></tr>
<tr><td></td><td></td></tr>
<tr><td>(2) additional covered door assembly</td><td>1</td></tr>
<tr><td></td><td></td></tr>
<tr><td>11.602.1.11 Tile backing materials. Tile backing materials installed under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325.</td><td>Mandatory</td></tr>
<tr><td>Exception: This practice is not mandatory for existing tile surfaces without apparent moisture problem.</td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>11.602.1.12 Roof overhangs. 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.

Table 11.602.2
Minimum Roof Overhang for One- & Two-Story Buildings
<table><tr><th>Inches Rainfall (1)</th><th>Eave Overhang (Inches)</th><th>Rake Overhang (Inches)</th></tr><tr><td></td><td></td><td></td></tr><tr><td>≤40</td><td>12</td><td>12</td></tr><tr><td>>41 and ≤70</td><td>18</td><td>12</td></tr><tr><td>> 70</td><td>24</td><td>12</td></tr></table>(1) Annual mean total precipitation in inches is in accordance with Figure 6(2).
For SI: 12 inches = 304.8 mm</td><td>4</td></tr>
<tr><td>11.602.1.13 Drip edge. Drip edge is installed at eaves and gable roof edges.</td><td>3</td></tr>
<tr><td></td><td></td></tr>
<tr><td>11.602.1.14 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 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.</td><td>Mandatory</td></tr>
<tr><td></td><td></td></tr>
<tr><td>11.602.1.15 Architectural features. Architectural features that increase the potential for the water intrusion are avoided:</td><td></td></tr>
<tr><td>(1) No roof configurations that create horizontal valleys in roof design.</td><td>2</td></tr>
<tr><td>(2) No recessed windows and architectural features that trap water on horizontal surfaces.</td><td>2</td></tr>
<tr><td>(3) All horizontal ledgers are sloped away to provide gravity drainage as appropriate for the application.</td><td>Mandatory</td></tr>
</table>

GREEN BUILDING PRACTICES	POINTS
11.602.2 Roof surfaces. 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: **(1)** products that are in accordance with the ENERGY STAR® cool roof certification or equivalent	**3**
(2) a vegetated roof system	
11.602.3 Roof water discharge. A gutter and downspout system or splash blocks and effective grading are provided to carry water a minimum of 5 feet (1524 mm) away from perimeter foundation walls.	**4**
11.602.4 Finished grade.	
11.602.4.1 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.	**Mandatory**
11.602.4.2 The final grade is sloped away from the edge of the building at a minimum slope of 5 percent.	**1**
11.602.4.3 Water is directed to drains or swales to ensure drainage away from the structure.	**1**

11.603 REUSED OR SALVAGED MATERIALS

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.	
11.603.1 Reuse of existing building. Major elements or components of existing buildings and structures are reused, modified, or deconstructed for later use in lieu of demolition. **(Points awarded for every 200 square feet (18.5 m^2) of floor area.)**	**1** **12 Points Max**
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. **(Points awarded per 1% of salvaged materials used based on the total construction cost.)**	**1** **9 Points Max**
11.603.3 Scrap materials. Facilitation for sorting and reuse of scrap building material (e.g., provide a central storage area or dedicated bins).	**4**

11.604 RECYCLED-CONTENT BUILDING MATERIALS

11.604.1 Recycled content. Building materials with recycled content are used for two minor and/or two major components of the building.	**Points per Table 11.604.1**

GREEN BUILDING PRACTICES	POINTS

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.)

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 waste.	**6**

11.605.2 On-site recycling. On-site recycling measures following applicable regulations and codes are implemented, such as the following:	**7**
(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.	

11.605.3 Recycled construction materials. Construction materials (e.g., wood, cardboard, metals, drywall, plastic, asphalt roofing shingles, or concrete) are recycled offsite.	**6 Points Max**
(1) a minimum of two types of materials are recycled	**3**
(2) for each additional recycled material	**1**

11.605.4 Hazardous Waste 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.	**Mandatory**

11.606 RENEWABLE MATERIALS

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

GREEN BUILDING PRACTICES	POINTS
11.606.1 Biobased products. 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)	**8 Points Max**
(1) Two types of biobased materials are used, each for more than 0.5 percent of the project's projected building material cost.	**3**
(2) Two types of biobased materials are used, each for more than 1 percent of the project's projected building material cost.	**6**
(3) For each additional biobased material used for more than 0.5 percent of the project's projected building material cost.	**1** **2 Points Max**

11.606.2 Wood-based products. Wood or wood-based products are certified to the requirements of one of the following recognized product programs: **(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	
(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**

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

11.607
RECYCLING

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

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

11.608
RESOURCE-EFFICIENT MATERIALS

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

11.609
REGIONAL MATERIALS

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

11.610
LIFE CYCLE ANALYSIS

11.610.1 Life cycle analysis. 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.	**15 Points Max**
11.610.1.1 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.	**15**
11.610.1.2 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 LCA tool that incorporates data methods compliant with ISO 14044 or other recognized standards that compare the environmental impact of products or assemblies.	**10 Points Max**
(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** **10 Points Max**
(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	**Points per Table 11.610.1.2(2)** **10 Points Max**

elements, insulation, and wall coverings:
(a) exterior walls
(b) roof/ceiling
(c) interior walls or ceilings
(d) intermediate floors

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 11.610.1.2(2)
Assembly LCA

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

11.611 INNOVATIVE PRACTICES

11.611.1 Manufacturer's environmental management system concepts. 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. **(1 point awarded per percent.)**	**10 points Max**

11.611.2 Sustainable Products. 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.		**4 Points Max**
(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**

11.611.3 Universal Design Elements. Dwelling incorporates one or more of the following universal design elements.	**10 Points Max**

(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**
	Note: *Reasonable construction tolerances are allowed.*	

11.611.4 Food waste disposers. A minimum of one food waste disposer is installed at the primary kitchen sink.	**1**

GREEN BUILDING PRACTICES	POINTS
11.701 MINIMUM ENERGY EFFICIENCY REQUIREMENTS	
11.701.4 Mandatory practices.	
11.701.4.1 HVAC systems.	
11.701.4.1.1 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.	**Mandatory**
11.701.4.1.2 Radiant and hydronic space heating. 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).	**Mandatory**
11.701.4.2 Duct systems.	
11.701.4.2.1 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.	**Mandatory**
11.701.4.2.2 Supply ducts. Building cavities are not used as supply ducts. Existing building cavities currently used as supply ducts exposed during the remodel are lined.	**Mandatory**
11.701.4.2.3 Duct system sizing. New or modified Duct system is sized and designed in accordance with ACCA Manual D or equivalent.	**Mandatory**
11.701.4.3 Insulation and air sealing.	
11.701.4.3.1 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:	**Mandatory**
(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.	
11.701.4.3.2 Air sealing and insulation. 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).	**Mandatory**

GREEN BUILDING PRACTICES	POINTS

(1) Testing option. 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:

(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.

(2) Visual inspection option. 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.

Table 11.701.4.3.2(2)
Air Barrier and Insulation Inspection Component Criteria

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.
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.

GREEN BUILDING PRACTICES	POINTS
11.701.4.3.3 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/m2), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/ m2), 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.	
11.701.4.3.4 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.	**Mandatory**
11.701.4.4 High-efficacy lighting. 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.	**Mandatory**
11.701.4.5 Boiler supply piping. Boiler supply piping is insulated in unconditioned spaces accessible during the remodel.	**Mandatory**

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.	

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
11.901 POLLUTANT SOURCE CONTROL	
11.901.0 Intent. Pollutant sources are controlled.	
11.901.1 Space and water heating options	
11.901.1.1 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**
11.901.1.2 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**
11.901.1.3 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)	**TBD**
(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**
11.901.1.4 Newly installed 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**
11.901.1.5 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.	**TBD**
11.901.1.6 The following electric equipment is installed:	
(1) heat pump air handler in unconditioned space	**2**
(2) heat pump air handler in conditioned space	**5**

GREEN BUILDING PRACTICES	POINTS
11.901.2 Solid fuel-burning appliances. **Exception: These practices are not mandatory for existing fuel burning appliances.**	**Mandatory**
11.901.2.1 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 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.	
(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.	
11.901.2.2 Fireplaces, woodstoves, pellet stoves, or masonry heaters are not installed.	**7**

11.901.3 Garages. 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**

GREEN BUILDING PRACTICES	POINTS
11.901.4 Wood materials. 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:	**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. **(Points awarded per product group.)**	**2**
(3) Hardwood plywood in accordance with HPVA HP-1. **(Points awarded per product group.)**	**2**
(4) Particleboard, MDF, or hardwood plywood is in accordance with CPA 3. **(Points awarded per product group.)**	**3**
(5) Composite wood or agrifiber panel products contain no added urea-formaldehyde or are in accordance with the CARB *Composite Wood Air Toxic Contaminant Measure Standard*. **(Points awarded per product group.)**	**4**
(6) Non-emitting products. **(Points awarded per product group.)**	**4**

11.901.5 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*.	**3**

11.901.6 Carpets. Carpets 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 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.	
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^3 (13.5 ppb).	
(a) carpet	**6**
(b) carpet cushion	**2**
(c) carpet adhesives	**2**

GREEN BUILDING PRACTICES	POINTS
11.901.7 Hard-surface flooring. 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:	**6**
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^3 (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	

11.901.8 Wall coverings. 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.	**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).	

11.901.9 Architectural coatings. 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:	
11.901.9.1 Site-applied interior architectural coatings, which are inside the water proofing envelope, are in accordance with one or more of the following:	**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 *Suggested Control Measure for Architectural Coatings* (see Table 11.901.9.1).	

GREEN BUILDING PRACTICES	POINTS

Table 11.901.9.1
VOC Content Limits For Architectural Coatings[c,d,e]

Coating Category	LIMIT[a] (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	120[b]
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

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 11.806.3(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.

11.901.9.2 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/m3 (13.5 ppb).	
11.901.9.3 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.	***MANDATORY***

11.901.10 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 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 apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).	
(2)	GreenSeal GS-36 Adhesives for Commercial Use	**5**
	OR	
(3)	SCAQMD Rule 1168 (see Table 11.901.10.2), excluding products that are purchased in containers that are less than 16 ounces	**5**

Table 11.901.10.2
Site Applied Adhesive And Sealants Voc Limits[a,b]

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 Porous	 250 775
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.

11.901.11 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).	

11.901.12 Carbon monoxide (CO) alarms. 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.	**3**

11.901.13 Building entrance pollutants control. Pollutants are controlled at all main building entrances by one of the following methods:	

GREEN BUILDING PRACTICES	POINTS
(1) Exterior grilles or mats are installed in a fixed manner and may be removable for cleaning.	**1**
(2) Interior grilles or mats are installed in a fixed manner and may be removable for cleaning.	**1**
901.14 Non-smoking areas. 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.	**1**
(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.	**1**
11.901.15 For buildings constructed before 1978, lead safe work practices are used during the remodeling.	

11.902 POLLUTANT CONTROL

11.902.0 Intent. Pollutants generated in the building are controlled.

11.902.1 Spot ventilation.	
11.902.1.1 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.	**Mandatory**
(2) Clothes dryers are vented to the outdoors.	**Mandatory**
(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.	**8**
11.902.1.2 Bathroom and/or laundry exhaust fan is provided with an automatic timer and/or humidistat:	**11 Points Max**
(1) for first device	**5**
(2) for each additional device	**2**
11.902.1.3 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.	**8**
11.902.1.4 Exhaust fans are ENERGY STAR, as applicable.	**12 Points Max**
(1) ENERGY STAR, or equivalent, fans **(Points awarded per fan.)**	**2**

GREEN BUILDING PRACTICES	POINTS
(2) ENERGY STAR, or equivalent, fans operating at or below 1 sone **(Points awarded per fan.)**	**3**

11.902.2 Building ventilation systems	
11.902.2.1 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**
11.902.2.2 Ventilation airflow is tested to achieve the design fan airflow at point of exhaust in accordance with Section 11.902.2.1.	**8**
11.902.2.3 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**

11.902.3 Radon control. Radon control measures are in accordance with ICC IRC Appendix F. Zones are defined in Figure 9(1). **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.**	
(1) Buildings located in Zone 1	**Mandatory**
(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**

11.902.4 HVAC system protection. 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.	

11.902.5 Central vacuum systems. Central vacuum system is installed and vented to the outside.	**5**
11.902.6 Living space contaminants. 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.

11.903.1 Plumbing	
11.903.1.1 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**
11.903.1.2 Plumbing is not installed in unconditioned spaces.	**5**

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

11.903.3 Relative humidity. 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: **(Points not awarded in remaining climate zones.)**	**8**
(1) additional dehumidification system(s)	
(2) central HVAC system equipped with additional controls to operate in dehumidification mode	

11.904 INNOVATIVE PRACTICES

11.904.1 Humidity monitoring system. 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**

11.904.2 Kitchen exhaust. 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

11.1001
BUILDING OWNERS' MANUAL FOR ONE- AND TWO-FAMILY DWELLINGS

11.1001.0 Intent. Information on the building's use, maintenance, and green components is provided.

11.1001.1 A building owner's manual is provided that includes the following, as available and applicable. **(Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)**		**1**
(1)	A green building program certificate or completion document.	**Mandatory**
(2)	List of green building features (can include the national green building checklist).	**Mandatory**
(3)	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.	**Mandatory**
(4)	Information on local recycling programs.	
(5)	Information on available local utility programs that purchase a portion of energy from renewable energy providers.	
(6)	Explanation of the benefits of using energy-efficient lighting systems [e.g., compact fluorescent light bulbs, light emitting diode (LED)] in high-usage areas.	
(7)	A list of practices to conserve water and energy.	
(8)	Local public transportation options.	
(9)	A diagram showing the location of safety valves and controls for major building systems.	
(10)	Where frost-protected shallow foundations are used, owner is informed of precautions including: **(a)** instructions to not remove or damage insulation when modifying landscaping. **(b)** providing heat to the building as required by the ICC IRC or IBC. **(c)** keeping base materials beneath and around the building free from moisture caused by broken water pipes or other water sources.	
(11)	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).	
(12)	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.	
(13)	Maintenance checklist.	
(14)	List of common hazardous materials often used around the building and instructions for proper handling and disposal of these materials.	

GREEN BUILDING PRACTICES	POINTS
(15) Information on organic pest control, fertilizers, deicers, and cleaning products. **(16)** Information on native landscape materials and/or those that have low-water requirements. **(17)** Information on methods of maintaining the building's relative humidity in the range of 30 percent to 60 percent. **(18)** Instructions for inspecting the building for termite infestation. **(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 For buildings originally built before 1978, the EPA publications "Reducign Lad Hazards When Remodeling Your Home" and "Abestos in Your Home: A Homeowners Guide"	

11.1002
TRAINING OF BUILDING OWNERS ON OPERATION AND MAINTENANCE FOR ONE- AND TWO-FAMILY DWELLINGS AND MULTI-UNIT BUILDINGS

11.1002.1 Training of building owners. 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:	**Mandatory**
(1) HVAC filters **(2)** thermostat operation and programming **(3)** lighting controls **(4)** appliances operation **(5)** water heater settings and hot water use **(6)** fan controls **(7)** recycling practices	

11.1003
CONSTRUCTION, OPERATION, AND MAINTENANCE MANUALS AND TRAINING FOR MULTI-UNIT BUILDINGS

11.1003.0 Intent. 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
11.1003.1 Building construction manual. A building construction manual, including five or more of the following, is compiled and distributed in accordance with Section 11.1003.0. **(Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)**	**1**
(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 *National Green Building Standard™*, 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.	

11.1003.2 Operations manual. 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. ***(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.	

GREEN BUILDING PRACTICES	POINTS
(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. **(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.	

11.1003.3 Maintenance manual. 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. ***(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.	

11.**1004**
INNOVATIVE PRACTICES

11.1004.1 (Reserved)	

PC159 / PC162 / PC185 / PC208

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	• 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.
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.

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/m2), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/ m2), 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 Porous	 250 775
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 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.