Public Comments on 2024 National Green Building Standard Draft 2 with Task Group Recommendations

August 9, 2024

Contents

Chapter 1: Scope and Administration

PC201 ID 8460	101 GENERAL
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	Every location where "multifamily" is referenced, it should say multifamily and mixed-use
Reason:	Every location where "multifamily" is referenced, it should say "multifamily and mixed-use" to better align with the scope of the NGBS. Alternatively, if the definition of multifamily is revised as submitted, this might resolve the issue.
TG Recommendation:	Accept
TG Vote:	9-0-0
TG Modification:	
TG Reason:	

Chapter 2: Definitions

PC202 ID 8439	202 DEFINITIONS
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	WATER FACTOR. Value that conveys clothes washer efficiency, calculated by the quantity of water, in gallons per cycle (Q), divided by a clothes washing machine clothes container capacity in cubic feet (C). The equation is WF=Q/C.
Reason:	Existing definition is poor. It describes how the value is calculated but not how the value is used/its purpose.
TG Recommendation:	Accept as Modified
TG Vote:	4-0-1
TG Modification:	*Modify as follows:* ~~WATER FACTOR. the quantity of water, in gallons per cycle (Q), divided by a clothes washing machine clothes container capacity in cubic feet (C). The equation is WF=Q/C.~~ INTEGRATED WATER FACTOR (IWF). a measure of water efficiency that considers gallons of water consumed per cubic foot of capacity. The lower the IWF, the more water efficient the clothes water.
TG Reason:	Alignment with ENERGY STAR definition. Also, IWF is utilized in the document, not WF, so needed to correct.

PC203 ID 8457	202 DEFINITIONS
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	~~PERFORMANCE PATH. An alternative set of standards (to the Prescriptive Path) with defined performance metrics, as specified in Chapter 7 of this Standard.~~ ~~PRESCRIPTIVE PATH. A set of provisions in a code or standard that shall be adhered to for compliance.~~
Reason:	The definition for "Performance Path" is outdated, as there are now multiple performance and prescriptive paths for both energy and water compliance paths (including ERI and WRI) across multiple chapters (7, 8, and 11). I suggest deleting definitions for both "Performance Path" and "Prescriptive Path."
TG Recommendation:	Accept
TG Vote:	5-0-1
TG Modification:	
TG Reason:	Support statement from submitter

PC204 ID 8458	202 DEFINITIONS
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)

Comment:	**MULTIFAMILY BUILDING.** A building, which can be mixed-use, containing multiple dwelling units or sleeping units and classified as R-2 or I-1 under the IBC.
Reason:	Definition for Multifamily Building is less inclusive than the NGBS scope of 101.2
TG Recommendation:	Accept
TG Vote:	9-0-0
TG Modification:	
TG Reason:	

PC205 ID 8459	**202 DEFINITIONS**
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	**NEW CONSTRUCTION.** ~~Construction of a new building.~~ Building that has a certificate of occupancy 12 months or fewer prior to NGBS registration.
Reason:	Definition for New Construction is overly simple. This definition would be better if aligned with 305.2.1.
TG Recommendation:	Accept as Modified
TG Vote:	9-0-0
TG Modification:	**NEW CONSTRUCTION.** ~~Construction of a new building.~~ Building for which an active permit has been issued or for which a Certificate of Occupancy has been issued within the last 12 months.
TG Reason:	The TG modified the proposed language because they did not want to reference NGBS registration within the definition.

PC206 ID 8496	**202 DEFINITIONS**
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	**High Intersection Density.** Defined under "Area of High Intersection Density."
Reason:	"Area of High Intersection Density" is defined but most people look for the term "High Intersection Density." Recommend adding a note under "High Intersection Density" to see the defined term "Area of High Intersection Density.'
TG Recommendation:	Accept
TG Vote:	3-0-0
TG Modification:	
TG Reason:	

PC207 ID 8493	**Chapter 2 - New Section**
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)

Comment:	**Hazardous Waste**. A solid waste, or combination of solid waste, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (a) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. A solid waste is a hazardous waste if it is specifically listed by the US EPA as a known hazardous waste or meets the characteristics of a hazardous waste.
Reason:	The term hazardous waste is not defined and there are several mandatory practices that relate to hazardous waste. We propose the following definition to clarify what is included.
TG Recommendation:	Accept as Modified
TG Vote:	7-0-1
TG Modification:	**Hazardous Waste**. A solid waste, or combination of solid waste, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (a) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. A solid waste is a hazardous waste if it is specifically listed by the US EPA as a hazardous waste or as determined by the AHJ.
TG Reason:	Clarifies who determines waste as hazardous.

Chapter 3: Compliance Method

PC208 ID 8482	305.2 Whole-building rating criteria
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	305.2.6.3 EPA water Score. The Multifamily property shall be scored in the EPA ENERGY STAR Portfolio Manager tool following EPA requirements and guidance or equivalent tool or program. The last month in the 12-month water data period for this water score shall be within 9 ~~6~~ months prior to acceptance by the Adopting Entity. Where total property water data is not available, then the score can be generated with 100% actual common and non-residential area water usage and not less than 80% of the actual tenant water meters, which has been extrapolated to 100%. All water data and extrapolation methods shall be reported. The level awarded for the Water Section shall be based on Table 305.2.6.3.
Reason:	TG7 supports changing the time period for water data from 6 months to 9 months. This would better accommodate regions where water bill data may only be distributed every 2 or 3 months.
TG Recommendation:	Accept
TG Vote:	9-0-0
TG Modification:	
TG Reason:	

PC209 ID 8487	305.2 Whole-building rating criteria
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	If a building can demonstrate through documentation approved by the Adopting Entity that the remodel activities started prior to project registration, the energy baseline (consumption per square foot before remodel) can be calculated based on data and building systems that were existing in the building up to 3 years prior to project registration. Remodeling activities conducted during the 3-year lookback period that will be included as part of the consumption reduction analysis are subject to all applicable NGBS mandatory practices.
Reason:	Section 305.2.5.1 identifies that remodeling activities to improve energy efficiency performed prior to project registration can contribute toward the building's energy consumption reduction target. It is not clear whether remodel activities conducted during the "3-year lookback period" are subject to the NGBS mandatory practices.
TG Recommendation:	Accept as Modified
TG Vote:	9-0-0
TG Modification:	Where a building can demonstrate through documentation approved by the Adopting Entity that the remodel activities started prior to project registration, the energy baseline (consumption per square foot before remodel) can be calculated based on data and building systems that were existing in the building up to 3 years prior to project registration. Remodeling activities conducted during the 3-year lookback period that will be included as part of the consumption reduction analysis are subject to all applicable NGBS mandatory practices. Accepted the modification but changed "if" to Where" at start of sentence
TG Reason:	TG wanted to approve the proposal but needed an editorial change for consistency with how the NGBS is written.

PC210 ID 8488	305.2 Whole-building rating criteria
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	Where a building can demonstrate through documentation approved by the Adopting Entity that the remodel activities started prior to project registration, the water baseline (consumption per unit before remodel) shall be calculated based on data and building systems that existed in the building up to 3 years prior to project registration. Remodeling activities conducted during the 3-year lookback period that will be included as part of the consumption reduction analysis are subject to all applicable NGBS mandatory practices.
Reason:	Section 305.2.6.1 identifies that remodeling activities to improve water efficiency performed prior to project registration can contribute toward the building's water consumption reduction target. It is not clear whether remodel activities conducted during the "3-year lookback period" are subject to the NGBS mandatory practices. This change also updates the reference to water baseline to align with changes made earlier in 305.2.6.1.
TG Recommendation:	Accept
TG Vote:	9-0-0
TG Modification:	
TG Reason:	

Chapter 4: Site Design and Development

PC211 ID 8461	403.6 Landscape plan
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	Points need to be assigned to the various sub-practices, however, I am unsure if there should be MORE or LESS points for more turf. The TG needs to discuss and decide on what they want to incentivize.
Reason:	Points are missing from 403.6.8
TG Recommendation:	Disapprove
TG Vote:	3-0-0
TG Modification:	
TG Reason:	The TG dealt with this proposal for PC 212 below, this was redundant.

PC212 ID 8497	403.6 Landscape plan
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	(8) For landscaped vegetated areas, the maximum percentage of all artificial turf areas is (only applicable in Dry climate zones in accordance with Table A200): ~~(a) 0%~~ (b) greater than 0% to less than or equal to 20% 1 point (c) greater than 20% to less than or equal to 40% 2 points (d) greater than 40% to less than or equal to 60% 3 points
Reason:	403.6(8) is missing points. In addition, points should not be awarded for zero % turf - if there is benefit to having artificial turf, as presumed by the practice, then having no turf shouldn't earn points.
TG Recommendation:	Accept as Modified
TG Vote:	3-0-0
TG Modification:	*strike (a) and renumber b, c, and d to a,b, and c* (8) For landscaped vegetated areas, the maximum percentage of all artificial turf areas is (only applicable in Dry climate zones in accordance with Table A200): ~~(a) 0%~~ ~~(b)~~ (a) greater than 0% to less than or equal to 20% 1 point ~~(c)~~ (b) greater than 20% to less than or equal to 40% 2 points ~~(d)~~ (c) greater than 40% to less than or equal to 60% 3 points

TG Reason:	The TG said that (b) includes 0% in b and therefore it doesn't make sense to award points just for 0% for (a). The revision is what the TG intends to incentivize with points.

PC213 ID 8462	**405.6 Multi-modal transportation**
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	(5) The developer has plans to work with bike ~~Bike~~ sharing programs ~~participate with the developer~~ and bike sharing facilities ~~for bike sharing~~ are installed on the property. ~~planned for and constructed~~
Reason:	The practice is oddly worded and needs revision.
TG Recommendation:	Accept as Modified
TG Vote:	3-0-0
TG Modification:	*Modify 2024 NGBS Draft 2 as Follows:* *Replace current text of 405.6 (5) with the following:* (5) The developer has a contract with a bike sharing program to install bike sharing facilities on or adjacent to the property.
TG Reason:	The rewrite clarifies the actual process that would be used to implement bike sharing on the site.

PC214 ID 8463	**405.6 Multi-modal transportation**
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	(7) A site is selected within a census block group that, compared to its region, has above-average transit access to employment as calculated using the Transit Access Measures within the EPA's Smart Location Database: ~~(a) Access is within the top quartile for the region~~ ~~(b) Access is within the second quartile for the region~~ (a) Access is within the second quartile for the region (b) Access is within the top quartile for the region
Reason:	Suggest reversing sub-practices so that the lower point item is first which is more consistent with the rest of the NGBS.
TG Recommendation:	Accept
TG Vote:	3-0-0

TG Modification:	
TG Reason:	

PC215 ID 8464	**405.8 Mixed-use development**
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	(8) A site is selected within a census block group that, compared to its region, has above-average access to employment within a 45-minute drive as calculated using EPA's Smart Location Database: ~~(a) Access is within the top quartile for the region~~ ~~(b) Access is within the second quartile for the region~~ (a) Access is within the second quartile for the region (b) Access is within the top quartile for the region
Reason:	Flip the order so that it is more consistent with the rest of the NGBS where the lower point sub-practice comes first
TG Recommendation:	Accept
TG Vote:	3-0-0
TG Modification:	
TG Reason:	

PC216 ID 8470	**Chapter 4 - Other**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	None.
Reason:	I request that the Consensus Committee review the point values for this section and rebalance with the point options and thresholds in other sections. I am submitting this request for each chapter.
TG Recommendation:	Disapprove
TG Vote:	4-0-0
TG Modification:	
TG Reason:	The TG doesn't believe that Chapter 4 or 5 requires rebalancing as the experience so far with certification has demonstrated that all is good.

PC217 ID 8501	505.12 Wildfire resilience
Submitter:	Alexander Haldeman
Organization:	James Hardie Building Products
Comment:	**505.12 Wildfire resilience** (1) Defensible space is part of the construction site plan. a) Within 0- 5 feet of the building only ~~hardscapes and succulents are~~ noncombustible ground cover such as gravel, pavers, or bare soil may be used for landscaping (1 point) b) Within 5- 30 feet of the building Fire Smart vegetation such as certain thin trees and shrubbery, and no undergrowth for vegetation and no accessory buildings are present *(1 point for projects in WUI area*) ~~c) Non-combustible fencing is used (1 point)~~ (2) Home hardening is part of the construction development plan. (a) Roof and Wall Assemblies are designed to resist the impingement of flame via approved rated assemblies (1 point each) (i) Roof assemblies are Class A Rated per ASTM E108 or UL 790 (ii) Wall assemblies are 1-hour fire-resistance rated per ASTM E119 or UL 263 from the exterior side (b) Materials used are designed to resist ignition caused by embers, ember accumulation, radiant heat, or direct flame. (1 point each) (i) Noncombustible fencing (ii) Ember resistant vents such as vents covered with a maximum 1/8" noncombustible mesh or vents tested to ASTM E2886 (iii) Noncombustible materials or metal flashing are used for minimum 6 inches at base of walls and decks (iv) Noncombustible, fire-retardant treated wood or ignition resistant siding is used (v) Gutters made of noncombustible materials, and covered to prevent accumulation of leaves and other debris (vi) Eaves and Soffits are enclosed with noncombustible or ignition resistant materials (vii) Noncombustible deck surface ~~2~~3) Response Planning (a) Water sources (ponds, swimming pools, wells etc.) are available, readily accessible, and equipped for fire-fighting use. *(1 point for projects in the WUI area*) --- Please add the following to reference section 14: Document | Date | Title | Section

	ASTM E108	2020	Standard Test Methods for Fire Tests of Roof Coverings	
	ASTM E119	2020	Standard Test Methods for Fire Tests of Building Construction and Materials	
	ASTM E2886	2020	Standard Test Method for Evaluating the Ability of Exterior Vents to Resist the Entry of Embers and Direct Flame Impingement	
	UL 263	2011 (revised 2022)	Fire Tests of Building Construction and Materials	
	UL 790	2022	Standard Test Methods for Fire Tests of Roof Coverings	

Please add to section 2 Definitions;:

Fire-Smart Vegetation: *Plants, shrubs, trees and other vegetation that exhibits properties such as high moisture content, little accumulation of dead vegetation and low sap or resin content, that make them less likely to ignite or contribute heat or spread flame in a fire than native vegetation typically found in the region.*

Reason:	Reason Statement: The reduction of environmental impact due to ever-increasing wildfire risk to homes and communities involves defensible space, home hardening, and response planning. Addition of home hardening accommodates what can be done by designers and builders during the construction phase. Other modifications are to offer clarity and consistency between this and other codes/standards. - Modified 0-5 feet defensible space based on findings from IBHS and others, and to provide consistency with other codes, which are changing to remove all vegetation and combustible matter from this zone. The term “hardscape” was removed, as the definition in Ch. 2 includes combustible wood. - The added home hardening solutions are based on collaborative research conducted by the National Institute of Standards and Technology (NIST), CAL FIRE, the Insurance Institute for Business and Home Safety (IBHS). Together, a Hazard Mitigation Methodology (HMM) was developed, which had two primary goals: 1. Protect homes and property to reduce loss. 2. Prioritize cost-effective protection. - Introduced the term “Fire Smart Vegetation” to be aligned and consistent with where other codes (CA Ch.7a, IWUIC, ICC-605) are moving, and to provide a more searchable and appropriate term for builders to properly identify wildfire-resistant vegetative species. o The definition is as follows: “Fire-Smart Vegetation: Plants, shrubs, trees and other vegetation that exhibits properties such as high moisture content, little accumulation of dead vegetation and low sap or resin content, that make them less likely to ignite or contribute heat or spread flame in a fire than native vegetation typically found in the region.”
Substantiating Documents:	True
TG Recommendation:	Accept as Modified
TG Vote:	TG 2 Vote 4-0-0, TG 3 Vote 6-1-0

TG Modification:	*Staff Note: Task Group 2 worked in tandem with Task Group 3 to provide a joint recommnendation on this item. Task Group 2 considered changes to Chapter 5, while Task Group 3 considered changes to Chapter 6. It is the intent of both Task Groups to have thier recommendations considered together.* Please add to section 2 Definitions;: **Fire-Smart Vegetation:** *Plants, shrubs, trees and other vegetation that exhibits properties such as high moisture content, little accumulation of dead vegetation and low sap or resin content, that make them less likely to ignite or contribute heat or spread flame in a fire than native vegetation typically found in the region.* **505.12 Wildfire resilience** (1) Defensible space is part of the construction site plan. a) Within 0- 5 feet of the building only ~~hardscapes and succulents are~~ noncombustible ground cover such as gravel, pavers, or bare soil may be used for landscaping (1 point) b) Within 5- 30 feet of the building Fire Smart vegetation such as certain thin trees and shrubbery, and no undergrowth for vegetation and no accessory buildings are present *(1 point for projects in WUI area*) c) Non-combustible fencing is used (1 point) ~~(2) Home hardening is part of the construction development plan.~~ ~~(a) Roof and Wall Assemblies are designed to resist the impingement of flame via approved rated assemblies (1 point each)~~ ~~(i) Roof assemblies are Class A Rated per ASTM E108 or UL 790~~ ~~(ii) Wall assemblies are 1-hour fire-resistance rated per ASTM E119 or UL 263 from the exterior side~~ ~~(b) Materials used are designed to resist ignition caused by embers, ember accumulation, radiant heat, or direct flame. (1 point each)~~ ~~(i) Noncombustible fencing~~ ~~(ii) Ember resistant vents such as vents covered with a maximum 1/8" noncombustible mesh or vents tested to ASTM E2886~~ ~~(iii) Noncombustible materials or metal flashing are used for minimum 6 inches at base of walls and decks~~ ~~(iv) Noncombustible, fire-retardant treated wood or ignition resistant siding is used~~ ~~(v) Gutters made of noncombustible materials, and covered to prevent accumulation of leaves and other debris~~ ~~(vi) Eaves and Soffits are enclosed with noncombustible or ignition resistant materials~~ ~~(vii) Noncombustible deck surface~~ 2~~3~~) Response Planning (a) Water sources (ponds, swimming pools, wells etc.) are available, readily accessible, and equipped for fire-fighting use. *(1 point for projects in the WUI area*)

Please add the following to reference section 14:

Document	Date	Title	Section
ASTM E108	2020	Standard Test Methods for Fire Tests of Roof Coverings	
ASTM E119	2020	Standard Test Methods for Fire Tests of Building Construction and Materials	
ASTM E2886	2020	Standard Test Method for Evaluating the Ability of Exterior Vents to Resist the Entry of Embers and Direct Flame Impingement	
UL 263	2011 (revised 2022)	Fire Tests of Building Construction and Materials	
UL 790	2022	Standard Test Methods for Fire Tests of Roof Coverings	

613.2 ~~**HUD**~~ **DNH Guides (Designing for Natural Hazards).** Building incorporates resilient construction guidance from DNH~~HUD~~ Guides (Designing for Natural Hazards). Select guidance from ~~a maximum of two~~ the hazard categories identified ~~by~~ from the vulnerability assessment in § 613.1. [Points awarded only for buildings where 613.1 is also awarded] ..... 16 max

613.2.1 Wind Resilience. Practices listed on the following one-pager titles of the ~~HUD~~DNH Guides (Volume 1: Wind) are met. [0.5 point awarded per practice, 2 points max per one-pager]

[Points not awarded for 613.2.3 if points are taken for 613.3.2 Fortified Home Certified]..... 8 max

613.2.2 Water Resilience. Practices listed on the following one-pager titles of the ~~HUD~~DNH Guides (Volume 2: Water) are met. [0.5 point per practice, 2 points max per one-pager] ..... 8 max

613.2.3 Fire Resilience. Practices listed on the following one-pager titles of the ~~HUD~~DNH Guides (Volume 3: Fire) are met. [0.5 point per practice, 2 points max per one-pager]

[Points not awarded for 613.2.3 if points are taken for 613.3.1 Wildfire Prepared Certified]..... 8 max

613.2.4 Earth Resilience. Practices listed on the following one-pager titles of the ~~HUD~~DNH Guides (Volume 4: Earth) are met. [0.5 point per practice, 2 points max per one-pager] OR Building is designed for maximum

considered earthquake hazard by a Licensed P.E. with 3rd party review and document including detailed Site-Specific Hazard report..... 8 max

613.3 - **3rd-Party Certification of Enhanced Resilience and Insurability** Select certification for hazard categories identified from the vulnerability assessment in § 613.1. [Points awarded only for buildings where 613.1 is also awarded]

613.3.1 – Wildfire Prepared™ Home designation

(i) Certification to **Base** designation (8 points)

(ii) Certification to **Plus** designation (12 points)

[points not awarded for 613.3.1 if points are taken for 613.2.3 Fire Resilience]

613.3.2 – FORTIFIED Home™ or FORTIFIED Multifamily™ designation

(i) Certification to Fortified Roof (4 pts)

(ii) Certification to Fortified Silver (8pts)

(iii) Certification to Fortified Gold (12)

[points not awarded for 613.3.2 if points are taken for 613.2.1 Wind Resilience]

Add to CHAPTER 14

FORTIFIED Home https://fortifiedhome.org/

FORTIFIED Home https://fortifiedhome.org/wp-content/uploads/2020-FORTIFIED-Home-Standard.pdf?v=1721916178811	2020	FORTIFIED Home 2020 Standard	613.3.2
FORTIFIED Multifamily https://fortifiedhome.org/wp-content/uploads/Fortified_Multifamily_Wind_Standards_2022.pdf	2022	FORTIFIED Multifamily Wind Standards	613.3.2

Wildfire Prepared Home https://wildfireprepared.org/

Wildfire Prepared Home Base https://wildfireprepared.org/wildfire-prepared-home-overview/	N/A	Wildfire Prepared Home Base	613.3.1
Wildfire Prepared Home Plus https://wildfireprepared.org/wildfire-prepared-home-plus-overview/	N/A	Wildfire Prepared Home Plus	613.3.1

TG Reason:

TG 2 Reason: The TG thought that the practice 2 was more for the structure and not for the design and construction of the lot and is better suited to Chapter 6, therefore they stuck that part of the proposal and accepted the rest.

TG 3 Reason: It builds upon the work started with HUD guides but adds specific requirements and certification. It provides alternate pathways for awarding points in wind and fire categories.

PC218 ID 8471	Chapter 5 - Other
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	None.
Reason:	I request that the Consensus Committee review the point values for this section and rebalance with the point options and thresholds in other sections. I am submitting this request for each chapter.
TG Recommendation:	Disapprove
TG Vote:	4-0-0
TG Modification:	
TG Reason:	The TG doesn't believe that Chapter 4 or 5 requires rebalancing as the experience so far with certification has demonstrated that all is good.

Chapter 6: Resource Efficiency

PC219 ID 8431	602.1 Moisture management - building envelope
Submitter:	Karla Butterfield
Organization:	Steven Winter Associates, Inc.
Comment:	602.1.9 Flashing. (1) Flashing is installed at all the following locations, as applicable:..... (i) all window and door head and jamb ~~flashing~~; and (j) roof kickout and step ~~flashing~~.
Reason:	The charging statement already says "flashing". Repeating the term in I and J are redundant.
TG Recommendation:	Accept as Modified
TG Vote:	9-0-0
TG Modification:	(1) Flashing is installed at all the following locations, as applicable:..... (d) at roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets (e.g, kickout and step flashing); (i) all window and door heads and jambs ~~flashing~~; and ~~(j) roof kickout and step flashing~~ (2) All window and door head and jamb flashing is either self-adhered flashing complying with AAMA 711 or liquid applied flashing complying with AAMA 714 and installed in accordance with fenestration or flashing manufacturer's installation instructions
TG Reason:	Item (J) was already covered, and item (d) was redundant. Deletion in (2) made it redundant to mandatory items, gives points for upgraded flashing.

PC220 ID 8435	602.2 Roof surfaces
Submitter:	Jonathan Humble
Organization:	Cool Roof Rating Council
Comment:	*(Remove dash between CRRC and S100, and add "ANSI/" before CRRC)* **602.2 Roof surfaces.** Not less than 90% 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 more of the following: (1) initial SRI of not less than 78 for low-sloped roof (a slope less than 2:12) and an initial SRI of not less than 29 for a steep-sloped roof (a slope equal to or greater than 2:12). The SRI is calculated in accordance with ASTM E1980. Roof products are rated and labeled in accordance with the ANSI/CRRC- S100 Program. (2) a vegetated roof system

Reason:	I am representing the Cool Roof Rating Council for this code change proposal. The citations for the referenced standard ANSI/CRRC S100 are different in various locations. We ask that the consensus committee editorially update the titles as shown in our proposals.
TG Recommendation:	Accept
TG Vote:	9-0-0
TG Modification:	
TG Reason:	*Note to staff: change in other locations where it appears in standard*

PC221 ID 8504	**603.1 Reuse of existing building**
Submitter:	Elina Thapa
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	**603.1 Reuse of existing building.** Major elements or components of existing buildings and structures are reused, modified, or deconstructed for later use. [1 point awarded for every 200 ft2 (18.5 m2) of floor area; points applied for whole building.] .....1[12 max]
Reason:	Most practices in Multifamily buildings have points applied per unit but that's not practical for this practise. For e.g, if foundation is reused or any external wall is reused, points should be counted for entire building.
TG Recommendation:	Accept as Modified
TG Vote:	7-0-0
TG Modification:	*Delete 603.1 and 11.603.1 and replace with following language* 603.1 Reuse of existing building. Major components of the existing building structure are reused or deconstructed for later use. Points are awarded according to the below as a percentage of the reused floor area or surface area as applicable. The reuse calculation is based on the percentage of the building reused, including both new and existing areas. 20% - 6 pts 40% - 8 pts 60% - 10 pts 80% - 12 pts 100% - 14 pts 11.603.1 Reuse of existing building. Major components of the existing building structure are reused or deconstructed for later use. Points are awarded according to the below as a percentage of the reused floor area or surface area as applicable. The reuse calculation is based on the percentage of the building reused, including both new and existing areas. 20% - 2 pts

	40% - 3 pts 60% - 4 pts 80% - 5 pts 100% - 6 pts
TG Reason:	Previous language did not work for multifamily projects.

PC222 ID 8500	**604 RECYCLED-CONTENT BUILDING MATERIALS**
Submitter:	Alexander Haldeman
Organization:	James Hardie Building Products
Comment:	**604 Recycled-Content Building Materials** **604.2 ~~Concrete~~ Cementitious Materials** (1) Use supplementary cementitious materials instead of Portland cement ~~in concrete~~ with not less than the following: (a) 20% supplementary cementitious materials (1 point) (b) 30% supplementary cementitious materials (3 points) (c) 40% supplementary cementitious materials (5 points) (2) Include recycled content aggregate for not less than 10% of aggregate material (1 point) [*Points not awarded if point are taken for cementitious material under 604.1]* --- Please add the following definition to Chapter 2: **Cementitious Materials:** Materials utilizing hydraulic cement as a primary binder, such as concrete, mortar, grout, manufactured masonry, and fiber-cement. **Supplementary Cementitious Materials:** Inorganic materials that, used in combination with Portland or blended cements, contribute to the properties of a cementitious mixture through hydraulic or pozzolanic activity or both. **Supporting Documentation Links:** American Concrete Institute: https://www.concrete.org/topicsinconcrete/topicdetail/Cementitious%20Material%20in%20Concrete?search=Cementitious%20Material%20in%20Concrete U.S. DOT Tech Brief – Supplementary Cementitious Materials: https://www.fhwa.dot.gov/pavement/concrete/pubs/hif16001.pdf Portland Cement Association - https://www.cement.org/cement-concrete/concrete-materials/supplementary-cementing-materials

	NRMCA Brief CIP 30 – Supplementary Cementitious Materials - https://alconcrete.org/wp-content/downloads/cip/30p.pdf Iowa State University: https://cptechcenter.org/cementitious-materials/
Reason:	Cementitious materials more accurately describes the family of products which currently use Portland cement, concrete being one; masonry mortar, grout, manufactured masonry and fiber-cement being some others.
TG Recommendation:	Accept as Modified
TG Vote:	10-0-0
TG Modification:	**604.2 ~~Concrete~~ Cementitious Materials** (1) Use supplementary cementitious materials instead of Portland cement in 2 minor or 1 major component(s) ~~in concrete~~ with not less than the following: (a) 20% supplementary cementitious materials (1 point) (b) 30% supplementary cementitious materials (3 points) (c) 40% supplementary cementitious materials (5 points) (2) Include recycled content aggregate for not less than 10% of aggregate material (1 point) [*Points not awarded if point are taken for cementitious material under 604.1.]* --- Please add the following definition to Chapter 2: **Cementitious Materials:** Materials utilizing hydraulic cement as a primary binder, such as concrete, mortar, grout, manufactured masonry, and fiber-cement. **Supplementary Cementitious Materials:** Inorganic materials that, used in combination with Portland or blended cements, contribute to the properties of a cementitious mixture through hydraulic or pozzolanic activity or both.
TG Reason:	To facilitate the implementation of this credit.

PC223 ID 8440	**606.1 Biobased products**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	606.1 Biobased products. The following biobased products are used: 8 max (a) certified solid wood in accordance with § 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) biobased materials that are USDA Biopreferred certified ~~qualified~~ . (i) other biobased materials with not less than 50% biobased content (by weight or volume). Biobased content originating from a Mass Balance Approach shall have external validation. (1) Two types of biobased materials are used, each for more than 0.5% of the project's projected building material cost. 3 (2) Two types of biobased materials are used, each for more than 1% of the project's projected building material cost. 6 (3) For each additional biobased material used for more than 0.5% of the project's projected building material cost. 1 [2 max] >>> 11.606.1 Biobased products. The following biobased products are used: 8 max (a) certified solid wood in accordance with § 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) biobased materials that are USDA Biopreferred certified ~~qualified~~. (i) other biobased materials with not less than 50% biobased content (by weight or volume). Biobased content originating from a Mass Balance Approach shall have external validation. (1) Two types of biobased materials are used, each for more than 0.5% of the project's projected building material cost. 3 (2) Two types of biobased materials are used, each for more than 1% of the project's projected building material cost. 6 (3) For each additional biobased material used for more than 0.5% of the project's projected building material cost. 1 [2 max]
Reason:	USDA Biopreferred materials are "certified," not "qualified." See https://www.biopreferred.gov/BioPreferred/faces/catalog/Catalog.xhtml
TG Recommendation:	Accept
TG Vote:	10-0-0
TG Modification:	

TG Reason:	

PC224 ID 8455	**613 RESILIENT CONSTRUCTION**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	613.2 HUD Guides (Designing for Natural Hazards). Building incorporates resilient construction guidance from HUD Guides (Designing for Natural Hazards). Select guidance from a at least ~~maximum of~~ two hazard categories identified by the vulnerability assessment in § 613.1. [Points awarded only for buildings where 613.1 is also awarded] 16 max 613.2.1 Wind Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 1: Wind) are met. [0.5 point awarded per practice, 2 points max per one-pager] 8 max 613.2.2 Water Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 2: Water) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 613.2.3 Fire Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 3: Fire) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 613.2.4 Earth Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 4: Earth) are met. [0.5 point per practice, 2 points max per one-pager] 8 max >>> 11.613.2 HUD Guides (Designing for Natural Hazards). Building incorporates resilient construction guidance from HUD Guides (Designing for Natural Hazards). Select guidance from at least ~~a maximum of~~ two hazard categories identified by the vulnerability assessment in § 11.613.1. [Points awarded only for buildings where 11.613.1 is also awarded] 16 max 11.613.2.1 Wind Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 1: Wind) are met. [0.5 point awarded per practice, 2 points max per one-pager] 8 max 11.613.2.2 Water Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 2: Water) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 11.613.2.3 Fire Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 3: Fire) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 11.613.2.4 Earth Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 4: Earth) are met. [0.5 point per practice, 2 points max per one-pager] 8 max
Reason:	Replace "maximum" with "at least." There's no reason to limit users if they choose to do more than what is eligible for compliance/points.
TG Recommendation:	Accept as Modified
TG Vote:	10-0-0
TG Modification:	613.2 HUD Guides (Designing for Natural Hazards). Building incorporates resilient construction guidance from HUD Guides (Designing for Natural Hazards). Select guidance from the hazards category identified from the ~~maximum of two hazard categories identified by the~~ vulnerability assessment in § 613.1. [Points awarded only for buildings where 613.1 is also awarded.] 16 max

	613.2.1 Wind Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 1: Wind) are met. [0.5 point awarded per practice, 2 points max per one-pager] 8 max 613.2.2 Water Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 2: Water) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 613.2.3 Fire Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 3: Fire) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 613.2.4 Earth Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 4: Earth) are met. [0.5 point per practice, 2 points max per one-pager] 8 max >>> 11.613.2 HUD Guides (Designing for Natural Hazards). Building incorporates resilient construction guidance from HUD Guides (Designing for Natural Hazards). Select guidance from <u>the hazards category identified from the</u> ~~a maximum of two hazard categories identified by the~~ vulnerability assessment in § 11.613.1. [Points awarded only for buildings where 11.613.1 is also awarded] 16 max 11.613.2.1 Wind Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 1: Wind) are met. [0.5 point awarded per practice, 2 points max per one-pager] 8 max 11.613.2.2 Water Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 2: Water) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 11.613.2.3 Fire Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 3: Fire) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 11.613.2.4 Earth Resilience. Practices listed on the following one-pager titles of the HUD Guides (Volume 4: Earth) are met. [0.5 point per practice, 2 points max per one-pager] 8 max
TG Reason:	Clarified restrictions on point availability.

PC225 ID 8505	**613.2 HUD Guides (Designing for Natural Hazards)**
Submitter:	Elina Thapa
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	**613 RESILIENT CONSTRUCTION** **613.2 ~~HUD~~ <u>DNH</u> Guides (Designing for Natural Hazards).** Building incorporates resilient construction guidance from DNH Guides (Designing for Natural Hazards). Select guidance from a maximum of two hazard categories identified by the vulnerability assessment in § 613.1. [Points awarded only for buildings where 613.1 is also awarded] ..... 16 max **613.2.1 Wind Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ <u>DNH</u> Guides (Volume 1: Wind) are met. [0.5 point awarded per practice, 2 points max per one-pager] ..... 8 max **613.2.2 Water Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ <u>DNH</u> Guides (Volume 2: Water) are met. [0.5 point per practice, 2 points max per one-pager] ..... 8 max

	613.2.3 Fire Resilience. Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 3: Fire) are met. [0.5 point per practice, 2 points max per one-pager] ..... 8 max **613.2.4 Earth Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 4: Earth) are met. [0.5 point per practice, 2 points max per one-pager] OR Building is designed for maximum considered earthquake hazard by a Licensed P.E. with 3rd party review and document including detailed Site-Specific Hazard report..... 8 max
Reason:	The guides referenced is named DNH guide. Most practices in the guides are focused for timber structures that conform to IRC and while most categories of resilience have enough practices for high rise structure other than timber, number of practices were limited for earth resilience making it difficult for such structure to earn maximum points so provided another option.
TG Recommendation:	Accept as Modified
TG Vote:	9-0-1
TG Modification:	**613 RESILIENT CONSTRUCTION** **613.2 ~~HUD~~ DNH Guides (Designing for Natural Hazards).** Building incorporates resilient construction guidance from DNH Guides (Designing for Natural Hazards). Select guidance from a maximum of two hazard categories identified by the vulnerability assessment in § 613.1. [Points awarded only for buildings where 613.1 is also awarded] ..... 16 max **613.2.1 Wind Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 1: Wind) are met. [0.5 point awarded per practice, 2 points max per one-pager] ..... 8 max **613.2.2 Water Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 2: Water) are met. [0.5 point per practice, 2 points max per one-pager] ..... 8 max **613.2.3 Fire Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 3: Fire) are met. [0.5 point per practice, 2 points max per one-pager] ..... 8 max **613.2.4 Earth Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 4: Earth) are met. [0.5 point per practice, 2 points max per one-pager] OR Building is designed for maximum considered earthquake hazard by a Licensed P.E. with 3rd party review and document including detailed Site-Specific Hazard report..... 8 max
TG Reason:	Editorial changes

PC226 ID 8456	**613.2 HUD Guides (Designing for Natural Hazards)**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	613.2 HUD Guides (Designing for Natural Hazards). Building incorporates resilient construction guidance from HUD Guides (Designing for Natural Hazards). Select guidance from a maximum of two hazard categories identified by the vulnerability assessment in § 613.1. [Points awarded only for buildings where 613.1 is also awarded] 16 max

	613.2.1 Wind Resilience. Practices listed in the one-pager of HUD Guide ~~on the following one-pager titles of the HUD Guides~~ (Volume 1: Wind) are met. [0.5 point awarded per practice, 2 points max per one-pager] 8 max 613.2.2 Water Resilience. Practices listed in the one-pager of HUD Guide ~~on the following one-pager titles of the HUD Guides~~ (Volume 2: Water) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 613.2.3 Fire Resilience. Practices listed in the one-pager of HUD Guide ~~on the following one-pager titles of the HUD Guides~~ (Volume 3: Fire) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 613.2.4 Earth Resilience. Practices listed in the one-pager of HUD Guide ~~on the following one-pager titles of the HUD Guides~~ (Volume 4: Earth) are met. [0.5 point per practice, 2 points max per one-pager] 8 max >>> 11.613.2 HUD Guides (Designing for Natural Hazards). Building incorporates resilient construction guidance from HUD Guides (Designing for Natural Hazards). Select guidance from a maximum of two hazard categories identified by the vulnerability assessment in § 11.613.1. [Points awarded only for buildings where 11.613.1 is also awarded] 16 max 11.613.2.1 Wind Resilience. Practices listed in the one-pager of HUD Guide ~~on the following one-pager titles of the HUD Guides~~ (Volume 1: Wind) are met. [0.5 point awarded per practice, 2 points max per one-pager] 8 max 11.613.2.2 Water Resilience. Practices listed in the one-pager of HUD Guide ~~on the following one-pager titles of the HUD Guides~~ (Volume 2: Water) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 11.613.2.3 Fire Resilience. Practices listed in the one-pager of HUD Guide ~~on the following one-pager titles of the HUD Guides~~ (Volume 3: Fire) are met. [0.5 point per practice, 2 points max per one-pager] 8 max 11.613.2.4 Earth Resilience. Practices listed in the one-pager of HUD Guide ~~on the following one-pager titles of the HUD Guides~~ (Volume 4: Earth) are met. [0.5 point per practice, 2 points max per one-pager] 8 max
Reason:	Current phrasing is awkward/incorrect.
TG Recommendation:	Disapprove
TG Vote:	9-0-0
TG Modification:	
TG Reason:	There are more than one one-pagers in the guide.

PC227 ID 8449	**613.3 Resilient energy systems & passive survivability**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	613.3 Resilient energy systems & passive survivability [Points cannot be claimed for both (1) and (2)]. (1) On-site renewable energy systems with battery energy storage are designed and installed to provide emergency power for residents to safely shelter during power outages. 3 (2) ~~CARB compliant~~ Whole-building generators are designed and installed to provide emergency power for residents to safely shelter during power outages. 1

	>>> 11.613.3 Resilient energy systems & passive survivability [Points cannot be claimed for both (1) and (2)] (1) On-site renewable energy systems with battery energy storage are designed and installed to provide emergency power for residents to safely shelter during power outages. 3 (2) ~~CARB compliant~~ Whole-building generators are designed and installed to provide emergency power for residents to safely shelter during power outages. 1
Reason:	A reference standard for CARB-compliant generators is not currently included in Chapter 14. I looked on the CARB website but could not identify a product standard published by CARB for generators.
TG Recommendation:	Accept as Modified
TG Vote:	7-0-0
TG Modification:	613.3 Resilient energy systems & passive survivability [Points cannot be claimed for both (1) and (2)]. (1) On-site renewable energy systems with battery energy storage are designed and installed to provide emergency power for residents to safely shelter during power outages. 3 (2) ~~CARB compliant~~ Whole-building generators compliant with the CARB Distributed Generation Certification Program are designed and installed to provide emergency power for residents to safely shelter during power outages. 1 >> 11.613.3 Resilient energy systems & passive survivability [Points cannot be claimed for both (1) and (2)] (1) On-site renewable energy systems with battery energy storage are designed and installed to provide emergency power for residents to safely shelter during power outages. 3 (2) ~~CARB compliant~~ Whole-building generators compliant with the CARB Distributed Generation Certification Program are designed and installed to provide emergency power for residents to safely shelter during power outages

CARB – California Air Resources Board | www.arb.ca.gov			
DOCUMENT	**DATE**	**TITLE**	**SECTION**
	2007	Composite Wood Air Toxic Contaminant Measure Standard	901.5(5), 901.6(2), 11.901.5(5), 11.901.6(2)
	2020	Suggested Control Measure for Architectural Coatings	901.10.1(3), 11.901.10.1(3), 1205.6(3)
	2011	The California Consumer Products Regulations	901.11(3), 11.901.11(3)

	-	2007	California Code of Regulations - Title 17, Division 3, Chapter 1, Subchapter 8, Article 3. Distributed Generation Certification Program	613.3(2), 11.613.3(2)
TG Reason:	Providing the needed reference was preferable to deleting the CARB compliant option.			

PC228 ID 8472	**Chapter 6 - Other**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	None.
Reason:	I request that the Consensus Committee review the point values for this section and rebalance with the point options and thresholds in other sections. I am submitting this request for each chapter.
TG Recommendation:	Accept as Modified
TG Vote:	4-0-0
TG Modification:	**601.9 Universal design elements**. Dwelling incorporates one or more of the following universal design elements. Conventional industry construction tolerances are permitted. ..... ~~12 max~~ 6 max (1) Any no-step entrance into the dwelling which 1) 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 in. in height with the pitch not exceeding 1 in 12; and 2) provides not less than a 32-in. wide clearance into the dwelling. ..... ~~3~~ 2 (2) Not less than a 36-in. 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 not less than a 32-in. clear door width and a 30-in. by 48-in. clear area inside the bathroom outside the door swing. ..... ~~3~~ 2 (3) Not less than a 36-in. wide accessible route from the no-step entrance into at least one bedroom which has not less than a 32-in. clear door width. ..... ~~3~~ 2 (4) Blocking or equivalent installed in the accessible bathroom walls for future installation of grab bars at water closet and bathing fixture, where applicable. ..... 1 (5) All interior and exterior door handles are levers rather than knobs. ..... 1 (6) All sink, lavatory and showering controls comply with ICC A117.1..... 1 (7) Interior convenience Power receptacles, communication connections (for cable, phone, Ethernet, etc.) and switches are placed between 15 in. and 48 in. above the finished floor. Additional switches to control devices and systems (such as alarms, home theaters and other equipment) not required by the local building code may be installed as desired. 1

(8) All light switches are rocker-type switches or other similar switches that can be operated by pressing them (with assistive devices). Toggle-type switches may not be used. 1

(9) Any of the following systems are automated and can be controlled with a wireless device or voiceactivated device: HVAC, all permanently-installed lighting, alarm system, window treatments, or door locks. [1 point awarded per system] ..... 1 [5 max]

601.7 Prefinished materials. Prefinished building materials or assemblies listed below have no additional site-applied finishing material are installed. .....~~12 max~~ 6 max

(a) interior trim not requiring paint or stain.

(b) exterior trim not requiring paint or stain.

(c) window, skylight, and door assemblies not requiring paint or stain on one of the following surfaces:

i. exterior surfaces

ii. interior surfaces

(d) interior wall coverings or systems, floor systems, and/or ceiling systems not requiring paint or stain or other type of finishing application.

(e) exterior wall coverings or systems, floor system, and/or ceiling systems not requiring paint or stain or other type of finishing application.

(1) Percent of prefinished building materials or assemblies installed: [Points awarded for each type of material or assembly.]

(a) greater than or equal to 35% to less than 50% 1

(b) greater than or equal to 50% to less than 90% 2

(c) greater than or equal to 90% .....~~5~~ 3

602.1.1 Capillary breaks

602.1.1.1 A capillary break and vapor retarder are installed at concrete slabs in accordance with Sections R506.2.2 and R506.2.3, or IBC Sections 1907 and 1805.4.1. .....Mandatory

602.1.1.2 A capillary break between the footing and the foundation wall is provided to prevent moisture migration into foundation wall. .....~~3~~ 1

602.1.1.3 Not less than a 10-mil vapor retarder complying with ASTM E1745 is installed in accordance with ASTM E1643. .....~~3~~ 1

602.1.1.4 Not less than a 15-mil vapor retarder complying with ASTM E1745 with water vapor permeance rating below 0.01 US perms [grains/(ft2*hr*in-Hg)] is installed in accordance with ASTM E1643. .....~~6~~ 3

604.2 Concrete materials

	(1) Use supplementary cementitious materials instead of Portland cement in concrete with not less than the following: (a) 20% supplementary cementitious material .....~~1~~ 3 (b) 30% supplementary cementitious material .....~~3~~ 5 (c) 40% supplementary cementitious material .....~~5~~ 7 (2) Include recycled content aggregate for not less than 10% of aggregate material. .....~~1~~ 3 **606.2 Wood-based products.** Wood or wood-based products are certified to the requirements of one of the following: (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) National Wood Flooring Association's Responsible Procurement Program (RPP). (g) other product programs mutually recognized by PEFC. (h) A manufacturer's fiber procurement system that has been audited by an approved agency as compliant with the provisions of ASTM D7612 as a responsible or certified source. Government or tribal forestlands whose water protection programs have been evaluated by an approved agency as compliant with the responsible source designation of ASTM D7612 are exempt from auditing in the manufacturers' fiber procurement system. (1) All tropical wood products used for major and minor components are responsibly sourced in accordance with ASTM D7612 or certified to one of the listed standards. .....Mandatory (2) Not less than 10% of permanently installed wood material, by cost, or area shall be certified to one of the standards listed. Alternatively, 1 major component or 2 minor components certified to a standard listed below comply. .....~~2~~ 4 (3) Not less than 30% of permanently installed wood material, by cost, or area shall be certified to one of the standards listed. Alternatively, 2 major components or 3 minor components certified to a standard listed below comply. .....~~3~~ 5 (4) Not less than 50% of permanently installed wood material, by cost, or area shall be certified to one of the standards listed below. Alternatively, 3 major components or 4 minor components certified to a standard listed comply.....~~4~~ 6 **609.1 Regional materials.** Regional materials are used for major and/or minor components of the building. .....~~10 max~~ 8 max

	(1) Major component [2 points awarded per each component] .....2 (2) Minor component [1 point awarded per each component] .....1 (2) All window and door head and jamb flashing is installed in accordance with fenestration or flashing manufacturer's installation instructions. .....2 (3) Sill or pan flashing is installed at sills of all exterior windows and doors.....3 (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. .....3 **602.1.9 Flashing.** (2) All window and door head and jamb flashing is installed in accordance with fenestration or flashing manufacturer's installation instructions. ~~2~~ 1 (3) Sill or pan flashing is installed at sills of all exterior windows and doors. ~~3~~ 1 (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. ~~3~~ 1
TG Reason:	Points revised

Chapter 7: Energy Efficiency

PC229 ID 8452	701.1 Mandatory requirements
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	701.1 Mandatory requirements. The building shall comply with § 702 (Performance Path), § 703 (Prescriptive Path), § 704 (ERI Target Path), or one of the pathways in § 701.1.4 through § 701.1.8 (Alternative Bronze and Silver Paths), or § 705 (Tropical Path). Items listed as "mandatory" in § 701.4 shall apply to § 702, § 703, and § 704 paths. ~~Except where otherwise noted, buildings in the Tropical Climate Zone shall comply with Climate Zone 1 requirements .~~ >>> 11.701.1 Mandatory requirements. The building shall comply with § 11.702 (Performance Path), § 11.703 (Prescriptive Path), § 11.704 (ERI Target Path), or one of the pathways in § 11.701.1.4 through § 11.701.1.8 (Alternative Paths). Items listed as "mandatory" in § 11.701.4 shall apply to § 11.702, § 11.703, and § 11.704 paths. ~~Except where otherwise noted, buildings in the Tropical Climate Zone shall comply with Climate Zone 1 requirements.~~
Reason:	I don't understand the final sentence, which applies to Tropical Zone compliance. What requirements? There's no mention of a reference standard. I suggest rewriting or deleting.
TG Recommendation:	Accept as Modified
TG Vote:	6-0-0
TG Modification:	701.1 Mandatory requirements. The building shall comply with § 702 (Performance Path), § 703 (Prescriptive Path), § 704 (ERI Target Path), or one of the pathways in § 701.1.4 through § 701.1.8 (Alternative Bronze and Silver Paths), or § 705 (Tropical Path). Items listed as "mandatory" in § 701.4 shall apply to § 702, § 703, and § 704 paths. ~~Except where otherwise noted, buildings in the Tropical Climate Zone shall comply with Climate Zone 1 requirements .~~ Except where section 705 requirements are met, buildings in Tropical Climate Zone shall comply with IECC Climate Zone 1 requirements. 11.701.1 Mandatory requirements. The building shall comply with § 11.702 (Performance Path), § 11.703 (Prescriptive Path), § 11.704 (ERI Target Path), or one of the pathways in § 11.701.1.4 through § 11.701.1.8 (Alternative Paths). Items listed as "mandatory" in § 11.701.4 shall apply to § 11.702, § 11.703, and § 11.704 paths. ~~Except where otherwise noted, buildings in the Tropical Climate Zone shall comply with Climate Zone 1 requirements.~~ Except where section 11.705 requirements are met, buildings in Tropical Climate shall comply with IECC Climate Zone 1 requirements.
TG Reason:	Clarification of requirements

PC230 ID 8480	701.1 Mandatory requirements
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	701.1.7 Alternative Emerald level compliance. Buildings that meet one of the following criteria: [Points awarded shall not be combined with points from § 703 (Prescriptive Path), § 704 (ERI Target Path), or 701.1.4 through 701.1.8 (Alternative Paths)]: ~~(1) demonstrated to be net zero energy based on modeled site or source energy analysis;~~

	(1~~2~~) complies with the IECC Appendix CC Zero Energy Commercial Building provisions; (2~~3~~) complies with the IECC Appendix RC Zero Energy Residential Building provisions; or (3~~4~~) certified to PHIUS CORE or PHIUS ZERO.
Reason:	701.1.7(1) is not as robust as the other options and would leave many details and compliance rules to the Adopting Entity to establish. I suggest striking this option in lieu of the more comprehensive options currently included in options (2)-(4) and renumber.
TG Recommendation:	Accept
TG Vote:	4-2-1
TG Modification:	
TG Reason:	

PC231 ID 8481	**701.1 Mandatory requirements**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	701.1.8 Alternative Silver or Gold level compliance for Tropical Zones (§ 705). For buildings in the Tropical Zone, where more than 50 percent of the occupied space is not air conditioned and 100 percent of the occupied space is not heated. The building shall be awarded in accordance with the following:~~, and comply with one of the following:~~ ~~[Points awarded shall not be combined with points from § 703 (Prescriptive Path), § 704 (ERI Target Path), or 701.1.4 through 701.1.8 (Alternative Paths)]~~ (1) § 705.1 mandatory practices and § 705.2 Additional Tropical Zone practices – Silver 45 (2) IECC Section R401.2.4 (Tropical Zone). Buildings without heating and 50% or less air-conditioned space in the Tropical Zone are eligible to earn Silver even if they are located above the IECC elevation limit – Silver 45 (3) § 705.1 mandatory practices and § 705.3 Additional Tropical Zone practices – Gold 60 [Points awarded shall not be combined with points from § 703 (Prescriptive Path), § 704 (ERI Target Path), or 701.1.4 through 701.1.8 (Alternative Paths)]
Reason:	Edited for better code language. "Awarded in accordance with" is more directive than "comply with."
TG Recommendation:	Accept
TG Vote:	6-0-1
TG Modification:	
TG Reason:	

PC232 ID 8484	**701.1 Mandatory requirements**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)

Comment:	**701.1.7 Alternative Emerald level compliance.** Buildings that meet one of the following criteria: *[Points awarded shall not be combined with points from § 703 (Prescriptive Path), § 704 (ERI Target Path), or 701.1.4 through 701.1.8 (Alternative Paths)]* (1)... demonstrated to be ~~net~~ zero emissions ~~energy~~ based on the U.S. DOE National Definition of Zero Emissions Building; ~~modeled site or source energy analysis~~; (2)... complies with the IECC Appendix CC Zero Energy Commercial Building provisions; (3)... complies with the IECC Appendix RC Zero Energy Residential Building provisions; or (4)... certified to PHIUS CORE or PHIUS ZERO.
Reason:	701.1.1.7(1) is vague and would require the Adopting Entity to establish rules and procedures for compliance. In comparison, options (2) through (4) are robust standards or rating systems by a reputable organization. I suggest replacing the current option (1) with the U.S. DOE definition of zero emission building. Incorporating this definition as an Alternative pathway would streamline compliance for high-performing buildings that are pursuing NGBS Green Certification and seeking financing through federal programs, such as HUD or USDA. The White House and U.S. DOE released "National Definition for a Zero Emissions Building" for public comment in February 2024; it is expected to be formally published in June 2024. While the exact use of this term is yet to be determined, it is assumed that federal programs may require or incentivize buildings that meet the definition. See February 2024 edition of the definition here: https://www.federalregister.gov/documents/2024/02/16/2024-03285/national-definition-for-a-zero-emissions-building-part-1-operating-emissions-version-100m-draft
TG Recommendation:	Disapprove
TG Vote:	6-0-0
TG Modification:	
TG Reason:	At the request of the submitter in favor of action on item PC230.

PC233 **ID 8438**	**701.1.2 Minimum Prescriptive Path requirements**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	701.1.2 Minimum Prescriptive Path requirements. A building complying with § 703 shall obtain not less than 30 points from § 703 and shall include not less than two practices from § 706, or not less than one practice from § 706 and not less than one practice from § 707.
Reason:	Missing word.
TG Recommendation:	Accept
TG Vote:	6-0-1
TG Modification:	
TG Reason:	

PC234 **ID 8495**	**703 PRESCRIPTIVE PATH** **Final Formal Action: 0**
Submitter:	David Mallay
Organization:	Home Innovation Research Labs

Comment:	The points in Chapter 7 Energy Efficiency, Section 703 Prescriptive Path should be assessed, and rebalanced as needed, because the baseline for the energy chapter has been updated. The new analysis will be performed by Home Innovation, with the intent to provide results to the Consensus Committee and Task Group prior to any action on the item.
Reason:	This is a request to rebalance the points in Chapter 7 Energy Efficiency, Section 703 Prescriptive Path, as needed, based on new analysis. The intent of the previous analysis and the current point values was to align the prescriptive and performance methodologies so that either approach will provide a similar level of energy savings, based on one-point equals approximately 0.5% energy savings. The baseline for the energy chapter has been updated, so the new analysis is needed to either validate the current point values or recommend changes. The new analysis will be performed by Home Innovation, with the intent to provide results to the Consensus Committee and Task Group prior to any action on the item.
TG Recommendation:	
TG Vote:	
TG Modification:	
TG Reason:	Staff Note: Task Group 5 heard presentation from Dave Mallay on updated points. We are in general support of the direction that his analysis is headed but unable to make a full recommendation as work is in-progress. Dave will have his final findings ready to present during the in person meeting.

PC235 ID 8447	**703.2 Building envelope**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	703.2.4 Building <u>thermal</u> envelope leakage. The maximum building <u>thermal</u> envelope leakage rate is in accordance with Table 703.2.4(a) or Table 703.2.4(b) and whole building ventilation is provided in accordance with § 902.2.1. Per Table 703.2.4(a) or 703.2.4(b)
Reason:	In other locations throughout Chapter 7, the Task Group moved toward the term "building thermal envelope."
TG Recommendation:	Accept as Modified
TG Vote:	6-0-1
TG Modification:	*Modify as follows:* 703.2.1 Building <u>or dwelling unit</u> envelope leakage. The maximum building <u>or dwelling unit</u> envelope….
TG Reason:	Modified to reflect broadening of requirements in other sections.

PC236 ID 8450	**703.2 Building envelope**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	Replace existing table with Table R402.1.4 within 2021 IECC.
Reason:	Table values appear to be derived from the 2018 IECC. I suggest replacing with table from 2021 IECC for consistency.

TG Recommendation:	Accept
TG Vote:	7-0-2
TG Modification:	
TG Reason:	This is Table 703.2.1(a). Would be replaced with Table R402.1.4 from 2021 IECC.

PC237 **ID 8465**	**705.2 Additional Tropical Zone practices - Silver**
Submitter:	Craig Drumheller
Organization:	WDMA
Comment:	705.2.2 Glazing. Glazing in conditioned space has a Solar Heat Gain Coefficient (SHGC) ~~between 0.26 and~~ not greater than 0.30.
Reason:	The use of the word "between" is too restrictive. Any SHGC less than or equal to 0.30 should be acceptable for a silver zone certification in a tropical zone
TG Recommendation:	Accept
TG Vote:	7-0-1
TG Modification:	
TG Reason:	

PC238 **ID 8445**	**705.3 Additional Tropical Zone practices - Gold**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	705.3.4 Roof. The exterior roof surface complies with not less than two of the following: (1) Not less than an initial solar reflectance of 0.75 and emittance of 0.75. (2) Not less than an initial solar reflectance index of 0.75 and thermal emittance of 0.75. Roof products are tested in accordance with the ANSI/CRRC S100. (3) Roof or ceiling insulation with R-Value of R-13 or greater. (4) Radiant barrier installed. >>> 11.705.3.4 Roof. The exterior roof surface complies with not less than two of the following: (1) Not less than an initial solar reflectance of 0.75 and emittance of 0.75. (2) Not less than an initial solar reflectance index of 0.75 and thermal emittance of 0.75. Roof products are tested in accordance with the ANSI/CRRC S100. (3) Roof or ceiling insulation with R-Value of R-13 or greater. (4) Radiant barrier installed.
Reason:	I suspect that a decimal is missing here.
TG Recommendation:	Accept

TG Vote:	8-0-1
TG Modification:	
TG Reason:	

PC239 ID 8466	**705.3 Additional Tropical Zone practices - Gold**
Submitter:	Craig Drumheller
Organization:	WDMA
Comment:	**705.3.2 Glazing.** Glazing in conditioned space has a Solar Heat Gain Coefficient (SHGC) not ~~less~~ more than 0.25
Reason:	This appears to be written backwards. Lower SHGC is better in Tropical Zones, so is should be "not more than" rather than "not less than".
TG Recommendation:	Accept as Modified
TG Vote:	8-0-2
TG Modification:	*Modify as follows:* **705.3.2 Glazing.** Glazing in conditioned space has a Solar Heat Gain Coefficient (SHGC) not ~~less~~ greater than 0.25
TG Reason:	Corrects the requirement and adds consistency in editorial language.

PC240 ID 8443	**707.8 Electrical vehicle chargers**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	~~707.8 Electrical vehicle chargers. A Level 2 (208/240V 40-80 amp) or Level 3 electric vehicle charging station:~~ ~~(1) is installed on the building site. (Note: Charging station shall not be included in the building energy consumption.) 2~~ ~~(2) is ENERGY STAR certified or equivalent) 1 Additional~~ >>> ~~11.707.8 Single-family residence electrical vehicle chargers. A Level 2 (208/240V 40-80 amp) or Level 3 electric vehicle charging station:~~ ~~(1) is installed on the building site. (Note: Charging station shall not be included in the building energy consumption.) 2~~ ~~(2) is ENERGY STAR certified or equivalent. 1 Additional~~
Reason:	Points for EV chargers are available in two places - 505.6 and 707.8. Suggest deleting one practice to prevent "double-dipping."

TG Recommendation:	Disapprove
TG Vote:	9-0-1
TG Modification:	
TG Reason:	Practice requirements are different. 505.6 is for charging capability, whereas 707.8 is for installed chargers.

Chapter 8: Water Efficiency

PC241 ID 8444	802.3 Water usage metering
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	802.3 Water usage metering. Water meters are installed complying with the following: ~~(1) Single-Family Buildings: Water Usage Metering:~~ (1~~a~~) Where not otherwise required by the local AHJ, installation of a meter for water consumed from any source associated with the building or building site except for pools and spas. 2 per unique use meter (2~~b~~) Each water meter shall be capable of communicating water consumption data remotely for the dwelling unit occupant and be capable of providing daily data with electronic data storage and reporting capability that can produce reports for daily, monthly, and yearly water consumption. (Fire sprinkler systems are not required to be metered). 2 per sensor package ~~(2) Multifamily Buildings: Water Usage Metering:~~ ~~(a) Where not otherwise required by the local AHJ, installation of a meter for water consumed from any source associated with the building or building site except for pools and spas. 2 per unique use meter~~ ~~(b) Each water meter shall be capable of communicating water consumption data remotely for the dwelling unit occupant and be capable of providing daily data with electronic data storage and reporting capability that can produce reports for daily, monthly, and yearly water consumption. (Fire sprinkler systems are not required to be metered). 2 per sensor package~~ Points earned in § 802.3~~(2)~~ shall not exceed 50% of the total points earned for Chapter 8. >>> 11.802.3 Water usage metering. Water meters are installed complying with the following: ~~(1) Single-Family Buildings: Water Usage Metering:~~ (1~~a~~) Where not otherwise required by the local AHJ, installation of a meter for water consumed from any source associated with the building or building site except for pools and spas. 2 per unique meter (2~~b~~) Each water meter shall be capable of communicating water consumption data remotely for the dwelling unit occupant and be capable of providing daily data with electronic data storage and reporting capability that can produce reports for daily, monthly, and yearly water consumption. (Fire sprinkler systems are not required to be metered). 2 per sensor package ~~(2) Multifamily Buildings: Water Usage Metering:~~ ~~(a) Where not otherwise required by the local AHJ, installation of a meter for water consumed from any source associated with the building or building site except for pools and spas. 2 per unique use meter~~ ~~(b) Each water meter shall be capable of communicating water consumption data remotely for the dwelling unit occupant and be capable of providing daily data with electronic data storage and reporting capability that can produce reports for daily, monthly, and yearly water consumption. (Fire sprinkler systems are not required to be metered). 2 per sensor package~~ [Points earned in § 11.802.3~~(2)~~ shall not exceed 50% of the total points earned for the Indoor and Outdoor Water Use Category]

Reason:	There's no need for options (1) and (2) when they are identical.
TG Recommendation:	Accept
TG Vote:	5-0-1
TG Modification:	
TG Reason:	

PC242 ID 8467	**802.7 Irrigation systems**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	802.7.4 The irrigation system(s) is controlled by a smart controller or no irrigation is installed. [Points are not additive.] (1) Irrigation controllers shall be in accordance with the performance criteria of the EPA WaterSense program 10 (2) No irrigation is installed and <u>a minimum of 5 points from 503.5(1-5) is earned</u> ~~a landscape plan is developed in accordance with § 503.5, as applicable~~. 15 (3) No irrigation is installed and there is plan of no landscaping. 15
Reason:	In this recent development cycle, many more options were added under 503.5 Landscape Plan, including optional credits for installation of artificial turf, turf area percentage, and more. The points available under 503.5 has also grown considerably – a building can earn anywhere between 0.5 and 58 points under 503.5. Practice 802.7.4 references 503.5 with very simple language – "a landscape plan is developed in accordance with 503.5." I think the Task Groups should consider what would be a meaningful achievement to satisfy the expectation and if a few selected sub-sections should be referenced, rather than the entire practice. I ask that both the Lot Design/Development and Water Efficiency Task Groups review this proposed change.
TG Recommendation:	Accept as Modified
TG Vote:	5-0-1
TG Modification:	*Modify as Follows:* 802.7.4 The irrigation system(s) is controlled by a smart controller or no irrigation is installed. [Points are not additive.] (1) Irrigation controllers shall be in accordance with the performance criteria of the EPA WaterSense program 10 (2) No irrigation is installed and <u>a minimum of 5 points from 503.5(1-5, 7, 9, 10-11) is earned</u> ~~a landscape plan is developed in accordance with § 503.5, as applicable~~. 15 (3) No irrigation is installed ~~and there is no landscape area and there is plan of no landscaping.~~ 15

	Reorder 503.5 and renumber (this will affect language above so that the new references would be (1-9) in 802.7.4 (1) (2) (3) (4) (5) (7) (9) (10) (11) (6) (8) (13) (12) (14) (15)
TG Reason:	Reorder and renumbering is to align practices with vegetation vs. non-vegetation. This streamlines the reference within 802.3. Item (3) was rewritten for clarity and to narrow its available use to certain projects with limited outdoor area and to eliminate option for artificial turf to be used as a landscape option for compliance with this section.

PC243 ID 8433	**802.11 Pools and spas**
Submitter:	Karla Butterfield
Organization:	Steven Winter Associates, Inc.
Comment:	802.11.2 A~~n motorized~~ non-permeable pool cover is installed and extends across the entire pool surface..... 10
Reason:	A hand crank pool cover can be as effective as a motorized one.
TG Recommendation:	Accept as Modified
TG Vote:	5-0-1

TG Modification:	*Modify as follows:* 802.11.2 Non-permeable pool cover is installed and extends across the entire pool (1) Non-motorized…5 (2) Motorized…10 ~~802.11.2 An motorized non-permeable pool cover is installed and extends across the entire pool surface..... 10~~
TG Reason:	Want to offer options. Hand-crank may be just as effective as a motorized cover but requires more human intervention. Motorized options are more expensive. Evaporation without a cover is 5X more in dry hot climates.

PC244 ID 8473	**Chapter 8 - Other**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	None.
Reason:	I request that the Consensus Committee review the point values for this section and rebalance with the point options and thresholds in other sections. I am submitting this request for each chapter.
TG Recommendation:	Accept as Modified
TG Vote:	4-0-0
TG Modification:	*Modify the following:* 802.3 Water usage metering. Water meters are installed complying with the following: Max 14 points ~~(1) Single-Family Buildings: Water Usage Metering:~~ (1~~a~~) Where not otherwise required by the local AHJ, installation of a meter for water consumed from any source associated with the building or building site except for pools and spas. (Dwelling unit domestic cold water sub-meters can only be counted once per building.) 2 per unique use meter (2~~b~~) Each water meter shall be capable of communicating water consumption data remotely for the dwelling unit occupant and be capable of providing daily data with electronic data storage and reporting capability that can produce reports for daily, monthly, and yearly water consumption. (Fire sprinkler systems are not required to be metered). 2 per sensor package ~~Points earned in 802.3(2) shall not exceed 50% of the total points earned for Chapter 8.~~ 802.5.1 Install water-efficient lavatory faucets with flow rates not more than 1.5 gpm (5.68 L/m), tested in compliance with ASME A112.18.1/CSA B125.1 and complying with the performance criteria of the EPA WaterSense High-Efficiency Lavatory Faucet Specification: (1) Flow rate ≤ 1.5 gpm ~~[Faucets in all residential bathrooms are in compliance]~~..... 1 [3 max]

	Multifamily Building Note: In multifamily buildings, the average number of bathrooms per unit may be used as the number of points awarded for this practice, rounded to the nearest whole number. (2) Flow rate ≤ 1.2 gpm ~~[Faucets in all residential bathrooms are in compliance]~~..... 2 [6 max] Multifamily Building Note: In multifamily buildings, the average number of bathrooms per unit may be used as the number of points awarded for this practice, rounded to the nearest whole number. (3) Flow rate ≤ 1.5 gpm for all lavatory faucets in the dwelling unit(s) or sleeping unit(s) ..... 6 Additional (4) Flow rate ≤ 1.5 gpm for all lavatory faucets in the dwelling unit(s) or sleeping unit(s), and not less than one bathroom has faucet(s) with flow rate(s) ≤ 1.2 gpm..... 8 Additional (5) Flow rate ≤ 1.2 gpm for all lavatory faucets in the dwelling unit(s) or sleeping unit(s) ..... 12 Additional 802.6 Water closets and urinals. Water closets and urinals are in accordance with the following: Points awarded for § 802.6(2) or § 802.6(3), not both. (1) Gold and Emerald levels: All water closets and urinals are in accordance with §802.6..... Mandatory (2) All water closets are ~~is~~ installed with an effective flush volume of 1.28 gallons (4.85 L) or less in accordance with ASME A112.19.2/CSA B45.1 or ASME A112.19.14 as applicable. Tank-type water closets shall be in accordance with the performance criteria of the EPA WaterSense Specification for Tank-Type Toilets. ~~[Points awarded per fixture. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.]~~ ..... 21 ~~4 2 [12 max]~~ ~~(3) All water closets are in accordance with § 802.6(2). ..... 178~~ (3~~4~~) All water closets are in accordance with § 802.6(2) and one or more of the following are ~~installed~~ met: (a) Water closets that have an effective flush volume in accordance with one of the following: ~~between 0.9 and 1.2 gallons~~. ~~[Points awarded per toilet. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.] ..... 2 Additional [6 Add'l max]~~ ~~(b) Water closets have an effective flush volume of 0.8 gallons or less. .....~~ (i) between and including 0.9 and 1.2 gallons; ..... 2 Additional (ii) less than 0.9 gallons..... 4 Additional (~~c~~b) One or more urinals are in installed in accordance with the following: (i) ~~with~~ a flush volume of 0.5 gallons (1.9L) or less when tested in accordance with ASME A112.19.2/CSA B45.1. ..... 2 Additional

	(~~dii~~) ~~One or more~~ composting or non-flushing toilets or non-flushing urinals. Non-flushing toilets and urinals shall be tested in accordance with ASME A112.19.2/CSA B45.1. ..... 12 Additional
TG Reason:	Wish to limit total number of points available for water usage metering. Wish to increase points available for lavatory faucets, especially for multifamily buildings. Simplified point calculation for water closet and urinal points.

PC245 ID 8483	902.3 Radon testing and mitigation
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	See PC245 Substantiating Documents.
Reason:	Issues for both new construction and existing building sections: The following language is currently under 902.3/11.902.3 – a section where the radon zones are defined. It implies that an AHJ does not need to identify radon zones for existing buildings. I suggest deleting or moving to a more appropriate location within the Ch 9 and Ch 11 Radon Testing and Mitigation sections. Mandatory except for an existing building that has been tested for radon and is in accordance with federal and local acceptable limits. 902.3.1/11.902.3.1 Multifamily Testing Specifications is confusing, as it includes references and distinct sampling rates for both Zone 1 and Zone 2. There is no mention of Zone 3. I suggest making the practice text more general by removing Zone references. I also suggest including two point tiers – one for 100% testing of ground-contact areas and another (lesser) tier for sampled testing, which would only be available to projects in Zone 2 and Zone 3. Within the Multifamily Testing Specifications section, I suggest replacing "non-residential ground-contact locations" with "ground-contact amenity areas." This change will clarify that the language pertains to multifamily common areas, not retail/commercial space. Commercial spaces within mixed-use buildings are governed by radon reduction practices within Chapter 13. The language "all ground-contact rooms, offices, classrooms, and other general use areas" is vague. It would be simpler to simply say "in all locations that are occupied or intended to be occupied." Finally, I suggest an amendment to 11.902.3.2 Radon Reduction Measures to convey that the practice is only mandatory for existing buildings where there is new ground supported slab. It is not appropriate to require that all existing buildings in Zone 1 install a passive radon system. This follows the key principle of Section 305 – mandatory practices within Chapter 11 are not required if they are out of scope of the renovation project. I also included a similar amendment to the twin practice within the New Construction pathway, which would apply to cases where substantial rehabs seek certification as new construction. Issues for existing building sections: Existing buildings will often not have an existing vent pipe. I suggest replacing "the fan for the radon vent pipe" with "a radon mitigation system" in 11.902.3.2.1. 11.902.3.2 Radon Reduction Measures references IRC Appendix AF Radon Control Measures. This reference should not be included within the Existing Buildings chapter, as it is specific to new construction. 11.902.3.2 Radon Reduction Measures does not include references that are appropriate for existing single-family homes. Suggest referencing the ANSI AARST Soil Gas Mitigation Standards for Existing Homes. I have proposed this standard to be added to the practice and Ch 14 Reference Standards. While 902.3.3 is identified with a "Mandatory" flag, the parallel practice in Chapter 11 lacked that same flag. I suggest adding it so that it does not get missed.
Substantiating Documents:	True
TG Recommendation:	Accept as Modified
TG Vote:	6-0-0
TG Modification:	**902.3 Radon testing and mitigation.** Radon Zones are identified by the AHJ or, where the zone is not identified by the AHJ, as defined in Figure 9(1). ~~*[Mandatory except for an existing building that has been tested for radon and is in accordance with federal and local acceptable limits.]*~~ **Mandatory** **902.3.1 Radon testing.** Radon testing is mandatory for Zone 1. **Exceptions:** 1) Testing is not mandatory where the authority having jurisdiction has defined the radon zone as Zone 2 and 3; and 2) testing is not mandatory

	where the occupied space is located above an unenclosed open space or concrete podiums.	
	(1) Single-family testing specifications. Single-family testing is performed as specified in (a) through (j). Testing of a representative sample shall be permitted for multifamily buildings only.	**8**
	(a)-(j) *unchanged*	
	(2) Multifamily testing specifications. Multifamily testing is performed as specified in (a) through (i)..	**8 for 100% testing of ground-contact units/areas** **6 for 25% sampling of ground contact units/areas (Zone 2 and 3 only)**
	(a) ~~For Zone 1,~~ Each ground-contact dwelling or living sleeping unit, a test is performed in the lowest level that serves or could serve as a living area, sleeping quarters, office, playroom or otherwise be occupied for residential use at some time in the future. ~~Apply a 25% sampling of units or at least one of each unit type whichever is greater, for Zone 2 buildings.~~ There should be representative samples across the footprint of the building.	
	(b) For ~~non-residential~~ ground-contact amenity areas ~~locations~~, a test is performed in all ~~ground-contact rooms, offices, classrooms and other general use~~ areas that are occupied or intended to be occupied. ~~Apply a 25% sampling of spaces for Zone 2 buildings.~~ There should be representative samples across the footprint of the building.	
	(c)-(i) *unchanged*	
	(3) Testing results. A radon test done in accordance with 902.3.1(1) or 902.3.1(2) and completed before occupancy receives a result of 2 pCi/L or less.	**6**
	902.3.2 Radon reduction measures. Radon reduction measures are in accordance with IRC Appendix AF Radon Control Methods, ANSI/AARST MA-MFLB, or § 902.3.1.	
	(1) Buildings located in Zone 1	

	(a) a passive radon system is installed	**Mandatory**
	Mandatory for existing building with conditioned space over a new ground supported slab. An existing building that has been tested for radon and is less than 4 pCi/L would be exempted from this requirement.	
	(b) an active radon system is installed	**12**
	(2) Buildings located in Zone 2 or Zone 3	
	(a) a passive radon system is installed	**6**
	(b) an active radon system is installed	**12**
	11.902.3 Radon testing and mitigation**.** Radon Zones are identified by the AHJ or, where the zone is not identified by the AHJ, as defined in Figure 9(1). ~~*[Mandatory except for an existing building that has been tested for radon and is in accordance with federal and local acceptable limits.]*~~	**Mandatory**
	11.902.3.1 Radon testing**.** Radon testing is mandatory for Zone 1.	
	Exceptions: 1) Testing is not mandatory where the authority having jurisdiction has defined the radon zone as Zone 2 and 3; and 2) testing is not mandatory where the occupied space is located above an unenclosed open space or concrete podiums.	
	(1) Single-family testing specifications. Single-family testing is performed as specified in (a) through (j). Testing of a representative sample shall be permitted for multifamily buildings only.	**8**
	(a)-(i) *unchanged*	
	(j) Where the radon test result is 4 pCi/L or greater, ~~the fan for the radon vent pipe~~ a radon mitigation system shall be installed. The system shall be modified and retested until the test result is less than 4 pCi/L.	
	(2) Multifamily testing specifications. Multifamily testing is performed as specified in (a) through (i).	**8 for 100% testing of ground-contact units/areas**

		6 for 25% sampling of ground-contact units/areas (Zone 2 and 3 only)
	(a) ~~For Zone 1,~~ Each ground-contact dwelling or living sleeping unit, a test is performed in the lowest level that serves or could serve as a living area, sleeping quarters, office, playroom or otherwise be occupied for residential use at some time in the future. ~~Apply a 25% sampling of units or at least one of each unit type- whichever is greater, for Zone 2 buildings.~~ There should be representative samples across the footprint of the building. (b) For ~~non-residential~~ ground-contact amenity areas ~~locations~~, a test is performed in all locations ~~all ground-contact rooms, offices, classrooms and other general use areas~~ that are occupied or intended to be occupied. ~~Apply a 25% sampling of spaces for Zone 2 buildings.~~ There should be representative samples across the footprint of the building. (c)-(i) *unchanged* (3) Testing results. A radon test done in accordance with § 11.902.3.1(1) or 902.3.1(2) and completed before occupancy receives a result of 2 pCi/L or less.	**6**
	11.902.3.2 Radon reduction measures**.** Radon reduction measures are in accordance with ~~IRC Appendix AF Radon Control Methods~~, ANSI/AARST SGM-MFLB, ANSI/AARST SGM-SF, or § 11.902.3.1. (1) Buildings located in Zone 1 (a) a passive radon system is installed	**Mandatory for existing building with conditioned space over a new ground supported slab. An existing building that has been tested for radon and is less than 4 pCi/L would**

	be exempt from this requirement. (b) an active radon system is installed **12** (2) Buildings located in Zone 2 or Zone 3 (a) a passive or active radon system is installed **6** (b) an active radon system is installed **12** 11.902.3.3 Radon reduction option**.** This option requires § 11.902.3.3.2 through § 11.902.3.3.7. **Mandatory** *Addition for Chapter 14 Reference Standards:* **DOCUMENT** / **DATE** / **TITLE** / **SECTION** ANSI/AARST SGM-SF / 2023 / Soil Gas Mitigation Standards for Existing Homes / 11.902.3.2
TG Reason:	Moved mandatory language for clarity. For multifamily testing requirements, made practice text more general by removing Zone references. Different points for different % of sampling where testing is not mandatory and added references for existing building.

PC246 ID 8474	**Chapter 9 - Other**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	None.
Reason:	I request that the Consensus Committee review the point values for this section and rebalance with the point options and thresholds in other sections. I am submitting this request for each chapter.
TG Recommendation:	Accept as Modified
TG Vote:	4-0-0
TG Modification:	**901.5 Wood materials.**(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~~ Mandatory
TG Reason:	Points revised

Chapter 10: Operation, Maintenance, and Building Owner Education

PC247 ID 8502	1001.1 Homeowner's manual
Submitter:	Alexander Haldeman
Organization:	James Hardie Building Products
Comment:	**1001.1 Homeowners Manual** (27) For homes in areas designated as a wildland-urban interface or other wildfire-prone areas, information is included on how defensible space, and the home in general, is maintained to help the home be resilient to wildfires.
Reason:	It is important to add information on how to protect buildings from wildfires, even if practices were not originally done to claim points. Simple steps such as clearing leaf-litter and dead branches from around the house, regularly cleaning gutters, regularly cleaning areas beneath decks, fixing broken siding, keeping trees and shrubs trimmed, and many more small things can help prevent damage.
TG Recommendation:	Accept as Modified
TG Vote:	4-0-0
TG Modification:	**1001.1 Homeowners Manual** (27) For homes in areas designated as a wildland-urban interface or other wildfire-prone areas, information is included on how the home and it's defensible space~~, and the home in general,~~ is maintained to help the home be resilient to wildfires.
TG Reason:	The TG rewrote the proposal to be clearer without changing the intent.

PC248 ID 8503	1002.3 Maintenance manual
Submitter:	Alexander Haldeman
Organization:	James Hardie Building Products
Comment:	**1002.3 Maintenance manual** (14) A maintenance plan to preserve the defensible space, and the building in general, for wildfire resilience (only allowable when points for 505.12 Wildfire resilience are claimed)
Reason:	It is important to add information on how to maintain and protect buildings from wildfires. Simple (but not always done) maintenance steps such as clearing leaf-litter and dead branches from around the house, regularly cleaning gutters, regularly cleaning areas beneath decks, fixing broken siding, keeping tress and shrubs trimmed, and many more small things can help prevent damage.
TG Recommendation:	Accept as Modified
TG Vote:	4-0-0
TG Modification:	**1002.3 Maintenance manual** (14) A maintenance plan to preserve the building and it's defensible space~~, and the building in general,~~ for wildfire resilience (only allowable when points for 505.12 Wildfire resilience are claimed)
TG Reason:	The TG rewrote the proposal to be more clear without changing the intent.

PC249 ID 8475	Chapter 10 - Other
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	None.
Reason:	I request that the Consensus Committee review the point values for this section and rebalance with the point options and thresholds in other sections. I am submitting this request for each chapter.
TG Recommendation:	Disapprove
TG Vote:	4-0-0
TG Modification:	
TG Reason:	The TG doesn't believe points rebalancing is necessary

Chapter 11: Remodeling

PC250 ID 8429	11.505.6.1 Multi-family residence plug-in electric vehicle charging
Submitter:	Karla Butterfield
Organization:	Steven Winter Associates, Inc.
Comment:	11.505.6.1 Multi-unit family residence plug-in electric vehicle charging. Plug-in electric vehicle charger is provided for 2% or more of parking ~~stalls~~ spaces.
Reason:	Change stalls to spaces to provide consistency across credits.
TG Recommendation:	Accept
TG Vote:	6-0-0
TG Modification:	
TG Reason:	Good editorial correction

PC251 ID 8430	11.505.6.2 Multi-family residence plug-in electric vehicle charging capability
Submitter:	Karla Butterfield
Organization:	Steven Winter Associates, Inc.
Comment:	11.505.6.2 Multi-family residence plug-in electric vehicle charging capability. Plug-in electric vehicle charging capability is provided for 2% or more of parking ~~stalls~~ spaces.
Reason:	Change stalls to spaces to provide consistency across credits.
TG Recommendation:	Accept
TG Vote:	6-0-0
TG Modification:	
TG Reason:	Good editorial correction

PC252 ID 8432	11.602.1 Moisture management - building envelope
Submitter:	Karla Butterfield
Organization:	Steven Winter Associates, Inc.
Comment:	11.602.1.9 Flashing. (1) Flashing is installed at all the following locations, as applicable:..... (i) all window and door head and jamb ~~flashing~~; and (j) roof kickout and step ~~flashing~~.
Reason:	The charging statement includes the word "flashing". Remove "flashing from I and J where it is redundant.
TG Recommendation:	Accept as Modified
TG Vote:	6-0-0

TG Modification:	*Modify as follows:* (1) Flashing is installed at all the following locations, as applicable:..... (d) at roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets (e.g, kickout and step flashing); (i) all window and door heads and jambs ~~flashing~~; and ~~(j) roof kickout and step flashing~~
TG Reason:	Consistency with New Construction pathway in Ch 6.

PC253 ID 8436	**11.602.2 Roof surfaces**
Submitter:	Jonathan Humble
Organization:	Cool Roof Rating Council
Comment:	*(Remove dash between CRRC and S100, and add "ANSI/" before CRRC)* **11.602.2 Roof surfaces.** Not less than 90% 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 more of the following: (1) An initial SRI of not less than 78 for low-sloped roof (a slope less than 2:12) and an initial SRI of not less than 29 for a steep-sloped roof (a slope equal to or greater than 2:12). The SRI is calculated in accordance with ASTM E1980 or. Roof roof products are rated and labeled in accordance with the ANSI/CRRC-S100 Program. (2) a vegetated roof system
Reason:	I am representing the Cool Roof Rating Council for this code change proposal. The citations for the referenced standard ANSI/CRRC S100 are different in various locations. We ask that the consensus committee editorially update the titles as shown in our proposals.
TG Recommendation:	Accept as Modified
TG Vote:	6-0-0
TG Modification:	*Modify as follows:* *(Remove dash between CRRC and S100, and add "ANSI/" before CRRC)* **11.602.2 Roof surfaces.** Not less than 90% 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 more of the following: (1) An initial SRI of not less than 78 for low-sloped roof (a slope less than 2:12) and an initial SRI of not less than 29 for a steep-sloped roof (a slope equal to or greater than 2:12). The SRI is calculated in accordance with

	ASTM E1980 or~~. Roof~~ roof products that are rated and labeled in accordance with the ANSI/CRRC-S100 Program. (2) a vegetated roof system
TG Reason:	Strike-through did not come through with submission/added missing word

PC254 ID 8442	**11.610.1 Life cycle assessment**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	11.610.1.1 Whole-building life cycle assessment. A whole-building LCA is performed in conformance with ASTM E2921, ISO 21931, EN 15978, or equivalent, while using ISO 14044 compliant life cycle assessment. 15 max (1) Execute LCA at the whole building level through a comparative analysis between the final and reference building designs as set forth under Standard Practice, ASTM E2921. The assessment criteria includes the following environmental impact categories: 8 (a) Primary energy use (b) Global warming potential (c) Acidification potential (d) Eutrophication potential (e) Ozone depletion potential (f) Smog potential (2) Execute LCA on regulated loads throughout the building operations life cycle stage. Conduct simulated energy performance analyses in accordance with § 11.702.2.1 in establishing the comparative performance of final versus reference building designs. Primary energy use savings and global warming potential avoidance from simulation analyses results are determined using energy supplier, utility, or EPA electricity generation and other fuels energy conversion factors and electricity generation and other fuels emission rates for the locality or Sub-Region in which the building is located. 5 (3) Execute full LCA, including use-phase, through calculation of operating energy impacts (c) – (f) using local or regional emissions factors from energy supplier, utility, or EPA. 2
Reason:	Reference to 702.2.1 should be 11.702.2.1.
TG Recommendation:	Accept
TG Vote:	6-0-0
TG Modification:	
TG Reason:	

PC255 ID 8506	**11.613.2 HUD Guides (Designing for Natural Hazards)**
Submitter:	Elina Thapa
Organization:	Home Innovation Research Labs (NGBS Green)

Comment:	**11.613 RESILIENT CONSTRUCTION** **11.613.2 ~~HUD~~ DNH Guides (Designing for Natural Hazards).** Building incorporates resilient construction guidance from DNH Guides (Designing for Natural Hazards). Select guidance from a maximum of two hazard categories identified by the vulnerability assessment in § 613.1. [Points awarded only for buildings where 613.1 is also awarded] ..... 16 max **11.613.2.1 Wind Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 1: Wind) are met. [0.5 point awarded per practice, 2 points max per one-pager] ..... 8 max **11.613.2.2 Water Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 2: Water) are met. [0.5 point per practice, 2 points max per one-pager] ..... 8 max **11.613.2.3 Fire Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 3: Fire) are met. [0.5 point per practice, 2 points max per one-pager] ..... 8 max **11.613.2.4 Earth Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 4: Earth) are met. [0.5 point per practice, 2 points max per one-pager] OR Building is designed and retrofitted for maximum considered earthquake hazard by a Licensed P.E. with 3rd party review and document including detailed Site-Specific Hazard report..... 8 max
Reason:	The guides referenced is called DNH guide. Not enough practices in earth resilience category for high rise structures that are not timber construction so provided another option for such structure to be able to earn maximum points under this practice.
TG Recommendation:	Accept as Modified
TG Vote:	6-0-0
TG Modification:	**11.613 RESILIENT CONSTRUCTION** **11.613.2 ~~HUD~~ DNH Guides (Designing for Natural Hazards).** Building incorporates resilient construction guidance from DNH Guides (Designing for Natural Hazards). Select guidance from a maximum of two hazard categories identified by the vulnerability assessment in § 613.1. [Points awarded only for buildings where 613.1 is also awarded] ..... 16 max **11.613.2.1 Wind Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 1: Wind) are met. [0.5 point awarded per practice, 2 points max per one-pager] ..... 8 max **11.613.2.2 Water Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 2: Water) are met. [0.5 point per practice, 2 points max per one-pager] ..... 8 max **11.613.2.3 Fire Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 3: Fire) are met. [0.5 point per practice, 2 points max per one-pager] ..... 8 max **11.613.2.4 Earth Resilience.** Practices listed on the following one-pager titles of the ~~HUD~~ DNH Guides (Volume 4: Earth) are met. [0.5 point per practice, 2 points max per one-pager] Or, Building is designed and retrofitted for maximum considered earthquake hazard by a Licensed Professional Engineer ~~P.E.~~ with 3rd party review and document including detailed Site-Specific Hazard report..... 8 max
TG Reason:	Editorial changes consistent with Ch 6 / clarification (spelled out acronym)

PC256 ID 8453	11.701.1.2 Minimum Prescriptive Path requirements
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	11.701.1.2 Minimum Prescriptive Path requirements. A building complying with § 11.703 shall obtain not less than 30 points from § 11.703 and shall include not less than <u>two</u> practices from § 11.706, or not less than one practice from § 11.706 and not less than one practice from § 11.707.
Reason:	Missing word
TG Recommendation:	Accept
TG Vote:	6-0-0
TG Modification:	
TG Reason:	

PC257 ID 8451	11.703.2 Building envelope
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	Replace table with Table R402.1.4 from 2021 IECC.
Reason:	Table 11.703.2.1 appears to be derived from the 2018. I suggest updating to the 2021 IECC for consistency.
TG Recommendation:	Accept
TG Vote:	6-0-0
TG Modification:	
TG Reason:	Pending approval from IECC to copy table

PC258 ID 8428	11.707.11 Grid-interactive battery storage system
Submitter:	Steven Rosenstock
Organization:	Self
Comment:	~~**11.707.11 Grid-Interactive Battery Storage System.** A grid-interactive battery storage system of no less than 6 kWh of available capacity is installed.....2 points~~ **11.707.~~12~~ <u>11</u> Smart Ventilation** ... **11.707.~~13~~ <u>12</u> Alternative Refrigerant** ... 1**1.707.~~14~~ <u>13</u> Third-party utility benchmarking service** ... **11.707.~~15~~ <u>14</u> Entryway air seal ...**

	(rest of the sections are unchanged)
Reason:	This should be deleted, as this practice can already receive points in Section 11.505.13 (which also covers innovative practices) and Section 11.613.2 (for resiliency). Right now, it is a form of "double counting" since the same equipment/practice can receive points in two different parts of Chapter 11.
TG Recommendation:	Accept
TG Vote:	6-0-0
TG Modification:	
TG Reason:	

PC259 ID 8454	**11.801.1 Mandatory requirements**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	11.801.1 Mandatory requirements. The building shall comply with § 11.802 (Prescriptive Path) and § 11.803 (Innovative Practices). Points from § 11.804 (Performance Path) shall not be combined with points from § 11.802 (Prescriptive Path) or § 11.803 (Innovative Practices). The mandatory provisions of § 802 (Prescriptive Path) are required when using the Water Rating Index of § 804 (Performance Path) for Chapter 11 Water Efficiency compliance ~~Chapter 8 Water Efficiency compliance~~.
Reason:	Reference is incorrect.
TG Recommendation:	Accept
TG Vote:	6-0-0
TG Modification:	
TG Reason:	Corrects the reference

PC260 ID 8434	**11.802.11 Pools and spas**
Submitter:	Karla Butterfield
Organization:	Steven Winter Associates, Inc.
Comment:	11.802.11.2 A~~n motorized~~ non-permeable pool cover is installed and extends across the entire pool surface..... 10
Reason:	A hand crank pool cover can be as effective as a motorized one.
TG Recommendation:	Accept as Modified
TG Vote:	6-0-0
TG Modification:	*Modify as follows:* 11.802.11.2 Non-permeable pool cover is installed and extends across the entire pool (1) Non-motorized…5

	(2) Motorized…10 ~~11.802.11.2 An motorized non-permeable pool cover is installed and extends across the entire pool surface..... 10~~
TG Reason:	Consistency with New Construction Path Note: AHJ should issue verification note that a tarp that is laid across the pool does not qualify

PC261 ID 8448	**11.804.2 Water efficiency rating levels**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	11.804.2 Water efficiency rating levels. In lieu of threshold levels for Chapter 8 in Table 303 , rating levels for § 11.804.1 are in accordance with Table 11.804.2. Table 11.804.2 Maximum WRI Scores for NGBS Certification in Chapter 8 BRONZE SILVER GOLD EMERALD 100~~70~~ 90~~60~~ 80~~50~~ 70~~40~~ 11.804.3 Water efficiency NGBS points equivalency. The additional points for use with Table 305.2.6.2 from the Chapter 8 Water Efficiency Category are determined in accordance with Equation 11.804.3. Equation 11.804.3 NGBS = WRI x (-2.29) + 181.7
Reason:	Current WRI thresholds for existing buildings are not realistic. A score of 70 indicates that a building is roughly 30% more efficient than typical construction today. The median age of existing apartment buildings is over 50 years old (constructed between 1960 and 1979; see NMHC - https://www.nmhc.org/research-insight/quick-facts-figures/quick-facts-apartment-stock/characteristics-of-apartment-stock/). Most existing residential buildings are highly inefficient and would likely score above a 200 pre-remodel. I suggest lowering the WRI threshold for Bronze level certification to 100 and adjust the others accordingly. This would still be a significant achievement for the majority of existing buildings.
TG Recommendation:	Accept as Modified
TG Vote:	TG4 - 4-0-0; TG7 - 6-0-0
TG Modification:	***Task Group 4 Recommendation: Accept as Modified:*** 11.804.2 Water efficiency rating levels. In lieu of threshold levels for Chapter 8 in Table 303 , rating levels for § 11.804.1 are in accordance with Table 11.804.2. Table 11.804.2 Maximum WRI Scores for NGBS Certification in Chapter 11 ~~8~~

	BRONZE SILVER GOLD EMERALD 100~~70~~ 90~~60~~ 80~~50~~ 70~~40~~ 11.804.3 Water efficiency NGBS points equivalency. The additional points for use with Table 305.2.6.2 from the Chapter 8 Water Efficiency Category are determined in accordance with Equation 11.804.3. Equation 11.804.3 NGBS = WRI x (-2.29) + 181.7 Reason: in support of original proposal, 100 WRI threshold for Bronze level … score of 95 requires significant investment; fixed reference to Ch 11 ***Task Group 7 Recommendation: Accept as Modified:*** 11.804.2 Water efficiency rating levels. In lieu of threshold levels for Chapter 8 in Table 303 , rating levels for § 11.804.1 are in accordance with Table 11.804.2. Table 11.804.2 Maximum WRI Scores for NGBS Certification in Chapter 8 BRONZE SILVER GOLD EMERALD 95 90 80 70 ~~100 70~~ 90~~60~~ 80~~50~~ 70~~40~~ 11.804.3 Water efficiency NGBS points equivalency. The additional points for use with Table 305.2.6.2 from the Chapter 8 Water Efficiency Category are determined in accordance with Equation 11.804.3. Equation 11.804.3 NGBS = WRI x (-2.29) + 181.7
TG Reason:	Task Group 4: In support of original proposal, 100 WRI threshold for Bronze level … score of 95 requires significant investment; fixed reference to Ch 11. Task Group 7: Desire to bring limit below 100 to ensure that projects must be more efficient than code

PC262 ID 8446	**11.902.3.3 Radon reduction option**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	11.902.3.3 Radon reduction option. This option requires § 11.902.3.3.2 through § 11.902.3.3.7. *Mandatory when selected for compliance.* Mandatory 11.902.3.3.2 Soil gas collection. There shall be an unobstructed path for soil gas flow between the void space installed in the base course and the vent through the roof. Soil gases below the foundation shall be collected by a perforated pipe with a diameter of not less than 4 in. (10 cm) and not less than 5 ft (1.5 m) in total length. A tee fitting or equivalent method shall provide two horizontal openings to the radon collection. The tee fitting

	shall be designed to prevent clogging of the radon collection path. Alternately the soil gas collection shall be by approved radon collection mats or an equivalent approved method. 11.902.3.3.3 Soil gas entry routes. Openings in slabs, soil-gas retarders, and joints such as, but not limited to, plumbing, ground water control systems, soil-gas vent pipes, piping and structural supports, shall be sealed against air leakage at the penetrations. The sealant shall be a polyurethane caulk, expanding foam or other approved method. Foundation walls shall comply with IRC Section 103.2.3. Sumps shall be sealed in accordance with IRC Section 103.2.2. Sump pits and sump lids intended for ground water control shall not be connected to the sub-slab soil-gas exhaust system. 11.902.3.3.4 Soil gas vent. A gas-tight pipe vent shall extend from the soil gas permeable layer through the roof. The vent pipe size shall not be reduced at any location as it goes from gas collection to the roof. Exposed and visible interior vent pipes shall be identified with not less than one label reading “Radon Reduction System” on each floor and in habitable attics. 11.902.3.3.5 Vent pipe diameter. The minimum vent pipe diameter shall be as specified in Table 11.902.3.2.5. Table 11.902.3.3.5 Maximum Vented Foundation Area Maximum area vented Nominal pipe diameter 2,500 ft2 (232 m2) 3 in. (7.6 cm) 4,000 ft2 (372 m2) 4 in. (10 cm) Unlimited 6 in. (15.2 cm) 11.902.3.3.6 Multiple vented areas. In dwellings where interior footings or other barriers separate the soil-gas permeable layer, each area shall be fitted with an individual vent pipe. Vent pipes shall connect to a single vent that terminates above the roof or each individual vent pipe shall terminate separately above the roof. 11.902.3.3.7 Fan. Each sub-slab soil-gas exhaust system shall include a fan, or dedicated space for the post-construction installation of a fan. The electrical supply for the fan shall be located within 6 ft (1.8 m) of the fan. Fan is not required to be on a dedicated circuit.
Reason:	The parallel practice for new construction is identified with a MANDATORY note. I suggest including a similar note within the Existing Building section; otherwise, it will be overlooked.
TG Recommendation:	Disapprove
TG Vote:	6-0-0
TG Modification:	
TG Reason:	Believe that additional mention of “mandatory” would be confusing

PC263 ID 8441	**11.1005.4 Tenant Energy and Water Consumption Data Release Form**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	11.1005.4 Tenant Energy and Water Consumption Data Release Form.

	[Points only available for buildings with separately metered utilities.] Develop and provide an operational plan for residents to allow energy and water consumption data release: (1) For energy consumption. 2 (2) For water consumption. 2
Reason:	Point values are missing. Add same values as are present in the new construction path.
TG Recommendation:	Accept as Modified
TG Vote:	6-0-0
TG Modification:	*Modify as follows:* 11.1005.4 Tenant Energy and Water Consumption Data Release Form. [Points only available for buildings with separately metered utilities.] Develop and provide an operational plan, including a sample data release form that would allow residents to release ~~for residents to allow~~ energy and water consumption data ~~release~~: (1) For energy consumption. 2 (2) For water consumption. 2 1005.4 Tenant Energy and Water Consumption Data Release Form. [Points only available for buildings with separately metered utilities.] Develop and provide an operational plan, including a sample data release form that would allow residents to release ~~for residents to allow~~ energy and water consumption data ~~release~~: (1) For energy consumption. 2 (2) For water consumption. 2
TG Reason:	Clarify verification method/suggest similar change for 1005.4

PC264 ID 8479	**Chapter 11 - Overall**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	See PC264 Substantiating Documents.
Reason:	This draft of Chapter 3 and Chapter 11 was developed with input from Task Group 7 Existing Buildings. Chapter 3 Compliance Method is inconsistent with regard to the level of detail for the different compliance pathways. For New Construction and Land Development, only high-level direction is included within Section 3, and detailed compliance is located within Chapters 5-10 and Chapter 4, respectively. However, for Existing Buildings, Chapter 3 includes detailed energy and water compliance information. Existing Buildings compliance information is split across Section 305 and Chapter 11, with some compliance pathways being referenced only in one area. This makes it challenging for users to understand compliance requirements. With the number of energy and water compliance pathways growing exponentially with the 2024 version, compliance confusion will be exacerbated. In this draft, we sought to "right-size" Section 305 so that it includes only high-level direction and shift detailed energy and water compliance currently located in Section

	305 to Chapter 11so that a user can now find all energy and water compliance pathways in one place. This is an organizational change, not a functional/content change. This draft also corrects a previous misalignment of Section 305 and the Chapter 11 energy efficiency compliance pathways. In their previous modification of Section 305, TG7 had identified a limited number of "New Construction Energy Equivalency Paths." However, vague direction provided to staff resulted in Chapter 7 being entirely replicated within Chapter 11! In this draft, the Alternative Bronze, Silver, Gold, and Emerald compliance pathways were removed, as they reference codes or third-party labeling programs that are not relevant for existing buildings. The terms "New Construction Energy Equivalency Path" and "New Construction Water Equivalency Path" are confusing, as multiple pathways are included under these banners. These terms were struck and each of the individual pathways are highlighted independently. Finally, this draft corrects a previous issue with points award under 11.804 Performance Path. Previously, there were two conflicting point tables included, one in Section 305 and another in 11.804.2.
Substantiating Documents:	True
TG Recommendation:	Accept as Modified
TG Vote:	4-0-0
TG Modification:	See PC264 Supplemental Information.
TG Reason:	Editorial clean-up and renumbering for easier navigation

PC265 ID 8476	**Chapter 11 - Other**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	None.
Reason:	I request that the Consensus Committee review the point values for this section and rebalance with the point options and thresholds in other sections. I am submitting this request for each chapter.
TG Recommendation:	Disapprove
TG Vote:	4-0-0
TG Modification:	
TG Reason:	Reviewed, no action needed **contingent upon final point balancing from Chapter 8 being carried over to Chapter 11**.

PC266 ID 8477	**Chapter 11 - Other**
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	**11.703.1.2 Building Envelope Leakage.** New or altered portions of the ~~The~~ building thermal envelope are ~~is~~ in accordance with ~~R502.1.1.1 or R503.1.1 as applicable~~ one of the following IECC sections, as applicable: (1) R402.4 (2) C402.5.2 (2) C402.5.3

	(3) C402.5.1 and C402.5.4 through C402.5.11.1.
Reason:	With the various new compliance pathways added to Chapter 11, it is apparent that this certification option is now available for wider range of existing buildings. Mandatory practices must be applicable to both low-rise and high-rise construction. The current mandatory envelope leakage reference is most applicable to low-rise construction. This change would reference the latest code version and add references to the commercial code sections so that there is a relevant reference for mid- and high- rise buildings.
TG Recommendation:	Accept as Modified
TG Vote:	4-0-0
TG Modification:	**11.703.1.2 Building Envelope Leakage.** New or altered portions of the ~~The~~ building thermal envelope are ~~is~~ in accordance with IECC R501 or C501 ~~R502.1.1.1 or R503.1.1 as applicable~~ ~~one of the following IECC sections~~, as applicable. ~~(1) R402.4~~ ~~(2) C402.5.2~~ ~~(2) C402.5.3~~ ~~(3) C402.5.1 and C402.5.4 through C402.5.11.1.~~
TG Reason:	Change reference to existing building sections of IECC to simplify

Chapter 12: Certified Compliance Path for Single-Family Homes, Townhomes, and Duplexes

PC267 ID 8494	1203.13 Building envelope leakage
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	~~1203.13 Building envelope leakage. The air leakage rate of the dwelling unit tested in accordance with ANSI/RESNET/ICC Std. 380, ASTM E779, or ASTM E1827 shall not be greater than the following:~~ **1203.13 Building envelope leakage.** The building thermal envelope is in accordance with IECC R402.4
Reason:	Ch 7 references IECC R402.4 and C402.5 instead of Standard 380. Should Standard 380 still be referenced here? The proposed change is to make Chapter 12 consistent with Chapter 7
TG Recommendation:	Accept
TG Vote:	3-0-0
TG Modification:	
TG Reason:	

PC268 ID 8489	1203.15.1 ERI target compliance
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	1203.15.1 ERI target compliance. ~~Energy efficiency features are implemented to achieve an ERI performance that is 8 points less than the EPA National ERI Target Procedure for ENERGY STAR Certified Homes version 3.0 as computed based on Step 1 of the EPA National ERI Target Procedure. Dwelling ratings shall be submitted to a quality control registry approved by the Adopting Entity for calculating points under this section.~~ Compliance shall be determined in accordance with ANSI/RESNET/ICC 301. Energy efficiency features are implemented to achieve an ERI value that is at or below the maximum value in Table 704.2. Dwelling ratings shall be submitted to a Rating Certification Body approved by the Adopting Entity.
Reason:	This section should be reviewed and revised to ensure consistency with Ch 7. All other places have been revised to remove reference to ES ERI Target Procedure, but it continues to be referenced here.
TG Recommendation:	Accept
TG Vote:	3-0-0
TG Modification:	
TG Reason:	

PC269 ID 8499	1205.2 Solid fuel-burning fireplaces, inserts, stoves and heaters
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are EPA Phase 2 Emission Level Qualified Model ~~certified or Phase 2 Qualified.~~

Reason:	Revised language proposed to make practice consistent with Chapter 9 and 11
TG Recommendation:	Accept as Modified
TG Vote:	3-0-0
TG Modification:	Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are ~~Phase 2 Emission Level Qualified Model certified or Phase 2 Qualified~~ EPA Phase 2 Qualified.
TG Reason:	The TG modified the proposal to ensure that the correct verbiage was used for the EPA fireplace program.

PC270 ID 8490	**1205.6 Interior architectural coatings**
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	1205.6 Interior architectural coatings. Not less than 85% of the interior architectural coatings are in accordance with one or more of the following: (1) Low VOC as determined by EPA Method 24 (VOC content is below the detection limit for the method) (2) ~~Green Seal GS-11~~ ~~(3)~~ CARB Suggested Control Measure for Architectural Coatings (see Table 901.10.1).
Reason:	Strike Green Seal to be consistent with Chapter 9 revisions
TG Recommendation:	Accept as Modified
TG Vote:	3-0-0
TG Modification:	strike out Green Seal and renumber (rewritten for clarity below) ~~(2) Green Seal GS-11~~
TG Reason:	The TG agreed that Green Seal should be deleted and the subpractices renumbered. Formatting shown in mod.

PC271 ID 8507	**1205.8 Whole dwelling ventilation**
Submitter:	Elina Thapa
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	1205.8 Whole dwelling ventilation. Whole building ventilation systems implemented in the dwelling units are in accordance with the specifications of at least one of the following, as applicable: (a) 2021 International Residential Code (b) ASHRAE 62.2-2019

	One of the following whole building ventilation systems is implemented in the dwelling units and an explanation of the operation and importance of the ventilation system is included in § 1206.1. Exception: Unconditioned and low energy buildings in the Tropical Zone. ~~(1) exhaust air ventilation system equipped with outdoor air ducts and intake(s) for ventilation air.~~ ~~(2) exhaust air ventilation system equipped with outdoor air ducts and intake(s) for ventilation air and with automatic ventilation controls to limit ventilation air during periods of extreme temperature, extreme humidity and/or during times of peak utility loads.~~ ~~(3) supply air ventilation system.~~ ~~(4) supply air ventilation system equipped with automatic ventilation controls to limit ventilation air during periods of extreme temperature, extreme humidity and/or during times of peak utility loads.~~ ~~(5) balanced air ventilation system with exhaust and supply fan(s) with supply intakes located in accordance with the manufacturer's guidelines to not introduce polluted air back into the building.~~ ~~(6) heat-recovery ventilator.~~ ~~(7) balanced air ventilation system with exhaust and supply fan(s) with automatic ventilation controls to limit ventilation air during periods of extreme temperature, extreme humidity and/or during times of peak utility loads, and with intakes located in accordance with the manufacturer's guidelines to not introduce polluted air back into the building.~~ ~~(8) energy-recovery ventilator ICC 700-2024 NATIONAL GREEN BUILDING STANDARD DRAFT 2 Draft~~ (1) Exhaust or supply fan(s) ready for continuous operation and with appropriately labeled controls (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 buildings (3) Heat-recovery ventilator (4) Energy-recovery ventilator (5) Ventilation air is preconditioned by a system not specified above
Reason:	Making it consistent with chapter 9 whole dwelling ventilation changes.
TG Recommendation:	Disapprove
TG Vote:	3-0-0
TG Modification:	
TG Reason:	At the request of the submitter. Proposer was trying to better align with Chapter 9 but believes the practice should remain as is and the TG was ok with that.

PC272 ID 8486	**1205.12 MERV filters**
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)

Comment:	Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of the filter used.
Reason:	To make consistent with Chapter 9 practice. The sentence below, proposed to be added, was added in Chapter 9 but not in Chapter 12.
TG Recommendation:	Accept as Modified
TG Vote:	3-0-0
TG Modification:	Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of the filter ~~used~~ installed.
TG Reason:	The TG rewrote the proposal to be clearer and more precise.

PC273 ID 8498	**Chapter 12 - New Section**
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	Hazardous waste. A plan for any hazardous waste shall be prepared that includes information on the proper handling and disposal of hazardous waste. Hazardous waste is properly handled and disposed.
Reason:	New hazardous material plan added to chapter 6 should be added to Chap 12
TG Recommendation:	Accept as Modified
TG Vote:	3-0-0
TG Modification:	Hazardous waste. A hazardous waste plan ~~for any hazardous waste~~ shall be prepared that includes information on the proper handling and disposal of hazardous waste. Hazardous waste is properly handled and disposed.
TG Reason:	The TG made the language clearer and more concise.

Chapter 13: Commercial Spaces

PC274 ID 8491	1302 COMPLIANCE
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	13.02.3 Full mixed-use building compliance. Residential and non-residential spaces are verified to the requirements of this standard at the time of certification. The residential portions of the building are verified to the requirements of Chapters 5 through 10 or Chapter 11 of this Standard. The non-residential portion(s) of the building shall comply with the requirements of this chapter.
Reason:	Need to add Chapter 11 to this practice to recognize that Existing Buildings have commercial space that might seek certification.
TG Recommendation:	Accept as Modified
TG Vote:	6-0-0
TG Modification:	13.02.3 Full mixed-use building compliance. Residential and non-residential spaces are verified to the requirements of this standard at the time of certification. The residential portions of the building are verified to the requirements of Chapters 5 through 10, or Chapter 11, of this Standard. The non-residential portion(s) of the building shall comply with the requirements of this chapter.
TG Reason:	Adds necessary clarification for commercial spaces in existing buildings.

PC275 ID 8492	1304.5.4 Fireplaces and appliances
Submitter:	Michelle Foster
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	1304.5.4.5 Unvented Heaters and Appliances. Unvented room heaters and unvented decorative appliances, including alcohol burning, shall be prohibited.
Reason:	Added Heaters and Appliances so that the sub-head was more clear.
TG Recommendation:	Accept
TG Vote:	6-0-0
TG Modification:	
TG Reason:	Clarification of the title.

Chapter 14: Referenced Documents

PC276 ID 8437	CHAPTER 14: REFERENCED DOCUMENTS
Submitter:	Jonathan Humble
Organization:	Cool Roof Rating Council
Comment:	*(Add "ANSI/" before CRRC)* ~~**CCRC**~~ **CRRC – Cool Roof Rating Council |** www.coolroofs.org **DOCUMENT** / **DATE** / **TITLE** / **SECTION** ~~CRRC-1 Progam~~ / ~~2021~~ / ~~*CRRC-1 Product Rating Manual*~~ / ~~602.2(1), 11.602.2(1)~~ CRRC-2 / 2023 / *Wall Product Rating Program Manual* / 705.2.3(2) 705.3.3 (2) ANSI/CRRC S100 / 2021 / *Standard Test Methods for Determining Radiative Properties of Materials* / 602.2(1) 705.2.4(2) 705.3.4(2) 11.602.2(2)
Reason:	I am representing the Cool Roof Rating Council for this code change proposal. The citations for the referenced standard ANSI/CRRC S100 are different in various locations. We ask that the consensus committee editorially update the titles as shown in our proposals.
TG Recommendation:	Accept
TG Vote:	8-0-1
TG Modification:	
TG Reason:	

Appendix D: Water Rating Index

PC277 ID 8469	APPENDIX D: WATER RATING INDEX
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	*Add as a footnote under the Table:* American Society of Agricultural and Biological Engineers. Chapter 5 Irrigation System Performance. https://www.asabe.org/Portals/0/aPubs/Books/ISM/ISM5.pdf Eisenhauser, D. E., Martin, D. L., Heeren, D. M., Hoffman, G. J. (2021). Irrigation Systems Management. American Society of Agricultural and Biological Engineers. Howell, T. A. (2003, January). Irrigation Efficiency. United States Department of Agriculture (USDA). https://www.researchgate.net/profile/TerryHowell/publication/43256707_Irrigation_Efficiency/links/566ec91c08aea0892c52a91c/IrrigationEfficiency.pdf. Kranz, B. Irrigation Efficiencies. University of Nebraska Lincoln Extension. https://passel2-stage.unl.edu/view/lesson/bda727eb8a5a/8#:~:text=Irrigation%20efficiency%20refers%20to%20the,rates%2C%20weather%20and%20soil%20conditions. Texas A&M University. Typical Overall On-Farm Efficiencies for Various Types of Irrigation Systems. https://texaset.tamu.edu/. TWL Irrigation. (2023, March 9). Irrigation Efficiency – Definitions, Types, Importance & Formula. https://www.twl-irrigation.
Reason:	The references cited within the Task Group's PC095 reason statement were intended to be published within the NGBS. They wrote: "Old values weren't sourced. New values have data to back it up." Including references would increase the credibility and transparency of the Water Rating Index and help committee members with future updates.
TG Recommendation:	Accept
TG Vote:	4-0-0
TG Modification:	
TG Reason:	

PC278 ID 8485	APPENDIX D: WATER RATING INDEX
Submitter:	Pranav Phatak
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	Modify 2024 NGBS draft 2 as follows: OutdoorUse = (LandscapeWaterUse + NonLandscapeWaterUse) ~~/ (Number of dwelling units)~~ OutdoorBaseline(month) = (Evapotranspiration(month) * LandscapeWaterArea(total) * 0.623 (gallons/sq ft of 1 in of rain)) ~~/ (Number of dwelling units)~~

	where LandscapeWaterArea(total) is the total of all the areas that are planted, irrigated, hand-watered or have a water feature like a pool.
Reason:	Home Innovation tested the new method of calculating 'OutdoorUse' and 'OutdoorBaseline' on different multifamily reference homes with varying efficiencies. In majority of the cases, the new WRI score was more than the previous calculation, resulting in lower certification scores. This was opposite of the intended effect of making the change. See attached document. We recommend to undo the change that was made to this section, reverting it back to the language in the 2020 NGBS.
Substantiating Documents:	True
TG Recommendation:	Accept as Modified
TG Vote:	4-0-0
TG Modification:	*Modify 2024 NGBS draft 2 as follows; reject previous actions of this TG:* OutdoorUse = (LandscapeWaterUse + NonLandscapeWaterUse) ~~/ (Number of dwelling units)~~ OutdoorBaseline(month) = (Evapotranspiration(month) * LandscapeWaterArea(total) * 0.623 (gallons/sq ft of 1 in of rain)) ~~/ (Number of dwelling units)~~
TG Reason:	Author's formatting was not shown.

PC264 Supplemental Information

CHAPTER 3: COMPLIANCE METHOD

301 GENERAL

301.1 Environmental rating levels.

The building, project, site, and/or development environmental rating level shall consist of all mandatory requirements plus points assessed using the point system specified within this chapter. The rating level shall be in accordance with § 302, § 303, § 304, or § 305, as applicable. The designation for accessory structures shall be in accordance with § 306.

301.1.1 Non-residential spaces. Non-residential spaces in mixed-use buildings shall comply with Chapter 13 (Commercial Spaces) of this Standard or IgCC § 501.3.7.2 and Chapters 6-10, excluding § 601.3.1.

301.2 Awarding of points.

Points shall be awarded as follows:

(1) The maximum number of points that can be awarded for each practice is noted with that practice.

(2) Point allocation for multifamily buildings shall be as prescribed in § 304.

(3) The Adopting Entity shall allow the use of new and innovative products and practices deemed to comply with the intent of this Standard. Points assigned for any new product or practice shall be determined by the Adopting Entity. The Adopting Entity shall award no more than 20 points for such products or practices. Point values shall be determined by comparing the innovative product or practice to a product or practice already described in the Standard. The applicant shall supply demonstrable, quantified data to support the innovative product or practice and to determine the practice's functional equivalent in the Standard for the points to be awarded.

302 GREEN SUBDIVISIONS

302.1 Site design and development.

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

302.1.1 Site design and development obtaining thresholds in Table 302 are permitted to be verified, certified, and marketed as such prior to the verification of green buildings.

302.1.2 Developments are permitted to be marketed as a green subdivision. Developer shall provide clear explanation that the rating only applies to the development and not the buildings.

303 GREEN BUILDINGS

303.1 Compliance options.

The criteria for new buildings shall be in accordance with § 303.2 for residential buildings, the residential portion of mixed-use buildings, or mixed-use buildings or § 303.3 for compliance for single-family homes, townhomes, and duplexes.

303.2 Buildings.

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

(1) The threshold number of points, in accordance with Table 303, shall be achieved as prescribed in Categories 1 through 6. The lowest level achieved in any category shall determine the overall rating level achieved for the building.

(2) In addition to the threshold number of points in each category, all mandatory provisions of each category shall be implemented.

Table 302
Threshold Point Ratings for Site Design and Development

Green Subdivision Category		Rating Level Points			
		One Star	Two Stars	Three Stars	Four Stars
Chapter 4	Site Design and Development	**95**	**122**	**149**	**176**

Table 303
Threshold Point Ratings for Green Buildings

Green Building Categories			Rating Level Points [a] [b]			
			BRONZE	SILVER	GOLD	EMERALD
1.	Chapter 5	Lot Design, Preparation, and Development	50	64	93	121
2.	Chapter 6	Resource Efficiency	43	59	89	119
3.	Chapter 7	Energy Efficiency	30	45	60	70
4.	Chapter 8	Water Efficiency	25	39	67	92
5.	Chapter 9	Indoor Environmental Quality	25	42	69	97
6.	Chapter 10	Operation, Maintenance, and Building Owner Education	8	10	11	12
7.		Additional Points from Any Category	50	75	100	100
		Total Points:	231	334	489	611

(a) In addition to the threshold number of points in each category, all mandatory provisions of each category shall be implemented.

(b) For dwelling units greater than 4,000 ft^2 (372 m^2), the number of points in Category 7 (Additional Points from Any Category) shall be increased in accordance with § 601.1. The "Total Points" shall be increased by the same number of points.

(3) In addition to the threshold number of points prescribed in Categories 1 through 6 (which corresponds to Chapters 5-10), the additional points prescribed in Category 7 shall be achieved from any of the categories. Where deemed appropriate by the Adopting Entity based on regional conditions, additional points from Category 7 may be assigned to another category (or categories) to increase the threshold points required for that category (or categories). Points shall not be reduced by the Adopting Entity in any of the six other categories.

Exception: Where the builder is unable to control a majority of items in Chapter 5 due to timing and lack of relationship to the Lot Design, Preparation, and Development, green ratings on the home are permitted to be obtained by eliminating rating requirements and points from Chapter 5. Rating threshold requirements are permitted to be adjusted accordingly. Builders shall provide evidence of this impossibility to the Adopting Entity and provide disclaimer statement on marketing materials when this occurs.

303.3 Single-family homes, townhomes, and duplexes.

Single-family homes, townhomes, and duplexes complying with all applicable requirements of Chapter 12 shall be deemed Certified.

304 GREEN MULTIFAMILY BUILDINGS

304.1 Multifamily buildings.

All residential portions of a building shall comply with the requirements of this Standard. Partial compliance shall not be allowed. Unless specifically addressed in other portions of this standard, all dwelling and sleeping units and residential common areas within a multifamily building shall comply with all mandatory requirements. Where features similar to dwelling unit/sleeping unit features are installed in the common area, those features shall comply with the standard of the dwelling and sleeping units. Green building practices for residential common areas may differ from requirements for dwelling units/sleeping units. Points for the green building practices that apply to multiple units shall be credited once for the entire building. Where points are credited, including where a weighted average is used, practices shall be implemented in all dwelling and sleeping units, as applicable. Where application of a prescribed practice allows for a different number of points for different dwelling and sleeping units in a multifamily building, the fewer number of points shall be awarded, unless noted that a weighted average is used.

304.2 Alternative IgCC compliance.

As an alternative, any multifamily or mixed-use building that complies with the IgCC shall be designated as achieving the gold rating level. Additionally, acceptable air tightness of individual residential units shall be demonstrated by a blower door test. The testing and

sampling procedure shall be in accordance with the ENERGY STAR Multifamily High Rise Program Testing and Verification Protocols, Version 1.0, Revision 03 - 2015, with an allowable leakage not greater than 0.3 cfm/sf of enclosure bounding the apartment at an induced pressure difference of 50 pascals.

305 EXISTING BUILDING

305.1 Compliance. Compliance with § 305 shall be voluntary unless specifically adopted as mandatory by the Adopting Entity.

305.2 Whole-building rating criteria

305.2.1 Applicability. The provisions of § 305.2 shall apply to existing buildings. In addition to the foundation, not less than 50% of the structural systems of the existing building shall remain in place after any remodeling activities for the building to be eligible for compliance under § 305.2. Eligible projects shall have their Certificate of Occupancy not less than 12 months prior to NGBS registration.

305.2.1.1 Additions. For an existing building that includes an addition, the entire building including the addition shall comply with the criteria of § 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 multifamily buildings, the above-grade conditioned area shall be based on the entire building including all dwelling units/sleeping units and common areas. EXCEPTION: Historic buildings are exempt from the 75% limitation.

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

305.2.3 Mandatory practices. Additions, alterations or repairs to an existing building, building system or portion thereof shall comply with the Mandatory requirements of Chapter 11. Unaltered portions of the existing building shall not be required to comply with Mandatory requirements except when life safety or visible moisture issues exist.

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

305.2.5 Energy efficiency. The building shall comply with § 11.701.1 and the compliance requirements of Table 305.2. 5.~~§ 305.2.5.1 or § 305.2.5.2 or § 305.2.5.3~~.

~~**305.2.5.1 Energy consumption reduction path.** The energy efficiency rating level shall be based on the reduction in energy consumption resulting from the remodel in accordance with Table 305.2.5.1.~~

~~The reduction in energy consumption resulting from the remodel shall be based on the estimated annual energy cost savings, site energy savings, source energy savings, or carbon dioxide equivalent emissions (C02e) savings using methodology in ANSI/ASHRAE Standard 105 or IgCC or equivalent. The reduction shall be the percentage difference between the consumption per square foot before and after the remodel calculated as follows:~~

~~[(consumption per square foot before remodel – consumption per square foot after remodel)/ consumption per square foot before remodel]*100~~

~~The occupancy and lifestyle 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 multifamily buildings, the energy consumption shall be based on the entire building including all dwelling units/sleeping units and common areas.~~

~~If a building can demonstrate through documentation approved by the Adopting Entity that the remodel activities started prior to project registration, the energy baseline (consumption per square foot before remodel) can be calculated based on data and building systems that were existing in the building up to 3 years prior project registration.~~

~~**305.2.5.2 New Construction Equivalency path.** The building shall comply with § 11.701 Minimum Energy Efficiency Requirements and Table 305.2.5.2 (Energy Point Thresholds). Any practice listed in either § 11.702 (Performance Path), § 11.703 (Prescriptive Path), or 704 (ERI Target Path) shall be eligible for contributing points toward Table 305.2.5.2 (Energy Point Thresholds). The attributes of the existing building that were in compliance with § 11.702 through § 11.704 prior to certification and remain in compliance when submitting for certification shall be eligible for contributing points to this section.~~

~~A building complying with § 305.2.5.2 New Construction Equivalency Path shall obtain not less than 30 points from § 11.702, § 11.703, or § 11.704 and include not less than two practices from § 11.705 or not less than one practice from § 11.705 and one practice from § 11.706.~~

~~Points earned in § 11.705 and § 11.706 contribute to the energy points in Table 305.2.5.2 and support earning a higher certification level. Points from § 11.702 through § 11.706 do not count towards the required points in Table 305.2.7.~~

~~**305.2.5.3 EPA ENERGY STAR Score.** The Multifamily or mixed-use property shall be scored in the EPA ENERGY STAR Portfolio Manager tool following EPA requirements and guidance or equivalent tool or program. This score is based on actual energy usage~~

Table 305.2.5~~.1~~
Energy Compliance ~~Reduction Level~~ Thresholds

	Rating Level			
	BRONZE	**SILVER**	**GOLD**	**EMERALD**
Reduction in energy consumption	15%	25%	35%	45%
EPA ENERGY STAR Score	75-84	85-94	95+	N/A
Performance Path Points	30	45	60	70
Prescriptive Path Points	30	45	60	70
ERI Target Path Points	30	45	60	70
Tropical Zone Path Points	N/A	45	60	N/A

~~**Table 305.2.5.2**~~
~~**Energy Points Thresholds**~~

	~~Rating Level~~			
	~~**BRONZE**~~	~~**SILVER**~~	~~**GOLD**~~	~~**EMERALD**~~
~~Section 11.700 new construction equivalency thresholds~~	~~30~~	~~45~~	~~60~~	~~70~~
~~*Points from § 11.702 through § 11.706 shall not count towards the total points for § 305.2.7.*~~				

~~**Table 305.2.5.3**~~
~~**EPA ENERGY STAR Score**~~

	~~Rating Level~~			
	~~**BRONZE**~~	~~**SILVER**~~	~~**GOLD**~~	~~**EMERALD**~~
~~EPA ENERGY STAR Score~~	~~75-84~~	~~85-94~~	~~95+~~	~~N/A~~

~~data. The last month in the 12-month energy data period for this energy score shall be within 6 months prior to acceptance by the Adopting Entity. Where total property energy data is not available, then the score can be generated with 100% actual common and non-residential area energy usage and not less than 80% of the actual resident energy meters which has been extrapolated to 100%. All energy data and extrapolation methods shall be reported. The level awarded for the energy chapter is based on Table 305.2.5.3.~~

~~Notwithstanding the above requirements, projects that have an energy score of 65-75 shall achieve Bronze-level certification by implementing energy efficiency measures (EEM) that will improve the energy score to a level above 75. All of the EEMs shall be completed and verified before submission to the Adopting Entity. All energy data, energy modeling, and the forecasted energy score shall be submitted to the Adopting Entity.~~

305.2.6 Water efficiency. The building shall comply with § 11.801.1 and the requirements of Table 305.2.6. ~~305.2.6.1 or § 305.2.6.2 or § 305.2.6.3.~~ The attributes of the existing building that were in compliance with § 11.802 through § 11.804 prior to certification and remain in compliance when submitting for certification shall be eligible for contributing points to this section.

~~**305.2.6.1 Water consumption reduction path.** The water efficiency rating level shall be based on the reduction in water consumption resulting from the remodel in accordance with Table 305.2.6.1.~~

~~Water consumption shall be based on the estimated annual use as determined by a third-party audit and analysis or use of utility consumption data. The reduction shall be the percentage difference between the consumption before and after the remodel calculated as follows:~~

~~[(consumption per bedroom before remodel – consumption per bedroom after remodel)/consumption per bedroom before remodel]*100%~~

~~The occupancy and lifestyle 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 multifamily buildings, the water consumption shall be based on the entire building including all dwelling units and common areas.~~

~~Where a building can demonstrate through documentation approved by the Adopting Entity that the remodel activities started prior to project registration, the water baseline (consumption before remodel) shall be calculated based on data and building systems that existed in the building up to 3 years prior project registration.~~

Table 305.2.6~~.1~~
Water Compliance ~~Reduction Level~~ Thresholds

	Rating Level			
	BRONZE	**SILVER**	**GOLD**	**EMERALD**
Reduction in water consumption	20%	30%	40%	50%
EPA Water Score	75-84	85-94	95+	N/A
Prescriptive Path Points	25	39	67	92
Performance Path – Water Rating Index Score	61-70	51-60	41-50	40 and below

~~**Table 305.2.6.2**~~
~~**Water Point Thresholds**~~

	~~Rating Level~~			
	~~**BRONZE**~~	~~**SILVER**~~	~~**GOLD**~~	~~**EMERALD**~~
~~Section 11.800 new construction equivalency thresholds~~	~~25~~	~~39~~	~~67~~	~~92~~
~~*Points from § 11.802 through § 11.804 shall not count toward the total points for § 305.2.7.*~~				

~~**Table 305.2.6.3**~~
~~**EPA Water Score**~~

	~~Rating Level~~			
	~~**BRONZE**~~	~~**SILVER**~~	~~**GOLD**~~	~~**EMERALD**~~
~~EPA Water Score~~	~~75-84~~	~~85-94~~	~~95+~~	~~N/A~~

~~**305.2.6.2. New construction water equivalency path.** The building shall comply with New Construction Water Equivalency Table 305.2.6.2 (Water Point Thresholds). Any practice listed in either § 11.802 (Prescriptive Path) and § 11.803 (Innovative Practices), or § 11.804 (Performance Path) shall be eligible for contributing points toward Table 305.2.6.2 (Water Point Thresholds). The attributes of the existing building that were in compliance with § 11.802 through § 11.804 prior to certification and remain in compliance when submitting for certification shall be eligible for contributing points to this section.~~

~~A building complying with § 305.2.6.2 New Construction Water Equivalency Path shall obtain not less than 25 points from § 11.802 and § 11.803, or § 11.804.~~

~~Points from §11.802 through § 11.804 do not count towards the required points in Table 305.2.7.~~

~~**305.2.6.3 EPA water Score.** The Multifamily property shall be scored in the EPA ENERGY STAR Portfolio Manager tool following EPA requirements and guidance or equivalent tool or program. The last month in the 12-month water data period for this water score shall be within 6 months prior to acceptance by the Adopting Entity. Where total property water data is not available, then the score can be generated with 100% actual common and non-residential area water usage and not less than 80% of the actual tenant water meters, which has been extrapolated to 100%. All water data and extrapolation methods shall be reported. The level awarded for the Water Section shall be based on Table 305.2.6.3.~~

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 305.2.7. Any practice listed in Chapter 11, except for § 11.701 through § 11.706 and § 11.801 through § 11.803 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.

305.3 Multifamily property level green certification

305.3.1 Multifamily Properties with multiple buildings shall qualify for a single property-level green certification by following the practices of 305.2.

Building Types: Property-wide certifications shall specify the buildings that are included in the certification. Multifamily amenity buildings, such as clubhouse, fitness center and leasing offices shall be included in the property wide certification. Garage-only structures and smaller unconditioned structures, such as, but not limited to, maintenance sheds, or mail kiosks, shall be excluded. Commercial or retail space is permitted to be included or excluded from the green certification. Where commercial space is to be included, it shall comply with the requirements from Chapter 13 relevant for existing buildings.

305.3.2 Rating scope. The building rating achieved under § 305.3 and the associated compliance criteria apply to the entire property after the remodel, including any additions.

305.3.3 Mandatory practices. Additions, alterations, or repairs to any buildings, building system, or portion thereof shall comply with the Mandatory requirements of Chapter 11. Unaltered portions of the existing buildings shall not be required to comply with Mandatory requirements except where life, safety, or visible moisture issues exist.

305.3.4 Rating level. A rating level of Bronze or higher shall be achieved in each of the following categories: Energy efficiency (§ 305.2.5), Water efficiency (§ 305.2.6), and Prescriptive practices (§ 305.2.7), as applied across all the buildings in the property. Practices related to 305.2.7 shall be awarded to all buildings on the property based on the lowest point level achieved by any one building. The property rating level shall be the lowest rating level achieved in § 305.2.5, § 305.2.6, or § 305.2.7.

306 GREEN ACCESSORY STRUCTURES

306.1 Applicability.

The designation criteria for accessory structures shall be in accordance with Appendix C.

306.2 Compliance.

Compliance with Appendix C shall be voluntary unless specifically adopted as mandatory. Where specifically adopted, the adopting entity shall establish rules for compliance with Appendix C.

Table 305.2.7
Prescriptive Threshold Point Ratings

	Rating Level			
	BRONZE	**SILVER**	**GOLD**	**EMERALD**
Chapter 11 prescriptive thresholds	88	125	181	225

Preceding sections of Chapter 11 remain unchanged

11.701 MINIMUM ENERGY EFFICIENCY REQUIREMENTS

STAFF NOTE: Language from A009 and A010, that was Accepted As Modified by the Consensus Committee at their November 8-10, 2022 meeting, was not fully incorporated into the first draft standard but is included in this draft standard.

11.701.1 Mandatory requirements. The building shall comply with one of the following:

(1) § 11.701.1.1 ~~(~~Energy Consumption Reduction Path~~),~~
(2) § 11.701.1.2 Performance Path (§11.702)
(3) § 11.701.1.3 Prescriptive Path (§11.703)
(4) § 11.701.1.4 ERI Target Path (§11.704)
(5) § 11.701.1.5 Tropical Zone (§11.705), or
(6) § 11.701.1.6 EPA ENERGY STAR Score

~~(7) § 11.701.1.2 (EPA ENERGY STAR Score),~~
~~(8) §11.702 (Performance Path),~~
~~(9) § 11.703 (Prescriptive Path), § 11.704 (ERI Target Path), or~~
~~(10) § 11.705 (Tropical Zone) one of the pathways in § 11.701.1.4 through § 11.701.1.8 (Alternative Paths).~~

Items listed as "mandatory" in § 11.701.4 shall apply to § 11.702, § 11.703, and § 11.704 paths. Except where otherwise noted, buildings in the Tropical Climate Zone shall comply with Climate Zone 1 requirements.

11.701.1.1 Energy Consumption Reduction Path requirements. The energy efficiency rating shall be based on the reduction in energy consumption resulting from the remodel be in accordance with Table 305.2.5.1.

The reduction in energy consumption resulting from the remodel shall be based on the estimated annual energy cost savings, site energy savings, source energy savings, or carbon dioxide equivalent emissions (C02e) savings using methodology in ANSI/ASHRAE Standard 105 or IgCC or equivalent. The reduction shall be the percentage difference between the consumption per square foot before and after the remodel calculated as follows:

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

The occupancy and lifestyle 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 multifamily buildings, the energy consumption shall be based on the entire building including all dwelling units/sleeping units and common areas.

If a building can demonstrate through documentation approved by the Adopting Entity that the remodel activities started prior to project registration, the energy baseline (consumption per square foot before remodel) can be calculated based on data and building systems that were existing in the building up to 3 years prior project registration.

~~11.701.1.2 EPA ENERGY STAR Score requirements. The Multifamily or mixed-use property shall be scored in the EPA ENERGY STAR Portfolio Manager tool following EPA requirements and guidance or equivalent tool or program. This score is based on actual energy usage data. The last~~

~~month in the 12-month energy data period for this energy score shall be within 6 months prior to acceptance by the Adopting Entity. Where total property energy data is not available, then the score can be generated with 100% actual common area and non-residential area energy usage and not less than 80% of the actual resident energy meters which has been extrapolated to 100%. All energy data and extrapolation methods shall be reported. The level awarded shall comply with Table 305.2.5.~~

~~Notwithstanding the above requirements, projects that have an energy score of 65-75 shall achieve Bronze-level certification by implementing energy efficiency measures (EEM) that will improve the energy score to a level above 75. All of the EEMs shall be completed and verified before submission to the Adopting Entity. All energy data, energy modeling, and the forecasted energy score shall be submitted to the Adopting Entity.~~

11.701.1.3~~2~~ Minimum Performance Path requirements. A building complying with § 11.702 shall include not less than two practices from § 11.706, or not less than one practice from § 11.706 and not less than one practice from § 11.707.

11.701.1.4~~2~~ Minimum Prescriptive Path requirements. A building complying with § 11.703 shall obtain not less than 30 points from § 11.703 and shall include not less than practices from § 11.706, or not less than one practice from § 11.706 and not less than one practice from § 11.707.

11.701.1.5~~3~~ ERI Target Path requirements. A building complying with § 11.704 shall obtain not less than 30 points from § 11.704 and shall include not less than two practices from § 11.706, or not less than one practice from § 11.706 and not less than one practice from § 11.707.

11.701.1.5~~6~~ Alternative Silver and Gold Compliance for Tropical Zone requirements. For buildings in the Tropical Zone, where more than 50 percent of the occupied space is not air conditioned and 100 percent of the occupied space is not heated. The building shall be awarded in accordance with the following:

(1) § 11.705.1 mandatory practices and § 11.705.2 Additional Tropical Zone practices – Silver 45
(2) § 11.705.1 mandatory practices and § 11.705.3 Additional Tropical Zone practices – Gold 60
[Points awarded shall not be combined with points from § 11.703 (Prescriptive Path) or, § 11.704 (ERI Target Path)

11.701.1.6 EPA ENERGY STAR Score requirements. The Multifamily or mixed-use property shall be scored in the EPA ENERGY STAR Portfolio Manager tool following EPA requirements and guidance or equivalent tool or program. This score is based on actual energy usage data. The last month in the 12-month energy data period for this energy score shall be within 6 months prior to acceptance by the Adopting Entity. Where total property energy data is not available, then the score can be generated with 100% actual common area and non-residential area energy usage and not less than 80% of the actual resident energy meters which has been extrapolated to 100%. All energy data and extrapolation methods shall be reported. The level awarded shall comply with Table 305.2.5.

Notwithstanding the above requirements, projects that have an energy score of 65-75 shall achieve Bronze-level certification by implementing energy efficiency measures (EEM) that will improve the energy score to a level above 75. ~~All of the~~ EEMs shall be completed and verified before submission

to the Adopting Entity. All energy data, energy modeling, and the forecasted energy score shall be submitted to the Adopting Entity.

~~**11.701.1.4 Alternative Bronze level compliance**. Buildings that meet one of the following criteria:~~
~~*[Points awarded shall not be combined with points from § 11.703 (Prescriptive Path), § 11.704 (ERI Target Path), or 11.701.1.4 through 11.701.1.8 (Alternative Paths)]*..... **30**~~

~~(1) qualifies as an ENERGY STAR National Single Family New Homes Version 3.1 building;~~

~~(2) qualifies as an ENERGY STAR National Multifamily New Construction Version 1.1 building; or~~

~~(3) complies with the IECC.~~

~~**11.701.1.5 Alternative Silver level compliance**. Buildings that meet one of the following criteria:~~
~~*[Points awarded shall not be combined with points from § 11.703 (Prescriptive Path), § 11.704 (ERI Target Path), or 11.701.1.4 through 11.701.1.8 (Alternative Paths)]:* ..... **45**~~

~~(1) qualifies as an ENERGY STAR National Single Family New Homes Version 3.2 building; or~~

~~(2) qualifies as an ENERGY STAR National Multifamily New Construction Version 1.2 building.~~

~~(3) complies with the 2024 IECC.~~

~~**11.701.1.6 Alternative Gold level compliance**. Buildings that meet one of the following criteria:~~
~~*[Points awarded shall not be combined with points from § 11.703 (Prescriptive Path), § 11.704 (ERI Target Path), or 11.701.1.4 through 11.701.1.8 (Alternative Paths)]:* ..... **60**~~

~~(1) complies with Chapter 7 of the IgCC, additionally, measured compartmentalization shall be no greater than 0.2 CFM50/sf of dwelling unit enclosure area, tested in accordance with ANSI/RESNET/ICC 380, ASTM E779, ASTM E1827, or ASTM E3158;~~

~~(2) qualifies as a DOE Zero Energy Ready Homes Single Family;~~

~~(3) qualifies as a DOE Zero Energy Ready Homes CA Single Family Version 2;~~

~~(4) qualifies as a DOE Zero Energy Ready Multifamily; or~~

~~(5) qualifies as a DOE Zero Energy Ready Homes CA Multifamily Version 2.~~

~~**11.701.1.7 Alternative Emerald level compliance.** Buildings that meet one of the following criteria:~~
~~*[Points awarded shall not be combined with points from § 703 (Prescriptive Path), § 11.704 (ERI Target Path), or 11.701.1.4 through 11.701.1.8 (Alternative Paths)]:* ..... **70**~~

~~(1) demonstrated to be net zero energy based on modeled site or source energy analysis;~~

~~(2) complies with the IECC Appendix CC Zero Energy Commercial Building provisions;~~

~~(3) complies with the IECC Appendix RC Zero Energy Residential Building provisions; or~~

~~(4) certified to PHIUS CORE or PHIUS ZERO.~~

~~**11.701.1.8 Alternative Silver or Gold level compliance for Tropical Zones (§ 11.705)**. For buildings in the Tropical Zone, where more than 50 percent of the occupied space is not air conditioned and 100 percent of the occupied space is not heated, and comply with one of the following:~~
~~*[Points awarded shall not be combined with points from § 11.703 (Prescriptive Path) or, § 11.704 (ERI Target Path), or 11.701.1.4 through 11.701.1.8 (Alternative Paths)]*~~

~~(1) § 11.705.1 mandatory practices and § 11.705.2 Additional Tropical Zone practices – Silver ..... 45~~

~~(2) IECC Section R401.2.4 (Tropical Zone). Buildings without heating and 50% or less air-conditioned space in the Tropical Zone are eligible to earn Silver even if they are located above the IECC elevation limit – Silver ..... 45~~

~~(23) § 11.705.1 mandatory practices and § 11.705.3 Additional Tropical Zone practices – Gold ..... 60~~

11.701.2 Emerald level points.

The Performance Path (§ 11.702), the ERI Target Path (§ 11.704), or the Alternative Emerald level compliance (§ 11.701.1.7) shall be used to achieve the Emerald level.

11.701.3 Adopting entity review.

A review by the Adopting Entity or designated third party shall be conducted to verify design and compliance with Chapter 7.

11.701.4 Mandatory practices

11.701.4.0 Minimum energy efficiency requirements.

Additions, alterations, or renovations to an existing building, building system or portion thereof shall comply with the provisions of the IECC as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with the IECC. An addition complies with the IECC if the addition complies or if the existing building and addition comply with the IECC as a single building. ..... **Mandatory**

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, installed, and documented, using industry-approved guidelines and standards (e.g., ACCA Manual J, AHRI I=B=R, ANSI/ACCA 5 QI, or an accredited design professional's and manufacturer's recommendation). ..... **Mandatory**

11.701.4.2 Duct systems

11.701.4.2.1 Duct air sealing and testing. Ducts that are newly installed, modified, or are exposed during the remodel are air sealed and tested. All duct sealing materials are in conformance with UL 181A or UL 181B specifications and are installed in accordance with manufacturer's instructions. ..... **Mandatory**

(1) All duct sealing materials are in conformance with UL 181A or UL 181B specifications and are installed in accordance with manufacturer's instructions.

(2) **Testing.** Dwelling unit total duct leakage testing shall be required for single-family houses and multifamily structures of three stories or fewer above grade. Testing is conducted following procedures in ANSI/RESNET/ICC Std. 380 or ASTM E1554 with a pressure differential of 0.1 in. w.g. (25 Pa) across the entire system and demonstrating compliance with one of the following leakage rates:

Exception: Testing is not Mandatory for multifamily structures 4 or more stories in height and in compliance with IECC Section C 403.2.9.

(a) At rough-in test with air handler installed or at post construction, leakage shall be no greater than 4.0 CFM (113.3 L/min) per 100 ft^2 (9.29 m^2) of conditioned floor area (CFM/100 cfa) or 40 CFM, whichever is greater; OR

(b) At rough-in testing without the air handler installed, leakage shall be no greater than 3 CFM/100 cfa (85 L/min/9.29 m^2) or 30 CFM, whichever is greater; OR

(c) For ducts entirely within the thermal envelope, leakage shall be no greater than 8 CFM (226.6 L/min) /100 cfa (9.29 m^2) or 80 CFM, whichever is greater.

11.701.4.2.2 Ducts and plenums. Building framing cavities are not used as ducts or plenums. 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**

11.701.4.2.4 Duct insulation. Supply and return located outside conditioned space shall be insulated to an R-value of not less than R-8 for ducts 3 in. (76 mm) in diameter and larger and not less than R-6 for ducts smaller than 3 in. (76 mm) in diameter. ..... **Mandatory**

11.701.4.3 Insulation and air sealing

11.701.4.3.1 Building thermal envelope air sealing. 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, ceilings, and floors separating conditioned spaces from unconditioned spaces.

(h) Behind tubs and showers on exterior walls.

(i) Common walls between dwelling units or sleeping units.

(j) Attic access openings.

(k) Joints of framing members at rim joists.

(l) Top and bottom plates.

(m) Other sources of infiltration.

11.701.4.3.2 Air barrier, air sealing, building envelope testing and insulation. For portions of the building envelope that are exposed or created during the remodel, building envelope air tightness and insulation installation is verified to be in accordance with this Section and § 11.701.4.3.2(1). Insulation installation other than Grade 1 is not permitted. ..... **Mandatory**

(1) **Testing.** Where more than 50% of the building envelope is exposed or created during the remodel, conduct airtightness testing in accordance with procedures in ANSI/RESNET/ICC Std. 380, ASTM E779, ASTM 1827, or ASTM E3158.

(2) **Gold or Emerald levels.** Demonstrate compliance with one of the following air filtration targets in accordance with § 11.701.4.3.2(1). Projects with more than one dwelling unit are permitted to use a combination of these targets to demonstrate compliance.

(a) Measured airtightness shall be no greater than 6 ACH50.

(b) Unguarded compartmentalization testing shall be no greater than 0.40 CFM50 per square foot of dwelling unit enclosure area.

(c) Twenty percent improvement of ACH50 or CFM50 per square foot compared to pre-remodeling tested conditions.

Testing shall be conducted after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation, and combustion appliances. Testing is conducted under the following conditions:

(a) exterior windows and doors, fireplace and stove doors are closed, but not sealed;

(b) dampers are closed, but not sealed, including exhaust, intake, make-up 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 systems are turned off;

(f) HVAC duct terminations are not sealed; and

(g) supply and return registers are not sealed.

Multifamily Building Note: *Testing by dwelling units, sleeping units, groups of dwelling units, groups of sleeping units, or the building as a whole is acceptable.*

(3) **Visual inspection.** The air barrier and insulation items listed in Table 11.701.4.3.2(2) are field verified by visual inspection.

Table 11.701.4.3.2(2)
Air Barrier, Air Sealing and Insulation Installation[a]

COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA
General requirements	A continuous air barrier shall be installed in the building thermal envelope. Breaks or joints in the air barrier shall be sealed. Air-permeable insulation shall not be used a s sealing material.	Air-permeable insulation shall not be used as a sealing material.
Ceiling/attic	The air barrier in any dropped ceiling or soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.
Walls	The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed.	Cavities within comers and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance, *R*-value, of not less than R-3 per inch. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.
Windows, skylights and doors	The space between framing and skylights, and the jambs of windows and doors shall be sealed.	
Rim joists	Rim joists shall include an exterior air barrier.[b] The junctions of the rim board to the sill plate and the rim board and the subfloor shall be air sealed.	Rim joists shall be insulated so that the insulation maintains permanent contact with the exterior rim board.[b]
Floors including cantilevered floors and floors above garages	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking. Alternatively, floor framing cavity insulation shall be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing and extending from the bottom to the top of all perimeter floor framing members.
Basement crawl space and slab foundations	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder/air barrier in accordance with Section R402.2.10. Penetrations through concrete foundation walls and slabs shall be air sealed. Class 1 vapor retarders shall not be used as an air barrier on below-grade walls and shall be installed in accordance with Section R702.7 of the *International Residential Code*.	Crawl space insulation, where provided instead of floor insulation, shall be installed in accordance with Section R402.2.10. Conditioned basement foundation wall insulation shall be installed in accordance with Section R402.2.8.1. Slab-on-grade floor insulation shall be installed in accordance with Section R402.2.10.
Shafts, penetrations	Duct and flue shafts and other similar penetrations exterior or unconditioned space shall be sealed to allow for expansion, contraction and mechanical vibration. Utility penetrations of the air barrier shall be caulked, gasketed or otherwise sealed and shall allow for expansion, contraction of materials and mechanical vibration.	Insulation shall be fitted tightly around utilities passing through shafts and penetrations in the building thermal envelope to maintain required *R*-value.
Narrow cavities	Narrow cavities of 1 inch or less that are not able to be insulated shall be air sealed.	Batts to be installed in narrow cavities shall be cut to fit or narrow cavities shall be filled with insulation that on installation readily conforms to the available cavity space.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.	Insulated portions of the garage separation assembly shall be installed in accordance with Sections R303 and R402.2.7.
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be air sealed in accordance with Section R402.4.5.	Recessed light fixtures installed in the building thermal envelope shall be airtight and IC rated rated, and shall be buried or surrounded with insulation.

Plumbing wiring or other obstructions	All holes created by wiring, plumbing or other obstructions in the air barrier assembly shall be air sealed.	Insulation shall be installed to fill the available space and surround wiring, plumbing, or other obstructions, unless the required R-value can be met by installing insulation and air barrier systems completely to the exterior side of the obstructions.
Shower/tub on exterior wall	The air barrier shall be installed at exterior walls adjacent to showers and tubs shall separate the wall from the shower or tub.	Exterior walls adjacent to showers and tubs shall be insulated.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical and communication boxes. Alternatively, air-sealed boxes shall be installed.	
HVAC register boots	HVAC and supply and return register boots that penetrate building thermal envelope shall be sealed to the subfloor, wall covering or ceiling penetrated by the boot.	
Concealed sprinklers	When required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.	

a. In addition, inspection of log walls shall be in accordance with the provisions of ICC-400.
b. Insulation fully enclosed by an air barrier is not required in unconditioned/ventilated attic spaces and at rim joists.

11.701.4.3.2.1 Grade I insulation installation. Field-installed insulation products to ceilings, walls, floors, band joists, rim joists, conditioned attics, basements, and crawlspaces, except as specifically noted, are verified by a third-party as Grade I in accordance with the following:..... **Mandatory**

(1) Inspection is conducted before insulation is covered.

(2) Air-permeable insulation is enclosed on all six sides and is in substantial contact with the sheathing material on one or more sides (interior or exterior) of the cavity. Air permeable insulation in ceilings is not required to be enclosed when the insulation is installed in substantial contact with the surfaces it is intended to insulate.

(3) Cavity insulation uniformly fills each cavity side-to-side and top-to-bottom, without substantial gaps or voids around obstructions (such as blocking or bridging).

(4) Cavity insulation compression or incomplete fill amounts to 2% or less, presuming the compressed or incomplete areas are not less than 70% of the intended fill thickness; occasional small gaps are acceptable.

(5) Exterior rigid insulation has substantial contact with the structural framing members or sheathing materials and is tightly fitted at joints.

(6) Cavity insulation is split, installed, and/or fitted tightly around wiring and other services.

(7) Exterior sheathing is not visible from the interior through gaps in the cavity insulation.

(8) Faced batt insulation is permitted to have side-stapled tabs, provided the tabs are stapled neatly with no buckling, and provided the batt is compressed only at the edges of each cavity, to the depth of the tab itself.

(9) Where properly installed, ICFs, SIPs, and other wall systems that provide integral insulation are deemed in compliance with this section.

(10) Thin film products, including but not limited to radiant barrier film, that are designed to be installed with an air spaced to achieve their designated R-value shall be installed in accordance with manufacturer's instructions.

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 ft^2 (1.5 L/s/m^2), and swinging doors no more than 0.5 cfm per ft^2 (2.6 L/s/m^2), when tested in accordance with NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled. For site-built fenestration, a test report by an accredited, independent laboratory verifying compliance with the applicable infiltration rate shall be submitted to demonstrate compliance with this practice. This practice does not apply to field-fabricated fenestration products. ..... **Mandatory**

Exception: For Tropical Zones only, jalousie windows are permitted to be used as a conditioned space boundary and shall have an air infiltration rate of not more than 1.3 cfm per ft^2

11.701.4.3.4 Lighting and building thermal envelope. Newly installed luminaires installed in the building thermal envelope which penetrate the air barrier are sealed to limit air leakage between conditioned and unconditioned spaces. All luminaires are IC-rated and labeled as complying with ASTM E283 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 luminaires installed in the building thermal envelope which penetrate the air barrier are sealed with a gasket or caulk between the housing and the interior of the wall or ceiling covering. ..... **Mandatory**

11.701.4.4 High-efficacy lighting.

Lighting efficacy in dwelling units or sleeping units is in accordance with one of the following: ..... **Mandatory**

(1) All permanently installed lighting fixtures, excluding kitchen appliance lighting fixtures, shall contain only high-efficacy lighting sources.

(2) Lighting power density, measured in watts/square foot, shall be 0.45 or less.

11.701.4.5 Boiler piping.

Boiler piping in unconditioned space supplying and returning heated water or steam that is accessible during the remodel is insulated. Exception: where condensing boilers are installed, insulation is not required for return piping ..... **Mandatory**

11.701.4.6 Fenestration specifications.

The NFRC-certified U-factor and SHGC of newly installed windows, exterior doors, skylights, and tubular daylighting devices (TDDs) do not exceed the values in Table 11.703.2.5.1. ..... **Mandatory**

11.701.4.7 Replacement fenestration.

Where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the NFRC-certified U-factor and SHGC of the replacement fenestration unit do not exceed the values in Table 11.703.2.5.1. **Mandatory**

11.702 PERFORMANCE PATH

STAFF NOTE: Language from A009 and A010, that was Accepted As Modified by the Consensus Committee at their November 8-10, 2022 meeting, was not fully incorporated into the first draft standard but is included in this draft standard.

11.702.1 Point allocation.

Points from § 11.702 (Performance Path) shall not be combined with points from § 11.703 (Prescriptive Path), § 11.704 (ERI Target Path), or § 11.701.1.4 through § 11.701.1.8 (Alternative Paths). ..... **Mandatory for § 702**

11.702.2 Energy performance levels

11.702.2.1 IECC equivalency analysis.

Energy efficiency features are implemented to achieve energy cost, or site energy, source energy, or carbon dioxide equivalent emissions (CO_2e) performance that complies with the IECC thresholds (or equivalents thereof). When using equivalents to code thresholds, employ the methodology in ANSI/ASHRAE Standard 105-2021 or the IgCC. ..... **Mandatory for § 702**

11.702.2.2 Minimum energy performance analysis.

Energy efficiency features are implemented to achieve energy cost, or site energy, or source energy, or CO_2e performance that complies with the applicable minimum energy performance threshold in § 11.702.2.2.1 or § 11.702.2.2.2. ..... **Mandatory for § 702**

11.702.2.2.1 Residential buildings.

A documented analysis that either demonstrates compliance with IECC using software in accordance with IECC Section R405 applied as defined in the IECC, or that demonstrates performance at least as good as the NGBS Reference Home values in Table 11.702.2.2.1 using software approved by and applied as defined by the Adopting Entity, is required.

11.702.2.2.2 Commercial buildings.

A documented analysis that demonstrates compliance with the IECC using software in accordance with IECC Section C407 or ASHRAE 90.1 Appendix G or Energy Cost Budget simulation general requirements, is required.

Table 11.702.2.2.1
NGBS Reference Home Values
(Single-Family & Low-Rise Multifamily Modeling)

CATEGORY	REFERENCE
Building Envelope	**NGBS**
Slab	IECC Table R402.1.3
Floor	IECC Table R405.4.2(1)
Ceiling	IECC Table R405.4.2(1)
Door	IECC Table R405.4.2(1)
Insulation Rim/Band	IECC Table R405.4.2(1)
Insulation Walls	IECC Table R405.4.2(1)
Windows	IECC Table R405.4.2(1)
Air Infiltration	IECC Table R405.4.2(1)
Heating System Efficiency	10 CFR 430.32 (e) Furnaces and boilers
Cooling System Efficiency	10 CFR 430.32(c) Central air conditioners and heat pumps
Ventilation System Efficiency	
Energy Use of Ventilation Equipment	IECC Table R405.4.2(1)
Duct Sealing	
Duct Air Leakage Testing	IECC Table R405.4.2(1)
Water Heating System Efficiencies	10 CFR 430.32(d) Water heaters
Lighting	Default lighting and appliance values from ANSI/RESNET 301
Appliances	Default lighting and appliance values from ANSI/RESNET 301

11.702.2.3 Energy performance analysis.

Energy savings levels above the 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, lighting, appliances, and on-site renewable energy. Points are assigned using the following formula:

Points = 30 + (percent above threshold identified in § 11.702.2.1.1. or § 11.702.2.1.2) * 2

Multifamily Building Note: *Modeling is completed building-wide using one of the following methods: whole building energy modeling, a unit-by-unit approach, or a building average of a unit-by-unit approach.*

11.702.2.4 Tropical standard reference design.

For the Tropical Climate Zone, the standard reference design shall use the specifications in IECC Section R401.2.4 (Tropical Zone).

11.703 PRESCRIPTIVE PATH

11.703.1 Mandatory practices 30

In accordance with § 305.2.3, mandatory practices are not required where not applicable. Where § 11.703.1 practices are out of scope of work, 30 points shall be achieved elsewhere from § 11.703.

11.703.1.1 Building thermal envelope compliance. For conditioned spaces, the building thermal envelope is in compliance with § 11.703.1.1.1 or § 11.703.1.1.2. ..... **Mandatory for § 11.703**

11.703.1.1.1 Maximum UA. For ICC IECC residential, the total building UA is less than or equal to the total maximum UA as computed by IECC Section R402.1.5. For IECC commercial, the total UA is less than or equal to the sum of the UA for IECC Tables C402.1.4 and C402.4, including the U-factor times the area and C-factor or F-factor times the perimeter. The total UA proposed and baseline calculations are documented. REScheck or COMcheck is deemed to provide UA calculation documentation.

11.703.1.1.2 Prescriptive R-value and fenestration requirements. The building thermal envelope is in accordance with the thermal requirements of IECC Table R402.1.3 or Table C402.1.3, as applicable. The fenestration U-factors and SHGC's are in accordance with IECC Table R402.1.2 or C402.4, as applicable. Unconditioned buildings 3 stories or less in height located in the Tropical Zone are exempt from this practice if the building has a roof SRI of not less than 0.85, and a wall reflectivity of not less than 0.39.

11.703.1.2 Building envelope leakage. The building thermal envelope is in accordance with IECC R502.1.1.1 or R503.1.1 as applicable. ..... **Mandatory for § 11.703**

Exception: Section 11.703.1.2 is not required for Tropical Climate Zone.

11.703.1.3 Duct testing. The duct system is in accordance with IECC R403.3 as applicable. ..... **Mandatory for § 11.703**

11.703.2 Building envelope

11.703.2.1 UA improvement. The total building thermal envelope UA is less than or equal to the baseline total UA resulting from the U-factors provided in Table 11.703.2.1(a) or IECC Tables C402.1.4 and C402.4, as applicable. Where insulation is used to achieve the UA improvement, the insulation installation is in accordance with Grade 1 complying with § 11.701.4.3.2.1 as verified by a third-party. Total UA is documented using a REScheck, COMcheck, or equivalent report to verify the baseline and the UA improvement. **Per Table 11.703.2.1(b)**

Table 11.703.2.1(a)
Baseline U-Factors[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor	Crawlspace Wall U-Factor[c]
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.026	0.084	0.165	0.064	0.360	0.477
3	0.30	0.55	0.026	0.060	0.098	0.047	0.091[C]	0.136
4 except Marine	0.30	0.55	0.024	0.045	0.098	0.047	0.059	0.065
5 and Marine 4	0.30	0.55	0.024	0.045	0.082	0.033	0.050	0.055
6	0.30	0.55	0.024	0.045	0.060	0.033	0.050	0.055
7 and 8	0.30	0.55	0.024	0.045	0.057	0.028	0.050	0.055

a. Non-fenestration U-factors shall be obtained from measurement, calculation, or an approved source.
b. Where more the half the insulation is on the interior, the mass wall U-factors is a not greater than 0.17 in Zone 1, 0.14 in Zone 2, 0.12 in Zone 3, 0.10 in Zone 4 except in Marine, and the same as the frame wall U-factor in Marine Zone 4 and Zones 5 through 8.
c. Basement wall U-factor of 0.360 in warm-humid locations.

Table 11.703.2.1(b)
Points for Improvement in Total Building Thermal Envelope UA Compared to Baseline UA

Minimum UA Improvement	Climate Zone							
	1[a]	2	3	4	5	6	7	8

	POINTS							
0 to <5%	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5% to <10%	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
10% to <15%	**3**	**6**	**5**	**6**	**6**	**6**	**5**	**7**
15% to <20%	**5**	**9**	**8**	**9**	**9**	**9**	**8**	**10**
20% to <25%	**6**	**12**	**10**	**12**	**12**	**12**	**11**	**13**
25% to <30%	**8**	**15**	**13**	**16**	**14**	**15**	**14**	**17**
30% to <35%	**10**	**18**	**16**	**19**	**17**	**18**	**16**	**20**
≥35%	**11**	**21**	**18**	**22**	**20**	**21**	**19**	**23**

a. Tropical Climate Zone: Points are Climate Zone 1 points divided by 2 and rounded down

Exception: For the Tropical Climate Zone, crawl space, basement, and floor u-factors are excluded from the total building thermal envelope UA improvement calculation.

11.703.2.2 Mass walls. More than 75% of the above-grade exterior opaque wall area of the building is mass walls. **Per Table 11.703.2.2**

Table 11.703.2.2
Exterior Mass Walls

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

11.703.2.3 A radiant barrier with an emittance of 0.05 or less is used in the attic. The product is tested in accordance with ASTM C1371 and installed in accordance with the manufacturer's instructions. **Per Table 11.703.2.3**

Table 11.703.2.3
Radiant Barriers

Climate Zone	POINTS
Tropical	**3**
1	**2**
2-3	**3**
4-5	**1**
6-8	**0**

[In climate zones 1-3, 1 point maximum for multifamily buildings four or more stories in height.]

11.703.2.4 Building envelope leakage. The maximum building envelope leakage rate is in accordance with Table 11.703.2.4(a) or Table 11.703.2.4(b) and whole building ventilation is provided in accordance with § 11.902.2.1. **Per Table 11.703.2.4(a) or 11.703.2.4(b)**

Table 11.703.2.4(a)
Building Envelope Leakage

Max Envelope Leakage Rate (ACH50)	**Climate Zone**							
	1	2	3	4	5	6	7	8
	POINTS							
4	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**

3	**2**	**4**	**-**	**-**	**-**	**-**	**-**	**-**
2	**3**	**5**	**3**	**4**	**4**	**6**	**8**	**7**
1	**4**	**7**	**5**	**7**	**7**	**10**	**15**	**11**

Table 11.703.2.4(b)
Building Envelope Leakage

Max Envelope Leakage Rate (ELR50)	**Climate Zone**							
	1	2	3	4	5	6	7	8
	POINTS							
0.28	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**
0.23	**2**	**4**	**-**	**-**	**-**	**-**	**-**	**-**
0.18	**3**	**5**	**3**	**4**	**4**	**6**	**8**	**7**
0.13	**4**	**7**	**5**	**7**	**7**	**10**	**15**	**11**

Where ELR50 = CFM50 / *Building Thermal Envelope* Area
CFM50 = cubic feet per minute at 50 Pa

[Points not awarded if points are taken under § 11.705.6.2.1.

11.703.2.5 Fenestration

11.703.2.5.1 NFRC-certified (or equivalent) U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) on an area-weighted average basis do not exceed the values in IECC Table R402.1.2 or Table C402.4, as applicable. Area weighted averages are calculated separately for the categories of 1) windows and exterior doors and 2) skylights and tubular daylighting devices (TDDs). Decorative fenestration elements with a combined total area not greater than 15 ft^2 (1.39 m^2) or 10% of the total glazing area, whichever is less, are not required to comply with this practice. Unconditioned buildings 3 stories or less in height located in the Tropical Zone are exempt from this practice if the building has a roof SRI of not less than 0.85, and a wall reflectivity of not less than 0.39. ..... **Mandatory for § 11.703**

11.703.2.5.1.1 Dynamic glazing. Dynamic glazing is permitted to satisfy the SHGC requirements of Table 11.703.2.5.1 provided the ratio of the higher to lower labeled SHGC is greater than or equal to 2.4 and the dynamic glazing is automatically controlled to modulate the amount of solar gain into the space in multiple steps. Fenestration with dynamic glazing is considered separately from other fenestration and area-weighted averaging with fenestration that does not use dynamic glazing is not permitted. Dynamic glazing is not required to be automatically controlled or comply with minimum SHGC ratio when both the lower and higher labeled SHGC already comply with the requirements of Table 11.703.2.5.1.

11.703.2.5.2 The NFRC-certified (or equivalent) U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with Table 11.703.2.5.2(a), (b), or (c). Decorative fenestration elements with a combined total area not greater than 15 ft^2 (1.39 m^2) or 10% of the total glazing area, whichever is less, are not required to comply with this practice. **Per Table 11.703.2.5.2(a), or 11.703.2.5.2 (b), or 11.703.2.5.2 (c)**

Table 11.703.2.5.2(a)
Enhanced Fenestration Specifications

Climate Zones	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	**POINTS**
1	0.40	0.25	0.60	0.28	**1**
2	0.40	0.25	0.60	0.28	**1**
3	0.27	0.25	0.50	0.28	**2**
4	0.27	0.40	0.50	0.35	**3**

5	0.27	Any	0.50	Any	**3**
6	0.27	Any	0.50	Any	**4**
7	0.27	Any	0.50	Any	**4**
8	0.27	Any	0.50	Any	**4**

Exception: For Sun-tempered designs complying with the requirements of § 11.703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

Table 11.703.2.5.2(b)
Enhanced Fenestration Specifications

Climate Zone	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	**POINTS**
1	0.38	0.25	0.55	0.28	**2**
2	0.38	0.25	0.53	0.28	**3**
3	0.30	0.25	0.50	0.28	**4**
4	0.28	0.40	0.50	0.35	**4**
5	0.25	Any	0.48	Any	**4**
6	0.25	Any	0.48	Any	**5**
7	0.25	Any	0.46	Any	**5**
8	0.25	Any	0.46	Any	**4**

Exception: For Sun-tempered designs complying with the requirements of § 11.703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

Table 11.703.2.5.2(c)
Enhanced Fenestration Specifications

Climate Zones	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	**POINTS**
4	0.25	0.40	0.45	0.40	**6**
5-8	0.22	Any	0.42	Any	**6**

[Points for multifamily buildings four or more stories in height are awarded at 3 times the point value listed in Table 11.703.2.5.2(c)]

11.703.2.5.2.1 Dynamic glazing. Dynamic glazing is permitted to satisfy the SHGC requirements of Tables 11.703.2.5.2(a), 11.703.2.5.2(b), and 11.703.2.5.2(c) provided the ratio of the higher to lower labeled SHGC is greater than or equal to 2.4, and the dynamic glazing is automatically controlled to modulate the amount of solar gain into the space in multiple steps. Fenestration with dynamic glazing is considered separately from other fenestration, and area-weighted averaging with fenestration that does not use dynamic glazing is not permitted. Dynamic glazing is not required to be automatically controlled or comply with minimum SHGC ratio when both the lower and higher labeled SHGC already comply with the requirements of Tables 11.703.2.5.2(a), 11.703.2.5.2(b), and 11.703.2.5.2(c).

11.703.3 HVAC equipment efficiency

11.703.3.0 Multiple heating and cooling systems. For multiple heating or cooling systems in one home, practices § 11.703.3.1 through § 11.703.3.6 apply to the system that supplies 80% or more of the total installed heating or cooling capacity. Where multiple systems each serve less than 80% of the total installed heating or cooling capacity, points under § 11.703.3.1 through § 11.703.3.6 are awarded either for the system eligible for the fewest points or the weighted average of the systems. The weighted average shall be calculated in accordance with the following equation and be based

upon the efficiency and capacity of the equipment as selected in accordance with ACCA Manual S with it loads calculated in accordance with ACCA Manual J.

Weighted Average = $[(E_{unit\,1}*C_{unit\,1})+(E_{unit\,2}*C_{unit\,2})+...+(E_{unit\,n}*C_{unit\,n})] / (C_{unit\,1}+C_{unit\,2}+...+C_{unit\,n})$
where:
E = Rated AHRI efficiency for unit
C = Rated heating or cooling capacity for unit
n = Unit count

11.703.3.1 Combination space heating and water heating system (combo system) is installed using either a coil from the water heater connected to an air handler to provide heat for the building, dwelling unit or sleeping unit, or a space heating boiler using an indirect-fired water heater.

(a) Devices have a combined annual efficiency of not less than 0.80 and a water heating recovery efficiency of not less than 0.87. ..... **4**

(b) Devices have a combined annual efficiency of not less than 0.94 and a water heating recovery efficiency of not less than 0.95 ..... **6**

(c) Devices have a combined annual efficiency of not less than 1.15 and a water heating recovery efficiency of not less than 1.20. ..... **10**

(d) Devices have a combined annual efficiency of not less than 1.15 and a water heating recovery efficiency of not less than 1.20 and serves a third building load (e.g., pool heating). **12**

Items (b)-(d) are not available if points are awarded in 11.703.3.3 through 11.703.3.6 or 11.703.5.

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

(1) Gas and propane heaters: **Per Table 11.703.3.2(1)(a) or 11.703.3.2(1)(b)**

Table 11.703.3.2(1)(a)
Gas and Propane Heating Systems

AFUE / COP	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥90% AFUE	**0**	**2**	**3**	**6**	**6**	**9**	**10**	**12**
≥92% AFUE	**0**	**2**	**4**	**7**	**8**	**10**	**12**	**14**
≥94% AFUE	**0**	**3**	**4**	**9**	**9**	**12**	**14**	**16**
≥96% AFUE	**1**	**3**	**5**	**10**	**10**	**14**	**16**	**19**
≥98% AFUE	**1**	**3**	**6**	**11**	**12**	**16**	**18**	**21**
≥1.2 COP[a]	**1**	**4**	**9**	**16**	**18**	**23**	**26**	**30**
≥1.4 COP[a]	**1**	**5**	**11**	**19**	**21**	**26**	**30**	**35**

a. This requirement is used for gas-fired heat pump systems.

Table 11.703.3.2(1)(b)
Gas and Propane Heating Systems for Multifamily Buildings Four or More Stories in Height

AFUE / COP	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥90% AFUE	**0**	**4**	**4**	**8**	**8**	**10**	**11**	**13**
≥92% AFUE	**0**	**4**	**4**	**9**	**10**	**11**	**12**	**14**
≥94% AFUE	**0**	**5**	**5**	**10**	**11**	**12**	**14**	**16**
≥96% AFUE	**0**	**5**	**5**	**12**	**12**	**13**	**15**	**17**

≥98% AFUE	**0**	**6**	**6**	**13**	**13**	**14**	**16**	**18**
≥1.2 COP[a]	**0**	**8**	**8**	**18**	**18**	**18**	**21**	**23**
≥1.4 COP[a]	**0**	**9**	**9**	**21**	**21**	**21**	**24**	**26**

a. This requirement is used for gas-fired heat pump systems.

(2) Oil furnace: **Per Table 11.703.3.2(2)**

Table 11.703.3.2(2)
Oil Furnace

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥85% AFUE	**0**	**1**	**2**	**3**	**3**	**4**	**5**	**6**
≥90% AFUE	**0**	**2**	**3**	**6**	**6**	**9**	**10**	**12**

(3) Gas boiler: **Per Table 11.703.3.2(3)**

Table 11.703.3.2(3)
Gas Boiler

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥85% AFUE	**0**	**1**	**1**	**2**	**3**	**4**	**4**	**4**
≥90% AFUE	**0**	**1**	**2**	**4**	**6**	**7**	**8**	**6**
≥94% AFUE	**0**	**2**	**3**	**5**	**8**	**9**	**10**	**8**
≥96% AFUE	**0**	**2**	**4**	**6**	**9**	**11**	**12**	**10**

(4) Oil boiler: **Per Table 11.703.3.2(4)**

Table 11.703.3.2(4)
Oil Boiler

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥90% AFUE	**0**	**2**	**3**	**5**	**6**	**7**	**9**	**10**
≥95% AFUE	**0**	**2**	**3**	**6**	**6**	**9**	**10**	**12**

11.703.3.3 Heat pump heating efficiency is in accordance with Table 11.703.3.3(1) or Table 11.703.3.3(2) or Table 11.703.3.3(3). Refrigerant charge is verified for compliance with manufacturer's instructions utilizing a method in ACCA 5 QI Section 4.3. **Per Table 11.703.3.3(1) or 11.703.3.3(2) or 11.703.3.3(3)**

Table 11.703.3.3(1)
Electric Heat Pump Heating

Efficiency	Climate Zone					
	1	2	3	4	5	6-8[a]
	POINTS					
≥8.5 HSPF2 (11.5 EER2)	**0**	**1**	**1**	**2**	**2**	**2**
≥9.0 HSP2F (12.5 EER2)	**0**	**2**	**4**	**5**	**6**	**10**
≥9.5 HSPF2	**0**	**3**	**7**	**7**	**11**	**18**
≥10.0 HSPF2	**1**	**5**	**10**	**10**	**15**	**26**
≥12.0 HSPF2	**1**	**6**	**11**	**11**	**17**	**28**

Table 11.703.3.3(2)
Electric Heat Pump Heating for Multifamily Buildings Four or More Stories in Height

Efficiency	Climate Zone					
	1	2	3	4	5	6-8[a]
	POINTS					
≥8.5 HSPF2 (11.5 EER2)	**0**	**3**	**4**	**8**	**11**	**13**

Table 11.703.3.3(3)
Gas Engine-Driven Heat Pump Heating

Efficiency	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
≥1.3 COP at 47°F	**2**	**7**	**11**	**14**	**16**	**18**

11.703.3.4 Cooling efficiency is in accordance with Table 11.703.3.4(1) or Table 11.703.3.4(2). Refrigerant charge is verified for compliance with manufacturer's instructions utilizing a method in ACCA 5 QI Section 4.3.

Per Table 11.703.3.4(1) or 11.703.3.4(2)

Table 11.703.3.4(1)
Electric Air Conditioner and Heat Pump Cooling[a]

Efficiency	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥15 SEER2 (12.5 EER2)	**6**	**4**	**2**	**1**	**1**	**1**	**1**	**0**
≥17 SEER2 (12.5 EER2)	**11**	**9**	**7**	**3**	**3**	**2**	**2**	**0**
≥19 SEER2 (12.5 EER2)	**19**	**12**	**10**	**6**	**4**	**4**	**4**	**0**
≥21 SEER2	**26**	**15**	**14**	**8**	**6**	**6**	**5**	**0**
≥25 SEER2	**29**	**18**	**17**	**10**	**8**	**8**	**6**	**0**

a. Tropical Climate Zone: where none of the occupied space is air conditioned and where ceiling fans are provided for bedrooms and the largest space which is not used as a bedroom, 20 points is awarded.

Table 11.703.3.4(2)
Gas Engine-Driven Heat Pump Cooling

Efficiency	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
>1.2 COP at 95°F	**3**	**6**	**3**	**1**	**1**	**0**

11.703.3.5 Water source cooling and heating efficiency is in accordance with Table 11.703.3.5. Refrigerant charge is verified for compliance with manufacturer's instructions utilizing a method in ACCA 5 QI Section 4.3.

Per Table 11.703.3.5

Table 11.703.3.5
Water Source Cooling and Heating

Efficiency	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
≥15 EER2, ≥4.0 COP	**14**	**18**	**22**	**30**	**37**	**37**

11.703.3.6 Ground source heat pump is installed by a Certified Geothermal Service Contractor in accordance with Table 11.703.3.6. Refrigerant charge is verified for compliance with manufacturer's instructions utilizing a method in ACCA 5 QI Section 4.3.

Per Table 11.703.3.6

Table 11.703.3.6
Ground Source Heat Pump[a]

Efficiency	Climate Zone				
	1	2	3	4	5-8
	POINTS				
≥16.0 EER2, ≥3.6 COP	**1**	**1**	**2**	**16**	**22**
≥24.0 EER2, ≥4.3 COP	**24**	**29**	**22**	**31**	**35**
≥28.0 EER2, ≥4.8 COP	**42**	**46**	**35**	**42**	**44**

a. The ground loop is sized to account for the ground conductance and the expected minimum incoming water temperature to achieve rated performance.

11.703.3.7 ENERGY STAR, or equivalent, ceiling fans are installed. *[Points awarded per building.]* **1**

[For Tropical Climate Zone and Climate Zones 2B, 3B, and 4B: points awarded per fan where AC is not installed in the dwelling unit or sleeping unit (Max 8 points), and where points awarded in § 11.703.3.8 for these specific climate zones, points shall not be awarded in § 11.703.3.7.]

11.703.3.8 Whole-building or whole-dwelling unit or whole-sleeping unit fan(s) with insulated louvers and a sealed enclosure is installed. *[Points awarded per building.]* **Per Table 11.703.3.8**

Table 11.703.3.8
Whole Dwelling Unit Fan

Climate Zone		
1-3, Tropical	4-6	7-8
POINTS		
4	**3**	**0**

11.703.4 Duct systems

11.703.4.1 All space heating is provided by a system(s) that does not include air ducts. **Per Table 11.703.4.1**

Table 11.703.4.1
Ductless Heating System

Climate Zone					
1	2	3	4	5	6-8
POINTS					
0	**2**	**4**	**6**	**8**	**8**

11.703.4.2 All space cooling is provided by a system(s) that does not include air ducts. **Per Table 11.703.4.2**

Table 11.703.4.2
Ductless Cooling System

Climate Zone					
1	2	3	4	5	6-8
POINTS					
8	**8**	**4**	**2**	**1**	**0**

11.703.4.3 Ductwork is in accordance with all of the following: **Per Table 11.703.4.3**

(1) Building cavities are not used as return ductwork.

(2) Heating and cooling ducts and mechanical equipment are installed within the conditioned building space.

(3) Ductwork is not installed in exterior walls.

Table 11.703.4.3
Ducts

Climate Zone					
1	2	3	4	5	6-8
POINTS					
8	**10**	**8**	**8**	**8**	**4**

11.703.4.4 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 in. w.g. (25 Pa) and maximum air leakage is equal to or less than 6% of the system design flow rate or 4 cu-ft per minute per 100 ft^2 of conditioned floor area.

Per Table 11.703.4.4

Table 11.703.4.4
Duct Leakage

Ductwork location	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
ductwork *entirely outside* the building's thermal envelope	**4**	**5**	**4**	**3**	**2**	**1**
ductwork *entirely inside* the building's thermal envelope	**1**	**1**	**1**	**1**	**1**	**1**
ductwork *inside and outside* the building's thermal envelope	**3**	**4**	**3**	**2**	**1**	**1**

Points not awarded if points are taken under § 11.706.6.2.3.

11.703.5 Water heating system

11.703.5.1 Water heater Uniform Energy Factor (UEF) is in accordance with the following:

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

Water heater design is based on only 1 (one) water heater per dwelling unit, based on approved methods from IPC, ASPE, or manufacturer specifications. All table values are based on water heaters with medium water draws as defined by the DOE test procedures (55 gallons per day).

(1) Gas water heating

Per Table 11.703.5.1(1)(a) through 11.703.5.1(1)(e)

Table 11.703.5.1(1)(a)
Gas Water Heating
Storage Water Heater, Rated Storage Volume > 20 Gallons and ≤ 55 Gallons, Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.65 to <0.78	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**
≥0.78	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**

Table 11.703.5.1(1)(b)
Gas Water Heating
Storage Water Heater, Rated Storage Volume > 55 Gallons and ≤ 100 Gallons, Medium Water Draw

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

	POINTS							
≥0.78	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Table 11.703.5.1(1)(c)
Gas Water Heating
Storage Water Heater with Input Rate Greater than 75,000 Btu/h (Commercial)

Thermal Efficiency	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.90 to < 0.95	**6**	**6**	**5**	**3**	**3**	**3**	**3**	**2**
≥0.95	**7**	**7**	**5**	**4**	**4**	**4**	**4**	**2**

Table 11.703.5.1(1)(d)
Gas Water Heating
Storage Water Heater with Input Rate Greater than 75,000 Btu/h (Commercial),
In Buildings with High-Capacity Service Water-Heating Systems (1,000,000 Btu/h or Greater)

Thermal Efficiency	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.92 to < 0.95	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
≥0.95	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**

Table 11.703.5.1(1)(e)
Gas Water Heating
Instantaneous Water Heater, Rated Storage Volume < 2 Gallons and Input Rate of > 50,000 Btu/h, Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.89 to < 0.94	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**1**
≥0.94	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**1**

(2) Electric water heating

Per Table 11.703.5.1(2)(a) through 11.703.5.1(2)(e)

Table 11.703.5.1(2)(a)
Storage Water Heater, Rated Storage Volume ≥ 20 Gallons and ≤ 55 Gallons, Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.94 to <1.0	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
1.0 to <1.5	**4**	**2**	**2**	**2**	**1**	**1**	**1**	**1**
1.5 to <2.0	**7**	**4**	**3**	**2**	**2**	**2**	**1**	**1**
2.0 to <2.2	**14**	**8**	**7**	**5**	**4**	**4**	**2**	**2**
2.2 to <2.5	**17**	**9**	**8**	**6**	**5**	**4**	**3**	**3**
2.5 to <3.0	**18**	**12**	**10**	**8**	**6**	**6**	**3**	**3**
≥3.0	**22**	**16**	**13**	**11**	**8**	**8**	**4**	**3**

Table 11.703.5.1(2)(b)
Storage Water Heater, Rated Storage Volume ≥ 55 Gallons and ≤ 120 Gallons, Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
2.2 to <2.5	**6**	**4**	**3**	**3**	**2**	**2**	**1**	**1**
2.5 to <3.0	**7**	**5**	**4**	**3**	**3**	**3**	**2**	**2**
3.0 to <3.5	**8**	**5**	**5**	**4**	**3**	**3**	**3**	**2**
≥3.5	**9**	**6**	**6**	**5**	**4**	**4**	**3**	**2**

Table 11.703.5.1(2)(c)
Storage Water Heater, Rated Storage Volume > 120 Gallons, Medium Water Draw

Coefficient of Performance	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
2.5 to <3.0	**14**	**8**	**7**	**5**	**4**	**4**	**2**	**2**
3.0 to <3.5	**17**	**9**	**8**	**6**	**5**	**4**	**3**	**3**
3.5 to <4.0	**18**	**12**	**10**	**8**	**6**	**6**	**3**	**3**
≥4.0	**22**	**16**	**13**	**11**	**8**	**8**	**4**	**3**

Credits are only available for central systems that provide not less than 80% of total system volume in the building.

Table 11.703.5.1(2)(d)
Electric Tabletop Water Heating
(Tabletop Water Heater, Rated Storage Volume ≥ 20 Gallons and ≤ 120 Gallons, Medium Water Draw)

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.91	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Table 11.703.5.1(2)(e)
Electric Instantaneous Water Heating[a]
(Instantaneous Electric Water Heater, Rated Storage Volume < 2 Gallons, Medium Water Draw)

Uniform Energy Factor or Thermal Efficiency[b]	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.97	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**

a. Applies to any size water heater.
b. Electric instantaneous water heaters have either a Uniform Energy Factor (capacity less than or equal to 12 kW) or a Thermal Efficiency (capacity greater than 12 kW).

Table 11.703.5.1(2)(f)
Electric Grid Enabled Water Heating
(Grid Enabled Storage Water Heater, Rated Storage Volume ≥ 75 Gallons, Medium Water Draw)

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							

≥0.95	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

(3) Oil water heating **Per Table 11.703.5.1(3)**

Table 11.703.5.1(3)
Oil Water Heating
(Oil Water Heating, < 50 Gallons, Medium Water Draw)

Uniform Energy Factor	**Climate Zone**							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.62	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

11.703.5.2 Desuperheater is installed by a qualified installer or is pre-installed in the factory. **Per Table 11.703.5.2**

Table 11.703.5.2
Desuperheater

Climate Zone						
1	2	3	4	5	6	7-8
POINTS						
23	**17**	**9**	**7**	**5**	**4**	**2**

11.703.5.3 Drain-water heat recovery system is installed. *[Points awarded per building.]*..... **2**

11.703.5.4 Indirect-fired water heater storage tanks heated from boiler systems are installed. **1**

11.703.5.5 Solar water heater. SRCC (Solar Rating & Certification Corporation) OG 300 rated, or equivalent, solar domestic water heating system is installed. Solar Energy Factor (SEF) as defined by SRCC is in accordance with Table 11.703.5.5(a) and Table 11.703.5.5(b). **Per Table 11.703.5.5(a) or 11.703.5.5(b)**

Table 11.703.5.5(a)
Storage Water Heater, Rated Storage Volume of Backup Water Heater is ≥ 0.1 Gallon and ≤ 55 Gallons, Medium Water Draw

SEF	**Climate Zone**						
	Tropical &1	2	3	4	5	6	7-8
	POINTS						
SEF ≥ 1.3	**1**	**2**	**3**	**5**	**6**	**7**	**6**
SEF ≥ 1.51	**2**	**2**	**4**	**6**	**9**	**10**	**10**
SEF ≥ 1.81	**2**	**3**	**5**	**9**	**13**	**14**	**14**
SEF ≥ 2.31	**4**	**5**	**8**	**14**	**19**	**21**	**20**
SEF ≥ 3.01	**5**	**7**	**11**	**21**	**27**	**31**	**30**

Table 11.703.5.5(b)
Storage Water Heater, Rated Storage Volume of Backup Water Heater is >55 Gallons, Medium Water Draw

SEF	**Climate Zone**						
	Tropical &1	2	3	4	5	6	7-8
	POINTS						
SEF ≥ 1.3	**1**	**1**	**2**	**3**	**4**	**5**	**4**
SEF ≥ 1.51	**1**	**1**	**2**	**4**	**6**	**7**	**7**
SEF ≥ 1.81	**1**	**2**	**4**	**6**	**8**	**10**	**9**
SEF ≥ 2.31	**2**	**3**	**5**	**10**	**13**	**14**	**13**
SEF ≥ 3.01	**4**	**5**	**7**	**14**	**18**	**20**	**20**

11.703.6 Lighting and appliances

11.703.6.1 Interior hard-wired lighting. Interior hard-wired lighting is in accordance with one of the following:

(1) Not less than 95% of the total hard-wired interior luminaires or lamps comply with the following efficacy levels (lumens per watt):

(a) 80 lumens per watt **3**

(b) 100 lumens per watt..... **5**

(2) Lighting power densities (LPD) in common areas of multi-dwelling or multi-sleeping unit buildings shall be less than:

(a) 0.40 Watts per square foot **3**

(b) 0.35 Watts per square foot **5**

11.703.6.2 Exterior hard-wired lighting. Not less than 80% of the exterior lighting has a efficacy of not less than 100 lumens per watt or is solar-powered. **3**

11.703.6.3 Appliances.

(1) ENERGY STAR or equivalent appliance(s) are installed:

(a) Refrigerator **1**

(b) Dishwasher **1**

(c) Clothes washer..... **4**

(d) Clothes dryer..... **1**

(2) Install Consortium for Energy Efficiency (CEE) Tier 2 or higher tier appliances for the below types of appliances:

(a) Refrigerator **3**

(b) Dishwasher **2**

(c) Clothes dryer..... **5**

(bd) Clothes dryer..... **3**

11.703.7 Passive solar design

11.703.7.1 Sun-tempered design. Building orientation, sizing of glazing, and design of overhangs are in accordance with all of the following: **4**

(1) The long side (or one side if of equal length) of the building faces within 20 degrees of true south.

(2) Vertical glazing area on the south face is between 5% and 7% of the gross conditioned floor area [also see § 11.703.7.1(8)], and glazing U-factors complying with Table 11.703.2.5.2(a).

(3) Vertical glazing area on the west face is less than 2% of the gross conditioned floor area, and glazing complies with Table 11.703.2.5.2(a).

(4) Vertical glazing area on the east face is less than 4% of the gross conditioned floor area, and glazing complies with Table 11.703.2.5.2(a).

(5) Vertical glazing area on the north face is less than 8% of the gross conditioned floor area, and glazing complies with Table 11.703.2.5.2(a).

(6) Skylights, where installed, are in accordance with the following:

(a) shades and insulated wells are used, and all glazing complies with Table 11.703.2.5.2(a).

(b) horizontal skylights are less than 0.5% of finished ceiling area.

(c) sloped skylights on slopes facing within 45 degrees of true south, east, or west are less than 1.5% of the finished ceiling area.

(7) Overhangs, adjustable canopies, awnings, or trellises provide shading on south-facing glass for the appropriate climate zone in accordance with Table 11.703.7.1(7):

Table 11.703.7.1(7)
South-Facing Window Overhang Depth

		Vertical distance between bottom of overhang and top of window sill				
		≤7' 4"	**≤6' 4"**	**≤5' 4"**	**≤4' 4"**	**≤3' 4"**
Climate Zone	**1 & 2 & 3**	2' 8"	2' 8"	2' 4"	2' 0"	2' 0"
	4 & 5 & 6	2' 4"	2' 4"	2' 0"	2' 0"	1' 8"
	7 & 8	2' 0"	1' 8"	1' 8"	1' 4"	1' 0"

For SI: 1 in. = 25.4 mm

(8) The south facing windows have an SHGC of 0.40 or higher.

(9) Return air or transfer grilles/ducts are in accordance with § 11.705.4.

***Multifamily Building Note**: The site is designed such that not less than 40% of the multifamily dwelling or sleeping units have one south facing wall (within 15 degrees) containing not less than 50% of glazing for entire unit, Effective shading is required for passive solar control on all south facing glazing. The floor area of not less than 15 ft from the south facing perimeter glazing is massive and exposed to capture solar heat during the day and reradiate at night.*

11.703.7.2 Window shading. Automated solar protection or dynamic glazing is installed to provide shading for windows. **1**

11.703.7.3 Passive cooling design. Passive cooling design features are in accordance with at least three of the following: *[1 additional point awarded for each additional item.]* ..... **3 [6 max]**

(1) Exterior shading is provided on east and west windows using one or a combination of the following:

(a) vine-covered trellises with the vegetation separated by not less than 1 ft (305 mm) from face of building.

(b) moveable awnings or louvers.

(c) covered porches.

(d) attached or detached conditioned/unconditioned enclosed space that provides full shade of east and west windows (e.g., detached garage, shed, or building).

(2) Overhangs are installed to provide shading on south-facing glazing in accordance with § 11.703.7.1(7).

Points not awarded if points are taken under § 11.703.7.1.

(3) Windows and/or venting skylights are located to facilitate cross and stack effect ventilation.

(4) Solar reflective roof or radiant barrier is installed in climate zones 1, 2, or 3 and roof material achieves a 3-year aged criteria of 0.50.

(5) Internal exposed thermal mass is not less than 3 in. (76 mm) in thickness. Thermal mass consists of concrete, brick, and/or tile fully adhered to a masonry base or other masonry material in accordance with one or a combination of the following:

(a) Not less than 1 ft^2 (0.09 m^2) of exposed thermal mass of floor per 3 ft^2 (2.8 m^2) of gross finished floor area.

(b) Not less than 3 ft^2 (2.8 m^2) of exposed thermal mass in interior walls or elements per ft^2 (0.09 m^2) of gross finished floor area.

(6) Roofing material is installed with not less than a 0.75 in. (19 mm) continuous air space offset from the roof deck from eave to ridge.

11.703.7.4 Passive solar heating design. In addition to the sun-tempered design features in § 11.703.7.1, all of the following are implemented: *[Points shall not be awarded in the Tropical Climate Zone]*..... **4**

(1) Additional glazing, no greater than 12%, is permitted on the south wall. This additional glazing is in accordance with the requirements of § 11.703.7.1.

(2) Additional thermal mass for any room with south-facing glazing of more than 7% of the finished floor area is provided in accordance with the following:

(a) Thermal mass is solid and not less than 3 in. (76 mm) in thickness. Where two thermal mass materials are layered together (e.g., ceramic tile on concrete base) to achieve the appropriate thickness, they are fully adhered to (touching) each other.

(b) Thermal mass directly exposed to sunlight is provided in accordance with the following minimum ratios:

(i) Above latitude 35 degrees: 5 ft^2 (0.465 m^2) of thermal mass for every 1 ft^2 (0.093 m^2) of south-facing glazing.

(ii) Latitude 30 degrees to 35 degrees: 5.5 ft^2 (0.51 m^2) of thermal mass for every 1 ft^2 (0.093 m^2) of south-facing glazing.

(iii) Latitude 25 degrees to 30 degrees: 6 ft^2 (0.557 m^2) of thermal mass for every 1 ft^2 (0.093 m^2) of south-facing glazing.

(c) Thermal mass not directly exposed to sunlight is permitted to be used to achieve thermal mass requirements of § 11.703.7.4(2) based on a ratio of 40 ft^2 (3.72 m^2) of thermal mass for every 1 ft^2 (0.093 m^2) of south-facing glazing.

(3) In addition to return air or transfer grilles/ducts required by § 11.703.7.1(9), provisions for forced airflow to adjoining areas are implemented as needed.

11.704 ERI TARGET PATH

STAFF NOTE: Language from A009 and A010, that was Accepted As Modified by the Consensus Committee at their November 8-10, 2022 meeting, was not fully incorporated into the first draft standard but is included in this draft standard.

11.704.1 ERI target compliance.

Compliance shall be determined in accordance with ANSI/RESNET/ICC 301. Points from § 11.704 (ERI Target) shall not be combined with points from § 11.702 (Performance Path), § 11.703 (Prescriptive Path), or 11.701.1.4 through 11.701.1.8 (Alternative Paths).

Dwelling ratings shall be submitted to a Rating Certification Body approved by the Adopting Entity for calculating points under this section.

11.704.2 Point calculation.

Points for § 11.704 shall be computed individually for each building as follows:

Points = 40 + (Applicable Energy Rating Index from Table 11.704.2) * 2

Table 11.704.2
Energy Rating Index of the Rated Design

Climate Zone							
0-1	2	3	4	5	6	7	8
ENERGY RATING INDEX							
52	**52**	**51**	**54**	**55**	**54**	**53**	**53**

***Multifamily Building Note**: Modeling is completed building-wide using either a unit-by-unit approach, or a building average of a unit-by-unit approach.*

11.705 ALTERNATIVE COMPLIANCE FOR TROPICAL ZONES

STAFF NOTE: Language from A009 and A010, that was Accepted As Modified by the Consensus Committee at their November 8-10, 2022 meeting, was not fully incorporated into the first draft standard but is included in this draft standard.

11.705.1 Mandatory practices

11.705.1.1 High-efficacy lighting. All permanently installed lighting fixtures, excluding appliance lighting fixtures, shall contain only high-efficacy lighting sources.

11.705.1.2 Attics. Attics above the insulation are vented and attics below the insulation are unvented.

11.705.1.3 Roofs. Roof surfaces have a slope of not less than 1/4 unit vertical in 12 units horizontal (2.0-percent slope). The roof does not have water accumulation areas.

11.705.1.4 Operable fenestration

11.705.1.4.1 Ventilation area. Operable fenestration provides an openable area of not less than 10 percent of the floor area of the living space.

11.705.1.4.2 Bedroom exterior walls. Bedrooms with exterior walls facing two or more directions have operable fenestration on exterior walls facing not less than two directions.

11.705.1.4.3 Glazing in conditioned spaces. Glazing in conditioned spaces has a solar heat gain coefficient (SHGC), in accordance with § 11.705.2.2 or § 11.705.3.2, or has an overhang with a projection factor equal to or greater than 0.30 and a solar heat gain coefficient of no greater than 0.30.

Exception: jalousie windows.

11.705.1.5 Interior doors. Bedroom doors are capable of being secured in an open position.

11.705.2 Additional Tropical Zone practices - Silver

11.705.2.1 Water Heater. A renewable energy source provides not less than 80% of annual service water heating needs.

11.705.2.2 Glazing. Glazing in conditioned space has a Solar Heat Gain Coefficient (SHGC) between 0.26 and 0.30.

11.705.2.3 Exterior Walls. Exterior walls comply with not less than one of the following:

(1) Walls have insulation with an R-value of R-13 or greater.

(2) Wall products have a minimal initial solar reflectance of not less than 0.64. Wall products shall be tested in accordance with Chapter 3 testing requirements of CRRC-2.

11.705.2.4 Roof. The exterior roof surface complies with not less than one of the following:

(1) Not less than an initial solar reflectance of 0.75 and emittance of 0.75.

(2) Not less than an initial solar reflectance index of 75 and thermal emittance of 0.75. Roof products are tested in accordance with the ANSI/CRRC S100.

(3) Roof or ceiling insulation with R-Value of R-13 or greater.

(4) Radiant barrier installed.

11.705.2.5 Ceiling fans. A ceiling fan rough-in is provided for bedrooms and the largest living space that is not used as a bedroom.

11.705.2.6 Electric vehicle charging. Wiring sufficient for a Level 2 (208/240V 32-80 amp) electric vehicle charging station is installed on the building site.

11.705.3 Additional Tropical Zone practices - Gold

11.705.3.1 Water Heater. A renewable energy source provides not less than 90% of annual service water heating needs.

11.705.3.2 Glazing. Glazing in conditioned space has a Solar Heat Gain Coefficient (SHGC) not less than 0.25.

11.705.3.3 Exterior Walls. Exterior walls comply with the following:

(1) Walls have insulation with an R-value of R-13 or greater.

(2) Wall products have a minimal initial solar reflectance of not less than 0.64. Wall products shall be tested in accordance with Chapter 3 testing requirements of CRRC-2.

11.705.3.4 Roof. The exterior roof surface complies with not less than two of the following:

(1) Not less than an initial solar reflectance of 0.75 and emittance of 0.75.

(2) Not less than an initial solar reflectance index of 75 and thermal emittance of 0.75. Roof products are tested in accordance with the ANSI/CRRC S100.

(3) Roof or ceiling insulation with R-Value of R-13 or greater.

(4) Radiant barrier installed.

11.705.3.5 Ceiling fans. A ceiling fan is provided for bedrooms and the largest living space that is not used as a bedroom.

11.705.3.6 Air conditioning. All installed air conditioners have a rating of not less than 18 SEER2.....

11.705.3.7 Renewable energy system. For each dwelling unit, the building or lot is served by not less than 2kW renewable energy system and not less than 6kWh of energy storage. .....

11.705.3.8 Electric vehicle charging. A Level 2 (208/240V 32-80 amp) electric vehicle charging station is installed on the building site.

11.706 ADDITIONAL PRACTICES

11.706.1 Application of additional practice points.

Points from § 11.706 can be added to points earned in § 11.703 (Prescriptive Path), § 11.703 (Prescriptive Path), § 11.704 (ERI Target Path), or § 11.701.1.4 through § 11.701.1.8 (Alternative Paths)..

11.706.2 Lighting

11.706.2.1 Lighting controls

Percentages for point thresholds are based on lighting not required for means of egress or security lighting as defined by local building codes.

11.706.2.1.1 Interior lighting. In dwelling units or sleeping units, permanently installed interior lighting fixtures are controlled with an occupancy sensor, or dimmer:

(1) greater than 50% to less than 75% of lighting fixtures. **1**

(2) not less than 75% of lighting fixtures..... **2**

11.706.2.1.2 Exterior lighting. Photo or motion sensors are installed on 75% of outdoor lighting fixtures to control lighting.
[Percentages for point thresholds do not include lighting equipped with photovoltaics.]..... **1**

11.706.2.1.3 Multifamily common areas

(1) In a multifamily building, occupancy sensors, or dimmers are installed in common areas (except corridors and stairwells).

(a) greater than 50% to less than 75% of lighting fixtures. **1**

(b) not less than 75% of lighting fixtures. **2**

(2) In a multifamily building, occupancy controls are installed to automatically reduce light levels in interior corridors and exit stairwells when the space is unoccupied. Light levels are reduced by:

(a) greater than 50% to less than 75% or to local minimum requirements **2**

(b) not less than 75% **3**

11.706.2.1.4 In a multifamily building, occupancy controls are installed to automatically reduce light levels in garages and parking structures when the space is unoccupied. Light levels are reduced by:

(1) greater than 50% to less than 75% or to local minimum requirements **2**

(2) not less than 75% **3**

11.706.2.2 TDDs and skylights. A tubular daylighting device (TDD) or a skylight that complies with the requirements of Table 11.703.2.5.2(a) is installed in rooms without windows. *[Points awarded per building.]* **2**

11.706.2.3 Lighting outlets. Occupancy sensors are installed for not less than 80% of hard-wired lighting outlets in the interior living space. **1**

11.706.2.4 Recessed luminaires. The number of recessed luminaires that penetrate the thermal envelope is less than 1 per 400 ft^2 (37.16 m^2) of total conditioned floor area and they are in accordance with § 11.701.4.3.5. ..... **1**

11.706.3 Induction cooktop. Induction cooktop is installed. **1**

11.706.4 Return ducts and transfer grilles. Return ducts or transfer grilles are installed in every room with a door. Return ducts or transfer grilles are not required for bathrooms, kitchens, closets, pantries, and laundry rooms. **2**

11.706.5 HVAC design and installation

11.706.5.1 Comply with at least one of the following:

(1) HVAC contractor is certified by the Air Conditioning Contractors of America's Quality Assured Program (ACCA/QA), an EPA-recognized HVAC Quality Installation Training Oversight Organization (H-QUITO) , the Associated Air Balance Council (AABC) Test and Balance Technician or Engineer programs, the National Environmental Balancing Bureau (NEBB) Personnel Certification program, or Testing, Adjusting, and Balance Bureau (TABB) technician certification program. **1**

(2) HVAC installation technician(s) is certified by North American Technician Excellence, Inc. (NATE) or equivalent. **2**

11.706.5.2 Performance of the heating and/or cooling system is verified by the HVAC contractor in accordance with all of the following: **3**

(1) Start-up procedure is performed in accordance with the manufacturer's instructions.

(2) Refrigerant charge is verified by super-heat and/or sub-cooling method.

(3) Burner is set to fire at input level listed on nameplate.

(4) Air handler setting/fan speed is set in accordance with manufacturer's instructions.

(5) Total airflow is within 10% of design flow.

(6) Total external system static does not exceed equipment capability at rated airflow.

11.706.5.3 HVAC Design is verified by 3rd party as follows:

(1) The ENERGY STAR HVAC Design and Rater Design Review Checklists are completed and correct. **3**

(2) HVAC Installation is inspected and conforms to HVAC design documents and plans. **3**

11.706.6 Installation and performance verification

11.706.6.1 Third-party on-site inspection is conducted to verify compliance with all of the following, as applicable. No less than two inspections are performed: one inspection after insulation is installed and prior to covering, and another inspection upon completion of the building. Where multiple buildings or dwelling units of the same model or sleeping units of the same model are built by the same builder, a representative sample inspection of not less than 15% of the buildings or dwelling units or sleeping units is permitted. **3**

(1) Ducts are installed in accordance with the IRC or IMC and ducts are sealed.

(2) Building envelope air sealing is installed.

(3) Insulation is installed in accordance with § 11.701.4.3.2.1.

(4) Windows, skylights, and doors are flashed, caulked, and sealed in accordance with manufacturer's instructions and in accordance with § 11.701.4.3.

11.706.6.2 Testing. Testing is conducted to verify performance.

11.706.6.2.1 Air leakage validation of building or dwelling units or sleeping units. A visual inspection is performed as described in § 11.701.4.3.2(2) and air leakage testing is performed in accordance with ANSI/RESNET/ICC 380, ASTM E779, ASTM E1827, or ASTM E3158.
[Points awarded only for buildings where building envelope leakage testing is not required by the IECC.]
[Points not awarded if points are taken under § 11.703.2.4.]

(1) A blower door test. **3**

(2) Third-party verification is completed. **5**

11.706.6.2.2 HVAC airflow testing. Balanced HVAC airflows are demonstrated by flow hood or other acceptable flow measurement tool by a third party. Test results are in accordance with the following:

(1) Measured flow at each supply and return register complies with or exceeds the requirements in ACCA 5 QI Section 5.2. ..... **5**

(2) Total airflow complies with or exceeds the requirements in ACCA 5 QI Section 5.2..... **3**

11.706.6.2.3 HVAC duct leakage testing. One of the following is achieved:
[Points awarded only for buildings where duct leakage testing is not required by IECC.]
[Points not awarded if points are taken under § 11.703.4.4.]

(1) Duct leakage is in accordance with IECC R403.3.5 and R403.3.6. ..... **3**

(2) Duct leakage is in accordance with IECC R403.3.5 and R403.3.6, and testing is conducted by an independent third party. **5**

11.706.6.3 Insulating hot water pipes. Insulation with a thermal resistance (R-value) of not less than R-3 is applied to the following, as applicable:
[Points awarded only where these practices are not required by IECC.] **1**

(a) piping 3/4-in. and larger in outside diameter.

(b) piping serving more than one dwelling unit or sleeping unit.

(c) piping located outside the conditioned space.

(d) piping from the water heater to a distribution manifold.

(e) piping located under a floor slab.

(f) buried piping.

(g) supply and return piping in recirculation systems other than demand recirculation systems.

11.706.6.4 Potable hot water demand re-circulation system

11.706.6.4.1 Potable hot water demand re-circulation system is installed in a single-family unit. **1**

11.706.6.4.2 Potable hot water demand re-circulation system(s) that serves every unit in a multifamily building is installed in place of a standard circulation pump and control. **2**

11.706.7 Submetering system.

In multifamily buildings, an advanced electric and fossil fuel submetering system is installed to monitor electricity and fossil fuel consumption for each unit. The device provides consumption information on a monthly or near real-time basis. The information is available to the occupants not less than on a monthly basis. **1**

11.707 INNOVATIVE PRACTICES

11.707.1 Energy consumption control.

A whole-building, whole-dwelling unit, or whole-sleeping unit device or system is installed that controls or monitors energy consumption. ..... **3 max**

(1) programmable communicating thermostat with the capability to be controlled remotely **1**

(2) energy-monitoring device or system **1**

(3) energy management control system **3**

(4) programmable thermostat with control capability based on occupant presence or usage pattern **1**

(5) lighting control system **1**

11.707.2 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, or purchases renewable energy certificates (RECs) from a third-party provider to cover electricity used. The builder's local administrative office has renewable energy service or has otherwise been paired with RECs. Green-e Certified or equivalent is required for renewable electricity purchases. **1**

(2) The buyer of the building selects one of the following renewable energy service plans provided by the utility prior to occupancy of the building with no less than a two-year commitment or buys

RECs from a third-party provider to match the estimated projected electricity use for the building for two years. Green-e Certified (or equivalent) is required for renewable electricity purchases.

(a) less than 50% of the building common area has a projected electricity and gas use that is provided by renewable energy..... **1**

(b) greater than or equal to 50% of the building common area has a projected electricity and gas use that is provided by renewable energy..... **2**

(c) the entire building (all units and common areas included) has a projected electricity and gas use that is provided by renewable energy. **5**

11.707.3 Smart appliances and systems.

Smart appliances and systems are installed as follows:

[1 point awarded where at least 3 smart appliances are installed; 1 additional point awarded for 6 or more.]..... **1 [2 max]**

(1) Refrigerator

(2) Freezer

(3) Dishwasher

(4) Clothes Dryer

(5) Clothes Washer

(6) Room Air Conditioner

(7) HVAC Systems

(8) Service Hot Water Heating Systems

[Items (7) and (8) are permitted to count as two appliances each for the purpose of awarding points.]

Where points awarded in § 11.707.3, points shall not be awarded in § 11.707.7 and § 11.707.10.

11.707.4 Pumps

11.707.4.1 Pool or spa equipped with filtration pumps that are ENERGY STAR certified or equivalent are installed.

(1) Pool is equipped with ENERGY STAR certified or equivalent filtration pump(s). **3**

(2) Spa is equipped with ENERGY STAR certified or equivalent filtration pump(s). **1**

11.707.4.2 All sump pump(s) with electronically commutated motors (ECMs) are installed. **1**

11.707.5 On-site renewable energy system.

One of the following options is implemented:

(1) Building is Solar-Ready in compliance with IECC Appendix RB or CB Solar-Ready Provisions, as applicable. **1**

(2) An on-site renewable energy system(s) is installed on the property. ..... **2 per kW**

(3) An on-site renewable energy system(s) and a battery energy storage system are installed on the property.
[2 points awarded per kW or renewable energy system plus 1 per each 2 kWh or battery energy storage system]..... **2 per kW**

Points shall not be awarded in this section for solar thermal or geothermal systems that provide space heating, space cooling, or water heating, points for these systems are awarded in § 11.703. Points awarded in this section shall not be combined with points for renewable energy in another section of this chapter. The solar-ready zone roof area in item (1) is area per dwelling unit. Points in item (2) and (3) shall be divided by the number of dwelling units.

Multifamily Building Note: *Conditioned common area and non-residential space is excluded for the purpose of calculating number of units.*

11.707.6 Parking garage efficiency.

Structured parking garages are designed to require no mechanical ventilation for fresh air requirements. **2**

11.707.7 Grid-interactive electric thermal storage system.

A grid-interactive electric thermal storage system is installed.

(1) Grid-Interactive Water Heating System **1**

(2) Grid-Interactive Space Heating and Cooling System **1**

Where points are awarded in § 11.707.7, points shall not be awarded in § 11.707.3 and § 11.707.10.

11.707.8 Single-family residence electrical vehicle chargers.

A Level 2 (208/240V 40-80 amp) or Level 3 electric vehicle charging station:

(1) is installed on the building site. (Note: Charging station shall not be included in the building energy consumption.)..... **2**

(2) is ENERGY STAR certified or equivalent..... **1 Additional**

11.707.9 Single-family residence CNG vehicle fueling station.

A CNG vehicle residential fueling appliance is installed on the building site. The CNG fueling appliances shall be listed in accordance with ANSI/CSA NGV 5.1 and installed in accordance to the appliance manufacturer's installation instructions. (Note: The fueling appliance shall not be included in the building energy consumption.) **1**

11.707.10 Automatic demand response.

Automatic demand response system is installed that curtails energy usage upon a signal from the utility or an energy service provider is installed. **1**

Where points are awarded in § 11.707.10, points shall not be awarded in § 11.707.3 and § 11.707.7.

11.707.11 Grid-interactive battery storage system.

A grid-interactive battery storage system of no less than 6 kWh of available capacity is installed. **2**

11.707.12 Smart ventilation

(1) A whole-building ventilation system is installed with automatic ventilation controls to limit ventilation during periods of extreme temperature, extreme humidity, and/or during times of **1**

peak utility loads and is in accordance with the specifications of ASHRAE Standard 62.2 Section 4 .....

(2) Install a demand-controlled ventilation system to reduce outside air ventilation rates that is in accordance with specifications of ASHRAE Standard 62.2 Section 4 ..... **1**

11.707.13 Alternative refrigerant.

Use of the following in mechanical space cooling systems for dwellings.

(1) Use alternative refrigerant with a GWP less than 1,000 ..... **1**

(2) Do not use refrigerants **2**

11.707.14 Third-party utility benchmarking service

(1) For a multifamily building, the owner has contracted with a third-party utility benchmarking service with not less than five (5) years of experience in utility data management and analysis to perform a monthly analysis of whole-building energy and water consumption for not less than one (1) year. **3**

(2) The building owner commits to reporting energy data using EPA's ENERGY STAR Portfolio Manager for not less than three (3) years..... **1**

11.707.15 Entryway air seal.

For multifamily buildings, where not required by the building or energy code, to slow the movement of unconditioned air from outdoors to indoors at the main building entrance, the following is installed:

(1) Building entry vestibule..... **2**

(2) Revolving entrance doors..... **2**

11.801 INDOOR AND OUTDOOR WATER USE

11.801.0 Intent.

Implement measures that reduce indoor and outdoor water usage. Implement measures that include collection and use of alternative sources of water. Implement measures that treat water on site.

11.801.1Mandatory requirements.

The building shall comply with one of the following:

(1) § 11.801.1.1 ~~(~~Water Consumption Reduction Path~~);~~

(2) § 11.801.1.2 ~~(~~EPA Water Score Path~~);~~, or

(3) § 11.801.1.3 Prescriptive Path (§11.802 and §11.803), or

(4) § 11.801.1.4 ~~(~~Performance Path~~)~~ (11.804).

~~§ 11.802 (Prescriptive Path) and § 11.803 (Innovative Practices); or~~

~~(5) § 11.804 (Performance Path).~~

~~11.802 (Prescriptive Path) and § 11.803 (Innovative Practices). Points from § 11.804 (Performance Path) shall not be combined with points from § 11.802 (Prescriptive Path) or § 11.803 (Innovative Practices). The mandatory provisions of § 11.802 (Prescriptive Path) are required when using the Water Rating Index of § 804 (Performance Path) for Chapter 118 Water Efficiency compliance.~~

11.801.1.1 Water Consumption Reduction Path. The water efficiency rating level shall be based on the reduction in water consumption resulting from the remodel in accordance with Table 305.2.6.

Water consumption shall be based on the estimated annual use as determined by a third-party audit and analysis or use of utility consumption data. The reduction shall be the percentage difference between the consumption before and after the remodel calculated as follows:

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

The occupancy and lifestyle 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 multifamily buildings, the water consumption shall be based on the entire building including all dwelling units and common areas.

Where a building can demonstrate through documentation approved by the Adopting Entity that the remodel activities started prior to project registration, the water baseline (consumption before remodel) shall be calculated based on data and building systems that existed in the building up to 3 years prior project registration.

11.801.1.2 EPA Water Score Path. The Multifamily property shall be scored in the EPA ENERGY STAR Portfolio Manager tool following EPA requirements and guidance or equivalent tool or program. The last month in the 12-month water data period for this water score shall be within 6 months prior to acceptance by the Adopting Entity. Where total property water data is not available, then the score can be generated with 100% actual common and non-residential area water usage and not less than 80% of the actual tenant water meters, which has been extrapolated to 100%. All water data and extrapolation methods shall be reported. The level awarded for the Water Section shall be based on Table 305.2.6.

11.801.1.3 Prescriptive Path. A building complying with § 11.802 (Prescriptive Path) shall obtain not less than 8 points in practices § 11.802.4 through § 11.802.6 and not less than 4 points in practice § 11.802.7. Points from § 11.804 (Performance Path) shall not be combined with points from § 11.802 (Prescriptive Path) or § 11.803 (Innovative Practices).

11.801.1.4 Performance Path. The mandatory provisions of § 11.802 (Prescriptive Path) are required when using the Water Rating Index of § 804 (Performance Path) for Chapter 11~~8~~ Water Efficiency compliance. Points from § 11.804 (Performance Path) shall not be combined with points from § 11.802 (Prescriptive Path) or § 11.803 (Innovative Practices).

11.802 PRESCRIPTIVE PATH

~~11.802.0 Minimum prescriptive path requirements. A building complying with § 11.802 (Prescriptive Path) shall obtain not less than 8 points in practices § 11.802.4 through § 11.802.6 and not less than 4 points in practice § 11.802.7.~~

11.802.1 Indoor hot water usage. Indoor hot water supply system is in accordance with one of the practices listed in items (1) through (5). The maximum water volume from the source of hot

water to the termination of the fixture supply is determined in accordance with Tables 11.802.1(1) or 11.8021.1(2). The maximum pipe length from the source of hot water to the termination of the fixture supply is 50 ft

Where more than one water heater or where more than one type of hot water supply system, including multiple circulation loops, is used, points are awarded only for the system that qualifies for the minimum number of points. Systems with circulation loops are eligible for points only where pumps are demand controlled. Circulation systems with timers or aquastats and constant-on circulation systems are not eligible to receive points. Points awarded only where the pipes are insulated in accordance with § 11.705.6.3.

(1) The maximum volume from the water heater to the termination of the fixture supply at furthest fixture is 128 ounces (1 gallon or 3.78 liters). **8**

(2) The maximum volume from the water heater to the termination of the fixture supply at furthest fixture is 64 ounces (0.5 gallon or 1.89 liters). **12**

(3) The maximum volume from the water heater to the termination of the fixture supply at furthest fixture is 32 ounces (0.25 gallon or 0.945 liters). **20**

(4) A demand controlled hot water priming pump is installed on the main supply pipe of the circulation loop and the maximum volume from this supply pipe to the furthest fixture is 24 ounces (0.19 gallons or 0.71 liters). **24**

(a) The volume in the circulation loop (supply) from the water heater or boiler to the branch for the furthest fixture is no more than 128 ounces (1 gallon or 3.78 liters). ..... **4 Additional**

(5) A central hot water recirculation system is implemented in multifamily buildings in which the hot water line distance from the recirculating loop to the engineered parallel piping system (i.e., manifold system) is less than 30 ft (9,144 mm) and the parallel piping to the fixture fittings contains a maximum of 64 ounces (1.89 liters) (115.50 cubic in.) (0.50 gallons). **9**

(6) Tankless water heater(s) with not less than 0.5 gallon (1.89 liters) of storage are installed, or a tankless water heater that ramps up to not less than 110°F within 5 seconds is installed. The storage may be internal or external to the tankless water heater. ..... **1 Additional**

Table 11.802.1(1)
Maximum Pipe Length Conversion Table[a]

Nominal Pipe Size (in.)	Liquid Ounces per Foot of Length	Main, Branch, and Fixture Supply System Volume Category			Branch and Fixture Supply Volume from Circulation Loop
		128 ounces (1 gallons) [per 11.802.1(1)]	64 ounces (0.5 gallon) [per 11.802.1(2)]	32 ounces (0.25 gallon) [per 11.802.1(3)]	24 ounces (0.19 gallon) [per 11.802.1(4)]
		Maximum Pipe Length (feet)			
1/4[b]	0.33	50	50	50	50
5/16[b]	0.5	50	50	50	48
3/8[b]	0.75	50	50	43	32
1/2	1.5	50	43	21	16
5/8	2	50	32	16	12
3/4	3	43	21	11	8
7/8	4	32	16	8	6
1	5	26	13	6	5

1 1/4	8	16	8	4	3
1 1/2	11	12	6	3	2
2	18	7	4	2	1

a. Maximum pipe length figures apply when the entire pipe run is one nominal diameter only. Where multiple pipe diameters are used, the combined volume shall not exceed the volume limitation in § 11.801.1.

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

Table 11.802.1(2)
Common Hot Water Pipe Internal Volumes

OUNCES OF WATER PER FOOT OF PIPE

Size Nominal, In.	Copper Type M	Copper Type L	Copper Type K	CPVC CTS SDR 11	CPVC SCH 40	CPVC SCH 80	PE-RT SDR 9	Composite ASTM F 1281	PEX CTS SDR 9	PP SDR 7.4 F2389	PP SDR 9 F2389
3/8	1.06	0.97	0.84	N/A	1.17	N/A	0.64	0.63	0.64	N/A	N/A
1/2	1.69	1.55	1.45	1.25	1.89	1.46	1.18	1.31	1.18	1.72	1.96
3/4	3.43	3.22	2.90	2.67	3.38	2.74	2.35	3.39	2.35	2.69	3.06
1	5.81	5.49	5.17	4.43	5.53	4.57	3.91	5.56	3.91	4.41	5.01
1 ¼	8.70	8.36	8.09	6.61	9.66	8.24	5.81	8.49	5.81	6.90	7.83
1 ½	12.18	11.83	11.45	9.22	13.2	11.38	8.09	13.88	8.09	10.77	12.24
2	21.08	20.58	20.04	15.79	21.88	19.11	13.86	21.48	13.86	17.11	19.43

11.802.2 Water-conserving appliances.

ENERGY STAR or equivalent water-conserving appliances are installed.

(1) dishwasher **2**

(2) clothes washer, or **6**

(3) clothes washer with an Integrated Water Factor of 3.8 or less **12**

***Multifamily Building Note**: Washing machines are installed in individual units or provided in common areas of multifamily buildings.*

11.802.3 Water usage metering.

Water meters are installed complying with the following:

(1) Single-Family Buildings: Water Usage Metering: .....

(a) Where not otherwise required by the local AHJ, installation of a meter for water consumed from any source associated with the building or building site except for pools and spas. ..... **2 per unique meter**

(b) Each water meter shall be capable of communicating water consumption data remotely for the dwelling unit occupant and be capable of providing daily data with electronic data storage and reporting capability that can produce reports for daily, monthly, and yearly water consumption. (Fire sprinkler systems are not required to be metered). ..... **2 per sensor package**

(2) Multifamily Buildings: Water Usage Metering: .....

(a) Where not otherwise required by the local AHJ, installation of a meter for water consumed from any source associated with the building or building site except for pools and spas. ..... **2 per unique use meter**

(b) Each water meter shall be capable of communicating water consumption data remotely for the dwelling unit occupant and be capable of providing daily data with electronic data storage and reporting capability that can produce reports for daily, monthly, and yearly water consumption. (Fire sprinkler systems are not required to be metered). ..... **2 per sensor package**

[Points earned in § 11.802.3(2) shall not exceed 50% of the total points earned for the Indoor and Outdoor Water Use Category]

11.802.4 Showerheads. Showerheads are in accordance with the following:

(1) A 2.0 GPM limit shall apply to cumulative flow of all devices located less than 96 in. apart in individual/two-person shower compartments or 35 in. apart in gang or group showers (as measured horizontally). Showerheads shall comply with ASME A112.18.1/CSA B125.1 and shall comply with the performance criteria of the EPA WaterSense Specification for showerheads. Showerheads shall be served by an automatic compensating valve that complies with ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 and is specifically designed to provide thermal shock and scald protection at the flow rate of the showerhead. *[4 points awarded for first compartment; 1 point for each additional compartment in dwelling]*.... **2 [7 max]**

Points awarded per shower compartment. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.

(2) All shower compartments in the dwelling unit(s) or sleeping unit(s) and common areas meet the requirements of § 11.802.4(1) and all showerheads are in accordance with one of the following:

(a) maximum of 1.8 gpm..... **6 Additional**

(b) maximum of 1.5 gpm..... **10 Additional**

(3) Any shower control that can shut off water flow without affecting temperature is installed. *[1 point awarded per shower control]* ..... **1 [3 max]**

For SI: 1 gallon per minute = 3.785 L/m

11.802.5 Faucets

11.802.5.1 Install water-efficient lavatory faucets with flow rates not more than 1.5 gpm (5.68 L/min), tested in compliance with ASME A112.18.1/CSA B125.1 and complying with the performance criteria of the EPA WaterSense High-Efficiency Lavatory Faucet Specification:

(1) Flow rate ≤ 1.5 gpm [Faucets in all residential bathrooms are in compliance] ..... **1 [3 max]**

***Multifamily Building Note**: In multifamily buildings, the average number of bathrooms per unit may be used as the number of points awarded for this practice, rounded to the nearest whole number.*

(2) Flow rate ≤ 1.20 gpm [Faucets in all residential bathrooms are in compliance] ..... **2 [6 max]**

***Multifamily Building Note**: In multifamily buildings, the average number of bathrooms per unit may be used as the number of points awarded for this practice, rounded to the nearest whole number.*

11.802.5.2 Water-efficient residential kitchen faucets are installed in accordance with ASME A112.18.1/CSA B125.1. Residential kitchen faucets may temporarily increase the flow above the maximum rate but not to exceed 2.2 gpm.

(1) All residential kitchen faucets have a maximum flow rate of 1.8 gpm. **3**

(2) All residential kitchen faucets have a maximum flow rate of 1.5 gpm. ..... **1 Additional**

11.802.5.3 Self-closing valve, motion sensor, metering, or pedal-activated faucet is installed to enable intermittent on/off operation. *[1 point awarded per fixture]*..... **1 [3 max]**

11.802.6 Water closets and urinals.

Water closets and urinals are in accordance with the following:

Points awarded for § 11.803.6(2) or § 11.802.6(3), not both.

(1) Gold and Emerald levels: All water closets and urinals are in accordance with § 11.802.6. ..... **Mandatory**

(2) A water closet is installed with an effective flush volume of 1.28 gallons (4.85 L) or less in accordance with ASME A112.19.2/CSA B45.1 or ASME A112.19.14 as applicable. Tank-type water closets shall be in accordance with the performance criteria of the EPA WaterSense Specification for Tank-Type Toilets ..... **2 [12 max]**

[Points awarded per fixture. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.]

(3) All water closets are in accordance with § 11.802.6(2). **8**

(4) All water closets are in accordance with § 11.802.6(2) **and** one or more of the following are met:

(a) Water closets that have an *effective flush volume* in accordance with one of the following:. *[Points awarded per toilet. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.]*

(i) between and including0.9 and 1.2 gallons;. ..... **2 Additional**

(ii) less than 0.9 gallons. ..... **4 Additional**

(b) One or more urinals with a flush volume of 0.5 gallons (1.9L) or less when tested in accordance with ASME A112.19.2/CSA B45.1. ..... **2 Additional**

(c) One or more composting or non-flushing toilets or non-flushing urinals. Non-flushing toilets and urinals shall be tested in accordance with ASME A112.19.2/CSA B45.1. ..... **12 Additional**

11.802.7 Irrigation systems

11.802.7.1 Where an irrigation system is installed, an irrigation plan and implementation are executed by a qualified professional or equivalent. ..... **Mandatory**

11.802.7.2 Irrigation sprinkler nozzles shall be tested according to ANSI standard ASABE/ICC 802 Landscape Irrigation Sprinkler and Emitter Standard by an accredited third-party laboratory. **6**

11.802.7.3 Drip irrigation is installed. ..... **13 max**

(1) Drip irrigation is installed for all landscape beds. **4**

(2) Subsurface drip is installed for all turf grass areas. **4**

(3) Drip irrigation zones specifications show plant type by name and water use/need for each emitter *[Points awarded only where specifications are implemented.]*..... **5**

11.802.7.4 The irrigation system(s) is controlled by a smart controller or no irrigation is installed. *[Points are not additive.]*

(1) Irrigation controllers shall be in accordance with the performance criteria of the EPA WaterSense program **10**

(2) No irrigation is installed and a landscape plan is developed in accordance with § 11.503.5, as applicable. **15**

(2) No irrigation is installed and there is plan of no landscaping. **15**

11.802.7.5 Commissioning and water use reduction for irrigation systems. *[Points are not additive per each section.]*

(1) All irrigation zones utilize pressure regulation so emission devices (sprinklers and drip emitters) operate at manufacturer's recommended operating pressure. **3**

(2) Where dripline tubing is installed, a filter with mesh size in accordance with the manufacturer's recommendation is installed on all drip zones. **3**

(3) Utilize spray bodies that incorporate an in-stem or external flow shut-off device. **3**

(4) For irrigation systems installed on sloped sites, either an in-stem or external check valve is utilized for each spray body. **3**

(5) Where an irrigation system is installed, a flow sensing device is installed to monitor and alert the controller when flows are outside design range. **3**

11.802.8 Rainwater collection and distribution.

Rainwater collection and distribution is provided.

11.802.8.1 Rainwater is used for irrigation in accordance with one of the following:

(1) Rainwater is diverted for landscape irrigation without impermeable water storage **5**

(2) Rainwater is diverted for landscape irrigation with impermeable water storage in accordance with one of the following:

(a) 50 – 499 gallon storage capacity **5**

(b) 500 – 2,499 gallon storage capacity **10**

(c) 2,500 gallon or larger storage capacity (system is designed by a professional certified by the ARCSA or equivalent) **15**

(d) All irrigation demands are met by rainwater capture (documentation demonstrating the water needs of the landscape are provided and the system is designed by a professional certified by the ARCSA or equivalent). **30**

11.802.8.2 Rainwater is used for indoor domestic demand as follows. The system is designed by a professional certified by the ARCSA or equivalent.

(1) Rainwater is used to supply an indoor appliance or fixture for any locally approved use. *[Points awarded per appliance or fixture.]* ..... **5 [15 max]**

(2) Rainwater provides for total domestic demand. Where rainwater is used as potable water the potable rainwater system shall comply with the requirements of IRC Sections P2906 and Section P2912. ..... **46**

The following shall also apply:

(a) The following roof materials shall not be used to collect rainwater: shingles with fire retardant, copper, and materials that contain asbestos. Materials that contain lead, including but not limited to flashings and roof jacks, shall be prohibited.

(b) Potable water supplies shall be protected against cross connection with rainwater as specified in IRC Section P2902.1.

(c) Disinfection shall be provided by at least one of the following:

(i) Ultraviolet (UV) light providing not less than 40 mJ/cm2 at 254 nm for the highest water flow rate. A UV sensor with visible alarm, audible alarm, or water shutoff shall be triggered when the UV light is below the minimum at the sensor. In addition, filtration no greater than 5 µm shall be located upstream of the UV light or

(ii) filtration no greater than 0.2 µm, or

(iii) other approved disinfection

(d) Materials and systems that collect, convey, pump, or store rainwater for potable rainwater systems shall comply with NSF 53, NSF 61 or equivalent.

(e) The quality of the water at the point of use shall be verified in accordance with the requirements of the jurisdiction.

(f) The rainwater storage shall not admit sunlight.

(g) Potable rainwater pipe shall not be required to be purple after the point that the water is disinfected.

11.802.9 Sediment filters.

Water filter is installed to reduce sediment and protect plumbing fixtures for the whole building or the entire dwelling unit or the sleeping unit. **1**

11.802.10 Water treatment devices

11.802.10.1 Water Softeners shall not be installed where the supplied water hardness is less than 8.0 grains per gallon measured as total calcium carbonate equivalents. Water softeners shall be listed to NSF 44 and a rated salt efficiency of 3,400 grains of total hardness per 1.0 pound of salt based on sodium chloride equivalency. Devices shall not discharge more than 4.0 gallons of water per 1,000 grains of hardness removed during the service or recharge cycle.

(1) No water softener..... **5**

(2) Water softener installed to supply softened water only to domestic water heater..... **2**

11.802.10.2 Reverse Osmosis (R/O) water treatment systems shall be listed to NSF 58 and shall include automatic shut-off valve to prevent water discharge when storage tank is full.

(1) No R/O system. **3**

(2) Combined capacity of all R/O systems does not exceed 0.75 gallons. **1**

11.802.11 Pools and spas

11.802.11.1 An motorized non-permeable pool cover is installed and extends across the entire pool surface. **10**

11.803 INNOVATIVE PRACTICES

11.803.1 Reclaimed, grey, or recycled water.

Reclaimed, grey, or recycled water is used as permitted by applicable code.

Points awarded for either § 11.803.1(1) or § 11.803.1(2), not both.
Points awarded for either § 11. 803.6 or § 11.803.1, not both.

(1) each water closet flushed by reclaimed, grey, or recycled water
[Points awarded per fixture or appliance.] ..... **5 [20 max]**

(2) irrigation from reclaimed, grey, or recycled water on-site **10**

11.803.2 Reclaimed water, greywater, or rainwater pre-piping.

Reclaimed, greywater, or rainwater systems are rough plumbed (and permanently marked, tagged or labeled) into buildings for future use. ..... **3 per roughed in system**

11.803.3 Automatic leak detection and control devices.

One of the following devices is installed. Where a fire sprinkler system is present, ensure the device will be installed to not interfere with the operation of the fire sprinkler system. **2**

(1) automatic water leak detection and control devices

(2) automatic water leak detection and shutoff devices

11.803.4 Engineered biological system or intensive bioremediation system.

An engineered biological system or intensive bioremediation system is installed and the treated water is used on site. Design and implementation are approved by appropriate regional authority. **20**

11.803.5 Recirculating humidifier.

Where a humidifier is required, a recirculating humidifier is used in lieu of a traditional “flow through” type. **1**

11.803.6 Advanced wastewater treatment system.

Advanced wastewater (aerobic) treatment system is installed and treated water is used on site. **20**

Points awarded for either § 11.803.6 or § 11.803.1, not both.

11.804 PERFORMANCE PATH

STAFF NOTE: Language from A009 and A010, that was Accepted As Modified by the Consensus Committee at their November 8-10, 2022 meeting, was not fully incorporated into the first draft standard but is included in this draft standard.

11.804.1 Performance Path.

The index score for the Performance Path shall be calculated in accordance with Appendix D Water Rating Index (WRI) or equivalent methodology.

11.804.2 Water efficiency rating levels.

In lieu of threshold levels for Chapter 11~~8~~ in Table 303, rating levels for § 11.804.1 are in accordance with Table 11.804.2.

Table 11.804.2
Maximum WRI Scores for NGBS Certification in Chapter 8

BRONZE	SILVER	GOLD	EMERALD
70	60	50	40

11.804.3 Water efficiency NGBS points equivalency.

The additional points for use with Table 305.2.6.2 from the Chapter 8 Water Efficiency Category are determined in accordance with Equation 11.804.3.

Equation 11.804.3
NGBS = WRI x (-2.29) + 181.7

Following sections of Chapter 11 remain unchanged.