Public Comments on 2024 National Green Building Standard Draft 2

July 26, 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.

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.

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Reason:	The definition for "Performance Path" is outdated, as there are now multiple performance and prescriptive paths for both energy and water compliance paths (including ERI and WRI) across multiple chapters (7,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."

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

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.

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.'

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.

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.

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.

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.

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

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.

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.

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.

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

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.

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.*

**apologies, the server is not allowing document uploads, please let me know where/how I can provide supporting documentation.

Supporting Documentation:

Fire smart definition:

- https://readyforwildfire.org/prepare-for-wildfire/fire-smart-landscaping/
- (WUIC61-24 proposal – approved as submitted PDF)
- CAH1 Results showing approved as submitted PDF

No vegetation in 0-5 feet:

- https://ibhs.org/wildfireready/
- IBHS How to Prepare Home PDF
- CalFire Wildfire Home Retrofit Guide

Info sheets/websites about home hardening:

- https://readyforwildfire.org/prepare-for-wildfire/hardening-your-home/
- PDF of IBHS Home Prep
- CalFire Wildfire Home Retrofit Guide

Evidence supporting 6” noncombustible material at base of wall:

	○ NIST Technical Note 2205: Item 10 PDF ○ NIST Guidelines Link ○ IWUIC11-21 Public Comment 1 – data supporting 6" base requirements ○ IBHS How to Prepare Home PDF ○ CalFire Wildfire Home Retrofit Guide
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:	Yes

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.

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.

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.

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.

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.

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

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 <u>at least</u> ~~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>at least</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
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.

PC225 ID 8505	**613.2 HUD Guides (Designing for Natural Hazards)**
Submitter:	Elina Thapa
Organization:	Home Innovation Research Labs (NGBS Green)f

Comment:	**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
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.

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.

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.

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.

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.

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.

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."

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

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.

PC234 ID 8495	703 PRESCRIPTIVE PATH
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.

PC235 ID 8447	703.2 Building envelope
Submitter:	Cindy Wasser
Organization:	Home Innovation Research Labs (NGBS Green)
Comment:	703.2.4 Building thermal envelope leakage. The maximum building thermal 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."

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.

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

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.

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".

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."

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.

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.

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.

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.

Chapter 9: Indoor Environmental Quality

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:	Yes

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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

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.

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~~ 13 Third-party utility benchmarking service** ... **11.707.~~15~~ 14 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.

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.

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.

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.

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.

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.

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:	Yes

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.

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.

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

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.

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

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

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.

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.

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

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.

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.

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.

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.

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:	Yes