All Proposed Changes with Task Group Recommendations

October 7, 2022

Note: Proposed Changes were grouped for review and recommendation by the nine task groups assembled to assist the Consensus Committee in advisory function. The task groups met by conference call from June through August 2022. In all, 106 Proposed Changes were received from the public and 142 Proposed Changes were developed by the task groups. Proposed Changes received from the public are denoted in the Proposal Number starting with a "P" while the changes developed by the Task Groups are denoted with a "A".

Contents

Section 2 Definitions

P001 ID 7510	202 DEFINITIONS
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	**Blackwater:** liquid or waterborne waste that would be permitted without special treatment into either the public sewer or a private sewage disposal system. **Blackwater Capture:** water captured from toilets and faucets for reuse outdoors. **Capture Water Credit:** credit applied to indoor and outdoor water calculations that reflects extent to which water demand is "offset" by alternative sources, including rainwater, greywater, and blackwater. **Effective Rainfall:** amount of precipitation that is actually added and stored in the soil. **Evapotranspiration:** sum of evaporation from soil and other surfaces, as well as transpiration from plants; shown as a monthly sum for the purposes of WRI calculation. **Greywater:** untreated wastewater that has not come into contact with toilet waste, kitchen sink waste, dishwasher waste or similarly contaminated sources. **Greywater Capture:** water captured from showers, bathtubs, lavatory faucets, and clothes washers for reuse, either indoors or outdoors. **Indoor Baseline:** baseline indoor water demand calculated by adding typical daily water volume per device per occupant. **Irrigation Controller Reduction:** irrigation water reduction based on a verified weather-based irrigation controller. **Irrigation Efficiency:** the efficiency of a specific type of irrigation; a number between 0 and 1. **Landscape Area:** verified area of landscaped zone(s). **Landscape Water Area:** total area that is planted, irrigated, hand-watered or have a water feature like a pool. **Landscape Water Use:** annual outdoor water use for landscaping. **Master Bath Adjustment:** adjustment of indoor water use based on expected use of a separate master bathroom. **Non-Landscape Water Use:** sum of outdoor exposed pools, spas, and fountains. **Outdoor Baseline:** baseline outdoor water demand based on outdoor area and local evapotranspiration rates. **Pan Evaporation Rate:** value derived by dividing the volume of liquid that evaporated from the amount of time that it took to evaporate. **Plant Fraction Evapotranspiration:** fraction of evapotranspiration that is associated with a given plant type. **Rainwater:** natural precipitation that falls on a structure. **Rainwater Capture:** rainwater capture from roof or site for indoor and/or outdoor reuse. **Roof Surface Capture:** precipitation expected to be captured from a particular roof surface material. **Site Surface Capture:** precipitation expected to be captured from a particular site surface material. **Sitewater:** natural precipitation that falls on the ground, softscapes, and hardscapes.

	Structural Waste: water volume in the pipe between the hot water source and the plumbing fixture or appliance, plus the extra volume needed to heat the pipe as hot water is delivered to its use. **Structural Waste (Baseline):** approximate structural waste value based on the house size and configurations. **Structural Waste (Preliminary):** estimated structural waste volume where there is no built construction to verify but a preliminary score can be calculated based on plans. **Structural Waste (Verified):** field measured structural waste value; water volume is collected until the temperature of the water equals 100°F at furthest fixture for a domestic hot water system. **Thermostatic Control Valve (TSV):** device that prevents dangerously high output temperature regardless of input and output variations. Modern TSV products are designed to save water and energy by reducing flow to a trickle once hot water is available. **Use Factor:** expected frequency of a device's use. Shown in right column of Table 1. **Water Month:** month where irrigation or hand-watering is expected; months between first and last frosts. **WRI Verifier:** professional who has completed a recognized WRI training.
Reason:	Definitions list does not capture full set of terms present within the NGBS text. Incorporate terms that are included within Appendix D Water Rating Index.
TG Recommendation:	Disapprove, 8-0-1
TG Modification:	
TG Reason:	TG rejected this proposal and generated several individual proposals to incorporate expanded definitions directly within the Appendix D text.

Additional TG Proposed Changes

A001 ID 7741	**202 Definitions**
Submitter:	Bill Sanderson, Team WS, LLC.
Comment:	*Revise the following definition* Hardscape. Asphalt, concrete, masonry, stone, wood, and other ~~non-plant elements~~ pavers external to the building shell on a landscape.
Reason:	Non plant elements is an ambiguous term, replacing with pavers makes the hardscape definition more direct and applicable to driveways, parking areas, walkways, etc. The revision eliminates the technicality of non-plant elements, like artificial turf, being considered for practice 505.2 (1) (c) under Heat island mitigation.
TG Recommendation:	Accept, 5-0-0
TG Modification:	
TG Reason:	

A002 ID 7670	202 Definitions
Submitter:	Theresa Weston, The Holt Weston Consultancy representing ABAA
Comment:	*Add Definition*: BUILDING THERMAL ENVELOPE. The basement walls, exterior walls, floors, ceilings, roofs and any other building element assemblies that enclose conditioned space or provide a boundary between conditioned space and exempt or unconditioned space. *Modify note of Table 703.2.4(b) Building Envelope Leakage as follows:* Where ELR50 = CFM50 / ~~Shell Area~~ Building Thermal Envelope
Reason:	Revises language to use more widely accepted industry terminology and introduces definition from the IECC.
TG Recommendation:	Accept as Modified, 8-0-1
TG Modification:	*Add Definition*: BUILDING THERMAL ENVELOPE. The basement walls, exterior walls, floors, ceilings, roofs and any other building element assemblies that enclose conditioned space or provide a boundary between conditioned space and exempt or unconditioned space. *Modify note of Table 703.2.4(b) Building Envelope Leakage as follows:* Where ELR50 = CFM50 / ~~Shell Area~~ *Building Thermal Envelope* Area
TG Reason:	Note: italics should be applied in printed text Added missing word.

A003 ID 7642	202 Definitions
Submitter:	Olga Cano, TG4 Subgroup – Definitions
Comment:	Proposed: **Structural Waste:** water volume in the pipe between the hot water source and the plumbing fixture or appliance, plus the extra volume needed to heat the pipe as hot water is delivered to its use. **Structural Waste (Baseline):** approximate structural waste value based on the house size and configurations. **Structural Waste (Preliminary):** estimated structural waste volume where there is no built construction to verify but a preliminary score can be calculated based on plans. **Structural Waste (Verified):** field measured structural waste value; water volume is collected until the temperature of the water equals 100°F at furthest fixture for a domestic hot water system.
Reason:	WRI terms are not currently defined in the NGBS.
TG Recommendation:	Disapprove, 7-0-0
TG Modification:	
TG Reason:	Current text is sufficient. Term is only defined once and adequately defined within D101.6(5).

A004 ID 7641	202 Definitions
Submitter:	Olga Cano, TG4 Subgroup – Definitions
Comment:	D101.8 (1) (d) **Effective Rainfall:** amount of precipitation added and stored in the soil.

Reason:	Definition missing
TG Recommendation:	Accept, 7-0-1
TG Modification:	
TG Reason:	Include definition within the section

A005 ID 7599	**202 Definitions**
Submitter:	Bill Sanderson, Team WS, LLC.
Comment:	*Add the following definition* Recreational Surface. Hard covered playing area used for tennis courts, basketball courts, etc.
Reason:	Adding the definition ensures recreational surfaces do not encompass playing fields.
TG Recommendation:	
TG Modification:	
TG Reason:	*Staff Note: The Task Group could not come to consensus on a recommended action. Task Group is deferring to the Consensus Committee.*

Section 3 Compliance Method

P002 ID 7513	305 Green Remodeling
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Waive the size restriction on addition size for historic buildings so that they can benefit from the exemptions and flexibility within Chapter 11. Existing buildings that will be remodeled and will include an addition that is >75% of the existing building's above-grade conditioned area are eligible to apply the NGBS's exemptions for mandatory practices that apply to the building portions that will remain unaltered, as long as there are no apparent life safety or moisture issues. The remodeled existing building can comply using the remodeling path; the new addition portion of the building would comply under the new construction path and can not claim exemptions from the NGBS mandatory practices.
Reason:	Existing historic buildings that will be remodeled and will include an addition that is <75% of the existing building's above-grade conditioned area are eligible to use the NGBS's exemptions for mandatory practices that apply to the building portions that will remain unaltered, as long as there are no apparent life safety or moisture issues. It is currently unclear how a historic building being renovated with an addition >75% of the existing above-grade conditioned area could comply with the NGBS. It would be unreasonable to expect renovated historic buildings with large additions to comply via the New Construction pathway.
TG Recommendation:	Accept as Modified, 16-0-0
TG Modification:	**305.2.1.1 Additions.** For a remodeled building that includes an addition, the entire building including the addition shall comply with the criteria of § 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. ~~HISTORIC BUILDINGS. Buildings that are listed in or are eligible for listing in the National Register of Historic Places (NRHP) or designated as being of historic or architectural significance under an appropriate state or local law.~~ HISTORIC BUILDING. Any building or structure that is one or more of the following: 1.Listed, or certified as eligible for listing, by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places. 2.Designated as historic under an applicable state or local law. 3.Certified as a contributing resource within a National Register-listed, state-designated or locally designated historic district.
TG Reason:	The TG wanted to align the def of historic buildings with the IECC definition.

P003 ID 7557	305.2 Whole-building rating criteria
Submitter:	Steven Rosenstock, Self
Comment:	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 or site energy savings or source energy savings or carbon savings as determined by a third-party energy audit and analysis or utility consumption data.
Reason:	Different jurisdictions are using different metrics to determine compliance with energy codes for new or existing buildings. A green standard should be flexible to work with current policies of different cities and states.
TG Recommendation:	Accept as Modified, 14-0-2
TG Modification:	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 or site energy savings or source energy savings or carbon dioxide equivalent emissions (CO2e) savings ~~as determined by a third-party energy audit and analysis or utility consumption data~~ using methodology in ANSI/ASHRAE Standard 105-2021 or IgCC -2021 (ASHRAE 189.1-2020). **Add** (CO2e) and standard year to the 702.2.1 proposal from TG 5 P027
TG Reason:	The TG made the edits based on TG5 decision on P027 and to clarify the years.

P004 ID 7535	305.2 Whole-building rating criteria
Submitter:	Chinedu Moneke, Home Innovation Research Labs (NGBS Green)
Comment:	Presently, energy savings is considered on a per square foot basis but water savings is based on total area. The reason for this is unclear and will make achievement of the water performance thresholds more difficult, especially if additional square footage is added as part of the renovation.
Reason:	Change water consumption reduction equation to be divided by the number of dwelling/sleeping units.
TG Recommendation:	Accept as Modified,
TG Modification:	9-0-1 305.2.6.1 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%.
TG Reason:	The TG revised the proposal to normalize water consumption by bedrooms.

Additional TG Proposed Changes

A006 ID 7591	301.2 Awarding of Points
Submitter:	Hope Medina, Task Group 1

Comment:	(3) The Adopting Entity shall allow the use of new and innovative products and practices deemed to meet the intent of this Standard. Points assigned for any new product or practice shall be determined by the Adopting Entity. A maximum of 20 points may be awarded at the discretion of the Adopting Entity. ~~Innovative practices and products shall fall under Chapters 5-10 (Categories 1-6 in Table 303).~~ 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, quantifiable 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.
Reason:	It appears to be an oversight that innovative practices were limited to chapters 5-10. There is no reason that innovative practices could not be recognized for the other scoring pathways – Existing Buildings, Certified Path, and Commercial Spaces.
TG Recommendation:	Accept as Modified, 9-0-1
TG Modification:	(3) The Adopting Entity shall allow the use of new and innovative products and practices deemed to meet the intent of this Standard. Points assigned for any new product or practice shall be determined by the Adopting Entity. Points assigned for any new product or practice shall be determined by the Adopting Entity. <u>The Adopting Entity shall award no more than 20 points for such products or practices.</u> ~~A maximum of 20 points may be awarded at the discretion of the Adopting Entity. Innovative practices and products shall fall under Chapters 5-10 (Categories 1-6 in Table 303).~~ 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, quantifiable 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.
TG Reason:	The TG modification is to clarify the application of the standard.

A007 ID 7711	305.2 Whole-building rating criteria
Submitter:	Stephen Evanko, Dominion Due Diligence Group
Comment:	Proposed adding an energy performance compliance path for Existing Building / Remodel Energy Compliance for Multifamily projects. (Edits as proposed to section 305) 305 EXISTING BUILDING 305.2.1 Applicability. The provisions of § 305.2 shall apply to existing buildings. In addition to the foundation, at least 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 must have their Certificate of Occupancy at least ~~5 years~~ 1 year prior to NGBS registration. 305.2.5 Energy efficiency. The building shall comply with § 305.2.5.1 or § 305.2.5.2 or § 305.2.5.3. New Section 305.2.5.3 EPA ENERGY STAR SEP Score The Multifamily property must be benchmarked scored in the EPA ENERGY STAR Portfolio Manager tool following EPA requirements and guidance. This benchmark score, also known as the Statement of Energy Performance (SEP) score is a score from 1-100 and is based on actual energy usage data. The 12-month energy data period for this energy benchmark should be within 6 months of the final submission to NGBS. If 100% of all energy data is not available due to the utility not releasing tenant data, then the SEP can be generated with 100% actual house/owner energy usage and 80% of the actualtenant energy usage which has been extrapolated to 100%. All energy data and extrapolation methods must be reported. The level awarded for the energy chapter is based on Table 305.2.5.3. Table 305.2.5.3 Rating Level BRONZE SILVER GOLD EMERALD EPA ENERGY STAR SEP Score 75-85 85-95 95+ N/A
Reason:	The 2020 NGBS Remodel has two current paths for the Energy Section: 1) Energy Consumption Reduction Path of 15% (Bronze), etc (Table 305.2.5.1) 2) Prescriptive Path from 11.700 on the basis of Chapter 7 which has leveraged IECC 2018 as the baseline (Table 305.2.5.2) Newer high-performing buildings (e.g. 2-7 years old) have an extremely challenging time meeting the 15%+ reduction target without needing to discard functioning equipment which still has useful life remaining. Discarding useful equipment (HVAC, appliances, etc) early is wasteful and runs counter to the green intent of the NGBS program. The other energy path available is the Prescriptive Path, which as it exists requires 30 points in 11.703. Securing 30 points in that section is extremely difficult unless the building already complies with IECC 2018 (or IECC 2024 in the future). (BEEF UP TO EXPLAIN MORE ABOUT WHY THIS IS UNLIKELY) Without creating another path to certify these energy-efficient building we are missing an opportunity to recognize and encourage these property owners to continue their efforts to deliver green housing. ENERGY STAR Portfolio Manager is an interactive resource management tool that enables professionals to benchmark the energy use of any type of building, all in a secure online environment. Nearly 25% of U.S.

	commercial building space is already actively benchmarking in Portfolio Manager, making it the industry-leading benchmarking tool. The Multifamily ENERGY STAR scoring algorithm has been in place since 2014. Many Municipalities require the use of ENERGY STAR Portfolio Manager for benchmarking ordinances. And there are several green financing programs from Fannie Mae, Freddie Mac and HUD that required the use of the benchmarking tool. Some green building certification programs such as LEED already use the benchmarking score as evidence of energy-efficient performance. Issues to be addressed: · EPA ENERGY STAR algorithm only works on properties with 20 or more units o Should we offer an ERI path for existing buildings that aligns with Ch7? (to cover smaller MF properties and SFH) · EPA ENERGY STAR algorithm is used at the property level. So, the score for the building would be based on the total score for the property. (We should relate this to the additional proposal to offer a property wide certification) · No restriction on the age of the property. If an older property has already been upgraded and is performing a level equivalent to this, it should be able to use this new path as well. · SEP is based on Actual performance – Should have at least 80% of the actual 12-month history. Remaining 20% can be extrapolated if utility is unable to provide due to requirement for tenant releases (discuss these percentages). Also needs to have 80% average monthly occupancy (as required by ENERGY STAR) · Situation: a property that is scoring 70 but has an improvement scope to get to 75+ - If we already have to recommend changes to get the score to a 75+, how much different is it than the reduction path with 15%.
TG Recommendation:	Accept as Modified, 6-0-3
TG Modification:	Proposed adding an energy performance compliance path for Existing Building / Remodel Energy Compliance for Multifamily projects. (Edits as proposed to section 305) 305 EXISTING BUILDING 305.2.1 Applicability. The provisions of § 305.2 shall apply to existing buildings. In addition to the foundation, at least 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 must have their Certificate of Occupancy at least ~~5 years~~ 1 year prior to NGBS registration. 305.2.5 Energy efficiency. The building shall comply with § 305.2.5.1 or § 305.2.5.2 or § 305.2.5.3. New Section 305.2.5.3 EPA ENERGY STAR ~~SEP~~ Score The Multifamily or mixed-use property ~~must~~shall be ~~benchmarked~~ scored in the EPA ENERGY STAR Portfolio Manager tool following EPA requirements and guidance. This ~~benchmark~~ score~~, also known as the Statement of Energy Performance (SEP) score is a score from 1-100 and~~ is based on actual energy usage data. The last month in the 12-month energy data period for this energy ~~benchmark~~ score shall be within 6 months ~~of the final submission to NGBS~~ prior to the final submission to the Adopting Entity. ~~If~~ Where 100% of all energy data is not available due to the utility not releasing ~~tenant~~ resident data, then the~~SEP~~ score can be generated with 100% actual ~~house/owner~~ common and non-residential area energy usage and 80% of the actual ~~tenant~~ resident energy ~~usage~~ meters which has been extrapolated to 100%. All energy data and extrapolation methods ~~must~~ shall be reported. The level awarded for the energy chapter is based on Table 305.2.5.3. Table 305.2.5.3

	Rating Level BRONZE SILVER GOLD EMERALD EPA ENERGY STAR ~~SEP~~ Score 75-~~85~~ 84 85-~~95~~ 94 95~~+~~ 95-100 N/A 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 must 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. Projects, that received their CO more than 3 years ago, and that do not have 12-months of energy data with an occupancy of 80% of the units are permitted to submit a modeled energy score which has been prepared by a qualified energy professional.
TG Reason:	To add exception/exemptions and make verbiage more appropriate for a technical standard.

A008 ID 7717	305.2 Whole-building rating criteria
Submitter:	Stephen Evanko, Dominion Due Diligence Group
Comment:	Proposed adding a water performance compliance path for Existing Building / Remodel Water Compliance for Multifamily projects. (Edits as proposed to section 305) 305 EXISTING BUILDING …. 305.2.1 Applicability. The provisions of § 305.2 shall apply to existing buildings. In addition to the foundation, at least 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 must have their Certificate of Occupancy at least ~~5 years~~ 1 year prior to NGBS registration. …. 305.2.6 Water efficiency. The building shall comply with § 305.2.6.1 or § 305.2.6.2 or § 305.2.6.3. …. New Section 305.2.6.3 EPA ENERGY STAR Water Score The Multifamily property must be scored in the EPA ENERGY STAR Portfolio Manager tool following EPA requirements and guidance. This water score is a score from 1-100 and is based on actual water usage data. The 12-month water data period for this water score should be within prior 6 months of the final submission to Adopting Entity. If 100% of all water data is not available due to the utility not releasing data, then the benchmark can be generated with 100% actual house/owner water usage and 80% of the actual tenant water usage which has been extrapolated to 100%. All water data and extrapolation methods must be reported. The level awarded for the water chapter is based on Table 305.2.6.3. Table 305.2.6.3 Rating Level BRONZE SILVER GOLD EMERALD EPA ENERGY STAR Water Score 75-84 85-94 95+ N/A
Reason:	The 2020 NGBS Remodel has two current paths for the Water Section: 1) Water Consumption Reduction Path of 20% (Bronze), etc (Table 305.2.6.1) 2) Prescriptive Path from 11.800 on the basis of Chapter 8 (Table 305.2.6.2) ENERGY STAR Portfolio Manager is an interactive resource management tool that enables professionals to benchmark the energy and water use of several building types, all in a secure online environment. Nearly 25% of U.S. commercial building space is already actively benchmarking in Portfolio Manager, making it the industry-leading benchmarking tool. The Multifamily ENERGY STAR water scoring algorithm has been in place since 2017. Many Municipalities require the use of ENERGY STAR Portfolio Manager for benchmarking ordinances. And there are several green financing programs from Fannie Mae, Freddie Mac and HUD that required the use of the benchmarking tool. Some green building certification programs such as LEED already use the benchmarking score as evidence of energy-efficient performance.

TG Recommendation:	Accept as Modified, 10-0-1
TG Modification:	Proposed adding a water performance compliance path for Existing Building / Remodel Water Compliance for Multifamily projects. (Edits as proposed to section 305) 305 EXISTING BUILDING 305.2.1 Applicability. The provisions of § 305.2 shall apply to existing buildings. In addition to the foundation, at least 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 must have their Certificate of Occupancy at least ~~5 years~~ 1 year prior to NGBS registration. 305.2.6 Water efficiency. The building shall comply with § 305.2.6.1 or § 305.2.6.2 or § 305.2.6.3. New Section 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. ~~This water score is a score from 1-100 and is based on actual water usage data.~~ The 12-month water data period for this water score shall be within prior 6 months of the final submission to Adopting Entity. Where 100% of all water data is not available due to the utility or resident(s) not releasing data, then the score can be generated with 100% actual common and non-residential area water usage and 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. Table 305.2.6.3 Rating Level BRONZE SILVER GOLD EMERALD EPA Water Score 75-84 85-94 95+ N/A
TG Reason:	Removed text that was informational. Made clarifying text edits similar to those implemented in the ENERGY STAR score section. Updated to account for different metering scenarios.

A009 ID 7714	305.2 Whole-building rating criteria
Submitter:	Jamie Carr, Eco Achievers
Comment:	305.2.6.2 ~~Prescriptive~~ New Construction Water Equivalency Path The building shall comply with § 11.801.1 Mandatory Requirements and Table 305.2.6.2 (Water ~~Rating Prescriptive~~ Point Thresholds). Any practice listed in either 11.802 (Prescriptive Path) and 11.803 (Innovative Practices), or § 804 (Performance Path) shall be eligible for contributing points toward Table 305.2.6.2 (Water ~~Rating Prescriptive~~ Point Thresholds). The attributes of the existing building that were in compliance with ~~the prescriptive practices of in~~§ 11.80~~3~~2 through 11.804 prior to ~~the remodel~~ certification and remain in compliance ~~after the remodel~~ 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 at least 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. [Strike Section 305.2.7 Prescriptive practices] [Table 305.2.5.2 shall be renamed Water Point Thresholds, the second row in the first column will be modified to read "Section 11.800 new construction equivalency thresholds," and the last row will be modified to read "Points from § 11.802 through 11.804 shall not count toward the total points for § 305.2.7."] [Chapter 8 of the 2024 NGSB shall be reproduced as Chapter 11.8 with the number 11 preceding 80_ throughout the chapter as appropriate.]
Reason:	The goal here is to provide more flexibility and further align the Existing Buildings chapter with the new construction portion of the Standard, while continuing to maintain the same rigorousness. It seems reasonable to me award NGBS certification to buildings that can show equivalency to either of the two methods of demonstrating compliance under the new construction standard (i.e., Prescriptive Path or Performance Path), not just the Prescriptive Path.
TG Recommendation:	Accept as Modified, 10-0-1
TG Modification:	305.2.6.2 ~~Prescriptive~~ New Construction Water Equivalency Path The building shall comply with § 11.801.1 Mandatory Requirements and Table 305.2.6.2 (Water ~~Rating Prescriptive~~ Point Thresholds). Any practice listed in either 11.802 (Prescriptive Path) and 11.803 (Innovative Practices), or § 804 (Performance Path) shall be eligible for contributing points toward Table 305.2.6.2 (Water ~~Rating Prescriptive~~ Point Thresholds). The attributes of the existing building that were in compliance with ~~the prescriptive practices of in~~§ 11.80~~3~~2 through 11.804 prior to ~~the remodel~~ certification and remain in compliance ~~after the remodel~~ 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 ~~at least~~ 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. [Strike Section 305.2.7 Prescriptive practices] [Table 305.2.5.2 shall be renamed Water Point Thresholds, the second row in the first column will be modified to read "Section 11.800 new construction equivalency thresholds," and the last row will be modified to read "Points from § 11.802 through 11.804 shall not count toward the total points for § 305.2.7."] [Chapter 8 of the 2024 NGSB shall be reproduced as Chapter 11.8 with the number 11 preceding 80_ throughout the chapter as appropriate.]
TG Reason:	Verbiage more appropriate of a technical standard.

A010 ID 7713	305.2 Whole-building rating criteria
Submitter:	Jamie Carr, Eco Achievers
Comment:	305.2.5.2 ~~Prescriptive~~ New Construction Energy Equivalency Path The building shall comply with § 11.701 Minimum Energy Efficiency Requirements and Table 305.2.5.2 (Energy ~~Prescriptive~~ 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 ~~Prescriptive~~ Point Thresholds). The attributes of the existing building that were in compliance with ~~the prescriptive practices of in~~§ 11.70~~3~~2 through 11.704 prior to ~~the remodel~~ certification and remain in compliance ~~after the remodel~~ when submitting for certification shall be eligible for contributing points to this section. A building complying with § 305.2.5.2 ~~Prescriptive~~ New Construction Equivalency Path ~~for Energy~~ shall obtain at least 30 points from § 11.702, § 11.703, or § 11.704 and include a minimum of two practices from § 11.705 or a minimum of one practice from § 11.705 and a minimum of 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, ~~§11.703, § 11.705 and~~ through § 11.706 do not count towards the required points in Table 305.2.7. [Strike Section 305.2.7 Prescriptive practices] [Table 305.2.4.2 shall be renamed Energy Point Thresholds, the second row in the first column will be modified to read "Section 11.700 new construction equivalency thresholds," and the last row will be modified to read "Points from § 11.702 through 11.706 shall not count toward the total points for § 305.2.7."] [Chapter 7 of the 2024 NGSB shall be reproduced as Chapter 11.7 with the number 11 preceding 70_ throughout the chapter as appropriate.]
Reason:	The goal here is to provide more flexibility and further align the Existing Buildings chapter with the new construction portion of the Standard, while continuing to maintain the same rigorousness. It seems reasonable to me award NGBS certification to buildings that can show equivalency to any of the three methods of demonstrating compliance under the new construction standard (i.e., Performance Path, Prescriptive Path, or ERI Target Path), not just the Prescriptive Path.
TG Recommendation:	Accept as Modified, 9-0-2
TG Modification:	305.2.5.2 ~~Prescriptive~~ New Construction Energy Equivalency Path The building shall comply with § 11.701 Minimum Energy Efficiency Requirements and Table 305.2.5.2 (Energy ~~Prescriptive~~ 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 ~~Prescriptive~~ Point Thresholds). The attributes of the existing building that were in compliance with ~~the prescriptive practices of in~~§ 11.70~~3~~2 through 11.704 prior to ~~the remodel~~ certification and remain in compliance ~~after the remodel~~ when submitting for certification shall be eligible for contributing points to this section. A building complying with § 305.2.5.2 ~~Prescriptive~~ New Construction Equivalency Path ~~for Energy~~ shall obtain ~~at least~~ not less than 30 points from § 11.702, § 11.703, or § 11.704 and include ~~a minimum of~~ not less than two practices from § 11.705 or ~~a minimum of~~ 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, ~~§11.703, § 11.705 and~~ through § 11.706 do not count towards the required points in Table 305.2.7. [Strike Section 305.2.7 Prescriptive practices] [Table 305.2.4.2 shall be renamed Energy Point Thresholds, the second row in the first column will be modified to read "Section 11.700 new construction equivalency thresholds," and the last row will be modified to read "Points from § 11.702 through 11.706 shall not count toward the total points for § 305.2.7."] [Chapter 7 of the 2024 NGSB shall be reproduced as Chapter 11.7 with the number 11 preceding 70_ throughout the chapter as appropriate.]
TG Reason:	Verbiage more appropriate of a technical standard.

A011 ID 7712	305.3 Multifamily Property Certification
Submitter:	Stephen Evanko, Dominion Due Diligence Group
Comment:	Proposed adding a compliance path for Existing Building / Remodel Energy Compliance for Multifamily projects that awards the certification at the property-wide level rather than at the individual building level. [NOT SURE WHERE THIS WOULD RESIDE SO ASSUME NEED TO ADD ON TO SECTION 305 305 ~~GREEN REMODELING AND~~ EXISTING BUILDING …. *New Section* 305.3 Multifamily Property Level Green Certification 305.3.1 The Multifamily Property Level Certification permits Multifamily Properties with multiple buildings to qualify for a single property-level green certification by following the practices of 305.2 . Under this path, requirements are applied at the property-level. All buildings with conditioned space must comply with and meet applicable mandatory practices and all buildings that are included in the Property Certification. Building Types: Property-wide certifications should specify the buildings that are included in the certification. Multifamily amenity buildings such as clubhouse, fitness center and leasing offices should be included in the property wide certification. Garage-only structures and smaller unconditioned structures such as maintenance sheds, mail kiosks, etc. should be excluded. In alignment with NGBS standards, commercial or retail space may be included or excluded from the green certification. If commercial space is to be included, it must meet 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 meet Mandatory requirements except when life safety or apparent moisture issues exist. 305.3.4 Rating level. A minimum rating level of Bronze shall be achieved in each of the following categories: Energy efficiency § 305.3.5), Water efficiency (§ 305.3.6), and Prescriptive practices (§ 305.3.7) as applied across all the buildings in the property. The property rating level shall be the lowest rating level achieved in § 305.3.5, § 305.3.6, and § 305.3.7. [repeat the rest of section 305.2 as section 305.3]
Reason:	Issues to be addressed: · ADDRESS SITUATIONS WITH COMMERCIAL (should follow approach in the commercial section and the appeal) o Multiple buildings with some commercial in one building o Single building with commercial on the ground floor o Multiple apt buildings with a standalone commercial space (this scenario is currently treated as an accessory structure) Historically, NGBS has awarded certifications at the individual building level which has aligned well with the

	new construction process. However, for existing Multifamily properties with multiple apartment buildings and amenity buildings, the approach to earn certification at the individual building level creates excess labor and can lead to less efficient upgrade decisions that could risk the property pursuing a green certification. Furthermore, many owners need a green certification for all residential buildings to qualify for various green financing programs. Showing a single certification for the entire property is the preferred and most efficient path for these owners. Using the NGBS Remodeling program, the energy reduction path requires that each building earn at least a 15% energy reduction. Some Multifamily properties are built in phases and thus the older buildings have considerably more improvement opportunities than the newer buildings which would have newer, more energy-efficient equipment. Energy Analysts and Verifiers would be able to generate the most-optimal energy savings and return on investment by modeling and proposing improvement at the property-wide level. For instance, the new buildings could show a 10% improvement while the older buildings yielded a 20% improvement. Many other green programs recognize the green certification at the property-level. The ENERGY STAR Portfolio Manager tool and Existing Building Certification, evaluate the energy performance for the entire property as apposed to just at the individual building. GreenPoint Rated Multifamily also recognizes certifications at the property-wide level. This proposed change aligns well with the proposal to add an energy performance compliance path for Existing Building / Remodel Energy Compliance for Multifamily projects (aka ENERGY STAR Statement of Energy Performance)
TG Recommendation:	Accept as Modified, 11-0-0
TG Modification:	305 ~~GREEN REMODELING AND~~ EXISTING BUILDING *New Section* 305.3 Multifamily Property Level Green Certification 305.3.1 ~~The Multifamily Property Level Certification permits~~ Multifamily Properties with multiple buildings ~~to~~ shall qualify for a single property-level green certification by following the practices of 305.2. ~~Under this path, requirements are applied at the property level.~~ ~~All buildings with conditioned space must comply with and meet applicable mandatory practices and all buildings that are included in the Property Certification.~~ 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, ~~etc.,~~ shall be excluded. ~~In alignment with NGBS standards,~~ commercial or retail space is permitted to be ~~may be~~ included or excluded from the green certification. Where ~~If~~ commercial space is to be included, it ~~must~~ shall meet 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 meet Mandatory requirements except ~~when~~ where life, safety, or ~~apparent~~ visible moisture issues exist. 305.3.4 Rating level. A ~~minimum~~ 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. The property rating level shall be the lowest rating level achieved in § 305.2.5, § 305.2.6, or § 305.2.7. *In all other places where "apparent moisture issues" exists in Section 305, change to "visible moisture issues."* *Change "and" to "or" in final sentence of 305.2.4.*
TG Reason:	To better align with green financing that recognizes property-wide improvements in green certification, this new section provides new flexibility and recognize current existing conditions to earn a single property-wide certification without compromising the baseline performance required. Using the NGBS Remodeling program, the energy reduction path requires that each building earn at least a 15% energy reduction. Some Multifamily properties are built in phases and thus the older buildings have considerably more improvement opportunities than the newer buildings which would have newer, more energy-efficient equipment. Energy Analysts and Verifiers would be able to generate the most-optimal energy savings and return on investment by modeling and proposing improvement at the property-wide level. For instance, the new buildings could show a 10% improvement while the older buildings yielded a 20% improvement. Historically, NGBS has awarded certifications at the individual building level, which has aligned well with the new construction process. However, for existing Multifamily properties with multiple apartment buildings and amenity buildings, the approach to earn certification at the individual building level creates excess labor and can lead to less efficient upgrade decisions that could risk the property pursuing a green certification. Furthermore, many owners need a green certification for all residential buildings to qualify for various green financing programs. Showing a single certification for the entire property is the preferred and most efficient path for these owners. Other edits were provided for clarity.

Section 4 Site Design And Development

Additional TG Proposed Changes

A012 ID 7598	403.6 Landscape Plan
Submitter:	Bill Sanderson, Team WS, LLC.
Comment:	*Modify as shown below* (5) Where turf is being planted, Turfgrass Water Conservation Alliance (TWCA) or equivalent as determined by the adopting entity third-party qualified water efficient grasses are used (6) Where artificial turf is installed, Synthetic Turf Council (STC) or equivalent qualified artificial turf is used (only applicable in dry locations) (7) ~~(6)~~For landscaped vegetated areas, the maximum percentage of all turf areas is: (a) 0% (b) greater than 0% to less than or equal to 20% (c) greater than 20% to less than or equal to 40%. (d) greater than 40% to less than or equal to 60% (8) For landscaped vegetated areas, the maximum percentage of all artificial turf areas is (only applicable in dry locations): (a) 0% (b) greater than 0% to less than or equal to 20% (c) greater than 20% to less than or equal to 40% (d) greater than 40% to less than or equal to 60% (9) ~~(7)~~ To improve pollinator habitat… (10) ~~(8)~~ Non-potable irrigation water is available to common areas (11) ~~(9)~~ Non-potable irrigation water is available to lots (12) ~~(10)~~ Plants with similar… (13) ~~(11)~~ Species and locations… (14) ~~(12)~~ Vegetative wind breaks… (15)~~(13)~~) On-site tree trimmings… (16) ~~(14)~~ An integrated common… (17) ~~(15)~~ Plans for the common area landscape… (18) ~~(16)~~ Trees that might… (19) ~~(17)~~ Greywater irrigation systems… (20) ~~(18)~~ Cisterns, rain barrels… (21) ~~(19)~~ Spray irrigation…
Reason:	Natural turf fields in arid climates account for excessive water consumption and maintenance negatively effecting the environment. Artificial turf reduces that impact, but only in non-temperate climates.
TG Recommendation:	Accept as Modified, 5-0-0

TG Modification:	(5) Where turf is being planted, Turfgrass Water Conservation Alliance (TWCA) or equivalent as determined by the adopting entity third-party qualified water efficient grasses are used (6) Where artificial turf is installed, Synthetic Turf Council (STC) or equivalent industry association qualified artificial turf is used (only applicable in dry locations per table A200) (a) artificial aka synthetic turf is used in leu of natural turf for common recreation, sport or play fields only (7) ~~(6)~~For landscaped vegetated areas, the maximum percentage of all turf areas is: (a) 0% (b) greater than 0% to less than or equal to 20% (c) greater than 20% to less than or equal to 40%. (d) greater than 40% to less than or equal to 60% (8) For landscaped vegetated areas, the maximum percentage of all artificial turf areas is (only applicable in dry locations per table A200): (a) 0% (b) greater than 0% to less than or equal to 20% (c) greater than 20% to less than or equal to 40% (d) greater than 40% to less than or equal to 60% (9) ~~(7)~~ To improve pollinator habitat… (10) ~~(8)~~ Non-potable irrigation water is available to common areas (11) ~~(9)~~ Non-potable irrigation water is available to lots (12) ~~(10)~~ Plants with similar… (13) ~~(11)~~ Species and locations… (14) ~~(12)~~ Vegetative wind breaks… (15)~~(13)~~) On-site tree trimmings… (16) ~~(14)~~ An integrated common… (17) ~~(15)~~ Plans for the common area landscape… (18) ~~(16)~~ Trees that might… (19) ~~(17)~~ Greywater irrigation systems… (20) ~~(18)~~ Cisterns, rain barrels… (21) ~~(19)~~ Spray irrigation…
TG Reason:	Agree with the value of the practice and included more specificity.

Section 5 Lot Design, Preparation, And Development

P005 ID 7564	502.1 Project team, mission statement, and goals
Submitter:	Marla Esser Cloos, Self
Comment:	**Project team, mission statement, and goals**. A knowledgeable team is established, and team member roles are identified with respect to green lot design, preparation, and development**.** In addition, at least one project team member will be trained or certified in health and wellness with regards to lot design, preparation and development. The project's green and health and wellness goals and objectives are written into a mission statement.
Reason:	Health and wellness considerations in green lot design, preparation, and development lay the groundwork for many of the benefits achieved in NGBS Chapter 5. Community design for resident health is a goal for many developers and builders, especially as consumers increasingly choose these types of communities. Walkable communities offer locations with neighborhood features and resources easily accessible by walking or bicycling, increasing health and wellness opportunities for residents while also reducing potential car use. Additionally, including access to nature in the community supports the health and wellness of residents and is a key part of the plan, as is sun orientation. One or more team members being trained or certified in health and wellness provides additional resources in understanding and planning the infrastructure to support residents' health and wellness. Additional information about the importance of infrastructure and community planning to support residents' health and wellness may be found in NGBS Green+ Badges Workbook, NGBS+ Wellness section, starting on p. 14.
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	**Project team, mission statement, and goals**. A knowledgeable team is established, and team member roles are identified with respect to green lot design, preparation, and development**.** ~~In addition, at least one project team member will be trained or certified in health and wellness with regards to lot design, preparation and development.~~ The project's green ~~and health and wellness~~ goals and objectives are written into a mission statement. [4 points] 502.1.1 In addition, at least one project team member will be trained or certified in health and wellness with regards to lot design, preparation and development. [2 points] **502.1.2 ESG plan.** The Builder developing the project has written an ESG plan that includes green goals and objectives for the projects they build…….. [2 points]
TG Reason:	TG recognizes the inclusion of health and wellness and ESG reporting in the Standard are important and valuable additions for which the project team can take credit for.

P006 ID 7581	505.3 Density
Submitter:	Joe Baumann, SK Collaborative
Comment:	Do not auto-populate unit count for single building, which we have been told to include on overview design tab. Density is a figure that will represent the entire site, often including the combined unit counts of multiple buildings and the combined acreage of the entire site.
Reason:	It is not practical to fabricate acreages for each building on a site that contains multiple buildings. Density figures will always be provided in units/acre. That number should represent all buildings and all acreage on a site.
TG Recommendation:	Disapprove, 6-0-0
TG Modification:	
TG Reason:	The proposal doesn't offer legislative language for the TG to vote on, therefore they need to disapprove. But conceptually, the TG believes that the language in the NGBS is correct, but is not currently being calculated/implemented correctly by the certification agency in their scoring tools. As a result, the TG recommends that the certification agency can make this adjustment to the calculation now that the TG is clear in their intent.

P007 ID 7582	505.4 Mixed-use development

Submitter:	Joe Baumann, SK Collaborative
Comment:	Make it clear that projects qualify for points if the site contains a mix of uses, rather than a single mixed-use building.
Reason:	We have projects with retail, offices, medical facilities, etc. on site that do not technically qualify for points here, because there is a not always a single building with multiple uses. The intent should be to incentivize a mix of uses within a single site, not within a single building.
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	505.4 Mixed-Use ~~Development~~ Building
TG Reason:	This provides clarification that the practice addresses a single building with a mix of uses.

P008 ID 7561	**505.6 Multi-unit plug-in electric vehicle charging**
Submitter:	Steven Rosenstock, Self
Comment:	**505.6 Multi-unit plug-in electric vehicle charging.** Plug-in electric vehicle charging capability is provided for not fewer than ~~2%~~ 5% of parking stalls. *[An additional 2 points can be earned for each percentage point above ~~2%~~ 5% for a maximum of 10 points]* ...
Reason:	There are now many jurisdictions that have requirements at multi-family buildings for EV charging that are well above the 2% in the current standard. Here is one information source that shows requirements by jurisdiction: https://www.swenergy.org/transportation/electric-vehicles/building-codes#who This proposal increases the minimum requirement in the green standard to keep up with what is happening across the US in minimum building codes.
TG Recommendation:	Accept as Modified, 6-0-0
TG Modification:	Plug-in electric vehicle charger ~~charging capability~~ is provided for ~~not fewer than~~ 2% or more of parking stalls. *[An additional 2 points can be earned for each percentage point above 2% ~~for a maximum of 10 points~~]* ...
TG Reason:	The TG believes that encouraging more EV chargers is desirable.

Additional TG Proposed Changes

A013 ID 7592	502 Project team, mission statement, and goals
Submitter:	Aaron Gary, Task Group 2
Comment:	**502 Project team, mission statement, and goals** **502.1 Project team, mission statement, and goals.** A knowledgeable team is established and team member roles are identified with respect to green lot design, preparation, and development. The project's green goals and objectives are written into a mission statement. ..... **4** **502.2 ESG plan.** The Builder developing the project has written an ESG plan that includes green goals and objectives for the projects they build.....**2**
Reason:	Many developers implement portfolio wide ESG reporting plans that inform the goals and objectives of all our their projects', including the one being certified.
TG Recommendation:	Disapprove, 5-0-0
TG Modification:	
TG Reason:	ESG reporting adopted into P005.

A014 ID 7743	503.5 Landscape Plan
Submitter:	Bill Sanderson, Team WS, LLC.
Comment:	*Modify as shown below* (5) Where turf is being planted, Turfgrass Water Conservation Alliance (TWCA) or equivalent as determined by the adopting entity third-party qualified water efficient grasses are used (6) Where artificial turf is installed, Synthetic Turf Council (STC) or equivalent qualified artificial turf is used (only applicable in dry locations) (7) ~~(6)~~For landscaped vegetated areas, the maximum percentage of all turf areas is: (a) greater than 40% to less than or equal to 60% (b) greater than 20% to less than or equal to 40% (c) greater than 0% to less than or equal to 20% (d) 0% (8) For landscaped vegetated areas, the maximum percentage of all artificial turf areas is (only applicable in dry locations): (a) greater than 40% to less than or equal to 60% (b) greater than 20% to less than or equal to 40% (c) greater than 0% to less than or equal to 20% (d) 0% (9) ~~(7)~~ Plants with similar watering needs are grouped (hydrozoning) and shown on the lot plan (10) ~~(8)~~ Summer shading by planting installed to shade a minimum of 30% of building walls. To conform to summer shading, the effective shade coverage (five years after planting) is the arithmetic mean of the shade coverage calculated at 10 am for eastward facing walls, noon for southward facing walls, and 3 pm for westward facing walls on the summer solstice.

	(11) ~~(9)~~ Vegetative wind breaks or channels are designed to protect the lot and immediate surrounding lots as appropriate for local conditions
Reason:	Natural turf fields in arid climates account for excessive water consumption and maintenance negatively effecting the environment. Artificial turf reduces that impact, but only in non-temperate climates.
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	*Modify as shown below* (5) Where turf is being planted, Turfgrass Water Conservation Alliance (TWCA) or equivalent as determined by the adopting entity third-party qualified water efficient grasses are used (6) Where artificial turf is installed, Synthetic Turf Council (STC) or equivalent industry association qualified artificial turf is used (only applicable in dry locations per table A200) (a) in Multifamily buildings artificial aka synthetic turf is used in leu of natural turf for common areas, recreation, sport or play fields only (7) ~~(6)~~For landscaped vegetated areas, the maximum percentage of all turf areas is: (a) greater than 40% to less than or equal to 60% (b) greater than 20% to less than or equal to 40% (c) greater than 0% to less than or equal to 20% (d) 0% (8) For landscaped vegetated areas, the maximum percentage of all artificial turf areas is (only applicable in dry locations per table A200): (a) greater than 40% to less than or equal to 60% (b) greater than 20% to less than or equal to 40% (c) greater than 0% to less than or equal to 20% (d) 0% (9) ~~(7)~~ Plants with similar watering needs are grouped (hydrozoning) and shown on the lot plan (10) ~~(8)~~ Summer shading by planting installed to shade a minimum of 30% of building walls. To conform to summer shading, the effective shade coverage (five years after planting) is the arithmetic mean of the shade coverage calculated at 10 am for eastward facing walls, noon for southward facing walls, and 3 pm for westward facing walls on the summer solstice. (11) ~~(9)~~ Vegetative wind breaks or channels are designed to protect the lot and immediate surrounding lots as appropriate for local conditions
TG Reason:	Agree with the value of the practice and included more specificity.

A015 ID 7594	503.5 Landscape plan.
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Provide landscaped area with native or adapted habitat to meet the below thresholds: 1. 15% of site area (2 pts) 2. 20% of site area (4 pts) 3. 25% of site area (6 pts) 4. 30% of site area (8 pts) 5. 40% of site area (10 pts) Landscaped areas contributing to the native or adapted area must not be monocultures, include no invasive plants, and contribute to biodiversity. A portion of the habitat area must also meet criteria under 503.6(1).
Reason:	Current NGBS practices don't address habitat area as a percent of the overall site. The current 503.5 language is for preserving existing natural areas.
TG Recommendation:	Disapprove, 5-0-0
TG Modification:	
TG Reason:	Adequately covered in 503.

A016 ID 7593	503.5 Landscape plan.
Submitter:	Abhishek Lai, Meridian Consulting, LLC
Comment:	a. Invasive Plants are not planted on the project site (mandatory) b. ~~Non-invasive~~ vegetation that is native or regionally appropriate for local growing conditions is selected to promote biodiversity (7 pts).
Reason:	Invasive plants have a negative effect on native natural habitat.
TG Recommendation:	Disapprove, 4-1-0
TG Modification:	
TG Reason:	Existing Standard adequately addresses items

A017 ID 7603	505 Lot Design, Preparation, and Development Innovation Practices:
Submitter:	Theresa Weston, The Holt Weston Consultancy
Comment:	*Add new section to 505 Lot Design, Preparation, and Development Innovation Practices:* 505.X Wildfire Resilience. For areas designated as a wild-urban interface area, vegetation is managed in defensible space surrounding the structure, as follows: (1) removal of plants containing resins, oils and waxes (2) In the Immediate Zone (0 to 5 feet around the building) use crushed stone or gravel instead of flammable mulches.
Reason:	Resilience is currently only addressed in the NGBS Chapter 6 on Resource Efficiency (Materials) and does not address Wildfire threat. The proposed resiliency practices are better suited for Lot Design, Preparation and Development. These requirements are from the "How to Prepare Your Home" by Firewise/
TG Recommendation:	Accept as Modified, 5-0-1
TG Modification:	*Add new section to 505 Lot Design, Preparation, and Development Innovation Practices:* 505.X Wildfire Resilience. For areas designated as a wildland – urban interface or other wildfire prone areas, vegetation is managed in defensible space surrounding the structure, as follows: ~~(1) removal of plants containing resins, oils and waxes~~ ~~(2)~~ In the Immediate Zone (0 to 5 feet around the building) use crushed stone or gravel instead of plants trees, shrubs, and flammable mulches. (2 points)
TG Reason:	This practice is sound for all fire prone areas and should be included in the Standard.

A018 ID 7595	505.6 Multi-Unit Plug-In Electric Vehicle Charging
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Plug-in electric vehicle charging capability is provided for not fewer than ~~2~~ 5 percent of parking stalls. ~~[~~An additional 2 points can be earned for each additional 5% points above ~~2~~ 5% for a maximum of 10 points~~]~~. Fractional values shall be rounded up to the nearest whole number. Electrical capacity in main electric panels supports Level ~~1 or~~ 2 charging (208/240V- up to 80 amps or in accordance with SAE J1772). Each stall is provided with conduit and wiring infrastructure from the electric panel to support ~~Level 1 or~~ Level 2 charging (208/240V- up to 80 amps or in accordance with SAE J1772) service to the designated stalls, and stalls are equipped with either ~~Level 1 or~~ Level 2 charging AC grounded outlets (208/240V- up to 80 amps or in accordance with SAE J1772) or ~~Level 1 or~~ Level 2 charging stations (208/240V- up to 80 amps or in accordance with SAE J1772) by a third party charging station.
Reason:	The demand for electric vehicles is increasing. In residential buildings Level 1 charging requires less expensive infrastructure, reduces peak electrical load, and since residents are usually parked for longer periods of time rapid Level 2 charging isn't required except for guest or employee usage.
TG Recommendation:	Disapprove, 4-0-0
TG Modification:	
TG Reason:	EV market penetration differs based on geography and the existing Standard provision recognizes various baselines nationwide.

A019 ID 7601	505.10 Exercise and Recreation Area.

Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Delete Section entirely.
Reason:	Exercise and recreation aren't sustainability measures. There are fitness/wellness building certifications that already meet this need. Including non-sustainability measures in NGBS reduces the focus on sustainability within the NGBS program. Non-sustainability points allows projects to achieve certification without delivering on sustainability. Non-sustainability measures divert time/resources for users of the NGBS program from the core sustainability goal.
TG Recommendation:	Disapprove, 5-0-0
TG Modification:	
TG Reason:	Exercise and recreational areas provide important resources for residents while mitigating the needed transportation and infrastructure to go off site.

A020 ID 7596	505.11 Light Pollution Reduction
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	1. Install exterior light fixtures that meet Backlight, Uplight and Glare (BUG) ratings appropriate for the site's lighting zone. Ratings are per IDA/IES Model Lighting Ordinance (MLO) 2011, Table C (3 pts). 2. Or, install exterior lighting to not emit light above a horizontal plane. No more than 10% of exterior lighting lumens can be emitted above horizontal. Uplighting that is shielded by architectural features is exempt (2 pts).
Reason:	Reduce the effects of natural light on wildlife.
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	~~1. Install exterior light fixtures that meet Backlight, Uplight and Glare (BUG) ratings appropriate for the site's lighting zone. Ratings are per IDA/IES Model Lighting Ordinance (MLO) 2011, Table C (3 pts).~~ ~~2. Or, install exterior lighting to not emit light above a horizontal plane. Exceptions: Nno more than 10% of exterior lighting lumens can be emitted above horizontal. ,Uplighting that is shielded by architectural features is exempt (2 pts).~~ ~~503.6 Wildlife habitat~~ ~~(4) Outdoor lighting techniques are utilized with regard for wildlife such as (1 point per item)~~ 505.11 Light Pollution Reduction Lighting for all public exteriors in the project meet the maintained vertical and horizontal illuminance and uniformity recommendations per lighting zone as appropriate of at least one of the following (2 points per item): a) IES RP-33-14, ANSI/ASHRAE/IESNA Standard 90.1-2007 or any updated versions of the text. b) Photo occupancy sensors installed to limit external illumination to no more than 2000 lumens between 2300 and 0600. c) Outdoor lighting techniques are utilized with regard for wildlife. d) Install exterior light fixtures that meet Backlight, Uplight and Glare (BUG) ratings appropriate for the site's lighting zone. Ratings are per IDA/IES Model Lighting Ordinance (MLO) 2011, Table C. e) Install exterior lighting to not emit light above a horizontal plane such as IES designated “Zero Uplight”, or “fully shielded” fixtures. ~~No more than 10% of exterior lighting lumens can be emitted above horizontal.~~ Uplighting that is shielded by architectural features is exempt.
TG Reason:	Adjustments have been made to fully incorporate aspects of light trespass in order to mitigate environmental impacts of light pollution for people, surrounding adjacent properties and wildlife. Eliminated wildlife provision from 503.6 (4) and incorporated into 505.11 Light Pollution Reduction.

P009 ID 7491	601.5 Prefabricated components
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	~~(5) manufactured home construction for the entire building located above grade~~
Reason:	The NGBS does not apply to manufactured housing.
TG Recommendation:	Accept as Modified, 9-2-0
TG Modification:	In addition to the proposal above, remove the definition from Manufactured home and the reference standard to HUD code. ~~'MANUFACTURED HOME CONSTRUCTION. Threedimensional sections of the complete building, dwelling unit, or sleeping unit built in a factory in conformance with the HUD Manufactured Home Construction and Safety Standards (24 CFR, Part 3280) and transported to the jobsite to be joined together on a foundation.'~~
TG Reason:	The NGBS never included 'manufactured housing under HUD code'. (Manufactured housing falls under HUD code and does not fall under IRC- designated by OA). Site and development chapter of NGBS would not apply to manufactured housing given their different process, foundation structures, etc. TG 3 recommends removing Manufactured Housing section as it falls outside of the 'Residential Designation' in section 101.2.1 so it is out of scope of NGBS. TG3 recommends that HI work with HUD and interested parties that explores Manufactured Housing.

P010 ID 7520	602.1 Moisture management ? building envelope
Submitter:	Carl Seville, SK Collaborative
Comment:	(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. ~~2~~ M (3) Pan flashing is installed at sills of all exterior windows and doors. ~~3~~ M (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~~ M
Reason:	Window and door head, jamb, and sill flashing and kickout flashing are critical elements to preventing moisture damage in wood framed structures. These should all be required.
TG Recommendation:	Accept as Modified, 10-0-1
TG Modification:	(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. ~~2~~ M (3) Sill or pan flashing is installed at sills of all exterior windows and doors. ~~3~~ M (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~~ M *Add to Definitions (Section 202)* Sill or Pan Flashing. Flashing installed at the base of the rough opening to allow water which may enter through or around the window/door to drain out.
TG Reason:	Added definition of pan flashing to clarify the provision.

P011 ID 7506	602.1 Moisture management ? building envelope
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	FIGURE 6(3) TERMITE INFESTATION PROBABILITY MAP Reprinted with permission from the ~~2015~~ 2024 International Residential Code, a copyrighted work of the International Code Council, www.iccsafe.org. ©
Reason:	The 2018 ICC codes are the reference documents for the 2020 NGBS, but a termite map from the 2015 IRC is included. This appears to be an oversight. For the 2024 NGBS need to make sure to use the correct termite map.
TG Recommendation:	Accept, 11-0-0
TG Modification:	
TG Reason:	

P012 ID 7486	602.1 Moisture management ? building envelope
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Move entire 602.1.15 practice to section 608 and renumber. Apply a similar change to 11.602.1.15.

Reason:	It is incorrect to have the kitchen cabinet practice under section 602.1 Moisture Management. It is better suited under 608 Resource-Efficient Materials.
TG Recommendation:	Accept as Modified, 11-0-0
TG Modification:	Move section to a new section 602.5 and 11.602.5, and renumber remaining sections.
TG Reason:	Move the section out of the Moisture Section, but have it remain under durability and reduced maintenance.

P013 ID 7480	**602.2 Roof surfaces**
Submitter:	Jonathan Humble, American Iron and Steel Institute
Comment:	**CHAPTER 6** *(Modify as shown below)* **602.2 Roof surfaces.** A minimum of 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) products that are in accordance with the ENERGY STAR® cool roof certification or equivalent.~~ ~~(2) a vegetated roof system.~~ ~~(3)~~ (1) Minimum initial SRI of 78 for low-sloped roof (a slope less than 2:12) and a minimum initial SRI of 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 ~~certified~~ rated and labeled in accordance with the CRRC-1 Program. (2) a vegetated roof system. **CHAPTER 11** *(Modify as shown below)* **11.602.2 Roof surfaces.** A minimum of 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) products that are in accordance with the ENERGY STAR® cool roof certification or equivalent.~~ ~~(2) a vegetated roof system.~~ ~~(3)~~ (1) Minimum initial SRI of 78 for low-sloped roof (a slope less than 2:12) and a minimum initial SRI of 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 ~~certified~~ rated and labeled in accordance with the CRRC-1 Program. (2) a vegetated roof system. **Section 14** **REFERENCED DOCUMENTS** 1402.0 Referenced Documents *(Modify as shown below)* **ENERGY STAR® Documents** DOCUMENT DATE TITLE SECTION ~~ENERGY STAR®~~ ~~2012~~

	~~ENERGY STAR Program Requirements for Roof Products – Eligibility Criteria Version 2.3~~ ~~602.2(1)~~ ~~11.602(1)~~ **Cool Roof Rating Council Documents** DOCUMENT DATE TITLE SECTION CRRC-1 Program 2021 CRRC-1 Product Rating Program Manual 602.2(1) 11.602(1)
Reason:	Problem statement: The U.S. Environmental Protection Agency (EPA) announced in 2018 that it will sunset the EPA ENERGY STAR roof product certification program on June 1, 2022, which means there will no longer be ENERGY STAR certified roofing products in the marketplace or a publicly available list of certified products to help consumers with compliance. The references to ENERGY STAR certified roofing products in the ICC 700 standard will no longer be relevant beginning June 1, 2022. Proposal: We recommend that the existing references to ENERGY STAR certified roofing products be replaced with references to the CRRC-1 Program in the next edition of ICC 700 standard. Also, we proposed that the listing be organized such that the roof requirements appear as #1 and the option to install a vegetated roof be #2 since the title to the provisions is "roof surfaces." Reason Statement: The sunset of the ENERGY STAR roofing program will make it virtually impossible for users of the ICC 700 standard to comply with the cool roof compliance options, as EPA will prohibit the use of the ENERGY STAR logo on roofing products (including marketing materials and data sheets) on and after June 1, 2022. Additionally, the ENERGY STAR Qualified Products List will no longer include certified roofing products as of June 1, 2022. This means that architects, contractors, and builders will not be able to comply with the cool roof compliance options in the ICC 700 standard because ENERGY STAR certified roofing products will no longer be in existence. This is problematic because peer-reviewed, independent research has extensively shown that cool roofs are a relatively inexpensive option for reducing building energy use. Moreover, cool roofs can help mitigate the impacts of the urban heat island effect; improve occupant comfort; improve outdoor air quality by reducing smog production; lower peak energy demand and increase electrical grid stability (which helps lower brownouts and blackouts); and decrease the generation of greenhouse gas emissions. The CRRC is the only other third-party and independent resource with a publicly available list of rated roofing products and initial and three-year aged solar reflectance, thermal emittance, and SRI values. The CRRC is a 501(c)(3) nonprofit organization established in 1998 to develop accurate and credible methods for evaluating and labeling the radiative properties of roofing products. The CRRC also provides education to the public on how cool roofs can help improve building energy efficiency, increase occupant comfort, mitigate the impacts of the urban heat Island effect, and reduce greenhouse gas emissions. The CRRC created a third-party rating system for the radiative performance of roofing products in 2002 called the CRRC-1 Product Rating Program (CRRC-1 Program). The CRRC-1 Program is referenced in several building energy codes, including California's Title 24, Part 6 standards. The CRRC-1 Program is regularly updated with participation and input from a diverse array of stakeholders. Please note that participation in the CRRC-1 Program is separate and distinct from CRRC Membership. A roofing product manufacturer is not required to be a member of the CRRC to have their product(s) tested and listed in accordance with the CRRC-1 Program, which also includes listing in the free, online CRRC Rated Roof Products Directory (https://coolroofs.org/directory/roof). Through the CRRC-1 Program, roofing product manufacturers and sellers have the opportunity to get their products tested and labeled with measured initial and three-year aged radiative properties. These properties are determined and verified through testing by Accredited

	Independent Testing Laboratories (AITL) and a process of random testing. The CRRC-1 Program requirements are detailed in the CRRC-1 Product Rating Program Manual. The CRRC-1 Product Rating Program Manual includes: • Accredited testing laboratories requirements • Approved test farms weathering requirements • Testing requirements • Product rating and licensing requirements • Random Testing procedures • Labeling requirements CRRC Rated Roof Products Directory: This is a free, online database that currently lists the initial and three-year aged solar reflectance, thermal emittance, and solar reflectance index (SRI) values of over 3,000 roofing products. A CRRC product rating describes the radiative performance (solar reflectance and thermal emittance) of a roofing material; it does not indicate a ranking or approval. A product's placement in the Rated Products Directory does not mean that the product is "cool" as defined by any particular code or program. Only products with active ratings can be found in the Rated Roof Products Directory. Request to meet with ICC-700 Committee: The CRRC would appreciate the opportunity to speak with the ICC-700 consensus committee when this item is presented for consideration. Resources: About the CRRC please see: https://coolroofs.org/about A copy of the CRRC-1 Product Rating Program Manual can be downloaded at no charge at this address: https://coolroofs.org/documents/CRRC-1-Program-Manual.pdf To view the CRRC Rated Roof Products Directory please see: https://coolroofs.org/directory/roof
Substantiating Documents:	Yes
TG Recommendation:	Accept, 10-0-0
TG Modification:	
TG Reason:	

P014 **ID 7548**	**604.1 Recycled content**
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	604.1 Recycled content. Building materials with recycled content ~~are used for two minor and/or two major components of the building~~ are installed for a minimum of 10% (2 pts), 15% (3 pts), 20% (4 pts), 25% (5 pts), or 30% (6 pts) of all building materials, by cost. Exclude mechanical, electrical, and plumbing materials from total material cost.
Reason:	The current component-based criteria limits the incentive for projects to specify recycled content materials beyond a few materials.
TG Recommendation:	Accept as Modified, 12-0-0
TG Modification:	604.0 Recycled content. Choose one of the following: (1) *Existing language from 604.1* (2) Weight/volume Exclude mechanical, electrical, and plumbing materials from total material cost. Building materials with recycled content ~~are used for two minor and/or two major components of the building~~ are installed for a minimum of 10% (2 pts), 15% (3 pts), 20% (4 pts), 25% (5 pts), or 30% (6 pts) of all building materials, by cost, weight, or volume. Or, building materials with a minimum of 20% pre- or post-consumer recycled content are used for at least 4 minor components or 2 major components (1 pt). *Strike existing table with point values*
TG Reason:	Have a whole building approach for using recycled content. Give the option of component and percentage base

P015 **ID 7549**	**605.2 Construction waste management plan**
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Change from optional to mandatory.
Reason:	Construction waste management is readily achievable.
TG Recommendation:	Disapprove, 12-0-0
TG Modification:	

TG Reason:	In favor of action on A029.

P016 **ID 7546**	**606.2 Wood-based products**
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Mandatory Provision: Tropical wood products must be certified by either the Forest Stewardship Council (FSC) or have SFI certification (or equivalent certification).
Reason:	Tropical wood harvesting has significant environmental impacts to biodiversity and carbon sequestration.
TG Recommendation:	Accept as Modified, 8-0-2
TG Modification:	606.2.1 Tropical Wood Products. Tropical wood products must be certified to one of the standards in 606.2.2. *Prior 606.2 language is now 606.2.2.* *Include the following definition to Chapter 2:* TROPICAL WOOD PRODUCTS: products sourced from between the Tropic of Cancer and Tropic of Capricorn..
TG Reason:	Added definition to increase clarity. Be inclusive of the previously recognized wood certification programs.

P017 **ID 7547**	**606.2 Wood-based products**
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Mandatory Provision: A minimum of at least 20% of permanently installed wood material, by cost, must be certified to one of the standards listed in 606.2.
Reason:	The intent of the proposed change is to set a minimum environmental standard for NGBS certified buildings. Many NGBS projects are wood framed. Since wood is a primary building material there would be environmental benefits to setting a minimum requirement for certified wood. SFI and FSC are widely available and are cost effective in many applications.
TG Recommendation:	Disapprove, 12-0-0
TG Modification:	
TG Reason:	In favor of action on A030.

P018 ID 7565	612 INNOVATIVE PRACTICES
Submitter:	Marla Esser Cloos, Self
Comment:	**Health and Wellness Professional.** At least one member of the design and build team will be trained or certified in health and wellness with regards to resource, product and material selections, practices and uses in the project.
Reason:	Many practices in Chapter 6: Resource Efficiency inherently include health and wellness considerations around moisture management, materials selection, and product declarations. One or more team members being trained or certified in health and wellness will help to ensure that resource, product and material selections, practices and uses are chosen and implemented to prioritize building workers' and residents' health and wellness in the home. Additional information about the importance of materials, moisture management, material selection and sustainable products to support residents' health and wellness may be found in NGBS Green+ Badges Workbook, NGBS+ Wellness section, starting on p. 14.
TG Recommendation:	Disapprove, 13-0-0
TG Modification:	
TG Reason:	While many materials that could receive credit in Chapter 6 undoubtedly have health and wellness impacts, those considerations do not fit within the material properties that receive credit under Chapter 6.

P019 ID 7533	613 RESILIENT CONSTRUCTION
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Delete the entire 613 section and replace with the following: 613 RESILIENT CONSTRUCTION 613.1 Vulnerability Assessment. An assessment of the property's risks to climate, seismic, and natural disasters is performed. Strategies are identified to enable the project to adapt to and mitigate hazard risks. The assessment is shared with the Building Owner. …3 points 613.2 Resilient Energy Systems & Passive Survivability 613.2(1) On-site PV systems and/or efficient generators are designed and installed to provide emergency power for residents to safely shelter during power outages. …3 points 613.2(2) Water storage and purifications systems are designed and installed to provide potable water during power outages. ...4 points 613.3 Floodproofing. Lower floors and all mechanical areas are floodproofed. …2 points
Reason:	Home Innovation has observed that practically no users have pursued 613 Resilient Construction. Two main factors have handicapped its usefulness. First, the practice offers too much flexibility. When many are still learning how to factor resiliency into their design and construction, users need more structure to be successful. (2) The Resilient Construction practice requires a design professional to generate the performance-based analysis. This adds additional cost and time. Projects that are being constructed/re-built using federal disaster recovery funds have especially tight budgets and are unable to factor in this additional cost.
TG Recommendation:	Accept as Modified, 10-0-0
TG Modification:	*Modify as follows:* 613.2 Resilient Energy Systems & Passive Survivability Buildings are designed and constructed to maintain safe thermal conditions and safe water availability in the event of an extended power outage or loss of heating fuel, or provide back-up power to satisfy critical loads: 613.2(1) On-site PV systems with battery backup and/or generators are designed and installed to provide emergency power for residents to safely shelter during power outages. … (4 points for PV, 2 points for generator) 613.2(2) Water storage and purifications systems are designed and installed to provide potable water during power outages. ...4 points 613.2.(3) Demonstration of the building design ability to maintain safe thermal conditions as determined by the AHJ through thermal modeling or Passive house certification …4 points
TG Reason:	Removed vulnerability assessment and floodproofing that's covered by 613 and added passive survivability through envelope design.

Additional TG Proposed Changes

A021 ID 7605	602.1.1 Capillary breaks
Submitter:	Aaron Gary, Tempo, Inc.
Comment:	**602.1.1.1** A capillary break and vapor retarder are installed at concrete slabs in accordance with ~~IRC Sections R506.2.2 and R506.2.3 or IBC Sections 1907 and 1805.4.1IRC~~ Sections R506.2.2 and R506.2.3 or IBC Sections 1907 and 1805.4.1. ..... **M** **11.602.1.1.1** A capillary break and vapor retarder are installed at concrete slabs in accordance with ~~IRC Sections R506.2.2 and R506.2.3 or IBC Sections 1907 and 1805.4.1IRC~~ Sections R506.2.2 and R506.2.3 or IBC Sections 1907 and 1805.4.1. ..... **M***
Reason:	Update ICC Section #s to correlate with 2024 IBC & IRC
TG Recommendation:	Accept, 11-0-0
TG Modification:	
TG Reason:	

A022 ID 7604	602.1.1 Capillary breaks
Submitter:	Tom Marks and Ryan Goodwin, , Stego Industries, LLC
Comment:	*(Modify as shown below)* Section 602.1.1 Capillary breaks 602.1.1.1 A capillary break and vapor retarder are installed at concrete slab in accordance with IRC Sections R506.2.2 and R506.2.3 or IBC 1907 and 1805.4.1……M 602.1.1.2 A capillary break between the footing and the foundation wall is provided to prevent moisture migration into foundation wall……3 602.1.1.3 A minimum 10-mil vapor retarder meeting ASTM E1745 is installed per ASTM E1643……3 602.1.1.4 A minimum 15-mil vapor retarder meeting ASTM E1745 with water vapor permeance rating below 0.01 US perms [grains/(ft^2*hr*in-Hg)] is installed per ASTM E1643……6 - Additional Reference Standards: ASTM E1745-17 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs ASTM E1643-18a Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
Reason:	A below-slab vapor retarder that meets ASTM E1745 is a simple and low-cost pathway to contribute to a healthier and more durable building or home. Below-slab vapor retarders meeting ASTM E1745, the consensus-developed standard specification, will have better and more consistent performance (e.g. water vapor permeance, material strength, and longevity) compared to generic 6-mil polyethylene sheeting historically referenced in the IRC and IBC. Below-slab vapor retarders which meet ASTM E1745 are recommended industry best practice and referenced in other industry guidelines and standards. This is an opportunity to reward project teams who are already incorporating better foundation vapor control and incentivize above-code best practice for others. A vapor retarder with less than 0.01 perms is recognized by the American Concrete Institute as beneficial for slabs which will or could receive moisture-sensitive flooring (note: ACI defines a below-slab vapor membrane with less than 0.01 perms as a vapor “barrier”). A 15-mil thick membrane is most likely to achieve this referenced vapor permeance before and after mandatory conditioning tests per ASTM E1745 given current high-performance membrane technology. A minimum thickness is also helpful for third-party verifiers. The current consensus standard for the installation of a below-slab plastic vapor retarder is ASTM E1643. These best practices help ensure the efficacy of the installed system. Project teams should be recognized for ensuring proper installation of all building envelope materials, including the first side of the building below the slab/foundation.
TG Recommendation:	Accept, 8-0-2
TG Modification:	
TG Reason:	

A023 ID 7607	602.1.4 Crawlspaces
Submitter:	Aaron Gary, Tempo, Inc.

Comment:	**602.1.4.2** Crawlspace that is built as a conditioned area is sealed to prevent outside air infiltration and provided with conditioned air at a rate not less than 0.02 cfm (.009 L/s) per sq. ft. of horizontal area and one of the following is implemented: (1) a concrete slab over 6-mil polyethylene sheeting, or other Class I vapor retarder installed in accordance with ~~IRC Section 408.3 or Section 506~~ IRC Section R408.3 or Section R506. ..... **8** (2) 6-mil polyethylene sheeting, or other Class I vapor retarder installed in accordance with IRC Section ~~408.3 or Section 506~~ R408.3 or Section R506. ..... **M** **11.602.1.4.2** Crawlspace that is built as a conditioned area is sealed to prevent outside air infiltration and provided with conditioned air at a rate not less than 0.02 cfm (.009 L/s) per sq. ft. of horizontal area and one of the following is implemented: (1) a concrete slab over 6-mil polyethylene sheeting, or other Class I vapor retarder installed in accordance with ~~IRC Section 408.3 or Section 506~~ IRC Section R408.3 or Section R506. ..... **8** (2) 6-mil polyethylene sheeting, or other Class I vapor retarder installed in accordance with IRC Section ~~408.3 or Section 506~~ R408.3 or Section R506. ..... **M***
Reason:	Update ICC Section #s to correlate with 2024 IBC & IRC
TG Recommendation:	Accept, 9-0-0
TG Modification:	
TG Reason:	

A024 ID 7606	602.1.4 Crawlspaces
Submitter:	Tom Marks and Ryan Goodwin, Stego Industries, LLC
Comment:	*(Modify as show below)* 602.1.4 Crawlspaces 602.1.4.1 Vapor retarder in unconditioned vented crawlspace is in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 in. (152 mm) and are taped. ~~(2)~~(1) Walls. Dampproof walls are provided below finished grade……M ~~(1)~~(2) Floors. ~~Minimum 6-mil~~ Class I vapor retarder installed on the crawlspace floor and extended at least 6 in. up the wall and is attached and sealed to the wall……6 (3) Floors. Class I vapor retarder which complies with ASTM E1745 installed on the crawlspace floor and extended at least 6 in. up the wall and is attached and sealed to the wall……8 602.1.4.2 Crawlspace that is built as conditioned area is sealed to prevent outside air infiltration and provided with conditioned air at a rate not less than 0.02 cfm (.009 L/s) per sq. ft. of horizontal area and one of the following is implemented: ~~(2)~~(1) ~~6-mil polyethylene sheeting, or other~~ Class I vapor retarder installed in accordance with IRC Section 408.3 ~~or Section 506~~……M ~~(1)~~(2) a concrete slab over ~~6-mil polyethylene sheeting, or other~~ a Class I vapor retarder or vapor retarder per Section 602.1.1 installed in accordance with IRC Section 408.3 or Section 506……8 (3) a vapor retarder which complies with ASTM E1745 and minimum 10-mil thick installed on the crawlspace floor and extended at least 6 in. up the wall and is attached and sealed to the wall…8
Reason:	The IRC references a Class I vapor retarder as ground cover in crawl spaces, not a 6-mil thick vapor retarder. If there was intent to align the Mandatory practices with the IRC, reference to 6-mil polyethylene should be removed. 6-mil polyethylene sheeting may not always have a Class I water vapor permeance. Class I only correlates to material water vapor permeance and has nothing to do with the vapor retarder strength, durability, or longevity in a crawl space. ASTM E1745 is a useful performance standard for higher performance, more durable, and long-lasting vapor retarder films. Particularly for an exposed membrane (not covered by concrete) a minimum thickness is also helpful to achieve vapor protection that withstands future traffic and crawlspace conditions. This is important for a Section related to Enhanced Durability and Reduced Maintenance. Section 506 of the IRC is in reference to vapor retarders below slabs and should not be referenced for exposed vapor retarder as ground cover in a crawl space. Also, have reordered, per sub-group discussion, to make Mandatory path first.
TG Recommendation:	Accept, 12-0-0
TG Modification:	
TG Reason:	

A025 ID 7608	602.1.7 Moisture control measures
Submitter:	Theresa Weston, The Holt Weston Consultancy
Comment:	**602.1.7.3** Building envelope assemblies are designed for moisture control based on documented hygrothermal simulation or field study analysis. Hygrothermal analysis ~~is required to~~ shall comply with ASHRAE 160 or equivalent criteria and shall incorporate representative climatic conditions, interior conditions and include heating and cooling seasonal variation. Results of the hygrothermal simulation shall be reported in accordance with ASTM E3054.…….. **4** **Add References:** ASHRAE Standard 160-2021 -- Criteria for Moisture-Control Design Analysis in Buildings ASTM E3054/E3054M-16 Standard Guide for Characterization and Use of Hygrothermal Models for Moisture Control Design in Building Envelopes
Reason:	Adds standardization of the hygrothermal simulation through appropriate industry standards.
TG Recommendation:	Accept as Modified, 12-0-0
TG Modification:	*Modify as follows* **602.1.7.3** Building envelope assemblies are designed for moisture control based on documented hygrothermal simulation or field study analysis. Hygrothermal analysis ~~is required to~~ shall comply with ASHRAE 160 or equivalent criteria and shall incorporate representative climatic conditions, interior conditions and include heating and cooling seasonal variation. ~~Results of the hygrothermal simulation shall be reported in accordance with ASTM E3054~~.…….. **4** **Add References:** ASHRAE Standard 160-2021 -- Criteria for Moisture-Control Design Analysis in Buildings ~~ASTM E3054/E3054M-16 Standard Guide for Characterization and Use of Hygrothermal Models for Moisture Control Design in Building Envelopes~~
TG Reason:	ASHRAE 160 includes a section on reporting requirement. Adding an additional reporting standard did not seem necessary.

A026 ID 7609	602.1.9 Flashing
Submitter:	Theresa Weston, The Holt Weston Consultancy
Comment:	Add to Section 202 Definitions: RAINSCREEN SYSTEM. An assembly applied to the exterior side of an exterior wall which consists of, at minimum, an outer layer, an inner layer, and a cavity between them sufficient for the passive removal of liquid water and water vapor. *Modify Section 602.1.9 (5) as follows:* ~~602.1.9 (5)~~ 602.1.10 Rainscreen Systems. A rainscreen system ~~wall design~~ as follows is used ~~for~~ in exterior wall assemblies. ..... 4 max (1) ~~(a)~~ A system designed with minimum ~~1/4-in. air space~~3/16-in ventilated and drained space exterior to the water-resistive barrier for buildings not greater than 3 stories or 3/8-in ventilated and drained space exterior to the water-resistive barrier for buildings greater than 3 stories. ~~vented to the exterior at top and bottom of the wall, and integrated with flashing details~~ The space shall allow for ventilation to the exterior at top and bottom of the wall, and shall be integrated with flashing details with a clear drainage path to the exterior; or …….. 4 (b) A cladding material or a water-resistive barrier with enhanced drainage, meeting ~~75~~90% drainage efficiency determined in accordance with ASTM E2273 or Annex A2 of ASTM E2925. ..... 2 *Renumber Remaining Section as appropriate.*
Reason:	This proposal has several parts all aimed at clarifying the "rainscreen" credit section: (1) Adds the definition of "rainscreen system" which was added to the IBC-2024 (2) Moves the rainscreen system out of flashing section, as rainscreen systems are more than just a flashing subset (3) Modifies the behind cladding air space size to be better aligned with industry products and to be responsive to the building height (4) Adds an alternate drainage test method which is a more general method. The current method is specific to EIFS. This is consistent with the IBC and IRC stucco provisions.
TG Recommendation:	Accept, 12-0-0
TG Modification:	
TG Reason:	

A027 ID 7636	602.2 Roof Surfaces
Submitter:	Craig Conner, Building Quality
Comment:	The following help cool the building cool roofs with an SRI of XXX asphalt surfaces with an XXX of XXX
Reason:	The asphalt surfaces are being used (tested?) under the Phoenix Cool Pavement Program. I believe the cool pavements have been in place to about 2 years. Program is managed by City of Phoenix Street Transportation Department. Cool roofs should use same criteria that is in place for EPA cool roofs and NGBS. NGBS should only require the SRI, not the whole EPA cool roof program. Should there be a criteria for concrete surfaces too? Should cool walls somehow be included? Maybe not.
TG Recommendation:	Disapprove, 11-0-0
TG Modification:	
TG Reason:	Suggestion is already in practice and details aren't written down. SRI is included in the latest language for cool roofs.

A028 ID 7610	604.2 Concrete Materials
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	A. <u>Use concrete with recycled content cementitious materials per the below thresholds.</u> 1. <u>20% Recycled Cementitious Material (1 pt).</u> 2. <u>25% Recycled Cementitious Material (2 pts).</u> 3. <u>30% Recycled Cementitious Material (3 pts).</u> 4. <u>35% Recycled Cementitious Material (4 pts).</u> 5. <u>40% Recycled Cementitious Material (5 pts).</u> B. <u>Include recycled content aggregate for at least 10% of aggregate material (1 pt).</u> C. <u>Reduce the carbon emissions associated with portland cement production in concrete mixes per the below thresholds through strategies other than those in Section A above:</u> 1. <u>5% reduced carbon emissions (1 pt)</u> 2. <u>10% reduced carbon emissions (2 pts)</u> 3. <u>20% reduced carbon emissions (3 pts)</u> <u>Points for recycled content concrete can only be achieved in either 604.1 or 604.2.</u>
Reason:	Cement production is a significant source of global CO2 emissions, accounting for 8% of global emissions.
TG Recommendation:	Accept, 11-0-0
TG Modification:	
TG Reason:	
A029 ID 7613	**605.2 Construction waste management plan**
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	A construction waste management plan is developed, posted at the jobsite, and implemented diverting, through reuse, salvage, recycling, or manufacturer reclamation, a minimum of ~~50~~ <u>30</u> percent (by weight) of nonhazardous construction and demolition waste from disposal. For this practice, land clearing debris is not

	considered construction waste. Materials used as alternative daily cover are considered construction waste and do not count toward recycling or salvaging. For buildings following the new construction path that also have a renovation component, the waste management plan includes the recycling of 95 percent of electronic waste components (such as printed circuit boards from computers, building automation systems, HVAC, fire and security control boards) by an E-Waste recycling facility. *(Mandatory, 3 pts)* Exceptions: 1. Waste materials generated from land clearing, soil and sub-grade excavation and vegetative debris shall not be in the calculations. 2. A recycling facility (traditional or E-Waste) offering material receipt documentation is not available within 50 miles of the jobsite. Areas that don't have local construction waste recycling services must submit a plan that diverts or reduces waste generation for at least 2 materials (e.g., cardboard, metals). a. Divert at least 50% of construction and demolition waste from disposal (4 pts) b. Divert at least 70% of construction and demolition waste from disposal (6 pts)
Reason:	Construction waste accounts for over 66% of the total waste generated in the US (EPA, 2018). This represents about 600 million tons of construction and demolition waste per year. Construction waste management is readily achievable in many areas of the country.
TG Recommendation:	Accept as Modified, 12-0-0
TG Modification:	*Modify as follows:* A construction waste management plan is developed, posted at the jobsite, and implemented diverting, through reuse, salvage, recycling, or manufacturer reclamation, a minimum of ~~50~~ 30 percent (by weight) of nonhazardous construction and demolition waste from disposal. For this practice, land clearing debris is not considered construction waste. Materials used as alternative daily cover are considered construction waste and do not count toward recycling or salvaging. For buildings following the new construction path that also have a renovation component, the waste management plan includes the recycling of 95 percent of electronic waste components (such as printed circuit boards from computers, building automation systems, HVAC, fire and security control boards) by an E-Waste recycling facility. *(Mandatory)* Exceptions: 1. Waste materials generated from land clearing, soil and sub-grade excavation and vegetative debris shall not be in the calculations. 2. A recycling or comingled recycling facility (traditional or E-Waste) offering material receipt documentation is not available within 50 miles of the jobsite. Areas that don't have local construction waste recycling services per exception 2 develop and implement a plan that diverts or reduces waste generation for at least 2 materials (e.g., cardboard, metals)….. (3 points) Divert at least 50% of construction and demolition waste from disposal (4 pts) Divert at least 70% of construction and demolition waste from disposal (6 pts)
TG Reason:	Modified to incentivize recycling in regions that do not have recycling facilities.

A030 ID 7614	**606.2 Wood-based products**
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Wood or wood-based products are certified to the requirements of one of the following. (1) A minimum of at least 10% of permanently installed wood material, by cost, or area must be certified to

	one of the standards listed below. Alternatively, 1 major component or 2 minor components certified to a standard listed below comply. Projects that achieve 3 points under 601.2, Material Usage, automatically comply (Mandatory, 2 pts) (2) A minimum of at least 30% of permanently installed wood material, by cost, or area must be certified to one of the standards listed below. Alternatively, 2 major components or 3 minor components certified to a standard listed below comply (3 pts) (3) A minimum of at least 50% of permanently installed wood material, by cost, or area must be certified to one of the standards listed below. Alternatively, 3 major components or 4 minor components certified to a standard listed below comply (4 pts) 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 manufacturer's fiber procurement system.
Reason:	Certified wood has significant environmental benefits including habitat protection. Wood materials form the majority of most residential building materials, particularly for single family, low-rise and mid-rise buildings. The NGBS list of qualifying materials in 606.2 is comprehensive and represents widely available products. FSC estimates that ~16% of global timber are FSC certified. In the US an estimated 13% of all forest areas are certified forest (US Endowment for Forestry and Communities). The additional options in 606.2 increase the percent of the market that qualifies. Certified wood is a marketable feature of a green home. A cost analysis based on the 10% threshold is as follows. Assuming wood materials account for $40,000 of a single family home cost, which is at the higher end of the cost scale the practice can be achieved with $4,000 of certified wood materials. Assuming a 25% premium for certified wood, which is also on the higher end of the scale, the practice would have an $800 cost premium or 2% of the overall wood cost for the project.
TG Recommendation:	Accept as Modified, 12-0-0
TG Modification:	*Modify as follows:* Wood or wood-based products are certified to the requirements of one of the following. ~~(1) A minimum of two responsible or certified wood-based products are used for minor components of the building (3 pts).~~ ~~(2) A minimum of two responsible or certified wood-based products are used in major components of the building (4 pts).~~ (1) A minimum of at least 10% of permanently installed wood material, by cost, or area must be certified to one of the standards listed below. Alternatively, 1 major component or 2 minor components certified to a

	standard listed below comply. (2 pts) (2) A minimum of at least 30% of permanently installed wood material, by cost, or area must be certified to one of the standards listed below. Alternatively, 2 major components or 3 minor components certified to a standard listed below comply (3 pts) (3) A minimum of at least 50% of permanently installed wood material, by cost, or area must be certified to one of the standards listed below. Alternatively, 3 major components or 4 minor components certified to a standard listed below comply (4 pts) 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 manufacturer's fiber procurement system.
TG Reason:	Prefer this practice remain optional. Suggest consensus committee weigh the point value for this practice more significantly than other practices to encourage use of sustainable materials.

A031 ID 7615	607.1 Recycling and Composting
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	1. A readily accessible space(s) for recyclable material containers is provided and identified on the floorplan of the house or dwelling unit or a readily accessible area(s) outside the living space is provided for recyclable material containers and identified on the site plan for the house or building. The area outside the living space shall accommodate recycling bin(s) for recyclable materials accepted in local recycling programs. 2. Provide recycling storage in multifamily common areas including a central storage area adequately sized to meet the anticipated recycling volume for the building. Include recycling infrastructure in multifamily common areas including in mail and package rooms. (Mandatory) 3. A readily accessible space(s) for compostable material containers is provided and identified on the floorplan of the house or dwelling unit or a readily accessible area(s) outside the living space is provided for compostable material containers and identified on the site plan for the house or building. The area outside the living space shall accommodate composting container(s) for locally accepted materials, or, accommodate composting container(s) for onsite composting.
Reason:	Multifamily recycling infrastructure can be readily provided.
TG Recommendation:	Accept as Modified, 11-0-0
TG Modification:	*Modify as follows:* 1. A readily accessible space(s) for recyclable material containers is provided and identified on the floorplan of the house or dwelling unit or a readily accessible area(s) outside the living space is provided for recyclable material containers and identified on the site plan for the house or building. The area outside the living space shall accommodate recycling bin(s) for recyclable materials accepted in local recycling programs. 2. Provide recycling storage in multifamily common areas including a central storage area to meet the anticipated recycling volume. (….2 points) 3. A readily accessible space(s) for compostable material containers is provided and identified on the floorplan of the house or dwelling unit or a readily accessible area(s) outside the living space is provided for compostable material containers and identified on the site plan for the house or building. The area outside the living space shall accommodate composting container(s) for locally accepted materials, or, accommodate composting container(s) for onsite composting.
TG Reason:	Felt this practice should be optional, not mandatory due to regional differences in recycling availability.

A032 ID 7618	612 Innovative Practices
Submitter:	Theresa Weston, Aaron Gary, Jillian Cooke, Greg Coolidge, Task Group 3
Comment:	*Move Universal Design practices from 612 (Innovative Practices) into 601. No changes to the practice or points:* ~~612.3~~ 601.9 Universal design elements. Dwelling incorporates one or more of the following universal design elements. Conventional industry construction tolerances are permitted. ..... 12 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 a minimum 32-in. wide clearance into the dwelling. ..... 3 (2) Minimum 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 a minimum 32-in. clear door width and a 30-in. by 48-in. clear area inside the bathroom outside the door swing. ..... 3 (3) Minimum 36-in. wide accessible route from the no-step entrance into at least one bedroom which has a minimum 32-in. clear door width. ..... 3 (4) Blocking or equivalent installed in the accessible bathroom walls for future installation of grab bars at water closet and bathing fixture, if 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 voice-activated device: HVAC, all permanently-installed lighting, alarm system, window treatments, or door locks. [1 point awarded per system] ..... 1 [5 max]
Reason:	The use of the universal design has moved beyond being an “innovative practice” and promotes aging-in-place, thereby reducing future resources required for rework and remodeling.
TG Recommendation:	Accept, 9-0-1
TG Modification:	
TG Reason:	

A033 ID 7616	612.2 Sustainable products.
Submitter:	Aaron Gary, Tempo, Inc.
Comment:	**612.2 Sustainable products.** One or more of the following products are used for at least 30% of the floor or wall area of the entire dwelling unit or the sleeping unit, as applicable. Products are certified by a third-party agency accredited to ISO 17065. ..... **9 max** (1) greater than or equal to 50% of carpet installed (by square feet) is certified to NSF 140 or equivalent. ..... **3** (2) greater than or equal to 50% of resilient flooring installed (by square feet) is certified to NSF 332 or equivalent. ..... **3** (3) greater than or equal to 50% of the insulation installed (by square feet) is certified to UL 2985 or equivalent. ..... **3** (4) greater than or equal to 50% of interior wall coverings installed (by square feet) is certified to NSF 342 or equivalent. ..... **3** ~~(5) greater than or equal to 50% of the gypsum board installed (by square feet) is certified to UL 100 or equivalent. ..... 3~~ (5~~6~~) greater than or equal to 50% of the door leafs installed (by number of door leafs) is certified to UL 102 or equivalent. ..... **3** (5~~7~~) greater than or equal to 50% of the tile installed (by square feet) is certified to TCNA A138.1 Specifications for Sustainable Ceramic Tiles, Glass Tiles and Tile Installation Materials or equivalent.. **3** **11.612.2 Sustainable products.** One or more of the following products are used for at least 30% of the floor or wall area of the entire dwelling unit or the sleeping unit, as applicable. Products are certified by a third-party agency accredited to ISO 17065. ..... **9 max** (1) greater than or equal to 50% of carpet installed (by square feet) is certified to NSF 140 or equivalent. ..... **3** (2) greater than or equal to 50% of resilient flooring installed (by square feet) is certified to NSF 332 or equivalent. ..... **3** (3) greater than or equal to 50% of the insulation installed (by square feet) is certified to UL 2985 or equivalent. ..... **3** (4) greater than or equal to 50% of interior wall coverings installed (by square feet) is certified to NSF 342 or equivalent. ..... **3** ~~(5) greater than or equal to 50% of the gypsum board installed (by square feet) is certified to UL 100 or equivalent. ..... 3~~ (5~~6~~) greater than or equal to 50% of the door leafs installed (by number of door leafs) is certified to UL 102 or equivalent. ..... **3** (5~~7~~) greater than or equal to 50% of the tile installed (by square feet) is certified to TCNA A138.1 Specifications for Sustainable Ceramic Tiles, Glass Tiles and Tile Installation Materials or equivalent.. **3**
Reason:	UL 100 is no longer used in practice and should be removed from the NGBS standard.
TG Recommendation:	Accept, 9-0-0
TG Modification:	
TG Reason:	Note for Consensus Committee: please check UL102, as it may not apply to door leafs. TG did not have sufficient time to investigate.

A034 ID 7617	612.3 Universal design elements
Submitter:	Abhishek Lal, Meridian Consulting, LLC

Comment:	Delete section entirely.
Reason:	Universal design is addressed by other codes and isn't a sustainability measure. Including non-sustainability measures in NGBS reduces the focus on sustainability within the NGBS program. Non-sustainability points allows projects to achieve certification without delivering on sustainability. Non-sustainability measures divert time/resources for users of the NGBS program from the core sustainability goal.
TG Recommendation:	Disapprove, 8-2-0
TG Modification:	
TG Reason:	The use of the universal design promotes aging-in-place, thereby reducing future resources required for rework and remodeling. Universal design also supports financial equity and stability in homes.

A035 ID 7619	613.1 Resilient Construction
Submitter:	Michael D. Blanford, Department of Housing and Urban Development
Comment:	Delete Section 613.1 and 11.613 in their entirety. Replace with the following for both Chapter 6 and Chapter 11: 613.1 Vulnerability Assessment. An assessment of the property's risks to climate, seismic, and natural disasters is performed by a qualified professional. Strategies are identified to enable the project to adapt to and mitigate hazard risks. The assessment is shared with the Building Owner. …4 points 613.2 Building incorporates resilience construction practices from **HUD Guides (Designing for Natural Hazards)**. Select guidance from a maximum of two hazard categories identified by the vulnerability assessment in practice 613.1.. ……16 points max 613.1.1 **Wind Resilience:** Practices listed on the following one-pager titles of the HUD Guides (Volume 1- Wind) are met. (0.5 point per practice, 2 points max per one pager) ……8 points max a. Openings- Shutters b. Roof Deck & Underlayment c. High-Wind Roof Covering d. Continuous Load Path e. Garage doors 613.1.2 **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 points max a. Roof Underlayment & Vents b. Wall Assembly c. Utilities and Mechanical Equipment d. Freeboard Elevation 613.1.3 **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 points max a. Defensible space b. Roof Assembly c. Foundation Components d. Ducts, Vents, & Openings 613.1.4 **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) Points for d. and e. cannot be claimed if those practices are already claimed in a. ……8 points max a. Continuous Load Path b. Post and Beam Connections c. Drywall (to Prevent Cracks) d. Garage Openings e. Exterior Wall Construction f. Roof to Wall Connection Add HUD resilience guides to reference section.
Reason:	The HUD Resilient Construction Guides provide a set of practices that can be used as guidance by **builders and developers** to minimize damages in the event of various disasters. The one pagers of the guide listed in this proposal are categorized as 'good' resilience practices are focused on most frequently occurring damages during the specific disaster event. The HUD Guides also include guidance for AUXILLARY category but is potentially out of scope for the NGBS because of its' focus on disasters like volcano, hailstorm and extreme

	temperatures, but that is up to the TG to determine. The maximum points for this practice is capped such that only two hazard categories can be selected to not penalize houses in locations which is not vulnerable to many hazards.
TG Recommendation:	Accept, 10-0-0
TG Modification:	
TG Reason:	

P020 ID 7494	701.1.4 Alternative Bronze and Silver level compliance
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	701.1.4 Alternative Bronze and Silver level compliance. As an alternative, any building that qualifies as an ENERGY STAR Version 3.0 Certified Home or ENERGY STAR Multifamily High Rise Version 1.0 Rev. 03 building or demonstrates compliance with the ICC IECC or IRC Chapter 11 achieves the Bronze level for Chapter 7. As an alternative, any building that qualifies as an ENERGY STAR Version 3.1 Certified Home or ENERGY STAR Multifamily High Rise Version 1.0 Rev. 03 (with the baseline at ASHRAE 90.1-2010) building achieves the Silver level for Chapter 7. As an alternative in the Tropical Climate Zone, any building that meets all the requirements in ICC IECC Section R401.2.1 (Tropical Zone) achieves the Silver level for Chapter 7. <u>Unconditioned buildings in the Tropical Zone are eligible to earn Silver even if they are located above the IECC elevation limit.</u> The buildings achieving compliance under § 701.1.4 are not eligible for achieving a rating level above Silver.
Reason:	The elevation limit is designed to recognize buildings at higher elevations may install heating equipment and therefore should comply with conventional energy efficient requirements, however, buildings without heating installed should still be able to use the Tropical Zone compliance requirements.
TG Recommendation:	Accept as Modified, **Task Group 5:** 9-0-2, **Task Group 8:** 5-0-0
TG Modification:	<u>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</u>.
TG Reason:	Modification allows partially conditioned building to be exempted.

P021 ID 7575	701.1.6 Alternative Gold level compliance for tropical zones
Submitter:	Steven Rosenstock, Self
Comment:	**701.1.6 Alternative Gold level compliance for tropical zones**. One- or two-family dwelling in the tropical zone at an elevation less than 2,400 ft. (731.5 m) above sea level that complies with the following shall achieve the Gold level for Chapter 7: (1) The residence complies with ICC IECC R401.2.1 Tropical zone. (2) The residence includes a minimum of 2 kW of ~~PV~~ <u>an on-site renewable energy system</u> and a minimum of 6 kWh of battery storage. ... (*rest of the section is unchanged*)
Reason:	This change will allow the use of multiple renewable energy production systems, and is consistent with item 4 (of 9) that allows multiple renewable energy technologies to be used to provide water heating.
TG Recommendation:	Accept as Modified, **Task Group 5:** 7-2-3, **Task Group 8:** 6-0-0
TG Modification:	**701.1.6 Alternative Gold level compliance for tropical zones**. One- or two-family dwelling in the tropical zone ~~at an elevation less than 2,400 ft. (731.5 m) above sea level~~ that complies with the following shall achieve the Gold level for Chapter 7: (1) The residence complies with ICC IECC R401.2.1 Tropical zone. (2) The residence includes a minimum of 2 kW of ~~PV~~ <u>an on-site renewable energy system</u> and a minimum of 6 kWh of battery storage. (*rest of the section is unchanged*)
TG Reason:	In the Tropical Zone, the 2400 elevation does not make a difference.
P022 ID 7481	**701.1.6 Alternative Gold level compliance for tropical zones**
Submitter:	Jonathan Humble, American Iron and Steel Institute

Comment:	**PROPOSED CHANGES TO ICC 700-2020** **701.1.6 Alternative Gold level compliance for tropical zones.** One- and two-family in the tropical zone at an elevation less than 2,400 ft. (731.5 m) above sea level that complies with the following shall achieve the Gold level for Chapter 7: *(Subparts #1 through #6 remain unmodified)* (7) Walls comply with at least one of the following: a) Walls have an overhang with a projection factor equal to or greater than 0.30. b) Walls have insulation with an R-value of R-13 or greater. c) Walls have a minimum initial solar reflectance of 0.64 measured in accordance with the CRRC-2 Wall Rating Program. *(Subparts #8 through #9 remain unmodified)* **Section 14** **REFERENCED DOCUMENTS** 1402.0 Referenced Documents *(Modify as shown below)* **Cool Roof Rating Council Documents** DOCUMENT DATE TITLE SECTION CRRC-2 2022 CRRC-2 Wall Product Rating Program Manual 701.1.6(7)
Reason:	Problem Statement: The current exterior wall provisions in the ICC 700 standard include a requirement to meet a single solar reflectance value. It is not clear if the intent is to require only the installation of exterior wall products with a solar reflectance of 0.64 or to allow products that exceed this value. By only stating a single value, this greatly reduces the number of eligible products that can be installed, including those that are more reflective. Furthermore, the existing requirement does not reference any standards or programs that would ensure that a product's solar reflectance value is credible. The lack of a referenced standard or program also greatly reduces the ability for consumers to easily identify compliant products in the market. Proposal and Rationale: We recommend that the phrase "minimum initial" be included as shown in the proposal. Currently, the provision states that the wall product must have a solar reflectance value of 0.64. By not stating "minimum" solar reflectance of 0.64, it greatly reduces the number of products eligible for installation, including those that are more reflective. We recommend inserting "initial" to be consistent with the phrasing in the existing requirements for cool roofs in Sections 602.2 and 11.602.2 of ICC 700-2020. In addition, we propose adding a reference to the CRRC-2 Wall Product Rating Program Manual, a document that details the testing and labeling requirements of the CRRC Wall Rating Program. The manual was developed and vetted over a two-year period by a 27-member committee comprising 21 different organizations, including manufacturing and trade associations. Through the CRRC Wall Rating Program, manufacturers and sellers have the opportunity to get their wall products tested and labeled in accordance with the CRRC's strict protocols outlined in the CRRC-2 Program Manual. The CRRC is a 501(c)(3) nonprofit organization established in 1998 to develop accurate and credible methods for evaluating and labeling the radiative properties of roofing products. The CRRC also provides education to the public on how cool roofs and solar-reflective walls can help improve building energy efficiency, increase occupant comfort, mitigate the impacts of the urban

	heat Island effect, and reduce greenhouse gas emissions. In 2018, the CRRC officially expanded the organization's scope and mission to include the rating of exterior wall products. The CRRC worked closely with stakeholders from industry and end users on the development of the program over a two-year period. The program, which is the first and only in the world, officially launched on January 17, 2022. The CRRC Wall Rating Program is similar to the CRRC Roof Rating Program (CRRC-1), but with some technical differences. Please note that participation in the CRRC Wall Rating Program is separate and distinct from CRRC Membership. A wall product manufacturer is not required to be a member of the CRRC to have their product(a) tested and listed in accordance with the CRRC-2 Wall Rating Program Manual, which also includes listing in the free, online CRRC Rated Wall Products Directory (https://coolroofs.org/directory/wall). The CRRC-2 Wall Product Rating Program Manual includes: • Accredited testing laboratory requirements • Approved test farms weathering requirements • Testing requirements • Product rating and licensing requirements • Labeling requirements CRRC Rated Wall Products Directory: This is a free, online database that will list the initial and three-year aged solar reflectance and thermal emittance of exterior wall products. The directory will go live once wall products are initially rated. Products with only initial values will be listed through the duration of the three-year weathering process. The aged values will be added to the product listing after the weathering period is complete and aged testing performed. A CRRC product rating describes the radiative performance (solar reflectance and thermal emittance) of an exterior wall material; it does not indicate a ranking or approval. A product's placement in the CRRC Rated Wall Products Directory does not mean that the product is "cool" as defined by any particular code or program. Only products with active ratings can be found in the Rated Wall Products Directory. Request to meet with ICC-700 Committee: The CRRC would appreciate the opportunity to speak with the ICC-700 consensus committee when this item is presented for consideration. Resources: A copy of CRRC-2 Wall Product Rating Program Manual can be downloaded at no charge from the following address: https://coolroofs.org/programs/wall-rating-program/all-forms-2 The CRRC Wall Rating Program can be seen at: https://coolroofs.org/programs/wall-rating-program
TG Recommendation:	Accept as Modified, **Task Group 5:** 11-0-1, **Task Group 8:** 4-0-0
TG Modification:	**PROPOSED CHANGES TO ICC 700-2020** **701.1.6 Alternative Gold level compliance for tropical zones.** One- and two-family in the tropical zone at an elevation less than 2,400 ft. (731.5 m) above sea level that complies with the following shall achieve the Gold level for Chapter 7: *(Subparts #1 through #6 remain unmodified)* (7) Walls comply with at least one of the following: a) Walls have an overhang with a projection factor equal to or greater than 0.30. b) Walls have insulation with an R-value of R-13 or greater. c) Walls have a <u>minimum initial</u> solar reflectance of 0.64 measured <u>in accordance with the CRRC-2 Wall Rating Program</u>. *(Subparts #8 through #9 remain unmodified)* **Section 14** **REFERENCED DOCUMENTS** 1402.0 Referenced Documents *(Modify as shown below)* **<u>Cool Roof Rating Council Documents</u>**

DOCUMENT	DATE	TITLE	SECTION
<u>CRRC-2</u>	<u>2022</u>	<u>CRRC-2 Wall Product Rating Program Manual</u>	<u>701.1.6(7)</u>

TG Reason:	Clarifies the requirements and updates the reference document

P023 ID 7576	**701.1.6 Alternative Gold level compliance for tropical zones**

Submitter:	Steven Rosenstock, Self
Comment:	**701.1.6 Alternative Gold level compliance for tropical zones**. One- or two-family dwelling in the tropical zone at an elevation less than 2,400 ft. (731.5 m) above sea level that complies with the following shall achieve the Gold level for Chapter 7: (1) The residence complies with ICC IECC R401.2.1 Tropical zone... ... (9) Wiring sufficient for a <u>A</u> Level 2 (208/240V 40-80 amp) electric vehicle charging station is installed on the building site. (*rest of the section is unchanged*)
Reason:	This proposed change will help to eliminate any confusion about whether this item requires "EV Capable" or "EV Ready" equipment installation, or if it require the actual installation of an EV charging station. All light duty vehicles sold in the US are able to charge at a Level 2 charging station. Installing the station at the time of construction costs much less than to do the installation after the house is built.
TG Recommendation:	**Task Group 5:** Accept as Modified 9-2-1, **Task Group 8:** Accept 6-0-0
TG Modification:	*Task Group 5 Recommended Modification:* **701.1.6 Alternative Gold level compliance for tropical zones**. One- or two-family dwelling in the tropical zone ~~at an elevation less than 2,400 ft. (731.5 m) above sea level~~ that complies with the following shall achieve the Gold level for Chapter 7: (1) The residence complies with ICC IECC R401.2.1 Tropical zone... (9) ~~Wiring sufficient for a~~ <u>A</u> Level 2 (208/240V 40-80 amp) electric vehicle charging station is installed on the building site. (*rest of the section is unchanged*)
TG Reason:	**Task Group 5:** This change would avoid any confusion with “wiring sufficient” and it would also take out the elevation restriction

P024 ID 7536	**701.4.1 HVAC systems**
Submitter:	Chinedu Moneke, Home Innovation Research Labs (NGBS Green)
Comment:	This mandatory section does not require insulation for HVAC systems in unconditioned space. Language: " Supply and Return located in unconditioned space shall be insulated to a minimum of R-8. "
Reason:	For 701.4, we should include a mandatory practice for HVAC insulation if in unconditioned space in the next standard. This is important for energy efficiency
TG Recommendation:	Accept as Modified, 16-0-1
TG Modification:	**<u>701.4.2.4 Duct Insulation.</u>** <u>Supply and return located outside conditioned space shall be insulated to an R-value of not less than R-8 for ducts 3 inches (76 mm) in diameter and larger and not less than R-6 for ducts smaller than 3 inches (76 mm) in diameter. Mandatory</u>
TG Reason:	New language was not properly formatted when submitted. 701.4.2 is better location for this item.

P025 ID 7550	**701.4.3 Insulation and air sealing**
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Testing. Building envelope tightness is tested. Testing is conducted in accordance with ASTM E-779 using a blower door at a test pressure of 1.04 psf (50 Pa). Testing is conducted after roughin and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation, and

	combustion appliances. Air leakage of dwelling units shall not exceed 7ACH50. Testing is conducted under the following conditions: *(no change to testing procedure)*
Reason:	Current blower door testing requirement without a leakage limit doesn't create sufficient incentive for air sealing.
TG Recommendation:	Accept as Modified, 13-1-1
TG Modification:	*Modify the practice number to 701.4.3.2.* Testing. Conduct airtightness testing in accordance with procedures in ANSI/RESNET/ICC Std. 380, ASTM E779, or ASTM 1827 demonstrating compliance with the following leakage rates, as applicable to the type of home or dwelling unit: For detached homes ≥ 1,500 ft^2, -measured airtightness shall be no greater than 5 ACH50. For all other homes or dwelling units, the weighted average of the unguarded compartmentalization testing shall be no greater than 0.30 CFM50 per square foot of dwelling unit enclosure area. *Strike current language and replace with above.*
TG Reason:	Amended text to align with IECC 2021.

P026 ID 7519	701.4.3 Insulation and air sealing
Submitter:	Carl Seville, SK Collaborative
Comment:	(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 a minimum of 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) Foil sheet and bubble wrap insulation shall not be used as the sole thermal insulation in any exterior walls, floors, or ceilings. These products may be used in conjunction with glass fiber, mineral wool, foam, or cellulose insulation when installed with the designated air space and completely air sealed per manufacturer's installation instructions.
Reason:	We see some masonry buildings in Climate zone 1 using foil faced insulation and an air gap as the only insulation and regardless of manufacturer's claims they are not shown to provide adequate thermal value.
Substantiating Documents:	Yes
TG Recommendation:	Disapprove, 13-0-2
TG Modification:	
TG Reason:	There were concerns about the language used (foil sheet and bubble wrap). Also, there were concerns about the list of insulation products not being totally inclusive.

P027 ID 7558	702.2 Energy performance levels
Submitter:	Steven Rosenstock, Self
Comment:	**702.2.1 ICC IECC analysis.** Energy efficiency features are implemented to achieve energy cost or site energy or source energy or carbon performance that meets the ICC IECC
Reason:	Different jurisdictions use different metrics to judge building performance. The green standard should be flexible enough to adapt to the different metrics that are being used by different cities and different states (or if they are using multiple metrics). It should be noted that site energy was used in the first 2 version of the NGBS, and carbon is being used by more jurisdictions over the past few years.
TG Recommendation:	Accept as Modified, 11-3-2
TG Modification:	**702.2.1 ICC IECC analysis.** Energy efficiency features are implemented to achieve energy cost or site energy or source energy or carbon dioxide equivalent emissions performance that meets the ICC IECC, using methodology in ANSI/ASHRAE Standard 105 or ASHRAE 189.1.
TG Reason:	Broadened term to “carbon dioxide equivalent emissions.” Added methodology.

P028 ID 7574	702.2 Energy performance levels
Submitter:	Jamie Carr, Self
Comment:	702.2.1 ICC IECC analysis. ~~Energy efficiency features are implemented to achieve energy cost or source energy performance that meets the ICC IECC. A documented analysis using software in accordance with ICC IECC Section R405, or ICC IECC Section C407.2 through C407.5, applied as defined in the ICC IECC, is required.~~ For ICC IECC residential buildings, demonstrate Section R405.2 Performance-based compliance according to the documentation requirements in Section R405.3. The calculation procedure should be in accordance with R405.4 using calculation software tools in accordance with Section R.405.5. For ICC IECC commercial buildings, demonstrate Section C407.2 mandatory requirements according to the documentation requirements in Section C407.3. The calculation procedure should be in accordance with C407.4 using calculation software tools in accordance with Section C407.5. 702.2.2 Energy performance analysis. The energy performance analysis ~~savings levels above the ICC IECC are~~ shall be determined through an ~~analysis~~ energy model that includes ~~improvements in~~ consideration of the 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 NGBS Reference Home for ICC residential buildings or percent above ICC IECC for ICC commercial buildings ~~ICC IECC~~) * 2
Reason:	As a matter of practice, Home Innovation refers to NGBS as an above-code program and speaks of performance at the Silver, Gold, Emerald levels as being such-as-such percent above code. The reality is that because of how the standard has been written and interpreted, NGBS certified building are often below code and claims of being such-and-such a percentage above code are often not true. For example, for a low-rise residential building the IECC code requires that the HVAC equipment in the baseline and proposed versions of the energy model be the same in most cases. But NGBS allows the baseline model to use the NGBS reference home value while the proposed model can use the actual proposed equipment value. This means that a building could fail to meet code, but the NGBS report would say it is performing significantly above code. In fact, it's not performing significantly above code, it is only performing significantly above the NGBS reference home (which is not the same as code). Furthermore, the performance path allows for other below-code practices for low-rise buildings, like not having to test ducts that are in unconditioned space or not having to hit the code blower door threshold. I propose that we amend the NGBS standard so that it is no less stringent that the 2021 IECC, and so that when we talk about higher level of performance we are more careful about how that may compare to code.
TG Recommendation:	Disapprove, 6-2-3
TG Modification:	
TG Reason:	This would take away energy efficiency measures that reduce consumption as a tool for compliance.

P029 ID 7482	702.2 Energy performance levels
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	702.2.1 ICC IECC analysis. Energy efficiency features are implemented to achieve energy cost or source energy performance that meets the 2024 ICC IECC.
Reason:	The 2024 NGBS should be aligned with the performance baselines of the 2024 I-codes, specifically the 2024 IRC, 2024 IBC, and the 2024 IECC.
TG Recommendation:	Accept as Modified, 6-2-4
TG Modification:	702.2.1 ICC IECC analysis. Energy efficiency features are implemented to achieve energy cost or source energy performance that meets the 2021 ICC IECC.
TG Reason:	For our review of the proposals, we are using 2021 IECC as a known commodity to more easily decide on the proposals and do point adjustments. At this time, it is premature to base our decisions on the 2024 code with the knowledge that there are very big changes that may be adopted that will have a significant impact on the NGBS.

P030 ID 7583	703 PRESCRIPTIVE PATH
Submitter:	Joe Baumann, SK Collaborative
Comment:	Include minimum requirements for HVAC and appliances as part of the prescriptive path.
Reason:	Right now, if a ComCheck is provided, projects qualify for all the points needed to hit Bronze under the prescriptive path. Practices related to HVAC and appliance efficiencies become optional at the Bronze level, but there should be some requirement for those items.
TG Recommendation:	Disapprove, 12-0-1
TG Modification:	
TG Reason:	Proposal lacks specific language to include within the standard.

P031 ID 7492	703.1 Mandatory practices
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	703.1.1.2 Prescriptive R-values and fenestration requirements. The building thermal envelope is in accordance with the insulation and fenestration requirements of ICC IECC Table R402.1.2 or Table C402.1.3. The fenestration U-factors and SHGC's are in accordance with Table 703.2.5.1 or ICC IECC Table C402.4. Unconditioned buildings in the Tropical Zone are exempt from this practice.
Reason:	Buildings in the TZ that are unconditioned are typically concrete construction without insulation and do not benefit from higher performing windows. Such buildings are likely to have the windows open most of the year.
TG Recommendation:	Accept as Modified, **Task Group 5:** 9-0-2, **Task Group 8:** 4-0-0
TG Modification:	703.1.1.2 Prescriptive R-values and fenestration requirements. The building thermal envelope is in accordance with the insulation and fenestration requirements of ICC IECC Table R402.1.2 or Table C402.1.3. The fenestration U-factors and SHGC's are in accordance with Table 703.2.5.1 or ICC IECC Table C402.4. Unconditioned buildings 3 stories or less in height located in the Tropical Zone are exempt from this practice if the building meets a minimum roof SRI of 0.85, and a minimum wall reflectivity of 0.39.
TG Reason:	Amendments are tailored to unique conditions in the tropical zone allowing more flexibility in the use of fenestration in the Tropical zone. The amendments recognize that efficiency gains from reflective roofs and walls are more significant than the energy efficiency from high performance windows.

P032 ID 7493	703.2 Building envelope
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)

Comment:	703.2.5 Fenestration 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 Table 703.2.5.1. 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 maximum area of 15 sq. ft. (1.39 m2) or 10% of the total glazing area, whichever is less, are not required to comply with this practice. Unconditioned buildings in the TZ are exempt from this practice.
Reason:	Unconditioned buildings in the TZ do not benefit from high performance windows because the windows are likely to be open all year.
TG Recommendation:	Accept as Modified, **Task Group 5:** 7-0-5, **Task Group 8:** 4-0-0
TG Modification:	703.2.5 Fenestration 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 Table 703.2.5.1. 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 maximum area of 15 sq. ft. (1.39 m2) 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 meets a minimum roof SRI of 0.85, and a minimum wall reflectivity of 0.39.
TG Reason:	Amendments are tailored to unique conditions in the tropical zone allowing more flexibility in the use of fenestration in the Tropical zone. The amendments recognize that efficiency gains from reflective roofs and walls are more significant than the energy efficiency from high performance windows.

P033 ID 7501	703.2 Building envelope
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	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 Table 11.703.2.5.1. 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 maximum area of 15 sq. ft. (1.39 m2) or 10% of the total glazing area, whichever is less, are not required to comply with this practice. Unconditioned or low energy buildings in the Tropical Zone are exempt.
Reason:	High-performance windows do not provide the same efficiency value for unconditioned or low energy buildings located in the TZ. They should be exempt.
TG Recommendation:	Accept as Modified, **Task Group 5:** 7-0-5, **Task Group 8:** 4-0-0
TG Modification:	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 Table 11.703.2.5.1. 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 maximum area of 15 sq. ft. (1.39 m2) 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 meets a minimum roof SRI of 0.85, and a minimum wall reflectivity of 0.39.
TG Reason:	Amendments are tailored to unique conditions in the tropical zone allowing more flexibility in the use of fenestration in the Tropical zone. The amendments recognize that efficiency gains from reflective roofs and walls are more significant than the energy efficiency from high performance windows.

P034 ID 7475	703.2 Building envelope
Submitter:	Brad Bray, Self
Comment:	703.1.2 Building envelope leakage. The building thermal envelope (dwelling unit/sleeping unit) is in accordance with ICC IECC R402.4.1.2 ~~or C402.5 as applicable~~ for all residential use space.
Reason:	Require infiltration testing for residential spaces, regardless of height of building. Eliminate the exemption for "commercial" IECC due to height of buidling. People should have the same QC regardless of height of the building.
Substantiating Documents:	Yes
TG Recommendation:	Disapprove, 13-0-2
TG Modification:	
TG Reason:	There are dwelling unit requirements under both the residential and commercial sections of the 2021 IECC, so both spaces need to be consider. It would be inappropriate to remove commercial references. Parentheses are confusing and should not be included in code language.

<table>
<tr><td>P035 ID 7580</td><td>703.3 HVAC equipment efficiency</td></tr>
<tr><td>Submitter:</td><td>Kegan Daugherty, North American Gas Heat Pump Collaborative</td></tr>
<tr><td>Comment:</td><td>Add a row to tables 703.3.2.(1)(a-c)</td></tr>
<tr><td>Reason:</td><td>For committee consideration, inclusion of gas heat pumps and gas heating technologies greater than 100% AFUE equivalent in section 703.3, and updating relevant tables with residential heating equipment that meets the Advanced Tier of CEE’s Gas-Forced Air Specification, according to the ANSI Z21.40.4 Performance Testing and Rating of Gas-Fired, Air Conditioning and Heat Pump Applications. Amend tables 703.3.2(1)(a-c) to include additional row labeled: >120% AFUE, with proportionate point values for each climate zone. CEE details available at: https://library.cee1.org/system/files/library/12048/CEE_ResHVAC_GasSpecs_15Jan2021.pdf</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td>TG Recommendation:</td><td>Accept as Modified, 9-0-3</td></tr>
<tr><td>TG Modification:</td><td>Table 703.3.2(1a & 1b) Change Heaters to Heating Systems and add these tables
<table>
<tr><td><u>≥120% AFUE*</u></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td><u>≥140% AFUE*</u></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
Footnote: *This requirement is used for gas-fired heat pump systems</td></tr>
<tr><td>TG Reason:</td><td>These changes accommodate new high efficiency technologies that are going to be on the market and used in buildings.</td></tr>
</table>

P036 ID 7563	703.3 HVAC equipment efficiency
Submitter:	Steven Rosenstock, Self
Comment:	{Adjust point values downward in Tables for residential gas and oil boilers due to increase in federal minimum efficiency standards as of January 15, 2021. For example: Table 703.3.2(4) Oil Boiler AFUE

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	Points							
~~>=85% AFUE~~	~~0~~	~~1~~	~~1~~	~~3~~	~~3~~	~~4~~	~~4~~	~~5~~
>=90% AFUE	1	~~2~~1	~~3~~1	~~5~~2	~~6~~3	~~7~~3	~~9~~4	~~10~~4

Reason:	Federal standards for residential have increased as of January 15, 2021. Below are the previous and current values (from https://www.ecfr.gov/current/title-10/chapter-II/subchapter-D/part-430/subpart-C/section-430.32): Except as provided in paragraph (e)(2)(iv) of this section, the AFUE of residential boilers, manufactured on or after September 1, 2012, and before January 15, 2021, shall not be less than the following and must comply with the design requirements as follows: Product class AFUE1 (percent) Design requirements (A) Gas-fired hot water boiler 82 Constant burning pilot not permitted. Automatic means for adjusting water temperature required (except for boilers equipped with tankless domestic water heating coils). (B) Gas-fired steam boiler 80 Constant burning pilot not permitted. (C) Oil-fired hot water boiler 84 Automatic means for adjusting temperature required (except for boilers equipped with tankless domestic water heating coils). (D) Oil-fired steam boiler 82 None. (E) Electric hot water boiler None Automatic means for adjusting temperature required (except for boilers equipped with tankless domestic water heating coils). 1 Annual Fuel Utilization Efficiency, as determined in § 430.22(n)(2) of this part. Except as provided in paragraph (e)(2)(v) of this section, the AFUE of residential boilers, manufactured on and after January 15, 2021, shall not be less than the following and must comply with the design requirements as follows: Product class AFUE1 (percent) Design requirements (1) Gas-fired hot water boiler 84 Constant-burning pilot not permitted. Automatic means for adjusting water temperature required (except for boilers equipped with tankless domestic water heating coils). (2) Gas-fired steam boiler 82 Constant-burning pilot not permitted. (3) Oil-fired hot water boiler 86 Automatic means for adjusting temperature required (except for boilers equipped with tankless domestic water heating coils). (4) Oil-fired steam boiler 85 None. (5) Electric hot water boiler None Automatic means for adjusting temperature required (except for boilers equipped with tankless domestic water heating coils). (6) Electric steam boiler None None. 1 Annual Fuel Utilization Efficiency, as determined in § 430.23(n)(2) of this part.
TG Recommendation:	Accept as Modified, 7-0-3
TG Modification:	See reason statement below.
TG Reason:	Recognize that the points will be assigned after analysis. Approval is for the framework and elimination of the 85% category. 95% AFUE category to be incorporated when point calculations are being added. This is to update the table in light of an increase in the federal minimum standards.

P037 ID 7560	703.3 HVAC equipment efficiency
Submitter:	Steven Rosenstock, Self
Comment:	~~HSPF~~ HSPF2 ~~EER~~ EER2 ~~SEER~~ SEER2
Reason:	In the US, for air source heating and cooling systems, the metrics will be changing (and increased) as of 1/1/2023. EER, SEER, and HSPF will be changing to EER2, SEER2, and HSPF2. Tables in Chapters 7, 11, and 12 need to be updated for the new metrics and increased stringency (e.g., new SEER2 of 14.3 is roughly equivalent to old SEER of 15). Certain definitions with EER or SEER or HSPF also need to be updated.
TG Recommendation:	Accept, 11-0-2
TG Modification:	
TG Reason:	

P038 ID 7554	705 ADDITIONAL PRACTICES
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	(New Optional Criteria) 705.8. ENERGY STAR Certified Building. Obtain ENERGY STAR certification for multifamily buildings within 2 years of stable occupancy. Three points are achieved with an ENERGY STAR score of 75 or above, and 5 points for a score of 80 or above.
Reason:	ENERGY STAR certification for the building post-occupancy adds practices that improve energy performance of buildings in the operations phase.
TG Recommendation:	Disapprove, 10-1-2
TG Modification:	
TG Reason:	It is not clear what is meant by “stable occupancy” and how it is determined. Also, such “stable occupancy” may not occur for several years after the multi-family building is built. It is also not clear how these points would align with the different levels of NGBS certification. Also, the same number of points is achieved for buildings with a score of 80 or 90 or 100, even though buildings with higher scores have more energy savings, which does not align with other point value assignments in the NGBS. Existing Buildings TG will deal with ENERGY STAR certification.

P039 ID 7489	705.5 HVAC design and installation
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Add the following options: (1) Associated Air Balance Council (AABC) Test and Balance Technician; (2) Associated Air Balance Council (AABC) Test and Balance Engineer; and (3) National Environmental Balancing Bureau (NEBB) Personnel Certification.
Reason:	The current options included are relevant to low-rise residential buildings only. Add additional options that are accepted as equivalent for the multifamily/commercial sector.
TG Recommendation:	Accept as Modified, 11-0-1
TG Modification:	**705.5.1** Meet at least one ~~or both~~ of the following: (1) HVAC contractor is certified by the Air Conditioning Contractors of America's Quality Assured Program (ACCA/QA), ~~or by~~ 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. ~~or equivalent~~ 1 point (2) HVAC installation technician(s) is certified by North American Technician Excellence, Inc. (NATE) or equivalent. 2 point
TG Reason:	This allows existing service corps or testers and balancers certified under equivalent programs to participate.

P040 ID 7551	705.5 HVAC design and installation
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	705.5.2.1. In multifamily buildings, conduct third-party commissioning of common area and central HVAC, domestic hot water and lighting systems. Verify that startup is complete by the installing contractor. In addition, complete a functional test checklist for the applicable systems.
Reason:	Third party commissioning is a value to the building owner, and improves building performance. This is for multifamily buildings only.
TG Recommendation:	Disapprove, 8-1-1
TG Modification:	
TG Reason:	This is not ready for use.

P041 ID 7552	705.6 Installation and performance verification
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	705.6.2.3, HVAC Duct Leakage Testing. Criteria is mandatory for single family home projects. One of the following is achieved: *(no change to rest of criteria)*
Reason:	Duct leakage testing provides an incentive to improve duct tightness and installation. This applies to single family projects only.
TG Recommendation:	Disapprove, 13-0-1
TG Modification:	
TG Reason:	Per TG action on A048, duct testing will be mandatory for all projects.

P042 ID 7545	706.2 Renewable energy service plan
Submitter:	Heather Schrock, Self
Comment:	(1) Builder selects a renewable energy service plan (often called a green power 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 a minimum two-year commitment or buys RECs from a third-party provider to match the estimated projected electricity use for the building for two years. (a) less than 50% of the dwelling's projected electricity and gas use is provided by renewable energy. 1 (b) greater than or equal to 50% of the dwelling's projected electricity and gas use is provided by renewable energy 2
Reason:	Revise this existing practice for clarity.
TG Recommendation:	Accept as Modified, 13-0-1
TG Modification:	(1) Builder selects a renewable energy service plan ~~(often called a green power 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 a minimum two-year commitment or buys RECs from a third-party provider to match the estimated projected electricity use for the building for two years. (a) less than 50% of the dwelling's projected electricity and gas use is provided by renewable energy. 1 (b) greater than or equal to 50% of the dwelling's projected electricity and gas use is provided by renewable energy 2
TG Reason:	Edited for clarity of requirements.

P043 ID 7577	706.5 On-site renewable energy system
Submitter:	Steven Rosenstock, Self
Comment:	**706.5 On-site renewable energy system.** One of the following options is implemented: (1) Building is Solar-Ready in compliance... ... *Points shall not be awarded for the capacity of an on-site renewable energy system or battery energy storage system that is required by a jurisdiction to be installed in minimum building or energy codes that have been adopted by the jurisdiction.* (*rest of the section is unchanged*)
Reason:	There are now local jurisdiction minimum codes and state minimum energy codes (such as California's Title 24) that require new buildings to install on-site renewable energy systems. See https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency for information about CA Title 24-2022. This proposed change will prevent "double counting", or giving points for a required practice in those jurisdictions.
TG Recommendation:	Disapprove, 11-2-1
TG Modification:	
TG Reason:	This proposal unfairly burdens buildings in jurisdictions with solar requirements.

P044 ID 7542	706.8 Electrical vehicle charging station
Submitter:	Chinedu Moneke, Home Innovation Research Labs (NGBS Green)
Comment:	For multifamily, minimum charging stations should be 1 charging station per 100 dwelling units.
Reason:	For Multifamily, consider awarding points for percent of buildings/dwelling units
TG Recommendation:	Disapprove, 12-0-1
TG Modification:	
TG Reason:	This requirement is already in the standard as part of section 505.6

P045 ID 7540	706.8 Electrical vehicle charging station
Submitter:	Chinedu Moneke, Home Innovation Research Labs (NGBS Green)
Comment:	706.8.2: The Electrical Vehicle Chargers are ENERGYSTAR certified.
Reason:	Change 706.8 to 706.8.1 and add practice for EV Chargers that are ESTAR certified
TG Recommendation:	Accept as Modified, 11-1-3
TG Modification:	706.8.2: The Electrical Vehicle Chargers are ENERGY STAR certified or equivalent
TG Reason:	This would provide extra credit for ENERGY STAR charging station

P046 ID 7584	706.12 Smart ventilation
Submitter:	Justin Mahley, Panasonic
Comment:	**706.12.1 Smart ventilation.** A whole-building ventilation system is installed with automatic ventilation controls to maximize ventilation during periods of poor indoor air quality. **706.12.1.2 IAQ remediation.** A installed device that inhibits, removes, or reduces PM2.5, VOC and CO2
Reason:	To add language around further smart IAQ sensing ventilation
TG Recommendation:	Accept as Modified, 9-0-0
TG Modification:	**Modify as follows:** **{706.12 remains unchanged}** **904.5 Indoor Air Quality Remediation.** A ventilation device is installed that automatically removes, inhibits, or reduces PM2.5, TVOC and CO2 within the conditioned space when identified by installed devices per Section 904.4.2….8
TG Reason:	Added appropriate language.

Additional TG Proposed Changes

A036 ID 7683	Section 7 Energy Efficiency
Submitter:	Jamie Carr, Eco Achievers
Comment:	NGBS should incorporate a bonus for projected net zero energy performance.
Reason:	Perhaps this could replace the Net Zero Energy Badge. The bonus could be similar to Credit 5.4 in the Zero Energy Section of Enterprise Green Communities 2020. I propose putting together a sub-Task Group working group to develop this proposal more fully.
TG Recommendation:	Disapprove, 9-0-3
TG Modification:	
TG Reason:	No language included

A037 ID 7684	Section 7 Energy Efficiency
Submitter:	Jamie Carr, Eco Achievers
Comment:	NGBS should incorporate a more robust bonus for renewable energy.
Reason:	Currently, the way NGBS is structured there is very little weight given to on-site renewable energy systems. See Section 706.5. The bonus could be similar to Credit 5.3 Renewable Energy in the Moving to Zero Energy section of Enterprise Green Communities 2020. I propose putting together a sub-Task Group working group to develop this proposal more fully.
TG Recommendation:	Disapprove, 9-0-3
TG Modification:	
TG Reason:	No language included.

A038 ID 7681	Section 7 Energy Efficiency
Submitter:	Jamie Carr, Eco Achievers
Comment:	NGBS should incorporate an incentive bonus for the electrification of residential buildings.
Reason:	This bonus could be similar to Credits 5.5a Electric Ready and 5.5b All Electric in the Moving to Zero Carbon section of Enterprise Green Communities 2020. I propose putting together a sub-Task Group working group to develop this proposal more fully.
TG Recommendation:	Disapprove, 9-0-3
TG Modification:	
TG Reason:	No language included.

A039 ID 7682	Section 7 Energy Efficiency
Submitter:	Jamie Carr, Eco Achievers
Comment:	NGBS should incorporate an incentive bonus for near zero certifications, such as Zero Energy Ready Homes or Phius.
Reason:	The bonus could be similar to Credit 5.2b in the Moving to Zero Energy section of Enterprise Green Communities 2020. I propose putting together a sub-Task Group working group to develop this proposal more fully.
TG Recommendation:	Disapprove, 9-0-3
TG Modification:	
TG Reason:	No language included.

A040 ID 7689	Section 7 Energy Efficiency
Submitter:	Craig Conner, Building Quality
Comment:	See A040 Supplemental Information.
Reason:	This appendix provides a simpler energy code that conserves more energy.
TG Recommendation:	Disapprove, 12-0-0
TG Modification:	
TG Reason:	Certified Path already exists as a simplified NGBS compliance pathway. Some concepts here could potentially be folded into Ch 12. Potential complications from alignment with the R and C codes.

A041 ID 7662	701.1.4 Alternative Bronze and Silver level compliance
Submitter:	Asa Foss, EPA
Comment:	701.1.4 Alternative Bronze and Silver level compliance. As an alternative, any building that qualifies as an ENERGY STAR ~~Version 3.0 Certified Home or ENERGY STAR Multifamily High Rise Version 1.0 Rev. 03 building~~ National Single Family New Homes Version 3.1 or ENERGY STAR National Multifamily New Construction Version 1.1 building or demonstrates compliance with the ~~2018~~ 2021 IECC ~~or Chapter 11 of the 2018 IRC~~ achieves the bronze level for Chapter 7. As an alternative, any building that qualifies as an ENERGY STAR ~~Version 3.1 Certified Home or ENERGY STAR Multifamily High Rise Version 1.0 Rev .03 (with the baseline at ASRHAE 90.1-2010) building~~ National Single Family New Homes Version 3.2 or ENERGY STAR National Multifamily New Construction Version 1.2 building achieves the silver level for Chapter 7. …
Reason:	Projects must earn 30 points for Bronze, 45 for Silver, 60 for Gold Using the 702 Performance Path, points are awarded as Points = 30 + (% above NGBS Reference Home)*2. The NGBS Reference Home is vaguely defined/assumed to be equivalent to the 2021 IECC. To earn 30 points for Bronze, projects must be 0% better than 2021 IECC. To earn 45 points for Silver, projects must be 7.5% better than 2021 IECC. To earn 60 points for Gold, projects must be 15% better than the 2021 IECC. Residential Code ENERGY STAR Single Family New Homes v3.1 is 10% more stringent than the 2018 IECCthat the Residential 2021 IECC has a 9.38% site energy savings over 2018 IECC. Meeting ENERGY STAR v3.1 slightly exceeds the energy performance of 2021 IECC, so it should be rewarded as equivalent to NGBS Bronze. ENERGY STAR v3.2 is 10% more stringent than the 2021 IECC, which should be rewarded as more than meeting the requirements for NGBS Silver. Commercial Code ASHRAE 90.1-2016 may be used to demonstrate compliance to the commercial 2018 IECC. ASHRAE 90.1-2019 may be used to demonstrate compliance to the commercial 2021 IECC. DOE has determined that the Commercial 2021 IECC has a 4.7% site energy savings over 2018 IECC. ENERGY STAR Multifamily New Construction v1.1 requires a 15% improvement over 90.1-2016. Meeting ENERGY STAR v1.1 exceeds the performance requirements of NGBS Silver. ENERGY STAR v1.2 is 15% more stringent than ASHRAE 90.1-2019, so it should be rewarded as equivalent to NGBS Gold. For ease of compliance, and because Multifamily New Construction projects may use the ERI compliance path that aligns with single family, I recommend rounding down to the same performance equivalency as ENERGY STAR Single Family New Homes. Updated the code reference from 2018 to 2021 IECC.
TG Recommendation:	Accept, 11-1-2
TG Modification:	
TG Reason:	

A042 ID 7671	701.1.5 Alternative Gold level compliance
Submitter:	Theresa Weston, The Holt Weston Consultancy representing ABAA
Comment:	*Modify as follows:* 701.1.5 Alternative Gold level compliance. As an alternative, any building within the scope of the NGBS that complies with Chapter 7 of the ICC IgCC achieves the Gold level for Chapter 7. 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 maximum leakage of ~~0.3~~ 0.2 cfm/sf of enclosure bounding the apartment at an induced pressure difference of 50 pascals.
Reason:	Updates the allowable air leakage maximum for attached dwelling units to be consistent with ASHRAE 62.2-2019 Addendum e which was approved April 30, 2021.
TG Recommendation:	Accept as Modified, 7-0-1
TG Modification:	*Modify as follows:* 701.1.5 Alternative Gold level compliance. As an alternative, any building within the scope of the NGBS that complies with Chapter 7 of the ICC IgCC achieves the Gold level for Chapter 7. Additionally, measured compartmentalization shall be no greater than ~~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 maximum leakage of 0.3~~ 0.2 CFM50/sf of dwelling unit enclosure area, tested in accordance with ASTM E779, ASTM E1827, ASTM E3158 or ANSI/RESNET/ICC Std. 380.~~enclosure bounding the apartment at an induced pressure difference of 50 pascals.~~
TG Reason:	To be inclusive of the testing protocols that are applicable to compartmentalization testing. ENERGY STAR reference is no longer valid.

A043 ID 7688	701.1.6 Alternative Bronze Compliance
Submitter:	Craig Conner, Building Quality
Comment:	XX1.3 Energy Compliance Alternative. Compliance with the 3 items below is deemed to be energy compliance at the xxx level. XX1.3.1 Equivalent building option. Dwellings that meet both of the following criteria shall be deemed in compliance with the thermal envelop requirements of this chapter. 1. The ratio of the air-conditioning capacity to conditioned space is less than or equal to 1.5 tons per 1000square feet. 2. The ratio of the heating system capacity to floor area of conditioned space is less than or equal to 10,000 Bth/h per 1000 square feet for zone 2 15,000 Bth/h per 1000 square feet for zone 3 18,000 Bth/h per 1000 square feet for zone 4 5 20,000 Bth/h per 1000 square feet for zone 6 & 7. 25,000 Bth/h per 1000 square feet for zone 8 XX1.3.2 Equivalent hot water. The horizontal distance from the hot water supply outlet to the hot water use shall be no more than 10ft. This shall apply to the kitchens, bathrooms with showers or tub, and rooms with a clothes washer. XX1.3.3 Equivalent lighting. Dwellings complying with at least one of the following requirements shall be deemed in compliance with the lighting requirements: 1. Lamps over 15 watts shall be LED, or have an efficacy not less than 70 lumens per watt, or. 2. At least 90% of the lamps or fixtures shall have an efficacy not less than 75 lumens per watt. Where compliance is based on efficacy the efficacy shall be on a manufacturer designation of efficacy on the lamp or fixture; or the lighting efficacy shall be on the construction plans
Reason:	Trying to create a simple energy option. Not sure what values should be in the Btu/h list of zones
TG Recommendation:	Disapprove, 13-0-0
TG Modification:	
TG Reason:	Not usable as written; inconsistent with the energy code and total energy consumed by the building. Concept is OK but need some refinement. Question about the cooling demand by climate zone – constant versus scaled value.

A044 ID 7690	701.1.6 Alternative compliance for tropical zones
Submitter:	Steve Armstrong, Performance Point

Comment:	~~701.1.6 Alternative Gold level compliance for tropical zones. One- or two-family dwelling in the tropical zone at an elevation less than 2,400 ft. (731.5 m) above sea level that complies with the following shall achieve the Gold level for Chapter 7:~~ ~~(1) The residence complies with ICC IECC R401.2.1 Tropical zone.~~ ~~(2) The residence includes a minimum of 2 kW of PV and a minimum of 6 kWh of battery storage.~~ ~~(3) Any air conditioning has a minimum of 18 SEER.~~ ~~(4) Solar, wind or other renewable energy source supplies not less than 90% of the energy for service water heating.~~ ~~(5) Glazing in conditioned spaces has a solar heat gain coefficient of less than or equal to 0.25, or has an overhang with a projection factor equal to or greater than 0.30.~~ ~~(6) The exterior roof/ceiling complies with at least two of the following:~~ ~~(a) Minimum roof reflectance and emittance in ICC IECC Table C402.3.~~ ~~(b) Roof or ceiling has insulation with an R-value of R-15 or greater.~~ ~~(c) Includes a radiant barrier.~~ ~~(7) Walls comply with at least one of the following:~~ ~~(a) Walls have an overhang with a projection factor equal to or greater than 0.30.~~ ~~(b) Walls have insulation with an R-value of R-13 or greater.~~ ~~(c) Walls have a solar reflectance of 0.64.~~ ~~(8) A ceiling fan is provided for bedrooms and the largest space that is not used as a bedroom; alternately a whole house fan is provided.~~ ~~(9) Wiring sufficient for a Level 2 (208/240V 40-80 amp) electric vehicle charging station is installed on the building site.~~ **701.1.6 Alternative compliance for tropical zones (707).** Buildings in Tropical Zones where more than one-half of the occupied space is not air conditioned and 100 percent of the space is not heated can use this option to comply with chapter 7. Building can achieve either a silver or gold compliance level depending on the practices chosen. The building shall comply with the 707.1 mandatory practices and 707.2 additional practices. Note: To achieve a Gold level certification, all Gold level additional practices must be implemented *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in* Tropical Zone Supplemental Information.
Reason:	Adding compliance path for stand along Tropical Zone Section.
TG Recommendation:	Accept as Modified, **Task Group 5:** 7-0-5 // **Task Group 8:** 5-0-0
TG Modification:	Delete current 701.1.6 Alternative Gold level compliance for tropical zones in it's entirety. **701.1.6 Alternative compliance for tropical zones (705).** Buildings in Tropical Zones where more than one-half of the occupied space is not air conditioned and 100 percent of the space is not heated can use this option to comply with chapter 7. Building can achieve either a silver or gold compliance level depending on the practices chosen. The building shall comply with the 705.1 mandatory practices and 705.2 additional practices. Note: To achieve a Gold level certification, all Gold level additional practices must be implemented
TG Reason:	Renumbering from 707 to 705 would group all the compliance path together.

A045 ID 7686	**701.1.7 Alternative Emerald Level**

Submitter:	Craig Conner, Building Quality
Comment:	Homes verified to meet the Passive House requirements shall be emerald for energy.
Reason:	Passive Houses must meet stringent energy-related requirements. These should easily be emerald for energy.
TG Recommendation:	Disapprove, 13-0-0
TG Modification:	
TG Reason:	Concept is good, but words need work. Question about scope of end-uses that would be covered. Question about which passive house program (PHI or PHIUS+) and version. Key difference between NGBS and Passive House programs is type of modeling and testing. PHIUS+ also looks at ventilation, indoor air quality, durability, etc., so a more structured crosswalk may be warranted for dual-certification.

A046 ID 7672	701.4 Mandatory practices
Submitter:	Theresa Weston, The Holt Weston Consultancy representing ABAA
Comment:	*Modify the following sections:* 701.4.3.2 Air barrier, air sealing, building envelope testing, and insulation. Building envelope air barrier, air sealing envelope tightness, and insulation installation is verified to be in accordance with this Section and § 701.4.3.2.1. Insulation installation other than Grade 1 is not permitted (1) Testing. Building envelope tightness is tested. Testing is conducted in accordance with ASTM E779, ASTM E1827, ASTM E3158 or ANSI/RESNET/ICC 380 using a blower door at a test pressure of 1.04 psf (50 Pa). Testing is conducted after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation, and combustion appliances. ……. 705.6.2.1 Air leakage validation of building or dwelling units or sleeping units. A visual inspection is performed as described in § 701.4.3.2(2) and air leakage testing is performed in accordance with ASTM E779, ~~or~~ ASTM E1827, ASTM E3158 or ANSI/RESNET/ICC 380. ……. 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. (1) Testing. Building envelope tightness is tested. Testing is conducted in accordance with ASTM E779, ASTM E1827, ASTM E3158 or ANSI/RESNET/ICC 380 using a blower door at a test pressure of 1.04 psf (50 Pa). Testing is conducted after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances. ……. 11.705.6.2.1 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 ASTM E779, ASTM E1827, ASTM E3158 or ~~ANSI 380~~ ANSI/RESNET/ICC 380. --- *Update the following references:* E779- ~~2010~~ 2019 Standard Test Method for Determining Air Leakage Rate by Fan Pressurization E1827-2011(2017) Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door ANSI/RESNET/ICC 380 – ~~2018~~ 2019 Standard for Testing Airtightness of Building Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems --- *Add the following reference:* ASTM E3158-2018 Standard Test Method for Measuring the Air Leakage Rate of a Large or Multizone Building
Reason:	Update referenced air leakage testing criteria methods to correlate with those referenced in the IECC. Additionally, the publication version for test methods currently referenced in the NGBS. This is needed to keep NGBS up to date.
TG Recommendation:	Accept, 7-0-1
TG Modification:	
TG Reason:	

A047 ID 7687	701.4.1.1 HVAC system sizing
Submitter:	Craig Conner, Building Quality
Comment:	**xx1. Heating requirements.** heating system input per sq ft building < xheat [zone] **xx2. Cooling requirements.** cooling system input per sq ft building < xcool [zone] **xx3. Lighting requirements.** Lighting shall comply with at least one of the following: 1. Lamps over 15 watts shall be LED, or have an efficacy not less than 70 lumens per watt, or 2. At least 90% of the lamps or fixtures shall have an efficacy not less than 75 lumens per watt. The efficacy shall be on a manufacturer designation of efficacy on the lamp or fixture; or the efficacy shall be on the construction plans. **xx4. Water heating requirements.** Sources of hot water are within 10 ft of the use of hot water or water heating piping has R-3 or more insulation.
Reason:	This is a simple energy code to enforce. This proposal leaves it to the building designer to design and specify a residence with a small heating load and a small cooling load. It is up to the designer to stay within the loads specified. Of course the loads would vary by zone (climate). The values would need to be in a table in NGBS. The values are not in this proposal. Compliance means verifying that the design on the plans is within the allowed value.. See the entertaining video at https://www.youtube.com/watch?v=Okn3XgwSX5Q Lighting would allow any lamps or fixtures that meet the required lighting efficacy. There is no need to try to count fixtures. Presumably code enforcement would just check a few lamps or fixtures. Checking a few is much better than trying to total the lighting wattage in the building. Is the lighting efficacy in this proposal reasonable? Hot water pipe length (approximates volume) is the most important part of water heating efficiency. Water in the pipe starts out at the temperature of surroundings, as hot water is only intermittently in the pipe but then cools. The length of hot water pipe that heated water needs to fill and the pipe that needs to be heated is more important that the efficiency of the water heating equipment says water heating expert Gary Klein.
TG Recommendation:	Disapprove, 13-0-0
TG Modification:	
TG Reason:	Need more clarity. This proposal is not useable as written. Not clear what the heating and cooling inputs should be for each climate zone. This practice would be a better fit elsewhere; it does not fit in the HVAC section.

A048 ID 7665	701.4.2.1 and Duct air sealing
Submitter:	Karla Butterfield, Steven Winter Associates, Inc.
Comment:	New requirement: 701.4.2.1 (2) Testing. Dwelling unit duct leakage testing. Testing is conducted following procedures in ANSI/RESNET/ICC Std. 380 or ASTM E1554 with a pressure differential of 0.1 inch w.g. (25 pa) across the entire system and demonstrating compliance with the following leakage rates: At rough-in test with air handler installed or at post construction, leakage shall be no greater than 4 cfm per 100 square feet of conditioned floor area (cfm/100cfa) or 40 Cfm At rough-in testing without the air handler installed, leakage shall be no greater than 3 cfm/100cfa or 30 Cfm For ducts within the thermal envelope, leakage shall be no greater than 8 cfm/100cfa or 80 Cfm
Reason:	Duct leakage testing is a requirement in the 2021 IECC (R403.3.6) and should be part of the standard.
TG Recommendation:	Accept as Modified, 4-3-2
TG Modification:	701.4.2.1 (2) Testing. Dwelling unit 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 inch w.g. (25 Pa) across the entire system and demonstrating compliance with one of the following leakage rates: · 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 square feet (9.29 m^2) of conditioned floor area (CFM/100 cfa) or 40 CFM, whichever is greater; OR · 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 · 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.
TG Reason:	To accommodate mandatory duct testing for dwelling units with consideration for minimum duct leakage for smaller dwellings. Modification also reflects that there are no duct testing requirements under the commercial provisions of the IECC; it should not be mandatory under NGBS.

A049 ID 7661	701.4.3 Insulation and Air Sealing
Submitter:	Josh Hanson, US-EcoLogic
Comment:	~~**701.4.3.3 Multifamily air leakage alternative**. Multifamily buildings four or more stories in height and in compliance with IECC section C402.5 (Air leakage-thermal envelope) are deemed to comply with Sections 701.4.3.1 and 701.4.3.2.~~
Reason:	Remove the exception for commercial buildings to follow the visual inspection path As it is now required in commercial and residential multifamily buildings.
TG Recommendation:	Accept, 14-0-2
TG Modification:	
TG Reason:	

A050 ID 7664	701.4.3.2.1 Insulation and Air Sealing
Submitter:	Carl Seville, SK Collaborative
Comment:	(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 a minimum of 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 not be used as the sole thermal insulation in any exterior walls, floors, or ceilings. These products may be used in conjunction with glass fiber, mineral wool, foam, or cellulose insulation when installed with the designated air space and completely air sealed per manufacturer's installation instructions.
Reason:	We see some masonry buildings in Climate zone 1 using foil faced insulation and an air gap as the only insulation and regardless of manufacturer's claims they are not shown to provide adequate thermal value.
TG Recommendation:	Accept as Modified, 11-0-2
TG Modification:	(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 per manufacturer's instructions.
TG Reason:	The intent was not to exclude insulation materials that may be deemed sufficient for insulation, as long as it is installed per manufacturer direction.

A051 ID 7685	702 Performance Path
Submitter:	Craig Conner,, Building Quality
Comment:	Buildings certified as net zero energy shall be emerald for energy. Off-site generated energy associated with the building shall be permitted to be included.
Reason:	Can't get much better than no net energy use. Questions: This should apply to both commercial and residential? Zero energy is a clear concept. Should buildings slightly above zero energy also get emerald?
TG Recommendation:	Disapprove, 13-0-0
TG Modification:	
TG Reason:	Concept is good, but words need work. Discussion about which definition of net zero energy to apply, as well as time of construction versus 12-14 month real-time metrics.
A052 ID 7680	**702.1 Point allocation**

Submitter:	Jamie Carr, Eco Achievers
Comment:	702.2.1 ~~ICC IECC analysis~~ Minimum energy performance analysis. Energy efficiency features are implemented to achieve energy cost or source energy performance that meets the applicable minimum energy performance threshold. ~~the IECC. A documented analysis using software in accordance with ICC IECC Section R405, or ICC IECC Section C407.2 through C407.5, applied as defined in the ICC IECC, is required.~~ Residential Buildings A documented analysis that either demonstrates compliance with ICC IECC using software in accordance with ICC IECC Section R405 applied as defined in the ICC IECC, or that demonstrates performance at least as good as the NGBS Reference Home for ICC residential buildings using software approved by and applied as defined by the Adopting Entity, is required. Commercial Buildings A documented analysis that demonstrates compliance with the ICC IECC using software in accordance with ICC IECC Section C407.2 through C407.5 applied as defined in the ICC IECC, is required. [Note not to be included in Standard. The NGBS Reference Home table should be moved from the Verifier Resource Guide (VRG) to the Standard so that it is available to all.]
Reason:	This proposed revision aligns the text of the Standard with how the Standard has been interpreted by Home Innovation Research Labs and implemented by Verifiers. Currently, Verifiers are not required to provide "a documented analysis using software in accordance with ICC IECC Section R405 or ICC IECC Section C407.2 through C407.5" to show that "energy efficiency features are implemented to achieve energy cost or source energy performance that meets the IECC." Instead, Verifiers can show that implemented energy efficiency features result in performance that is at least as good as the NGBS Reference Home. There are cases where a building can demonstrate performance that exceeds the NGBS Reference Home (sometimes by a wide margin), but does not meet a level of cost or source energy performance that can be documented using software in accordance with the ICC IECC to meet the IECC. This discrepancy exists because that IECC residential code mostly evaluates the building envelope, whereas the NGBS Reference Home analysis includes other features that factor into overall building performance. I submitted a previous proposal that would have aligned Home Innovation Research Labs interpretation and Verifier practice with what I think is the clear meaning of the text of the Standard, but that proposal was voted down by the Task Group. This proposal takes a different approach, leaving the current Home Innovation Research Labs interpretation in place, but insisting that there be honesty and transparency about what that means in practice (i.e., NGBS does not require performance that meets the energy cost or source energy thresholds in the residential IECC when using software in accordance with ICC IECC Section 405).
TG Recommendation:	Accept as Modified, 11-0-1
TG Modification:	702.2.1 ~~ICC IECC analysis~~ Minimum energy performance analysis. Energy efficiency features are implemented to achieve energy cost or source energy performance that meets the applicable minimum energy performance threshold. ~~the IECC. A documented analysis using software in accordance with ICC IECC Section R405, or ICC IECC Section C407.2 through C407.5, applied as defined in the ICC IECC, is required.~~ Residential Buildings A documented analysis that either demonstrates compliance with ICC IECC using software in accordance with ICC IECC Section R405 applied as defined in the ICC IECC, or that demonstrates performance at least as good as the NGBS Reference Home for ICC residential buildings in Appendix X using software approved by and applied as defined by the Adopting Entity, is required. Commercial Buildings A documented analysis that demonstrates compliance with the ICC IECC using software in accordance with ICC IECC Section C407.2 through C407.5 applied as defined in the ICC IECC, is required. [Note not to be included in Standard. The NGBS Reference Home table should be moved from the Verifier

	Resource Guide (VRG) to the Standard so that it is available to all.]
TG Reason:	Note to staff: 2024 NGBS Reference Home values will be prepared prior to November meeting so that the content can be included with publication.

A053 ID 7674	**703.1 Mandatory Practices**
Submitter:	Theresa Weston, The Holt Weston Consultancy, representing ABAA
Comment:	Modify as follows: 703.1.2 Building envelope leakage. The building thermal envelope is in accordance with ICC IECC ~~R402.4.1.2~~ R402.4 or C402.5 as applicable.
Reason:	Corrects IECC section references. Sections are based on the IECC-2021 and may need additional updating once a draft of the IECC-2024 is available.
TG Recommendation:	Accept, 6-0-1
TG Modification:	
TG Reason:	Helps align residential and commercial sections pertaining to envelope leakage.

A054 ID 7673	Table 703.2.4 (a) & (b)
Submitter:	Theresa Weston, The Holt Weston Consultancy representing ABAA
Comment:	*Modify as follows:*

Table 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 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

Reason:	The maximum air leakage numbers are revised to give no points (make mandatory) in correlation with proposals that have passed the initial process of the IECC-2024 process.
TG Recommendation:	Disapprove, 6-0-2
TG Modification:	
TG Reason:	Nothing has been finalized for the 2024 IECC. It is also not clear why very tight buildings in climate zones 3-8 would not receive points

A055 ID 7677	703.3 HVAC equipment efficiency
Submitter:	Jason LaFleur, GTI
Comment:	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. Devices have a minimum combined annual efficiency of 0.80 and a minimum water heating recovery efficiency of 0.87. ..... 4 Devices have a minimum combined annual efficiency of 0.94 and a minimum water heating recovery efficiency of 0.95. ..... 6 Devices have a minimum combined annual efficiency of 1.15 and a minimum water heating recovery efficiency of 1.20. ..... 10 Devices have a minimum combined annual efficiency of 1.15 and a minimum water heating recovery efficiency of 1.20 and serves a third building load (e.g. pool heating). 12
Reason:	Equipment energy efficiency is greatly enhanced when one thermal engine can meet loads for multiple end uses. Increasing technology development of high efficiency tankless water heaters matched with a variable speed air handler with integrated controls has proven much higher energy savings compared to conventional "combo" systems, warranting a higher point level (6 points proposed). Several leading tankless OEMs have recently introduced products in this product class. Additionally, the advent of electric or fuel-fired heat pump technology with air-to-water heat pumps brings opportunity to lift COP >1, as a combo application is ideal for these systems and will result in longer equipment cycles once a system has reached its peak operating efficiency. Additionally, a combo application then avoids "parasitic" heat pump loads where one heat pump (e.g. water heater) is robbing the delivered BTUs from another heat pump (e.g. space heating) during times of simultaneous need, such as winter heating (10 points proposed). Finally, heat pumps can be applied in "combo" applications serving three end uses (space conditioning, water heating, and pool or spa heating) to further extend equipment cycle time and leverage higher performance end use applications. The standard should encourage this integrated application. This is more common in single-family than multi-family (12 points proposed)
TG Recommendation:	Accept as Modified, 5-4-3
TG Modification:	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 minimum combined annual efficiency of 0.80 and a minimum water heating recovery efficiency of 0.87. ..... 4 (b) Devices have a minimum combined annual efficiency of 0.94 and a minimum water heating recovery efficiency of 0.95. ..... 6 (c)Devices have a minimum combined annual efficiency of 1.15 and a minimum water heating recovery efficiency of 1.20. ..... 10 (d) Devices have a minimum combined annual efficiency of 1.15 and a minimum water heating recovery efficiency of 1.20 and serves a third building load (e.g. pool heating). ..... 12 Items (b)-(d) are not available if points are awarded in 703.3.3 through 703.3.6 or 703.5.
TG Reason:	The TG was concerned about duplicative points elsewhere in 703. This acknowledges higher efficiency products in the marketplace.

A056 ID 7716	Table 703.5.1(2)(c)
Submitter:	Jamie Carr, Eco Achievers
Comment:	Include a new table that provides points central heat pump water heater systems. Table 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							
X.X to <X.X	X	X	X	X	X	X	X	X
X.X to <X.X	X	X	X	X	X	X	X	X
X.X to <X.X	X	X	X	X	X	X	X	X
=X.X	X	X	X	X	X	X	X	X

Table 703.5.1(2)(~~c~~d)

Table 703.5.1(2)(~~d~~e)

Table 703.5.1(2)(~~e~~f)

Reason:	Currently, NGBS only provides credit for residential-sized heat pump water heaters (HPWHs). However, commercial central HPWHs are becoming more prevalent in commercial buildings and should also receive points for the energy savings they can provide. It is recommended that Home Innovation Research Labs research and determine the appropriate distribution of COP ratings and number of assigned points.
TG Recommendation:	Accept as Modified, **Task Group 5:** 10-0-2 // **Task Group 7:** 8-0-2
TG Modification:	Table 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	X	X	X	X	X	X	X	X
3.0 to < 3.5	X	X	X	X	X	X	X	X
3.5 to < 4.0	X	X	X	X	X	X	X	X
≥ 4.0	X	X	X	X	X	X	X	X

Credits are only available for central systems that provide at least 80% of total system volume in the building.

TG Reason:	**Task Group 5:** This new table provides points for high efficiency central heat pump hot water heating systems that may be used for multiple dwelling units in multifamily buildings. **Task Group 7:** Points to be determined later. To be consistent with existing tables and proposal accepted by TG 5.

A057 ID 7663	704.1 ERI Target compliance
Submitter:	Asa Foss, EPA
Comment:	704.1 ERI Target compliance. Compliance with the energy chapter shall be permitted to be based on the ENERGY STAR ERI Target for ENERGY STAR National Single Family New Homes v3.1 or ENERGY STAR National Multifamily New Construction v1.1.
Reason:	Since there are different versions of ENERGY STAR, we need to specify the appropriate program version. ENERGY STAR v3.1/v1.1 is most closely aligned with the 702 Performance Path, as detailed in the above proposal.
TG Recommendation:	Accept as Modified, 11-0-2
TG Modification:	704.1 ERI Target compliance. Compliance with the energy chapter shall be permitted to be based on the EPA National ERI Target Procedure for ENERGY STAR Certified Homes ENERGY STAR ERI Target for the program that the project is eligible to participate in as defined by EPA, either the ENERGY STAR Single-Family New Homes program or ENERGY STAR Multifamily New Construction program. For the Single-Family New Homes program, the ENERGY STAR ERI Target shall be determined by following the National ERI Target Procedure, Version 3.1. For the Multifamily New Construction program, the ENERGY STAR ERI Target shall be determined by following the National ERI Target Procedure, Version 1.1. Points from Section 704 (ERI Target) shall not be combined with points from Section 702 (Performance Path) or Section 703 (Prescriptive Path). Dwelling ratings shall be submitted to a Rating Certification Body approved by the Adopting Entity for calculating points under this section. 704.2 Point Calculation. Points for Section 704 shall be computed based on Step "1" of the EPA the National ERI Target Procedure. Points shall be computed individually for each building as follows: 30 + (Number of National ERI Points less than the EnergyStar National Target for that building ENERGY STAR ERI Target for proposed building – ERI of proposed building) * 2. Where the "ENERGY STAR ERI Target for proposed building" shall be calculated in accordance with Section 704.1 and the "ERI of proposed building" shall be calculated using the same version of ANSI / RESNET / ICC 301 as was used to determine the ENERGY STAR ERI Target. 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.
TG Reason:	Since there are different versions of ENERGY STAR, we need to specify the appropriate program version. ENERGY STAR v3.1/v1.1 is most closely aligned with the 702 Performance Path, as detailed in the above proposal. The reference to Step 1 above is in reference to additional steps that included a home size adjuster. ENERGY STAR no longer has a home size adjuster, so that step is no longer relevant. The final sentence is necessary to ensure consistency in how the ERI target and ERI of the proposed building is calculated.

A058 ID 7676	705.6 Installation and performance verification
Submitter:	Theresa Weston, The Holt Weston Consultancy representing ABAA
Comment:	*Modify as follows:* 705.6.2.1 Air leakage validation of building or dwelling units or sleeping units. A visual inspection is performed as described in § 701.4.3.2(2) and air leakage testing is performed in accordance with ASTM E779 or ASTM E1827. *Points awarded only for buildings where building envelope leakage testing is not required by ICC IECC. Points not awarded if points are taken under § 703.2.4.* (1) A blower door test conducted by a testing agency that is trained and certified by an ISO 17024 accredited certification body or deemed equivalent by the AHJ. ..... 3 (2) Third-party verification is completed. 5
Reason:	Certification of the individual testing enables higher accuracy of the air leakage testing and, therefore, will enable more equitable application of the air leakage provisions.
TG Recommendation:	Disapprove, 6-0-2
TG Modification:	
TG Reason:	Disapproval based on reducing companies' availability to offer testing.

A059 ID 7667	705.8 Construction Site Energy Management
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Prepare and implement a site energy management plan for construction phase activities. Include the below elements in the plan. 1. Assign a staff member of the general contractor who will be the responsible party for implementing the plan. 2. The plan must address the following: permanent equipment heating and cooling setpoints during construction; temporary heating setpoints; HVAC system use in unenclosed areas; temporary lighting energy use; permanent lighting energy use; exhaust and ventilation fan operation. 3. Setbacks for HVAC systems. 4. Non-work hour controls or management for lighting systems. 5. Jobsite plan communication including signage and plan distribution to subcontractors. 6. Subcontractor responsibilities. 7. Reporting and documentation procedures including site photos and inspection logs. HVAC system setbacks are not required during periods of increased humidity where elevated humidity would affect construction activities.
Reason:	To reduce construction phase energy use.
TG Recommendation:	Disapprove, 7-0-2
TG Modification:	
TG Reason:	It is not clear whether this plan will actually save energy. Some items are not clear/enforceable.

A060 ID 7668	705.8.2 Energy Efficient Appliances

Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Install Consortium for Energy Efficiency (CEE) Tier 2 or higher tier appliances for the below types of appliances: 1. Refrigerators (3 pts) 2. Clothes Washers (2 pt) 3. Dishwashers (2 pt) 4. Dryers (3 pt)
Reason:	CEE Tiers exceed ENERGY STAR efficiency levels.
TG Recommendation:	Accept as Modified, 7-0-2
TG Modification:	703.6.2.1 Appliances. Install Consortium for Energy Efficiency (CEE) Tier 2 or higher tier appliances for the below types of appliances: 1. Refrigerators (3 pts) 2. Dryers (3 pt)
TG Reason:	To align this section with current 703.6.2 and recognize that CEE Tier II does not exist for all categories proposed.

A061 ID 7669	**705.8.3 Hot Water Heaters**
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Install one of the below types of domestic hot water heaters and meet the referenced efficiency rating where included. 1. Heat pump or hybrid heat pump hot water heaters with a minimum 2.2 UEF (5 pts) 2. Gas or electric tankless hot water heaters. Gas tankless hot water heaters must have a minimum 0.87 UEF rating (5 pts)
Reason:	Incentivize higher efficiency hot water heaters. ENERGY STAR heat pump water heater minimum efficiency is 2.2 UEF; gas tankless UEF minimum in ENERGY STAR is 0.87.
TG Recommendation:	Disapprove, 8-0-1
TG Modification:	
TG Reason:	This practice would provide more points for lower efficiency than 703.5.1. It is redundant with existing practices within the standard.

A062 ID 7675	706 Innovative Practices
Submitter:	Theresa Weston, The Holt Weston Consultancy
Comment:	*Add section to Section 706 Energy Efficiency Innovative Practices:* 706.X Passive Survivability. Buildings are designed and constructed to maintain safe thermal conditions in the event of an extended power outage or loss of heating fuel, or provide back-up power to satisfy critical loads: (1) Demonstration of the building design ability to maintain safe thermal conditions through thermal modeling (2) Passive house certification (3) Adequate emergency back-up power available for critical loads.
Reason:	Resilience is currently only addressed in the NGBS Chapter 6 on Resource Efficiency (Materials), The proposed resiliency practices are better suited for the Energy Efficiency Chapter. These requirements are from the "How to Prepare Your Home" by Firewise/ Based on LEED pilot credit
TG Recommendation:	Disapprove, 8-0-1
TG Modification:	
TG Reason:	Words like "Safe" and "Adequate" are not measurable. Proposal lacks specificity regarding definition of safe conditions and time duration. TG5 recommends that TG3 consider this as a possible better fit under Resource Efficiency (Chapter 6). Suggests that item (3) be removed, since, depending on the emergency power option, it may not offer efficiency.

A063 ID 7678	706.12 Smart ventilation
Submitter:	Aaron Gary, Tempo, Inc
Comment:	**706.12 Smart ventilation.** 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 peak utility loads and is in accordance with the specifications of ASHRAE Standard 62.2~~-2010~~ Section 4. ..... **1** **11.706.12 Smart ventilation.** 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 peak utility loads and is in accordance with the specifications of ASHRAE Standard 62.2~~-2010~~ Section 4. ..... **1** SECTION 14: REFERENCED DOCUMENTS **DOCUMENT** **DATE** **TITLE** **SECTION** ASHRAE 62.2 2019 *Ventilation and Acceptable Indoor Air Quality in Residential Buildings* 706.12, 11.706.12,
Reason:	Aligns with current version of ASHRAE & Chapter 9 practices.
TG Recommendation:	Accept, 8-2-2

TG Modification:	
TG Reason:	

A064 ID 7679	**706.12 Smart Ventilation**
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	1. A whole-building ventilation systems is installed with automatic ventilation controls to limit ventilation during periods of extreme temperature, extreme humidity, and/or during times of peak utility loads and is in accordance with the specifications of ASHRAE Standard 62.2-2010 Section 4. (1 pt) 2. Install a demand-controlled ventilation system to reduce outside air ventilation rates when the home is not occupied. (1 pt)
Reason:	Introducing full design outside air when a home is unoccupied increases energy cost/usage. During humid times of the year continuous ventilation when spaces are unoccupied could contribute to elevated moisture levels in homes.
TG Recommendation:	Accept as Modified, 8-1-3
TG Modification:	1. A whole-building ventilation system~~s~~ is installed with automatic ventilation controls to limit ventilation during periods of extreme temperature, extreme humidity, and/or during times of peak utility loads and is in accordance with the specifications of ASHRAE Standard 62.2-~~2010~~ Section 4. (1 pt) 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 pt)
TG Reason:	Corrected typo (from submitter, not in standard text). Removed version year; other TG proposals identify ASHRAE 62.2 2019. Removed reference to occupancy, as that is inherent within a demand control system. Added reference standard for item (2).

P047 ID 7587	802.5 Faucets
Submitter:	Katie Norem, Evolve Technologies
Comment:	Add new practice within Section 802.5. 802.5.X An automatic tub-spout diverter system (with corresponding showerhead valve to pause flow) designed to conserve hot water is installed…….3 point per tub/9 points max.
Reason:	The auto diverting (thermostatic) tub spout system reduces hot water waste in several ways: reducing structural waste, eliminating behavioral waste, and preventing tub spout leaks. The ADTS functions by first purging the cold water in the plumbing lines (structural waste) through its tub spout fixture. By design, the tub spout expels structural waste more than 2 times faster than possible through a shower head. Warming the water in the manner not only significantly reduces hot water wait time, but also reduces the volume of structural waste that must be purged before hot water arrives. Due to the higher velocity, less thermal loss occurs as the water travels through the plumbing line to the shower. As a result, hot water arrives faster, and the volume that must be purged is reduced. Once hot water arrives, the tub spout fixture automatically blocks the tub spout's out flow and diverts hot water to the showerhead. The included valve (installed between the shower arm and showerhead) automatically pauses (reduced to a trickle) water flow from the showerhead until the bather is ready to shower. This pause eliminates Behavioral Waste by preventing hot water from inadvertently running down the drain while bathers are away from the shower while waiting for hot water. When ready to shower, the bater will pull the lanyard on the valve at the showerhead so resume normal flow and shower as usual. During the shower, the shut-off that automatically diverted hot water to the showerhead remains active. This tight, positively reinforced, thermostatically activated seal stop tub spout diverter leaks by preventing hot water from sneak past the diverter and running out of the tub spout during the shower. These three areas of savings combine to an average of 10 gallons of hot water saved for every shower taken. (Structural Waste ~ .4 gallons, Behavioral Waste ~ 5.1 gallons, Tub Spout leaks ~ 4.5 gallons)
Substantiating Documents:	Yes
TG Recommendation:	Disapprove, 7-0-1
TG Modification:	
TG Reason:	This appears to be a proprietary product with only one manufacturer developing it right now. We are unsure about industry standards and certifications covering this technology. We are also curious about potential conflict with the plumbing code. Question for submitter regarding savings claim.

P048 ID 7483	802.5 Faucets
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Create new section for "Toilets and Water Closets" that includes everything that is currently in 802.5.4 and renumber.
Reason:	Section 802.5 is labeled as "Faucets." This header is inappropriate, as water closets and urinals are also included within this section.
TG Recommendation:	Accept, 7-0-1
TG Modification:	
TG Reason:	

P049 ID 7487	802.5 Faucets
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	(c) One or more composting toilets and/or waterless toilets or ~~non-water~~ urinals. Waterless toilets and ~~Non-water~~ urinals shall be tested in accordance with ASME A112.19.2/CSA B45.1.
Reason:	Referring to both "waterless" and "nonwater" products is potentially confusing. Further, it is unclear why the NGBS would specify that waterless urinals but not waterless toilets must be tested. I assume that this was an error, as the reference standard covers both all ceramic fixtures and would apply to both product types.
TG Recommendation:	Accept as Modified, 7-0-1
TG Modification:	(c) One or more composting ~~toilets and/~~or non-flushing ~~waterless~~ toilets or non-~~water~~ flushing urinals. Non-flushing toilets and ~~Non-water~~ urinals shall be tested in accordance with ASME A112.19.2/CSA B45.1.
TG Reason:	Waterless urinal is a trademarked term.

P050 ID 7538	802.6 Irrigation systems
Submitter:	Chinedu Moneke, Home Innovation Research Labs (NGBS Green)
Comment:	Further Clarification needed from Task Group for this practice. Also Add reference to Chapter 14.
Reason:	Which version of the ASABE/ICC 802 Standard is required? Its not specified in the practice text or Chapter 14.
TG Recommendation:	Accept as Modified, 7-0-1
TG Modification:	Update standard to 2020 ASABE/ICC 802 *Add the following to Chapter 14 Reference Documents:*

DOCUMENT	DATE	TITLE	SECTION
ASABE/ICC 802-2020	2020	Landscape Irrigation Sprinkler and Emitter Standard	403.6(19b) 802.6.2 11.802.6.2

TG Reason:	Added year to referenced standard.

P051 ID 7512	801.10 Pools and spas
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	**802.10.1 Pools and Spas.** **802.10.1** Pools and Spas with surface area greater than 36 sq. ft. and connected to a water supply shall have a dedicated meter to measure the amount of water supplied. **MANDATORY** ~~to the pool or spa.~~ **802.10.2** (~~1~~) An automated motorized non-permeable pool cover is installed and extends across ~~that covers~~ the entire pool surface. 10
Reason:	Practice is confusing as written. The provision within the charging language has been overlooked as a mandatory practice due to its formatting. Reformat so that the charging language for this practice is a separate mandatory practice. Remove the word "dedicated." If a building has both a pool and a spa, I assume that one meter can serve both and achieve the same benefit.
TG Recommendation:	Accept as Modified, 7-0-1
TG Modification:	**802.10.1 Pools and Spas.** **802.10.1** Pools and Spas with surface area greater than 36 sq. ft. and connected to a water supply shall have a dedicated meter capable of tracking water supplied to the pool(s) and/or spa(s) ~~to measure the amount of water supplied~~. **MANDATORY** ~~to the pool or spa.~~ **802.10.2** (~~1~~) An automated motorized non-permeable pool cover is installed and extends across ~~that covers~~ the entire pool surface. 10
TG Reason:	Clarify what was intended by “dedicated.”

P052 ID 7543	803 INNOVATIVE PRACTICES
Submitter:	Heather Schrock, Self
Comment:	Add a new optional practice within 803 as follows: **803.X Water Restoration Certificates.** Purchase 100% of Water Restoration Certificates® (WRCs) to match the building's annual water budget based on design calculations of projected water use after the implementation of other water efficiency measures including indoor, outdoor, and process water (chiller, cooling towers, commercial kitchens as applicable). Each Water Restoration Certificate® represents 1,000 gallons of water restored to a critically dewatered river or stream at a time when that water is needed most. The water restoration must be new or an addition to an existing project, have permanence, be retired after the certificate is awarded, and have no negative impact downstream. Project teams using alternative water sources may subtract these from the building's annual water budget to determine the number of Water Restoration Certificates required. Qualifying alternative water sources include municipally supplied reclaimed water ("purple pipe" water), graywater, on-site reclaimed water, collected rainwater, captured condensate, and rejected water from reverse osmosis systems. To calculate annual irrigation water use in the water budget, project teams should include the annual irrigation water use calculated using the results of the EPA Water Budget Tool. 1 year of WRCs purchased……10 points 2 years of WRCs purchased……15 points 5 years of WRCs purchased……20 points Please see https://www.b-e-f.org/programs/water-restoration-certificates/ for more information about Water Restoration Certificates. Also, please note the precedence of this suggestion in the LEED WRC Pilot Credit found here:https://www.usgbc.org/credits/new-construction-core-and-shell-schools-new-construction-retail-new-construction-healthc-109
Reason:	: In the absence of the ability to reduce water usage to zero and/or to complement other water efficiency measures, this credit aims to restore natural water systems, restore wetlands and damaged watersheds, to promote biodiversity, promote healthy plants, biological communities, water storage, and infiltration.
TG Recommendation:	Disapprove, 6-0-2
TG Modification:	
TG Reason:	Need more information on the availability of this credit type. Appears proprietary and not well-defined across multiple organizations.

Additional TG Proposed Changes

A065 ID 7637	Section 8 Water Efficiency
Submitter:	Craig Conner and Darrel McMaster, Self
Comment:	All indoor and outdoor water used in the residence is rainwater. Water from wells, ponds, streams or rivers is not used. The residence shall receive emerald for water.
Reason:	Also this makes the WRI score zero? Water may come from precipitation that falls on roof or ground, but this item does not need to say that?
TG Recommendation:	Disapprove, 7-0-1
TG Modification:	
TG Reason:	In favor of action on A066.

A066 ID 7639	Section 8 Water Efficiency
Submitter:	Craig Conner and Darrel McMaster, Self
Comment:	Indoor water needs are met entirely by rainwater. Water from wells, ponds, streams or rivers is not used. Residence shall receive emerald for indoor water. (& the maximum water score?)
Reason:	No potable water used indoors is as low as it gets. How should this item deal with grey water? This reused water counts the same as no potable water? Should that be stated?
TG Recommendation:	Accept as Modified, 5-1-2
TG Modification:	Task Group recommends 802.7.1(2d) and 802.7.2(2) points are increased to 30 and 60, respectively
TG Reason:	Concept was already present within the standard (802.7.1(2d) and 802.7.2(2)), and we want to incentivize use of these fully engineered systems.

A067 ID 7640	Section 8 Water Efficiency
Submitter:	Craig Conner and Darrel McMaster, Self
Comment:	Where present the following meet or exceed the specified efficiency level. toilets 1.28 gif (gallons per flush) or less shower heads xxx clothes washers xxx
Reason:	The current legal maximum toilet is 1.6 gpf. The market is moving strongly towards 1.28 or less. Some states already have 1.28 as the state maximum. Best I can tell 1.28 costs no more. It appears that 1.28 sometimes costs less, possibly due to large sales volume. There are almost no toilets between 1.6 and 1.28. There are some toilets around 0.8 gpf. —Devices which are meant to fill a volume, such as a bathtub, should not be limited. —Should this item give points for each device separately? Obviously some homes will not have clothes washers, specially when new. —Dishwasher water use is too small to include here.
TG Recommendation:	Accept as Modified, 6-0-1
TG Modification:	802.5.4 Water closets and urinals are in accordance with the following: *Items (1), (2) and (3) are unchanged.* (4) All water closets are in accordance with § 802.5.4(2) and one or more of the following are installed: (a) Water closets have an effective flush volume <u>between</u> ~~of~~ 1.2 <u>and 0.9</u> gallons~~ or less~~. <u>(b) Water closets have an effective flush volume of 0.8 gallons or less.</u> *Items (b) and (c) are re-numbered.* 802.2 Water-conserving appliances. *Items (1) and (2) remain unchanged.* (3) clothes washer with an Integrated Water Factor <u>of less or equal to 3.2 for front-loading washers or 4.3 for top-loading</u> ~~of 3.8 or less~~.
TG Reason:	Task Group wanted to use efficiency levels that were appropriate for the devices, clarify requirements, and increase rigor (for water closets).

A068 ID 7643	802.4 (1) Showerheads
Submitter:	Olga Cano, EPA WaterSense
Comment:	Includes hand showers, body sprays, and rainfall panels. 2.0 GPM limit shall apply to cumulative flow of all devices located less than 96" in individual/two-person shower compartments or 35" apart in gang or group showers (as measured horizontally) apart.~~The total maximum combined flow rate of all showerheads in a shower compartment with floor area of 2,600 sq. in. or less is equal or less than 2.0 gpm. For each additional 1,300 sq. in. or any portion thereof of shower compartment floor area, an additional 2.0 gpm combined showerhead flow rate is allowed.~~ Showerheads shall comply with ASME A112.18.1/CSA B125.1 and shall meet 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
Reason:	To align with the recent AWE/PMI agreement here.
TG Recommendation:	Accept, 3-1-2
TG Modification:	
TG Reason:	

A069 ID 7638	802.5 Faucets
Submitter:	Amy Otley, US-EcoLogic
Comment:	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 meeting the performance criteria of the EPA WaterSense High-Efficiency Lavatory Faucet Specification: (1) Flow rate = 1.5 gpm [~~All~~ Faucets in ~~a bathroom~~ all residential bathrooms are in compliance] …… 1 [3 max] *[~~1 point awarded for each bathroom.~~ In multifamily buildings, the average ~~of the points assigned to individual dwelling units or sleeping units~~ 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 [~~All~~ Faucets ~~in a bathroom~~ all residential bathrooms are in compliance] …… 2 [6 max] *[~~2 points awarded for each bathroom.~~ In multifamily buildings, the average ~~of the points assigned to individual dwelling units or sleeping units~~ 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)~~ and common area(s)……. 6 Additional (4) Flow rate =1.5 gpm for all lavatory faucets in the dwelling unit(s), and at least 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) and common area(s)…….. 12 Additional
Reason:	Items (1) and (3) are redundant, items (2) and (5) are redundant. "All faucets in the bathroom" and "all lavatory faucets in dwelling units or sleeping units" mean the same thing. Language added to clarify common spaces for multifamily projects. Language adjusted to match the rest of the bullets.
TG Recommendation:	Accept as Modified, 7-0-1
TG Modification:	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 meeting the performance criteria of the EPA WaterSense High-Efficiency Lavatory Faucet Specification: (1) Flow rate ≤ 1.5 gpm [~~All~~ Faucets in ~~a bathroom~~ all residential bathrooms are in compliance] …… 1 [3 max] *[~~1 point awarded for each bathroom.~~ In multifamily buildings, the average ~~of the points assigned to individual dwelling units or sleeping units~~ [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 [~~All~~ Faucets ~~in a bathroom~~ all residential bathrooms are in compliance] …….. 2 [6 max] *[~~2 points awarded for each bathroom.~~ In multifamily buildings, the average ~~of the points assigned to individual dwelling units or sleeping units~~ [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) and amenity areas ……. 6 Additional (4) Flow rate ≤1.5 gpm for all lavatory faucets in the dwelling unit(s) or sleeping units, and at least 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 units and amenity areas…….. 12 Additional
TG Reason:	For clarity and resolve redundancy

A070 ID 7660	803 Innovative Practices
Submitter:	Theresa Weston, The Holt Weston Consultancy
Comment:	*Add resilience section to Water Efficiency Innovative Practices – Section 803:* 803.X: Water Supply Resilience. Water storage and purifications systems are designed and installed to provide potable water during power outages. ...4 points
Reason:	Resilience is currently only addressed in the NGBS Chapter 6 on Resource Efficiency (Materials). A proposed resiliency practice relating to maintenance of potable water during power outage is better suited to the Water Efficiency Section. Power outages can result from many different resiliency events.
TG Recommendation:	Disapprove, 5-0-1
TG Modification:	
TG Reason:	TG is unsure of water storage component. How will store water remain potable (i.e., free of bacteria and other harmful growths like Legionella)? Loss of potable water is not necessarily tied to power outages.

Section 9 Indoor Environmental Quality

P053 ID 7539	901.2 Solid fuel-burning appliances
Submitter:	Chinedu Moneke, Home Innovation Research Labs (NGBS Green)
Comment:	Confirm that this practice was only intended for indoor use then propose revision by clarifying that this only applies to indoor fireplaces
Reason:	Slight confusion as to whether this practice applies only to indoor use
TG Recommendation:	Accept as Modified, 8-0-1
TG Modification:	901.2.1 Solid fuel-burning fireplaces, inserts, stoves and heaters indoors are code compliant and are in accordance with the following requirements… *Items (1) through (5) remain the same.* 901.2.2 Fireplaces, woodstoves, pellet stoves, ~~or~~ and masonry heaters are not installed indoors. 6
TG Reason:	Rewrote into legislative language.

P054 ID 7537	901.13 Carbon monoxide (CO) alarms
Submitter:	Chinedu Moneke, Home Innovation Research Labs (NGBS Green)
Comment:	Include similar practice from IBC: 901.13: Carbon Monoxide (CO) alarms. A carbon monoxide (CO) alarm is provided in accordance with the IRC Section 315 or IBC Section 915 as applicable
Reason:	This section only references the IRC. I recommend including a similar section from the IBC as this is an important safety measures in residential buildings
TG Recommendation:	Accept as Modified, 9-0-0
TG Modification:	901.13: Carbon Monoxide (CO) alarms. A carbon monoxide (CO) alarm is provided in accordance with ~~the~~ IRC Section 315 or IBC Section 915, as applicable.
TG Reason:	Original proposal show did not reflect new language with formatting

P055 ID 7502	901.15 Non-smoking areas
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)

Comment:	901.15 Non-smoking areas. Environmental tobacco smoke is minimized by one or more of the following: (1) All interior common areas of a multifamily building are designated as non-smoking areas with posted signage. (2) Exterior smoking areas of a multifamily building are designated with posted signage and located a minimum of 25 ft. from entries, outdoor air intakes, and operable windows. <u>(3) The entire multifamily building is designated as non-smoking with posted signage and restrictions in the leases.</u>
Reason:	Building owners that commit to non-smoking multifamily buildings (both common areas and apartments) should be incentized with points toward certification.
TG Recommendation:	Accept as Modified, 11-0-0
TG Modification:	*Modify as follows:* 901.15 Non-smoking areas. Environmental tobacco smoke is minimized by one ~~or more~~ of the following: (1) All interior common areas of a multifamily building are designated as non-smoking areas with posted signage. (2) Exterior smoking areas of a multifamily building are designated with posted signage and located a minimum of 25 ft. from entries, outdoor air intakes, and operable windows. <u>(3) The entire multifamily building and site is designated as non-smoking with posted signage and restrictions in the leases.</u>
TG Reason:	The new practice (3) is redundant with (1) and (2), projects should not achieve points in multiple practices for doing the same thing.

P056 ID 7585	**902.1 Spot ventilation**
Submitter:	Justin Mahley, Panasonic
Comment:	**902.1.4.1** Exhaust fans energy star most efficient and HVI certified at .375 static pressure (add extra points per fan)
Reason:	Typical ducts for spot ventilation create more static pressure than what is listed by energy star at .25sp. By adding this, builders will be rewarded for installing fans that meet the typical static pressure found on homes, .375
TG Recommendation:	Disapprove, 10-0-1
TG Modification:	
TG Reason:	Energy Star efficient change is annual but NGBS is few years

P057 ID 7586	902.2 Building ventilation systems
Submitter:	Justin Mahley, Panasonic
Comment:	(3) Heat-recovery ventilator - Condensate drain is required or see mfg installation requirements for verification (4) Energy-recovery ventilator – no condensate drain is required if the manufacturer deems that it is not required because of equipment design and efficiency.
Reason:	Under 902.2.1 item 4 we ought to specify whether the product needs a condensate drain for HRV and ERV. This helps the builder choose the installation practice most fitting for his project or product.
TG Recommendation:	Disapprove, 11-0-0
TG Modification:	
TG Reason:	Builders are required to install everything according to manufacturer's instructions.

P058 ID 7556	902.2 Building ventilation systems
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Change 902.2.1 from optional to mandatory. Maintain ASHRAE 62.2-2010 as the reference standard.
Reason:	Tighter construction standards make providing ventilation more important than in the past. In addition, natural ventilation is not feasible during hot summer months and cold winter months.
TG Recommendation:	Accept as Modified, 9-0-0
TG Modification:	**902.2.1** One of the following whole building ventilation systems is implemented <u>in the dwelling units</u> and is in accordance with the specifications of ASHRAE 62.2-201~~0~~<u>9</u> Section 4, <u>2021 International Mechanical Code Sections 403.3 or 403.3.2 (regardless of building height) or 2021 International Residential Code Section 1505, as applicable</u>. An explanation of the operation and importance of the ventilation system is included in either 1001.1 or 1002.2.M<u>~~*~~</u> ~~{*Mandatory where the maximum air infiltration rate is less than 5.0 ACH50}~~
TG Reason:	Agreed in principle with the comment. Language makes ventilation in the dwelling units mandatory in alignment with 2021 IMC. Added specific section numbers for clarity and specificity. Updated ASHRAE reference to current version of 62.2 as it allows designers to use take advantage of smart ventilation controllers when designing and calculating ventilation rates.

P059 ID 7505	902.3 Radon reduction measures
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	Figure 9.1 EPA Map of Radon Zones should be from the relevant IRC
Reason:	Replace with map from the 2018 IRC (or better the 2024 IRC). The 2018 ICC codes are the reference documents for the 2020 NGBS, but a radon map from the 2015 IRC is included. This appears to be an oversight.
TG Recommendation:	Accept as Modified, 11-0-0
TG Modification:	**902.3 Radon reduction measures.** Radon reduction measures are in accordance with IRC Appendix AF Radon Control Methods or § 902.3.1. Radon Zones as identified by the AHJ or, if the zone is not identified by the AHJ, as defined in Figure 9(1). (1) Buildings located in Zone 1 (a) a passive radon system is installed ..... **M** (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** Figure 9.1 EPA Map of Radon Zones ~~should be from the relevant IRC~~ of the 2024 International Residential Code, a copyrighted work of the International Code Council, www.iccsafe.org. ©
TG Reason:	Updated to current version of IRC per Censuses Committee direction.

P060 ID 7566	905 INNOVATIVE PRACTICES
Submitter:	Marla Esser Cloos, Self
Comment:	**Health and Wellness Professional.** At least one member of the design and build team will be trained or certified in health and wellness with regards to emissions from materials, products, and finishes selected and used in the project.
Reason:	Many practices in Chapter 9: Indoor Environmental Quality inherently include health and wellness considerations around emissions from materials, products and finishes selected and used in the project. One or more team members being trained or certified in health and wellness practices will help to ensure that material, product and finish selections and practices are chosen and implemented to prioritize building workers' and residents' health and wellness in the home. Additional information about the importance of emissions from materials, products, and finishes to support residents' health and wellness may be found in NGBS Green+ Badges Workbook, NGBS+ Wellness section, starting on p. 14.
TG Recommendation:	Disapprove, 9-0-0
TG Modification:	
TG Reason:	P070 already addresses the most important aspect of this proposal which is the delivery of the training to the project team, construction team, homeowners & tenants. Having a professional team is not sufficient for points and concept of wellness is very broad.

P061 ID 7516	905 INNOVATIVE PRACTICES
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	**905.6 Indoor Air Quality Monitoring.** Indoor air quality monitors designed for continuous monitoring of temperature, relative humidity, PM2.5, CO2, and TVOCs are installed are installed in single-family homes or multifamily common areas. For multifamily common areas, a minimum of one monitor is installed per 5,000 square feet of common area space. 4 points
Reason:	Real-time indoor air quality monitoring provides actionable feedback about air pollutants that affect resident health.
TG Recommendation:	Accept as Modified, 11-0-1
TG Modification:	**904.0 Intent.** IAQ is protected by best practices to monitor and control ventilation, moisture, pollutant sources and sanitation. **904.4 Indoor Air Quality Monitoring** ~~**905.1**~~ **904.4.1 Humidity Monitoring** ~~**system.**~~ Humidity monitoring system is installed with a mobile base unit that displays readings of temperature and relative humidity. The system has a minimum of two remote sensor units. One remote sensor unit is placed permanently inside the conditioned space in a central location, excluding attachment to exterior walls, and other remote sensor unit is placed permanently outside of the conditioned space. 2 points **904.4.2 Airborne Pollutant Monitoring.** Indoor air quality sensors designed for continuous monitoring of PM2.5, TVOC, and CO_2 are installed. Instantaneous and trending data are accessible via website or mobile application in near-real-time. **(1)** Sensors are installed within the kitchen area of each dwelling unit. …….. 4 points **(2)** Sensors are installed within each bedroom……2 points **(3)** Sensors are installed within multifamily amenity areas. At least one sensor is installed per 5,000 square feet of common area space. …….. 2 points **(4)** Installed devices are also capable of monitoring and providing trending data for at least two of the following: air pressure, radon, CO, NO_2, Methane, Ozone, Formaldehyde …… 1 Additional *Moves existing 905.1 from Innovation Practices to Indoor Air Quality*
TG Reason:	Original proposal was modified to eliminate overlap with existing Humidity Monitoring section 905.1 and separate dwelling unit from multifamily common space monitoring. Both Monitoring proposals were then relocated to Section 904.

P062 ID 7490	905.4 Sound barrier
Submitter:	James V. Fera, Self
Comment:	905.4 Sound barrier. Provide room-to-room privacy between bedrooms and adjacent living spaces within dwelling units or homes by achieving an STC greater than 52 ~~articulation index (AI) between 0 and 0.15~~ per the criteria below: ~~Articulation Index 0 to 0.05 =~~ STC greater than 55 (NIC greater than 47) by meeting one of the following assemblies: Steel frame construction: • 2 ½ " metal studs @ 24" o.c. o 5/8" gypsum wallboard (2 layers on each side), batt insulation • 3 5/8" metal studs @ 24" o.c. o 5/8" gypsum wallboard (at least 1 layer on one side, 2 layers on other side), batt insulation Wood frame construction: • 2 x 4 wood studs @ 16" o.c. o 5/8" gypsum wallboard (2 layers on each side), batt insulation ~~Articulation Index 0.05 to 0.15 =~~ STC 52 to 55 (NIC 44 to 47) by meeting one of the following assemblies: Steel frame construction: • 2 ½ " metal studs @ 24" o.c. o 5/8" gypsum wallboard (at least 1 layer on one side, 2 layers on other side), batt insulation • 3 5/8" metal studs @ 24" o.c. o 5/8" gypsum wallboard (2 layers on each side) Wood frame construction: • 2 x 4 wood studs @ 16" o.c. o 5/8" gypsum wallboard (at least 1 layer on one side, 2 layers on other side), batt insulation
Reason:	The practice as written is unusable and the Articulation Index (AI) is not used.
TG Recommendation:	Accept as Modified, 7-1-1
TG Modification:	905.4 Sound barrier. Provide room-to-room privacy between bedrooms and adjacent living spaces within dwelling units or homes by achieving an STC greater than 52 ~~articulation index (AI) between 0 and 0.15~~ per the criteria below: ~~Articulation Index 0 to 0.05 =~~ STC greater than 55 (NIC greater than 47) = Articulation Index 0 to 0.05 ~~Articulation Index 0.05 to 0.15 =~~ STC 52 to 55 (NIC 44 to 47) = Articulation Index 0.05 to 0.15
TG Reason:	Agree that STC is more widely used metric and should be primary. Thought that wall assembly guidance should be part of the Builder Resource Guide & Verifier Resource Guide not part of the standard as there are move assemblies that could be employed to meet the STC rating than the ones listed in the proposal.

P063 ID 7541	905.5 Evaporative coil mold prevention

Submitter:	Chinedu Moneke, Home Innovation Research Labs (NGBS Green)
Comment:	905.6: Building is an all electric home with no gas appliance/equipment. One point awarded.
Reason:	Add a new practice 905.6 for an all electric home, no gas appliances.
TG Recommendation:	Accept as Modified, 7-1-4
TG Modification:	~~905.6~~901.3: Building ~~is an all electric home with~~ has no ~~gas~~ combustion appliances~~/~~, equipment, or fixtures inside the building thermal envelope. – 1 Point Renumber subsequent sections
TG Reason:	Agree with proposal in concept as studies have shown the positive health implications of living in a homes that does not have combustion equipment within the building thermal envelope but felt that it was misplaced in section 905. Relocated in section 901 where credit is already available for non-combustion space and water heating equipment and appliances.

A071 ID 7620	901.3 Garages
Submitter:	Aaron Gary, Tempo, Inc.
Comment:	**901.3 Garages.** Garages are in accordance with the following: (1) Attached garage (a) Doors installed in the common wall between the attached garage and conditioned space are tightly sealed and gasketed. ..... **M 2** (b) A continuous air barrier is provided separating the garage space from the conditioned living spaces. **M 2** (c) For one- and two-family dwelling units, a 100 cfm (47 L/s) or greater ducted or 70 cfm (33 L/s) cfm or greater unducted wall exhaust fan is installed and vented to the outdoors and is designed and installed for continuous operation or has controls (e.g., motion detectors, pressure switches) that activate operation for a minimum of 1 hour when either human passage door or roll-up automatic doors are operated. For ducted exhaust fans, the fan airflow rating and duct sizing are in accordance with ASHRAE Standard 62.2~~-2007~~ Section 7.3. ..... **8** **11.901.3 Garages.** Garages are in accordance with the following: (1) Attached garage (a) Where installed in the common wall between the attached garage and conditioned space, the door is tightly sealed and gasketed. ..... **M 2** (b) A continuous air barrier is provided between walls and ceilings separating the garage space from the conditioned living spaces. ..... **M 2** (c) For one- and two-family dwelling units, a 100 cfm (47 L/s) or greater ducted, or 70 cfm (33 L/s) cfm or greater unducted wall exhaust fan is installed and vented to the outdoors, designed and installed for continuous operation, or has controls (e.g., motion detectors, pressure switches) that activate operation for a minimum of 1 hour when either human passage door or roll-up automatic doors are operated. For ducted exhaust fans, the fan airflow rating and duct sizing are in accordance with ASHRAE Standard 62.2~~-2007~~ Section 7.3. ..... **8** **SECTION 14:** **REFERENCED DOCUMENTS** **DOCUMENT** **DATE** **TITLE** **SECTION** ASHRAE 62.2 2019 *Ventilation and Acceptable Indoor Air Quality in Residential Buildings* 901.3, 11.901.3,
Reason:	Updated reference to current version of ASHAAE 62.2 as there didn't appear to be any substantive differences in Section 7.3 between the 2007 and 2019 versions.

TG Recommendation:	Accept as Modified, 11-0-0
TG Modification:	*Modify as follows:* **901.3 Garages.** Garages are in accordance with the following: (1) Attached garage (a) Doors installed in the common wall between the attached garage and conditioned space are tightly sealed and gasketed. ..... **M 2** (b) A continuous air barrier is provided separating the garage space from the conditioned living spaces. **M 2** (c) For one- and two-family dwelling units, a 100 cfm (47 L/s) or greater ducted or 70 cfm (33 L/s) cfm or greater unducted wall exhaust fan is installed and vented to the outdoors and is designed and installed for continuous operation or has controls (e.g., motion detectors, pressure switches) that activate operation for a minimum of 1 hour when either human passage door or roll-up automatic doors are operated. For ducted exhaust fans, the fan airflow rating and duct sizing are in accordance with ASHRAE Standard 62.2~~-2007~~ 2019 Section 7.3. ..... **8** **11.901.3 Garages.** Garages are in accordance with the following: (1) Attached garage (a) Where installed in the common wall between the attached garage and conditioned space, the door is tightly sealed and gasketed. ..... **M 2** (b) A continuous air barrier is provided between walls and ceilings separating the garage space from the conditioned living spaces. ..... **M 2** (c) For one- and two-family dwelling units, a 100 cfm (47 L/s) or greater ducted, or 70 cfm (33 L/s) cfm or greater unducted wall exhaust fan is installed and vented to the outdoors, designed and installed for continuous operation, or has controls (e.g., motion detectors, pressure switches) that activate operation for a minimum of 1 hour when either human passage door or roll-up automatic doors are operated. For ducted exhaust fans, the fan airflow rating and duct sizing are in accordance with ASHRAE Standard 62.2~~-2007~~ 2019 Section 7.3. ..... **8** **SECTION 14:** **REFERENCED DOCUMENTS**

DOCUMENT	DATE	TITLE	SECTION
ASHRAE 62.2	2019	*Ventilation and Acceptable Indoor Air Quality in Residential Buildings*	901.3, 11.901.3,

TG Reason:	Having the year in the practice language is helpful to the users to understand.

A072 ID 7623	902 Pollutant Control
Submitter:	Aaron Gary, Tempo, Inc.
Comment:	**902.1.3** Kitchen range, bathroom, and laundry exhaust are verified to air flow specification. Ventilation airflow at the point of exhaust is tested to a minimum of: ..... **~~8~~M** (a) 100 cfm (47.2 L/s) intermittent or ~~25~~50 cfm (11.8 L/s) continuous for kitchens, and (b) 50 cfm (23.6 L/s) intermittent or 2~~0~~5 cfm (9.4 L/s) continuous for bathrooms and/or laundry Exception: Kitchen range hoods that are ducted to the outside with 6-inch of larger duct.
Reason:	Changed to Mandatory to aligns with 2021 IMC & 2024 IMC IECC where the testing of exhaust ventilation is required in residential kitchens. Continuous operation rate increased to 50 CFM to align with 2024 IMC.
TG Recommendation:	Accept as Modified, 7-1-3
TG Modification:	**902.1.3** Kitchen ~~range~~, bathroom, and laundry area exhaust are verified to air flow specification. Ventilation airflow ~~at the point of exhaust~~ is tested in accordance with BSR/RESNET/ICC 380 to a minimum of: ..... **~~8~~M** (a) 100 cfm (47.2 L/s) intermittent or ~~25~~50 cfm (11.8 L/s) continuous for kitchens, and (b) 50 cfm (23.6 L/s) intermittent or 2~~0~~5 cfm (9.4 L/s) continuous for bathrooms and/or laundry areas Exception: The prescriptive requirements of Table 902.1.3 shall be permitted in place of a measurement. When using Table 902.1.3, the airflow rating shall meet or exceed a static pressure of 0.25 in. of. Use of Table 902.1.3 is limited to duct systems not exceeding 25 ft in length, duct systems with no more than three (3) elbows, and duct systems with exterior termination fittings having a hydraulic diameter greater than or equal to the minimum duct diameter and not less than the hydraulic diameter of the fan outlet.
TG Reason:	Changed exception to be more flexible in alignment with ASHRAE 62.2.

Table 902.1.3 Prescriptive Duct Sizing

Fan Airflow Rating, at minimum static pressure of 0.25 in. of water	≤ 50	≤ 80	≤ 100	≤ 125	≤ 150	≤ 175	≤ 200	≤ 250	≤ 350	≤ 400	≤ 450	≤ 700	≤ 800
Duct Type	Minimum Duct Diameter, In. [a,b]												
Rigid Duct	4 [e]	5	5	6	6	7	7	8	9	10	10	12	12 [d]
Flex Duct [c]	4	5	6	6	7	7	8	8	9	10	NP	NP	NP

a. For noncircular ducts, calculate the diameter as four times the cross-sectional area divided by the perimeter.
b. NP = application of the prescriptive table is not permitted for this scenario.
c. Use of this table for verification of flex duct systems requires flex duct to be fully extended and any flex duct elbows to have a minimum bend radius to duct diameter ratio of 1.0.
d. For this scenario, use of elbows is not permitted.
e. For this scenario, 4 in. (100 mm) oval duct shall be permitted, provided the minor axis of the oval is greater than or equal to 3 in. (75 mm)

A073 ID 7622	902.1 Spot ventilation

Submitter:	Aaron Gary, Tempo, Inc.
Comment:	**902.1.1** Spot ventilation is in accordance with the following: (1) Bathrooms are vented to the outdoors. The minimum ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms. *[1 point awarded only if a window complying with IRC Section R303.3 is provided in addition to mechanical ventilation.]* . ……M [1 max] (2) Clothes dryers (except listed and labeled condensing ductless dryers) are vented to the outdoor. ……M (3). Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or ~~25~~50 cfm (11.8 L/s) for continuous operation. M~~8 points~~
Reason:	Changed to Mandatory to align with 2021 IMC & 2024 IMC where the kitchen exhaust ventilation is required in residential kitchens. Continuous operation rate increased to 50 CFM to align with 2024 IMC.
TG Recommendation:	Accept, 11-0-0
TG Modification:	
TG Reason:	

A074 ID 7624	**902.1 Spot ventilation**
Submitter:	Aaron Gary, Tempo, Inc.
Comment:	**902.1.4** Exhaust fans comply with ~~are ENERGY STAR as applicable.~~ ..... **12 max** (1) ~~ENERGY STAR,~~ IECC Table R403.6.2 or equivalent~~, fans *[Points awarded per fan.]*~~ ..... ~~**2**~~**M** (2) ENERGY STAR, or equivalent, fans operating at or below 1 sone *[Points awarded per fan.]* **3**
Reason:	Changed to Mandatory to aligns with 2021 IECC which adopted the efficacy criteria currently used by ENERGY STAR
TG Recommendation:	Accept as Modified, 9-0-1
TG Modification:	*Modify as follows* **902.1.4** Exhaust fans comply with ~~are ENERGY STAR as applicable.~~ ..... **12 max** (1) ENERGY STAR, IECC Table R403.6.2 or equivalent~~, fans *[Points awarded per fan.]*~~ ..... ~~**2**~~**M** (2) ENERGY STAR, or equivalent, fans operating at or below 1 sone *[Points awarded per fan.]* **3**
TG Reason:	ENERGY STAR is important to mention for ease of use

A075 ID 7621	902.1 Spot Ventilation
Submitter:	Aaron Gary, Theresa Weston, Greg Coolidge, Jillian Cooke, Jason LaFleur, Task Group 3
Comment:	**902.1.1** Spot ventilation is in accordance with the following: (1) Bathrooms are vented to the outdoors. The minimum ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms. *[1 point awarded only if a window complying with IRC Section R303.3 is provided in addition to mechanical ventilation.]* M [1 max] (2) Clothes dryers (except listed and labeled condensing ductless dryers) are vented to the outdoors. M (3). Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation. 8 points (4) A kitchen exhaust unit(s) that equals or exceeds 400 cfm (189 L/s) is installed, and make-up air is provided. 2 Additional (Must comply with (3)) *Delete existing 905.2*
Reason:	Its easier for the user to have all kitchen exhaust items in one place. Enhanced kitchen exhaust no longer warrants classification as an "innovative practice."
TG Recommendation:	Accept, 11-0-1
TG Modification:	
TG Reason:	Note to CC: Once 2024 IMC code is published, review and adjust points based on code requirements.

A076 ID 7625	902.1 Spot Ventilation
Submitter:	Aaron Gary, Tempo, Inc.
Comment:	**902.1.6 Ventilation for Multifamily Common Spaces.** Systems are implemented and are in accordance with the specifications of ASHRAE 62.1 or ICC IMC Chapter 4 and an explanation of the operation and importance of the ventilation system is included in § 1002.1 and § 1002.2 of this Standard. .....~~3~~M **11.902.1.6 Ventilation for Multifamily Common Spaces.** Systems are implemented and are in accordance with the specifications of ASHRAE 62.1 or ICC IMC Chapter 4 and an explanation of the operation and importance of the ventilation system is included in § 1002.1 and § 1002.2 of this Standard. .....~~3~~M
Reason:	Updated reference and changed to mandatory to align with 2021/2024 IMC and NGBS Chapter 13.
TG Recommendation:	Accept as Modified, 11-0-0
TG Modification:	*Modify as follows:* **902.1.6 Ventilation for Multifamily Common Spaces.** Systems are implemented and are in accordance with the specifications of ASHRAE 62.1 or ICC IMC Chapter 4 and an explanation of the operation and importance of the ventilation system is included in § 1002.1 and § 1002.2 of this Standard. .....~~3~~M **11.902.1.6 Ventilation for Multifamily Common Spaces.** Systems are implemented and are in accordance with the specifications of ASHRAE 62.1 or ICC IMC Chapter 4 and an explanation of the operation and importance of the ventilation system is included in § 1002.1 and § 1002.2 of this Standard. .....3~~M~~
TG Reason:	Many projects following the existing building pathway are not able to provide a ventilation system in common area.
A077 ID 7629	**902.2 Building ventilation systems**
Submitter:	Aaron Gary, Tempo, Inc

Comment:	**902.2.3** MERV filters 6 are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of MERV 6 filters. …… M **902.2.~~3~~4** MERV filters 8 to 13 are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of MERV 8 to 13 filters. …… 2 points **902.2.4~~5~~** MERV filters 14 or greater are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of the filter used. ……3 points
Reason:	Align with current version of ASHRAE 62
TG Recommendation:	Accept as Modified, 11-0-0
TG Modification:	*Modify as follows:* **902.2.3** MERV filters ~~6~~ 8 are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of MERV ~~6~~ 8 filters. …… M **902.2.~~3~~4** MERV filters ~~8 to~~ 13 are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of MERV ~~8 to~~ 13 filters. …… 2 points **902.2.4~~5~~** MERV filters ~~14~~ 16 or greater are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of the filter used. ……3 points
TG Reason:	MERV 8 are commonly available in the market. Points should be given for more incremental improvement between the tiers.

A078 ID 7626	902.2 Building ventilation systems
Submitter:	Aaron Gary, Theresa Weston, Greg Coolidge, Jillian Cooke, Jason LaFleur, Task Group 3
Comment:	**902.2.2** Ventilation airflow is tested to achieve the design fan airflow in accordance with ANSI/RESNET/ICC 380 and § 902.2.1. 4 points **902.2.3** MERV filters 8 to 13 are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of MERV 8 to 13 filters. 2 points **902.2.4** MERV filters 14 or greater are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of the filter used. 3 points **902.2.5** Enhanced air filtration. 2 points Meet all of the following: (1) Design for and install a secondary filter rack space for activated carbon filters. (2) Provide the manufacturer's recommended filter maintenance schedule to the homeowner or building manager. *Delete existing 905.3*
Reason:	It's easier for the user to have all filtration practices in one area. Enhanced filtration no longer warrants classification as an "innovative practice."
TG Recommendation:	Accept, 12-0-0
TG Modification:	
TG Reason:	

A079 ID 7627	902.2 Building ventilation systems
Submitter:	Aaron Gary, Tempo, Inc.
Comment:	**902.2.1** One of the following whole building ventilation systems is implemented in the dwelling units and is in accordance with the specifications of ASHRAE 62.2-2010~~09~~ Section 4, 2021 International Mechanical Code Sections 403.3 or 403.3.2 (regardless of building height) or 2021 International Residential Code Section 1505, as applicable. An explanation of the operation and importance of the ventilation system is included in either 1001.1 or 1002.2..... M~~*~~ ~~{*Mandatory where the maximum air infiltration rate is less than 5.0 ACH50}~~ (1) Exhaust ~~or supply fan(s)~~ air ventilation system~~-ready for continuous operations and with appropriately labeled controls~~ equipped with outdoor air ducts and intake(s) for ventilation air..... 1 (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 or moisture in the outdoor air..... 3 (3) Supply air ventilation system..... 3 (4) Supply air ventilation system equipped with automatic ventilation controls to limit ventilation air during periods of extreme temperature or moisture in the outdoor air..... 5 (5~~2~~) Balanced air ventilation system with exhaust and supply fan(s) with supply intakes located in accordance with the manufacturer's guidelines so as to not introduce polluted air back into the building..... 6 (6~~3~~) Heat-recovery ventilator..... 7 (7) Balanced air ventilation system with exhaust and supply fan(s) with automatic ventilation controls to limit ventilation air during periods of extreme temperature or moisture in the air, and with intakes located in accordance with the manufacturer's guidelines so as to not introduce polluted air back into the building..... ….8 (8~~4~~) Energy-recovery ventilator……8 (9~~5~~) Ventilation air is preconditioned by a system not specified above……10 **11.902.2.1** One of the following whole dwelling ventilation systems is implemented in the dwelling units and is in accordance with the specifications of ASHRAE 62.2-2010~~09~~ Section 4, 2021 International Mechanical Code Sections 403.3 or 403.3.2 (regardless of height) or 2021 International Residential Code Section 1505, as applicable. An explanation of the operation and importance of the ventilation system is included in either 1001.1 or 1002.2..... M~~*~~ ~~{*Mandatory where the maximum air infiltration rate is less than 5.0 ACH50}~~ (1) Exhaust ~~or supply fan(s)~~ air ventilation system~~-ready for continuous operations and with appropriately labeled controls~~ equipped with outdoor air ducts and intake(s) for ventilation air..... 1 (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 or moisture in

	the outdoor air..... 3 (3) Supply air ventilation system..... 3 (4) Supply air ventilation system equipped with automatic ventilation controls to limit ventilation air during periods of extreme temperature or moisture in the outdoor air ..... 5 (5~~2~~) Balanced air ventilation system with exhaust and supply fan(s) with supply intakes located in accordance with the manufacturer's guidelines so as to not introduce polluted air back into the building..... 6 (6~~3~~) Heat-recovery ventilator..... 7 (7) Balanced air ventilation system with exhaust and supply fan(s) with automatic ventilation controls to limit ventilation air during periods of extreme temperature or moisture in the outdoor air and with intakes located in accordance with the manufacturer's guidelines so as to not introduce polluted air back into the building..... 8 (8~~4~~) Energy-recovery ventilator……8 (9~~5~~) Ventilation air is preconditioned by a system not specified above……10 **1205.8 Whole dwelling ventilation.** One of the following whole ~~dwelling~~building ventilation systems is implemented and is in accordance with the specifications of ASHRAE 62.2-201~~0~~9 Section 4 or 2021 International Residential Code Section 1505. An explanation of the operation and importance of the ventilation system is included in either 1001.1 or 1002.2. (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 or moisture in the air~~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 or moisture in the air~~, 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 so as 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 or moisture in the air~~, extreme humidity and/or during times of peak utility loads.,~~ and with intakes located in accordance with the manufacturer's guidelines so as to not introduce polluted air back into the building. (8) Energy-recovery ventilator. (9) Ventilation air is preconditioned by a system not specified above.

SECTION 14:

REFERENCED DOCUMENTS

ICC – International Code Council | www.iccsafe.org

IMC

~~2018~~2021

International Mechanical Code

705.6.1(1),

902.2.1
11.705.6.1(1),

11.902.2.1
13.105.10,
13.107.7,
13.107.8.1

IRC

~~2018~~2021

International Residential Code

202,
602.1.1.1,
602.1.3.1,
602.1.4.2(1),
602.1.4.2(2),
602.1.8,
602.1.13,
705.6.1(1),
902.1.1(1),

902.2.1,
902.3,
1001.1(12)(b),

11.602.1.1.1,
11.602.1.3.1,

11.602.1.4.2(1),
11.602.1.4.2(2),
11.602.1.8,
11.602.1.13,
11.705.6.1,
11.902.1.1(1),
11.902.2.1,

11.902.3,
11.1001.1(12)(b),
1202.1,
1202.4,

	1205.8 **ASHRAE – American Society of Heating, Refrigeration, Air-conditioning Engineers|** www.ashrae.org **DOCUMENT** **DATE** **TITLE** **SECTION** ASHRAE 62.2 2019 *Ventilation and Acceptable Indoor Air Quality in Residential Buildings* 902.2.1, 11.902.2.1, 1205.8
Reason:	Aligns the dwelling ventilation section which appears 3 times in the NGBS Standard with the Chapter 12 version used as the basis of the alignment (felt that the NGBS 2020 Chapter 12 version did the best job of aligning with current developments in design practice, code requirements, and product developments). Additionally, specified this practice applies to the dwelling units, removed peak load language (as that seemed more appropriate for Chapter 7), changed extreme humidity to moisture in the air (as some products control of dew point), and updated references to ASHRAE 62.2-2019 and 2021 IMC.
TG Recommendation:	Accept, 9-0-0
TG Modification:	
TG Reason:	

A080 ID 7628	902.2 Building ventilation systems
Submitter:	Aaron Gary, Tempo, Inc.
Comment:	**902.2.2** Ventilation airflow is tested and verified to provide the minimum ventilation flow rates ~~achieve the design fan airflow~~ in accordance with ANSI/RESNET/ICC 380 and Section 902.2.1……M 4 **11.902.2.2** Ventilation airflow is tested and verified to provide the minimum ventilation flow rates ~~achieve the design fan airflow~~ in in accordance with ANSI/RESNET/ICC 380 and Section 11.902.2.1……M 4 **1209 Whole Dwelling Ventilation Testing.** Ventilation airflow is tested and verified to provide the minimum ventilation flow rates in accordance with ANSI/RESNET/ICC 380 and Section 1208……M
Reason:	Aligns with 2021 & 2024 IECC where the testing of ventilation airflow is required.
TG Recommendation:	
TG Modification:	
TG Reason:	*Staff Note: This Proposed Change garnered a lot of discussion at the Task Group meetings and the Task Group could not come to consensus on a recommended action. Task Group is deferring to the Consensus Committee.*

A081 ID 7630	902.3.1.1 Soil-gas barriers and base course
Submitter:	Tom Marks and Ryan Goodwin, Stego Industries, LLC
Comment:	*(Modify as shown below)* **902.3.1.1 Soil-gas barriers and base course.** A base course in accordance with IRC ~~Section 506.2.2~~ Appendix F Section 103.2 shall be installed below slabs and foundations. There shall be a continuous gas-permeable base course under each soil-gas retarder that is separated by foundation walls or footings. Between slabs and the base course, install a soil-gas retarder with minimum performance outlined in Section 602.1.1 ~~damp-proofing or water-proofing shall be installed in accordance with IRC Section 406~~. ~~The soil-gas retarder shall be a continuous 6-mil polyethylene sheeting or an approved equivalent.~~
Reason:	If the intent is a base course approved for radon mitigation (such as a gas-permeable layer) 506.2.2 does not seem like the appropriate reference. This Section of the IRC applies to the base course for regular slabs below grade, but not specifically noted as a gas permeable layer for soil-gas mitigation. Section 103.2 of Appendix F seems more appropriate for radon mitigation. The soil-gas retarder will inevitably be the same material used as the below-slab water vapor retarder. Currently the verbiage seems to be *requiring* 6-mil polyethylene sheeting (which may not/shouldn't be used under the slab for water vapor protection), but also references damp proofing. For simplicity and consistency, it seems reasonable to just reference Section 602.1.1 of the NGBS as the water vapor retarder will also be acting as the soil-gas retarder in the radon control system. Furthermore, our understanding of Section 406 applies to damp proofing and waterproofing for below grade foundation walls, not beneath concrete floor slabs. This reference seems like it can be removed.
TG Recommendation:	Accept as Modified, 9-0-1
TG Modification:	Modify as follows: **902.3.1.1 Soil-gas barriers and base course.** A base course in accordance with IRC ~~Section 506.2.2~~ Appendix A F Section 103.2 shall be installed below slabs and foundations. There shall be a continuous gas-permeable base course under each soil-gas retarder that is separated by foundation walls or footings. Between slabs and the base course, install a soil-gas retarder with minimum performance outlined in Section 602.1.1 and following the guidance in IRC AF 103 ~~damp-proofing or water-proofing shall be installed in accordance with IRC Section 406~~. ~~The soil-gas retarder shall be a continuous 6-mil polyethylene sheeting or an approved equivalent.~~
TG Reason:	Adding additional guidance requirement.

A082 ID 7631	902.3.2 Radon testing
Submitter:	Thomas Bowles, US EPA
Comment:	Proposed Changes in red to section 902.3.2: 902.3.2 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 or 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~~..... (a) Testing is performed after the residence passes its airtightness test. (b) Testing is performed after the radon control system installation is complete. If the system has an active fan, the residence shall be tested with the fan operating. (c) Testing is performed at the lowest level within a dwelling unit which will be occupied, even if the space is not finished. (d) Testing is not performed in a closet, hallway, stairway, laundry room, furnace room, kitchen or bathroom. (e) Testing is performed with a commercially available test kit or with a continuous radon monitor that can be calibrated. Testing shall be in accordance with the testing device manufacturer's instructions. (f) Testing shall be performed by the builder, a registered design professional, or an approved third party. (g) Testing shall extend at least 48 hours or to the minimum specified by the manufacturer, whichever is longer. (h) Written radon test results shall be provided by the test lab or testing party. Written test results shall be included with construction documents. (i) An additional pre-paid test kit shall be provided for the homeowner to use when they choose. The test kit shall include mailing or emailing the results from the testing lab to the homeowner. (j) Where the radon test result is 4 pCi/L or greater, the fan for the radon vent pipe shall be installed. (2) Multifamily Testing specifications. Multifamily Building Testing is performance as specified in (a) through (j)..... (a) For each ground-contact dwelling or living 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 (b) For non-residential ground-contact 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. (c) On each upper floor, testing is performed in at least one and not less than 10% of all dwellings and nonresidential rooms that are occupied or intended to be occupied. These measurements shall be in addition to tests performed in ground-contact locations and rooms or dwellings that adjoin immediately above untested ground-contact locations. (d) Testing is not performed in hallways, closets and bathroom or shower areas unless they are open to other

	rooms that are occupied for other purposes. (e) Testing is performed with a commercially available test kit or with a continuous radon monitor that can be calibrated. Testing shall be in accordance with the testing device manufacturer's instructions. (f) Testing shall be performed by the builder, a registered design professional, or an approved third party. (g) Testing shall extend at least 48 hours or to the minimum specified by the manufacturer, whichever is longer. (h) Written radon test results shall be provided by the test lab or testing party. Written test results shall be included with construction documents. (i) An additional pre-paid test kit shall be provided for the homeowner to use when they choose. The test kit shall include mailing or emailing the results from the testing lab to the homeowner. (j) Where the radon test result is 4 pCi/L or greater, the fan for the radon vent pipe shall be installed.
Reason:	Radon Testing should be required in ALL ZONES not just Z1. MF testing for radon should include sampling protocols. Also included is testing protocols for non-residential common areas. Radon has been found in all zones regardless of geographic location. The only way to know if there is elevated radon is to test. People tend to see a testing requirement in Z1 as a false sense of security that Zones 2 and 3 are safe. Elevated radon has been found in all zones and we at EPA never intended for the map to be used to determine whether there is a radon problem or not. The only way to know is to test. The map is intended to help governments and other organizations with target risk reduction activities and resources. The Map of Radon Zones should not be used to determine if individual dwellings need to be tested. Radon causes lung cancer and does not discriminate by zone. MF Buildings also need separate testing protocols from SF residences and some guidance around common areas which is addressed in the changes.
TG Recommendation:	Accept as Modified, 5-3-2
TG Modification:	Modify as follows: 902.3.2 Radon testing. Radon testing is mandatory. for Zone 1 and 2 Exceptions: 1) Testing is not mandatory where the authority having jurisdiction has defined the radon zone as Zone ~~2 or~~ 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~~..... (a) Testing is performed after the residence passes its airtightness test. (b) Testing is performed after the radon control system installation is complete. If the system has an active fan, the residence shall be tested with the fan operating. (c) Testing is performed at the lowest level within a dwelling unit which will be occupied, even if the space is not finished. (d) Testing is not performed in a closet, hallway, stairway, laundry room, furnace room, kitchen or bathroom. (e) Testing is performed with a commercially available test kit or with a continuous radon monitor that can be

	calibrated. Testing shall be in accordance with the testing device manufacturer's instructions. (f) Testing shall be performed by the builder, a registered design professional, or an approved third party. (g) Testing shall extend at least 48 hours or to the minimum specified by the manufacturer, whichever is longer. (h) Written radon test results shall be provided by the test lab or testing party. Written test results shall be included with construction documents. (i) An additional pre-paid test kit shall be provided for the homeowner to use when they choose. The test kit shall include mailing or emailing the results from the testing lab to the homeowner. (j) Where the radon test result is 4 pCi/L or greater, the fan for the radon vent pipe shall be installed. (2) Multifamily Testing specifications. Multifamily Building Testing is performance as specified in (a) through (j)…….. (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 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) On each upper floor, testing is performed in at least one and not less than 10% of all dwellings and nonresidential rooms that are occupied or intended to be occupied. These measurements shall be in addition to tests performed in ground-contact locations and rooms or dwellings that adjoin immediately above untested ground-contact locations. (d) Testing is not performed in hallways, closets and bathroom or shower areas unless they are open to other rooms that are occupied for other purposes. (e) Testing is performed with a commercially available test kit or with a continuous radon monitor that can be calibrated. Testing shall be in accordance with the testing device manufacturer's instructions. (f) Testing shall be performed by the builder, a registered design professional, or an approved third party. (g) Testing shall extend at least 48 hours or to the minimum specified by the manufacturer, whichever is longer. (h) Written radon test results shall be provided by the test lab or testing party. Written test results shall be included with construction documents. ~~(i) An additional pre-paid test kit shall be provided for the homeowner to use when they choose. The test kit shall include mailing or emailing the results from the testing lab to the homeowner.~~ (j) Where the radon test result is 4 pCi/L or greater, the fan for the radon vent pipe shall be installed.
TG Reason:	Applying to all zones isn't necessary based on potential risks- sampling is appropriate for MF in less radon prone areas.

A083 ID 7632	**905.4 Sound barrier**

Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Delete section entirely.
Reason:	Acoustic performance within buildings isn't a sustainability measure. Including non-sustainability measures in NGBS reduces the focus on sustainability within the NGBS program. Non-sustainability points allow projects to achieve certification without delivering on sustainability. Non-sustainability measures divert time/resources for users of the NGBS program from the core sustainability goal.
TG Recommendation:	Disapprove, 4-3-3
TG Modification:	
TG Reason:	Human health is a component of sustainability. Acoustics play an important role in human wellbeing, affecting cardiac health and mental capacity. While this practice is not often selected, continuing to include it within the Standard may raise awareness of the additional elements that impact a resident's experience with a space.

Section 10 Operation, Maintenance, And Building Owner Education

P064 ID 7568	1001.1 Homeowner's manual
Submitter:	Marla Esser Cloos, Self
Comment:	A list of no- and low-emission and sustainable materials, products, and finishes used in the building interiors. A list of site, building, and/or interior features that contribute to the health and well-being of the building workers and occupants. A list of practices to maintain the health and wellness attributes of the building.
Reason:	Building owners and occupants gain understanding and appreciation of materials, products and finishes that contribute to occupant and building workers' health and well-being. Additional information about the importance of using no- and low-emission and sustainable materials, products, and finishes to support residents' health and wellness may be found in NGBS Green+ Badges Workbook, NGBS+ Wellness section, starting on p. 14.
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	~~A list of no- and low-emission and sustainable materials, products, and finishes used in the building interiors.~~ A list of site, building, and/or interior features that contribute to the health and well-being of the ~~building workers and~~ occupants. A list of practices to maintain the health and wellness attributes of the building.
TG Reason:	Health and wellness features of the building should be identified and available as part of the use and enjoyment of the building. Information will be preserved and available in the reference for future owners.

P065 ID 7569	1001.2 Training of initial homeowners
Submitter:	Marla Esser Cloos, Self
Comment:	**Training of initial homeowners.** Initial homeowners are familiarized with the role of occupants in achieving ~~green~~ health and environmental goals. Training is provided to the responsible party(ies) ~~regarding~~ by a team member(s) trained or certified in health and wellness and sustainability in buildings. Training will consist of equipment operation and maintenance, control systems, and occupant actions and how they ~~that will~~ improve the health and environmental performance of the building. These include: (1) HVAC filters….(8) Whole-dwelling mechanical ventilation systems
Reason:	Building owners and occupants gain understanding and appreciation of features that affect health and environmental performance of the building, and why proper maintenance, operation and occupant actions are so critical to achieving health and wellness in the building. Additional information about health and wellness in homes and buildings may be found in NGBS Green+ Badges Workbook, NGBS+ Wellness section, starting on p. 14.
TG Recommendation:	Disapprove, 5-0-0
TG Modification:	
TG Reason:	This item was covered in P070.

P066 ID 7570	1002.5 Multifamily occupant manual
Submitter:	Marla Esser Cloos, Self
Comment:	A list of no- or low-emission and sustainable materials, products and finishes used in the building interiors. A list of site, building, and/or interior features that contribute to the health and well-being of the occupants. A list of practices to maintain the health and wellness attributes of the building.
Reason:	Building owners and occupants gain understanding and appreciation of materials, products and finishes that contribute to occupant and building workers' health and well-being. Additional information about the importance of using no- and low-emission and sustainable finishes and materials to support residents' health and wellness may be found in NGBS Green+ Badges Workbook, NGBS+ Wellness section, starting on p. 14
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	1002.5 Multifamily occupant manual ~~A list of no- or low-emission and sustainable materials, products and finishes used in the building interiors.~~ A list of site, building, and/or interior features that contribute to the health and well-being of the occupants. A list of practices to maintain the health and wellness attributes of the building. 1002.3 Maintenance manual A list of site, building, and/or interior features that contribute to the health and well-being of the building workers and occupants. A list of practices to maintain the health and wellness attributes of the building.
TG Reason:	Health and wellness features of the building should be identified and available as part of the use and enjoyment of the building. Information will be preserved and available for tenants (under 1002.3 and owners and building workers).

P067 ID 7571	1002.6 Training of multifamily occupants
Submitter:	Marla Esser Cloos, Self
Comment:	**Training of multifamily occupants.** Prepare a training outline, video, or website that familiarizes occupants with their role in maintaining the ~~green~~ health and environmental goals of the project. A team member(s) trained or certified in health and wellness and sustainability in buildings will provide input about how proper equipment operation and care of components improve the health and environmental performance of the project. Include all equipment that the occupant(s) is expected to operate, including, but not limited to: (1) Lighting controls … (7) Water heater setting and hot water use.
Reason:	Building owners and occupants gain understanding and appreciation of features that affect health and environmental performance of the building, and why proper maintenance, operation and occupant actions are so critical to achieving health and wellness and sustainability in the building. Additional information about health and wellness in homes and buildings may be found in NGBS Green+ Badges Workbook, NGBS+ Wellness section, starting on p. 14.
TG Recommendation:	Disapprove,
TG Modification:	5-0-0
TG Reason:	This item was covered in P070.

P068 ID 7476	1004.1 Verification system
Submitter:	Paul Gay, Self
Comment:	1004.1 Verification system. A verification system plan is provided in the building owner's manual (§ 1001 or § 1002). The verification system provides methods for demonstrating continued energy and water savings that are determined from the ~~building's initial year of occupancy~~ year of finalized building upgrade of water and energy consumption as compared to annualized consumption at least every four years.
Reason:	Add this section to Chapter 11
TG Recommendation:	Accept as Modified,
TG Modification:	4-0-1 1004.1 Verification system. A verification ~~system~~ plan is provided in the building owner's manual (§ 1001 or § 1002). The verification system provides methods for ~~demonstrating continued~~ measuring energy and/or water ~~savings~~ consumption starting after the building reaches 80% or more occupancy. ~~that are determined from the building's initial year of occupancy of water and energy consumption as compared to annualized consumption at least every four years.~~ (1) Verification plan is developed to monitor post-occupancy energy and/or water use and is provided in the building owner's manual. Plan to monitor energy consumption [1 point] Plan to monitor water consumption [1 point] Plan to report energy and/or water consumption to a national benchmarking system [1 point] (2) Verification system is installed in the building to monitor post-occupancy energy and water use. ..... System is installed to monitor energy consumption [2 points] System is installed monitor water consumption [2 points] System is installed to report energy and/or water consumption to a national benchmarking system [2 points] (3) Verification system that is compliant with national/international ESG benchmarking system is installed in the building to monitor post-occupancy energy and water use. ..... System is installed to monitor energy consumption [3 points] System is installed monitor water consumption [3 points] System is installed to report energy and/or water consumption to a national benchmarking system [3 points]
TG Reason:	ESG is increasingly important to MF developments and developer financing and this modification clarifies a process to encourage monitoring of systems installed.

P069 ID 7579	1005 INNOVATIVE PRACTICES
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	**100X Tenant Energy and Water Consumption Data Release Form** *Points only available for buildings with separately metered utilities.* Require tenants to sign utility consumption data release forms: (1) For energy consumption...2 points (2) For water consumption...2 points *Note:* Include in the lease language a utility release as a default. Include an opt-out field for residents who do not wish to sign the release.
Reason:	Utility benchmarking provides valuable insight into a building's operation. Tenant data release forms can ensure that property owners are able to secure useful data for ongoing utility benchmarking.
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	**100X Tenant Energy and Water Consumption Data Release Form** *Points only available for buildings with separately metered utilities.* ~~Require tenants to sign utility consumption data release forms:~~ Develop and provide an operational plan for residents to allow utility consumption data release: (1) For energy consumption...2 points (2) For water consumption...2 points *Note:* ~~Include in the lease language a utility release as a default. Include an opt-out field for residents who do not wish to sign the release~~. *Include a release form to be included in the lease package that includes opt-out options for residents who do not wish to sign the release.*
TG Reason:	The modifications recognize the difficulty of determining eligibility/when points should be awarded for this practice.

P070 ID 7572	1005 INNOVATIVE PRACTICES
Submitter:	Marla Esser Cloos, Self
Comment:	**Health and Wellness Professional.** At least one member of the design and build team trained or certified in health and wellness will conduct training to at least one of the following groups: 1. other design and build team members with regards to resource, product, and material selections, practices and uses in the project. 2. Building operators and maintenance staff 3. Building occupants or homeowners
Reason:	Design and build team members, as well as building owners, maintenance staff, and occupants, gain understanding and appreciation of features which affect health and environmental performance of the building and why proper maintenance, operation, and occupant actions are so critical to achieving health and wellness in the building. By making the connection between the health and wellness benefits and attributes of the site, building, and/or interiors, more stakeholders in the project understand and can perform their role(s) in providing a place(s) to live where people - and the environment - can thrive. Additional information about health and wellness in homes and buildings may be found in NGBS Green+ Badges Workbook, NGBS+ Wellness section, starting on p. 14.
TG Recommendation:	Accept as Modified, 5-0-1
TG Modification:	**Health and Wellness Professional.** At least one member of the ~~design and build~~ project team ~~trained or certified in~~ is a qualified professional in health and wellness in residential design and construction and will conduct training to at least one of the following groups (one point per item): 1. ~~o~~Other ~~design and build~~ project team members with regards to resource, product, and material selections, practices and uses in the project. 2. Building ~~operators~~ operations and maintenance staff 3. Building occupants or homeowners
TG Reason:	Modifications meant to better incorporate health and wellness into the Standard and to better define a health and wellness professional and the training that can be provided to stakeholders.

P071 ID 7518	1005 INNOVATIVE PRACTICES
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	**1005.2 Indoor Air Quality Display and Communication.** Live data from indoor air quality monitoring is made available to occupants. Live data is either visually displayed in an area of the building that is accessible by residents or accessible via website or a mobile application. 2 points
Reason:	Indoor air quality data can offer building owners and residents information that can inform adjustments to building operations and resident behavior to reduce health risks.
TG Recommendation:	Accept as Modified, 4-2-0
TG Modification:	**1005.2 Indoor Air Quality Display and Communication.** Live data from indoor air quality monitoring in accordance with section 905.1 or 905.2.1 is made available to occupants. Live data is either visually displayed in an area of the building that is accessible by residents or accessible via website or a mobile application. 2 points
TG Reason:	Providing real time information to occupants will be valuable in helping them understand the indoor air quality of their living environment, and to better align with the proposal from TG 3.

Additional TG Proposed Changes

A084 ID 7602	1002.3 Maintenance manual
Submitter:	Abhishek Lal, Meridian Consulting, LLC
Comment:	Delete part 11 which requires maintenance plan for recreation and play spaces.
Reason:	Recreation and play spaces aren't sustainability measures. There are fitness/wellness building certifications that already meet this need. Including non-sustainability measures in NGBS reduces the focus on sustainability within the NGBS program. Non-sustainability points allow projects to achieve certification without delivering on sustainability. Non-sustainability measures divert time/resources for users of the NGBS program from the core sustainability goal.
TG Recommendation:	Disapprove, 5-0-0
TG Modification:	
TG Reason:	Exercise and recreational areas provide important resources for residents while mitigating the needed transportation and infrastructure to go off site.

Section 11 Remodeling

P072 ID 7485	11.503.5 Landscape plan
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	(2) Non-invasive vegetation that is native or regionally appropriate for local growing conditions is selected to promote biodiversity.
Reason:	Missing word.
TG Recommendation:	Accept, 9-0-0
TG Modification:	
TG Reason:	

P073 ID 7562	11.505.6 Multi-unit plug-in electric vehicle charging
Submitter:	Steven Rosenstock, Self
Comment:	**11.505.6 Multi-unit plug-in electric vehicle charging**. Plug-in electric vehicle charging capability is provided for not fewer than ~~2%~~ 5% of parking stalls. [*An additional 2 points can be earned for each percentage point above ~~2%~~ 5% for a maximum of 10 points*]
Reason:	There are now many jurisdictions that have requirements at multi-family buildings for EV charging that are well above the 2% in the current standard. Here is one information source that shows requirements by jurisdiction: https://www.swenergy.org/transportation/electric-vehicles/building-codes#who This proposal increases the minimum requirement in the green standard to keep up with what is happening across the US in minimum building codes.
TG Recommendation:	Accept as Modified, 9-0-1
TG Modification:	**11.505.6 Multi-unit plug-in electric vehicle charging**. Plug-in electric vehicle charging capability is provided for not fewer than 2% of parking stalls. [*An additional 4 points can be earned for each percentage point above 2% for a maximum of 20 points*]
TG Reason:	TG 7 wanted to maintain the 2% threshold, recognizing that many parts of the country still do not have EV chargers and to provide an easier entry point. We increased the cap to 20 points to further encourage use of EVs. The point value was increased to 4 points to recognize the higher investment needed for existing buildings. TG 7 recommends that new construction reconsider a 5% threshold, considering infrastructure installation is easier for new construction. We also recommend adding a point cap. For instance, if a building were to pursue 100% chargers, it could result in 200 points.

P074 ID 7504	11.613 RESILIENT CONSTRUCTION
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	Change to 11.613.6
Reason:	Fix typo. Currently shows as 613.13.6
TG Recommendation:	Accept, 9-0-0
TG Modification:	
TG Reason:	

P075 ID 7495	11.703.1 Mandatory practices
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	11.703.1.1 Building thermal envelope compliance. The building thermal envelope is in compliance with § 11.703.1.1.1 or § 11.703.1.1.2. Unconditioned buildings in the TZ are exempt.

Reason:	These practices are not applicable to those largely unconditioned structures typically constructed in the TZ. The NGBS should provide an exemption for 11.703.1.1 and 11.703.1.2 for buildings constructed in Tropical Climate zones.
TG Recommendation:	Accept as Modified, 6-0-2
TG Modification:	**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. ~~**Exception:** Section 11.703.1.1 is not required for Tropical Climate Zone.~~ ~~Another option would be to modify both current exceptions to say "is not required for unconditioned buildings in a Tropical Climate Zone."~~ 11.703.1.1.2 Prescriptive R-values and fenestration requirements. The building thermal envelope is in accordance with the insulation and fenestration requirements of ICC IECC Table R402.1.2 or Table C402.1.3. The fenestration U-factors and SHGC's are in accordance with Table 703.2.5.1 or ICC IECC Table C402.4. Unconditioned buildings 3 stories or less in height located in the Tropical Zone are exempt from this practice if the building meets a minimum roof SRI of 0.85, and a minimum wall reflectivity of 0.39.
TG Reason:	Amendments are tailored to unique conditions in the tropical zone allowing more flexibility in the use of fenestration in the Tropical zone.

P076 ID 7514	**11.703.1 Mandatory practices**
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Allow renovation projects that do not have any building thermal envelope work involved to bypass 11.703.1, provided that they can achieve a minimum of 30 points elsewhere in 11.703.
Reason:	These mandatory practices are not applicable to more moderate renovation projects that do not intend to open up the walls or replace the conditioning systems. Clarification on the application of these mandatory requirements would allow more moderate renovation projects to still achieve green certification.
TG Recommendation:	Accept as Modified, 9-0-1
TG Modification:	11.703.1 Mandatory Practices. 30 *In accordance with Section 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.*
TG Reason:	Crafted legislative language.

P077 ID 7578	11.706.5 On-site renewable energy system
Submitter:	Steven Rosenstock, Self
Comment:	**11.706.5 On-site renewable energy system.** One of the following options is implemented: (1) Building is Solar-Ready in compliance with... ... *Points shall not be awarded for the capacity of an on-site renewable energy system or battery energy storage system that is required by a jurisdiction to be installed in minimum building or energy codes that have been adopted by the jurisdiction.* (*rest of the section is unchanged*)
Reason:	There are now local jurisdiction minimum codes and state minimum energy codes (such as California's Title 24) that require new buildings to install on-site renewable energy systems. See https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency for information about CA Title 24-2022. This proposed change will prevent "double counting", or giving points for a required practice in those jurisdictions.
TG Recommendation:	Disapprove, 6-2-1
TG Modification:	
TG Reason:	Contingency with rules of local jurisdiction does not fit with the scope of NGBS being a national Standard, puts a burden on Verifiers, and creates inequity for projects.

P078 ID 7534	11.801.10 Pools and spas
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	**11.802.10.1** ~~Pools and Spas with water surface area greater than 36 sq. ft. and connected to a water supply shall have a dedicated meter to measure the amount of water supplied to the pool or spa.~~ ~~(1).~~ Automated motorized non-permeable pool cover ~~that~~ covers the entire pool surface..... **10**
Reason:	The requirement for pool meter is more feasible for new construction projects. It is unrealistic to expect an existing building owner to install a meter for existing pools and spas. This mandatory requirement should be deleted or made optional within the Renovation chapter.
TG Recommendation:	Accept, 8-0-0
TG Modification:	
TG Reason:	

P079 ID 7588	11.802.5 Faucets
Submitter:	Katie Norem, Evolve Technologies
Comment:	Add new practice within Section 11.802.5. 11.802.5.X An automatic tub-spout diverter system (with corresponding showerhead valve to pause flow) designed to conserve hot water is installed…….3 point per tub/9 points max.
Reason:	The auto diverting (thermostatic) tub spout system reduces hot water waste in several ways: reducing structural waste, eliminating behavioral waste, and preventing tub spout leaks. The ADTS functions by first purging the cold water in the plumbing lines (structural waste) through its tub spout fixture. By design, the tub spout expels structural waste more than 2 times faster than possible through a shower head. Warming the water in the manner not only significantly reduces hot water wait time, but also reduces the volume of structural waste that must be purged before hot water arrives. Due to the higher velocity, less thermal loss occurs as the water travels through the plumbing line to the shower. As a result, hot water arrives faster, and the volume that must be purged is reduced. Once hot water arrives, the tub spout fixture automatically blocks the tub spout's out flow and diverts hot water to the showerhead. The included valve (installed between the shower arm and showerhead) automatically pauses (reduced to a trickle) water flow from the showerhead until the bather is ready to shower. This pause eliminates Behavioral Waste by preventing hot water from inadvertently running down the drain while bathers are away from the shower while waiting for hot water. When ready to shower, the bater will pull the lanyard on the valve at the showerhead so resume normal flow and shower as usual. During the shower, the shut-off that automatically diverted hot water to the showerhead remains active. This tight, positively reinforced, thermostatically activated seal stop tub spout diverter leaks by preventing hot water from sneak past the diverter and running out of the tub spout during the shower. These three areas of savings combine to an average of 10 gallons of hot water saved for every shower taken. (Structural Waste ~ .4 gallons, Behavioral Waste ~ 5.1 gallons, Tub Spout leaks ~ 4.5 gallons)
Substantiating Documents:	Yes
TG Recommendation:	Disapprove, 9-0-1
TG Modification:	
TG Reason:	Support reasoning provided by TG4: "This appears to be a proprietary product with only one manufacturer developing it right now. We are unsure about industry standards and certifications covering this technology. We are also curious about potential conflict with the plumbing code. Question for submitter regarding savings claim."

P080 ID 7496	Section 11 Remodeling
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	11.1004.0 Intent. A verification system for post occupancy assessment of the building is intended to be a management tool for the building owner to determine if energy or water usage have deviated from expected levels so that inspection and correction action can be taken. 1004.1 Verification system. A verification system plan is provided in the building owner's manual (§ 1001 or § 1002). The verification system provides methods for demonstrating continued energy and water savings that are determined from the building's initial year of occupancy of water and energy consumption as compared to annualized consumption at least every four years. (1) Verification plan is developed to monitor post-occupancy energy and water use and is provided in the building owner's manual. (2) Verification system is installed in the building to monitor post-occupancy energy and water use.
Reason:	Add new section 11.1004 to be the same as the Chapter 10 1004 section Post Occupancy for New Construction. Existing buildings should also be encouraged to monitor post-renovation performance.
TG Recommendation:	Accept as Modified, 9-0-1
TG Modification:	11.1004.0 Intent. A verification system for post occupancy assessment of the building is intended to be a management tool for the building owner to determine if energy or water usage have deviated from expected levels so that inspection and correction action can be taken. 11.1004.1 Verification plan or system. A verification ~~system~~ plan is provided in the building owner's manual (§ 11.1001 or § 11.1002). The verification ~~system~~ plan provides methods for ~~demonstrating continued~~ measuring energy and/or water ~~savings~~ consumption starting after the building reaches 80% or more occupied dwelling units. ~~that are determined from the building's initial year of occupancy of water and energy consumption as compared to annualized consumption at least every four years.~~ (1) Verification plan is developed to monitor post-occupancy energy and/or water consumption and is provided in the building owner's manual. (a) Plan to monitor energy consumption [1 point] (b) Plan to monitor water consumption [1 point] (c) Plan to report energy and/or water consumption to a national benchmarking system [1 point] (2) Verification system (excluding utility meters) is installed in the building to monitor and report in real time post-occupancy energy and water use. ..... (a) System is installed to monitor energy consumption [4 points] (b) System is installed monitor water consumption [4 points] (c) System is installed to report energy and/or water consumption to a national benchmarking system [4 points]
TG Reason:	This new addition recognizes the energy saving energy and water saving possibilities. The additional points awarded for verification system reflect the additional value of real time monitoring and the additional cost required to install in an existing building.

Additional TG Proposed Changes

A085 ID 7634	Section 11 Remodeling
Submitter:	Aaron Gary, Tempo, Inc
Comment:	Update Chapter 6 and 9 practices as they appear in Chapters 11, 12, and 13.
Reason:	Maintain the internal logic and structure of the NGBS Standard
TG Recommendation:	Withdrawn
TG Modification:	
TG Reason:	

P081 ID 7499	1202.13 Roof overhangs
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	1202.13 Roof overhangs. Roof overhangs, in accordance with Table 602.1.12, are provided over a minimum of 90% of exterior walls to protect the building envelope. Concrete buildings are exempt.
Reason:	Modern style concrete homes in the TZ typically do not have roof overhangs, but roof overhangs don't provide an important value in shielding a concrete home from rain like a wood home. Therefore they should be exempt.
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	1202.13 Roof overhangs. Roof overhangs, in accordance with Table 602.1.12, are provided over a minimum of 90% of exterior walls to protect the building envelope. Concrete and concrete masonry buildings are exempt.
TG Reason:	The task group believed the exemption should also include concrete and concrete masonry buildings.

P082 ID 7559	1203.10 Energy performance pathway
Submitter:	Steven Rosenstock, Self
Comment:	**1203.10.1 ICC IECC analysis.** Energy efficiency features are implemented to achieve energy cost or site energy or source energy or carbon performance that exceeds the ICC IECC by 7.5%.
Reason:	Different jurisdictions use different metrics to judge building performance. The green standard should be flexible enough to adapt to the different metrics that are being used by different cities and different states (or if they are using multiple metrics). It should be noted that site energy was used in the first 2 version of the NGBS, and carbon is being used by more jurisdictions over the past few years.
TG Recommendation:	Disapprove, 6-1-1
TG Modification:	
TG Reason:	The proposed modification makes this practice too complicated, and the criteria are different from each other. Also, carbon is hard to quantify.

P083 ID 7532	1203.11 Energy prescriptive pathway
Submitter:	Chinedu Moneke, Home Innovation Research Labs (NGBS Green)
Comment:	Include additional practice below in the prescriptive energy path: Building envelope leakage. The building thermal envelope is in accordance with ICC IECC R402.4.1.2 or C402.5 as applicable
Reason:	The prescriptive energy path should have a maximum ACH50/ELR50 for climate zones as were in the 703.1.2 prescriptive path requirements
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	1203.14 **Building envelope leakage.** The air leakage rate of the building or dwelling unit shall not exceed 5.0 ACH (0.33 ELR50) for climate zones 0, 1 and 2 and 3.0 ACH (0.23 ELR50) in climate zone 3 through 8. Unconditioned buildings are exempt.
TG Reason:	The TG realized that the reference to the C402.5 code was inapplicable, plus the TG wanted to provide a ACH max and not refer users to the code to find the requirement for compliance. The TG also recognized that testing was not necessary for unconditioned buildings. (Also, the TG notes there is already a 1203.14 so the numbering needs to be revised, but this practice should be after the Duct Leakage practice.)

P084 ID 7497	1203.11.1 Building envelope
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	1203.11.1 Building envelope. The building thermal envelope complies with § 1203.11.1.1 or § 1203.11.1.2. Exception: Section 1203.11.1.1 and 1203.11.1.2 are ~~is~~ not required for Tropical Climate Zone.
Reason:	Exception is provided for 1203.11.1.1 for buildings constructed in the Tropical Climate Zone. Exception should be amended to indicate that neither 1203.11.1.1 nor 1203.11.1.2 are required in Tropical climate. These practices are not applicable to those largely unconditioned structures typically constructed in the Tropics.
TG Recommendation:	Accept, 8-0-0
TG Modification:	
TG Reason:	

P085 ID 7488	1204 WATER EFFICIENCY
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	1204.1 Mandatory requirements. The building shall comply with 1204.2 Prescriptive Path or 1204.3 Performance Path. Existing text for 1204.1, 1204.2, 1204.3 should be renumbered under 1204.2 Prescriptive Path. Existing text for 1204.4 should be renumbered under 1204.3 Performance Path.
Reason:	Formatting is inconsistent with other sections and potentially confusing. Reformat so that this section is similarly structured as the Energy Efficiency section. Add a "Mandatory Requirements" section that clearly identifies the Prescriptive and Performance pathways as either/or options.
TG Recommendation:	Accept, 8-0-0
TG Modification:	
TG Reason:	

P086 ID 7484	1204.4 Alternative Compliance Path
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	1204.4 Alternative Compliance Path. A Water Rating Index (WRI) ~~needs to achieve a level 70~~ of 70 or lower is achieved.

Reason:	There is no reason that a home cannot be higher-performing than the value specified.
TG Recommendation:	Accept, 8-0-0
TG Modification:	
TG Reason:	

P087 ID 7515	**1205.7 Local ventilation**
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Replace with the following-- **1205.7 Local Ventilation.** Bathroom and kitchen exhaust ventilation rates are tested to meet minimum ventilation rates or ducts are installed to meet the prescriptive requirements in IRC Table M1504.2. (1) Testing Option (a) Bathrooms are vented to the outdoors. The minimum tested ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms. Exhaust fans are ENERGY STAR, or equivalent. (b) Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation. (2) Prescriptive Option: Bathroom and kitchen exhaust ventilation rates ducts are installed to meet the prescriptive requirements in IRC Table M1504.2.
Reason:	Practice should be reformatted for clarify. It doesn't make sense for all three sub-items to be required.
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	**1205.7 Local Ventilation.** Bathroom and kitchen exhaust ventilation rates are designed to meet minimum ventilation rates or ducts are installed to meet the prescriptive requirements in IRC Table M1504.2. (1) Testing Option (a) Bathrooms are vented to the outdoors. The minimum tested ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms. Exhaust fans are ENERGY STAR, or meet a minimum efficacy level of 2.8 (cfm/W). (b) Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation. (2) Prescriptive Option: Bathroom and kitchen exhaust ducts are installed to meet the prescriptive requirements in IRC Table M1504.2.
TG Reason:	The TG changed the word “tested” to “designed” because there is a prescriptive option that would not require testing. Also added the equivalent efficacy level for ENERGY STAR.

P088 ID 7517	**1205.8 Whole Dwelling Ventilation**
Submitter:	Carl Seville, SK Collaborative
Comment:	1205.8 Whole Dwelling Ventilation. One of the following whole dwelling ventilation systems shall be implemented and shall be in accordance with the specifications of ASHRAE Standard 62.2-2010 Section 4. An explanation of the operation and importance of the ventilation system shall be included in the homeowner’s manual practice. Ventilation flow rate shall not be required for home being certified under the Tropical Climate exemption.
Reason:	ASHRAE 62.2 2010 requires whole house airflow to be tested. Homes using the Tropical Climate exemption do not require duct or envelope testing and are typically affordable housing. For these projects, inspections are done primarily virtually, allowing these projects to be certified cost effectively. If on site verification of only

	house ventilation is required it will significantly increase the cost of certification and as these homes are typically naturally vented the value of confirmed ventilation is of limited value. Confirming that the duct installation meets the ASHRAE Prescriptive Design is adequate to confirm the ventilation system installation.
TG Recommendation:	Accept as Modified, 4-0-0
TG Modification:	1205.8 Whole Dwelling Ventilation. One of the following whole dwelling ventilation systems shall be implemented and shall be in accordance with the specifications of ASHRAE Standard 62.2-2010 Section 4. An explanation of the operation and importance of the ventilation system shall be included in the homeowner's manual practice. Exemption: Section 1205.8 is not required for the Tropical Climate Zone.
TG Reason:	The TG revised the exemption to be consistent with the language they previously accepted in an earlier practice.

P089 ID 7498	**1205.9 Radon control**
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	1205.9 Radon control. ~~Radon control measures are installed in accordance with 902.3 for Zone 1 as defined in Figure 9(1).~~ ~~(a) a passive radon system is installed, or~~ ~~(b) an active radon system is installed~~ In Radon Zone 1, a passive system is installed.
Reason:	Simplify text to "In Radon Zone 1, a passive radon system is installed." Referring to both "radon control measures" and "section 902.3" presents confusion, as section 902.3 covers both "radon reduction measures" and "radon testing." Further, there is no need to list both passive and active radon system options within Chapter 12, since there are no design choices. It would be cleaner to identify one core expectation for homes in radon zone 1.
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	1205.9 Radon control. ~~Radon control measures are installed in accordance with 902.3 for Zone 1 as defined in Figure 9(1).~~ ~~(a) a passive radon system is installed, or~~ ~~(b) an active radon system is installed~~ In Radon Zone 1, a passive or active system is installed.
TG Reason:	The TG modified the proposal to be clear that if an active system is installed it would be compliant.

Additional TG Proposed Changes

A086 ID 7710	**Section 12 certified compliance path for single-family homes, townhomes, and duplexes**
Submitter:	Greg Coolidge, Crescent Communities
Comment:	SECTION 12 CERTIFIED COMPLIANCE PATH FOR SINGLE-FAMILY HOMES, TOWNHOMES, AND DUPLEXES, TRIS, AND QUADS
Reason:	There really is no reason to not allow tris and quads for the Chapter 12 compliance path
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	SECTION 12

	CERTIFIED COMPLIANCE PATH FOR SINGLE-FAMILY HOMES, TOWNHOMES, AND DUPLEXES, TRIPLEXES, AND QUADPLEXES PERMITTED UNDER THE IRC
TG Reason:	The task group wants to restrict the certified path to buildings permitted under the IRC.

A087 ID 7644	**1204.1 Lavatory faucets.**
Submitter:	Olga Cano, EPA WaterSense
Comment:	Water-efficient lavatory faucets in bathrooms shall have a maximum flow rate of 1.5 gmp (5.58 L/min~~), tested at 60 psi (414 kPa) in accordance with ASME A112.18.1/CSA B125.1~~ and be WaterSense labeled
Reason:	· Requiring the WaterSense label ensures that products have met EPA's performance criteria for user satisfaction in addition to efficiency. · Offers consistency with Water Closet guidance which specifies WaterSense specification. · Specifying the pressure is unnecessary. Pressure is specified as part of the WaterSense performance requirements. Metered faucets do not have pressure settings specified by the manufacturer. Manufacturer listed pressure in other plumbing products is governed by DOE standards.
TG Recommendation:	Accept, 2-2-2
TG Modification:	
TG Reason:	

A088 ID 7709	1205.7 Local ventilation
Submitter:	Carl Seville, SK Collaborative
Comment:	**1205.7 Local ventilation.** shall be in accordance with the following: (1) Bathrooms are vented to the outdoors. The minimum tested ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms. Exhaust fans are ENERGY STAR, or equivalent. (2) Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation. Homes meeting the tropical climate exemption for energy efficiency with kitchens open to rooms with operable windows are exempt from this requirement. (3) Bathroom and kitchen exhaust ventilation rates are tested to meet minimum ventilation rates or ducts are installed to meet the prescriptive requirements in IRC Table M1504.2.
Reason:	Kitchens in homes located in tropical zones often have operable windows and no AC and would not need the additional ventilation provided by a kitchen exhaust unit or range hood.
TG Recommendation:	Accept as Modified, **Task Group 6:** 6-0-0 // **Task Group 8:** 4-0-0
TG Modification:	**1205.7 Local ventilation.** shall be in accordance with the following: (1) Bathrooms are vented to the outdoors. The minimum tested ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms. Exhaust fans are ENERGY STAR, or equivalent. Exemption: 1205.7(1) is not required for the Tropical Zone Climate if the openable window area is at least 14% of the Bathroom floor area 2) Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation. ~~Homes meeting the tropical climate exemption for energy efficiency with kitchens open to rooms with operable windows are exempt from this requirement.~~ Exemption: 1205.7(2) is not required for the Tropical Zone Climate if the openable window area is at least 14% of the Kitchen floor area. (3) Bathroom and kitchen exhaust ventilation rates are tested to meet minimum ventilation rates or ducts are installed to meet the prescriptive requirements in IRC Table M1504.2.
TG Reason:	This addresses natural ventilation as a compliance. TG 6 agrees with the modification for TZ homes.

P090 ID 7508	13.102 COMPLIANCE
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	13.10~~2~~3.1.1 Core and shell compliance. The exterior air barrier, insulation, air sealing, and fenestration, are verified to the requirements of this chapter at the time of certification. 13.10~~4~~3.2 Core and shell material selection. The core and shell of the non-residential portion of the building must contain similar green material selections of the residential portion of the building and must comply with the additional provisions of this section. 13.10~~5~~3.~~1~~3 Building thermal envelope insulation. The non-residential portion of the building must comply with the insulation requirements of ICC IECC Sections C402.1 through C402.3 as applicable, and § 13.105.1.1. A UA tradeoff shall be allowed for § 13.105.1 and § 13.105.2 is equal to or less than the ICC IECC UA. Maximum UA. For ICC IECC residential, the total building UA is less than or equal to the total maximum UA as computed by 2015 ICC IECC Section R02.1.5. For ICC IECC commercial, the total UA is less than or equal to the sum of the UA for 2015 ICC 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. 13.103.4 ~~105.1.1~~ Insulation installation. Insulation installed in the thermal envelope shall be visually inspected for compliance with Grade I installation. Grade II insulation is only permitted where exterior continuous insulation is installed. Grade III insulation installation is not permitted. 13.103.5~~105.2~~ Building thermal envelope fenestration. The non-residential portion of the building shall be in accordance with the requirements of the ICC IECC Section C402.4 as applicable. 13.103.6 Building thermal envelope air sealing. The building thermal envelope is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. The following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film, or solid material: (1) All joints, seams and penetrations (2) Site-built windows, doors and skylights (3) Openings between window and door assemblies and their respective jambs and framing (4) Utility penetrations (5) Dropped ceilings or chases adjacent to the thermal envelope (6) Knee walls (7) Walls and ceilings separating the garage from conditioned spaces (8) Behind tubs and showers on exterior walls (9) Cantilevers (10) Attic access openings (11) Rim joists junction (12) Other sources of infiltration 13.105.3.1 Air barrier verification. If not previously verified, the air barrier shall be visually inspected to demonstrate compliance with Table 701.4.3.2(2) and shall comply with the requirements of ICC IECC C402.5.
Reason:	Items required for Core & Shell certification is not clear based on current formatting. Suggest making two distinct sections, one for core and shell and one for fully fitted out and equipped and indicating core and shell is prerequisite for core and shell.
TG Recommendation:	Accept, 9-0-0
TG Modification:	
TG Reason:	

P091 ID 7500	13.104.3 Core and shell material selection
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	~~13.104.3.1~~ Material selection. At least six of these sections must be met from the following: 1. Biobased products § 606.1 2. Wood-based products § 606.2 3. Manufacturing energy § 606.3 4. Resource-efficient materials § 608.1 5. Regional materials § 609.1 6. Product LCA § 610.1.2.1 7. Building assembly LCA § 610.1.2.2 8. Manufacturer's environmental management system concepts § 612.1 9. Sustainable products § 612.2 10. Salvaged materials § 603.2 11. Product declarations § 611.1.1 and § 611.1.2 12. Recycled content § 604.1
Reason:	This section needs a new section number to separate it from the Core and Shell requirements of 13.104.3. As it is numbered now, nested within 13.104 it seems like it should be required for core and shell certification, but that would not make any sense. ALSO reorder items 1-12 so that they are in numeric order of the practice.
TG Recommendation:	Accept, 10-0-0
TG Modification:	
TG Reason:	Not all items are appropriate for Core and Shell projects. We assume that it was inadvertently misnumbered. We anticipate future modifications after other TGs have acted on related sections.

P092 ID 7573	13.105.1 Building thermal envelope insulation
Submitter:	Jamie Carr, Self
Comment:	Add at the end of 13.105.1 after "provide UA calculation documentation": Where buildings have a vertical fenestration area or skylight area exceeding that allowed in Section C402.4, provide documentation showing compliance with Section C401.2, Item 1 or Section 401.2, Item 3.
Reason:	Currently the only form of compliance for the maximum UA is through REScheck or COMcheck. Tall curtain wall buildings generally do not comply through this method because their glazing area exceeds that allowed by C402.4. In fact, 2018 IECC section C402.1 says that these buildings need to use one of the modeling paths to show envelope compliance. I propose including modeling as a way to show minimum compliance so that the commercial space in these types of buildings can be certified.
TG Recommendation:	Disapprove, 7-0-0
TG Modification:	
TG Reason:	In favor of action on A092.

P093 ID 7507	13.105.1 Building thermal envelope insulation
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	Reference the 2024 IECC.
Reason:	This section references the 2015 ICC IECC tables, not 2018. Was that intentional? Or, should the next version of the NGBS reference the same IECC version as it does for residential?
TG Recommendation:	Disapprove, 7-0-0
TG Modification:	
TG Reason:	Reference baseline is not settled.

Additional TG Proposed Changes

A089 ID 7718	13.102.1 Compliance
Submitter:	Carl Seville, SK Collaborative
Comment:	**Core and shell compliance.** The exterior air barrier, insulation, air sealing, fenestration, resource efficiency measures, and any other products or systems that are installed at the time of certification are verified to the requirements of this chapter at the time of certification.
Reason:	Core and shell projects should include moisture management and resource efficient planning and construction. Specific Resource Efficiency Measures to be included in Core and Shell certification include: 13.104.1.1 Capillary Break 13.104.1.2 Foundation Drainage 13.104.1.3 Dampproof Walls 13.104.1.4 Water Resistive Barrier 13.104.1.5 Flashing 13.104.1.7 Ice Barrier 13.104.1.8 Architectural Features
TG Recommendation:	Accept as Modified, 10-0-0
TG Modification:	Per the accepted proposal P090, the items within the Reason statement above should be included in the new Core and Shell section. Specify newly-installed resource efficiency measures to be included in Core and Shell projects.
TG Reason:	These items belong in both Core and Shell and Full Fit-Out. Better accommodate existing buildings with commercial spaces by including newly-installed language for certain measures.

A090 ID 7720	Section 13.104.1 Enhanced Durability
Submitter:	Karla Butterfield, Steven Winter Associates, Inc.
Comment:	13.104.1 Enhanced Durability. For existing spaces, a visual inspection of interior surfaces shall be performed by the verifier. If moisture is evident, the source (e.g. leaks around windows, doors, wall penetrations, roofs, flashing, foundations, plumbing, etc.) must be identified and remediated. 13.104.1.1 Capillary break. A capillary break and vapor retarder shall be installed under newly installed concrete slabs in accordance with ICC IBC Sections 1907, excluding exception #3 and 1805.2.1 13.104.1.2 Foundation drainage. Where required by the ICC IBC, for newly constructed habitable and usable spaces below grade, exterior drain tile is installed. 13.104.1.3 Dampproof walls. Newly installed walls that retain earth and enclose interior spaces, are required to be dampproofed per ICC IBC Section 1805. 13.104.1.4 Water-resistive barrier. Where required by the ICC IBC, a water-resistive barrier and/or drainage system is installed behind newly installed exterior cladding. 13.104.1.5 Flashing. Flashing is provided as follows to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details are provided in the construction documents and are in accordance with the fenestration manufacturer's instructions, the flashing manufacturer's instructions, or as detailed by a registered design professional. Flashing is installed at the following newly installed assembly locations~~, as applicable unless in conflict with manufacturer's installation instructions~~: *Items (1) through (12) remain unchanged* 13.104.1.6 Tile backing materials. Tile backing materials installed under newly tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325. Tile shall not be installed over paper-faced gypsum board in wet areas. *Item 13.104.1.7 Ice Barrier remains unchanged* 13.104.1.8 Architectural features that increase the potential for water intrusion are avoided, and must comply with the following: 1) Newly installed horizontal ledgers are sloped away to provide gravity drainage as appropriate for the application. 2) No roof configurations that create horizontal valleys in roof design, unless directed to a drain on a flat roof. 3) No newly installed recessed windows and architectural features that trap water on horizontal surfaces.
Reason:	Although referencing the ICC IBC implies these requirements are for newly constructed assemblies, clarifying newly installed may allow more rehab and renovation project participation. The submitter has weighed durability concerns against the overall impact of including existing buildings, therefore, a visual inspection would be required to ensure moisture issues aren't pre-existing.
TG Recommendation:	Accept as Modified, 10-0-0
TG Modification:	13.104.1 Enhanced Durability. For existing spaces, a visual inspection of interior surfaces shall be performed. Where moisture is evident, the source, such as, but not limited to leaks around windows, doors, wall penetrations, roofs, flashing, foundations, and plumbing, shall be identified and remediated. 13.104.1.1 Capillary break. A capillary break and vapor retarder shall be installed under newly installed concrete slabs in accordance with ICC IBC Sections 1907, excluding exception #3 and 1805.2.1

	13.104.1.2 Foundation drainage. Where required by the ICC IBC, for newly constructed habitable and usable spaces below grade, exterior drain tile is installed. 13.104.1.3 Dampproof walls. Newly installed walls that retain earth and enclose interior spaces, are required to be dampproofed per ICC IBC Section 1805. 13.104.1.4 Water-resistive barrier. Where required by the ICC IBC, a water-resistive barrier and/or drainage system is installed behind newly installed exterior cladding. 13.104.1.5 Flashing. Flashing is provided as follows to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details are provided in the construction documents and are in accordance with the fenestration manufacturer's instructions, the flashing manufacturer's instructions, or as detailed by a registered design professional. Flashing is installed at the following newly installed assembly locations, as applicable unless in conflict with manufacturer's installation instructions: *Items (1) through (12) remain unchanged* 13.104.1.6 Tile backing materials. Tile backing materials installed under newly tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325. Tile shall not be installed over paper-faced gypsum board in wet areas. *Item 13.104.1.7 Ice Barrier remains unchanged* 13.104.1.8 Architectural features that increase the potential for water intrusion are avoided, and must comply with the following: 1) Newly installed horizontal ledgers are sloped away to provide gravity drainage as appropriate for the application. 2) No roof configurations that create horizontal valleys in roof design, unless directed to a drain on a flat roof. 3) No newly installed recessed windows and architectural features that trap water on horizontal surfaces.
TG Reason:	Modification provides additional flexibility and clarity of language.

A091 ID 7719	**13.104.3 Core and shell material selection**
Submitter:	Karla Butterfield, Steven Winter Associates, Inc.
Comment:	13.104.3.1 Material selection. At least six of the following Section 6 items must be met ~~from the following~~ when certifying to Full missed-use building compliance (13.102.1.2). Also, change the numbering to 13.104.3 if the CC deletes 13.104.3 (previous submittal).
Reason:	As it currently reads, it is not clear that 13.104.3.1 only applies to a full fit out. It would be difficult for core and shell to meet this since finish materials aren't usually being selected.
TG Recommendation:	Accept as Modified, 8-0-0
TG Modification:	13.104.3.1 Material selection. Not less than ~~At least~~ six of the following Section 6 items must be met ~~from the following~~ where certifying to Full mixed-use building compliance (13.102.1.2). *Also, change the numbering to 13.104.3 if the CC deletes 13.104.3 (previous submittal).*
TG Reason:	Fixed typo, applied other editorial corrections.

A092 ID 7722	13.105.1 Building thermal envelope insulation
Submitter:	Carl Seville, SK Collaborative
Comment:	**13.105.1 Building thermal envelope insulation.** The non-residential portion of the building must comply with the insulation requirements of ICC IECC Sections C402.1 through C402.3 as applicable, and § 13.105.1.1~~. A UA tradeoff shall be allowed for § 13.105.1 and § 13.105.2 is equal to or less than the ICC IECC UA.~~ or the entire building envelope including non-commercial areas meet the total IECC UA or the entire building meets the IECC as demonstrated with whole building energy model. **Maximum UA.** For ICC IECC residential, the total building UA is less than or equal to the total maximum UA as computed by 2015 ICC IECC Section R02.1.5. For ICC IECC commercial, the total UA is less than or equal to the sum of the UA for 2015 ICC 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 or the entire building envelope including non-commercial areas meet the total IECC UA or the entire building meets the IECC as demonstrated with whole building energy model.
Reason:	If the entire building meets the energy code, there is no reason that attached commercial space should not comply if the envelope of that area was not compliant with the prescriptive code.
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	**13.105.1 Building thermal envelope insulation.** The non-residential portion of the building must comply with the insulation requirements of ICC IECC Sections C402.1 through C402.3 as applicable, and § 13.105.1.1~~. A UA tradeoff shall be allowed for § 13.105.1 and § 13.105.2 is equal to or less than the ICC IECC UA.~~ or the entire building envelope including non-commercial areas meet the total IECC UA or the entire building meets the IECC as demonstrated with whole building energy model. **Maximum UA.** For ICC IECC residential, the total building UA is less than or equal to the total maximum UA as computed by ~~2015~~ ICC IECC Section R402.1.5. For ICC IECC commercial, the total UA is less than or equal to the sum of the UA for ~~2015~~ ICC 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 or the entire building envelope including non-commercial areas meet the total IECC UA or the entire building meets the IECC as demonstrated with whole building energy model.
TG Reason:	Align IECC reference with current reference code. Correct section number.

A093 ID 7734	13.105.1 Building thermal envelope insulation
Submitter:	Carl Seville, Josh Hanson, & Thomas Culp, SK Collaborative, US-EcoLogic, & Birch Point Consulting
Comment:	**13.105.1 Building thermal envelope insulation and fenestration.** The non-residential portion of the building ~~must comply~~ shall be in accordance with one of the following: (1) The ~~insulation~~ requirements of ICC IECC Sections C402.1 through ~~C402.3~~C402.4 or R402.1 through R402.3 including table R402.4.1.1, as applicable, and § 13.105.1.1~~. A UA tradeoff shall be allowed for § 13.105.1 and § 13.105.2 is equal to or less than the ICC IECC UA.~~ (2) The entire building thermal envelope, including both residential and non-residential, meet the total ICC IECC UA per section C402.1.5 or R402.1.5, as applicable. (3) The entire building meets the ICC IECC as demonstrated with a whole building energy model per ICC IECC section C407. (4) The entire building complies with ASHRAE 90.1 Section 4.2.1.1.c Appendix G. ~~**Maximum UA.** For ICC IECC residential, the total building UA is less than or equal to the total maximum UA as computed by 2015 ICC IECC Section R02.1.5. For ICC IECC commercial, the total UA is less than or equal to the sum of the UA for 2015 ICC 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~~
Reason:	If the entire building meets the energy code, there is no reason that attached commercial space should not comply if the envelope of that area was not compliant with the prescriptive code. Included more direct language for alignment with 13.105.2 and 13.105.12 (prescriptive, UA trade off and modeling as applicable options)
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	**13.105.1 Building thermal envelope insulation and fenestration.** Comply with one of the following: (1) The ~~insulation~~ requirements of IECC Sections C402.1 through ~~C402.3~~C402.4 or R402.1 through R402.3 including table R402.4.1.1, as applicable, and § 13.105.1.1~~. A UA tradeoff shall be allowed for § 13.105.1 and § 13.105.2 is equal to or less than the ICC IECC UA.~~ (2) The entire building thermal envelope, including both residential and non-residential, comply with total IECC Section C402.1.5 or R402.1.5, as applicable. (3) The entire building complies with the IECC as demonstrated with a whole building energy model in accordance with IECC Section C407. (4) The entire building complies with ASHRAE 90.1 Section 4.2.1.1.c Appendix G.
TG Reason:	Clarify the intent of the standard.

A094 ID 7727	13.105.2 Building Thermal Envelope Thermal Fenestration
Submitter:	Carl Seville & Josh Hanson, SK Collaborative & US-EcoLogic
Comment:	~~13.105.2 Building Thermal Envelope Thermal Fenestration.~~ ~~The non-residential portions~~ of the building shall be in accordance with one of the following: ~~the requirements of the ICC IECC Section C402.4 as applicable~~ ~~(1) The requirement of the ICC IECC Section C402.4 or R402.3, as applicable.~~ ~~(2) The entire building thermal envelope, including both residential and non-residential, meet the total ICC IECC UA per section C402.1.5 or R402.1.5, as applicable.~~ ~~(3) The entire building meets the ICC IECC as demonstrated with a whole building energy model per ICC IECC section C407.~~
Reason:	Fenestration practices have been added to 13.105.1.
TG Recommendation:	Accept, 7-0-0
TG Modification:	
TG Reason:	TG recommended combining fenestration with 13.105.1 per action A093.

A095 ID 7728	13.105.3 Building thermal envelope air sealing
Submitter:	Karla Butterfield, Steven Winter Associates, Inc.
Comment:	13.105.3 Building thermal envelope air sealing. The building thermal envelope is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. Where applicable, the following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film, or solid material: (1) (2) Newly installed site-built windows, doors and skylights (3) Openings between newly installed window and door assemblies and their respective jambs and framing (4) (5) (6) (7) (8) Behind newly installed tubs and showers on exterior walls (9) Newly constructed cantilevers (10) (11) Newly installed rim joist~~s~~ junctions (12)
Reason:	Where applicable is added to ensure core and shell projects comply when the item is installed. Adding newly installed to some of the items will allow renovation projects to comply. For example, if the windows are not being replaced, verifying sealant around the rough opening is not required. However, joints, seams and penetrations must be sealed so a joint between the existing window trim and drywall would need to be sealed.
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	13.105.3 Building thermal envelope air sealing. The building thermal envelope is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. The following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film, or solid material: *Items 1, 4, 5, 6, 7, 10, 12 (as written)* For existing buildings and where not renovated, modified, or newly installed, the following locations are permitted to be exempted from the requirement: *Items 2, 3, 8, 9, 11 (as written)*
TG Reason:	Reformatted for clarity, as well as provided better direction for the treatment of existing buildings undergoing renovation.

A096 ID 7729	13.105.4 Energy metering
Submitter:	Karla Butterfield, Steven Winter Associates, Inc.
Comment:	13.105.4 Energy metering. Energy metering or monitoring of usage shall be provided for each tenant individually for the non-residential portions . . .
Reason:	Where individual metering isn't provided, an alternative way to monitor and affect usage seems reasonable.
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	13.105.4 Energy metering. Energy metering or monitoring device shall be provided for each tenant space individually for the non-residential portions . . .
TG Reason:	Clarity.

A097 ID 7730	13.105.11 Heated-water circulation and temperature maintenance
Submitter:	Karla Butterfield, Steven Winter Associates, Inc.
Comment:	13.105.11.3 Controls for hot water storage. The controls on pumps that circulate water between a water heater and heated water storage tank shall limit the operation of the pump from the heating cycle startup to not greater than 5 minutes ~~at~~ after the end of the cycle.
Reason:	Align the standard with code by changing "at" to "after." Current language reflects a substantive typo.
TG Recommendation:	Accept, 7-0-0
TG Modification:	
TG Reason:	

A098 ID 7726	13.105.12 Energy options
Submitter:	Carl Seville & Josh Hanson, SK Collaborative & US-EcoLogic
Comment:	**13.105.12 Energy options.** The non-residential portions of the building shall ~~comply~~ be in accordance with one of the ~~three two options below~~ following: **13.105.12.1 T**he requirements of the ICC IECC Sections C402 through C405 and two selections from section C406. **13.105.12.~~1~~2** ~~Energy requirements shall be met if~~ Modeling in accordance with ICC IECC section C407 ~~shows a 10% reduction in~~ demonstrating that the entire building meets the energy efficiency requirement in the ICC IECC. **13.105.12.~~2~~3** ~~Energy requirements shall be met if~~ Modeling in accordance with the requirements of ASHRAE 90.1, Appendix G ~~shows a 10% reduction in energy cost from the prescribed levels.~~ ~~**13.105.12.32** Energy requirements shall be met if at least two options in ICC IECC Section C406 are met.~~
Reason:	Eliminate this practice entirely. Energy efficiency compliance is addressed in 13.105.1
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	~~**13.105.12 Energy options.** The non-residential portions of the building shall comply be in accordance with one of the three two options below following:~~ ~~**13.105.12.1 T**he requirements of the ICC IECC Sections C402 through C405 and two selections from section C406.~~ ~~**13.105.12.12** Energy requirements shall be met if Modeling in accordance with ICC IECC section C407 shows a 10% reduction in demonstrating that the entire building meets the energy efficiency requirement in the ICC IECC.~~ ~~**13.105.12.23** Energy requirements shall be met if Modeling in accordance with the requirements of ASHRAE 90.1, Appendix G shows a 10% reduction in energy cost from the prescribed levels.~~ ~~**13.105.12.32** Energy requirements shall be met if at least two options in ICC IECC Section C406 are met.~~
TG Reason:	Residential certification only requires meeting the energy code. Deleting this item improves consistency throughout the standard. TG combined energy efficiency compliance with 13.105.1 per A093.

A099 ID 7737	13.106.1 Fitting and fixture consumption
Submitter:	Jonah Schein, WaterSense
Comment:	Edits to table 13.106.1 as specified.
Reason:	· Requiring the WaterSense label ensures that products have met EPA's performance criteria for user satisfaction in addition to efficiency. Adding the requirement here also keeps the commercial space requirements consistent with the requirements for residential spaced (which also reference the WaterSense performance criteria). · Specifying the pressure is unnecessary. Pressure is specified as part of the WaterSense performance requirements. Metered faucets do not have pressure settings specified by the manufacturer. Manufacturer listed pressure in other plumbing products is governed by DOE standards. · Multi-head/emitter shower compartments can dramatically increase the amount of water used in a shower.
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	**13.106.1 Fitting and fixture consumption.** Plumbing fixtures and fixture fittings shall comply with the maximum flow rates specified in Table 13.106.1 and, where applicable, meet the performance criteria of the WaterSense Specification. Plumbing fixtures and fixture fittings in Table 13.106.1 shall have a manufacturer's designation for flow rate. **Exceptions:** The following fixtures and devices shall not be required to comply with the reduced flow rates in Table 13.106.1: 1) Clinical sinks having a maximum water consumption of 4.5 gallons (17 L) per flush; 2) service sinks faucets, tub fillers, pot fillers, laboratory faucets, utility faucets, and other fittings designed primarily for filling operations; and 3) Fixtures, fittings, and devices whose primary purpose is safety. *Edit table as shown below.* **TABLE 13.106.1**
TG Reason:	Consistency with performance criteria elsewhere in the standard and eliminating un-verifiable requirements.

MAXIMUM FLOW RATES AND FLUSH VOLUMES FOR FIXTURES AND FIXTURES FITTING FIXTURE OR FIXTURE FITTING TYPE	MAXIMUM FLOW RATE OR FLUSH VOLUME & CERTIFICATION REQUIREMENTS
Showerhead[a]	2.0 gpm & WaterSense labeled or equivalent performance criteria
Lavatory faucet and bar sink-private	1.5 gpm & WaterSense labeled or equivalent performance criteria
Lavatory faucet-public (metering)	0.25 gpc[bd]
Lavatory faucet-public (non-metering)	0.5 gpm[e]
Kitchen faucet-private[d]	1.8 gpm[e]
Kitchen and bar sink faucets in other than dwelling units and guest rooms	2.2 gpm[e]
Urinal	0.5 gpf & WaterSense labeled or equivalent performance standard or nonwater urinal
Water closet	1.28 gpf[e] & WaterSense labeled or equivalent performance criteria
Prerinse Spray Valves	1.28 gpm
Drinking Fountains (manual)	0.7 gpmd
Drinking Fountains (metered)	0.25 gpcb[c]

a. Includes hand showers, body sprays, and rainfall panels. 2.0 GPM limit shall apply to cumulative flow of all devices located less than 96" apart in individual/two-person shower compartments or 35" apart in gang or group showers (as measured horizontally).
b. Gallons per cycle.
c. Bottle filling stations associated with drinking fountains shall not have limitations for flow rate.
d. Kitchen faucets may temporarily increase the flow above the maximum rate but not to exceed 2.2 gpm.
e. Shall meet ASME/CSA A112.18.1 or equivalent standard as determined by the Adopting Entity.

A100 ID 7736	13.106.4 Food Service
Submitter:	Jonah Schein, WaterSense
Comment:	**13.106.4.3 Pre-rinse spray heads.** Food service pre-rinse spray heads ~~shall have a manufacturers designation of flow rate, shall comply with the maximum flow rate in Table 1305.1, and~~ shall shut off *automatically* when released.
Reason:	There is no Table 1305.1 in the standard, making the requirement impossible to comply with. It is believed that table 1305.1 may be a reference to the Uniform Plumbing Code to specify required spray forces. These spray forces are required in the U.S. by DOE regulations, as are manufacturer designation of flow rates, and do not need to be reiterated here. For properties outside the U.S., it is highly unlikely that products not in compliance with U.S. regulations would provide spray force values, making this requirement unenforceable.
TG Recommendation:	Accept, 6-0-0
TG Modification:	
TG Reason:	No need to reiterate federal regulations. Deleted requirement impossible to field verify.

A101 ID 7731	13.106.6 Heat exchangers
Submitter:	Karla Butterfield, Steven Winter Associates, Inc.
Comment:	13.106.6 Heat exchangers. Once-through or single-pass cooling with potable or municipal reclaimed water is prohibited. ~~Heat exchangers shall be connected to a recirculating water system such as a chilled water loop, cooling tower loop, or similar recirculating system.~~
Reason:	This is a water savings measure which is easier to understand with the first charging sentence alone. Adding examples confuses the requirement.
TG Recommendation:	Accept, 7-0-0
TG Modification:	
TG Reason:	

A102 ID 7735	13.107.5 Protection of HVAC system openings
Submitter:	Karla Butterfield, Steven Winter Associates, Inc.
Comment:	13.107.5 Protection of HVAC system openings. HVAC supply and return duct and equipment openings shall be protected during dust-producing operations of construction or inspected and verified to be free from dust and debris at the time of register/diffuser installation.
Reason:	Verifying during the construction process may require several inspections. Adding the option for a visual inspection at the end of construction allows the verifier flexibility but still ensures the duct systems are free from dust and debris.
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	13.107.5 Protection of HVAC system openings. HVAC supply and return duct and equipment openings shall be protected during dust-producing operations of construction or inspected and verified to be free from dust and debris after dust-producing activities are completed and prior to owner occupancy.
TG Reason:	Added timing for inspection.

A103 ID 7733	13.107.8 Building Ventilation Systems
Submitter:	Thomas Culp, Birch Point Consulting, self
Comment:	**13.107.8.2 Air filters.** Air filters with a minimum MERV rating of ~~6~~ 13 are installed on central forced air

	systems and are accessible.
Reason:	Addendum P to ASHRAE 189.1-2020 / 2021 International Green Construction Code addendum raised the requirement for particulate matter filters or air cleaners to MERV 13. California 2019 Title 24 which took effect Jan 2020 also requires MERV 13. Note: there are also references to MERV 8 in 902.2.3, 11.902.2.3, and 1205.11. This chapter 13 requirement may need to be coordinated with any action taken on those sections by other task groups.
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	**13.107.8.2 Air filters.** Air filters with a minimum MERV rating of ~~6~~ 13 are installed on new central forced air systems and are readily accessible for maintenance. *Note:* Central forced air ducted systems should be designed to accommodate the pressure drop from a MERV 13 filter.
TG Reason:	Modified for clarity. Proposal makes the NGBS consistent with other industry standards while accommodating existing systems that may not function properly with a higher MERV filter.

A104 ID 7738	13.108.1 Operation and maintenance manuals for tenants
Submitter:	Josh Hanson, US-EcoLogic
Comment:	**13.108.~~1~~2** Operation and maintenance manuals for tenants. Manuals are provided to the initial tenants of ~~the~~ core and shell spaces and non-residential spaces of a full mixed-use building regarding the operation and maintenance of their respective portions of the building. Paper or digital format manuals are to include information regarding those aspects of the building's maintenance and operation that are within the area of responsibilities of the respective tenant. One or more responsible parties are to receive a copy of all documentation for archival purposes. (1) A narrative detailing the importance of operating in a green building. This narrative is included in all responsible parties' manuals. (2) A list of practices to conserve water and energy which require maintenance. (3) Information on opportunities to purchase renewable energy from local utilities or national green power providers. (4) Information on local and on-site recycling and hazardous waste disposal programs. (5) Local public transportation options for employees. **13.108.~~2~~1** Tenant finish out manual. Manuals are provided to the tenants of core and shell ~~non-residential~~ spaces prior to the start of construction regarding the design and construction of the non-residential portion of the building. Paper or digital format manuals are to include information regarding those aspects of the design and construction that are within the area of responsibilities of the respective tenant. One or more responsible parties are to receive a copy of all documentation for archival purposes. (1) Provisions of this Chapter verified and NOT verified at the time of building Certification for the ~~respective~~ non-residential space(s) that shall be maintained as part of the Tenant Finish Out. ~~(2) Provisions of this Chapter NOT verified at the time of building Certification for the respective space that shall be included in the Tenant Finish Out Construction Documents~~. (3) A list of minimum green building material specifications that are to be included in the Tenant Finish Out Construction Documents based on the materials that were installed in the residential portion of the building.
Reason:	Flipped the sections to flow more with the construction process, added language to clarify tenant finish out pertaining to C&S style spaces while O&M manuals would apply to both C&S and non-res spaces in a full mixed-use building. Combined 1&2 under Tenant finish out manuals.
TG Recommendation:	Accept as Modified, 4-0-0
TG Modification:	**13.108.~~1~~2** Operation and maintenance manuals for tenants. Manuals are available ~~provided~~ to the ~~initial~~ future tenants of ~~the~~ core and shell spaces and non-residential spaces of a full mixed-use building regarding the operation and maintenance of their respective portions of the building. Paper or digital format manuals are to include information regarding those aspects of the building's maintenance and operation that are within the area of responsibilities of the respective tenant. One or more responsible parties are to receive a copy of all documentation for archival purposes. (1) A narrative detailing the importance of operating in a green building. This narrative is included in all responsible parties' manuals.

	(2) A list of practices to conserve water and energy which require maintenance. (3) Information on opportunities to purchase renewable energy from local utilities or national green power providers. (4) Information on local and on-site recycling and hazardous waste disposal programs. (5) Local public transportation options for employees. **13.108.~~2~~1** Tenant finish out manual. Manuals are provided to the tenants of core and shell ~~non-residential~~ spaces prior to the start of construction regarding the design and construction of the non-residential portion of the building. Paper or digital format manuals are to include information regarding those aspects of the design and construction that are within the area of responsibilities of the respective tenant. One or more responsible parties are to receive a copy of all documentation for archival purposes. (1) Provisions of this Chapter verified and NOT verified at the time of building Certification for the ~~respective~~ non-residential space(s) that should be included ~~shall be maintained~~ as part of the Tenant Finish Out. ~~(2) Provisions of this Chapter NOT verified at the time of building Certification for the respective space~~ ~~that shall be included in the Tenant Finish Out Construction Documents~~. (3) A list of ~~minimum~~ green building material specifications that are recommended to be included in the Tenant Finish Out Construction Documents based on the materials that were installed in the residential portion of the building.
TG Reason:	Edited to clarify performance requirements and recommendations for all future fit-outs.

Section 14 Referenced Documents

Additional TG Proposed Changes

<table>
<tr><th>A105 ID 7635</th><th>Section 14 Referenced Documents</th></tr>
<tr><td>Submitter:</td><td>Aaron Gary, Tempo, Inc</td></tr>
<tr><td>Comment:</td><td>Update Chapter 14 to reflect the most current versions of the documents referenced in Chapter 6 and 9 practices.

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<table>
<tr><th>DOCUMENT</th><th>DATE</th><th>TITLE</th><th>SECTION</th></tr>
<tr><td>16000-23</td><td><s>2009</s>2018</td><td>Indoor air – Part 23: Performance test for evaluating the reduction of formaldehyde and other carbonyl concentrations by sorptive building materials</td><td>901.9,
11.901.9</td></tr>
<tr><td>17025</td><td><s>2005</s>2017</td><td>General requirements for the competence of testing and calibration laboratories</td><td>901.7,
901.8,
901.9.3,
901.10(1),
901.11,
901.12
11.901.7,
11.901.8,
11.901.9.3,
11.901.10(1),
11.901.11,
11.901.12</td></tr>
</table></td></tr>
<tr><td>Reason:</td><td>Maintain the internal logic and structure of the NGBS Standard</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td>TG Recommendation:</td><td>Accept as Modified, 8-0-0</td></tr>
<tr><td>TG Modification:</td><td>See A105 Supplemental Information.</td></tr>
<tr><td>TG Reason:</td><td>Incorporated additional 1402 updates.</td></tr>
</table>

NGBS Appendix B: Examples Of Third-Party Programs For Indoor Environmental Quality

P094 ID 7511	APPENDIX B: EXAMPLES OF THIRD-PARTY PROGRAMS FOR INDOOR ENVIRONMENTAL QUALITY
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Expand table to include ALL referenced product standards across all chapters, not just chapter 9.
Reason:	Users of the NGBS often have questions about third-party programs for product labels included in Chapter 6.
TG Recommendation:	Accept as Modified, 9-0-0
TG Modification:	See P094 Supplemental Information.
TG Reason:	Agreed with concept, added additional programs.

Additional TG Proposed Changes

A106 ID 7633	Appendix B
Submitter:	Aaron Gary, Tempo, Inc
Comment:	Update Appendix B to reflect the most current versions of the documents referenced in Chapter 6 and 9 practices. **TABLE B200(1) Examples of Third-party Certification Programs** **Related Section of Standard** / **Examples of Third-party Certification Programs Compliant with the Corresponding Section** 901.~~6~~7(2) Carpet~~s~~ and carpet cushion, 11.901.7(2) Carpet~~s~~ and carpet cushion — Carpet and Rug Institute's (CRI) Green Label Plus Indoor Air Quality Program 901.7 (1) Hard-surface flooring, 11.901.7 (1) Hard-surface flooring — UL GREENGUARD Gold Resilient Floor Covering Institute's FloorScore Indoor Air Certification Program
Reason:	Update the NGBS Standard references to the most recent versions.
TG Recommendation:	Accept as Modified, 9-0-0
TG Modification:	See A106 Supplemental Information.
TG Reason:	Updated Chapter 9 references.

NGBS Appendix C: Accessory Structures

P095 ID 7503	APPENDIX C: ACCESSORY STRUCTURES
Submitter:	Michelle Foster, Home Innovation Research Labs (NGBS Green)
Comment:	Change reference E202 to C202
Reason:	Accessory Structures was changed from Appendix E to Appendix C with the 2020 version. Editorial changes were not fully implemented.
TG Recommendation:	Accept, 7-0-1
TG Modification:	
TG Reason:	

Additional TG Proposed Changes

A107 ID 7723	Appendix C Accessory Structures
Submitter:	Carl Seville, SK Collaborative
Comment:	C202 Conformance Criteria. Accessory Structures shall implement practices from Sections 5 through 11 or Section 13, as applicable, ~~Chapters 5 through 10~~ in accordance with Sections C202.1 through C202.7.
Reason:	This change will expand flexibility for stand-alone buildings located on multifamily sites to conform with Appendix C (provided that they are accessory to and incidental to residential building(s)).
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	*Amend Appendix C as follows:* C202 Conformance Criteria. Accessory Structures shall implement practices from Sections 5 through 11 or Section 13, as applicable, ~~Chapters 5 through 10~~ in accordance with Sections C202.1 through C202.7. Where applying Section 13 criteria, total accessory structure area shall be equal to or less than 50% of the gross floor area of the entire project.
TG Reason:	Clarification and alignment with Section 101.2 Scope.

A108 ID 7732	Appendix C Accessory Structures
Submitter:	Carl Seville, SK Collaborative
Comment:	*Amend Appendix C as follows:* C202 Conformance Criteria. Accessory Structures shall implement practices from Sections 5 through 11 or Section 13, as applicable, ~~Chapters 5 through 10~~ in accordance with Sections C202.1 through C202.7. If applying Section 13 criteria, total accessory structure area shall not exceed 50% of the gross floor area of the entire project.
Reason:	This change will expand flexibility for stand-alone buildings located on multifamily sites to conform with Appendix C (provided that they are accessory to and incidental to residential building(s)).
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	*Amend Appendix C as follows:* C202 Conformance Criteria. Accessory Structures shall implement practices from Sections 5 through 11 or Section 13, as applicable, ~~Chapters 5 through 10~~ in accordance with Sections C202.1 through C202.7. Where applying Section 13 criteria, total accessory structure area shall be equal to or less than 50% of the gross floor area of the entire project.
TG Reason:	Clarification and alignment with Section 101.2 Scope.

P096 ID 7528	APPENDIX D: WATER RATING INDEX
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Renumber tables. Check numbering throughout.
Reason:	EDITORIAL CHANGES Appendix D table are labeled 1, 2, 4, 6, 7, 8, 9. This appears to be an editorial issue. There is no explanation for why tables 3 and 5 would be missing. In section D101.8(1), there are two items labeled "(a)." One of these should be corrected to "(c)."
TG Recommendation:	Accept, 7-0-1
TG Modification:	
TG Reason:	Legislative language required

P097 ID 7521	D101.3 Capabilities
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Replace with the following: **D101.3 Capabilities.** 1) The WRI addresses newly-constructed single-family homes, multifamily buildings, and the residential portions of mixed-use buildings. 2) Multifamily buildings are evaluated as a whole; WRI scores are not available for individual dwelling or sleeping units. 3) The WRI calculator cannot be used to evaluate the water use of commercial spaces.
Reason:	SECTION D101.3 Capabilities The scope and building types noted in this section are in conflict with other sections of the NGBS standard. Appendix D D101.3(1) states the WRI methodology applies to both new and existing construction. However, the NGBS only references WRI within the New Construction and Single-Family Certified Paths. Appendix D 101.3(2) states that WRI calculations are available for (1) one- and two- family dwellings; (2) townhomes not more than three stories above grade in height; and (3) multifamily buildings as a whole building, or individual dwelling units provided that each unit has a separate water meter. This scope does not align with the definitions and compliance options included within Chapters 2 and 3. This section should be adjusted to identify that WRI is available for single-family homes, townhomes, and multifamily and mixed-used buildings (i.e., all buildings that are eligible for NGBS compliance under the New Construction and Single-Family Certified paths). Further, we believe that the story limit included within D101.3(2) was intended as a definition of what constitutes a townhome, rather than a true restriction of building eligibility. Per the IRC classification, all townhomes are at or below three stories. We find no building science reason to limit townhomes of a certain height. Finally, WRI scores should be issued for whole-building only, not individual units. This aligns with how NGBS compliance is assessed. Per Section 303 Green Buildings, residential buildings and the residential portions of mixed-use buildings are assessed in their entirety for compliance.
TG Recommendation:	Accept as Modified, 9-0-0
TG Modification:	*Replace Items (1) and (2) with the following:* **D101.3 Capabilities.** 1) The WRI addresses ~~newly-constructed~~ single-family homes, townhouses, multifamily buildings, and the residential portions of mixed-use buildings. 2) Multifamily buildings are evaluated as a whole; WRI scores are not available for individual dwelling or sleeping units. 3) The WRI calculator cannot be used to evaluate the water use of commercial spaces.
TG Reason:	TG did not want to limit WRI to only new construction.

P098 ID 7530	D101.5 Computer Water Rating Index
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	See P098 Supplemental Information.
Reason:	SECTION D101.5 COMPUTE WATER RATING INDEX Appendix D D101.5 states "The WRI shall be computed as a percentage of the combined indoor and outdoor water use in relation to the combined indoor and outdoor water baseline." Appendix D, as written, does not address common areas; however, in most other areas of the NGBS, all residential portions of a multifamily building, including residential common areas, are evaluated for compliance. Add an additional section that addresses Indoor Common Areas. The values water volume and use factors included within the proposal attached are derived largely from The Handbook of Water Use and Conservation.
Substantiating Documents:	Yes
TG Recommendation:	Accept, 5-0-1
TG Modification:	
TG Reason:	

P099 ID 7524	D101.6 Indoor Water
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Delete all three sub-items.
Reason:	SECTION D101.6(5)(b)((ii)(1-3) BASELINE STRUCTURAL WASTE Appendix D includes three exceptions for the Estimated Vertical Pipe equation within the Baseline Structural Waste section. (1) Add half floor height for one story house with crawlspace and water heater on first floor or in garage (2) Add half floor height for 1 story with slab (3) Subtract 1 floor height for 2 story slab on grade The intent of these exceptions is unclear. Further, inclusion of these exceptions would instill inconsistencies between the baseline and verified calculations, as similar construction details are not reflected in the verified structural waste equation.
TG Recommendation:	Accept, 7-0-1
TG Modification:	
TG Reason:	Make it in legislative format.

P100 ID 7525	D101.6 Indoor Water
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Replace with the following: Verify no leaks.
Reason:	SECTION D101.6(6)(iv) OTHER WATER USE Appendix D considers verified leaks within the Other Water Use section. As the NGBS only includes WRI for newly-constructed buildings, it is inappropriate to allow verified leaks to be factored into water use calculations. In order to earn a certified WRI score, a building should be verified to have no leaks.
TG Recommendation:	Accept, 7-0-1
TG Modification:	
TG Reason:	Make it in legislative format.

P101 ID 7523	D101.6 Indoor Water
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Within Table 1, change the Baseline VolumePerOccupant for Clothes Washers from 7.41 to 17.41.
Reason:	Table 1. WATER USE FOR BASELINE AND VERIFIED DEVICES Table 1 in Appendix D identifies baseline water

	volume per occupant per day for each device and expected uses for the devices per occupant per day. Home Innovation identified that this table includes an error related to clothes washer water volume. As written, the baseline volume per occupant is 7.41. This value is missing a '1' in front. The correct value should be '17.41.' The 7.41 value is unrealistically low, given that most high-efficiency clothes washer are between 15 and 30 gallons. Per capita water use from clothes washer is presently 16 gallons/person/day, but it was as high was 21 gallons/person/day before 1980. A value of 17.41 would put the baseline around the estimate daily use by Americans around 1985. That is a more reasonable value for a representation of "typical" home water use.
TG Recommendation:	Accept, 6-0-2
TG Modification:	
TG Reason:	Make it in legislative format.

P102 ID 7522	**D101.6 Indoor Water**
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	For multifamily, user should enter the total number of 0/1-bedroom, 2-bedroom, 3-bedroom, and 4-bedroom units. The Number of Occupants should be calculated based on those inputs. For group living, users should enter a bedroom value based on the total expected number of occupants to per unit. For example, a 2-bedroom unit planned to house 4 individuals would be entered as a 3-bedrooom unit.
Reason:	SECTION D101.6(2) Indoor Water Appendix D includes the following equation for calculating Number of Occupants: "NumOccupants = bedrooms + 1". As written, Appendix D did not identify how to extend this equation to multifamily buildings. It also did not include guidance regarding how Number of Occupants would be calculated in the case of group living (e.g., dormitories and independent living facilities), where it cannot be assumed that there will be a master bedroom with two occupants.
TG Recommendation:	Accept as Modified, 6-0-2
TG Modification:	<u>For multifamily, user should enter the total number of 0/1-bedroom, 2-bedroom, 3-bedroom, and 4-bedroom units. The Number of Occupants should be calculated based on those inputs.</u> <u>For group living, users should enter a bedroom value based on the total expected number of occupants to per unit. For example, a 2-bedroom unit planned to house 4 individuals would be entered as a 3-bedrooom unit.</u> <u>In case of places like dormitories, student housing or places that don't have a defined bedroom, the number of occupants can be calculated based on the number of expected occupants. For such places, we can project the expected number of occupants using previous data.</u>
TG Reason:	Comment statement modified

P103 ID 7544	D101.7 Water Capture for Potential Reuse
Submitter:	Heather Schrock, Self
Comment:	Add a new section following D101.7 Water Capture for Potential Reuse: D101.7(2) Water Restoration Credits (WRCs) (a) As an alternative to on-site capture for reuse, Water Restoration Certificates (WRCs) can be applied as an offset. (b) The total volume (gallons) of WRCs is applied directly against the water use calculations, first to offset indoor water, and then to offset outdoor water. Please see https://www.b-e-f.org/programs/water-restoration-certificates/ for more information about Water Restoration Certificates.
Reason:	Reason Statement: In some jurisdictions, builders do not have the option to apply on-site captured water to offer water usage. As an alternative, these builders should have the option to apply Water Restoration Credits as a credit against indoor and outdoor water use in the calculation of a WRI score.
TG Recommendation:	Disapprove, 6-0-2
TG Modification:	
TG Reason:	Need more information on the availability of this credit type. Appears proprietary and not well-defined across multiple organizations

P104 ID 7531	D101.7 Water Capture for Potential Reuse
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	See attached.
Reason:	SECTION D101.7 WATER CAPTURE FOR POTENTIAL REUSE Appendix D provides incomplete information about the appropriate applications of captured water. Not all indoor and outdoor water uses are identified as potential applications for captured water. As written, the methodology does not allow a building to achieve a score as low as 0; not all water uses can be offset by captured water.
Substantiating Documents:	Yes
TG Recommendation:	Accept as Modified, 8-0-1
TG Modification:	*Within each row of the table of the Proposed Change, add the following:* Other Uses as approved by the Authority Having Jurisdiction (AHJ)
TG Reason:	Blackwater has no permitted direct use, but it could be treated onsite to a level suitable for uses by the AHJ.

P105 ID 7527	D101.8 Outdoor Calculations
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Add the following: Effective rainfall is calculated as 25% of the monthly rainfall.
Reason:	SECTION D101.8(1)(b) LANDSCAPE WATER USE Within the equation for LandscapeWaterUse, the value "EffectiveRainfall(month)" is included. This term is not defined within Appendix D, and no calculations are provided to explain how it is to be derived. Initially, Home Innovation applied the full monthly rainfall values from the data set. This was found to be problematic. For certain areas with hot, wet climate, the WRI scoring tool was calculating unrealistic savings (up to 90%, and in some cases 100%), depending on the outdoor area, irrigation method used, and plant type entered, without any data entered for indoor water use. As the contribution of outdoor water use significantly outstripped that of indoor water use, the application of an effective rainfall factor was deemed necessary. Investigations revealed that such unrealistic savings resulted from the full rainfall value being applied, rather than a fraction. When the full rainfall values were applied, the difference between evapotranspiration and rainfall more often resulted in a negative number or an exact zero (i.e., the rainfall received is more than the evapotranspiration of the plants and there is no need of supplying water through irrigation). This translated to very little outdoor water use and subsequently massive savings from little to no water efficient features being implemented outdoors. The American Society of Agricultural and Biological Engineers (ASABE) ANSI/ASABE S623.1 JAN2017 Determining Landscape Plant Water Demands introduced the concept of "effective" rainfall. A large portion of a rain event cannot be used by plants. Short, extreme burst results in more water being washed away before infiltrating the soil. "Effective rainfall" is an estimate of the amount of water that can be useful to plants. ANSI/ASABE S623.1 applies a 50% rainfall effectiveness factor. The EPA WaterSense Water Budget Tool applies a 25% rainfall effectiveness factor. The WaterSense Water Budget Approach summary document notes that this factor "leads to a more conservative landscape design" and that "this landscape design will be more resilient in drier-than-average years or periods of unexpected drought. To generate WRI scores that are more representative of actual water use, especially in hot and wet climates, we suggest that a 25% rainfall effectiveness factor be applied.
TG Recommendation:	Disapprove, 6-1-1
TG Modification:	
TG Reason:	25% is an unrealistic number in most cases. Further investigation required. The number can vary widely.

P106 ID 7526	D101.8 Outdoor Calculations
Submitter:	Cindy Wasser, Home Innovation Research Labs (NGBS Green)
Comment:	Replace with the following: Water Months = 12 – (Number of Frost Days in a year / 30), rounded to the nearest whole month
Reason:	SECTION D101.8(2a) WATER MONTHS Appendix D D101.8(2a) says, "To define the water months, take the number of frost days in a year, divide by twelve, and round to the nearest whole month." Home Innovation identified that the WRI equation for watering months did not yield a usable number.
TG Recommendation:	Disapprove, 6-0-1
TG Modification:	
TG Reason:	In favor of action on A120.

Additional TG Proposed Changes

A109 ID 7739	Appendix D: Water Rating Index
Submitter:	Olga Cano, TG4 Subgroup – Definitions
Comment:	**Master Bath Adjustment:** adjustment of indoor water use based on expected use of a separate master bathroom. This item shall apply where there is a master bath. If the flow rate of the individual toilet, lavatory,

	or shower devices varies, then water use in the master bath and outside the master bath shall be computed separately.
Reason:	Clarify section with additional context.
TG Recommendation:	Accept, 6-0-2
TG Modification:	
TG Reason:	

A110 ID 7740	**Appendix D: Water Rating Index**
Submitter:	Olga Cano, TG4 Subgroup – Definitions
Comment:	**Evapotranspiration:** sum of evaporation from soil evaporation from the capillary fringe of the groundwater table, and evaporation from water bodies on land, as well as transpiration from plants *Include definition in Appendix D.*
Reason:	Source: USGS
TG Recommendation:	Accept, 7-0-1
TG Modification:	
TG Reason:	Include definition within the section

A111 ID 7658	Appendix D: Water Rating Index
Submitter:	Shannon Corcoran, TG4 Subgroup – Definitions
Comment:	The standard does not define “Pan Evaporation Rate” Modify Clause D101.6 (6)(c)(iii) as follows: (6) Other types of water use. OtherWaterUse (gallons/day) - other water fixture use for fixtures verified to be present (a) The baseline is zero, when device is not present (b) OtherWaterUse sums the water use for fixtures that are present (c) OtherWaterUse includes: (i) Water use per manufacturer (gallons/day) (1) Water softeners (2) Humidifiers (3) Evaporative coolers (4) Water filters, except reverse osmosis (ii) Reverse osmosis water use shall be as specified by the manufacturer or shall default to a water waste of 4 times the water consumption (iii) Fountains and spas – water loss (gallons/day) = pan evaporation rate * area <u>Pan Evaporation Rate: value derived by dividing the volume of liquid that evaporated from the amount of time that it took to evaporate.</u> (iv) VerifiedLeaks shall be included as a direct use item. The baseline is no leaks. Leaks are included in both baseline and actual if verified as present for existing or final ratings. (v) Where there are multiple fixtures or appliances of the same type, the baseline fixtures and appliances shall be assumed to all be of the same type, flow rate and water use rate.
Reason:	The term Outdoor Baseline is used in the calculation in D101.8, and needs a definition to provide clarification.
TG Recommendation:	Accept, 7-0-1
TG Modification:	
TG Reason:	

A112 ID 7659	Appendix D: Water Rating Index
Submitter:	Shannon Corcoran, TG4 Subgroup – Definitions
Comment:	The standard does not define “Outdoor Baseline” Modify Clause D101.8 as follows: D101.8 Outdoor Calculations. The annual outdoor water use shall be calculated as follows: OutdoorUse = LandscapeWaterUse + NonLandscapeWaterUse OutdoorBaseline(month) = Evapotranspiration(month) * LandscapeWaterArea(total) * 0.623 (gallons/sq ft of 1 in of rain) where LandscapeWaterArea(total) is the total of all the areas that are planted, irrigated, hand-watered or have a water feature like a pool. Outdoor Baseline: baseline outdoor water demand based on outdoor area and local evapotranspiration rates.
Reason:	The term Outdoor Baseline is used in the calculation in D101.8, and needs a definition to provide clarification.
TG Recommendation:	Accept as Modified, 7-0-1
TG Modification:	Outdoor Baseline: baseline outdoor water demand based on outdoor area and evapotranspiration rates.
TG Reason:	Removed “local” to be more concise.

A113 ID 7656	Appendix D: Water Rating Index
Submitter:	Olga Cano, EPA WaterSense
Comment:	NonLandscapeWaterUse = (Evapotranspiration(in)$_{(annual)}$ * CoverFactor) * Pool/Spa/Fountain Area (square feet) * 0.623 (gallons/sq ft of 1 in of water) Where CoverFactor = 0.70 if a motorized pool cover is installed.
Reason:	Under D101.8 (6), an equation needs to be provided for calculating NonLandscapeWaterUse that includes the sum of areas of all outdoor water features (e.g., pool, spas, fountains);
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	NonLandscapeWaterUseBaseline=(Evapotranspiration(in)$_{(annual)}$ * Pool/Spa/Fountain Area (square feet) * 0.623 (gallons/sq ft of 1 in of water) NonLandscapeWaterUseVerified = (Evapotranspiration(in)$_{(annual)}$ * CoverFactor) * Pool/Spa/Fountain Area (square feet) * 0.623 (gallons/sq ft of 1 in of water) Where CoverFactor = 0.70 if an automatic motorized pool cover is installed.
TG Reason:	Equation for non-landscape was not included and TG4 wanted to include it. Reformatted for consistency and added word “automatic” to ensure that efficiency was gained from the installation of the pool cover.

A114 ID 7657	Appendix D: Water Rating Index
Submitter:	Shannon Corcoran, TG4 Subgroup – Definitions
Comment:	Currently, the standard allows for black water to be used (untreated/unfiltered) for irrigation purposes. He proposal remove black water as an acceptable source of water **D101.3 Capabilities.** The WRI calculation shall include the following capabilities (4) Building water use shall be reduced based on the water capture and reuse. Where a specific type of water capture and reuse would violate local laws or ordnances, the amount of water capture and reuse for that specific type shall be zero. (a) The water types for capture and reuse shall be: (i) Rainwater, which is natural precipitation that falls on a structure. (ii) Sitewater, which is natural precipitation that falls on the ground, softscapes, and hardscapes. (iii) Greywater, which is untreated wastewater that has not come into contact with toilet waste, kitchen sink waste, dishwasher waste or similarly contaminated sources: (1) Only wastewater from bathtubs, showers, lavatories, and clothes washers shall be used in the greywater offset calculation. (2) If no filtration/purification system and properly sized tank is present, then greywater shall only be used outdoors as subsurface irrigation. ~~(iv) Blackwater, which is the liquid and waterborne waste that would be permitted without special treatment into either the public sewer or a private sewage disposal system.~~ D101.7 Water Capture for Potential Reuse. This calculates the water available for reuse for each month. (1) RainwaterCapture~~,~~ and GreywaterCapture~~, and BlackwaterCapture~~ shall be computed for each month. ~~(c) BlackwaterCapture(month) - in gallons/month~~ ~~= (ToiletWater(verified) + FaucetWater(verified)) * DaysInMonth(month)~~ (d) To get credit for reuse of captured rainwater~~,~~ and greywater ~~and blackwater~~: (v) Reuse of rainwater~~,~~and greywater ~~and blackwater~~ shall not receive credit in violation of ordinances or other regulations.
Reason:	The use of black water as a source of irrigation water poses a health risk by exposing consumers to untreated human waste. All black water should be disposed of through a waste disposal system (municipal sewage system or septic tank).
TG Recommendation:	Accept, 5-0-1
TG Modification:	
TG Reason:	

A115 ID 7645	Appendix D: Water Rating Index
Submitter:	Olga Cano, EPA WaterSense
Comment:	Under D101.6 (1), the "IndoorUse" equation also needs to be multiplied by 365 days/year (similar to the "IndoorBaseline").
Reason:	Multiplier is missing
TG Recommendation:	Accept, 5-0-1
TG Modification:	
TG Reason:	

A116 ID 7648	Appendix D: Water Rating Index
Submitter:	Olga Cano, EPA WaterSense
Comment:	Update Table 4 values as follows: Clothes Washer ~~9.5~~6.5 IWF, 4 CF (ft2) Dishwasher ~~6.5~~ 5 gallon/ cycle
Reason:	These defaults are consistent with current DOE regulations (https://www.ecfr.gov/current/title-10/chapter-II/subchapter-D/part-430/subpart-C/section-430.32)
TG Recommendation:	Accept, 5-0-2
TG Modification:	
TG Reason:	

A117 ID 7649	Appendix D: Water Rating Index
Submitter:	Olga Cano, EPA WaterSense
Comment:	([Evapotranspiration$_{(month)}$ * PlantFractionEvapotranspiration$_{(zone)}$] - EffectiveRainfall$_{(month)}$) * LandscapeArea$_{(zone)}$ * (**[**1-IrrigationControllerReduction$_{(zone)}$**]** / IrrigationEfficiency$_{(zone)}$) * 0.623 (gallons/sq ft of 1 in of ~~rain~~ water)
Reason:	The equation for LandscapeWaterUse needs to be fixed to include proper parentheses.
TG Recommendation:	Accept as Modified, 6-0-1
TG Modification:	([Evapotranspiration$_{(month)}$ * PlantFractionEvapotranspiration$_{(zone)}$] - EffectiveRainfall$_{(month)}$) * LandscapeArea$_{(zone)}$ * ([1-IrrigationControllerReduction$_{(zone)}$] / IrrigationEfficiency$_{(zone)}$) * 0.623 (gallons/sq ft of 1 in of water)
TG Reason:	Put into legislative format

A118 ID 7650	Appendix D: Water Rating Index
Submitter:	Olga Cano, EPA WaterSense
Comment:	~~(a)~~ (c) Multiple physical zones with the same values for Evapotranspiration, IrrigationEfficiency and IrrigationControllerReduction shall be permitted to be combined into one zone with LandscapeArea being the sum of the areas of those zones
Reason:	Third bullet point is mislabeled.
TG Recommendation:	Accept as Modified, 6-0-1
TG Modification:	(c) Multiple physical zones with the same values for Evapotranspiration, IrrigationEfficiency and IrrigationControllerReduction shall be permitted to be combined into one zone with LandscapeArea being the sum of the areas of those zones
TG Reason:	Put into legislative format

A119 ID 7651	Appendix D: Water Rating Index
Submitter:	Olga Cano , EPA WaterSense
Comment:	*Modify D101.8 Outdoor Calculations (1) as follows:* (d) Effective Rain Definition (TBD) (suggested as 25% of total rainfall).
Reason:	Effective rain is included in the equation but it is not defined. Reference ASABE 623 definition; Percentage needs to be justified based on soil characteristics, ect; WERS uses 25% as well.
TG Recommendation:	Accept as Modified, 6-0-1
TG Modification:	LandscapeWaterUse = For each month that is a water month and for each landscape zone sum ([Evapotranspiration(month) * PlantFractionEvapotranspiration(zone)] - EffectiveRainfall(month)) * LandscapeArea(zone) * (1 - IrrigationControllerReduction)(zone) / IrrigationEfficiency(zone)) * 0.623 (gallons/sq ft of 1 in of rain) EffectiveRainfall: 25% of total rainfall
TG Reason:	More informative to include definition directly within Appendix text.

A120 ID 7652	Appendix D: Water Rating Index
Submitter:	Olga Cano, EPA WaterSense
Comment:	(a) To define the watering months, take the number of ~~frost~~ non-frost days in a year, divide by ~~twelve~~ thirty, and round to the nearest whole month.
Reason:	Regions with no frost days ie Scottsdale would result in unusable number (365-frost days) metric is available in this manner; Creates monthly figure.
TG Recommendation:	Accept as Modified, 6-0-1
TG Modification:	Water Months = (Number of Non- Frost Days in a year / 30), rounded to the nearest whole month
TG Reason:	Consistent with action on with P106.

A121 ID 7654	Appendix D: Water Rating Index
Submitter:	Olga Cano, EPA WaterSense
Comment:	(ii) ~~An~~ A WaterSense labeled irrigation controller that integrates daily weather or soil moisture tracking shall be a 10% IrrigationControllerReduction
Reason:	WaterSense label assures performance and efficiency. Simple way for verifier to determine product meets requirements/ criteria.
TG Recommendation:	Accept as Modified, 7-0-0
TG Modification:	A WaterSense labeled irrigation controller or equivalent, in efficiency and performance criteria to the EPA WaterSense Specification for Irrigation Controllers, ~~that integrates daily weather or soil moisture tracking~~ shall be a 10% IrrigationControllerReduction. ~~An irrigation controller that integrates daily weather tracking shall be a 10% IrrigationControllerReduction.~~
TG Reason:	Put into legislative format. The EPA Specification is clear but it might be possible that other products meet the criteria but are not labeled as such.

A122 ID 7646	Appendix D: Water Rating Index
Submitter:	Olga Cano, EPA WaterSense
Comment:	D101.6 (4) Table 1, complete calculations are not provided for dishwashers and clothes washers. For dishwasher, the 0.26 uses /day / per occupant must be multiplied by the device gallons per cycle. For clothes washers, the 0.78 uses / day / occupant needs to be multiplied by the IWF and the clothes washer capacity. Proposed Change: Dishwasher: (0.26 uses /day / per occupant) * GPC Clothes Washers: (0.78 uses / day / occupant) * IWF*CF
Reason:	Multipliers is missing
TG Recommendation:	Accept, 5-0-1
TG Modification:	
TG Reason:	

A123 ID 7647	Appendix D: Water Rating Index
Submitter:	Olga Cano, EPA WaterSense
Comment:	(iii) Fountains and spas – water loss (gallons/day) = (annual pan evaporation rate * area) / 365
Reason:	Pan evaporation rate is usually provided in monthly or annual terms.
TG Recommendation:	Accept, 5-0-1
TG Modification:	
TG Reason:	

A124 ID 7653	Appendix D: Water Rating Index
Submitter:	Olga Cano, EPA WaterSense
Comment:	(d) IrrigationControllerReduction(zone) is irrigation water reduction based on a verified irrigation controllers ~~weather-based irrigation controller:~~
Reason:	rain sensors are not necessarily considered weather-based irrigation controllers,
TG Recommendation:	Accept as Modified, 6-0-1
TG Modification:	(d) IrrigationControllerReduction(zone) is irrigation water reduction based on a verified ~~weather-based~~ irrigation controller:
TG Reason:	Edited to better reflect original text

Stand Alone Tropical Zone Section

A125 ID 7707	New Tropical Zone Section
Submitter:	Steve Armstrong, Performance Point
Comment:	Make a sub chapter 707 for Tropical *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	Many Tropical zone buildings utilize different construction types than buildings that are typically a 100% conditioned. Making a separate section for Tropical clarifies the Tropical section
TG Recommendation:	Accept, 3-0-0
TG Modification:	
TG Reason:	Create a subchapter for the tropical zone helps streamline the tropical zone requirements.

A126 ID 7708	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	**707.1** Mandatory Practices *S*taff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in *Tropical Zone Supplemental Information*.
Reason:	This section shall start with title “707.1 Mandatory Practices”
TG Recommendation:	Accept, 4-0-0
TG Modification:	
TG Reason:	

A127 ID 7691	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	707.1.2 High-efficacy lighting All lamps shall have an efficacy of not less than 65 lumens per watt, or luminaires shall have an efficacy of not less than 45 lumens per watt. Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in *Tropical Zone Supplemental Information*.
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	Accept as Modified, **Task Group 5:** 11-0-1 // **Task Group 8:** 4-0-0
TG Modification:	**Task Group 5:** All lamps shall have an initial efficacy of not less than 75 lumens per watt, or luminaires shall have an efficacy of not less than 55 lumens per watt. **Task Group 8:** All lamps shall have an efficacy of not less than 75 lumens per watt, or luminaires shall have an efficacy of not less than 55 lumens per watt.
TG Reason:	**Task Group 5:** The modification acts as clarification for lamp ratings that is consistent with other sections of the code. **Task Group 8:** LED efficacy has improved dramatically in the last three years.

A128 ID 7692	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	707.1.3 Attics Where attics are present, attics above the insulation are vented and attics below the insulation are unvented *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in* Tropical Zone Supplemental Information.
Reason:	Adding stand alone Tropical Zone Section
TG Recommendation:	Accept, **Task Group 5:** 8-0-2 // **Task Group 8:** 4-0-0
TG Modification:	
TG Reason:	

A129 ID 7693	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	707.1.4 Roofs Roof Surfaces have a slope of not less than ¼ unit vertical in 12 units horizontal (21 -percent slope). The finished roof does not have water accumulation areas *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	Accept as Modified, **Task Group 5:** 9-0-1 // **Task Group 8:** 4-0-0
TG Modification:	Roof Surfaces have a slope of not less than ¼ unit vertical in 12 units horizontal (2.0 -percent slope). The finished roof does not have water accumulation areas
TG Reason:	A 2.0 percent slope would drain water effectively preventing ponding and micro algae accumulation

A130 ID 7695	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	707.1.5 Operable Fenestration *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	This section shall start with title “707.1.5 Operable Fenestration ”
TG Recommendation:	Accept, 11-0-1
TG Modification:	
TG Reason:	This promotes the free flow of air through the living space.

A131 ID 7694	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	707.1.5.1 Ventilation area Operable fenestration provides a ventilation area of not less than 14 percent of the floor area in each room. Alternatively, equivalent ventilation is provided by a ventilation fan *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	Accept as Modified, **Task Group 5:** 9-1-2 // **Task Group 8:** 4-0-0
TG Modification:	**Task Group 5:** Operable fenestration provides an openable area of not less than 10 percent of the entire living space ~~in each room. Alternatively, equivalent ventilation is provided by a ventilation fan~~ **Task Group 8:** Operable fenestration provides a ventilation area of not less than 10 percent of the entire living space ~~in each room. Alternatively, equivalent ventilation is provided by a ventilation fan~~
TG Reason:	**Task Group 5:** Openable area is more reasonably verified than the term “ventilation area” **Task Group 8:** Provides a reasonable cost effective area of operable windows for ventilation.

A132 ID 7696	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	**707.1.5.2 Bedroom Exterior Walls** Bedrooms with exterior walls facing two different directions have operable fenestration on exterior walls facing two directions *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	Accept, **Task Group 5:** 11-0-1 // **Task Group 8:** 4-0-0
TG Modification:	
TG Reason:	

A133 ID 7697	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office

Comment:	**707.1.5.3 Glazing in conditioned space** Glazing in conditioned spaces has a solar heat gain coefficient (SHGC) as described in Table 707.3, or has an overhang with a projection factor equal to or greater than 0.30 *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	**Task Group 5:** Accept as Modified 9-0-2 // **Task Group 8:** Accept 4-0-0
TG Modification:	**Task Group 5:** Glazing in conditioned spaces has a solar heat gain coefficient (SHGC) as described in Table 707.3, 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.
TG Reason:	**Task Group 5:** To provide a limit for the solar heat coefficient back-stop that we feel is appropriate for Tropical climate zone.

A134 ID 7698	**New Tropical Zone Section**
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	**707.1.6 Interior doors** Bedroom doors are capable of being secured in the open position. *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown* in *Tropical Zone Supplemental Information.*
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	**Task Group 5:** Accept as Modified 10-0-1 // **Task Group 8:** Accept 4-0-0
TG Modification:	**Task Group 5:** Bedroom doors are capable of being secured in a fully ~~the~~ open position.
TG Reason:	**Task Group 5:** Modified for clarity.

A135 ID 7699	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	707.2 ADDITIONAL PRACTICES *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	This section shall start with title "707.2 ADDITIONAL PRACTICES"
TG Recommendation:	Accept, 9-0-1
TG Modification:	
TG Reason:	

A136 ID 7700	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	**707.2 Water Heater.** Renewable Energy source is used for service water heating in accordance with Table 707.2(1) **Table 707.2(1)** **Renewable Energy for Service Water Heater** = 80% > 80% Silver Gold *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	**Task Group 5:** Accept as Modified 10-0-0 // **Task Group 8:** Accept 4-0-0
TG Modification:	**Task Group 5:** Renewable Energy source is used to provide annual service water heating for minimum percentages shown in ~~in accordance with~~ Table 707.2(1)
TG Reason:	**Task Group 5:** Modified for clarity. Increased limit to better align with IECC.

Table 707.2(1)	
Renewable Energy for Service Water Heater	
≥80% ~~80%~~	≥ 90% ~~80%~~
Silver	Gold

A137 ID 7701	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	**707.3 Glazing. Solar Heat Gain Coefficient (SHGC).**

	All glazing in conditioned spaces has an SHGC according to Table 707.3 below: **Table 707.3** **Solar Heat Gain Coefficient SHGC** 0.26 - 0.4 | = 0.25 Silver | Gold *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	**Task Group 5:** Accept as Modified 9-0-2 // **Task Group 8:** Accept 4-1-0
TG Modification:	**Task Group 5:** All glazing in conditioned spaces has an SHGC according to Table 707.3 below: **Table 707.3** **Solar Heat Gain Coefficient SHGC** 0.26 - 0.30 | ≤ 0.25 Silver | Gold
TG Reason:	To provide a limit for the solar heat coefficient back-stop that we feel is appropriate for Tropical climate zone. Consistent with action on TZ-8 (707.1.5.3).

A138 ID 7702	New Tropical Zone Section
Submitter:	Howard Wiig, Hawaii State Energy Office
Comment:	**707.4 Roof.** (1) The exterior roof surface complies with a least one of the following practices below…….. Silver a) Minimum roof reflectance and emittance of 0.55 and 0.75 respectively b) Minimum roof reflectance index of 64 c) Roof or Ceiling has insulation with an R-Value of R-13 or greater d) Includes a radiant barrier - (2) The exterior roof surface complies with an additional practice above…….. Gold *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	Accept as Modified, **Task Group 5:** 13-0-0 // **Task Group 8:** 5-0-0
TG Modification:	**Task Group 5:** (1) The exterior roof surface complies with a least one of the following practices below…….. Silver a) Minimum initial solar reflectance and emittance of 0.75 and 0.75 respectively b) Minimum initial solar reflectance index of 75 c) Roof or Ceiling has insulation with an R-Value of R-13 or greater d) Includes a radiant barrier (2) The exterior roof surface complies with an additional practice above…….. Gold ---------- **Task Group 8:** (1) The exterior roof surface complies with a least one of the following practices below…….. Silver a) Minimum initial solar reflectance and emittance of 0.75 and 0.75 respectively b) Minimum initial solar reflectance index of 75 c) Roof ~~or Ceiling~~ has insulation with an R-Value of R-13 or greater d) Includes a radiant barrier (2) The exterior roof surface complies with an additional practice above…….. Gold
TG Reason:	**Task Group 5:** No harm in keeping ceiling insulation as part of this set of requirements. **Task Group 8:** This is to mitigate solar heat gain via passive design

A139 ID 7703	New Tropical Zone Section

Submitter:	Steve Armstrong, Performance Point
Comment:	**707.5 Ceiling Fans** (1) A ceiling fan rough-in is provided for bedrooms and the largest space that is not used as a bedroom…….. Silver (2) A ceiling fan is provided for bedrooms and the largest space that is not used as a bedroom…… Gold *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	**Task Group 5:** Accept as Modified 10-0-0 // **Task Group 8:** Accept 5-0-0
TG Modification:	**Task Group 5:** (1) A ceiling fan rough-in is provided for all bedrooms and the largest space that is not used as a bedroom…….. Silver (2) A ceiling fan is provided for all bedrooms and the largest space that is not used as a bedroom…… Gold
TG Reason:	**Task Group 5:** Edited for clarity. Our understanding of rough-in is that it includes roughed-in wiring and provisions to secure the fan. **Task Group 8:** Ceiling fans use 1/20th as much energy as split systems and are very effective in the tropics

A140 ID 7704	**New Tropical Zone Section**
Submitter:	Steve Armstrong, Performance Point
Comment:	**707.6 Photovoltaic System.** The residence includes a minimum of 2kW of PV and a minimum of 6kWh of battery storage……Gold *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	Accept as Modified, 5-0-0
TG Modification:	The residence includes a minimum of 2kW of PV and a minimum of 6kWh of battery storage per dwelling unit……Gold
TG Reason:	This is to maximize use of renewable energy.

A141 ID 7705	**New Tropical Zone Section**
Submitter:	Steve Armstrong, Hawaii State Energy Office
Comment:	**707.7. Air Conditioning.** All installed air conditioners have a minimum of 18 SEER……Gold *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into*

	their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.
Reason:	Adding stand alone Tropical Zone Section.
TG Recommendation:	Accept, 5-0-0
TG Modification:	
TG Reason:	High SEER air conditioners are readily available and cost effective.

A142 ID 7706	New Tropical Zone Section
Submitter:	Steve Armstrong, Performance Point
Comment:	**707.8. Walls.** Walls comply with at least one of the following: a) Walls have an overhang with a projection factor equal to or greater than 0.30. b) Walls have insulation with an R-value of R-13 or greater. c) Walls have a minimum initial solar reflectance of 0.64 measured in accordance with the CRRC-2 Wall Rating Program. *(Subparts #8 through #9 remain unmodified)* **Section 14** **REFERENCED DOCUMENTS** 1402.0 Referenced Documents *(Modify as shown below)* **Cool Roof Rating Council Documents** DOCUMENT DATE TITLE SECTION CRRC-2 2022 CRRC-2 Wall Product Rating Program Manual 701.1.6(7) *Staff Note: At the request of the Consensus Committee the TG is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown in Tropical Zone Supplemental Information.*
Reason:	Problem Statement: The current exterior wall provisions in the ICC 700 standard include a requirement to meet a single solar reflectance value. It is not clear if the intent is to require only the installation of exterior wall products with a solar reflectance of 0.64 or to allow products that exceed this value. By only stating a single value, this greatly reduces the number of eligible products that can be installed, including those that are more reflective. Furthermore, the existing requirement does not reference any standards or programs that would ensure that a product's solar reflectance value is credible. The lack of a referenced standard or program also greatly reduces the ability for consumers to easily identify compliant products in the market. Proposal and Rationale: We recommend that the phrase "minimum initial" be included as shown in the proposal. Currently, the provision states that the wall product must have a solar reflectance value of 0.64. By not stating "minimum" solar reflectance of 0.64, it greatly reduces the number of products eligible for installation, including those that are more reflective. We recommend inserting "initial" to be consistent with the phrasing in the existing requirements for cool roofs in Sections 602.2 and 11.602.2 of ICC 700-2020. In addition, we propose adding a reference to the CRRC-2 Wall Product Rating Program Manual, a document that details the testing and labeling requirements of the CRRC Wall Rating Program. The manual was developed and vetted over a two-year period by a 27-member committee comprising 21 different organizations, including manufacturing and trade associations. Through the CRRC Wall Rating Program, manufacturers and sellers have the opportunity to get their wall products tested and labeled in accordance with the CRRC's strict protocols outlined in the CRRC-2 Program Manual. The CRRC is a 501(c)(3) nonprofit organization established in 1998 to develop accurate and credible methods for evaluating and labeling the radiative properties of roofing products. The CRRC also provides education to the public on how cool roofs and solar-reflective walls

	can help improve building energy efficiency, increase occupant comfort, mitigate the impacts of the urban heat Island effect, and reduce greenhouse gas emissions. In 2018, the CRRC officially expanded the organization's scope and mission to include the rating of exterior wall products. The CRRC worked closely with stakeholders from industry and end users on the development of the program over a two-year period. The program, which is the first and only in the world, officially launched on January 17, 2022. The CRRC Wall Rating Program is similar to the CRRC Roof Rating Program (CRRC-1), but with some technical differences. Please note that participation in the CRRC Wall Rating Program is separate and distinct from CRRC Membership. A wall product manufacturer is not required to be a member of the CRRC to have their product(a) tested and listed in accordance with the CRRC-2 Wall Rating Program Manual, which also includes listing in the free, online CRRC Rated Wall Products Directory (https://coolroofs.org/directory/wall). The CRRC-2 Wall Product Rating Program Manual includes: • Accredited testing laboratory requirements • Approved test farms weathering requirements • Testing requirements • Product rating and licensing requirements • Labeling requirements CRRC Rated Wall Products Directory: This is a free, online database that will list the initial and three-year aged solar reflectance and thermal emittance of exterior wall products. The directory will go live once wall products are initially rated. Products with only initial values will be listed through the duration of the three-year weathering process. The aged values will be added to the product listing after the weathering period is complete and aged testing performed. A CRRC product rating describes the radiative performance (solar reflectance and thermal emittance) of an exterior wall material; it does not indicate a ranking or approval. A product's placement in the CRRC Rated Wall Products Directory does not mean that the product is "cool" as defined by any particular code or program. Only products with active ratings can be found in the Rated Wall Products Directory. Request to meet with ICC-700 Committee: The CRRC would appreciate the opportunity to speak with the ICC-700 consensus committee when this item is presented for consideration. Resources: A copy of CRRC-2 Wall Product Rating Program Manual can be downloaded at no charge from the following address: https://coolroofs.org/programs/wall-rating-program/all-forms-2 The CRRC Wall Rating Program can be seen at: https://coolroofs.org/programs/wall-rating-program
TG Recommendation:	Accept as Modified, 4-0-0
TG Modification:	**PROPOSED CHANGES TO ICC 700-2020** **701.1.6 Alternative Gold level compliance for tropical zones.** One- and two-family in the tropical zone at an elevation less than 2,400 ft. (731.5 m) above sea level that complies with the following shall achieve the Gold level for Chapter 7: *(Subparts #1 through #6 remain unmodified)* (7) Walls comply with at least one of the following: a) Walls have an overhang with a projection factor equal to or greater than 0.30. b) Walls have insulation with an R-value of R-13 or greater. c) Walls have a <u>minimum initial</u> solar reflectance of 0.64 measured <u>in accordance with the CRRC-2 Wall Rating Program</u>. *(Subparts #8 through #9 remain unmodified)* **Section 14** **REFERENCED DOCUMENTS** 1402.0 Referenced Documents *(Modify as shown below)* **<u>Cool Roof Rating Council Documents</u>** DOCUMENT | DATE | TITLE | SECTION CRRC-2 | 2022 | CRRC-2 Wall Product Rating Program Manual | 701.1.6(7)
TG Reason:	It clarifies the reflectance requires.

A040
Supplemental Information

A040 SUPPLEMENTAL INFORMATION

APPENDIX RX ENERGY EFFICIENT OPTION.

This appendix provides a simpler energy code that conserves more energy.

RX 101. Thermal Envelope.

The thermal envelope shall comply with RX101.1 through RX101.4.

RX 101.1 Insulation and fenestration criteria.

The building thermal envelope shall meet the requirements of IECC Table R402.1.2, based on climate zone. Assemblies shall have a Ufactor equal to or less than that specified in Table R402.1.2. Fenestration shall have a U-factor and glazed fenestration SHGC equal to or less than that specified in Table R402.1.2.

RX 101.2 R-value alternative.

Assemblies with an R-value of insulation materials equal to or greater than that specified in IECC Table R402.1.3 shall be an alternative to the U-factor in Table R402.1.2.

RX 101.3 Specific insulation requirements.

The building shall comply with IECC Section R402.2 “Specific Insulation Requirements”.

RX 101.4 Fenestration U-factor.

An area-weighted average of fenestration shall be permitted to satisfy the fenestration U-factor requirements.

RX 101.5 Glazed fenestration SHGC.

An area-weighted average of fenestration products more than 50-percent glazed shall be permitted to satisfy the SHGC requirements.

RX101.5.1 Glazed fenestration exemption.

15 square feet (1.4 m) of glazed fenestration per dwelling unit shall be exempt from the U-factor and SHGC requirements in this section. This exemption shall not apply to the Total building UA alternative.

RX101.5.2 Opaque door exemption.

One side-hinged opaque door assembly not greater than 24 square feet (2.22m) in area shall be exempt from the U-factor requirement. This exemption shall not apply to the total building UA alternative.

RX102 HVAC efficiency.

HVAC shall meet the following criteria as applicable:

1. In zones 3 through 8 gas furnaces shall be at least 90 AFUE. Where installed in an existing house without venting for condensing furnaces, gas furnaces shall be at least 83 AFUE. An alternative that conserves at least the same energy shall be permitted.

2. In zones 3 through 8 air source heat pump efficiency shall be at least 16 SEER and 8.2 HSPF; or an alternative that conserves at least the same energy,

3. Ground source heat pumps shall have at least a 3.5 COP.

4. Cooling shall have at least an 18 SEER in zones 0 to 2. Cooling shall have at least an 16 SEER in zones 3 to 7. An alternative that conserves at least the same energy shall be permitted

RX102.1 Electric resistance heating.

Electric resistance heating shall not be used as a primary heating system in zones 3 to 8.

RX103 Equipment sizing.

Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies.

RX104 Air leakage.

The building or dwelling unit shall be tested and verified as having an air leakage rate not exceeding 5 ACH50 in zones 0 to 3 and 3 ACH50 in zones 4 to 8. Testing shall be conducted in accordance with RESNET/ICC 380, ASTM E779 or ASTM E1827 and reported at a pressure of 0.2 inch w.g. (50 Pascals). Where required by the code official, testing shall be conducted by an approved third party. A written report of the test results shall be provided to the code official by the party conducting the test.

Testing shall be performed after creation of all penetrations of the building thermal envelope.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond weatherstripping or other infiltration control measures.

2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond the infiltration control measures.

3. Exterior or interior terminations for continuous ventilation systems shall be sealed.

4. Where installed at time of test:

4.1. Interior doors shall be open

4.2. Heating and cooling systems shall be turned off

4.3. Supply and return registers shall be fully open

RX105 Mechanical ventilation.

Buildings and dwelling units mechanical ventilation shall comply the International Residential Code or International Mechanical Code, or with other approved means of ventilation.

Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

RX105.1 Heat or energy recovery ventilation.

Dwelling units shall be provided with a heat recovery or energy recovery ventilation system in Climate Zones 6 thru 8.

The system shall be balanced with a minimum sensible heat recovery efficiency of 65 percent at 32°F (0°C) at a flow greater than or equal to the design airflow.

RX 106 Whole-dwelling mechanical ventilation system fan efficacy.

Fans providing whole-dwelling mechanical ventilation shall meet the following efficacy requirements at one or more rating points. Fans shall be tested in accordance with HVI 916 and listed. The airflow shall be reported in the product listing or on the label. Fan efficacy shall be reported in the product listing or shall be derived from the input power and airflow values reported in the product listing or on the label. Fan efficacy for fully ducted HRV, ERC, balanced, and in-line fans shall be determined at a static pressure of not less than 0.2 inch w.c. (49.85 Pa). Fan efficacy for ducted range hoods, bathroom and utility room fans shall be determined at a static pressure of not less than 0.1 inch w.c. (24.91 Pa).

Minimum efficacy shall be as follows. Design outdoor airflow rate/watts of fan shall be used.

1. HRV, ERV - 1.2 cfm/watt

2. In-line supply or exhaust fan - 3.8 cfm/watt

3. Other exhaust fan < 90 cfm - 2.8 cfm/watt

4. Other exhaust fan ≥ 90 cfm - 3.5 cfm/watt

5. Fan in air-handler in HVAC equipment - 1.2 cfm/watt

RX107 Mechanical system piping insulation.

Mechanical system piping capable of carrying fluids greater than 105°F (41°C) or less than 55°F (13°C) shall be insulated to an Rvalue of not less than R-3.

RX108 Service hot water systems.

Service hot water systems shall be in compliance with IECC Section R403.5 or this section.

RX108.1 Service water heaters.

Service water heaters shall comply with 1, 2 3, or 4. It is permissible to have multiple water heaters service each dwelling. Each service water heater shall meet at least one of the criteria below:

1. water heater is within 10 horizontal feet of hot water use. Distance shall be as measured from the center of the water heater to the plumbing fixture or appliance on construction documents or as in actual construction

2. efficiency is at least 1.5 UEF if electric; or an alternative that conserves at least the same energy,

3. efficiency is at least 0.85 UEF if gas; or an alternative that conserves at least the same energy,

4. solar energy is projected to supply at least 70% of the service hot water energy.

RX108.2 Heated water circulation and temperature access.

Automatic controls, temperature sensors and pumps shall be in a location with access. Manual controls shall be in a location with ready access.

RX108.3 Circulation systems.

Heated water circulation systems shall be provided with a circulation pump. The system return pipe shall be a dedicated return pipe or a cold water supply pipe. Gravity and thermosyphon circulation systems shall be prohibited. Controls for circulating hot water system pumps shall automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is no demand for hot water. The controls shall limit the temperature of the water entering the cold water piping to not greater than 104ºF (40ºC).

RX108.4 Demand recirculation water systems.

Where installed, demand recirculation water systems shall have controls that start the pump upon receiving a signal from the action of fixture or appliance use, sensing the presence of a fixture user or sensing the flow of hot or tempered water to a fixture or appliance.

RX108.5 Heat trace systems.

Electric heat trace systems shall comply with IEEE 515.1 or UL 515. Controls shall automatically adjust the heat tracing to maintain the desired water temperature in the piping in accordance with heated water use.

RX109 Hot water pipe insulation.

Insulation for service hot water piping with a thermal resistance of not less than R-3 shall be applied to the following:

1. Piping 3/4 inch (19.1 mm) and larger in nominal diameter located inside the conditioned space.

2. Piping serving more than one dwelling unit.

3. Piping located outside the conditioned space.

4. Piping from the water heater to a distribution manifold.

5. Piping located under a floor slab.

6. Buried piping.

7 Supply and return piping in circulating hot or cold water systems.

Exceptions:

1. Cold water pipe returns in demand recirculation water systems.

2. Where the source of service hot water is within 6 horizontal feet (1828 mm) of the plumbing fixture or appliance.

RX109.1 Short hot water pipes.

Where the source of service hot water is within 6 feet of the use of service hot water or recirculation loop, pipe insulation is not required

RX110 Ducts.

Ducts and air handlers shall be installed in accordance with Sections RX110.1 through RX110.7.

RX110.1 Ducts outside conditioned space.

Supply and return ducts located outside conditioned space shall be insulated to not less than R-8 for ducts 3 inches (76 mm) in diameter and larger; and not less than R-6 for ducts smaller than 3 inches (76 mm) in diameter. Ducts buried beneath a building shall be insulated as required per this section or have an equivalent thermal distribution efficiency. Underground ducts utilizing the thermal distribution efficiency method shall be listed and labeled to indicate the R-value equivalency.

RX110.2 Ducts in conditioned space.

For ductwork to be considered inside a conditioned space, it shall comply with at least one of the following:

1. The duct system shall be located completely within the continuous air barrier and within the building thermal envelope.

2. Ductwork in ventilated attic spaces shall be buried within ceiling insulation in accordance with IECC Section R403.3.3 and all of the following:

2.1. The air handler is located completely within the continuous air barrier and within the building thermal envelope.

2.2. The duct leakage, as measured either by a rough-in test of the ducts or a post-construction total system leakage test to outside the building thermal envelope in accordance with IECC Section R403.3.6, is less than or equal to 1.5 cubic feet per minute (42.5 L/min) per 100 square feet (9.29 m) of conditioned floor area served by the duct system.

2.3. The ceiling insulation R-value installed against and above the insulated duct is greater than or equal to the proposed ceiling insulation R-value, less the R-value of the insulation on the duct.

3 Ductwork in floor cavities located over unconditioned space shall comply with all of the following:

3.1. A continuous air barrier shall be installed between unconditioned space and the duct.

3.2. A minimum R-19 insulation installed in the cavity width separating the duct from unconditioned space.

4 Ductwork located within exterior walls of the building thermal envelope shall comply with the following:

4.1. A continuous air barrier installed between unconditioned space and the duct.

4.2. Minimum R-10 insulation installed in the cavity width separating the duct from the outside sheathing.

4.3. The remainder of the cavity insulation shall be fully insulated to the drywall side.

RX110.3 Ducts buried within ceiling insulation.

Where supply and return air ducts are partially or completely buried in ceiling insulation, such ducts shall comply with all of the following:

1. The supply and return ducts shall have an insulation R-value not less than R-8

2. At all points the sum of the ceiling insulation R-value against and above the top of the duct, and against and below the bottom of the duct, shall be not less than R-19, excluding the R-value of the duct insulation.

3. In Climate Zones 0A, 1A, 2A and 3A, the supply ducts shall be completely buried within ceiling insulation and insulated to an Rvalue of not less than R-13.

Exception: Sections of the supply duct that are less than 2 feet (914 mm) from the supply outlet shall not be required to comply with these requirements.

RX110.4 Effective R-value of deeply buried ducts.

Ducts located directly on or within 5.5 inches (140 mm) of the ceiling, surrounded with blown-in attic insulation of R- 30 or greater and located such that the top of the duct is not less than 3.5 inches (89 mm) below the top of the insulation, shall have an effective duct insulation R-value of R-25.

RX110.5 Duct sealing.

Ducts, air handlers and filter boxes shall be sealed. Joints and seams shall comply with either the International Mechanical Code or International Residential Code.

RX110.6 Sealed air handler.

Air handlers shall have a manufacturer's designation for an air leakage of not greater than 2 percent of the design airflow rate when tested in accordance with ASHRAE 193.

RX110.7 Duct testing.

Ducts shall be pressure tested in accordance with ANSI/RESNET/ICC 380 or ASTM E1554 to determine air leakage by one of the following methods:

1. Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. Registers shall be taped or otherwise sealed during the test.

2. Post-construction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.

Exception: The duct air-leakage test in Section RX110.7 shall not be required for ducts serving heating, cooling or ventilation systems that are not integrated with ducts serving heating or cooling systems.

RX110.7.1 Duct leakage.

The total leakage of the ducts, where measured in accordance with Section R403.3.5, shall be as follows:

1. Rough-in test: The total leakage shall be less than or equal to 4.0 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m) of conditioned floor area where the air handler is installed at the time of the test. Where the air handler is not installed at the time of the test, the total leakage shall be less than or equal to 3.0 cubic feet per minute (85 L/min) per 100 square feet (9.29 m) of

conditioned floor area.

2. Post-construction test: Total leakage shall be less than or equal to 4.0 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m) of conditioned floor area.

3. Test for ducts within thermal envelope: Where all ducts and air handlers are located entirely within the building thermal envelope, total leakage shall be less than or equal to 8.0 cubic feet per minute (226.6 L/min) per 100 square feet (9.29 m) of conditioned floor area.

RX111 Building cavities.

Building cavities shall not be used as ducts or plenums.

RX112 Rooms containing fuel-burning appliances.

In Climate Zones 3 through 8, where open combustion air ducts provide combustion air to open combustion fuel-burning appliances the following shall apply:

1. appliances and combustion air opening shall be located outside the building thermal envelope or enclosed in a room that is isolated from inside the thermal envelope

2. rooms shall be sealed and insulated in accordance with the envelope requirements of IECC Table R402.1.3

3. walls, floors and ceilings shall meet a minimum of the basement wall R-value requirement

4. door(s) into the room shall be gasketed

5. water lines and ducts in the room shall be insulated in accordance with IECC Section R403

6. combustion air duct shall be insulated where it passes through conditioned space to not less than R-8

Exceptions:

1. Direct vent appliances with both intake and exhaust pipes installed continuous to the outside; and

2. Fireplaces and stoves complying with Section R402.4.2 and Section R1006 of the International Residential Code.

RX113 Fireplace doors.

Fireplaces shall have tight-fitting doors.

RX114 Renewables offset.

Renewables shall be permitted to be treated as a reduction in energy use of the dwelling. Such renewables shall be on-site or off-site renewables. Off-site renewables treated as a reduction in energy use shall be as specified by IECC Section CC103.3.1

RX115 Pool covers.

Outdoor heated pools and outdoor permanent spas shall be provided with a vapor-retardant cover or other approved vapor-retardant means. Outdoor heated pools shall be provided with an automated pool cover.

Exception: Where more than 75 percent of the energy for heating, computed over an operation season of not fewer than 3 calendar months, is from a heat pump or an on-site renewable energy system, the covers or other vapor-retardant means shall not be required.

RX116 Fuel Gas Lighting Equipment.

Fuel gas lighting systems shall not have continuously burning pilot lights.

A105
Supplemental Information

Additional Proposed Change Submittal Form

Copy and paste the blank for below for each addition Proposed Change. Submit the completed change to your TG Chair or Staff Liaison

<table>
<tr><td>TG 3</td><td colspan="4">Chapter 14 Final Formal Action: TBD</td></tr>
<tr><td>Submitter:</td><td colspan="4">Aaron Gary</td></tr>
<tr><td>Comment:</td><td colspan="4">Update Chapter 14 to reflect the most current versions of the documents referenced in Chapter 6 and 9 practices.

ISO – International Organization for Standardization | www.iso.org
<table>
<tr><th>DOCUMENT</th><th>DATE</th><th>TITLE</th><th>SECTION</th></tr>
<tr><td>16000-23</td><td>~~2009~~2018</td><td>Indoor air – Part 23: Performance test for evaluating the reduction of formaldehyde and other carbonyl concentrations by sorptive building materials</td><td>901.9,
11.901.9</td></tr>
<tr><td>17025</td><td>~~2005~~2017</td><td>General requirements for the competence of testing and calibration laboratories</td><td>901.7,
901.8,
901.9.3,
901.10(1),
901.11,
901.12
11.901.7,
11.901.8,
11.901.9.3,
11.901.10(1),
11.901.11,
11.901.12</td></tr>
</table></td></tr>
<tr><td>Reason:</td><td colspan="4">Maintain the internal logic and structure of the NGBS Standard</td></tr>
<tr><td>Task Group Recommendation:</td><td colspan="4">Approve as Modified (y-n-a)</td></tr>
<tr><td>Task Group Modification:</td><td colspan="4">See Below</td></tr>
<tr><td>Task Group Reason:</td><td colspan="4">Incorporated additional 1402 updates.</td></tr>
</table>

1402 REFERENCED DOCUMENTS

ASHRAE – American Society of Heating, Refrigeration, Air-conditioning Engineers| www.ashrae.org

DOCUMENT	DATE	TITLE	SECTION
ASHRAE 62.1	~~2016~~2019	*Ventilation for Acceptable Indoor Air Quality*	902.1.6, 11.902.1.6, 13.107.7, 13.107.8.1
ASHRAE 62.2	2019	*Ventilation and Acceptable Indoor Air Quality in Residential Buildings*	706.12, 901.3, 902.2.1, 11.706.12, 11.901.3, 11.902.2.1, 1205.8

ASTM – ASTM International, Inc. | www.astm.org

DOCUMENT	DATE	TITLE	SECTION
C1178	~~2013~~2018	*Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel*	602.1.11, 11.602.1.11, 1202.8, 13.104.1.6
C1278~~–07a~~/1278M ~~– 07a~~	~~2011~~2018	*Standard Specification for Fiber-Reinforced Gypsum Panel*	602.1.11, 11.602.1.11, 1202.8, 13.104.1.6
C1288	~~2010~~2017	*Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets*	602.1.11, 11.602.1.11, 1202.8, 13.104.1.6
C1325~~-08b~~	~~2008~~2022	*Standard Specification for ~~Non-Asbestos~~ Fiber-Mat Reinforced Cementitious Backer Units*	602.1.11, 11.602.1.11, 1202.8, 13.104.1.6
C1371-15	~~2010~~2022	*Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers*	703.2.3, 11.703.2.3
D7338	~~2010~~2014	*Standard Guide for Assessment of Fungal Growth in Buildings*	904.1, 904.2, 11.904.1, 11.904.2

ASTM – ASTM International, Inc. | www.astm.org (Continued)

DOCUMENT	DATE	TITLE	SECTION
D7612	~~2015~~2021	*Standard Practice for Categorizing Wood and Wood-Based Products According to Their Fiber Sources*	606.2(h), 11.606.2(h)
E283	2012	*Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*	701.4.3.5, 11.701.4.3.5,

E779	2010	*Standard Test Method for Determining Air Leakage Rate by Fan Pressurization*	705.6.2.1, 11.705.6.2.1
E1509	~~2012~~2022	*Standard Specification for Room Heaters, Pellet Fuel-Burning Type*	901.2.1(4), 11.901.2.1(4), 1205.2(4)
E1602-03	~~2010~~2017	*Standard Guide for Construction of Solid Fuel Burning Masonry Heaters*	901.2.1(5), 11.901.2.1(5), 1205.2(4)
E1827	2011	*Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door*	705.6.2.1, 11.705.6.2.1
E1980-11	~~2011~~2019	*Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low Sloped Opaque Surfaces*	505.2(1)(b), 602.2(3), 11.505.2(1)(b), 11.602.2(3)
E2273	~~2011~~2018	*Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies*	602.1.9(5)(b), 11.602.1.9(5)(b)
E2921-16a	~~2013~~2016	*Standard Practice for Minimum Criteria for Comparing Whole Building Life Cycle Assessments for Use with Building Codes and Rating Systems*	610.1.1, 610.1.1(1), 11.610.1.1, 11.610.1.1(1),

CARB – California Air Resources Board | www.arb.ca.gov

DOCUMENT	DATE	TITLE	SECTION
	2007	*Composite Wood Air Toxic Contaminant Measure Standard*	901.4(5), 901.5(2), 11.901.4(5), 11.901.5(2)
	~~2008~~2020	*Suggested Control Measure for Architectural Coatings*	901.9.1(3), 11.901.9.1(3), 1205.6(3)
	2011	*The California Consumer Products Regulations*	901.10(3), 11.901.10(3)

CDPH – California Department of Public Health | www.cdarb.ca.gov

DOCUMENT	DATE	TITLE	SECTION
	~~2010~~2017	*Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.~~1~~2.*	901.7, 901.8, 901.9.3, 901.10(1), 901.11, 11.901.7, 11.901.8, 11.901.9.3, 11.901.10(1), 11.901.11, 12.1.901.7, 12.1.901.8,

			12.1.901.9.2, 12.11.901.10(1)

CPA – Composite Panel Association | www.pbmdf.com

DOCUMENT	DATE	TITLE	SECTION
A208.1	~~2009~~2022	*Particleboard Standard*	901.4(2), 11.901.4(2)
A208.2	~~2009~~2022	*MDF Standard*	901.4(2), 11.901.4(2)
CPA 4	~~2011~~2019	*The Eco-Certified Composite™ (ECC) Standard*	901.4(4), 11.901.4(4)

CSA – CSA International | www.csa-international.org

DOCUMENT	DATE	TITLE	SECTION
6.19	2011	*Residential Carbon Monoxide Alarming Devices*	
CSA/AM - ANSI Z21.50/ ~~CSA 2.22~~	~~2014~~2019	*Vented Decorative Gas Fireplaces ~~w/ Addenda b~~*	901.1.5, 11.901.1.5
CSA/AM - ANSI Z21.88/ CSA 2.33	~~2014~~2019	*Vented Gas Fireplace Heaters*	901.1.5, 11.901.1.5
Z809	~~2013~~2016	*Sustainable Forest Management Requirements and Guidance (SFM)*	606.2(b), 11.606.2(b)
B366.1	2007	*Solid-Fuel-Fired Central Heating Appliances*	13.107.4.3

EPA – Environmental Protection Agency | www.epa.gov

DOCUMENT	DATE	TITLE	SECTION
Burn Wise	2012	*EPA Qualified Wood-Burning Fireplace Program Partnership Agreement*	901.2(2), 11.901.2(2)
EPA 402-K-01-001	2008	*Mold Remediation in Schools and Commercial Buildings*	904.3(1), 11.904.3(1), 1202.11
EPA 402-K-02-003	2012	*A Brief Guide to Mold, Moisture and Your Home*	904.3(1), 11.904.3(1)
EPA 747-K-97-001	1997	*Reducing Lead Hazards When Remodeling Your Home*	11.1001.1(23)
Method 24	~~2000~~2020	*Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings*	901.9.1(1), 11.901.9.1(1), 1205.6(1)
	1990	*Asbestos in the Home: A Homeowner's Guide*	11.1001.1(23)
	2013	*Smart Location Database, NGBS: Points for Smart Location Practices* https://epa.maps.arcgis.com/home/item.html?id=9508f9295c144b9fb392d33b18b569e3	405.6(7), 405.6(8), 501.2(4), 11.501.2(3)

EPA – Environmental Protection Agency | www.epa.gov (continued)

ENERGY STAR® Documents (Continued)

DOCUMENT	DATE	TITLE	SECTION
	January 1, 2014	*ENERGY STAR Program Requirements for Clothes Washers, Version 7.0*	703.6.2(3), 802.2(2), 11.703.6.2(3), 11.802.2(3)
	January 20, 2013	*ENERGY STAR Program Requirements for Dishwashers, Version 5.2*	703.6.2(2), 802.2(1), 11.703.6.2(2), 11.802.2(1)
	December 1, 2009	*ENERGY STAR Program Requirements for Geothermal Heat Pumps – Eligibility Criteria Version 3.1*	703.3.6, 11.703.3.6
	April 1, 2012	*ENERGY STAR Program Requirements for Luminaires, Version 1.2*	703.6.1(1), 11.703.6.1(1)
	April 28, 2014	*ENERGY STAR Program Eligibility Criteria for Residential Refrigerators and/or Freezers, Version 5*	703.6.2(1), 11.703.6.2(1)
	April 1, 2012	*ENERGY STAR Program Requirements for Residential Ceiling Fans – Eligibility Criteria Version 3.0*	703.3.7, 11.703.3.7
	~~April 1, 2012~~ October 1, 2015	*ENERGY STAR Program Requirements for Residential Ventilating Fans – Eligibility Criteria Version ~~3.2~~4.1*	~~902.1.4(1),~~ 902.1.4(2), ~~11.902.1.4(1),~~ 11.902.1.4(2)
	January 17, 2014	*ENERGY STAR Program Requirements for Residential Windows, Doors, and Skylights – Eligibility Criteria Version 6.0*	703.2.5.2.1, 11.703.2.5.2.1
	2012	*ENERGY STAR Program Requirements for Roof Products – Eligibility Criteria Version 2.3*	602.2(1), 11.602.2(1)

GS – Green Seal | www.greenseal.org

DOCUMENT	DATE	TITLE	SECTION
GS-11	~~2013~~2021	*Paints and Coatings ~~3.1~~4.0*	901.9.1(2), 11.901.9.1(2), 1205.6(2)
GS-36	2013	*Adhesives for Commercial Use 2.1*	901.10(2), 11.901.10(2),

HPVA – Hardwood Plywood Veneer Association | www.hpva.org

DOCUMENT	DATE	TITLE	SECTION
ANSI/HPVA HP-1	~~2009~~2020	*American National Standard for Hardwood and Decorative Plywood*	901.4(3), 11.901.4(3)

ICC – International Code Council | www.iccsafe.org

DOCUMENT	DATE	TITLE	SECTION
A117.1	2017	*Accessible and Usable Buildings and Facilities*	611.3

IBC	~~2018~~2024	*International Building Code*	202, 602.1.1.1, 602.1.3.1, 602.1.8, 602.1.13, 613.2, 901.2.1(5), 1001.1(12)(b), 11.602.1.1.1, 11.602.1.3.1, 11.602.1.8, 11.602.1.13, 11.613.2, 11.901.2.1(5), 11.1001.1(12)(b), 1205.2(5), 13.104.1.1, 13.104.1.2, 13.104.1.3, 13.104.1.4, 13.104.1.6

ICC – International Code Council | www.iccsafe.org (Continued)

DOCUMENT	DATE	TITLE	SECTION
ICC-400	2012	*Standard on the Design and Construction of Log Structures*	Table 701.4.3.2(2)

IECC	2018	*International Energy Conservation Code*	610.1.1(2), 701.1.4, 701.1.6(1), 701.1.6(6)(a), 701.4.3.3, 702.2.1, 702.2.2, 702.2.3, 703.1.1.1, 703.1.1.2, 703.1.2, 703.1.3, 703.2.1, 705.6.2.1, 705.6.2.3(1), 705.6.2.3(2), 705.6.3, 706.5(1), 11.610.1.1(2), 11.701.4.0, 11.701.4.3.3, 11.703.1.1.1, 11.703.1.1.2, 11.703.1.2, 11.703.1.3, 11.703.2.1, 11.705.6.2.1, 11.705.6.2.3(1), 11.705.6.2.3(2), 11.705.6.3, 11.706.5(1), 1203.10.1, 1203.10.2, 13.105.1, 13.105.3.1, 13.105.5, 13.105.6, 13.105.7, 13.105.8.1, 13.105.9, 13.105.11.2, 13.105.12.1, 13.105.12.3
IFGC	~~2018~~2024	*International Fuel Gas Code*	901.1.4, 11.901.1.4, 1205.1, 13.107.4.4

ICC – International Code Council | www.iccsafe.org (Continued)

DOCUMENT	DATE	TITLE	SECTION
IgCC	2018	*International Green Construction Code*	301.1.1, 304.2,

			701.1.5, 13.102.1.4
IMC	~~2018~~2024	*International Mechanical Code*	705.6.1(1), 11.705.6.1(1), 13.105.10, 13.107.7, 13.107.8.1
IRC	~~2018~~2024	*International Residential Code*	202, 602.1.1.1, 602.1.3.1, 602.1.4.2(1), 602.1.4.2(2), 602.1.8, 602.1.13, 705.6.1(1), 902.1.1(1), 902.3, 1001.1(12)(b), 11.602.1.1.1, 11.602.1.3.1, 11.602.1.4.2(1), 11.602.1.4.2(2), 11.602.1.8, 11.602.1.13, 11.705.6.1, 11.902.1.1(1), 11.902.3, 11.1001.1(12)(b), 1202.1, 1202.4
IPC	2018	*International Plumbing Code*	703.5.1, 11.703.5.1, 13.106.5.3
IWUIC	2018	*International Wildlife Urban Interface Code*	503.1(8), 11.503.1(8)

ISO – International Organization for Standardization | www.iso.org

DOCUMENT	DATE	TITLE	SECTION
14025http://www.solar-rating.org/ratings/OG300DIRECTORIES/OG300DIRFULL_20070131.pdf	2006	*Environmental labels and declarations – Type III environmental declarations – Principles and procedures*	611.1.1, 611.1.2, 11.611.1.1, 11.611.1.2
14044http://www.solar-rating.org/ratings/OG300DIRECTORIES/OG300DIRFULL_20070131.pdf	2006	*Environmental management – Life cycle assessment – Requirements and guidelines*	610.1.1, 610.1.2, 11.610.1.1, 11.610.1.2,

14001http://www.solar-rating.org/ratings/OG300DIRECTORIES/OG300DIRFULL_20070131.pdf	~~2004~~2015	*Environmental management systems – Requirements with guidance for use*	612.1, 11.612.1
16000-23	~~2009~~2018	*Indoor air – Part 23: Performance test for evaluating the reduction of formaldehyde and other carbonyl concentrations by sorptive building materials*	901.9, 11.901.9
17025	~~2005~~2017	*General requirements for the competence of testing and calibration laboratories*	901.7, 901.8, 901.9.3, 901.10(1), 901.11, 901.12 11.901.7, 11.901.8, 11.901.9.3, 11.901.10(1), 11.901.11, 11.901.12
17065	2012	*Conformity assessment – Requirements for bodies certifying products, processes and services*	612.2, 901.7, 901.8, 901.9.3, 901.10(1), 901.11, 901.12, 11.612.2, 11.901.7, 11.901.8, 11.901.9.3, 11.901.10(1), 11.901.11, 11.901.12
21930	~~2007~~2017	*Sustainability in buildings and civil engineering works ~~construction~~ – Core rules for Eenvironmental declarations of ~~building~~ construction products and services*	611.1.1, 611.1.2, 11.611.1.1, 11.611.1.2

Home Innovation | Home Innovation Research Labs | www.HomeInnovation.com

DOCUMENT	DATE	TITLE	SECTION
Z765	~~2013~~2020	*Single-Family Residential Buildings – Square Footage – Method for Calculating*	601.1, 11.601.1

KCMA – Kitchen Cabinet Manufacturers Association | www.kcma.org

DOCUMENT	DATE	TITLE	SECTION
ANSI/KCMA A161.1	~~2012~~2020	*Performance and Construction Standard for Kitchen and Vanity Cabinets*	602.1.15, 11.602.1.15

NFPA – National Fire Protection Association | www.nfpa.org

DOCUMENT	DATE	TITLE	SECTION
54	~~2012~~2021	*National Fuel Gas Code*	901.1.4, 11.901.1.4, 1205.1, 13.107.4.4

NSF – NSF International | www.nsf.org

DOCUMENT	DATE	TITLE	SECTION
NSF/ANSI 140	~~2013~~2019	*Sustainable Carpet Assessment*	612.2(1), 11.612.2(1)
NSF/ANSI 332	~~2012~~2015	*Sustainability Assessment for Resilient Floor Coverings*	612.2(2), 11.612.2(2)
NSF/ANSI 342	~~2012~~2019	*Sustainability Assessment for Wallcovering Products*	612.2(4), 11.612.2(4)

NWFA – National Wood Flooring Association | www.nwfa.org

DOCUMENT	DATE	TITLE	SECTION
RPP-STN-V3-0	~~2011~~2019	*Responsible Procurement Program*	606.2(f), 11.606.2(f)

PEFC – Pan European Forest Council | www.pefc.org

DOCUMENT	DATE	TITLE	SECTION
GL 2	2011	*PEFC Council Minimum Requirements Checklist*	606.2(d) & (g), 11.606.2(d) & (g)

RESNET – Residential Energy Services Network| www.resnet.us

DOCUMENT	DATE	TITLE	SECTION
ANSI/RESNET/ICC 380	~~2018~~2019	*Standard for Testing Airtightness of Building, Dwelling Unit and Sleeping Unit Enclosures~~;~~ Airtightness of Heating and Cooling Air Distribution Systems~~;~~ and Airflow of Mechanical Ventilation Systems*	902.2.2, 705.6.2.1, 11.705.6.2.1, 11.902.2.2 1209

SCAQMD – South Coast Air Quality Management District | www.aqmd.gov

DOCUMENT	DATE	TITLE	SECTION
Rule 1168	~~2011~~2017	*Adhesive and Sealant Applications*	901.10(3), 11.901.10(3)

SFI – Sustainable Forestry Initiative, Inc. | www.sfiprogram.org

DOCUMENT	DATE	TITLE	SECTION
~~2010-2014~~2015-2019 Standard	~~2010~~2015	*Sustainable Forestry Initiative Standard (SFIS)*	606.2(e), 11.606.2(e)

UL – Underwriters Laboratories Inc. | www.ul.com

DOCUMENT	DATE	TITLE	SECTION
127	~~2011~~2020	*Factory-Built Fireplaces*	901.2.1(2), 11.901.2.1(2)
181	2013	*The Standard for Safety for Factory-Made Air Ducts and Air Connectors*	701.4.2.1, 11.701.4.2.1
1482	~~2011~~2022	*Solid-Fuel Type Room Heaters*	901.2.1(3), 11.901.2.1(3), 1205.2(3), 13.107.4.2(3)
~~100~~	~~2012~~	~~*Interim Sustainability Requirements for Gypsum Boards and Panels*~~	~~612.2(5), 11.612.2(5)~~
~~102~~	~~2012~~	~~*Standard for Sustainability for Door Leafs*~~	~~612.2(6), 11.612.2(6)~~
2985	2015	*Sustainability Outline for Thermal Insulation*	612.2(3), 11.612.2(3)
391	2010	*Standard for Solid-Fuel and Combination Fuel Central and Supplementary Furnaces*	13.107.4.3
2523	2009	*Standard for Solid Fuel-Fired Hydronic Heating Appliances, Water Heaters, and Boilers*	13.107.4.3

P094

Supplemental Information

APPENDIX B:
EXAMPLES OF THIRD-PARTY PROGRAMS ~~AND ACCREDITATION~~ ~~FOR INDOOR ENVIRONMENTAL QUALITY~~

B100 SCOPE AND APPLICABILITY

B101.1 Applicability of Appendix B. Appendix B is not part of this Standard.

B101.2 Scope. Appendix B provides examples of third-party programs ~~for indoor environmental quality~~ ~~and accreditation~~ that can be used to demonstrate compliance with the applicable provisions of this Standard.

B200 CONFORMANCE

TABLE B200(1)
Examples of Third-party Certification Programs ~~and accreditation~~

Related Section of Standard	Examples of Third-party Certification Programs Compliant with the Corresponding Section
403.1 (3) Natural resources	USDA Natural Resource Conservation Service (NRCS) Conservation programs
404.4 (4) Wildlife habitat	Wildlife Conservation Land Program (WCLP) USDA Wildlife Habitat Management Programs
503.6 (2)/11.503.6 (2) Wildlife habitat	Garden for Wildlife, National Wildlife Federation (NWR) Wild Acres, MD Department of Natural Resources
602.1.7.2/11.602.1.7.2 Moisture control measures	Carpet and Rug Institute's (CRI) Green Label Plus Indoor Air Quality Program UL GREENGUARD Gold Resilient Floor Covering Institute's FloorScore Indoor Air Certification Program
602.1.15/11.602.1.15 Kitchen and vanity cabinets	Kitchen Cabinet Manufacturers Association (KCMA) Environmental Stewardship Program (ESP)
602.2 (3)/11.602.2 (3) Roof surfaces	Cool Roof Rating Council (CRRC)
606.1/11.606.1 Biobased products (g/h)	Forest Stewardship Council (FSC) United States Department of Agriculture (USDA)
606.2/11.606.2 Wood-based products	Forest Stewardship Council (FSC)
612.2/11.612.2 Sustainable products	Carpet and Rug Institute's (CRI) Green Label Plus Indoor Air Quality Program UL GREENGUARD Gold Resilient Floor Covering Institute's FloorScore Indoor Air Certification Program
~~802.6.2/11.802.6.2 Irrigation systems~~	~~UL SPLASH Field Sample Sprinkler Testing~~

901.5 Cabinets	Kitchen Cabinet Manufacturers Association (KCMA) Environmental Stewardship Program (ESP)
~~901.6 Carpets~~	~~Carpet and Rug Institute's (CRI) Green Label Plus Indoor Air Quality Program~~
901.7 Hard-surface flooring	UL GREENGUARD Gold Resilient Floor Covering Institute's FloorScore Indoor Air Certification Program, Carpet and Rug Institue's (CRI) Label Plus Indoor Air Quality Program
901.8 Wall coverings	UL GREENGUARD Gold Scientific Certification Systems (SCS) Indoor Advantage Gold Program
901.9 Architectural coatings	UL GREENGUARD Gold Scientific Certification Systems (SCS) Indoor Advantage Gold Program Green Seal-11 Standard for Paints and Coatings UL 2768
901.10 Adhesives and sealants	UL GREENGUARD Scientific Certifications Systems (SCS) Indoor Advantage Gold Program Carpet and Rug Institute's (CRI) Green Label Plus Indoor Air Quality Program Resilient Floor Covering Institute's FloorScore Indoor Air Certification Program Green Seal-36 Standard for Adhesives for Commercial Use
901.11 Insulation	UL GREENGUARD Gold Scientific Certifications Systems (SCS) Indoor Advantage Gold Program
901.12 Furniture and Furnishing	UL GREENGUARD Gold Scientific Certifications Systems (SCS) Indoor Advantage Gold Program BIFMA level certification where 7.6.1 and 7.6.2 are proven to be achieved

TABLE B200(2)
Contact Information for the Example Third-party Certification Programs

Third-party Certification Program	Contact Information for the Program Administrator
Kitchen Cabinet Manufacturers Association (KCMA) Environmental Stewardship Program (ESP)	*Kitchen Cabinet Manufacturers Association* *1899 Preston White Drive* *Reston, VA 20191* *www.kcma.org* *(703) 264-1690*
Carpet and Rug Institute's (CRI) Green Label Plus Indoor Air Quality Program	*Carpet and Rug Institute* *730 College Drive* *Dalton, Georgia 30720* *United States of America* *http://www.carpet-rug.org* *(706) 278-3176*
UL GREENGUARD Gold	*Underwriters Laboratories Inc. 333 Pfingsten Road* *Northbrook, IL 60062-2096* *www.ul.com* *(877) 854-3577*
Resilient Floor Covering Institute's FloorScore Indoor Air Certification Program	*Resilient Floor Covering Institute* *115 Broad Street, Suite 201* *LaGrange, Georgia 30240* *http://www.rfci.com*

Scientific Certification Systems (SCS) Indoor Advantage Gold Program	*Scientific Certification Systems* *2000 Powell Street, Suite 600* *Emeryville, California 94608* *http://www.scscertified.com* *(510) 452-8000*
Green Seal-11 Standard for Paints and Coatings	*Green Seal* *1001 Connecticut Avenue, NW, Suite 827* *Washington, DC 20036-5525* *http://www.greenseal.org/* *(202) 872-6400*
UL 2768	*Underwriters Laboratories Inc.* *333 Pfingsten Road* *Northbrook, IL 60062-2096* *www.ul.com* *(877) 854-3577*
UL SPLASH Field Sample Sprinkler Testing	*Underwriters Laboratories Inc. 333 Pfingsten Road* *Northbrook, IL 60062-2096* *www.ul.com* *(877) 854-3577*
USDA Natural Resource Conservation Service (NRCS) Conservation programs	*United Stated Department of Agricultre* *1400 Independence Ave SW, Washington, DC 20250* *https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/* *(202) 720-7246*
USDA Wildlife Habitat Management Programs	*United Stated Department of Agricultre* *1400 Independence Ave SW, Washington, DC 20250* *https://www.usda.gov/topics/conservation/wildlife* *(202) 720-7246*
Garden for Wildlife, National Wildlife Federation (NWR)	*National Wildlife Federation* *Mid-Atlantic Regional Center* *20 Ridgely Avenue, Suite 203* *Annapolis, MD 21401* http://www.nwf.org/Mid-Atlantic/ MidAtlantic@nwf.org *(443)-759-3400*
Cool Roof Rating Council (CRRC)	*Cool Roof Rating Council* *2435 N. Lombard St.* *Portland, OR 97217* https://coolroofs.org/programs/roof-rating-program *(866) 465-2523*
Forest Stewardship Council (FSC)	*Forest Stewardship Council* *708 First Street North, Suite 235* *Minneapolis, MN 55401* https://us.fsc.org/en-us/certification (612) 353 4511

P013 ID 7480	602.2 Roof surfaces Final Formal Action: TBD
Submitter:	Jonathan Humble, American Iron and Steel Institute
Comment:	**CHAPTER 6** *(Modify as shown below)* **602.2 Roof surfaces.** A minimum of 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) products that are in accordance with the ENERGY STAR® cool roof certification or equivalent.~~ ~~(2) a vegetated roof system.~~ ~~(3)~~ (1) Minimum initial SRI of 78 for low-sloped roof (a slope less than 2:12) and a minimum initial SRI of 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 ~~certified~~ rated and labeled in accordance with the CRRC-1 Program. (2) a vegetated roof system. **CHAPTER 11** *(Modify as shown below)*

A106
Supplemental Information

Additional Proposed Change Submittal Form

Copy and paste the blank for below for each addition Proposed Change. Submit the completed change to your TG Chair or Staff Liaison

<table>
<tr><td>TG 3</td><td colspan="2">Appendix B Final Formal Action: TBD</td></tr>
<tr><td>Submitter:</td><td colspan="2">Aaron Gary</td></tr>
<tr><td>Comment:</td><td colspan="2">Update Appendix B to reflect the most current versions of the documents referenced in Chapter 6 and 9 practices.

TABLE B200(1)
Examples of Third-party Certification Programs
<table>
<tr><th>Related Section of Standard</th><th>Examples of Third-party Certification Programs Compliant with the Corresponding Section</th></tr>
<tr><td>901.~~6~~7(2) Carpet~~s~~ and carpet cushion,
11.901.7(2) Carpet~~s~~ and carpet cushion</td><td>Carpet and Rug Institute’s (CRI) Green Label Plus Indoor Air Quality Program</td></tr>
<tr><td>901.7 (1) Hard-surface flooring,
11.901.7 (1) Hard-surface flooring</td><td>UL GREENGUARD Gold Resilient Floor Covering Institute’s FloorScore Indoor Air Certification Program</td></tr>
<tr><td></td><td></td></tr>
</table></td></tr>
<tr><td>Reason:</td><td colspan="2">Update the NGBS Standard references to the most recent versions.</td></tr>
<tr><td>Task Group Recommendation:</td><td colspan="2">Approve as Modified</td></tr>
<tr><td>Task Group Modification:</td><td colspan="2">See Below</td></tr>
<tr><td>Task Group Reason:</td><td colspan="2">Updated Chapter 9 references. Were not able to research and add Chapter 6 practices in time allotted.</td></tr>
</table>

TABLE B200(1) Examples of Third-party Certification Programs	
Related Section of Standard	**Examples of Third-party Certification Programs Compliant with the Corresponding Section**
901.5 Cabinets 11.901.5 Cabinets	Kitchen Cabinet Manufacturers Association (KCMA) Environmental Stewardship Program (ESP)
901.~~6~~7 (2) Carpet~~s~~ and carpet cushion 11.901.7 (2) Carpet and carpet cushion	Carpet and Rug Institute's (CRI) Green Label Plus Indoor Air Quality Program
901.7 (1) Hard-surface flooring 11.901.7 (1) Hard-surface flooring	UL GREENGUARD Gold Resilient Floor Covering Institute's FloorScore Indoor Air Certification Program
901.8 Wall coverings 11.901.8 Wall coverings	UL GREENGUARD Gold Scientific Certification Systems (SCS) Indoor Advantage Gold Program
901.9 Architectural coatings 11.901.9 Architectural coatings	UL GREENGUARD Gold Scientific Certification Systems (SCS) Indoor Advantage Gold Program Green Seal-11 Standard for Paints and Coatings UL 2768
901.10 Adhesives and sealants 11.901.10 Adhesives and sealants	UL GREENGUARD Scientific Certifications Systems (SCS) Indoor Advantage Gold Program Carpet and Rug Institute's (CRI) Green Label Plus Indoor Air Quality Program Resilient Floor Covering Institute's FloorScore Indoor Air Certification Program Green Seal-36 Standard for Adhesives for Commercial Use
901.11 Insulation 11.901.11 Insulation	UL GREENGUARD Gold Scientific Certifications Systems (SCS) Indoor Advantage Gold Program
901.12 Furniture and Furnishing 11.901.12 Furniture and Furnishing	UL GREENGUARD Gold Scientific Certifications Systems (SCS) Indoor Advantage Gold Program BIFMA level certification where 7.6.1 and 7.6.2 are proven to be achieved

P098

Supplemental Information

Cindy Wasser
Home Innovation Research Labs

Section: Appendix D

Section Number: D101.5 Compute Water Rating Index

Reason Statement: Appendix D D101.5 states "The WRI shall be computed as a percentage of the combined indoor and outdoor water use in relation to the combined indoor and outdoor water baseline." Appendix D, as written, does not address common areas; however, in most other areas of the NGBS, all residential portions of a multifamily building, including residential common areas, are evaluated for compliance. Add an additional section that addresses Indoor Common Areas. The values water volume and use factors included within the proposal below are derived largely from The Handbook of Water Use and Conservation.

Proposed Change:

Revise D101.5 as follows:

D101.5 Overall Water Rating Index (WRI) Calculation. The WRI is an overall rating for the home on an annual basis. The WRI shall be computed as a percentage of the combined indoor and outdoor water use in relation to the combined indoor and outdoor water baseline.

$$WRI = 100 * (IndoorUseUnits + IndoorUseCommon + OutdoorUse) / (IndoorBaseline + IndoorBaselineCommon + OutdoorBaseline)$$

Add the following:

D101.6(3)-CA Indoor Water of Common Areas – Calculations

Indoor water calculations for annual Baseline and annual Use shall be as follows:

$$\textbf{IndoorBaseline} = [ToiletWater_{(baseline)} + UrinalWater_{(baseline)} + ShowerWater_{(baseline)} + LavatoryWater_{(baseline)} + FaucetWater_{(baseline)} + DishWasherWater_{(baseline)} + ClothesWasherWater_{(baseline)} + StructuralWasteWater_{(baseline)} + OtherWaterUse_{(baseline)}] * 365 \text{ days/year}$$

$$\textbf{IndoorUse} = [ToiletWater_{(verified)} + UrinalWater_{(verified)} + ShowerWater_{(verified)} + LavatoryWater_{(verified)} + FaucetWater_{(verified)} + DishWasherWater_{(verified)} + ClothesWasherWater_{(verified)} + StructuralWasteWater_{(verified)} + OtherWaterUse_{(verified)}] - IndoorWaterReuseCredit_{(verified)} \text{ x } 365 \text{ days/year})$$

D101.6(3)-CA Indoor Water of Common Areas– Baseline Water Use for Devices

Baseline water for each device in Table 1 shall be:

Baseline $_{(device)}$ = Planned Maximum Capacity for Amenity Area(s) x Use Factor x Baseline Water Volume Per Use

Use factors for water devices are as follows:

TABLE D101.6(3)-CA
BASELINE WATER USES & VOLUME FOR COMMON AREA DEVICES

Device	Baseline VolumePerUser (gallons/day/user)	Use Factor(s)
Toilet	3.2	2 uses / day / user
Urinal	1.6	1 use / day / user
Shower	9.01	5.3 minutes / day / user
Lavatory	4	4 minutes / day / user
Faucet	6.8	4 minutes / day / user
Dishwasher	0.45	0.1 loads / day / user
Clothes Washer (residential style)	22.3	0.37 loads / day / user
Clothes Washer (commercial style)	3.256 per cubic foot for Top Loading / 1.517 per CF for Front-Loading (Integrated Water Factors of 8.8 for Top-Loading and 4.1 for Front-Loading)	0.37 loads / day / user

D101.6(4)-CA Indoor Water of Common Areas – Verified Water Use for Devices

Verified use for each device in Table 1 shall be:

Verified $_{(device)}$ = Planned Capacity for Amenity Area(s) x Use Factor x VerifiedFlowRate

D101.6(5)(a)-CA - Indoor Water of Common Areas – Structural Waste (Verified)

Structural waste, which is the water volume in the pipe between the hot water source and the plumbing fixture or appliance plus the extra volume needed to heat the pipe as hot water is delivered to its use.

(a) VerifiedStructuralWaste (gallons), shall be field measured as the water volume collected until the temperature of the water equals 100°F at the furthest fixture for a domestic hot water system.

(i) This test shall be performed before any other tests in order to avoid preheating the pipes. This test shall use an apparatus with a thermometer and water container.

(ii) If there is more than one hot water system serving multifamily amenity areas, all systems shall be tested for structural waste with the worst performing system entered into the calculation.

D101.6(5)(b)-CA Indoor Water of Common Areas – Structural Waste (Baseline)

BaselineStructuralWaste (gallons/day) is approximated based on the amenity area size and configuration. The pipe length is estimated as a horizontal length plus a vertical length.

For Common Areas, the calculation is as follows:

Baseline Structural Waste = Estimated Total Pipe x Pipe Volume (see Table 2)

Estimated Total Pipe is the sum of Estimated Horizontal Pipe and Estimated Vertical Pipe.

Estimated Horizontal Pipe = Total Footprint of All Amenity Areas x 2

Estimated Vertical Pipe = Floor Height of Amenity Areas

Tropical Zone
Supplemental Information

TROPICAL ZONE SUPPLEMENTAL INFORMATION

Staff Note: *At the request of the Consensus Committee the Task Group is moving all of the Tropical Zone Practices into their own section. Each Section of the stand alone Tropical Zone Section was submitted as its own Proposed Change. The Draft of this new section was compiled by Home Innovation Staff with input from the Task Group. The full stand alone Tropical Zone Section draft with all of the proposed modifications recommended for approval, with or without modifications, is shown below. Section numbering has been updated and may not match Proposed Changes. Proposal numbers for each change are identified by (blue text).*

701.1.4 Alternative Bronze and Silver level compliance. As an alternative, any building that qualifies as an ENERGY STAR Version 3.0 Certified Home or ENERGY STAR Multifamily High Rise Version 1.0 Rev. 03 building or demonstrates compliance with the ICC IECC or IRC Chapter 11 achieves the Bronze level for Chapter 7. As an alternative, any building that qualifies as an ENERGY STAR Version 3.1 Certified Home or ENERGY STAR Multifamily High Rise Version 1.0 Rev. 03 (with the baseline at ASHRAE 90.1-2010) building achieves the Silver level for Chapter 7. As an alternative in the Tropical Climate Zone, any building that meets all the requirements in ICC IECC Section R401.2.1 (Tropical Zone) achieves the Silver level for Chapter 7. 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. *(P020)* The buildings achieving compliance under § 701.1.4 are not eligible for achieving a rating level above Silver.

Staff Note: *Section 701.1.6 was modified by multiple Proposed Changes, with Task Group recommendations that do not align. Consensus Committee should clarify these contradictory recommendations.*

- *A044 - Task Group recommendation includes deleting section 701.1.6 in its entirety and replacing it with new language*
- *P021, P023, and A042 modify the existing section.*

701.1.6 Alternative Gold level compliance for tropical zones. One- or two-family dwelling in the tropical zone ~~at an elevation less than 2,400 ft. (731.5 m) above sea level that~~ *(P021)* complies with the following shall achieve the Gold level for Chapter 7:

(1) The residence complies with ICC IECC R401.2.1 Tropical zone.

(2) The residence includes a minimum of 2 kW of ~~PV~~ an on-site renewable energy system *(P021)* and a minimum of 6 kWh of battery storage.

(3) Any air conditioning has a minimum of 18 SEER.

(4) Solar, wind or other renewable energy source supplies not less than 90% of the energy for service water heating.

(5) Glazing in conditioned spaces has a solar heat gain coefficient of less than or equal to 0.25, or has an overhang with a projection factor equal to or greater than 0.30.

(6) The exterior roof/ceiling complies with at least two of the following:

(a) Minimum roof reflectance and emittance in ICC IECC Table C402.3.

(b) Roof or ceiling has insulation with an R-value of R-15 or greater.

(c) Includes a radiant barrier.

(7) Walls comply with at least one of the following:

(a) Walls have an overhang with a projection factor equal to or greater than 0.30.

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

(c) Walls have a minimum initial *(A142)* solar reflectance of 0.64 measured in accordance with the CRRC-2 Wall Rating Program *(A142)*.

(8) A ceiling fan is provided for bedrooms and the largest space that is not used as a bedroom; alternately a whole house fan is provided.

(9) ~~Wiring sufficient for~~ *(P023)* A Level 2 (208/240V 40-80 amp) electric vehicle charging station is installed on the building site.

(A044)

Delete Section 701.1.6 in its entirety and replace with:

701.1.6 Alternative compliance for tropical zones (705). Buildings in Tropical Zones where more than one-half of the occupied space is not air conditioned and 100 percent of the space is not heated can use this option to comply with chapter 7. Building can achieve either a silver or gold compliance level depending on the practices chosen. The building shall comply with the 705.1 mandatory practices and 705.2 additional practices. Note: To achieve a Gold level certification, all Gold level additional practices must be implemented.

705 ALTERNATIVE COMPLIANCE FOR TROPICAL ZONES

705.1 Mandatory Practices

705.1.2 High-Efficacy Lighting *(A127)*

Staff Note: *For this section, TG5 and TG8 recommended different modifications. Both options are shown here:*

Task Group 5: All lamps shall have an initial efficacy of not less than 75 lumens per watt, or luminaires shall have an efficacy of not less than 55 lumens per watt.

Task Group 8: All lamps shall have an efficacy of not less than 75 lumens per watt, or luminaires shall have an efficacy of not less than 55 lumens per watt.

705.1.3 Attics *(A128)*

Where attics are present, attics above the insulation are vented and attics below the insulation are unvented.

705.1.4 Roofs *(A129)*

Roof Surfaces have a slope of not less than ¼ unit vertical in 12 units horizontal (2.0 -percent slope). The finished roof does not have water accumulation areas.

705.1.5 Operable Fenestration *(A130)*

705.1.5.1 Ventilation Area *(A131)*

Staff Note: *For this section, TG5 and TG8 recommended different modifications. Both options are shown here:*

Task Group 5: Operable fenestration provides an openable area of not less than 10 percent of the entire living space.
Task Group 8: Operable fenestration provides a ventilation area of not less than 10 percent of the entire living space.

705.1.5.2 Bedroom Exterior Walls *(A132)*

Bedrooms with exterior walls facing two different directions have operable fenestration on exterior walls facing two directions.

705.1.5.3 Glazing in Conditioned Spaces *(A133)*

Staff Note: *For this section, TG5 and TG8 recommended different modifications. Both options are shown here:*

Task Group 5: Glazing in conditioned spaces has a solar heat gain coefficient (SHGC) as described in Table 705.3, 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.

Task Group 8: Glazing in conditioned spaces has a solar heat gain coefficient (SHGC) as described in Table 705.3, or has an overhang with a projection factor equal to or greater than 0.30.

705.1.6 Interior Doors *(A134)*

Staff Note: *For this section, TG5 and TG8 recommended different modifications. Both options are shown here:*

Task Group 5: Bedroom doors are capable of being secured in a fully open position.

Task Group 8: Bedroom doors are capable of being secured in the open position.

705.2 Additional Practices *(A135)*

705.2 Water Heater *(A136)*

Task Group 5:

Renewable Energy source is used to provide annual service water heating for minimum percentages shown in Table 705.2(1)

Table 705.2(1)	
Renewable Energy for Service Water Heater	
≥80% ~~80%~~	≥ 90% ~~80%~~
Silver	Gold

Task Group 8:

Renewable Energy source is used for service water heating in accordance with Table 705.2(1).

Table 705.2(1)

Renewable Energy for Service Water Heater	
= 80%	> 80%
Silver	Gold

705.3 Glazing. Solar Heat Gain Coefficient (SHGC). *(A137)*

Task Group 5:

All glazing in conditioned spaces has an SHGC according to Table 705.3 below:

Table 705.3	
Solar Heat Gain Coefficient SHGC	
0.26 - 0.30	≤ 0.25
Silver	Gold

Task Group 8:

All glazing in conditioned spaces has an SHGC according to Table 705.3 below:

Table 705.3	
Solar Heat Gain Coefficient SHGC	
0.26 - 0.4	= 0.25
Silver	Gold

705.4 Roof *(A138)*

Task Group 5:

(1) The exterior roof surface complies with a least one of the following practices below……. Silver

a) Minimum initial solar reflectance and emittance of 0.75 and 0.75 respectively
b) Minimum initial solar reflectance index of 75
c) Roof or Ceiling has insulation with an R-Value of R-13 or greater
d) Includes a radiant barrier

(2) The exterior roof surface complies with an additional practice above……. Gold

---

Task Group 8:

(1) The exterior roof surface complies with a least one of the following practices below……. Silver

a) Minimum initial solar reflectance and emittance of 0.75 and 0.75 respectively
b) Minimum initial solar reflectance index of 75
c) Roof ~~or Ceiling~~ has insulation with an R-Value of R-13 or greater
d) Includes a radiant barrier

(2) The exterior roof surface complies with an additional practice above……. Gold

705.5 Ceiling Fans *(A139)*

Task Group 5:

(1) A ceiling fan rough-in is provided for all bedrooms and the largest space that is not used as a bedroom…….. Silver

(2) A ceiling fan is provided for all bedrooms and the largest space that is not used as a bedroom……. Gold

Task Group 8:

(1) A ceiling fan rough-in is provided for bedrooms and the largest space that is not used as a bedroom…….. Silver

(2) A ceiling fan is provided for bedrooms and the largest space that is not used as a bedroom……. Gold

705.6 Photovoltaic System *(A140)*

The residence includes a minimum of 2kW of PV and a minimum of 6kWh of battery storage per dwelling unit……Gold

705.7 Air Conditioning *(A141)*

All installed air conditioners have a minimum of 18 SEER……Gold

Section 14 *(A142)*

REFERENCED DOCUMENTS

1402.0 Referenced Documents

(Modify as shown below)

Cool Roof Rating Council Documents

DOCUMENT	DATE	TITLE	SECTION
CRRC-2	2022	CRRC-2 Wall Product Rating Program Manual	701.1.6(7)