2012 National Green Building Standard

ANSI Standard Revision Process

Proposed Revisions to the Points System

January 20, 2012

Preface

This document summarizes proposed revisions to the threshold levels and point assignments developed by Task Groups based on the review of the Draft Standard (September 23, 2011). All revisions are shown in underline/strikethrough format with the Draft Standard used as the baseline document.

CHAPTER 3

COMPLIANCE METHOD

301 - GENERAL

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

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

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

(2) Point allocation for multi-unit buildings shall be as prescribed in Section 304.

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

302 - GREEN SUBDIVISIONS

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

Table 302
Threshold Point Ratings for Site Design and Development

Green Subdivision Category		Rating Level Points			
		One Star	Two Stars	Three Stars	Four Stars
Chapter 4	Site Design and Development	~~79~~95	~~104~~122	~~134~~149	~~175~~176

303 - GREEN BUILDINGS

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

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

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

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

Table 303
Threshold Point Ratings for Green Buildings

Green Building Categories			Rating Level Points (1) (2)			
			BRONZE	SILVER	GOLD	EMERALD
1.	**Chapter 5**	Lot Design, Preparation, and Development	~~39~~50	~~66~~64	~~93~~93	~~119~~121
2.	**Chapter 6**	Resource Efficiency	~~45~~43	~~79~~59	~~113~~89	~~146~~119
3.	**Chapter 7**	Energy Efficiency	**30**	**60**	~~100~~80	~~120~~100
4.	**Chapter 8**	Water Efficiency	~~14~~19	~~26 3~~9	~~41 6~~7	~~60 9~~7
5.	**Chapter 9**	Indoor Environmental Quality	~~36~~25	~~65~~42	~~100~~69	~~140~~97
6.	**Chapter 10**	Operation, Maintenance, and Building Owner Education	**8**	**10**	**11**	**12**
7.		Additional Points from any category	**50**	**100**	**100**	**100**
		Total Points:	~~222~~226	~~406~~374	~~558~~509	~~697~~647

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

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

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

Task Group Thresholds before adjustment for flexible points

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

End of staff note.]

304 - GREEN MULTI-UNIT BUILDINGS

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

305 - GREEN REMODELING

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

CHAPTER 4

SITE DESIGN AND DEVELOPMENT

GREEN BUILDING PRACTICES	POINTS
400 **SITE DESIGN AND DEVELOPMENT**	
400.0 Intent. This section applies to land development for the eventual construction of buildings or additions thereto that contain dwelling units. The rating earned under Section 303 based on practices herein, applies only to the site as defined in Chapter 2. The buildings on the site earn their own performance level by complying with the provisions of Section 303, 304, or 305.5, as applicable.	
401 **SITE SELECTION**	
401.0 Intent. The site is selected to minimize environmental impact by one or more of the following:	
401.1 Infill site. An infill site is selected.	~~4~~7
401.2 Greyfield site. A greyfield site is selected.	7~~5~~
401.3 Brownfield site. A brownfield site is selected.	~~TBD~~8
401.4 Low-slope site. A site with an average slope calculation of less than 15% is selected.	~~TBD~~5
402 **PROJECT TEAM, MISSION STATEMENT, AND GOALS**	
402.0 Intent. The site is designed and constructed by a team of qualified professionals trained in green development issues.	
402.1 Team. 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**
402.2 Training. Training is provided to on-site supervisors and team members regarding the green development practices to be used on the project.	**3**
402.3 Project checklist. A checklist of green development practices to be used on the project is created, followed, and completed by the project team regarding the site.	**Mandatory** **3~~4~~**
402.4 Development Agreements. Developer requires purchaser(s) of lots to build the homes to a minimum NGBS certified green building bronze level or equivalent through a developer agreement or equivalent.	~~TBD~~6

403
SITE DESIGN

403.0 Intent. The project is designed to avoid detrimental environmental impacts, minimize any unavoidable impacts, and mitigate for those impacts that do occur. The project is designed to minimize environmental impacts and to protect, restore, and enhance the natural features and environmental quality of the site.

(To acquire points allocated for the design, the intent of the design is implemented.)

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

403.5 Storm water management. Storm water management design includes one or more of the following low-impact development techniques:	
(1) Natural water and drainage features are preserved and used.	~~6~~7
(2) Use of vegetative swales, French drains, wetlands, drywells, rain gardens, and similar infiltration features.	6
(3) Permeable materials are selected/specified for common area roads, driveways, parking areas, walkways, and patios.	
(a) less than 25 percent	~~1~~2
(b) 25 percent to 75 percent	~~3~~5
(c) greater than 75 percent	~~5~~8
(4) Stormwater management practices that manage rainfall on-site and prevent the off-site discharge from all storms up to and including the volume of the 95th percentile storm event.	~~TBD~~7
(5) A hydrologic analysis is conducted that results in the design of a stormwater management system that maintains the pre-development (stable, natural) runoff hydrology of the site throughout the development or redevelopment process. Post construction runoff rate, volume, and duration do not exceed predevelopment rates.	~~TBD~~7
(6) Storm water management features/structures are designed for the reduction of nitrogen, phosphorus and sediment.	~~TBD~~7

403.6 Landscape plan. A landscape plan is developed to limit water and energy use in common areas while preserving or enhancing the natural environment utilizing one or more of the following:	
(1) A plan is formulated to restore or enhance natural vegetation that is cleared during construction. Landscaping is phased to coincide with achievement of final grades to ensure denuded areas are quickly vegetated.	~~5~~6
(2) On-site native or regionally appropriate trees and shrubs are conserved, maintained and reused for landscaping to the greatest extent possible.	~~5~~6
(3) Turf grass species, other vegetation, and trees that are native or regionally appropriate for local growing conditions are selected.	~~4~~5
(4) The percentage of all turf areas are limited as part of the landscaping.	
(a) 0 percent	~~4~~6
(b) greater than 0 percent to less than 20 percent	~~3~~5
(c) 20 percent to less than 40 percent	~~2~~3
(d) 40 percent to 60 percent	~~1~~2
(5) Plants with similar watering needs are grouped (hydrozoning).	~~5~~4
(6) Species and locations for tree planting are identified and utilized to increase summer shading of streets, parking areas, and buildings and moderate temperatures.	5
(7) Vegetative wind breaks or channels are designed as appropriate to local conditions.	4

(8)	On-site tree trimmings or stump grinding of regionally appropriate trees are used to provide protective mulch during construction or as base for walking trails, and cleared trees are recycled as sawn lumber or pulp wood.	~~3~~4
(9)	An integrated common area pest management plan to minimize chemical use in pesticides and fertilizers is developed.	**4**
(10)	Plans for the common area landscape watering system include a weather-based or moisture-based controller. Required irrigation systems should be designed in accordance with the Irrigation Association's *Turf and Landscape Best Management Practices*.	**6**
(11)	Trees that might otherwise be lost due to site construction are transplanted to other areas on site or off site, using tree-transplanting techniques to ensure a high rate of survival.	~~3~~4
(12)	Greywater irrigation systems are used to water common areas. Greywater used for irrigation conforms to all criteria within Section 802.1.	~~TBD~~7
(13)	Cisterns, rain barrels, and similar tanks are structures designed to intercept and store runoff. These systems may be above or below ground, and they may drain by gravity or be pumped. Stored water may be slowly released to a pervious area, and used for irrigation of lawn, trees, and gardens located in common areas. ~~X percent of site area is to be irrigated by these means and demonstrated on the site plan.~~	~~TBD~~6

403.7 Wildlife habitat. Measures are planned that will support wildlife habitat.	~~5~~6

403.8 Operation and maintenance plan. An operation and maintenance plan (manual) is prepared and outlines ongoing service of common open area, utilities (storm water, waste water), and environmental management activities.	~~5~~6

403.9 Existing buildings. Existing building(s) and structure(s) is/are preserved, reused, modified, or disassembled for reuse or recycling of building materials.	~~6~~8

403.10 Existing and recycled materials. Existing or recycled materials are used as follows. **(Points awarded for every 10 percent of total construction materials that are reused, deconstructed, and/or salvaged. The percentage is consistently calculated on a weight, volume, or cost basis.)**	~~1~~3
(1) Existing pavements, curbs, and aggregates are salvaged or reincorporated into the development.	
(2) Recycled asphalt or concrete is utilized in the project.	

403.11 Environmentally sensitive areas. Environmentally sensitive areas as follows:		
(1)	Environmentally sensitive areas including steep slopes, prime farmland, critical habitats, and wetlands are avoided as follows:	
	(a) < 25% of site undeveloped	~~TBD~~2
	(b) 25% - 75% of site undeveloped	~~TBD~~4
	(c) > 75% of site undeveloped	~~TBD~~7

(2) Compromised environmentally sensitive areas are mitigated or restored.	~~3~~4

404 SITE DEVELOPMENT AND CONSTRUCTION

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

404.1 On-site supervision and coordination. On-site supervision and coordination is provided during clearing, grading, trenching, paving, and installation of utilities to ensure that specified green development practices are implemented. (also see Section 403.4)	~~4~~5

404.2 Trees and vegetation. Designated trees and vegetation are preserved by one or more of the following:	
(1) Fencing or equivalent is installed to protect trees and other vegetation.	**4**
(2) Trenching, significant changes in grade, compaction of soil, and other activities are avoided in critical root zones (canopy drip line) in "tree save" areas.	~~4~~5
(3) Damage to designated existing trees and vegetation is mitigated during construction through pruning, root pruning, fertilizing, and watering.	**4**

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

404.4 Wildlife habitat. Measures are implemented to support wildlife habitat.	
(1) Wildlife habitat is maintained.	**5**
(2) Measures are instituted to establish or promote wildlife habitat.	~~4~~5
(3) Open space is preserved as part of a wildlife corridor.	~~5~~6
(4) Builder or member of builder's project team participates in a wildlife conservation	**5**

program.	

405
INNOVATIVE PRACTICES

405.0 Intent. Innovative site design, preparation, and development practices are used to enhance environmental performance. Waivers or variances from local development regulations are obtained, and innovative zoning practices are used to implement such practices, as applicable.

405.1 Driveways and parking areas. Driveways and parking areas are minimized by one or more of the following:		
(1)	Off-street parking areas are shared or driveways are shared. An environmental and green approach to shared parking and driveways is achieved through the removal of driveways, and utilization of on-street parking and the use of alleys (shared common area driveways) for rear-loaded garages.	**5**
(2)	In a multi-unit project, parking capacity is not to exceed the local minimum requirements.	**5**
(3)	Structured parking is utilized to reduce the footprint of surface parking areas.	
(a)	25 % to less than 50%	~~2~~3
(b)	50% to 75%	~~3~~5
(c)	greater than 75%	~~4~~8

405.2 Street widths.

(1) Street pavement widths are minimized per local code and are in accordance with Table 405.2. — **6**

Table 405.2
Maximum Street Widths

Facility Type	Maximum Width
Collector street with parking (one side only)	31 feet
Collector street without parking	26 feet
Local access with parking (one side only)	27 feet
Local access street without parking	20 feet
Queuing (one-lane) streets with parking	24 feet
Alleys and queuing (one-lane) streets without parking	17 feet

For SI: 1 foot = 304.8 mm

(2) A waiver was secured by the developer from the local jurisdiction to allow for construction of streets below minimum width requirement. — ~~TBD~~8

405.3 Cluster development. Cluster development enables and encourages flexibility of design and development of land in such a manner as to preserve the natural and scenic qualities of the site by utilizing an alternative method for the layout, configuration and design of lots, buildings and structures, roads, utility lines and other infrastructure, parks, and landscaping. — **10**

405.4 Zoning. Innovative zoning techniques are implemented in accordance with the

following:	
(1) Innovative zoning ordinances or local laws are used or developed for permissible adjustments to population density, area, height, open space, mixed-use, or other provisions for the specific purpose of open space, natural resource preservation or protection and/or mass transit usage. Other innovative zoning techniques may be considered on a case-by-case basis.	~~6~~8
(2) An increase to the permissible density, area, height, use, or other provisions of a local zoning law for a defined green benefit.	~~6~~7
(3) Place-based amenities such as plazas, squares, and attached greens, located around civic, commercial, and mixed-use property are accessible by sidewalks, on-street parking, or provide for bike racks, for the purpose of promoting higher density living.	~~6~~7

405.5 Wetlands. Constructed wetlands or other natural innovative wastewater or storm water treatment technologies are used.	~~7~~8

405.6 Multi-modal transportation. Multi-modal transportation access is provided in accordance with one or more of the following:	
(1) A site is selected with a boundary within one-half mile (805 m) of pedestrian access to a mass transit system or within five miles of a mass transit station with available parking.	~~3~~5
(2) A site is selected where all lots within the site are located within one-half mile (805 m) of pedestrian access to a mass transit system.	~~TBD~~7
(3) Walkways, bikeways, street crossings, and entrances designed to promote pedestrian activity are provided. New buildings are connected to existing sidewalks and areas of development.	~~3~~5
(4) Bicycle parking and racks are indicated on the site plan and constructed for mixed-use, multi-family buildings, and/or common areas.	~~TBD~~4
(5) Bike sharing programs participate with the developer, and their facilities are planned for and constructed.	~~TBD~~5
(6) Car sharing programs participate with the developer, and their facilities are planned for and constructed.	~~TBD~~5

405.7 Density. The average density on a net developable area basis is:	
(1) 7 to less than 14 dwelling units per acre (per 4047 m2)	4~~~~5
(2) 14 to less than 21 dwelling units per acre (per 4047 m2)	7
(3) 21 or greater dwelling units per acre (per 4047 m2)	10

405.8 Mixed-Use Development. (1) Mixed-use development is incorporated, or (2) for single-use sites 20 acres or less in size with boundaries adjacent to a minimum of two uses containing retail, services, and employment may achieve the mixed-use points, given that a pedestrian network of streets, sidewalks, pathways, or plazas exist that connect a majority of lots within the site with the adjacent non-residential uses.	~~TBD~~9

405.9 Open Space. A portion of the gross area of the community is set aside as open space beyond local code requirement. **(Points awarded for every 10 percent of the community set aside as open space beyond local code requirement)**	~~1~~5
405.10 Community Garden(s). A portion of the site is established as a community garden(s), available to residents of the site, to provide for local food production to residents or area consumers.	~~TBD~~6

CHAPTER 5

LOT DESIGN, PREPARATION, AND DEVELOPMENT

GREEN BUILDING PRACTICES	POINTS
500 LOT DESIGN, PREPARATION, AND DEVELOPMENT	
500.0 Intent. This section applies to lot development for the eventual construction of residential buildings, multi-unit buildings, or additions thereto that contain dwelling units. The buildings on the lot earn their own performance level by complying with the provisions of Sections 303, 304, or 305.5, as applicable.	
501 LOT SELECTION	
501.1 Lot. The lot is selected to minimize environmental impact by one or more of the following:	
(1) The builder selects a lot within an NGBS certified green community or equivalent on which to build.	~~4 for 4-star 3 for 3-star 2 for 2-star 1 for 1-star green community~~ 6
(2) An infill lot is selected.	~~6~~8
(3) An infill lot is selected that is a greyfield.	~~8~~7
(4) An EPA-recognized brownfield lot is selected.	~~10~~9
(5) A lot with an average slope calculation of less than 15% is selected.	~~TBD~~9
501.2 Multi-modal transportation. A range of multi-modal transportation choices are promoted by one or more of the following:	
(1) A lot is selected within one-half mile (805 m) of pedestrian access to a mass transit system or within five miles (8046 m) of a mass transit station with provisions for parking.	~~3~~4
(2) Walkways, street crossings, and entrances designed to promote pedestrian activity are provided. New buildings are connected to existing sidewalks and areas of development.	~~3~~5
(3) A lot is selected within one-half mile (805 m) of six or more community resources [e.g., recreational facilities (such as pools, tennis courts, basketball courts), parks, grocery store, post office, place of worship, community center, daycare center, bank, school, restaurant, medical/dental office, laundromat/dry cleaner].	~~3~~4
(4) Bicycle use is promoted by building on a lot located within a community that has	~~TBD~~5

GREEN BUILDING PRACTICES	POINTS
rights-of-way specifically dedicated to bicycle use in the form of paved paths or bicycle lanes or on an infill lot located within 1/2 mile of a bicycle lane designated by the jurisdiction.	

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**

503
LOT DESIGN

503.0 Intent. The lot is designed to avoid detrimental environmental impacts first, minimize any unavoidable impacts, and mitigate for those impacts that do occur. The project is designed to minimize environmental impacts and to protect, restore, and enhance the natural features and environmental quality of the lot.

(To be awarded points allocated for design the intent of the design is implemented.)

503.1 Natural resources. Natural resources are conserved by one or more of the following:	
(1) A natural resources inventory is completed under the direction of a qualified professional.	**5**
(2) A plan is implemented to conserve the elements identified by the resource inventory as high-priority resources.	**6**
(3) Items listed for protection in the resource inventory plan are protected under the direction of a qualified professional.	**4**
(4) Basic training in tree or other natural resource protection is provided for the on-site supervisor.	**4**
(5) All tree pruning on-site is conducted by a Certified Arborist.	**~~2~~3**
(6) Ongoing maintenance of vegetation on the lot during construction is in accordance with TCIA A300 or locally accepted best practices.	**~~3~~4**
(7) Where a lot adjoins a landscaped common area, a protection plan from construction activities next to the common area is implemented.	**5**

503.2 Slope disturbance. Slope disturbance is minimized by: ~~the use of terrain adaptive architecture including terracing, retaining walls, landscaping, or other re-stabilization techniques.~~	
(1) The use of terrain adaptive architecture including terracing, retaining walls, landscaping, or other re-stabilization techniques.	**5**
(~~1~~2) Hydrological/soil stability study is completed and used to guide the design of all buildings on the site.	**~~5~~4**

GREEN BUILDING PRACTICES	POINTS
(2 3) All or a percentage of driveways and parking are aligned with natural topography to reduce cut and fill.	
(a) less than 25 percent	1 3
(b) 25 percent to 75 percent	3 4
(c) greater than 75 percent	5 6
(3 4) Long-term erosion effects are reduced through the design and implementation of terracing, retaining walls, landscaping, or restabilization techniques.	6 5

(4 5) Underground parking uses the natural slope for parking entrances.	4 5

503.3 Soil disturbance and erosion. Soil disturbance and erosion are minimized by one or more of the following: (also see Section 504.3)	
(1) Construction activities are scheduled to minimize length of time that soils are exposed.	**5**
(2) At least 75% of total length of the installed utilities on the lot are installed using one or more alternative means:	**5**
(a) tunneling instead of trenching **(b)** use of smaller (low ground pressure) equipment or geomats to spread the weight of construction equipment **(c)** shared utility trenches or easements **(d)** placement of utilities under paved surfaces instead of yards	
(3) Limits of clearing and grading are demarcated on the lot plan.	**5**

503.4 Storm water management. A storm water management design includes one or more of the following low-impact development techniques: **(For lots in a development, the points for items (1), (2), and (3) may be awarded for the lot when there is a community storm water management plan implemented and the builder does not violate that plan with respect to water leaving the lot.)**	
(1) Natural water and drainage features are preserved and used.	**6**
(2) Facilities that minimize concentrated flows and simulate flows found in natural hydrology by the use of vegetative swales, french drains, wetlands, drywells, rain gardens, and similar infiltration features.	6 7
(3) All or a percentage of impervious surfaces are minimized and permeable materials are used for driveways, parking areas, walkways, and patios.	
(a) less than 25 percent	1 2
(b) 25 percent to 75 percent	3 4
(c) greater than 75 percent	5 6
(4) A minimum of 50 percent of the roof is vegetated (green roof) using technology capable of withstanding the climate conditions of the jurisdiction and the microclimate conditions of the building site. Invasive plant species are not permitted.	3 5
(5) Stormwater management practices that manage rainfall on-site and prevent the off-site discharge from all storms up to and including the volume of the 95th percentile storm event.	TBD 6

GREEN BUILDING PRACTICES	POINTS
(6) Conduct a hydrologic analysis that results in the design of a stormwater management system that maintains the pre-development (stable, natural) runoff hydrology of the site throughout the development or redevelopment process. Post-construction runoff rate, volume, and duration cannot exceed predevelopment rates.	~~TBD~~7

503.5 Landscape plan. A landscape plan for the lot is developed to limit water and energy use while preserving or enhancing the natural environment. **(Where "front" only or "rear" only plan is implemented, only half of the points (rounding down to a whole number) are awarded for items 1-6)**	
(1) Where a lot is less than 50% turf, a plan is formulated to restore or enhance natural vegetation that is cleared during construction. Landscaping is phased to coincide with achievement of final grades to ensure denuded areas are quickly vegetated.	~~5~~6
(2) Turf grass species, other vegetation, and trees are selected and specified on the lot plan that are native or regionally appropriate for local growing conditions.	**4**

(3) The percentage of turf areas that is designed to be mowed is limited and shown on the lot plan. The percentage is based on the landscaped area of the lot not including the home footprint, hardscape, and any undisturbed natural areas.	
(a) 0 percent	~~4~~5
(b) greater than 0 percent to less than 20 percent	~~3~~4
(c) 20 percent to less than 40 percent	~~2~~3
(d) 40 percent to 60 percent	~~1~~2
(4) Plants with similar watering needs are grouped (hydrozoning) and shown on the lot plan.	**5**
(5) Summer shading by planting installed to shade a minimum of 30% of building walls. To conform to summer shading, the effective shade coverage is the arithmetic mean of the shade coverage calculated at 10 am for eastward facing walls, noon for southward facing walls, and 3 pm for westward facing walls on the summer solstice five years after planting.	**5**
(6) Vegetative wind breaks or channels are designed to protect the lot and immediate surrounding lots as appropriate for local conditions.	**4**
(7) On-site (or community generated) tree trimmings or stump grinding of regionally appropriate trees are used on the site to provide protective mulch during construction or for landscaping.	**3**
(8) An integrated pest management plan is developed to minimize chemical use in pesticides and fertilizers.	**4**

503.6 Wildlife habitat. Measures are planned that will support wildlife habitat and include at least two of the following:	~~4~~
(1) Plants and gardens that will encourage wildlife, such as bird and butterfly gardens.	~~TBD~~3
(2) Inclusion of a certified “backyard wildlife” program.	~~TBD~~3
(3) Lots are adjacent to wildlife corridors, fish and game parks, or preserved areas and are designed with regard for this relationship.	~~TBD~~3

GREEN BUILDING PRACTICES	POINTS
(4) Outdoor lighting techniques are utilized with regard for wildlife.	~~TBD~~3

503.7 Environmentally sensitive areas. Environmentally sensitive areas.	
(1) The lot does not contain any environmentally sensitive areas that are disturbed by the construction.	~~3~~4
(2) Compromised environmentally sensitive areas are mitigated or restored.	~~3~~4

504
LOT CONSTRUCTION

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

504.1 On-site supervision and coordination. On-site supervision and coordination is provided during clearing, grading, trenching, paving on the lot, and installation of utilities on the lot to ensure that specified green development practices are implemented. (also see Section 503.3)	**4**

504.2 Trees and vegetation. Designated trees and vegetation are preserved by one or more of the following:	
(1) Fencing or equivalent is installed to protect trees and other vegetation.	**3**
(2) Trenching, significant changes in grade, and compaction of soil and critical root zones in all “tree save” areas as shown on the lot plan are avoided.	~~4~~5
(3) Damage to designated existing trees and vegetation is mitigated during construction through pruning, root pruning, fertilizing, and watering.	**4**

504.3 Soil disturbance and erosion implementation. On-site soil disturbance and erosion are minimized by one or more of the following in accordance with the SWPPP or applicable plan: (also see Section 503.3)	
(1) Sediment and erosion controls are installed on the lot and maintained in accordance with the storm water pollution prevention plan, where required.	**5**
(2) Limits of clearing and grading are staked out on the lot.	**5**
(3) “No disturbance” zones are created using fencing or flagging to protect vegetation and sensitive areas on the lot from construction activity.	**5**
(4) Topsoil from either the lot or the site development is stockpiled and stabilized for later use and used to establish landscape plantings on the lot.	**5**
(5) Soil compaction from construction equipment is reduced by distributing the weight of the equipment over a larger area (laying lightweight geogrids, mulch, chipped wood, plywood, OSB, metal plates, or other materials capable of weight distribution in the pathway of the equipment).	~~3~~4
(6) Disturbed areas on the lot that are complete or to be left unworked for 21 days or more are stabilized within 14 days using methods as recommended by the EPA, or in	**3**

GREEN BUILDING PRACTICES	POINTS
the approved storm water pollution prevention plan, where required.	
(7) Soil is improved with organic amendments and mulch.	**3**
(8) Utilities on the lot are installed using one or more alternative means (e.g., tunneling instead of trenching, use of smaller equipment, use of low ground pressure equipment, use of geomats, shared utility trenches or easements).	**5**
(9) Inspection reports of storm water best management practices are available.	~~**TBD**~~**3**

505 INNOVATIVE PRACTICES

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

505.1 Driveways and parking areas. Driveways and parking areas are minimized by one or more of the following:	
(1) Off-street parking areas are shared or driveways are shared. Waivers or variances from local development regulations are obtained to implement such practices, if required.	~~**4**~~**5**
(2) In a multi-unit project, parking capacity is not to exceed the local minimum requirements.	~~**4**~~**5**
(3) Structured parking is utilized to reduce the footprint of surface parking areas.	
(a) 25 % to less than 50%	~~**2**~~**4**
(b) 50% to 75%	~~**3**~~**5**
(c) greater than 75%	~~**4**~~**6**

505.2 Heat island mitigation. One or more of the following strategies are provided for a minimum of 50 percent of the horizontal surface area of the hardscape on the lot:	**4**
(1) Shading of hardscaping: Shade is provided from existing or new vegetation (within five years) or from trellises. Shade of hardscaping is to be measured on the summer solstice at noon.	**5**
(2) Light-colored hardscaping: Horizontal hardscaping materials are installed with a solar reflectance index of 29 or greater.	**4**
(3) Permeable hardscaping: Permeable hardscaping materials are installed.	**5**
(4) Roofs: Not less than 75 percent of the surface of the roof meets one or a combination of the following methods.	
(a) Minimum initial Solar Reflectance Index of 78 for a low-sloped roof (a slope less than or equal to 2:12) and a minimum initial Solar Reflectance Index of 29 for a steep-sloped roof (a slope of more than 2:12).	**5**
(b) Roof is vegetated using technology capable of withstanding the climate conditions of the jurisdiction and the microclimate conditions of the building site. Invasive plant species are not permitted.	**6**

GREEN BUILDING PRACTICES	POINTS
505.3 Density. The average density on the lot on a net developable area basis is:	
(1) 7 to less than 14 dwelling units per acre (per 4047 m^2)	~~4~~5
(2) 14 to less than 21 dwelling units per acre (per 4047 m^2)	~~7~~8
(3) 21 or greater dwelling units per acre (per 4047 m^2)	~~10~~11
505.4 Mixed-use development. The lot contains a mixed-use building.	~~6~~8
505.5 Community Garden(s). A portion of the lot is established as a community garden(s), available to residents of the lot, to provide for local food production to residents or area consumers.	~~TBD~~6

CHAPTER 6

RESOURCE EFFICIENCY

GREEN BUILDING PRACTICES	POINTS
601 QUALITY OF CONSTRUCTION MATERIALS AND WASTE	
601.0 Intent. Design and construction practices that minimize the environmental impact of the building materials are incorporated, environmentally efficient building systems and materials are incorporated, and waste generated during construction is reduced.	
601.1 Conditioned floor area. Finished floor area of a dwelling unit is limited. Finished floor area is calculated in accordance with NAHBRC Z765. Only the finished floor area for stories above grade plane is included in the calculation.	
(1) less than or equal to 1,000 square feet (93 m^2)	**15**
(2) less than or equal to 1,500 square feet (139 m^2)	**12**
(3) less than or equal to 2,000 square feet (186 m^2)	**9**
(4) less than or equal to 2,500 square feet (232 m^2)	**6**
(5) greater than 4,000 square feet (372 m^2) **(For every 100 square feet (9.29 m^2) over 4,000 square feet (372 m^2), one point is to be added in Table 303, Category 7 for each performance level.)**	**Mandatory**
***Multi-Unit Building Note**: For a multi-unit building, use a weighted average of the individual unit sizes in qualifying for available points.*	
601.2 Material usage. Structural systems are designed or construction techniques are implemented that reduce and optimize material usage.	**9 Points Max**
(1) Minimum structural member or element sizes necessary for strength and stiffness in accordance with advanced framing techniques or structural design standards are selected.	**3**
(2) Higher-grade or higher-strength of the same materials than commonly specified for structural elements and components in the building are used and element or component sizes are reduced accordingly.	**3**
(3) Performance-based structural design is used to optimize lateral force-resisting systems.	**3**
601.3 Building dimensions and layouts. Building dimensions and layouts are designed to reduce material cuts and waste. This practice is used for a minimum of 80 percent of the following areas:	
(1) floor area	**3**
(2) wall area	**3**
(3) roof area	**3**
(4) cladding or siding area	**3**

GREEN BUILDING PRACTICES	POINTS
(5) penetrations or trim area	**1**
601.4 Framing and structural plans. Detailed framing or structural plans, material quantity lists and on-site cut lists for framing, structural materials, and sheathing materials are provided.	**4**
601.5 Prefabricated components. Precut or preassembled components, or panelized or precast assemblies are utilized for a minimum of 90 percent for the following system or building:	**Max 13 points**
(1) floor system	**4**
(2) wall system	**4**
(3) roof system	**4**
(4) modular construction for the entire building located above grade	**13**
(5) manufactured home construction for the entire building located above grade	**13**
601.6 Stacked stories. Stories above grade are stacked, such as in 1½-story, 2-story, or greater structures. The area of the upper story is a minimum of 50 percent of the area of the story below, based on areas with a minimum ceiling height of 7 feet (2134 mm).	**8 Points Max**
(1) first stacked story	**4**
(2) for each additional stacked story	**2**
601.7 Site-applied finishing materials. Building materials or assemblies listed below that do not require additional site-applied material for finishing are incorporated in the building.	**12 Points Max**
(1) 90 percent or more of the installed building materials or assemblies listed below: **(Points awarded for each type (a-g) of material or assembly.)**	**5**
(2) 50 percent to less than 90 percent of the installed building material or assembly listed below: **(Points awarded for each type (a-g) of material or assembly.)**	**2**
(3) 35 percent to less than 50 percent of the installed building material or assembly listed below: **(Points awarded for each type (a-g) of material or assembly.)**	**1**
(a) pigmented, stamped, decorative, or final finish concrete or masonry **(b)** interior trim not requiring paint or stain **(c)** exterior trim not requiring paint or stain **(d)** window, skylight, and door assemblies not requiring paint or stain on exterior or interior surfaces **(e)** interior wall coverings or systems not requiring paint or stain or other type of finishing application **(f)** exterior wall coverings or systems not requiring paint or stain or other type of finishing application **(g)** pre-finished hardwood flooring	

GREEN BUILDING PRACTICES	POINTS
601.8 Foundations. A foundation system that minimizes soil disturbance, excavation quantities and material usage, such as frost-protected shallow foundations, isolated pier and pad foundations, deep foundations, post foundations, or helical piles is selected, designed, and constructed. The foundation is used on 50 percent or more of the building footprint.	**3**
601.9 Above grade wall systems. One or more of the following above grade wall systems that provide sufficient structural and thermal characteristics are used for a minimum of 75 percent of the gross exterior wall area of the building:	**4**
(1) adobe **(2)** concrete and/or masonry **(3)** logs **(4)** rammed earth	
602 **ENHANCED DURABILITY AND REDUCED MAINTENANCE**	
602.0 Intent. Design and construction practices are implemented that enhance the durability of materials and reduce in-service maintenance.	
602.1 Moisture Management – Building Envelope	
602.1.1 Capillary breaks	
602.1.1.1 A capillary break and vapor retarder are installed at all concrete slabs adjoining living space in accordance with Sections 602.1.1.1(1) or 602.1.1.1(2), as modified by Section 602.1.1.1(3):	**Mandatory**
(1) A minimum 4-inch-thick (102 mm) bed of ½-inch (13 mm) diameter or greater clean aggregate, covered with polyethylene or polystyrene sheeting in direct contact with the concrete slab, with the sheeting joints lapped in accordance with Section 602.1.4. **(2)** A minimum 4-inch-thick (102 mm) uniform layer of sand, overlain with a layer or strips of geotextile drainage matting, covered with polyethylene sheeting, with the sheeting joints lapped in accordance with Section 602.1.4. **(3)** Modification: In areas with free-draining soils, identified as Group 1 in the ICC IRC by a certified hydrologist, soil scientist, or engineer through a site visit, a gravel bed or geotextile matting is not required.	
602.1.1.2 Add a capillary break on footing to prevent moisture migration into foundation wall.	**3**
602.1.2 Foundation waterproofing. Enhanced foundation waterproofing is installed: **(1)** rubberized coating, or **(2)** drainage mat	**4**
602.1.3 Foundation drainage.	
602.1.3.1 Where required by the ICC IRC or IBC for habitable and usable spaces below grade, exterior drain tile is installed.	**Mandatory**
602.1.3.2 Interior and exterior foundation perimeter drains are installed and sloped to	**4**

GREEN BUILDING PRACTICES	POINTS
discharge to daylight, dry well, or sump pit.	
602.1.4 Crawlspaces.	
602.1.4.1 ~~Crawlspace~~ V~~v~~apor retarder in unconditioned crawlspace is in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 inches (152 mm) and are taped.	
(1) Floors. Minimum 6 mil vapor retarder installed on the crawlspace floor and extended up the wall sufficient to allow the material to be affixed with glue and furring strips.	**6**
(2) Walls. Damp-proof walls are provided below finished grade.	**Mandatory**
602.1.4.2 Crawlspace that is built as a conditioned area is sealed to prevent outside air infiltration and provided with conditioned air at a rate not less than 0.02 cfm (.009 L/s) per square foot of horizontal area and one of the following is implemented:	
(1) a concrete slab over lapped 6 mil polyethylene or polystyrene.	**~~10~~8**
(2) 6 mil polyethylene sheeting, lapped a minimum of 6 inches (152 mm), and taped at the seams.	**~~8~~Mandatory**
602.1.5 Termite barrier. Continuous physical foundation termite barrier used with low toxicity treatment or with no chemical treatment is installed in geographical areas that have subterranean termite infestation potential determined in accordance with Figure 6(3).	**4**
602.1.6 Termite-resistant materials. Termite-resistant materials are used as follows:	
(1) In areas of slight to moderate termite infestation probability [as defined by Figure 6(3)] for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings within the first 2 feet (610 mm) above the top of the foundation.	**2**
(2) In areas of moderate to heavy termite infestation probability [as defined by Figure 6(3)] for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings within the first 3 feet (914 mm) above the top of the foundation.	**4**
(3) In areas of very heavy termite infestation probability [as defined by Figure 6(3)] for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings.	**6**
602.1.7 Moisture control measures	
602.1.7.1 Moisture control measures are in accordance with the following:	
(1) Building materials with visible mold are not installed or are cleaned or encapsulated prior to concealment and closing.	**2**
(2) Insulation in cavities is dry in accordance with manufacturer's installation instructions when enclosed (e.g., with drywall).	**Mandatory 2**
(3) The moisture content of lumber is sampled to ensure it does not exceed 19 percent	**4**

GREEN BUILDING PRACTICES	POINTS
prior to the surface and/or cavity enclosure.	
602.1.7.2 Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the finish flooring to be applied.	**2**
602.1.8 Water-resistive barrier. Where required by the ICC IRC or IBC, a water-resistive barrier and/or drainage plane system is installed behind exterior veneer and/or siding.	**Mandatory**
602.1.9 Flashing. Flashing is provided to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details are provided in the construction documents and are in accordance with the fenestration manufacturer's instructions, the flashing manufacturer's instructions, or as detailed by a registered design professional.	
(1) Flashing are installed at all of the following locations, as applicable: **(a)** around exterior fenestrations, skylights and doors **(b)** at roof valleys **(c)** at deck, balcony, porch or stair to building intersections **(d)** at roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets. **(e)** at ends of and under masonry, wood, or metal copings and sills **(f)** above projecting wood trim **(g)** at built-in roof gutters **(h)** drip edge is installed at eave~~s~~ and rake edges.	**Mandatory**
(2) All window head and jamb flashing are self-adhered flashing complying with AAMA 711-07.	**2**
(3) Pan flashing is installed at sills of all exterior windows and doors.	~~2~~**3**
(4) Seamless, preformed kickout flashing, or prefabricated metal with soldered seams is provided at all roof-to-wall intersections. The type and thickness of the material used for roof flashing including but not limited kickout and step flashing is commensurate with the anticipated service life of the roofing material.	~~2~~**3**
(5) A rainscreen wall design is used for exterior wall assemblies	~~2~~ ~~4~~ **Points Max**
(a) a system designed with minimum ¼" inch air space exterior to the water-resistive barrier, vented to the exterior at top and bottom of the wall and integrated with flashing details. OR	~~2~~**4**
(b) either a cladding material or a water-resistive barrier with enhanced drainage, meeting 75% drainage efficiency requirement of ASTM E2273.	~~1~~**2**
(6) A drip cap is provided above windows and doors that are not flashed or protected by covering in accordance with Section 602.1	**2**
(7) Through wall flashing is installed at transitions between wall cladding materials, or wall construction types.	**2**
(8) Flashing is installed at expansion joints in stucco walls	**2**
602.1.10 Exterior doors. Entries at exterior door assemblies, inclusive of side lights, are	~~5~~**2 Points per**

GREEN BUILDING PRACTICES	POINTS
covered by one of the following methods to protect the building from the effects of precipitation and solar radiation. A projection factor of 0.375 minimum is provided. Eastern- and western-facing entries in Climate Zones 1, 2, and 3, as determined in accordance with Figure 6(1) or Appendix C, have a projection factor of 1.0 minimum, unless otherwise protected from direct solar radiation by other means (e.g., screen wall, vegetation).	exterior door 6 Points Max
(a) installing a porch roof or awning **(b)** extending the roof overhang **(c)** recessing the exterior door	
~~(1) main entrance door~~	~~3~~
~~(2) additional covered door assembly~~	~~1~~
602.1.11 Tile backing materials. Tile backing materials installed under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325.	**Mandatory**
602.1.12 Roof overhangs. Roof overhangs, based on inches of rainfall in Table 602.2, are provided over a minimum of 90 percent of exterior walls to protect the building envelope.	**4**

Table 602.2
Minimum Roof Overhang for One- & Two-Story Buildings

Inches Rainfall (1)	Eave Overhang (Inches)	Rake Overhang (Inches)
≤40	12	12
>41 and ≤70	18	12
> 70	24	12

(1) Annual mean total precipitation in inches is in accordance with Figure 6(2).

For SI: 12 inches = 304.8 mm

602.1.13 Drip edge. Drip edge is installed at eaves and gable roof edges.	Mandatory **3**
602.1.14 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier is installed in accordance with the ICC IRC or IBC at roof eaves of pitched roofs and extends at a minimum of 24 inches (610 mm) inside the exterior wall line of the building.	**Mandatory**
602.1.15 Architectural features. Architectural features that increase the potential for the water intrusion are avoided:	
(1) No roof configurations that create horizontal valleys in roof design.	**2**
(2) No recessed windows and architectural features that trap water on horizontal surfaces.	**2**
(3) All horizontal ledgers are sloped away to provide gravity drainage as appropriate for the application.	**Mandatory** 1

602.2 Roof surfaces. A minimum of 90 percent of roof surfaces, not used for roof penetrations and associated equipment, on-site renewable energy systems such as photovoltaics or solar thermal energy collectors, or rooftop decks, amenities and walkways, are constructed of one or both of the following:	**3**

GREEN BUILDING PRACTICES	POINTS
(1) products that are in accordance with the ENERGY STAR® cool roof certification or equivalent	
(2) a vegetated roof system	
602.3 Roof water discharge. A gutter and downspout system or splash blocks and effective grading are provided to carry water a minimum of 5 feet (1524 mm) away from perimeter foundation walls.	**4**
602.4 Finished grade.	
602.4.1 Finished grade at all sides of a building is sloped to provide a minimum of 6 inches (150 mm) of fall within 10 feet (3048 mm) of the edge of the building. Where lot lines, walls, slopes, or other physical barriers prohibit 6 inches (152 mm) of fall within 10 feet (3048 mm), the final grade is sloped away from the edge of the building at a minimum slope of 2 percent.	**Mandatory**
602.4.2 The final grade is sloped away from the edge of the building at a minimum slope of 5 percent.	**1**
602.4.3 Water is directed to drains or swales to ensure drainage away from the structure.	**1**
603 **REUSED OR SALVAGED MATERIALS**	
603.0 Intent. Practices that reuse or modify existing structures, salvage materials for other uses, or use salvaged materials in the building's construction are implemented.	
603.1 Reuse of existing building. Major elements or components of existing buildings and structures are reused, modified, or deconstructed for later use in lieu of demolition. **(Points awarded for every 200 square feet (18.5 m^2) of floor area.)**	**1** **12 Points Max**
603.2 Salvaged materials. Reclaimed and/or salvaged materials and components are used. The total material value and labor cost of salvaged materials is equal to or exceeds 1 percent of the total construction cost. **(Points awarded per 1% of salvaged materials used based on the total construction cost.)** **(Materials, elements, or components awarded points under Section 603.1 shall not be awarded points under Section 603.2.)**	**1** **9 Points Max**
603.3 Scrap materials. Facilitation for sorting and reuse of scrap building material (e.g., provide a central storage area or dedicated bins).	**4**
604 **RECYCLED-CONTENT BUILDING MATERIALS**	
604.1 Recycled content. Building materials with recycled content are used for two minor and/or two major components of the building.	**Points per Table 604.1**

Table 604.1
Recycled Content

Material Percentage Recycled Content	Points Per 2 Minor	Points Per 2 Major
25% to less than 50%	**1**	**2**

GREEN BUILDING PRACTICES					POINTS
	50% to less than 75%	**2**	**4**		
	more than 75%	**3**	**6**		

605
RECYCLED CONSTRUCTION WASTE

605.0 Intent. Waste generated during construction is recycled. All waste classified as hazardous shall be properly handled and disposed.

(Points not awarded for hazardous waste removal.)

605.1 Construction waste management plan. A construction waste management plan is developed, posted at the jobsite, and implemented with a goal of recycling or salvaging a minimum of 50 percent (by weight) of construction waste.	**6**

605.2 On-site recycling. On-site recycling measures following applicable regulations and codes are implemented, such as the following:	**7**
(a) Materials are ground or otherwise safely applied on-site as soil amendment or fill. A minimum of 50 percent (by weight) of construction and land-clearing waste is diverted from landfill. **(b)** Alternative compliance methods approved by the Adopting Entity. **(c)** Compatible untreated biomass material (lumber, posts, beams etc.) are set aside for combustion if a Solid Fuel Burning Appliance as per Section 901.2.1(2) will be available for on-site renewable energy.	

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

606
RENEWABLE MATERIALS

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

606.1 Biobased products. The following biobased products are used:	**8 Points Max**
(a) certified solid wood in accordance with Section 606.2 **(b)** engineered wood **(c)** bamboo **(d)** cotton **(e)** cork **(f)** straw **(g)** natural fiber products made from crops (soy-based, corn-based) **(h)** products with the minimum biobased contents of the USDA 7 CFR Part 2902 **(i)** other biobased materials with a minimum of 50 percent biobased content (by weight or volume)	
(1) Two types of biobased materials are used, each for more than 0.5 percent of the project's projected building material cost.	**3**

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

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

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

607
RECYCLING AND WASTE REDUCTION

607.1 Recycling. Occupant recycling is facilitated by one or more of the following methods:	
(1) A built-in collection space in each kitchen and an aggregation/pick-up space in a garage, covered outdoor space, or other area for recycling containers	**3**
(2) Compost facility provided on-site	**3**
607.2 Food waste disposers. A minimum of one food waste disposer is installed at the primary kitchen sink.	**1**

608
RESOURCE-EFFICIENT MATERIALS

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

GREEN BUILDING PRACTICES	POINTS
(2) engineered wood or engineered steel products **(3)** roof or floor trusses	

609
REGIONAL MATERIALS

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

610
LIFE CYCLE ANALYSIS

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

(c) Acidification potential
(d) Eutrophication potential
(e) Ozone depletion potential
(f) Human health respiratory effects potential from particulates

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

Table 610.1.2(2)
Assembly LCA

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

611INNOVATIVE PRACTICES

611.1 Manufacturer's environmental management system concepts. Product manufacturer's operations and business practices include environmental management system concepts, and the production facility is registered to ISO 14001 or equivalent. The aggregate value of building products from registered ISO 14001 or equivalent production facilities is 1 percent or more of the estimated total building materials cost. **(1 point awarded per percent.)**	**10 points Max**

611.2 Sustainable Products. One or more of the following products are used for at least 30% of the floor or wall area of the entire dwelling unit, as applicable. Certification third-party agency is ISO Guide 65 accredited.	~~4~~ 6 **Points Max**
(1) 50% or more of carpet installed (by square feet) is third-party certified to NSF/ANSI 140.	~~1~~3
(2) 50% or more of resilient flooring installed (by square feet) is third-party certified to NSF/ANSI 332.	~~1~~3
(3) 50% or more of the insulation installed (by square feet) is third-party certified to EcoLogo CCD-016.	~~1~~3
(4) 50% or more of interior wall coverings installed (by square feet) is third-party certified to NSF/ANSI 342.	~~1~~3

611.3 Universal Design Elements. Dwelling incorporates one or more of the following universal design elements.	**10 Points Max**
(1) Any no-step entrance into the dwelling which is accessible from a substantially level parking or drop-off area (no more than 2%) via an accessible path which has no individual change in elevation or other obstruction of more than 1-1/2 inches in height, whose pitch does not exceed 1 in 12 and which provides a minimum 32-inch wide clearance into the dwelling.	**3**
(2) Minimum 36-inch wide accessible route from the no-step entrance into at least one visiting room in the dwelling and into at least one full or half bathroom which has a minimum 32 inch clear door width and a 30 inch by 48 inch clear area inside the bathroom outside the door swing.	**3**
(3) Minimum 36-inch wide accessible route from the no-step entrance into at least one	**3**

bedroom which has a minimum 32 inch clear door width.	
(4) Blocking or equivalent installed in the accessible bathroom walls for future installation of grab bars at commode and bathing fixture, if applicable.	**1**
Note: *Reasonable construction tolerances are allowed.*	

~~**611.4 Food waste disposers.** A minimum of one food waste disposer is installed at the primary kitchen sink.~~	~~**1**~~

CHAPTER 7

ENERGY EFFICIENCY

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

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ACCA Manual D or equivalent.	
701.4.3 Insulation and air sealing.	
701.4.3.1 Building Thermal Envelope. 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:	**Mandatory**
(a) All joints, seams and penetrations. **(b)** Site-built windows, doors and skylights. **(c)** Openings between window and door assemblies and their respective jambs and framing. **(d)** Utility penetrations. **(e)** Dropped ceilings or chases adjacent to the thermal envelope. **(f)** Knee walls. **(g)** Walls and ceilings separating a garage from conditioned spaces. **(h)** Behind tubs and showers on exterior walls. **(i)** Common walls between dwelling units. **(j)** Attic access openings. **(k)** Rim joist junction. **(l)** Other sources of infiltration.	
701.4.3.2 Air sealing and insulation. The compliance of the building envelope air tightness and insulation installation is demonstrated in accordance with Section 701.4.3.2(1) or 701.4.3.2(2).	**Mandatory**
(1) Testing option. Building envelope tightness and insulation installation is considered acceptable when tested air leakage is less than seven air changes per hour (ACH) when tested with a blower door at a pressure of 33.5 psf (50 Pa). Testing is conducted after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances. During testing:	
(a) Exterior windows and doors, fireplace and stove doors are closed, but not sealed; **(b)** Dampers are closed, but not sealed, including exhaust, intake, makeup air, backdraft and flue dampers; **(c)** Interior doors are open; **(d)** Exterior openings for continuous ventilation systems and heat recovery ventilators are closed and sealed; **(e)** Heating and cooling system(s) is turned off; **(f)** HVAC ducts are not sealed; and **(g)** Supply and return registers are not sealed.	
(2) Visual inspection option. Building envelope tightness and insulation installation are considered acceptable when the items listed in Table 701.4.3.2(2) applicable to the method of construction, are field verified.	

Table 701.4.3.2(2)
Air Barrier and Insulation Inspection Component Criteria

COMPONENT	CRITERIA
Air barrier and thermal barrier	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier.

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	Breaks or joints in the air barrier are filled or repaired. Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.
Ceiling/attic	Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and anygaps are sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.
Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.
Windows and doors	Space between window/door jambs and framing is sealed.
Rim joists	Rim joists are insulated and include an air barrier.
Floors (including above-garage and cantilevered floors)	Insulation is installed to maintain permanent contact with underside of subfloor decking. Air barrier is installed at any exposed edge of insulation.
Crawl space walls	Insulation is permanently attached to walls. Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.
Shafts, penetrations	Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.
Narrow cavities	Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.
Garage separation	Air sealing is provided between the garage and conditioned spaces.
Recessed lighting	Recessed light fixtures are air tight, IC rated, and sealed to drywall. Exception—fixtures in conditioned space.
Plumbing and wiring	Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.
Shower/tub on exterior wall	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.
Electrical/phone box on exterior walls	Air barrier extends behind boxes or air sealed-type boxes are installed.
Common wall	Air barrier is installed in common wall between dwelling units.
HVAC register boots	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.
Fireplace	Fireplace walls include an air barrier.

701.4.3.3 Fenestration air leakage. Windows, skylights and sliding glass doors have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m2), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/ m2), when tested according to NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled by the manufacturer.	**Mandatory**
Exception: Site built windows, skylights and doors.	
701.4.3.4 Recessed lighting. Recessed luminaires installed in the building thermal envelope are sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires are IC-rated and labeled as meeting ASTM E 283 when tested at 1.57 psf (75 Pa) pressure differential with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity. All recessed luminaires are sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.	**Mandatory**
701.4.4 High-efficacy lighting. A minimum of 50 percent of the total hard-wired lighting fixtures, or the bulbs in those fixtures, qualify as high efficacy or equivalent.	**Mandatory**
701.4.5 Boiler supply piping. Boiler supply piping is insulated in unconditioned spaces.	**Mandatory**

GREEN BUILDING PRACTICES	POINTS
702 PERFORMANCE PATH	
702.1 Point allocation. Points from Section 702 (Performance Path) shall not be combined with points from Section 703 (Prescriptive Path).	**Mandatory**
702.2 Energy cost performance levels.	
702.2.1 ICC IECC analysis. Energy efficiency features are implemented to achieve energy cost performance that meets the ICC IECC. A documented analysis using software in accordance with ICC IECC, Section 405, or ICC IECC Section 506.2 through 506.5, applied as defined in the ICC IECC, is required.	**TBD**
702.2.2 Energy cost performance analysis. Savings levels above the ICC IECC are determined through an analysis that includes improvements in building envelope, air infiltration, heating system efficiencies, cooling system efficiencies, duct sealing, water heating system efficiencies, lighting, and appliances.	
(1) 15 percent	**30**
(2) 30 percent	**60**
(3) ~~50~~ 40 percent	**~~100~~80**
(4) ~~60~~ 50 percent	**~~120~~100**
703 PRESCRIPTIVE PATH	
703.1 Building envelope	
703.1.1 UA improvement. The total building thermal envelope UA is in accordance with Table 703.1.2 and is less than or equal to the total UA resulting from the U-factors provided in Table 703.1.1. Where insulation is used to achieve the UA improvements, a third-party grading of the installation as achieving Grade 1 is required. Total UA is documented using RESCheck or equivalent report and supplied to verify the baseline and the UA improvement.	**Points per Table 703.1.1**

Table 703.1.1
Equivalent U-Factors[a]

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

a. Nonfenestration U-factors shall be obtained from measurement, calculation or an approved source.
b. When more the half the insulation is on the interior, the mass wall U-factors is a maximum of 0.17 in Zone 1, 0.14 in

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Zone 2, 0.12 in Zone 3, 0.10 in Zone 4 except in Marine, and the same as the frame wall U-factor in Marine Zone 4 and Zones 5 through 8.
c. Basement wall U-factor of 0.360 in warm-humid locations.

Table 703.1.2
Improvement in Total Building Thermal Envelope UA

Minimum UA Improvement	Climate Zone							
	1	2	3	4	5~~-6~~	6	7~~-8~~	8
	Points							
0 to < 5%	0	0	0	0	0	0	0	0
5% to <10%	0	~~5~~2	~~6~~3	~~7~~4	~~8~~7	5	~~9~~3	4
10% to <15%	0	~~10~~6	~~12~~8	~~14~~8	~~16~~11	12	~~18~~9	10
15% to <20%	0	~~15~~10	~~18~~12	~~21~~13	~~24~~16	14	~~27~~11	12
≥20%	~~0~~2	~~20~~14	~~24~~17	~~28~~18	~~32~~18	17	~~36~~14	16

703.1.2 Insulation installation. The insulation installation is graded by a third party and is in accordance with Sections 703.1.2.1, 703.1.2.2, and/or 703.1.2.3 as applicable. Grade 3 insulation installation is not permitted. Grade 2 installation is permitted only for bronze level buildings.

(Points not awarded in this section if already awarded under Section 703.1.1.)

~~Points per Table 703.1.2~~ 2

~~Table 703.1.2~~
~~Insulation Installation Grades~~

~~Grade~~	~~POINTS~~
~~1~~	~~15~~
~~2~~	~~10~~

703.1.2.1 Both Grade 1 and Grade 2 installations are in accordance with the following:

(1) Grading applies to field-installed insulation products.

(2) Grading applies to ceilings, walls, floors, band joists, rim joists, conditioned attics basements and crawlspaces, except as specifically noted.

(3) Inspection is conducted before insulation is covered.

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

703.1.2.2 Grade 1 installation is in accordance with the following:

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

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(2) Cavity insulation compression or incomplete fill amounts to 2 percent or less, presuming the compressed or incomplete areas are a minimum of 70 percent of the intended fill thickness; occasional small gaps are acceptable.

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

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

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

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

(7) Where properly installed, ICFs, SIPs, and other wall systems that provide integral insulation are deemed in compliance with the Grade 1 insulation installation requirements.

(8) Grade 1 insulation meets or exceeds all requirements for Grade 2 insulation.

703.1.2.3 Grade 2 installation is in accordance with the following:

(1) A maximum of 2 percent of the surface area of insulation is missing. Compression or incomplete fill amounts to 10 percent or less, presuming the compressed or incomplete areas are a minimum of 70 percent of the intended fill thickness.

(2) In unconditioned basements or crawlspaces insulation is installed in substantial contact with the subfloor surfaces.
- **(a)** floor insulation over vented or ambient conditions is enclosed on six sides.
- **(b)** floor insulation over unconditioned basements is not required to be enclosed on six sides.

(3) Ceiling insulation is not required to be enclosed when the insulation is installed in substantial contact with the drywall or plywood surfaces it is intended to insulate.

(4) Eave baffles or equivalent construction is installed to prevent wind intrusion.

(5) Installation with occasional installation defects is permitted: gaps around wiring, electrical outlets, plumbing and other intrusions; rounded edges or shoulders.

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

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

	~~**Mass Construction**~~	
	≥3 in. to <6 in~~.~~	~~≥6 in.~~
	~~**POINTS**~~	
~~Climate Zones 1, 2, 3, 4 except marine, and 5 dry.~~	~~**4**~~	~~**6**~~

GREEN BUILDING PRACTICES	POINTS

~~Climate Zones 4 marine, 5 except dry, and 6.~~	~~3~~	~~5~~
~~Climate Zones 7 and 8~~	~~0~~	~~0~~

~~For SI: 1 inch = 25.4 mm~~

Table 703.1.3
Exterior Mass Walls

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

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

Points per Table 703.1.4

Table 703.1.4
Radiant Barriers

Climate Zone	POINTS
1~~-3~~	**2**
42-3	~~1~~3
4	1
5-8	**0**

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

Points per Table 703.1.5

~~(a)~~	~~5 ACH50~~	~~3~~
~~(b)~~	~~4 ACH50~~	~~6~~
~~(c)~~	~~3 ACH50~~	~~9~~
~~(d)~~	~~2 ACH50~~	~~12~~
~~(e)~~	~~1 ACH50~~	~~15~~

Table 703.1.5
Building Envelope Leakage

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

703.1.6 Fenestration

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

Mandatory

Table 703.1.6.1
Fenestration Specifications

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

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

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

Table 703.1.6.2(a)
Enhanced Fenestration Specifications

Climate Zones	U-Factor	SHGC	POINTS
	~~Windows and Exterior Doors (maximum certified ratings)~~		
1 ~~and 2~~	0.60	0.27	~~TBD~~10
2	0.60	0.27	5
3	0.35	0.30	~~TBD~~6
4	0.32	0.40	~~TBD~~2
5 ~~to 8~~	0.30	Any	~~TBD~~5
6	0.30	Any	5
7	0.30	Any	5
8	0.30	Any	5
	~~Skylights and TDDs (maximum certified ratings)~~		
~~1 and 2~~	~~0.70~~	~~0.30~~	~~TBD~~
~~3~~	~~0.57~~	~~0.30~~	~~TBD~~
~~4~~	~~0.55~~	~~0.40~~	~~TBD~~
~~5 to 8~~	~~0.55~~	~~Any~~	~~TBD~~

For Climate Zones 5-8 an equivalent energy performance is permitted based on either (1)

windows with a U-factor = 0.31 and an SHGC ≥ 0.35, or, a U-factor = 0.32 and an SHGC ≥ 0.40 or (2) windows meeting the ENERGY STAR Equivalent Energy Performance requirements.

Table 703.1.6.2(b)
Enhanced Fenestration Specifications

Climate Zones	U-Factor	SHGC	Points
	~~Windows and Exterior Doors (maximum certified ratings)~~		
1 ~~and 2~~	0.40	0.25	~~TBD~~13
2	0.40	0.25	9
3	0.30	0.25	~~TBD~~9
4	0.28	0.40	~~TBD~~4
~~4~~	~~0.25~~	~~0.40~~	~~TBD~~
5 ~~to 8~~	0.25	Any	~~TBD~~8
6	0.25	Any	9
7	0.25	Any	9
8	0.25	Any	9
~~5 to 8~~	~~0.22~~	~~Any~~	~~TBD~~
	~~Skylights and TDDs (maximum certified ratings)~~		
~~1 & 2~~	~~0.50~~	~~0.30~~	~~TBD~~
~~3~~	~~0.50~~	~~0.35~~	~~TBD~~
~~4~~	~~0.50~~	~~0.40~~	~~TBD~~
~~5 to 8~~	~~0.50~~	~~Any~~	~~TBD~~

Table 703.1.6.2(c)
Enhanced Fenestration Specifications

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

703.2 HVAC equipment efficiency

703.2.1 Combination space heating and water heating system (combo system) is installed using either a coil from the water heater connected to an air handler to provide heat for the building or dwelling unit, or a space heating boiler using an indirect-fired water heater. Devices have a combined annual efficiency of 0.80. **4**

703.2.2 Furnace and/or boiler efficiency is in accordance with one of the following:
(Where multiple systems are used, points awarded based on the system with the lowest efficiency.)

(1) Gas and propane heaters: **Points per Table 703.2.2(1)**

Table 703.2.2(1)
Gas and Propane Heaters

	Climate Zone							
	1	2	3	4	5	6~~8~~	7	8
	POINTS							
≥ 90% AFUE	**0**	5~~2~~	6~~5~~	7~~8~~	9~~11~~	9~~14~~	10	10

≥ 92% AFUE	**0**	5 ~~2~~	8 ~~6~~	9 ~~9~~	11 ~~12~~	11 ~~15~~	12	12
≥ 94% AFUE	**0**	5 ~~3~~	8 ~~7~~	10 ~~10~~	13 ~~14~~	13 ~~17~~	13	14
≥ 96% AFUE	1	6	10	11	14	14	15	16
≥ 98% AFUE	1	6	10	13	15	15	16	17

(2) Oil furnace:

Points per Table 703.2.2(2)

Table 703.2.2(2)
Oil Furnace

	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
≥ ~~83~~85% AFUE	**0**	**~~-~~1**	**3**	**3**	**7**	**7**
≥ 90% AFUE	**0**	**2**	**5**	**8**	**11**	**14**

(3) Gas boiler:

Points per Table 703.2.2(3)

Table 703.2.2(3)
Gas Boiler

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

(4) Oil boiler:

Points per Table 703.2.2(4)

Table 703.2.2(4)
Oil Boiler

	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
≥ 85% AFUE	**0**	9 ~~1~~	16 ~~3~~	18 ~~4~~	17 ~~6~~	16 ~~7~~
≥ 90% AFUE	1 ~~0~~	10 ~~2~~	17 ~~5~~	19 ~~8~~	18 ~~11~~	17 ~~14~~

~~703.2.3 Boiler is equipped with temperature reset control or burner delay control.~~ **~~1~~**

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

Points per Table 703.2.4

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

Table 703.2.4
Heat Pump Heating

	Climate Zone					
	1	2	3	4	5	6-8*
	POINTS					
8.2 HSPF (11.5 EER)	**0**	**1**	**2**	~~5~~4	~~7~~5*	~~7~~5*
9.0 HSPF (12.5 EER)	**0**	~~2~~3	~~5~~6	~~10~~9	~~11~~12*	**12***

9.5 HSPF	0	4	7	12	16	16
10.0 HSPF	1	4	9	15	19	19

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

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

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

(1) Air conditioner and heat pump cooling:

Points per Table 703.2.5(1)

Table 703.2.5(1)
Air Conditioner and Heat Pump Cooling

	Climate Zone						
	1	2	3	4	5	6~~-8~~	7-8
	POINTS						
≥ 14 SEER (11.5 EER)	4~~8~~	3~~6~~	1~~2~~	1~~2~~	0~~1~~	0~~1~~	0
≥ 15 SEER (12.5 EER)	7~~12~~	5~~10~~	2~~4~~	1~~3~~	1~~2~~	0~~2~~	0
≥ 17 SEER (12.5 EER)	12~~18~~	8~~14~~	4~~6~~	2~~4~~	1~~3~~	1~~3~~	0
≥ 19+ SEER (12.5 EER)	16~~24~~	11~~18~~	6~~8~~	3~~4~~	2~~3~~	1~~3~~	0
≥ 19+ SEER	19	14	7	3	2	1	0

(2) Water source and cooled air conditioners**:**

Points per Table 703.2.5(2)

Table 703.2.5(2)
Water Source and Cooled Air Conditioners

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

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

Points per Table 703.2.6

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

Table 703.2.6
Ground source heat pump*

	Climate Zone					
	1	2	3	4	5	6-8

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

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

~~(1) Open loop: ≥ 16.2 EER / ≥ 3.6 COP~~ ~~20~~

~~(2) Closed loop: ≥ 14.1 EER / ≥ 3.3 COP~~ ~~20~~

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

~~(4) Any type (open, closed, direct expansion): ≥ 24 EER / ≥ 4.3 COP~~ ~~30~~

~~(5) Any type (open, closed, direct expansion): ≥ 28 EER / ≥ 4.8 COP~~ ~~35~~

703.2.7 ENERGY STAR, or equivalent, ceiling fan(s) are installed. **1**

(Points awarded per building.)

703.2.8 Whole building or whole dwelling unit fan(s) with insulated louvers and a sealed enclosure is installed. **Points per Table 703.2.8~~2~~**

(Points awarded per building.)

Table 703.2.8
Whole dwelling unit fan

Climate Zone		
1-3	4-6	7-8
POINTS		
5	3	0

703.2.9 In multi-unit buildings, an advanced electric and fossil fuel submetering system is installed to monitor electricity and fossil fuel consumption for each unit. At a minimum, the information is available to the occupants on a monthly basis.

(1) Install a device providing monthly consumption information, or~~.~~ **1**

(2) Install a device that can provide near real-time energy consumption information. ~~4~~**1**

~~**703.2.10** An ENERGY STAR, or equivalent, programmable thermostat is installed to control each heating and cooling zone.~~ ~~1~~

~~**(Points awarded per dwelling unit.)**~~

703.3 Duct Systems

703.3.1 All space heating is provided by a system(s) that does not include air ducts. | ~~15~~Points per Table 703.3.1

Table 703.3.1
Ductless heating system

Climate Zone					
1	2	3	4	5	6-8
POINTS					
0	4	7	7	6	2

703.3.2 All space cooling is provided by a system(s) that does not include air ducts. | ~~15~~Points per Table 703.3.2

Table 703.3.2
Ductless cooling system

Climate Zone					
1	2	3	4	5	6-8
POINTS					
10	7	3	1	0	0

703.3.3 Ductwork is in accordance with all of the following: | Points per Table 703.3.3~~12~~

(1) Building cavities are not used as return ductwork.
(2) Heating and cooling ducts and mechanical equipment are installed within the conditioned building space.
(3) Ductwork is not installed in exterior walls.

Table 703.3.2
Interior ducts

Climate Zone					
1	2	3	4	5	6-8
POINTS					
11	11	11	8	4	3

703.3.4 Duct Leakage. The entire central HVAC duct system, including air handlers and register boots, is tested by a third party for leakage at a pressure differential of 0.1 inches w.g. (25 Pa). The maximum leakage as a percent of the system design flow rate is in accordance with ~~the following:~~Table 703.3.4. | Points per Table 703.3.4

~~**(1)** 6 percent for ductwork entirely outside the building's thermal envelope~~ | ~~15~~

~~**(2)** 6 percent for ductwork entirely inside the building's thermal envelope~~ | ~~5~~

~~**(3)** 6 percent for ductwork both inside and outside the building's thermal envelope~~ | ~~15~~

Table 703.3.4
Duct Leakage

System design flow rate	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
6 percent for ductwork entirely outside the building's thermal envelope	8	9	8	6	3	2

6 percent for ductwork entirely inside the building's thermal envelope	3	3	3	2	1	1	
6 percent for ductwork both inside and outside the building's thermal envelope	5	6	5	4	2	2	

703.4 Water heating design, equipment, and installation

703.4.1 Water heater Energy Factor (EF) is equal to or greater than the following:

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

(1) Gas water heating

Points per Table 703.4.1(1)~~(a) or Table 703.4.1(1)(b)~~

~~Table 703.4.1(1)(a)~~
~~Gas Water Heating~~
~~(Storage with input rate of 75,000 Btu/h or less or instantaneous input rate of 200,000 Btu/h or less)~~

~~Size (gallons)~~	~~Energy Factor~~	~~POINTS~~
~~30 to < 40~~	~~0.64~~	~~1~~
~~40 to < 50~~	~~0.62~~	~~1~~
~~50 to < 65~~	~~0.60~~	~~1~~
~~65 to < 75~~	~~0.58~~	~~1~~
~~≥75~~	~~0.56~~	~~1~~
~~Any~~	~~0.80~~	~~10~~

~~For SI: 1 gallon = 3.785 L~~

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

~~Size (gallons)~~	~~Thermal Efficiency~~	~~POINTS~~
~~Any~~	~~82-86%~~	~~1~~
~~Any~~	~~> 86%~~	~~10~~

Table 703.4.1(1)
Gas Water Heating

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

(2) Electric water heating

Points per Table 703.4.1(2)

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

~~Size (gallons)~~	~~Energy Factor~~	~~POINTS~~
~~30 to < 40~~	~~0.95~~	~~1~~
~~40 to < 50~~	~~0.94~~	~~1~~
~~50 to < 65~~	~~0.92~~	~~1~~
~~65 to < 80~~	~~0.90~~	~~1~~
~~80 to < 100~~	~~0.88~~	~~1~~

~~≥100~~	~~0.86~~	~~1~~

~~For SI: 1 gallon = 3.785 L~~

Table 703.4.1(2)
Electric Water Heating

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

(3) Oil water heating

Points per Table 703.4.1(3)

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

~~Size (gallons)~~	~~Energy Factor~~	~~POINTS~~
~~30 to < 50~~	~~0.59~~	~~1~~
~~≥50~~	~~0.55~~	~~1~~

~~For SI: 1 gallon = 3.785 L~~

Table 703.4.1(3)
Oil Water Heating

Size (gallons)	Energy Factor	Climate Zone							
		1	2	3	4	5	6	7	8
		POINTS							
30 to <50	0.59	1	1	1	1	1	1	1	1
≥50	0.59	1	1	1	1	1	1	1	1
For SI: 1 gallon = 3.785 L									

(4) Heat pump water heating

Points per Table 703.4.1(4)

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

	~~Energy Factor~~	~~POINTS~~
~~Heat Pump~~	~~1.5~~	~~7~~
~~Heat Pump~~	~~2.0~~	~~10~~

Table 703.4.1(4)
Heat Pump Water Heating

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

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

Points per Table

Table 703.4.2
Desuperheater

	Climate Zone		
	~~Zone~~ 1~~-4~~	~~Zone~~ 2~~-~~5~~-8~~	6-8
	POINTS		
Desuperheater	~~5~~17	~~2~~8	4

703.4.2

703.4.3 Drain-water heat recovery system is installed in multi-family units. **(Points awarded per building.)** — **2**

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

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

~~**Table 703.4.5**~~
~~**Solar Hot Water Systems**~~

~~SEF - Electric Tank~~	~~SEF - Gas Tank~~	~~POINTS~~
~~1.30 - 1.50~~	~~0.85 - 1.00~~	~~8~~
~~1.51 - 1.80~~	~~1.01 - 1.20~~	~~11~~
~~1.81 - 2.30~~	~~1.21 - 1.50~~	~~14~~
~~2.31 - 3.00~~	~~1.51 - 2.00~~	~~17~~
~~≥ 3.01~~	~~≥ 2.01~~	~~20~~

Table 703.4.5
Solar Hot Water Systems

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

703.5 Lighting and appliances

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

(1) A minimum ~~of 50~~ percent of the total hard-wired lighting fixtures qualify as ENERGY STAR or equivalent. — ~~8~~ **Points per Table 703.5.1**

Table 703.5.1
Hard-wired Lighting

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

(2)	A minimum of 80 percent of the exterior lighting wattage has an efficiency of 40 lumens per watt minimum or be a solar-powered light fixture.	1~~TBD~~
703.5.2 Recessed lighting fixtures. The number of recessed light fixtures that penetrate the thermal envelope are less than 1 per 400 square feet (37.16 m^2) of total conditioned floor area and are in accordance with Section 701.4.3.4.		**2**
703.5.3 Appliances. ENERGY STAR or equivalent appliance(s) are installed:		
(1)	Refrigerator	~~5~~ **Points per Table 703.5.3(1)**
(2)	Dishwasher	~~2~~1
(3)	washing machine	**4**
703.5.4 Induction cooktop. Induction cooktop is installed.		**1**

Table 703.5.3(1) Refrigerator

Climate Zone							
1	2	3	4	5	6	7	8
Points							
3	2	1	1	1	1	1	1

703.6 Passive solar design		
703.6.1 Sun-tempered design. Building orientation, sizing of glazing, and design of overhangs are in accordance with all of the following:		**5**
(1)	The long side (or one side if of equal length) of the building faces within 20 degrees of true south.	
(2)	Vertical glazing area is between 5 and 7 percent of the gross conditioned floor area on the south face [also see Section 703.6.1(8)].	
(3)	Vertical glazing area is less than 2 percent of the gross conditioned floor area on the west face, and glazing is ENERGY STAR compliant or equivalent.	
(4)	Vertical glazing area is less than 4 percent of the gross conditioned floor area on the east face, and glazing is ENERGY STAR compliant or equivalent.	
(5)	Vertical glazing area is less than 8 percent of the gross conditioned floor area on the north face, and glazing is ENERGY STAR compliant or equivalent.	
(6)	Skylights, where installed, are in accordance with the following: **(a)** shades and insulated wells are used, and all glazing is ENERGY STAR compliant or equivalent **(b)** horizontal skylights are less than 0.5 percent of finished ceiling area **(c)** sloped skylights on slopes facing within 45 degrees of true south, east or west are less than 1.5	

percent of the finished ceiling area

(7) Overhangs or adjustable canopies or awnings or trellises provide shading on south-facing glass for the appropriate climate zone in accordance with Table 703.6.1(7):

Table 703.6.1(7)
South-Facing Window Overhang Depth

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

For SI: 1 inch = 25.4 mm

(8) The south face windows have a SHGC of 0.40 or higher.

(9) Return air or transfer grilles/ducts are in accordance with Section 704.3.

703.6.2 Window shading. Automated solar protection is installed to provide shading for windows. **1**

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

Points for three items: 3

Points for one additional item: 1

(1) Exterior shading is provided on east and west windows using one or a combination of the following:
- **(a)** Vine-covered trellises with the vegetation separated a minimum of 1 foot (305 mm) from face of building
- **(b)** moveable awnings or louvers
- **(c)** covered porches
- **(d)** attached or detached conditioned/unconditioned enclosed space that provides full shade of east and west windows (e.g., detached garage, shed, or building)

(2) Overhangs are installed to provide shading on south-facing glazing in accordance with Section 703.6.1(7).

(Points not awarded if points are taken under Section 703.6.1.)

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

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

(5) Internal exposed thermal mass is a minimum of three inches (76 mm) in thickness. Thermal mass consists of concrete, brick, and/or tile that are fully adhered to a masonry base or other masonry material and is in accordance with one or a combination of the following:
- **(a)** A minimum of 1 square foot (0.09 m^2) of exposed thermal mass of floor per 3 square feet (2.8 m^2) of gross finished floor area.
- **(b)** A minimum of 3 square feet (2.8 m^2) of exposed thermal mass in interior walls or elements per square foot (0.09 m^2) of gross finished floor area.

(6) Roofing material is installed with a minimum 0.75 inch (19 mm) continuous air space offset from the

roof deck from eave to ridge.	
703.6.4 Passive solar heating design. In addition to the sun-tempered design features in Section 703.6.1, all of the following are implemented:	**4**
(1) Additional glazing, no greater than 12 percent, is permitted on the south wall. This additional glazing is in accordance with the requirements of Section 703.6.1.	
(2) Additional thermal mass for any room with south-facing glazing of more than 7 percent of the finished floor area is provided in accordance with the following:	
(a) Thermal mass is solid and a minimum of 3 inches (76 mm) in thickness. Where two thermal mass materials are layered together (e.g., ceramic tile on concrete base) to achieve the appropriate thickness, they are fully adhered to (touching) each other.	
(b) Thermal mass directly exposed to sunlight is provided in accordance with the following minimum ratios:	
(i) Above latitude 35 degrees: 5 square feet (0.465 m^2) of thermal mass for every 1 square foot (0.0929 m^2) of south-facing glazing.	
(ii) Latitude 30 degrees to 35 degrees: 5.5 square feet (0.51 m^2) of thermal mass for every 1 square foot (0.0929 m^2) of south-facing glazing.	
(iii) Latitude 25 degrees to 30 degrees: 6 square feet (0.557 m^2) of thermal mass for every 1 square foot (0.0929 m^2) of south-facing glazing.	
(c) Thermal mass not directly exposed to sunlight is permitted to be used to achieve thermal mass requirements of Section 703.6.4 (2) based on a ratio of 40 square feet (3.72 m^2) of thermal mass for every 1 square foot (0.0929 m^2) of south-facing glazing.	
(3) In addition to return air or transfer grilles/ducts required by Section 703.6.1(9), provisions for forced airflow to adjoining areas are implemented as needed.	

704 ADDITIONAL PRACTICES

704.1 Application of additional practice points. Points from Section 704 can be added to points earned in Section 702 (Performance Path), Section 703 (Prescriptive Path), or Section 701.1.3 (alternative bronze level compliance).	

704.2 Lighting	
704.2.1 Occupancy sensors. Occupancy sensors are installed on indoor lights, and photo or motion sensors are installed on outdoor lights to control lighting.	
(1) 25 percent of lighting	~~2~~ 1
(2) 50 percent of lighting	~~4~~2
704.2.2 TDDs and skylights. Tubular daylighting device (TDD) or a skylight with sealed, insulated, low-E glass is installed in rooms without windows. **(Points awarded per building.)**	**2**
704.2.3 Lighting outlets. Occupancy sensors are installed for a minimum of 80 percent of hard-wired lighting outlets.	**1**

704.3 Return ducts and transfer grills. Return ducts or transfer grilles are installed in every room with a	**5**

door. This practice does not apply to bathrooms, kitchens, closets, pantries, and laundry rooms.	
704.4 HVAC design and installation	
704.4.1 HVAC contractor and service technician are certified by a nationally or regionally recognized program (e.g., North American Technician Excellence, Inc. (NATE), Air Conditioning Contractors of Americas Quality Assured Program (ACCA/QA), Building Performance Institute (BPI), Radiant Panel Association, or manufacturers' training program).	**1**
704.4.2 Performance of the heating and/or cooling system is verified by the HVAC contractor in accordance with all of the following:	**3**
(1) Start-up procedure is performed in accordance with the manufacturer's instructions. **(2)** Refrigerant charge is verified by super-heat and/or sub-cooling method. **(3)** Burner is set to fire at input level listed on nameplate. **(4)** Air handler setting/fan speed is set in accordance with manufacturer's instructions. **(5)** Total airflow is within 10 percent of design flow. **(6)** Total external system static does not exceed equipment capability at rated airflow.	
704.4.4 Manufacturer's label or printed specifications for sealed air handler (except furnaces) indicates the leakage is less than or equal to 2 percent of design airflow at a pressure of 1-inch w.g. (1250 Pa). Air handlers are tested with inlets, outlets, and condensate drain ports sealed, and filter box in place.	**4**

704.5 Installation and performance verification.	
704.5.1 Third-party on-site inspection is conducted to verify compliance with all of the following, as applicable. Minimum of two inspections are performed. One inspection after insulation is installed and prior to being covered, and another inspection upon completion of the project. Where multiple buildings or dwelling units of the same model are built by the same builder, a representative sample inspection of a minimum of 15 percent of the buildings or dwelling units is permitted.	**5**
(1) Ducts are installed in accordance with the ICC IRC or IMC and ducts are sealed. **(2)** Building envelope air sealing is installed. **(3)** Insulation is installed in accordance with Section 703.1.2. **(4)** Windows, skylights, and doors are flashed, caulked, and sealed in accordance with manufacturer's recommendations and in accordance with Section 701.4.3.	
704.5.2 Testing. Testing above mandatory requirements is conducted to verify performance.	
704.5.2.1 Building envelope leakage testing.	
(1) Both a blower door test and visual inspection are performed as described in 701.4.3.2.	**5**
(2) Third-party verification is completed.	**5**
704.5.2.2 HVAC airflow testing. Balanced HVAC airflows are demonstrated by flow hood or other acceptable flow measurement tool by a third party. Test results are in accordance with both of the following:	**8**

(1) Measured flow at each supply and return register is within 25 percent of design flow. **(2)** Total airflow is within 10 percent of design flow.	
704.5.3 Insulating hot water pipes. Insulation with a minimum thermal resistance (R-value) of at least R-3 is applied to the following:	**1**
(a) piping larger than 3/4 in. outside diameter **(b)** piping serving more than one dwelling unit **(c)** piping branches serving kitchen sinks **(d)** piping located outside the conditioned space **(e)** piping from the water heater to a distribution manifold **(f)** piping located under a floor slab **(g)** buried piping **(h)** piping in recirculation systems other than demand recirculation systems **(i)** all other piping except the piping that meets the length requirements of Table 704.5.3	

Table 704.5.3
Maximum Pipe Run Length

Nominal Pipe Diameter of largest pipe in run (inches)	Maximum pipe length (feet)[1]
3/8	30
1/2	20
3/4	10

1. Total length of all piping from the distribution manifold or the recirculation loop to a point of use.

705 INNOVATIVE PRACTICES

705.1 Energy consumption control. A whole building or whole dwelling unit device is installed that controls or monitors energy consumption.		**7 Points Max**
(1)	programmable communicating thermostat	~~2~~1
(2)	Energy-monitoring device	~~4~~2
(3)	energy management control system	~~7~~4

705.2 Renewable energy service plan. Renewable energy service plan is provided as follows:		
(1)	Builder selects a renewable energy service plan provided by the local electrical utility for interim (temporary) electric service. The builder's local administrative office has renewable energy service.	~~2~~1
(2)	The buyer of the building selects a renewable energy service plan provided by the utility prior to occupancy of the building with a minimum two year commitment.	~~5~~
	(a) less than half of the dwelling's projected electricity and gas use is provided by renewable energy	1
	(b) half or more of the of the dwelling's projected electricity and gas use is provided by renewable energy	5

705.3 Smart Appliances and Systems. Smart Appliances and Systems are installed as follows:		
(1)	Refrigerator	~~TBD~~
(2)	Freezer	~~TBD~~

(3)	Dishwasher	~~**TBD**~~
(4)	Clothes Dryer	~~**TBD**~~
(5)	Clothes Washer	~~**TBD**~~
(6)	Room Air Conditioner	~~**TBD**~~
(7)	HVAC Systems	~~**TBD**~~
(8)	Service Hot Water Heating Systems	~~**TBD**~~
	A minimum of three (3) smart appliances installed	**1**
	A minimum of six (6) smart appliances installed	**2**

705.4 Pumps.	
705.4.1 Pool, spa, and water features equipped with filtration pumps as follows:	
(1) Two-speed pump(s) is installed.	**1**
(2) Electronically controlled variable-speed pump(s) is installed (efficiencies 90% or greater).	**3**
705.4.2 Sump pump(s) with electrically commutated motors (ECMs) or permanent split capacitor (PSC) motors is installed (efficiencies 90% or greater).	**1**

705.5 Additional renewable energy options	
705.5.1 Photovoltaic panels are installed on the property. **(Points awarded per 100 W of system rating per 2,000 square feet of total conditioned floor area of the building.)**	**1**
705.5.2 Other on-site renewable energy source is installed (e.g., wind energy, on-site micro-hydro power, active solar space heating systems solar thermal hydronic heating system, photovoltaic hybrid heating system). **(Points awarded per 100 W of system rating per 2,000 square feet of total conditioned floor area of the building.)**	**One-half**

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

CHAPTER 8

WATER EFFICIENCY

GREEN BUILDING PRACTICES	POINTS
801 INDOOR AND OUTDOOR WATER USE	
801.0 Intent. Measures that reduce indoor and outdoor water usage are implemented.	
801.1 Indoor hot water usage **801.1.1** Indoor hot water usage is reduced by one of the following practices: **(Points awarded only for one of the items.)**	
(1) All hot water piping that runs to the plumbing fixtures in all kitchens and bathrooms is 40 feet (12,192 mm) or less in length from the water heater or multi-unit building's recirculating loop and is sized in accordance with the code for the specified application.	~~2~~13
(2) All hot water piping that runs to the plumbing fixtures in all kitchens and bathrooms is 30 feet (9144 mm) or less from the water heater or multi-unit building's recirculating loop and is sized in accordance with the code for the specified application.	~~3~~15
(3) One of the following piping system designs is implemented:	
(a) use of structured-type plumbing with demand-controlled hot water loops, in which the volume of water contained in the pipe and fixture fittings downstream of the recirculating trunk line is a maximum of 4 cups (0.95 liters) (57.75 cubic inches) (0.25 gallons), or	~~6~~35
(b) engineered parallel piping system (i.e., manifold system) in which the hot water line distance from the water heater to the parallel piping system is less than 15 feet (4570 mm) and the parallel piping to any fixture fittings contains a maximum of 8 cups (1.89 liters) (115.50 cubic inches) (0.50 gallons), or	~~6~~11
(c) central core plumbing system with all plumbing fixture fittings (e.g., faucets, showerheads) located such that the volume of water contained in each pipe run between the water heater and any fixture fitting is a maximum of 6 cups (1.42 liters) (86.63 cubic inches) (0.38 gallons).	~~8~~25
(d) central hot water recirculation system in multi-unit buildings in which the hot water line distance from the recirculating loop to the engineered parallel piping system (i.e., manifold system) is less than 30 feet (9144 mm) and the parallel piping to the fixture fittings contains a maximum of 8 cups (1.89 liters) (115.50 cubic inches) (0.50 gallons).	~~TBD~~9
(4) Pipe runs exceeding 40 feet (12,192 mm) from the water heater to fixture locations are aided by one of the following:	~~1~~
(a) tankless water heater is installed at point of use and is served only by cold water or a solar-assisted system.	21
(b) on-demand hot water recirculation system is installed with a water temperature sensor pump switch.	35

GREEN BUILDING PRACTICES	POINTS
801.2 Water-conserving appliances. ENERGY STAR or equivalent water-conserving appliances are installed.	
(1) dishwasher	**2**
(2) washing machine, or	**~~8~~13**
(3) washing machine with a water factor of 6.0 or less	**~~12~~24**
Multi-Unit Building Note*: Washing machines are installed in individual units or provided in common areas of multi-unit buildings.*	
801.4 Showerheads. Showerheads are in accordance with the following:	
(1) The maximum combined flow rate of all showerheads controlled by a single valve at any point in time in a shower compartment is 1.6 to less than 2.5 gpm. Maximum of two valves are installed per shower compartment. The flow rate is tested at 80 psi (552 kPa) in accordance with ASME A112.18.1. Showerheads are served by an automatic compensating valve that complies with ASSE 1016 or ASME A112.18.1 and specifically designed to provide thermal shock and scald protection at the flow rate of the showerhead. **(Points awarded per shower compartment.)**	**4 points for first compartment** **1 point for each additional compartment in dwelling ~~3~~** **7 Points Max**
(2) All showerheads meet the requirements of 801.4(1). **(Points awarded per shower compartment based on 801.4(2)(a) or 801.4(2)(b).)**	
(a) 2.0 to less than 2.5 gpm	**11 Additional Point**
(b) 1.6 to less than 2.0 gpm	**~~2~~ 14 Additional Points**
(3) Any control that can shut off water flow without affecting temperature is installed. **(Points awarded per shutoff.)**	**1** **3 Points Max**
For SI: 1 gallon per minute = 3.785 L/m	

801.5 Faucets	
801.5.1 Water-efficient lavatory faucets with 1.5 gpm (5.68 L/m) or less maximum flow rate when tested at 60 psi (414 kPa) in accordance with ASME A112.18.1 are installed:	
(1) a bathroom (all faucets in a bathroom are in compliance) **(Points awarded for each bathroom.)**	**1** **3 Points Max**
(2) all lavatory faucets in the dwelling unit and common areas	**~~2~~ 6 Additional**

GREEN BUILDING PRACTICES	POINTS
	Points
801.5.2 Self-closing valve, motion sensor, metering, or pedal-activated faucet is installed to enable intermittent on/off operation. **(Points awarded per fixture.)**	**1 3 Points Max**
801.6 Water closets and urinals. Water closets and urinals are in accordance with the following:	
(1) Gold and emerald levels: All water closets and urinals are in accordance with Section 801.6.	**Mandatory**
(2) A water closet is installed with an effective flush volume of 1.28 gallons (4.85 L) or less when tested in accordance with ASME A112.19.2 (all water closets) or when tested in accordance with ASME A112.19.14 (all dual flush water closets), and is in accordance with EPA WaterSense *Tank-Type High-Efficiency Toilet*, or **(Points awarded per fixture.)**	~~6~~2 ~~18~~ 6 **Points Max**
(3) All water closets are in accordance with Section 801.6(2).	~~24~~ 11 **Points**
(a) Dual flush (or other) water closets are used that have a flush volume of 1.2 gallons or less and comply with 801.6(2); and all other water closets comply with 801.6(2). **(Points awarded per toilet)**	~~2~~ 1 **Additional Points** ~~4~~ 3 **Additional Points Max**
(b) One or more urinals are installed with a flush volume of 0.5 gallons (1.9L) or less when tested in accordance with ASME A112.19.2 and all other water closets comply with 801.6(2).	~~2~~ 1 **Additional Points**
(c) One or more composting or waterless toilets and/or urinals are installed and all other water closets comply with 801.6(2).	~~8~~ 6 **Additional Points**
801.7 Irrigation systems	
801.7.1 High-Distribution Uniformity (DU) rotating spray heads are installed in lieu of spray heads for turf or landscaping.	**6**
801.7.2 Drip Irrigation installed for each landscape type.	**8**
801.7.3 Landscape Plan & Implementation are executed by a certified WaterSense Professional or equivalent as approved by adopting entity.	**5 Additional Points**
801.7.4 Drip Irrigation Zones Implemented show plant type by name and water use or need for each emitter.	~~5~~ 10 **Additional Points**
801.7.5 The irrigation system(s) is controlled by a smart controller. **(Points for 801.7.~~4~~5(3) are not addittive with points for 801.7.~~4~~5(~~a~~1) or 801.7.~~4~~5(~~b~~2).)**	
(1) Evapotranspiration (ET) based irrigation controller with a rain sensor.	~~4~~8
(2) Soil moisture sensor based irrigation controller.	~~4~~8

GREEN BUILDING PRACTICES	POINTS
(3) No irrigation is installed and a landscape plan is developed in accordance with Section 503.5, as applicable.	~~15~~25
801.8 Rainwater collection and distribution. Rainwater collection and distribution is provided.	
801.8.1 Rainwater is used for irrigation in accordance with the following:	
(1) Rainwater is diverted for landscape irrigation without impermeable water storage, or	**5**
(2) Rainwater is diverted for landscape irrigation with impermeable water storage.	
(a) 50 - 499 gallon storage capacity, or	**5**
(b) 500 - 2499 gallon storage capacity, or	**10**
(c) 2500 gallon or larger storage capacity (system is designed by a professional certified by The American Rainwater Catchment Systems Association or equivalent), or	**15**
(d) All irrigation demands are met by rainwater capture (documentation demonstrating the water needs of the landscape is provided and the system is designed by a professional certified by The American Rainwater Catchment Systems Association or equivalent).	**25**
801.8.2 Rainwater is used for interior demand in the following way (system is designed by a professional certified by The American Rainwater Catchment Systems Association or equivalent):	
(1) Rainwater provides for partial domestic demand (any locally approved uses). **(Points awarded per appliance or fixture.)**	**5 ~~20~~ 15 Points Max**
(2) Rainwater provides for total domestic demand.	**25**
801.9 Sediment filters. Water filter is installed to reduce sediment and protect plumbing fixtures for the whole building or whole dwelling unit.	**1**
802 INNOVATIVE PRACTICES	
802.1 Reclaimed, gray, or recycled water. Reclaimed, gray, or recycled water is used as permitted by applicable code. **(Points awarded for either Section 802.1(1) or 802.1(2), not both.)**	
(1) each water closet flushed by reclaimed, gray, or recycled water **(Points awarded per fixture or appliance.)**	**5 20 Points Max**
(2) irrigation from reclaimed, gray, or recycled water on-site	**10**

GREEN BUILDING PRACTICES	POINTS
802.2 Automatic shutoff water devices. One of the following automatic shutoff water supply devices is installed. Where a fire sprinkler system is present, installer is to ensure the device will not interfere with the operation of the fire sprinkler system.	**2**
(1) excess water flow automatic shutoff	
(2) leak detection system with automatic shutoff	
802.3 Engineered Biological System or Intensive Bioremediation System. An Engineered Biological System or Intensive Bioremediation System is installed and the treated water is used on site. Design and implementation is approved by appropriate regional authority.	**20**
802.4 Recirculating humidifier. Where a humidifier is required, a recirculating humidifier is used in lieu of a traditional "flow through" type.	**1**
802.5 Advanced wastewater treatment system. Advanced wastewater (aerobic) treatment system is installed and treated water is used on site. **(Points awarded for either Section 802.5 or 802.1, not both.)**	**20**

CHAPTER 9

INDOOR ENVIRONMENTAL QUALITY

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

GREEN BUILDING PRACTICES	POINTS
(1) Site-built masonry wood-burning fireplaces are equipped with outside combustion air and a means of sealing the flue and the combustion air outlets to minimize interior air (heat) loss when not in operation.	**4**
(2) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are EPA certified.	**6**
(3) Wood stove and fireplace inserts, as defined in UL 1482 Section 3.8, are in accordance with the certification requirements of UL 1482 and are in accordance with the emission requirements of the EPA Certification and the State of Washington WAC 173-433-100(3).	**6**
(4) Pellet (biomass) stoves and furnaces are in accordance with the requirements of ASTM E1509 or are EPA certified.	**6**
(5) Masonry heaters are in accordance with the definitions in ASTM E1602 and ICC IBC, Section 2112.1.	**6**
901.2.2 Fireplaces, woodstoves, pellet stoves, or masonry heaters are not installed.	**7**

901.3 Garages. Garages are in accordance with the following:	
(1) Attached garage	
(a) Where installed in the common wall between the attached garage and conditioned space, the door is tightly sealed and gasketed.	**Mandatory 2**
(b) A continuous air barrier is provided between walls and ceilings separating the garage space from the conditioned living spaces.	**Mandatory 2**
(c) For one- and two-family dwelling units, a 100 cfm (47 L/s) or greater ducted, or 70 cfm (33 L/s) cfm or greater unducted wall exhaust fan is installed and vented to the outdoors, designed and installed for continuous operation, or has controls (e.g., motion detectors, pressure switches) that activate operation for a minimum of 1 hour when either human passage door or roll-up automatic doors are operated. For ducted exhaust fans, the fan airflow rating and duct sizing are in accordance with Appendix A.	**8**
(2) A carport is installed, the garage is detached from the building, or no garage is installed.	**10**

901.4 Wood materials. A minimum of 85 percent of material within a product group (i.e., wood structural panels, countertops, composite trim/doors, custom woodwork, and/or component closet shelving) is manufactured in accordance with the following:	**10 Points Max**
(1) Structural plywood used for floor, wall, and/or roof sheathing is compliant with DOC PS 1 and/or DOC PS 2. OSB used for floor, wall, and/or roof sheathing is compliant with DOC PS 2. The panels are made with moisture-resistant adhesives. The trademark indicates these adhesives as follows: Exposure 1 or Exterior for plywood, and Exposure 1 for OSB.	**Mandatory**
(2) Particleboard and MDF (medium density fiberboard) is manufactured and labeled in	**2**

GREEN BUILDING PRACTICES	POINTS
accordance with CPA A208.1 and CPA A208.2, respectively. **(Points awarded per product group.)**	
(3) Hardwood plywood in accordance with HPVA HP-1. **(Points awarded per product group.)**	**2**
(4) Particleboard, MDF, or hardwood plywood is in accordance with CPA 3. **(Points awarded per product group.)**	**3**
(5) Composite wood or agrifiber panel products contain no added urea-formaldehyde or are in accordance with the CARB *Composite Wood Air Toxic Contaminant Measure Standard*. **(Points awarded per product group.)**	**4**
(6) Non-emitting products. **(Points awarded per product group.)**	**4**

901.5 Cabinets. A minimum of 85 percent of installed kitchen and bath vanity cabinets are in accordance with KCMA ESP 04 (or equivalent) or CARB *Composite Wood Air Toxic Contaminant Measure Standard*.	**3**

901.6 Carpets. Carpets are in accordance with the following:	
(1) Wall-to-wall carpeting is not installed adjacent to water closets and bathing fixtures.	**Mandatory**
(2) A minimum of 85 percent of installed carpet area~~,~~ and carpet cushion (padding)~~, and carpet adhesives~~ are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D.	
Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m^3 (13.5 ppb).	
(a) carpet	**6**
(b) carpet cushion	**2**
~~**(c)** carpet adhesives~~	~~**2**~~

901.7 Hard-surface flooring. A minimum of 10% of the conditioned floor space has pre-finished hard-surface flooring installed and at least 85 percent of all prefinished installed hard-surface flooring is in accordance with the emission concentration limits of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D. ~~Where post-manufacture coatings or surface applications have not been applied, the following hard surface flooring types are deemed to comply with the emission requirements of this section:~~	**6**
Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m^3 (13.5 ppb).	
Where post-manufacture coatings or surface applications have not been applied, the following hard surface flooring types are deemed to comply with the emission requirements of this section:	

GREEN BUILDING PRACTICES	POINTS
(a) Ceramic tile flooring **(b)** Organic-free, mineral-based flooring **(c)** Clay masonry flooring **(d)** Concrete masonry flooring **(e)** Concrete flooring **(f)** Metal flooring **(g)** Glass	
901.8 Wall coverings. When at least 10% of the interior wall surfaces are covered, a minimum of 85 percent of wall coverings are in accordance with the emission concentration limits of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D.	**4**
Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).	
901.9 Architectural coatings. A minimum of 85 percent of the architectural coatings are in accordance with either Section 901.9.1 or Section 901.9.2, not both:	
901.9.1 Site-applied interior architectural coatings, which are inside the water proofing envelope, are in accordance with one or more of the following:	**5**
(1) Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method) **(2)** GreenSeal GS-11 Standard for Paints and Coatings **(3)** CARB *Suggested Control Measure for Architectural Coatings* (see Table 901.9.1).	

Table 901.9.1
VOC Content Limits For Architectural Coatings[c,d,e]

Coating Category	LIMIT[a] (g/l)
Flat Coatings	50
Non-flat Coatings	100
Non-flat - High Gloss Coatings	150
Specialty Coatings:	
Aluminum Roof Coatings	400
Basement Specialty Coatings	400
Bituminous Roof Coatings	50
Bituminous Roof Primers	350
Bond Breakers	350
Concrete Curing Compounds	350
Concrete/Masonry Sealers	100
Driveway Sealers	50
Dry Fog Coatings	150
Faux Finishing Coatings	350
Fire Resistive Coatings	350

GREEN BUILDING PRACTICES	POINTS

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

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

901.9.2 Site-applied interior products are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to,	**8**

GREEN BUILDING PRACTICES	POINTS
those found in Appendix D.	
Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).	

901.10 Adhesives and sealants. Interior low-VOC adhesives and sealants located inside the water proofing envelope: A minimum of 85 percent of site-applied products used within the interior of the building are in accordance with one of the following, as applicable.		
(1)	The emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those found in Appendix D.	**8**
	Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).	
(2)	GreenSeal GS-36 Adhesives for Commercial Use	**5**
	OR	
(3)	SCAQMD Rule 1168 (see Table 901.10.2), excluding products that are purchased in containers that are less than 16 ounces	**5**

Table 901.10.2
Site Applied Adhesive And Sealants Voc Limits[a,b]

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

GREEN BUILDING PRACTICES	POINTS

Special Purpose Contact Adhesive	250
Structural Wood Member Adhesive	140

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

901.11 Insulation. Emissions of 85 percent of wall, ceiling, and floor insulation materials are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1 when tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO Guide 65, such as, but not limited to, those in Appendix D.	**4**
Exception: Footnote b in Table 4.1 of CDPH/EHLB Standard Method v1.1 does not apply. Formaldehyde maximum allowable concentration is 16.5 µg/m3 (13.5 ppb).	

901.12 Carbon monoxide (CO) alarms. Where not required by local codes, a carbon monoxide (CO) alarm is installed in a central location outside of each separate sleeping area in the immediate vicinity of the bedrooms. The CO alarm(s) is located in accordance with NFPA 720 and is hard-wired with a battery back-up. The alarm device(s) is certified by a third-party for conformance to either CSA 6.19 or UL 2034.	**3**

901.13 Building entrance pollutants control. Pollutants are controlled at all main building entrances by one of the following methods:	
(1) Exterior grilles or mats are installed in a fixed manner and may be removable for cleaning.	**1**
(2) Interior grilles or mats are installed in a fixed manner and may be removable for cleaning.	**1**

901.14 Non-smoking areas. Environmental tobacco smoke is minimized by one or more of the following:	
(1) All interior common areas of a multi-unit building are designated as non-smoking areas with posted signage.	**1**
(2) Exterior smoking areas of a multi-unit building are designated with posted signage and located a minimum of 25 feet from entries, outdoor air intakes, and operable windows.	**1**

902 POLLUTANT CONTROL

902.0 Intent. Pollutants generated in the building are controlled.

902.1 Spot ventilation.	
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	**Mandatory**

L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms.	
(Points are awarded only where a code-compliant window is provided in addition to mechanical ventilation)	**1**
(2) Clothes dryers are vented to the outdoors.	**Mandatory**
(3) Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation.	**8**
902.1.2 Bathroom and/or laundry exhaust fan is provided with an automatic timer and/or humidistat:	**11 Points Max**
(1) for first device	**5**
(2) for each additional device	**2**
902.1.3 Kitchen range, bathroom, and laundry exhaust are verified to specification. Ventilation airflow at the point of exhaust is tested to a minimum of 100 cfm (47.2 L/s) intermittent or 25 cfm (11.8 L/s) continuous for kitchens, and 50 cfm (23.6 L/s) intermittent or 20 cfm (9.4 L/s) continuous for bathrooms and/or laundry.	**8**
902.1.4 Exhaust fans are ENERGY STAR, as applicable.	**12 Points Max**
(1) ENERGY STAR, or equivalent, fans **(Points awarded per fan.)**	**2**
(2) ENERGY STAR, or equivalent, fans operating at or below 1 sone **(Points awarded per fan.)**	**3**

902.2 Building ventilation systems	
902.2.1 One of the following whole building ventilation systems is implemented and is in accordance with the specifications of Appendix B.	**Mandatory where the maximum air infiltration rate is less than 5 ACH50 (see Section 703.1.5 of Chapter 7)**
(1) exhaust or supply fan(s) ready for continuous operation and with appropriately labeled controls	**~~8~~3**
(2) balanced exhaust and supply fans with supply intakes located in accordance with the manufacturer's guidelines so as to not introduce polluted air back into the building	**~~10~~6**
(3) heat-recovery ventilator	**~~15~~7**
(4) energy-recovery ventilator	**8~~17~~**
902.2.2 Ventilation airflow is tested to achieve the design fan airflow at point of exhaust in accordance with Section 902.2.1.	**~~8~~4**
902.2.3 MERV filters 8 or greater are installed on central forced air systems and are	**3**

accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of MERV 8 filters.	

902.3 Radon control. Radon control measures are in accordance with ICC IRC Appendix F. Zones are defined in Figure 9(1).	
(1) Buildings located in Zone 1	**Mandatory**
(a) a passive radon system is installed	**~~10~~7**
(b) an active radon system is installed	**~~18~~10**
(2) Buildings located in Zone 2 or Zone 3	
(a) a passive or active radon system is installed	**~~10~~7**

902.4 HVAC system protection. One of the following HVAC system protection measures is performed.	**3**
(1) HVAC supply registers (boots), return grilles, and rough-ins are covered during construction activities to prevent dust and other pollutants from entering the system.	
(2) Prior to owner occupancy, HVAC supply registers (boots), return grilles, and duct terminations are inspected and vacuumed. In addition, the coils are inspected and cleaned and the filter is replaced if necessary.	

902.5 Central vacuum systems. Central vacuum system is installed and vented to the outside.	**~~5~~3**
902.6 Living space contaminants. The living space is sealed in accordance with Section 701.4.3.1 to prevent unwanted contaminants.	**Mandatory**
~~(1)~~ ~~Attic access, knee wall door, or drop down stair is caulked, gasketed, or otherwise sealed.~~	**~~2~~**
~~(2)~~ ~~All penetrations (e.g., top plates, HVAC register boots, recessed can lights) are sealed in the following areas:~~	
~~(a)~~ ~~attic/ceiling~~	**~~2~~**
~~(b)~~ ~~wall~~	**~~2~~**
~~(c)~~ ~~floors~~	**~~2~~**

903
MOISTURE MANAGEMENT: VAPOR, RAINWATER, PLUMBING, HVAC

903.0 Intent. Moisture and moisture effects are controlled.	

903.1 Plumbing	
903.1.1 Cold water pipes in unconditioned spaces are insulated to a minimum of R-4 with pipe insulation or other covering that adequately prevents condensation.	**2**
903.1.2 Plumbing is not installed in unconditioned spaces.	**5**

903.2 Duct insulation. ~~All HVAC ducts, plenums, and trunks in unconditioned attics, basements, and crawl spaces are insulated to a minimum of R-6. Outdoor air supplies to ventilation systems are insulated to a minimum of R-6.~~	
(1) ~~insulated to a minimum of R-6~~All HVAC ducts, plenums, and trunks in are conditioned	**1~~Mandatory~~**

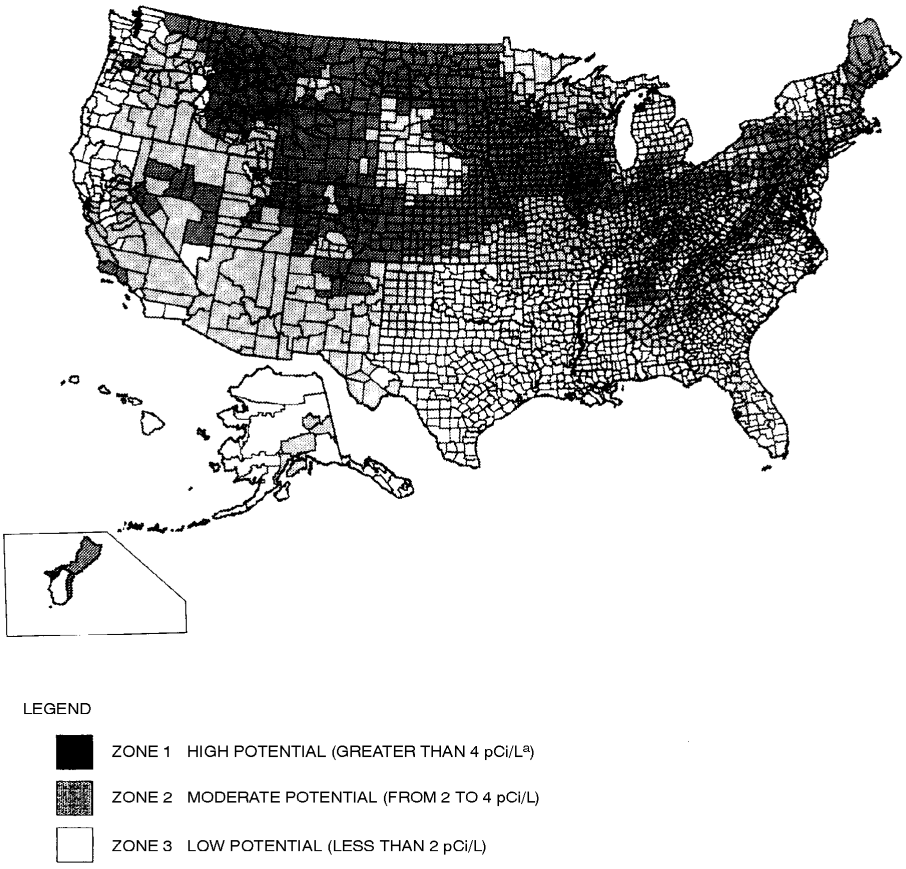
	space.	
(2)	~~insulated to a minimum of R-8~~ All HVAC ducts, plenums, and trunks in are conditioned space. All HVAC ducts are insulated to a minimum of R4.	~~2~~3

903.3 Relative humidity. In climate zones 1A, 2A, 3A, 4A, and 5A as defined by Figure 6(1), equipment is installed to maintain relative humidity (RH) at or below 60 percent using one of the following: **(Points not awarded in remaining climate zones.)**	~~8~~7
(1) additional dehumidification system(s) **(2)** central HVAC system equipped with additional controls to operate in dehumidification mode	

904
INNOVATIVE PRACTICES

904.1 Humidity monitoring system. A humidity monitoring system is installed with a mobile base unit that displays a reading of temperature and relative humidity at the base unit with a minimum of two remote units. One remote unit is placed permanently inside the conditioned space in a central location, excluding attachment to exterior walls, and another remote unit is placed permanently outside of the conditioned space.	**2**

904.2 Kitchen exhaust. A kitchen exhaust unit(s) that equals or exceeds 400 cfm (189 L/s) is installed, and makeup air is provided.	**2**



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

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

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

FIGURE 9(1)
EPA MAP OF RADON ZONES

CHAPTER 10

OPERATION, MAINTENANCE, AND BUILDING OWNER EDUCATION

GREEN BUILDING PRACTICES	POINTS

1001
BUILDING OWNERS' MANUAL FOR ONE- AND TWO-FAMILY DWELLINGS

1001.0 Intent. Information on the building's use, maintenance, and green components is provided.

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

GREEN BUILDING PRACTICES	POINTS
(e.g., HVAC, water-heating equipment, sealants, caulks, gutter and downspout system, shower and/or tub surrounds, irrigation system).	
(~~12~~ 13) A photo record of framing with utilities installed. Photos are taken prior to installing insulation, clearly labeled, and included as part of the building owners' manual. **~~(13)~~** ~~Maintenance checklist.~~ **(14)** List of common hazardous materials often used around the building and instructions for proper handling and disposal of these materials. **(15)** Information on organic pest control, fertilizers, deicers, and cleaning products. **(16)** Information on native landscape materials and/or those that have low-water requirements. **(17)** Information on methods of maintaining the building's relative humidity in the range of 30 percent to 60 percent. **(18)** Instructions for inspecting the building for termite infestation. **(19)** Instructions for maintaining gutters and downspouts and importance of diverting water a minimum of 5 feet away from foundation. **(20)** A narrative detailing the importance of maintenance and operation in retaining the attributes of a green-built building. **(21)** Where storm water management measures are installed on the lot, information on the location, purpose, and upkeep of these measures.	
1002 TRAINING OF BUILDING OWNERS ON OPERATION AND MAINTENANCE FOR ONE- AND TWO-FAMILY DWELLINGS AND MULTI-UNIT BUILDINGS	
1002.1 Training of building owners. Building owners are familiarized with the role of occupants in achieving green goals. On-site training is provided to the responsible party(ies) regarding equipment operation and maintenance, control systems, and occupant actions that will improve the environmental performance of the building. These include:	**~~6~~8**
(1) HVAC filters **(2)** thermostat operation and programming **(3)** lighting controls **(4)** appliances operation **(5)** water heater settings and hot water use **(6)** fan controls **(7)** recycling practices	
1003 CONSTRUCTION, OPERATION, AND MAINTENANCE MANUALS AND TRAINING FOR MULTI-UNIT BUILDINGS	
1003.0 Intent. Manuals are provided to the responsible parties (owner, management, tenant, and/or maintenance team) regarding the construction, operation, and maintenance of the building. Paper or digital format manuals are to include information regarding those aspects of the building's construction, maintenance, and operation that are within the area	

GREEN BUILDING PRACTICES	POINTS
of responsibilities of the respective recipient. One or more responsible parties are to receive a copy of all documentation for archival purposes.	
1003.1 Building construction manual. A building construction manual, including five or more of the following, is compiled and distributed in accordance with Section 1003.0. **(Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)**	**1**
(1) A narrative detailing the importance of constructing a green building, including a list of green building attributes included in the building. This narrative is included in all responsible parties' manuals.	**Mandatory**
(2) A local green building program certificate as well as a copy of the *National Green Building Standard*™, as adopted by the Adopting Entity, and the individual measures achieved by the building.	**Mandatory**
(3) Warranty, operation, and maintenance instructions for all equipment, fixtures, appliances, and finishes.	**Mandatory**
(4) Record drawings of the building. **(5)** A record drawing of the site including stormwater management plans, utility lines, landscaping with common name and genus/species of plantings. **(6)** A diagram showing the location of safety valves and controls for major building systems. **(7)** A list of the type and wattage of light bulbs installed in light fixtures. **(8)** A photo record of framing with utilities installed. Photos are taken prior to installing insulation and clearly labeled.	
1003.2 Operations manual. Operations manuals are created and distributed to the responsible parties in accordance with Section 1003.0. Between all of the operation manuals, five or more of the following options are included. ***(Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)***	**1**
(1) A narrative detailing the importance of operating and living in a green building. This narrative is included in all responsible parties' manuals.	**Mandatory**
(2) A list of practices to conserve water and energy (e.g., turning off lights when not in use, switching the rotation of ceiling fans in changing seasons, purchasing ENERGY STAR appliances and electronics).	**Mandatory**
(3) Information on methods of maintaining the building's relative humidity in the range of 30 percent to 60 percent.	~~**Mandatory**~~
(4) Information on opportunities to purchase renewable energy from local utilities or national green power providers and information on utility and tax incentives for the installation of on-site renewable energy systems. **(5)** Information on local and on-site recycling and hazardous waste disposal programs and, if applicable, building recycling and hazardous waste handling and disposal procedures.	

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

CHAPTER 11

REMODELING

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