Florida Green Home Standard
Reference Guide

Version 6
Effective May 2009
Revised 04-1-09

This reference guide is intended to serve two purposes:
- To provide information on green home practices.
- To provide details on how to earn points for complying with the Florida Green Home Designation Standard.

Some items require submittals and are colored in red.

Suggested submittals for other items are colored in green.

Note:
It is possible to combine many submittals in one detailed plan. Letters or documented verbal communication from vendors can substitute for material and equipment cut sheets where required. No document produced by FGBC is intended to supersede or contradict the Florida Building Code.

www.FloridaGreenBuilding.org

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PREREQUISITE 1: Swimming Pool / Spa

Although a popular amenity for homes in Florida, swimming pools and spas utilize precious fresh water resources and harmful chemicals in their operation and maintenance. Simple steps can be taken to minimize or eliminate chemical usage, minimize energy used for pumping and heating, and reduce reliance on fresh water addition by minimizing evaporation. In order to qualify for the FGBC Green Home designation, homes with pools or spas must implement at least one of the following measures, or not have a pool or spa on the property.

P1.1 SANITATION SYSTEM THAT REDUCES CHLORINE USE

In order to maintain a sanitary swimming environment, pools generally require that chlorine levels be kept at a concentration of 2-4ppm (parts per million). Chlorine is generally added on a weekly basis, in relatively large quantities, in order to shock the pool. This high level of chlorine evaporates rather quickly, and the required constant level is maintained. There are swimming pool sanitation systems currently on the market that eliminate the use of liquid chlorine by recycling a salt alternative, or reduce the amount of liquid chlorine required by using ionization technology. There are also ultra violet and ozone systems available that sterilize the water without the use of chemicals.

Points: Prerequisite.
Suggested submittal: Cut sheet or photo of sanitation system.
Resources: N/A

P1.2 POOL COVER

The greatest loss of heat and chemicals from a pool occurs from its surface due to evaporation. By reducing this evaporation loss, pool covers are effective in lengthening the swimming season. They also keep the pool clean, thereby reducing the costs associated with chemicals and filter maintenance. Pool covers also can reduce chlorine loss by blocking direct sunlight that leads to chlorine evaporation. Depending on materials and the amount of use, temperature increases of 5°F to 10°F may be expected from a pool cover. A 5°F increase is reasonable when the cover is used 12 hours a day and a 10°F increase could be expected when it is used 20 hours a day. Transparent or lightly translucent covers work best because they allow solar energy to pass through and be absorbed by the pool water, and they also prevent heat loss at night. Opaque covers are best used in Florida at night to prevent heat loss. Various types of pool covers are available at your local pool supply store.

Points: Prerequisite.
Suggested submittal: Cut sheet or photo of cover.
Resources: N/A
P1.3 SOLAR POOL HEATING SYSTEM  

The average yearly cost for heating a residential pool in Florida is approximately $1,450 using electrical resistance (electricity at $0.09/kWh), and often over $500 using an electric heat pump or using natural gas. Liquid propane costs about the same as electrical resistance. A solar pool heating system is appropriate in our Florida climate, and can pay for itself in as little as two years.

**Points:** Prerequisite.
**Suggested submittal:** Cut sheet or photo of heating system.
**Resources:** For information on the State of Florida solar pool heating testing and certification program and a list of all certified manufacturers, visit: [http://www.fsec.ucf.edu/en/consumer/solar_hot_water/pools/index.htm](http://www.fsec.ucf.edu/en/consumer/solar_hot_water/pools/index.htm)

P1.4 EFFICIENT POOL PUMPING  

Pool pumping costs easily comprise 20% of total electricity use. One cost effective way to reduce this expense is to use an oversized cartridge filter and 2" PVC piping rather than the standard 1 1/2" inch. Then locate a pump no larger than 1/2 hp per 10,000 gallons of pool volume. Set the pump on a timer to operate no more than six hours per day in summer and three hours in winter. Pool pumping is also a good application for photovoltaic (PV) technology.

**Points:** Prerequisite.
**Suggested submittal:** Indicate pump hp and pool volume.

PREREQUISITE 2: Waterfront Considerations

Waterfront Florida yards present special challenges and responsibilities. Waterfront property owners have firsthand knowledge of the special contributions that the lagoon, rivers, streams and lakes add to our quality of life. However, a special responsibility goes along with the benefit of being a next-door neighbor to these natural resource treasures. Landscapes bordering our surface-water resources need to be designed with special sensitivity to the environment. Those landscapes also present some unique management challenges for the environmentally conscious homeowner. In order to qualify for the green designation, home sites that border water bodies must implement at least one of the following measures. For more information consult A Guide to Environmentally Landscaping: Florida Yards and Neighborhoods Handbook or visit [http://edis.ifas.ufl.edu/EL001](http://edis.ifas.ufl.edu/EL001).
P2.1 USE OF NATIVE AQUATIC VEGETATION IN SHORELINE AREA Prerequisite

Naturally sloping lagoon shorelines, particularly when buffered by a fringe of mangroves and/or marsh grass, help smooth out waves and reduce turbidity (cloudiness) in the water. Mangroves and other shoreline plants contribute to the lagoon's food web, attract wildlife, such as wading birds, and help prevent erosion of the shoreline. Such plants also contribute to the treatment of storm water runoff before it enters the water body. To receive the credit, 75% of your property’s shoreline must be bordered by native aquatic plants.

Points: Pre-requisite.
Suggested submittal: Photo and plant list.
Resources: To find appropriate plant species for your area, contact your water management district or your local horticultural extension office, or for a full list extension agencies, visit: http://www.csrees.usda.gov/Extension/, or http://dep.state.fl.us/secretary/watman/.

P2.2 NO TURF ADJACENT TO WATER Prerequisite

Erosion problems are typical along water bodies where vegetation has been disturbed by construction activities. Enhancing natural vegetation with additional native plantings and removing non-native, invasive plants can improve both the function and aesthetics of your shoreline. Native plantings require little maintenance in the form of fertilizer that can enter the water body via storm water runoff and encourage harmful algal blooms. Turf is an especially poor choice for the shoreline area due to high fertilizer use and potential for grass clippings to enter the water body. To receive the credit, no turf can be adjacent to the water. Instead, choose a low maintenance ground cover, or a mulched area with low maintenance plantings.

Points: Prerequisite.
Suggested submittal: Photo and plant list.
Resources: To find appropriate plant species for your area, contact your water management district or your local horticultural extension office or for a full list extension agencies, visit: http://www.csrees.usda.gov/Extension/, or http://dep.state.fl.us/secretary/watman/.

P2.3 USE OF TERRACES, SWALES, OR BERMSTO SLOW STORM WATER Prerequisite

Sloping shorelines with no aquatic plants in the littoral zone are pathways for storm water entry, along with contaminants it picks up along the way. There are various techniques to slow storm water movement into the water body, thereby allowing it to be treated naturally by the onshore environment, such as terraces, swales, and berms. Such structures should be placed landward of the mean high water line. A
qualified individual should be consulted before changing drainage patterns along your shoreline. Contact your local water management district.

**Points:** Prerequisite.  
**Suggested submittal:** Photo.  
**Resources:** N/A

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**PREREQUISITE 3: Invasive Exotic Species**

**P3.1 NO CLASS 1 INVASIVE EXOTIC PLANT SPECIES**

Often times, exotic plants that are not native to Florida’s environment are not suited to local rainfall conditions, and require more water to remain healthy. In addition, invasive species sometimes crowd out our natural vegetation. FGBC requires that no invasive class 1 exotic plants be located on sites/lots that are less than 1/5 acre, and for lots greater than 1/5 acre, no class 1 exotic plants be located within 50 feet of the structure (foundation or conditioned space).

**Points:** Prerequisite.  
**Suggested Submittal:** Landscape plan and plant list.  
**Required submittal:** Homes with existing landscaping require inspection/approval by Florida Yards and Neighborhoods (FY&N) personnel, certified FL master gardener, Florida Water Star Certifier, or approved professional.  
**Resources:** A list of such plants can be found at: [http://www.fleppc.org/list/list.htm](http://www.fleppc.org/list/list.htm).
CATEGORY 1: Energy

E1 Ratings

E1.1 CONFIRMED FLORIDA HERS RATING 3-75 Pts.

Elements included in the Home Energy Rating System (HERS) Index can be found in the table on the cover of the checklist. Points are awarded for homes more energy efficient than code. Note that HERS Index is based on whole house energy use, including lighting and appliances.

Points: 3 points for every HERS point below 90.
Required submittal: Copy of signed HERS rating guide.
Resources: To find out more about Florida Energy Ratings, visit the Florida Solar Energy Center’s website at: http://www.fsec.ucf.edu/en/consumer/buildings/homes/ratings/. This website contains priorities for designing an energy-efficient home in Florida, along with listings of local Energy Raters.

E2 Design, finishes, amenities

FGBC has created this design section to award points for other energy conservation measures that are not taken into account within the HERS Rating System. Many of these measures involve proper design and layout of the home that can lead to energy savings through passive, rather than active action.

E2.1 DOCUMENT PROPER SIZING OF HVAC SYSTEM 1 Pt.

An improperly sized heating, ventilation, and air conditioning (HVAC) system can result in comfort and humidity problems. The Air Conditioning Contractors Association (ACCA) Manual J Calculation is a calculation performed to determine the heating load for a residence or small commercial building. The calculation includes site-specific characteristics such as regional weather data, building framing materials, building insulation levels, building air infiltration levels and window area.

Points: To receive the point, calculation inputs require interior set points must not be greater than 70°F for heating or lower than 75°F for cooling. House infiltration shall be based on “tight” or the equivalent term. Outdoor temperatures shall be the 99.0% design temperatures as published in the American Society of Heating Refrigeration and Air Conditioned Engineers (ASHRAE) Handbook of Fundamentals for the home’s location or most representative city for which design temperature data are available.
Required submittal: A report from a software program or hand-calculation of the ACCA Manual J method determining system sizing must be included and information on system installed capacity. The installed cooling system maximum
over sizing limit for air conditioners and heat pumps is 15% to the Manual J values to claim this credit of one point.


**E2.2 DUCTWORK AND JOINTS SEALED WITH MASTIC**

Duct leakage significantly contributes to excessive energy use and can also cause pressure imbalances that lead to durability problems. Using mastic compound to seal all ductwork connections provides a seal that is much less prone to failure than tape.

**Points:** FGBC awards 1 point of all ductwork and joints are sealed with mastic.

**Suggested submittal:** Photo of at least 1 properly sealed joint.

**Resources:** N/A

**E2.3 CROSS VENTILATION AND CEILING FANS CODE CREDITS**

In the HERS system, credit is awarded for incorporating either cross ventilation or ceiling fans, but not for both. Incorporating cross ventilation and ceiling fans into a home design encourages less reliance on air conditioning systems during periods of cooler ambient temperatures by circulating air more efficiently, and thus making the home more comfortable.

**Points:** FGBC awards 1 point for incorporating both ceiling fans and cross ventilation. To receive this point ceiling fans must be installed in each bedroom and each major living area of the house, and all primary living areas and bedrooms must qualify as having cross ventilation with windows present on at least two walls of each room.

**Suggested submittal:** Photos or floor plan showing locations of windows and installed ceiling fans.


**E2.4 ROOFED PORCH, MIN. 100 FT² AND 3 SIDES OPEN**

Porches provide a comfortable outdoor living, cooking, and eating space during cooler months and reduce reliance on the home’s air conditioning system. As with the rest of the home’s design, providing shade with overhangs, keeping the roof cool, and installing a ceiling fan will further increase comfort.

**Points:** FGBC awards 1 point to a house that includes a minimum 100 ft² porch or outdoor living space. To receive the point, a minimum of 3 sides of the porch must be open or screened, meaning that it is not enclosed by solid walls.

**Suggested submittal:** Photos or floor plan showing location of porch.

**Resources:** N/A
E2.5  PASSIVE SOLAR SPACE HEAT SYSTEM  1 Pt.

A home designed for passive solar heating utilizes, and sometimes stores, energy from the sun during the winter months. South-facing windows receive significant winter sun and much less summer sun. Incorporating south-facing glass and placing the main living area on the south side of the home takes full advantage of this. Heat storage can be achieved by using a good conducting material on the slab floor, such as tile or slate, to provide for thermal mass. Concrete block and brick partition walls also provide good thermal mass, as do designs that incorporate water. Homes can also use this “mass” to preserve cool temperatures when the air conditioning system is operating.

Points: FGBC awards 1 point for a solar space heat system that incorporates 30 BTU/°F/ft² of storage for every square foot of south-facing glass. Credit not available (or appropriate) for homes in the South Florida climate zone (as defined by the Department of Community Affairs (DCA) - refer to the map below, or check the home’s energy code compliance form).

Suggested submittal: Details of storage system.

Resources: N/A
E2.6 PASSIVE SOLAR DAY-LIGHTING 1 Pt.

A home designed for passive solar day lighting allows sunlight to enter the home without excessive heat gain. Examples include north- and south-facing clerestory windows. Clerestory windows are windows that are above the eye level for privacy and allow sunlight in while reducing heat gain. Such windows should be operable to also provide a ventilation outlet. Solar light tubes (domed glass roof fixtures coupled with an insulated reflective tube) are encouraged, and provide usable reflected light without the heat gain. Light-colored interior surfaces (walls, ceilings, floors) also aid with natural lighting by reflecting light rather than absorbing it. Light-colored surfaces are beneficial whether using natural or artificial lighting.

Points: FGBC awards 1 point to a home that incorporates solar day lighting with clerestory windows, skylights that are energy star certified, or light tubes. Light-colored interior surfaces are treated separately in this category.

Suggested submittal: Photos or plan showing location of day-lighting features.

Resources: N/A

E2.7 DECIDUOUS TREES ON SOUTH 1 Pt.

Placement/preservation of trees that will shade south elevations during warm weather, but do not block heat/light during cool weather can yield energy savings.

Points: Receive one point if the trees will shade more than 75% of south elevation. Southern climate zone of state (as defined by DCA residential energy code) excluded from deciduous requirement. The determination of what climate zone a home is located in can come from either the map above or can be pulled from the energy code compliance form.

Suggested submittal: Photo or site plan showing locations of trees.

Resources: N/A

E2.8 HOUSE SHADED ON THE EAST AND WEST BY TREES 1-4 Pts.

During the cooler seasons, a house can achieve a large solar heat gain during the morning and early evening hours as the sun rises and sets. These times also correspond to peak demand placed on utilities. By providing shade trees on the east and west sides of the house, cooling demand can be significantly reduced, since a single mature tree can avert as much heat from a home site as two residential size central air conditioners. Placing deciduous trees on the south side of the house is also beneficial, as they provide shade in the summer and let in winter sunlight. Foundation plantings of smaller shrubs are also beneficial to keep the ground next to the house cool and to block re-radiation from adjacent hot surfaces (however, no plants should be placed within 24” of the foundation to prevent excess moisture from accumulating). Trees can also be used to shade the air conditioner condenser, which can further reduce cooling costs. Shade produced by balconies and other
overhangs are not included here, for their influence is taken into account in the HERS rating system.

**Points:** FGBC awards 1 point for each 25% of the designated wall areas (average of east and west walls) that are shaded by trees. To determine points, sum up the wall areas that are oriented within 45° of due east or west and that separate the conditioned area from the outside (omit garage and porch walls). Observe amount of wall area under full shade during the summer or use a sunpath tool. If trees are immature, no extrapolations are to be made to their adult size.

**Suggested submittal:** Photo or site plan showing locations of trees.

**Resources:** N/A

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**E2.9 WASHER AND DRYER OUTSIDE OF CONDITIONED SPACE** 1 Pt.

Washers and dryers emit large quantities of heat under operation. If located within the conditioned space, they represent an additional load on the home’s air conditioning system. If the washer and dryer are located within the conditioned space, points can be achieved under Health-Ventilation by providing a make up air source.

**Points:** FGBC awards 1 point if this equipment is located outside of the conditioned space—garage, unconditioned utility room, etc. The location must be separated from the main body of the home by an insulated wall.

**Suggested submittal:** Photo or floor plan showing location of utility room.

**Resources:** N/A

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**E2.10 FLOOR JOIST PERIMETER INSULATED AND SEALED** 1 Pt.

In homes greater than 1 story, it is critical to ensure that the external perimeter of all framed floors are insulated, as well as sealed, to prevent leakage of unconditioned air and moisture into the floor cavity. Often times, forced air ductwork is located within this cavity, and can suffer significant efficiency loss through contact with the unconditioned air.

**Points:** FGBC awards 1 point if all framed floors are insulated and sealed around their perimeter. **One cannot claim points in this category unless this home is greater than one story.**

**Suggested submittal:** Photo or wall section detail.

**Resources:** N/A

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**E2.11 LIGHT COLORED EXTERIOR WALLS** 1 Pt.

Dark colors absorb more heat from sunlight; in contrast, light-colored surfaces have been shown to reduce cooling costs. A code credit is currently available for homes in Florida that incorporate white metal or tile roofs. New paints are becoming available that offer adequate reflectance specs in colors other than “white.”
**Points:** FGBC awards 1 point for having an exterior wall color with a reflectance of at least 50%. If a documented reflectivity is not available this credit can only be given to “white” or “off white”.

**Suggested submittal:** Cut sheet showing reflectance spec.

**Resource:** N/A

### E2.12 LIGHT COLORED INTERIOR WALLS, CEILINGS, CARPET/FLOORS 1-2 Pts.

Light-colored interior surfaces increase lighting efficiency by reflecting and dispersing light rather than absorbing it. Light-colored surfaces are beneficial whether using natural or artificial lighting.

**Points:** FGBC awards 1 point if bedrooms and all major living spaces in the home have light-colored wall and ceiling surfaces with a reflectance of at least 50%. Two points are available if bedrooms and all major living spaces have light-colored flooring in addition to light colored walls and ceilings. If a documented reflectivity is not available this credit can only be given to “white” or “off white”.

**Suggested submittal:** Photo or cut sheet of paint/surface used.

**Resources:** N/A

### E 2.13 MAX 100W FIXTURES IN BATHROOMS 1 Pt.

Typically bathrooms have lighting fixtures that contain 4 or 5 incandescent bulbs. Such fixtures can add excessive heat to the conditioned space, and the amount of light output is generally excessive.

**Points:** FGBC awards 1 point if all bathroom light fixtures are designed to use a maximum total of 100 watts. A fixture as defined by FGBC is any amenity or system that uses lights and operates on a single switch. These include items such as recessed cans, vanities, lights, mirror fixtures, etc. Multiple switches may be incorporated into the bathroom; however each switch must only activate 100 watts of lighting total. Limit the number of bulbs per switch or use low wattage lighting such as compact fluorescent or LED. For example if a bathroom has a vanity with 4 light bulbs and a recessed can, the home can achieve points if one of two things happens: The 4 light bulb fixture is tied to one switch and has a combined wattage of less than 100W and the recessed can is tied to a separate switch and has wattage of less than 100W. Or the fixture and recessed can are tied to the same switch and the combined wattage of the 5 lights is less than 100 watts.

**Suggested submittal:** Photo of light fixtures.

**Resources:** N/A
E2.14 SOUTH ROOF AREA FOR FUTURE SOLAR USE 1 Pt.

The best efficiency of a solar system is obtained by facing the system south. This point is not available if a system is installed. Installed photovoltaic (PV) Systems are given credit in the HERS rating system and in the General category, and installed solar water heating systems are given credit in the HERS rating system and in the Energy category.

Points: FGBC awards 1 point if provisions are made such that there is available south-facing roof area for future installation of a PV system or solar water heating system. At least 75 ft² of roof facing within 20° of due south must be provided.

Suggested submittal: Photo or plan that shows south facing roof area.

Resources: N/A

E2.15 PRE-PLUMB FOR SOLAR HOT WATER 1 Pt.

Besides providing south-facing roof area, the next step in preparing for a future solar hot water system is to install plumbing. This point is not available if a system is installed. Installed solar water heating systems are given credit in the HERS rating system and in the Energy category.

Points: FGBC awards 1 point for installing plumbing for future installation of a solar hot water system running from the hot water tank location up through the roof. Penetration should be properly sealed, and plumbing must be copper pipe or CPVC.

Suggested submittal: Photo or plumbing plan.

Resources: N/A

E2.16 INSTALL A STATE CERTIFIED SOLAR WATER HEATING SYSTEM 2 Pts.

Water heating can account for a large portion of a home’s energy use. A modestly sized solar water heating will provide 50-70% of an average household’s hot water needs at low cost.

Points: FGBC will award 2 points if a solar hot water system is installed and properly sized so that the system has a solar fraction ≥ 0.5. The system must be certified under the state of Florida’s solar water heating system program.

Required submittal: Spec. sheet and copy of certification results.


E2.17 COMPACT HOT WATER DISTRIBUTION 1 Pt.

By centrally locating the water heater, heat losses can be minimized by minimizing piping runs. Heat losses can also be minimized by installing an on-demand circulation loop, or by installing a manifold system with individual small diameter water lines dedicated to each fixture.
**Points:** FGBC awards 1 point if compact hot water distribution is used. For a conventional system, no branch line from the water heater to any fixture may exceed 20 feet in one story homes. Add 1x the ceiling height for two story homes, and add 2x the ceiling height for three or four story homes. Branch lines from the central header to each fixture must be a maximum of ½ inch diameter. One point is also available for use of a manifold system, or for use of a recirculation loop with an on demand control with auto pump shut-off in the kitchen and each full bathroom.

**Suggested submittal:** Plumbing plan.

**Resources:** N/A

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**E2.18 INSULATE ALL HOT WATER PIPES**  
1 Pt.

Insulating the piping will minimize heat losses while water is flowing through, or remaining stagnant inside the pipes. CPVC is not a suitable replacement for insulation.

**Points:** FGBC awards 1 point if all hot water piping (including that which is buried) is insulated with a minimum of ½” insulation.

**Required submittal:** Photo of the buried insulated lines or a receipt for the appropriate amount of pipe insulation must be provided.

**Resources:** N/A

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**E2.19 ENERGY-EFFICIENT CLOTHES DRYER**  
1 Pt.

The clothes dryer is typically the second-biggest electricity-using appliance after the refrigerator. Some new clothes dryers remove moisture more efficiently, have moisture sensors, and have automatic shut-off controls to avoid over-drying. The efficiency of clothes dryer is measured by a term called the energy factor. This factor is somewhat similar to ‘miles per gallon’ for a car, but in this case the measure is pounds of clothing per kilowatt-hour of electricity. Unlike most other appliances, energy consumption does not vary significantly among clothes dryers, and clothes dryers are not required to display EnergyGuide labels.

Look for clothes dryers with a moisture sensor that automatically shuts off the machine when your clothes are dry. Not only will this save energy, it will reduce the wear and tear on clothes from over-drying. The best dryers have moisture sensors in the drum for sensing dryness, while most only infer dryness by sensing the temperature of the exhaust air. Compared with timed drying, you can save about 10% with a temperature sensing control, and 15% with a moisture sensing control. Look for a dryer with a cycle that includes a cool-down period, sometimes known as a “perma-press” cycle. In the last few minutes of the cycle, cool air, rather than heated air, is blown through the tumbling clothes to complete the drying process. Gas dryers are usually less expensive to operate than electric dryers. The cost of drying a typical load of laundry using an electric dryer is 30-40 cents compared to 15-20 cents using a gas dryer.
Points: FGBC awards 1 point if a clothes dryer with a moisture sensor is installed.
Suggested submittal: Photo or cut sheet of appliance.
Resources: http://www1.eere.energy.gov/consumer/tips/laundry.html

E2.20 ENERGY-EFFICIENT OVEN/RANGE 1 Pt.

Conventional ovens must first heat up about 35 pounds of steel and a large amount of air before they heat up the food. Tests indicate that only 6% of the energy output of a typical oven is actually absorbed by the food. New ovens have additional insulation and tighter-fitting oven door gaskets and hinges to save energy.

- For gas ovens, new electronic pilotless ignitions reduce gas usage by about 30% over a constantly burning pilot light. These are also more convenient, eliminating the need to restart a standing pilot light. About 58% of American households cook with electricity, but gas cooking is making a steady comeback. Gas ovens use much less energy compared to their electric counterparts because the fuel is used directly for cooking. A gas appliance costs less than half as much to operate as an electric one, provided it is equipped with electronic ignition instead of a pilot light.
- Consider buying a self-cleaning oven. They use less energy for normal cooking because of higher insulation levels. However, if you use the self-cleaning option more than once a month, you will end up using more energy than you will save from the extra insulation.
- With electric cook tops, there are a number of new types of burners on the market: solid disk elements, radiant elements under glass, halogen elements, and induction elements. Solid disk elements and radiant elements under glass are easier to clean, but they take longer to heat up and use more electricity. Halogen elements and induction elements are more efficient than conventional electric coil elements. Induction elements require that you use only iron or steel pots and pans. Aluminum cookware will not work with induction elements.
- The range hood should ventilate to the outside and not simply re-circulate and filter the cooking fumes. This is especially important with gas ranges. But also be careful about the sizes of fans—too large a fan can waste energy and cause back-drafting of combustion gases into the house. This is a major concern with large downdraft ventilation fans used with some cook-tops and ranges. Ask about make-up air ducts available for these models. Points are awarded for exterior vented range hoods under the Health section.

Points: FGBC awards 1 point if the oven is: self-cleaning or pilotless gas and the cook top is pilotless gas or has halogen, solid disk, radiant, or induction elements.
Suggested submittal: Cut sheet for each appliance.
Resources: N/A
E2.21 ENERGY STAR® CLOTHES WASHER 1 Pt.

Appliances labeled with the EPA ENERGY STAR® label use less energy and water than other products, save money on utility bills, and help protect the environment. Although energy-efficient models sometimes cost more to purchase initially, any extra up-front cost can often be made up with savings on your utility bill. Also, check with your local utility; some may offer rebates on the purchase of ENERGY STAR®-rated appliances.

ENERGY STAR® clothes washers use superior designs that require less water to get clothes thoroughly clean. These machines use sensors to match the hot water needs to the load, preventing energy waste. ENERGY STAR® washers use nearly 50% less water and over 40% less energy per load. The washer design also causes less wear and tear on clothes. In addition, better water extraction means less drying time, which yields further energy savings. There are two designs, top-loading and front-loading. They are described in more detail as follows:

- Front-loading ENERGY STAR® models are similar in design to washers used in laundromats. These horizontal-axis or tumble-action machines repeatedly lift and drop clothes, instead of moving clothes around a central axis.
- Top-loading ENERGY STAR® washers use sensor technology to closely control incoming water temperature. To reduce water consumption, they spray clothes with repeated high-pressure rinses to remove soap residues rather than soaking them in a full tub of rinse water.

Points: FGBG awards 1 point for an ENERGY STAR® labeled clothes washer.
Suggested submittal: Photo or cut sheet for each appliance.
Resources: For more information, visit the ENERGY STAR® web page at: http://www.energystar.gov/index.cfm?c=clotheswash.pr_clothes_washers.

E2.22 BUYER GIVEN INFORMATION ON ENERGY STAR® APPLIANCES IF NONE INSTALLED 1 Pt.

Points: FGBC will award 1 point if the builder gives the homeowner printed information about available models if no ENERGY STAR® or energy-efficient appliances are installed at the time of occupancy.
Suggested submittal: Indicate what materials were given to homeowner.
Resources: The information contained in this reference book may be used, and information can be obtained from http://www.energystar.gov/index.cfm?c=appliances.pr_appliances.

E2.23 EFFICIENT WELL PUMPING 1 Pt.

When using a well pump, larger storage volumes will minimize the number of times the pump must cycle on/off, thereby minimizing the large amount of energy needed
to start the pump motor. You may also receive a point if the pump is powered by photovoltaics.

**Points:** FGBC awards 1 point if power to the pump is 220V, and the system contains a storage tank with a volume greater than 35 gallons. Only homes whose potable water is served by a deep well are eligible for this point.

**Suggested submittal:** Include details of pump/storage system.

**Resources:** N/A

**E2.24 EFFICIENT ENVIRONMENT VOLUME**

1 Pt.

Some home designs minimize the amount of outside surfaces while others have shapes that have many projections. Although many projections may help for cross ventilation, minimal outside surface area is beneficial for times when air conditioning or heating is occurring.

**Points:** FGBC provides 1 credit point if the:

\[
\frac{\text{Total gross wall area}}{\sqrt{\text{(Conditioned square footage)} \times \text{(Number of stories)}}} < 43
\]

Total gross wall area refers to the walls, windows and doors that separate the conditioned space from the non-conditioned space.

**Suggested submittal:** Floor plan and calculation.

**Resources:** N/A

**E2.25 DWELLING UNIT ATTACHED; ZERO LOT-LINE; ROW HOUSE**

1 Pt.

Residences bound by other conditioned spaces on any or all sides use less energy for cooling and heating than residences bound by unconditioned or spaces.

**Points:** FGBC awards 1 point if the home has an attached dwelling unit such as an apartment, is a zero lot-line, or is a row house.

**Suggested submittal:** Photo or site plan.

**Resources:** N/A

**E2.26 RECESSED, SEALED, INSULATED FIXTURES**

2 Pts.

Recessed IC fixtures refer to fixtures installed flush with the ceiling that are rated for insulation contact. Sealed IC fixtures, or ICAT (Insulation Contact Air Tight), have no penetrations and do not permit air to exchange between the conditioned space and the attic. During installation, it is also important that the gap between the can and the ceiling material be sealed to prevent conditioned air from leaking through this gap, and/or to prevent hot attic air from entering into the conditioned space.
**Points**: FGBC awards 2 points if all recessed light fixtures are sealed ICAT fixtures and insulated to the same amount as the rest of the ceiling. Alternatively, the 2 points can be obtained with unsealed units if installed in an unvented attic, or if no recessed fixtures are used in the home.

**Suggested submittal**: Cut sheet of can lights used or photos of unvented attic.

**Resources**: N/A

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**E2.27 ENERGY STAR® ADVANCED LIGHTING PACKAGE**

This is a comprehensive package that includes ceiling fans, indoor lighting, and outdoor lighting. Also includes ventilating fans. The Energy Star lighting package requires that Energy Star fixtures be installed, rather than just efficient bulbs, this acts as “bonus credit” for using this comprehensive package.

**Points**: FGBC awards 3 points if the builder installs an Energy Star Advanced Lighting package.

**Suggested submittal**: Lighting schedule and package compliance.


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**E2.28 OUTDOOR LIGHTS ARE ENERGY EFFICIENT**

Outdoor lighting, including exterior house, path, and driveway lights, typically consumes a great deal of energy, especially when left on throughout the entire night. Suggested choices for brightly lit outdoor spaces like patios include using fluorescent bulbs and fixtures with electronic ballasts (more efficient than magnetic type), low-pressure sodium, or mercury vapor lamps. Photovoltaic systems are a good choice for walkways, driveways, and landscaping. Most available units have storage batteries that will charge during daylight hours and power the lights all night; some will even provide power for 2 to 3 days in case the weather is cloudy. Motion sensors are recommended for outdoor lighting, particularly if incandescent floodlights are used. Low voltage landscape lights that operate on a timer are also an energy efficient choice.

**Points**: FGBC awards 2 points if **all** exterior lights are low voltage, photovoltaic, fluorescent, or operate on motion sensors or timers.

**Suggested submittal**: None required – visual inspection by Certifying Agent.

**Resources**: N/A
CATEGORY 2: Water

W1  Fixtures

This section deals with indoor water fixtures and other water using devices connected to them. Often, water saving features result in direct energy savings by placing a lower demand on the water heater.

W1.1 WATER SAVING CLOTHES WASHER  2-3 Pts.

The Water Factor (WF) is a metric that allows for comparison of clothes washer water consumption independent of clothes washer capacity. The WF equals the total weighted per-cycle water consumption divided by the capacity of the washer. Since energy savings in an efficient clothes washer are primarily governed by the amount of water that needs to be heated, conserving water also conserves energy. Manufacturers must submit their water consumption factors with their Energy Star® qualified clothes washers. However, neither the federal standard nor the Energy Star® criteria require a maximum WF.

Points: To receive 2 points, the Energy Star® model chosen must have a WF less than 7.2, to receive 3 points; the Energy Star® model chosen must have a WF less than 5.

Suggested submittal: Photo or cut sheet for each appliance.

Resources: The WF may not be found on the Energy Guide label, and should be identified through the Energy Star® website for a particular model: http://www.energystar.gov/index.cfm?c=clotheswash.pr_clothes_washers.

W1.2 LOW FLOW SHOWERHEADS  1 Pt.

The Florida Building Code and National Energy Policy Act of 1992 (EPACT) require that all installed showerheads and faucets be rated at a maximum flow rate of 2.5 gallons per minute at 80 psi water pressure. There are available fixtures on the market today that exceed these standards. Laminar flow controls may also be used that deliver a precise volume of water at faucets, showerheads, and hose outlets. Unlike conventional water-saving fixtures that deliver varying flow rates in response to varying line pressure, fixtures equipped with laminar flow controls deliver a constant rate, lower than that mandated by EPACT.

Points: FGBC awards 1 point if all showerheads installed in the home are rated at a flow rate lower than 2.5 gallons per minute.

Suggested submittal: None required – visual inspection by Certifying Agent, or cut sheet.

W1.3 ALL SHOWERS EQUIPPED WITH ONE SHOWERHEAD  

Although EPACT sets a maximum limit on flow per showerhead; building codes do not set a limit on the number of showerheads that can be used.

**Points:** FGBC awards 1 point if each shower in the home is equipped with only one showerhead.

**Suggested submittal:** Photo of each shower showing showerhead.

**Resources:** N/A

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W1.4 NO GARBAGE DISPOSAL  

Although a popular item that increases the convenience of food cleanup, garbage disposals are notorious for wasting water and adding to the load placed on waste water treatment plants. A much better choice for disposal of food scraps is composting, discussed in more detail later.

**Points:** FGBC awards 2 points to a home that does not have a garbage disposal.

**Suggested submittal:** None required – visual inspection by Certifying Agent.

**Resources:** N/A

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W1.5 DUAL FLUSH OR LOW FLOW TOILETS  

Toilets represent the largest source of indoor water use in the home, accounting for up to 30%-40% of water demand. The Florida building code and National Energy Policy Act of 1992 (EPACT) require that all installed toilets be rated at a maximum flow rate of 1.6 gallons/flush. There are toilets on the market today that exceed these standards.

To make it easy to find and select water-efficient products with good performance, the EPA (Environmental Protection Agency) has introduced its WaterSense® program, a label that’s backed by independent testing and certification. WaterSense®-labeled products perform their intended functions as well as or better than their less-efficient counterparts. And generally speaking, they’re about 20 percent more water-efficient.

**Points:** For a home built after 1992, FGBC awards 2 points if all toilets installed in the home flush at volumes lower than 1.6 gallons/flush.

**Suggested submittal:** Cut sheet for toilet.

**Resources:** For a list of high efficiency commodes that have earned the WaterSense® label, visit [http://www.epa.gov/watersense/pp/het.htm](http://www.epa.gov/watersense/pp/het.htm).
W1.6 TOILETS WITH UNAR MAP RATING (350GPF)  

A MaP (Maximum Performance) Rating is a measure of toilet performance. Better performing toilets do not require multiple flushes.

**Points:** FGBC awards 1 point if toilets installed have a MaP Rating of 350 grams per flush or greater.

**Suggested submittal:** Cut sheet for toilet.

**Resources:** N/A

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W2 Greywater Reuse

Greywater is generally defined as domestic wastewater from any source except toilets and the kitchen sink—this includes laundry, shower/bath, faucets, and dishwasher. It can also include air conditioner condensate. Reusing greywater for landscape irrigation presents an exciting opportunity for water conservation. Statistics show that 50-75% of the water consumption in an average Florida home is for exterior landscape irrigation, and generally our precious potable water resource is used for this purpose. Greywater is rich in nutrients, and many landscape plants and grasses will thrive when watered with greywater. In turn, the terrestrial environment acts to naturally purify this waste stream without chemicals or added energy, and returns the water to its natural cycle.

Greywater differs from blackwater (water from toilets and kitchen sink), in that it is free of pathogens and solids. Greywater only contains 1/10 the amount of nitrogen as blackwater, and the organic content of greywater typically decomposes much faster than that of blackwater. Although inherently safer than blackwater, greywater cannot be considered as potable, and, therefore, landscape application must take place subsurface, and cannot be used with sprayers or rotors. To utilize greywater from household fixtures, plumbing in the home must separate drains from blackwater and greywater sources. For new construction, a reuse system should be planned during the design stage. Since laundry equipment generally has drain hoses that are not fixed, washing machines are an excellent source of reuse water.

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W2.1 SYSTEM INSTALLED  

**Points:** FGBC awards 3 points if a greywater system is installed that disperses water from laundry, shower/bath, faucets or dishwasher to the landscape.

**Suggested submittal:** Schematic of system design.

**Resources:** Two excellent greywater resources are the book entitled “Create an Oasis with Greywater” by Art Ludwig, and the Oasis Design website, located at: [www.oasisdesign.net](http://www.oasisdesign.net). Another good source of information is the City of Austin’s Sustainable Building Sourcebook at: [www.greenbuilder.com/sourcebook/greywater.html](http://www.greenbuilder.com/sourcebook/greywater.html). The Florida Department of Health regulates the installation and use of greywater and onsite systems, and the specifics are defined
in rule 64E-6. This rule is available for download from the Department's web site: www.doh.state.fl.us. For more info visit: http://www.toolbase.org/Techinventory/TechDetails.aspx?ContentDetailID=907&BucketID=6&CategoryID=11

W2.2 VANITY WATER COLLECTION FOR TOILET FLUSHING 2 Pts.

An under vanity water reservoir system used for the collection of vanity sink water to later be used for the flushing of the adjacent toilet is also another source of greywater and can save a significant amount of water each year especially in homes with families.

Points: FGBC will award 2 points for installation of an under vanity water reservoir system.
Suggested submittal: Schematic of system design.
Resources: N/A

W2.3 AIR CONDITIONER CONDENSATE REUSE 1 Pt.

Air conditioner condensate can also be considered a source of greywater. Annual air conditioner condensate volume can average between 1500 and 3500 gallons. Inexpensive purification devices are available that make the water useable for pool refilling, irrigation, or make-up water for water-cooled air conditioning units.

Points: FGBC awards one point for incorporating a means to reuse air conditioner condensate water.
Suggested submittal: Schematic of system design.
Resources: N/A

W3 Rainwater Harvesting

With an average rainfall of 54 inches/year in the state of Florida (compared to the national average of 27 inches/year), harvested rainwater is an excellent source of water for landscape irrigation. The equipment is readily available and of relatively low complexity. Rainwater harvesting is now mandated for new construction in Bermuda and the U.S. Virgin Islands. Rainwater is generally harvested from a roof surface, and system components include properly designed gutters, piping, roof washers, screens, and a storage tank/cistern. System capacities can range from thousands of gallons to trashcan-sized rain barrels. Harvested rainwater could also be a good source for toilet flushing.

W3.1 SYSTEM INSTALLED WITH DEDICATED USE 2 Pts.

Points: FGBC awards 2 points for an installed system with a dedicated indoor or outdoor use. System must be capable of collecting and storing a minimum of 50% of the runoff from the roof based on a ¾ inch rainfall event.
Suggested submittal: Schematic of system design.

W3.2 SYSTEM ROUGH IN WITH SIMPLE COLLECTION 1 Pt.
Points: 1 point available for a system of gutters installed along with a simple collection system such as a rain-barrel.
Suggested submittal: Schematic of system design.

W4  Reclaimed Water Reuse

Reclaimed water is wastewater that has received at least secondary treatment and basic disinfection and is reused after flowing out of a domestic wastewater treatment facility. Reclaimed water is not potable, but is made available by municipalities and wastewater utilities for purposes such as irrigation and toilet flushing. Although infrastructure costs can be high to arrange for reclaimed water service, once available the actual cost for the water is relatively inexpensive. Reuse of reclaimed water provides a useful method for treatment facilities to dispose of their treated wastewater. Even though reclaimed water is considered an alternative source, it is still available in limited supply. Whether or not the homeowner is charged based on the meter, a meter will still allow the homeowner to monitor their water use.

W4.1 WATER FOR IRRIGATION 2 Pts.
Points: FGBC awards 2 points if reclaimed water is used for all of the home’s irrigation needs.
Suggested submittal: Documentation that describes reclaimed water use agreement.
Resources: N/A
W4.2 METER ON RECLAIMED IRRIGATION SYSTEM

Points: 2 points are available if the home's use of reclaimed water is metered.
Suggested submittal: Documentation that describes reclaimed water use agreement.
Resources: N/A

W4.3 VOLUME BASED PRICING ARRANGEMENT

Points: 2 points are awarded if a volume-based pricing arrangement is in place.
Suggested submittal: Documentation that describes reclaimed water use agreement.
Resources: N/A

W4.4 FOR TOILET FLUSHING

Points: 2 points if reclaimed water is used for toilet flushing.
Suggested submittal: Documentation that describes reclaimed water use agreement.
Resources: N/A

W5 Installed Landscape

Plant selection is an important part of landscaping your yard. The plants you select determine the wildlife value of your yard, the level of maintenance that will be required, how much money you will be spending on water or electricity to run a sprinkler pump, and how much fertilizer or pesticide may be required. Stormwater runoff, or rain that falls on yards, roads, and parking lots and then washes into water bodies, carries pollutants such as fertilizers, pesticides, soil, and petroleum products. Fertilizers and pesticides from residential areas can be serious threats to the health of Florida’s waters. Plant selection will also determine how long your landscape will last. Fast growing plants often have a shorter life span than slower growing species. More people are conserving water both inside and outside the home, and interest is growing in landscaping with native and other beneficial trees, shrubs, and ground covers. Homeowners are choosing plants that blend beauty and environmental benefits. Many of these benefits to the environment also save time and money while enhancing our special Florida lifestyle. For more information consult A Guide to Environmentally Landscaping: Florida Yards and Neighborhoods Handbook or visit http://edis.ifas.ufl.edu/EL001. Another good source of information on this subject is Waterwise Florida Landscapes publication from Florida’s water management districts. An electronic version is available for download at www.sjr.state.fl.us/.

For homes taking credit for existing landscape material, some of the criteria in this section require inspection by a Florida Yards and Neighborhoods (FY&N) Professional, Master Gardener, or Florida Water Star Certifier. If one of these three specialists cannot be utilized, an individual may use another professional pending
the professional submits their qualifications and FGBC deems them as qualified. Indicate the name of the professional used in the space provided on the checklist.

**W5.1 DROUGHT TOLERANT TURF IN SUNNY AREAS ONLY; NO TURF IN DENSELY SHADED AREAS**

Turf is generally the largest consumer of water in the landscape, and most types will not flourish in shady areas.

**Points:** FGBC awards 2 points if Bahia, Zoysia, or Bermuda grass is used in sunny areas (<20% shade on June 21) and if no turf is used in densely shaded areas (>60% shade on June 21).

**Suggested submittal:** Landscaping plan and source of drought tolerant plant list.

**Required Submittal:** Landscape Inspection required for existing plants/trees by an FY&N, Master Gardener, Florida Water Star Certifier, or other approved professional.

**Resources:** N/A

**W5.2 50%, 80%, 100% OF PLANTS/TREES FROM LOCAL DROUGHT TOLERANT LIST**

Drought-tolerant plants and trees are able to survive on rainfall with little or no supplemental irrigation.

**Points:** FGBC awards 1 point if at least 50% of the plants and trees incorporated into the landscape are from a local drought tolerant list; 2 points are available if 80% are from such a list; and 3 points are available if 100% of the plants and trees are from such a list. **There must be a minimum of twelve total plants to qualify for the credit.**

**Suggested submittal:** Landscaping plan and source of drought tolerant plant list.

**Required Submittal:** Landscape Inspection required for existing plants/trees by an FY&N, Master Gardener, Florida Water Star Certifier, or other approved professional.

**Resources:**
- To obtain a list of drought tolerant plants and trees for your area, contact your local water management district, consult the Waterwise Florida Landscapes publication, or consult with a FY&N professional, Master Gardener, or Florida Water Certifier. For References here are some helpful websites: [http://www.sjrwmd.com/waterwiselandscapes/](http://www.sjrwmd.com/waterwiselandscapes/), [http://fyn.ifas.ufl.edu](http://fyn.ifas.ufl.edu), [http://floridawaterstar.com/criteria.html](http://floridawaterstar.com/criteria.html).

**W5.3 ALL PLANTS/TREES SELECTED TO BE COMPATIBLE WITH LOCAL ENVIRONMENT/MICROCLIMATE**

Even if preferred native, drought tolerant, and low maintenance plants are selected for the landscape, many times the plants are installed in areas of the landscape where they are not likely to remain healthy due to various sun/shade and soil type
requirements. Incompatibility between the plant(s) and their placement results in over watering and over fertilizing.

**Points:** FGBC awards 2 points if all plants (including shrubs, groundcovers, and vines and trees) are compatible with their location in the landscape.

**Suggested submittal:** Landscaping plan.

**Required Submittal:** Landscape Inspection required for existing plants/trees by an FY&N, Master Gardener, Florida Water Star Certifier, or other approved professional.

**Resources:** N/A

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**W5.4 TURF LESS THAN 50% OF LANDSCAPE**

As previously mentioned, lawns are generally the largest consumers of water in the landscape. Minimizing the amount of turf in a yard by confining it to play, pet, or entertainment areas will greatly reduce the yard’s burden on Florida’s limited freshwater resource.

**Points:** FGBC awards 3 points if turf is planted on less than 50% of the landscape.

**Suggested submittal:** Landscaping plan and plant characteristics.

**Resources:** N/A

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**W5.5 EVENLY SHAPED TURF AREAS; NO TURF ON BERMS**

Evenly-shaped turf areas are easier to water efficiently and easier to maintain. Turf planted on berms requires more water to remain healthy, due to water run-off from the slope.

**Points:** FGBC awards 2 points if 100% of turf is planted in evenly-shaped areas (such as circles, ovals, and large rectangular areas rather than in long thin strips) and if no turf is planted on berms.

**Suggested submittal:** Landscaping plan.

**Resources:** N/A

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**W5.6 PLANTS WITH SIMILAR MAINTENANCE REQUIREMENTS GROUPED TOGETHER**

Grouping plants with similar maintenance requirements together increases irrigation efficiency. Lawns that require a lot of water from sprayers and rotors should not be watered in the same irrigation zone as drought-tolerant plants that require less water and that can be efficiently irrigated with micro-irrigation (micro-spray jets, drip systems, bubblers, or soaker hoses).

**Points:** FGBC awards 2 points if the landscape is planned and installed according to plant maintenance requirements.

**Suggested submittal:** Landscaping plan and plant characteristics.
Required Submittal: Landscape Inspection required for existing plants/trees by an FY&N, Master Gardener, Florida Water Star Certifier, or other approved professional.

Resources: N/A

W5.7 MULCH APPLIED 3-4” DEEP AROUND PLANTS 2 Pts.

In addition to preventing weed growth, a thick layer of mulch will help retain soil moisture, retard erosion, cool the soil surface, and reduce some soil pests. Mulching around trees also reduces damage from mowers and line trimmers. It is important to leave ample open space close to the plant stems and trunks.

Points: FGBC awards 2 points if 3-4” of mulch are placed around plants and trees (extending out to drip line) and in landscaped beds.

Suggested submittal: Landscaping plan.

Resources: N/A

W5.8 NON CYPRESS MULCH USED 2 Pts.

Cypress mulch used to be produced mainly as a by-product of lumber operations but the increasing demand for mulch has led to the use of whole trees for nothing but mulch. The cypress trees are not being replanted resulting in the loss of the cypress forest, its wetland, and wildlife. Acceptable alternative types of mulch include melaleuca, pine straw, pine bark, recycled, and eucalyptus. Note that Brazilian pepper, Australian pines, and palms should not be used as mulch and are not given credit.

Points: FGBC awards 2 points if all mulch installed on the project is an acceptable alternative to cypress mulch.

Suggested submittal: Landscaping plan.

Resources: N/A

W5.9 SOIL TESTED AND AMENDED WHERE NECESSARY 2 Pts.

In some areas of Florida, native soil is very sandy and porous, and does not retain water or nutrients well; this often results in the need for excessive irrigation and fertilization to maintain a healthy landscape. The simplest way to avoid these problems in the landscape is to use only plants that are compatible with the site. However, in the case of a vegetable or flower garden a soil amendment such as compost (or other organic matter) may be mixed with the native soil to improve moisture and nutrient retention.

Points: FGBC awards 2 points if highly permeable soil is appropriately tested and amended where necessary. Testing includes pH, lime requirements, soil fertility, and water infiltration to show that amendment is necessary and type of amendment chosen.
Suggested submittal: Landscaping plan and soil test.
Resources: N/A

W6 Installed Irrigation

Homeowners in some parts of Florida are becoming accustomed to restrictions that limit irrigation to certain days and times. Still, most of us are watering too much. Overwatering depletes our water supply, often makes plants pest prone, and adds to stormwater runoff that pollutes our natural waters. By choosing and operating an irrigation system correctly, you can reduce water bills, fungal diseases, and maintenance requirements. Coupled with appropriate plant selection, implementing efficient irrigation techniques can reduce outdoor water use anywhere from 20% - 60%.

The St. Johns River Water Management District; the Southwest Florida Water Management District and the University of Florida have developed a Water Star certification program for homes. Irrigation is one component of this program. A number of individuals knowledgeable in irrigation system design, installation, and efficiency developed a list of measures that will ensure irrigation systems not only fulfill their intended purpose, but do so effectively and efficiently. Some of these items are integrated into the FGBC standards specified below.

W6.1 NO PERMANENT INSTALLED IRRIGATION SYSTEM 10 Pts.

The most effective outdoor water conservation strategy to employ is to design the landscape in such a way that it exists primarily on natural rainfall, and no permanent irrigation system is required. A temporary irrigation system may be set up during establishment.

Points: FGBC awards 10 points, regardless of its size.
Suggested submittal: None required.
Resources: N/A

W6.2 INNOVATIVE IRRIGATION TECHNOLOGY 2 Pts.

FGBC encourages innovative technologies to conserve water. Recent technologies such as soil moisture sensors or weather based controllers are ways of conserving irrigation water.

Points: FGBC will award 2 points for soil moisture sensor or weather based controller.
Suggested submittal: Cut sheet of innovative equipment.
Resources: N/A
W6.3 MEET OR EXCEED FLORIDA WATERSTAR\textsuperscript{SM} STANDARDS 5 Pts.

Florida WaterStar\textsuperscript{SM} is a voluntary, third-party certification program designed to increase water efficiency in landscapes, irrigation systems and indoor uses. While many certification programs provide general guidelines for water efficiency, Florida WaterStar\textsuperscript{SM} specifically addresses uses relevant to Florida.

**Points:** 5 points for meeting this program.

**Required submittal:** Signature, letter, or certificate showing completion of standard.

**Resources:** http://www.floridawaterstar.com/residential.html.

W6.4 LANDSCAPE IRRIGATED TO FGBC STANDARDS 1-5 Pts.

**Points:** FGBC awards points to a home that adheres to all of the requirements of the following list. Points are awarded according to the area that is irrigated, with more points awarded to smaller irrigated areas:

- 1 point for > 10,000 sqft irrigated to FGBC standards
- 2 points for 7,500 – 9,999 sqft irrigated to FGBC standards
- 3 points for 5,000 – 7,499 sqft irrigated to FGBC standards
- 4 points for 2,500 – 4,999 sqft irrigated to FGBC standards
- 5 points for 1 – 2,499 sqft irrigated to FGBC standards

To receive points for Installed Irrigation, each system must have the following features:

**Separate zones for turf and landscape beds – multi program controller:** In addition to grouping plants with similar maintenance requirements together, it is important to design the irrigation system to deliver the appropriate amount of water for each plant type. It is recommended that the irrigation systems be calibrated to supply less than ¾” of water per zone, per application. Even during the summer, turf areas—which generally require the most water of all landscape features—will not benefit from more than ¾” of water per application. Applying more than ¾” will result in excess water being lost to evaporation, runoff, or percolation through the soil. Over-watering turf also allows weeds such as dollarweed to become established. Other plants can suffer from root rot. Many landscape plants do not require as much water as turf, and their zone can be set for less than ¾” of water per application. An easy way to determine this is to place small containers (i.e. paper cups) throughout each zone and take note of the time it takes for the cups to accumulate the desired amount of water. Then, set your irrigation controller to operate for no longer than that time in each zone. **The controller must be a multiple program controller that can divide the landscape into zones and operate the different zones for different lengths of time.** In this way, high water use zones that require a large amount of water from rotors (application rates of 0.1 – 0.75 inches of water per hour) or spray heads (application rates of 1.0 – 1.5 inches per hour) can be separated from more drought-tolerant plants that require little or no water. In contrast, a single
program controller is often set for the watering requirements of the least drought-tolerant landscape feature, and the rest of the landscape ends up being over-watered. **The controller must have a battery backup to retain system settings and include a functioning rain sensor in an operable location as required by Florida Statute 373.62.**

High volume irrigation does not exceed 60% of the landscape area: Landscape zones requiring a high volume of water supplied by rotors or spray heads cannot exceed 60% of the landscape area.

Head to head coverage for rotor/spray heads: Many irrigation system designs incorporate spray/rotor head pattern overlap, to ensure complete coverage. In order to minimize over watering in the overlap zone, one emitter’s coverage pattern should not extend past adjacent emitters.

Irrigation heads have matched precipitation rates: Matching precipitation rates allows for sprinklers with various arcs and radii to be included in the same zone and each deliver the same target application rate.

Micro-irrigation only in landscape beds and narrow areas: Landscape features other than turf can be watered much more efficiently by using micro-irrigation rather than sprayers and rotors. **Equipment such as drip emitters, bubblers, micro-spray jets, and soaker hoses deliver water precisely where it is needed.** In contrast, much of the water emitted from sprayers and rotors is blown away by wind or evaporates. In addition, narrow areas that are 4 ft. wide or less are difficult to irrigate effectively with rotor or spray heads, for most patterns are greater than 4 feet in diameter. Micro-irrigation is a better choice for irrigating narrow areas.

Minimize overspray on impermeable surfaces: The irrigation system must be visually inspected while operating to ensure that no irrigation water is directed to areas not intended to be watered (driveway, street, etc.). The system must also not direct water onto walls of the house.

In poor drainage (low) areas, heads are installed with check valves: Equipment with check valves must be used in some areas to prevent low pressure drainage. Low pressure drainage is a situation in which the system drains to the lowest head and resultant water flows onto or over adjacent property, non-irrigated areas, walks, roadways, or structures. Not only could this be a localized wet spot problem, but it also wastes the water that is in the zone piping each time the system runs. To help prevent this situation, heads with check valves need to be installed if there is over an 18 inch difference in elevation or if there is undulating terrain.
Provide owner and FGBC with plan and instructions: The eventual homeowner should receive a copy of as built plans, operating manuals, and warranties. The package should also include a general irrigation schedule with recommendations and instructions on modifying the schedule for local climatic and growing conditions.

**Required submittal:** Visual inspection by Certifying Agent. Irrigation system design drawing as installed and irrigation schedule.

**Resources:** [http://www.floridawaterstar.com/residential.html](http://www.floridawaterstar.com/residential.html)
CATEGORY 3: Lot Choice

LC1.1 HOUSE BUILT WITHIN DESIGNATED FGBC GREEN DEVELOPMENT  1-6 Pts.

Points: Receive 1 point if the home is built within a certified FGBC Green Land Development. Receive 1 bonus point for each 20% the land development scores beyond the minimum compliance of the FGBC Land Development Standard. A maximum of 6 points is available for this item.
Suggested submittal: Name of development.
Resources: A database of certified FGBC Land Developments can be found at: www.floridagreenbuilding.org.

LC1.2 HOME WITHIN A CERTIFIED GREEN LOCAL GOVERNMENT  4 Pts.

Points: Receive 4 points if the home is built within a certified FGBC Green Local Government.
Suggested submittal: Name of Local Government.
Resources: A database of certified FGBC Land Developments can be found at: www.floridagreenbuilding.org.

LC1.3 BUILD ON AN INFILL SITE  2 Pts.

Points: If the lot is on a street where the majority of adjacent sites have homes that are ten or more years old, the site shall qualify as an infill site and two points may be scored.
Suggested submittal: None.
Resources: N/A

LC1.4 SITE WITHIN 1/2 MILE OF EXISTING INFRASTRUCTURE  2 Pts.

Points: If there is existing water and sewer within 1/2 mile from the house, FGBC will award 2 points.
Suggested submittal: None.
Resources: N/A

LC1.5 SITE WITHIN 1/4 MILE WALK TO MASS TRANSIT  2 Pts.

Points: If there is a safe (sidewalk or other pedestrian path) to a city bus stop or other mass transit station and the mass transit station is within ¼ mile from the house, FGBC will award 2 points.
Suggested submittal: None.
Resources: N/A
LC1.6 SITE WITHIN 1/2 MILE OF PUBLIC OPEN/GREEN SPACE 2 Pts.

**Points:** If there is a Public Park and/or recreational land within 1/2 mile from the house, FGBC will award 2 points.

**Suggested submittal:** None.

**Resources:** N/A

LC1.7 SITE WITHIN 1/4 MILE OF BASIC COMMUNITY RESOURCES 2 Pts.

**Points:** FGBC will award 2 points if there is walkable access to seven (within ¼ mile) or eleven (within ½ mile) basic community resources. Basic community resources are defined as:

<table>
<thead>
<tr>
<th>Arts and entertainment center</th>
<th>Pharmacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank</td>
<td>Police station</td>
</tr>
<tr>
<td>Community or civic center</td>
<td>Post office</td>
</tr>
<tr>
<td>Convenience store</td>
<td>Place of worship</td>
</tr>
<tr>
<td>Daycare center</td>
<td>Restaurant</td>
</tr>
<tr>
<td>Fire station</td>
<td>School</td>
</tr>
<tr>
<td>Fitness center or gym</td>
<td>Supermarket</td>
</tr>
<tr>
<td>Laundry or dry cleaner</td>
<td>Other Neighborhood-serving retail</td>
</tr>
<tr>
<td>Library</td>
<td>Other office building or major employment center</td>
</tr>
<tr>
<td>Medical or dental office</td>
<td></td>
</tr>
</tbody>
</table>

**Suggested submittal:** None.

**Resources:** N/A

LC1.8 SITE LOCATED IN SMALL-LOT CLUSTER DEVELOPMENT 2 Pts.

**Points:** If the lot is located in a development that has clustered the houses into lots that are 5000 square feet or less and has preserved for the common good over 50% of the total acreage, score 2 points.

**Suggested submittal:** None.

**Resources:** N/A

LC1.9 BROWNFIELD SITE 2 Pts.

Brownfield is defined by the EPA as abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination.

**Points:** If the lot has ever been designated a brownfield site by a state or federal agency then score two points.

**Suggested submittal:** Documentation of brownfield status.

**Resources:** N/A
CATEGORY 4: Site

All credits in this category deal only with buildable land. Only land that is legally allowed to be disturbed may count towards the credit points.

S1 Native Tree and Plant Preservation

S1.1 MAXIMIZE TREE SURVIVABILITY 2 Pts.

Several studies have shown that trees can increase the value of a home anywhere from 5% - 20%. Trees can also offer energy savings by providing considerable shade. In order to protect this investment, it is always more economical to prevent tree damage than to remedy it. Trees are often damaged during home construction by accidental cutting, mechanical equipment, grade changes, excavation, and chemical substances.

Points: Two points will be awarded if all of the following techniques are employed to at least 12 inches of tree caliber measured at chest height (i.e. four 3-inch trees, two 6-inch trees, etc.) per acre.

1) Provide a survey of the property that identifies all trees 2 inches in diameter at greater than breast height (4.5 feet) and all native plant communities. Identify areas to be preserved and develop a strategy for avoiding mechanical and chemical damage, grade changes, trenching, and compaction.

2) To avoid accidental cutting of trees, clearly mark the trees to be cut with paint at eye level, and also on the ground to make it easier to see if unmarked trees have been cut. Also, make sure the cut trees will not damage other trees when they fall.

3) Construct barricades around trees or groups of trees to be preserved at their drip line to prevent mechanical damage. Mechanical damage can be caused by heavy equipment, carelessness with tools, soil compaction, and improper cutting of roots. Make sure the barriers are tall enough to be seen by equipment operators. Use hand tools when removing brush and weeds around a tree.

4) Plan for tree survival when making grade changes, for filling can damage trees. Fill may raise the water table or cause surface drainage to puddle over the roots. A light fill of porous or gravel material up to 6 inches in depth will usually do little harm, however heavier or more impervious fills such as clay and marl will harm the tree. It is often advantageous to install an aeration system before the fill is added, to maintain a normal balance of air and water around the roots. Consult with a tree expert or the Florida Division of Forestry for more information regarding construction of an aeration system which generally includes installing tile for drainage and aeration, constructing a drywell, and filling.

5) Minimize damage to roots during excavation:
   a. Cut roots cleanly and retrim after excavation.
   b. Treat cuts in larger roots (1/4 inch and up) with wound dressing.
   c. Refill the excavation as soon as possible or construct retaining walls.
d. Avoid leaving air pockets when refilling.
e. Mix peat moss or other soil amendment with fill soil to promote new growth.
f. Top-prune to aid in maintaining tree vigor.
g. If cables or piping must be laid through the tree root zone, it is better to tunnel underneath it rather than trench through it.

6) Keep the soil within the drip line undisturbed and free from building materials and harmful runoffs to avoid chemical damage. Do not use areas near trees as dump or storage areas. Do not use herbicides or pesticides, or fertilizers containing herbicides, near any of the vegetation you are trying to preserve.

Suggested submittal: Tree/native plant identification survey and photo or other documentation of each technique.

S1.2 MINIMIZE SOIL COMPACTION 1-2 Pts.

Points: Two points are available if all construction equipment is restricted from driving on site during construction except for area of future driveway. This will allow soil to remain uncompacted allowing for better percolation and plant and turf growth. One point is available if all construction equipment is restricted from driving on site during construction except for area of <25% of site. This will allow soil to remain uncompacted allowing for better percolation and plant and turf growth.

Suggested submittal: Photos of barricaded site.
Resources: N/A

S1.3 REPLANT OR DONATE REMOVED VEGETATION 2 Pts.

Points: If native vegetation must be removed, receive 2 points if it is taken offsite (i.e. to a plant nursery) and then after construction brought back and planted onsite. Alternatively, transplant the removed material to another site. Qualification for these points requires either transplantation of 10% of the site vegetation or at least 12 inches of tree caliber measured at chest height (i.e. four 3-inch trees, two 6-inch trees, etc.).

Suggested submittal: Name and location or nursery or alternate site.
Resources: N/A

S1.4 PRESERVE OR CREATE WILDLIFE HABITAT / SHELTER 1-9 Pts.

Preserve existing native plant communities in their undisturbed state or if there is no existing native plant community, then create one that will survive on natural rainfall, soil nutrients, and pest control.

Points: One point is awarded for each contiguous 10% of property containing an un-irrigated native plant community.
Suggested submittal: Photo or description of effort.
Resources: For more information see A Guide to Environmentally Landscaping: Florida Yards and Neighborhoods Handbook (page 21) or visit http://edis.ifas.ufl.edu/EL001.

S2 On-site Use of Cleared Materials

S2.1 MILL CLEARED TREES 2 Pts.

Points: FGBC awards two points if all removed trees greater than 4 inches in diameter that will not be replanted or donated are milled into lumber.

Suggested submittal: Describe number and size of trees that were milled and describe lumber produced.

Resources: N/A

S2.2 REUSE CLEARED MATERIAL FOR MULCH/LANDSCAPE 1-2 Pts.

Reuse all removed stumps, limbs greater than 2 inches in diameter, and trees (that will not be replanted or donated) in the landscape. Examples include grinding for mulch, use as landscape decorations and fences, etc.

Points: One point is available if the mulch is both cleared and reused on site or if used from another site. Two points are awarded if the home uses mulch from both the cleared site and from off site. No credit is given for reusing Brazilian pepper or Australian pines. Palms should not be ground for mulch.

Suggested submittal: Describe reuse strategy and amount of material reused.

Resources: N/A

S3 Erosion Control / Topsoil Preservation

Trees and plants depend upon nutrients in the soil. Often when a new home is constructed the entire lot is cleared and then the topsoil is washed away by rain and blown away by wind. Not only is it a valuable resource by leaving it on the site, but it may end up clogging drainage areas and mucking water bodies. Hang on to the soil! More details and examples of criteria in this section can be found at http://www.broward.org/environment/app_water_11.pdf.

Soil costs $5 to $10/yard. Left unprotected, a significant amount of soil can be washed away from a typical ¼ acre lot with a downpour. This could be worse over an extended period or on lots with slopes.
S3.1 DEVELOP AN EROSION CONTROL SITE PLAN  

**Points:** Two points are available if applicant submits documentation of a site plan for erosion and sedimentation control to be implemented before the site is cleared or graded including areas where topsoil will be removed and contours of slopes will be cleared. Plan should also include location and type of erosion control measures, stormwater and sediment management systems, and a vegetative plan for temporary and permanent stabilization.  

**Required submittal:** Detailed plan.  

**Resources:** N/A

S3.2 STABILIZE DISTURBED SOIL  

**Point:** One point is available for documenting the use of Best Management Practices (BMPs) for soil stabilization, such as silt screens, hydro mulch, non-floatable conventional or alternative mulch, groundcovers, rye grass or millet, and retaining walls.  

**Suggested submittal:** Photo or other documentation of BMPs employed.  

**Resources:** N/A

S3.3 STAGE DISTURBANCE  

When a lot is cleared or extensive landscaping is to be done, staging the work so that only part of the site is disturbed at one time allows existing plants to retain some of the soil that may be lost from erosion during the project construction period.

Create a temporary physical barricade around the section of the site to be protected. If the undisturbed area needs to be disturbed, complete the work on the existing disturbed section and then landscape that section before removing the barricade.

**Points:** To qualify for the 2 points, no more than 60% of the site or no more than ¼ acres (whichever is less) can be disturbed at one time. Existing vegetation must remain in tact on the undisturbed part until at least 40% of the site is landscaped.  

**Suggested submittal:** Photo or other documentation of staging.  

**Resources:** N/A

S3.4 CONTROL SEDIMENT RUNOFF DURING CONSTRUCTION  

**Point:** One point is available for documenting the use of Best Management Practices to control sediment runoff/transport during construction including using a temporary gravel construction entrance/exit, straw bale barriers, silt fences, sediment traps, etc.  

**Suggested submittal:** Photo or other documentation of BMPs employed.  

**Resources:** N/A
S3.5  **SAVE AND REUSE ALL REMOVED TOPSOIL**  

**Point:** One point is available for saving and reusing any removed topsoil as the final top layer on site following construction. The soil must be covered and protected from weather until used. Organic soils lose their nutrients if left exposed to the elements.  

**Suggested submittal:** Photo of covered soil.  

**Resources:** N/A

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S4  **Drainage / Retention**

More details and examples of criteria in this section can be found at:  

S4.1 **ONSITE DESIGNATED RETENTION AREA**  

**Points:** Two points are awarded if a designated retention area(s) is **constructed to retain the first 1 inch of rainfall onsite.** This could be a single retention area or system of berms/swales. 

**Suggested submittal:** Photo or plan layout of strategy.  

**Resources:** N/A

S4.2 **DIRECT FILTERED ROOFTOP RUNOFF TO PLANTED AREA**  

Flow must be disbursed at least 3 feet from the building using an infiltration system that spreads runoff over a large area and eliminates focused flow that might cause erosion.  

**Points:** Two points are available for this criterion.  

**Suggested submittal:** Photo or plan layout of strategy.  

**Resources:** N/A

S4.3 **MAINTAIN PERVIOUS SURFACE AREA**  

**Points:** For each point received, 20% of the site should be 100% pervious. For semi-pervious sections use the following equation to determine equivalent pervious area:

\[
(\% \text{ perviousness of material}/100) \times \text{(coverage area)} = \text{equivalent pervious area}
\]

Add the coverage areas of 100% pervious materials and the equivalent area of the semi-pervious materials and divide by the total lot area. Then, divide this result by 0.2 to obtain the eligible points.
Example (All units are ft unless specified):

1) The 100% pervious area would be:
   \[= (70 \times 100) – (40 \times 50) – 45\text{ft}^2 – (20 \times 30)\]
   \[= 7000\text{ft}^2 – 2000\text{ft}^2 – 45\text{ft}^2 – 600\text{ft}^2 = 4355\text{ft}^2\]

2) If the driveway is 30% pervious then we add:
   \[0.30 \times 600\text{ft}^2 = 180\text{ft}^2\]
   \[4355\text{ft}^2 + 180\text{ft}^2 = 4535\text{ft}^2\]

3) Total available points are calculated as follows:
   \[\frac{\text{Total equivalent pervious area}}{\text{total area}} = \frac{4535\text{ft}^2}{7000\text{ft}^2} = 0.648\]
   \[0.648 / 0.2 = 3.24 = 3 \text{ available points} \]
   (Always truncate to the lower whole number)

*Suggested submittal:* Submit similar diagram and calculation.

CATEGORY 5: Health

H1 Combustion

This section primarily deals with techniques used to prevent dangerous products of combustion from entering into the conditioned environment of the home. Combustion takes place in gas appliances as well as automobiles, which are often running in the garage of the home.

H1.1 DETACHED GARAGE, CARPORT, OR NO GARAGE 3 Pts.

Often times, toxic fumes from automobiles and chemicals stored in the garage can be transferred into the living space of a home when it has an attached garage.

Points: FGBC awards 3 points if the home has a detached garage that does not share any common walls or enclosed passageways with the primary living space, or has a carport, or no garage at all.
Suggested submittal: Photo or floor plan showing garage / carport / no garage.
Resource: N/A

H1.2 ATTACHED GARAGE WITH AIR BARRIER BETWEEN GARAGE AND LIVING SPACE (INCLUDING ATTIC) 2 Pts.

An air barrier must be created to restrict air exchange between the garage and conditioned living space. This can be accomplished by caulking and sealing of the top and bottom wall plates of the shared garage-living space walls, constructing an airtight partition between the garage attic space and the attic space over the living area, and weather stripping the garage door. An automatic door closer should also be added for the door that connects the living space to the garage. Sealing of walls and attic partition can be accomplished with open-cell expanding foam insulation.

Points: FGBC awards 2 points if penetrations between a home and its attached garage are sealed properly.
Suggested submittal: Photos or plan detail.
Resource: N/A

H1.3 ATTACHED GARAGE – EXHAUST FAN ON MOTION SENSOR AND TIMER 1 Pt.

Points: One point is available for installing a fan capable of fully exchanging the garage air with the outside air in 15 minutes or less. A typical 20ft x 20ft x 8ft garage would require a 220 cfm fan. The fan must run for a sufficient amount of time to fully exchange the garage air every four hours on a timer or when activated via a motion sensor, to exhaust carbon monoxide fumes from automobiles. Fan must exhaust to the outside.
Suggested submittal: Photos, cut sheet of fan, or plan detail.
Resources: N/A

H1.4 DIRECT VENT, SEALED COMBUSTION FIREPLACE WITH ELECTRONIC IGNITION, FACTORY BUILT WOOD BURNING FIREPLACE, OR NO FIREPLACE PRESENT 1 Pt.

Points: To achieve the available point, a direct vent sealed combustion fireplace with dedicated outside air intake must be used and be properly vented to the outside. The fireplace should also be equipped with electronic ignition. This credit is also available for factory built wood burning fireplaces and for homes that do not have a fireplace.
Suggested submittal: Photo, plan detail, or cut sheet of fireplace.
Resources: N/A

H1.5 NO UNSEALED SPACE OR WATER HEATING EQUIPMENT LOCATED INSIDE THE CONDITIONED AREA – OR ELECTRIC 1-2 Pts.

Sealed combustion appliances minimize the threat of harmful combustion by-products from entering the home due to the fact that they contain their own air supply directly vented into the appliance for combustion and a sealed vent for exhausting the combustion gases to the exterior of the home.

If a sealed combustion or electric furnace or water heater is not used, points are also available if any non-sealed equipment is isolated from the conditioned area. Installation of a non-sealed combustion furnace must be located in a sealed combustion closet. Points are not awarded if the furnace is located outside of the conditioned area (such as in the garage), due to negative energy implications. Installation of a non-sealed combustion water heater can either be in a sealed combustion closet, or outside of the conditioned area (such as in a garage). To receive the point for the sealed closet one must:

- Insulate the four walls of the combustion closet.
- Finish the walls and ceiling with drywall.
- Seal all holes and air leakage pathways through the walls, floor, and ceiling that can connect the closet to the rest of the house (plumbing, gas lines, wiring, and bottom plate).
- Install a non-louvered door that is weather-stripped and equipped with a properly adjusted threshold.
- Install two ducts in the closet, extending to the outside or to a ventilated attic or crawlspace, to provide outside air for combustion. Seal the ducts to the ceiling.
- If a return plenum for a furnace is built below the closet, completely seal the plenum including plenum walls, plumbing, and connection of the furnace to the plenum.
- Seal the ceiling around the flue using sheet metal.
- The area must not be depressurized by more than 3 Pa.
Points: One point is available for isolating space heating combustion from the conditioned space, and/or one point is available for isolating water heating combustion from the conditioned space.

Suggested submittal: Cut sheet of furnace, photos or plan detail of closet.

Resources: N/A

H1.6 **CARBON MONOXIDE ALARM** 1 Pt.

Carbon monoxide alarms provide advanced warning to the homeowner of any intrusion of carbon monoxide to the living area of the home before becoming dangerously toxic. Carbon monoxide is a product of the combustion of fuel used for appliances, as well as automobile exhaust. Carbon Monoxide detectors are available at most local hardware stores.

Points: To receive the point, detectors should be installed at the entrance to each sleeping area and, if the home has an attached garage, one on the living area side of garage door entrance to living area within the conditioned space. One detector can be used for adjacent bedrooms. The detectors must be line powered with a battery backup.

Suggested submittal: Photos, electrical plan, or cut sheet.

Resources: N/A

H2 **Moisture Control**

By managing moisture properly the potential for growth of mold, mildew, and dust mites will be reduced. As a result, the quality of the health of the occupants will be improved leading to less respiratory problems, etc. The durability of the home will also improve. Some other important moisture control strategies can be found under Materials – Durability.

H2.1 **DRAINAGE TILE ON AND AROUND TOP OF FOOTING** 1 Pt.

By draining water away from the foundation of the home moisture intrusion will be minimized. The necessity of this criterion depends on soil type in your area and the foundation type of your home. It is most appropriate for basements and crawl spaces located in North Florida.

There are several types of drainage tile that may be used to facilitate this undertaking. The easiest to install and the most readily available is constructed of perforated PVC with a fabric cover. This should be placed around or on top of footing. Crushed stone of approximately 6 in. thick should be installed under the pipe with then more stone being used to cover the pipe after installation. The pipe should then be drained to a retention area away from the home.
Points: One point is available for installing drainage tile on and around top of footing.
Suggested submittal: Photo or plan detail of drainage strategy.
Resources: N/A

H2.2 DRAINAGE BOARD FOR BELOW GRADE WALLS 1 Pt.

Drainage board for below grade walls is not common to Florida. Basements are limited due to the high water table. It is most appropriate for homes located in North Florida. If used, it should be used in conjunction with drain tile. This will allow water to drain down the drain board on top of the drain tile, which will then take the water away from the home.

Points: One point is available for installing drainage board for below grade walls.
Suggested submittal: Photo or plan detail of drainage strategy.
Resources: N/A

H2.3 GRAVEL BED BENEATH SLAB ON GRADE FLOORS 1 Pt.

Installing a gravel bed beneath slab on grade floors will be very beneficial to the reduction of moisture trapped beneath the slab and reduce capillary action of water into the slab. The gravel should be placed under the complete slab including footings. All footings should be dug larger to allow for the gravel placement. It is also recommended that several drain tile pipes (4 inch PVC) be installed under the slab and extend to the exterior of the slab to allow water that has accumulated to drain to the exterior of the slab. The necessity of this criterion depends on soil type in your area.

Point: One point is available for installing a gravel bed beneath slab on grade floors. Gravel should be a minimum of 6 inches deep but preferably 12 inches deep.
Suggested submittal: Photo or plan detail of drainage strategy.
Resources: N/A

H2.4 SEAL SLAB PENETRATIONS 1 Pt.

After the slab has substantially cured, any penetration through the slab such as saw cuts, piping or conduit should be sealed around its perimeter to reduce moisture and pests from entering the home.

Points: One point is awarded for sealing all slab penetrations with an elastomeric or vulkem-type sealer.
Suggested submittal: Photo or plan detail of drainage strategy.
Resources: N/A
H2.5 CAPILLARY BREAK BETWEEN FOUNDATION AND FRAMING 1 Pt.

A capillary break should be installed between a concrete foundation and sill plate for all wood framed exterior walls to prevent moisture from wicking through the foundation into the framing.

**Point:** One point is awarded for installing a complete framed wall width sill gasket, EPDM-type rubber, or other suitable membrane.

**Suggested submittal:** Photo or plan detail of drainage strategy.

**Resources:** N/A

H2.6 CENTRAL DEHUMIDIFICATION SYSTEM 3 Pts.

In addition to controlling humidity and comfort, most central dehumidification equipment also permits the intake of fresh, outside air, thereby improving ventilation in the home. Points are awarded for outside air under the Ventilation section.

**Points:** 3 points are awarded for installation of a central dehumidification system to work in conjunction with the home’s HVAC system. The unit should be professionally installed by a local HVAC contractor.

**Suggested submittal:** Photo or cut sheet of equipment.

**Resources:** N/A

H2.7 NO VAPOR BARRIER ON THE INSIDE OF ASSEMBLIES 1 Pt.

Vapor barrier materials include some foil and some Kraft insulation facing, vinyl wallpaper, and vinyl floor covering. Vapor barriers prevent moisture that has penetrated the exterior of the assembly to pass through the assembly where it can be removed by the home’s air conditioner.

**Points:** Receive one point if no material with a rating of less than 1 perm is used on the inside of any wall, floor, or roof assembly.

**Suggested submittal:** None required – visual inspection by Certifying Agent.

**Resources:** N/A

H3 Source Control

Volatile organic compounds (VOCs), especially formaldehyde, and other chemical substances contained within building materials can be injurious to lung health and can be odorous. The best strategy is to select materials with low to zero quantities of such chemicals to minimize the source of emission. In selecting low-VOC materials, good rules of thumb are to choose water-based products and products with a low odor.

Pet dander, dust mites and other allergens can be of concern for sensitive persons, and persons with asthma. Regular cleaning practices with effective equipment and
the minimization of materials where such contaminants can accumulate can alleviate potential problems.

**H3.1 NO EXPOSED UREA-FORMALDEHYDE PARTICLEBOARD** 1 Pt.

Formaldehyde is commonly used in particleboard because of its preservative and adhesive properties. Because formaldehyde is a type of volatile organic compound (VOC), it is readily emitted into the air. Common replacements for particleboard in cabinets include solid wood, engineered stone, solid-surface and granite. Wire shelving can replace particleboard in closets and other shelving areas.

In addition to avoiding the use of particleboard within the home, projects may choose particleboard made with phenol-formaldehyde resin rather than urea-formaldehyde and/or all raw edges of manufactured wood products that contain urea-formaldehyde can be sealed with a laminate or other suitable sealer.

**Points:** One point is awarded for a home with no urea-formaldehyde particleboard exposed to the conditioned space.
**Suggested submittal:** None – visual inspection by certifying agent.
**Resources:** N/A

**H3.2 ZERO VOC PAINTS, STAINS, AND FINISHES** 2 Pts.

Use of zero VOC paints only pertains to paint used on the interior of the home. Depending on the goals of the project, one may want to select points for recycled content paints listed under the Materials category rather than this healthy paint criterion. **Points are not available for both criteria.**

**Points:** To receive the two points, 100% of all paint, stains, and other finish coatings used in the interior of the home must be certified as having zero VOCs.
**Suggested submittal:** Cut sheet of all finish coatings used.
**Resources:** N/A

**H3.3 LOW VOC PAINTS, STAINS, AND FINISHES** 1 Pt.

Used of low VOC paints only pertains to paint used on the interior of the home. Depending on the goals of the project, one may want to select points for recycled content paints listed under the Materials category rather than this healthy paint criterion. **Points are not available for both criteria.**
**Points:** One point is available if 100% of all paints, stains, and other finish coatings meet the specifications in the following table.

<table>
<thead>
<tr>
<th>Item</th>
<th>VOC Content</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>walls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anticorrosive and antirust</td>
<td>250 g/l</td>
<td>Green Seal Standard GS-03, Anticorrosive Paints, 2nd Edition, January 7th,</td>
</tr>
<tr>
<td>paints</td>
<td></td>
<td>1997</td>
</tr>
<tr>
<td>Clear Wood Finishes</td>
<td>Varnish: 350 g/l Lacquer: 550 g/l</td>
<td></td>
</tr>
<tr>
<td>Floor Coatings</td>
<td>100 g/l</td>
<td></td>
</tr>
<tr>
<td>Sealers</td>
<td>Waterproofing: 250 g/l Sanding 275 g/l All others: 200 g/l</td>
<td>South Coast Air Quality Management District Rule 1113, Architectural Coatings</td>
</tr>
<tr>
<td>Shellacs</td>
<td>Clear: 730 g/l Pigmented: 550 g/l</td>
<td></td>
</tr>
<tr>
<td>Stains</td>
<td>250 g/l</td>
<td></td>
</tr>
</tbody>
</table>

Table adapted from USGBC LEED for Homes® rating system.

**Suggested submittal:** Cut sheets of all finish coatings used.
**Resource:** [http://www.greenseal.org/findaproduct/paints_coatings.cfm](http://www.greenseal.org/findaproduct/paints_coatings.cfm)

### H3.4 LOW VOC SEALANTS AND ADHESIVES 1 Pt.

**Points:** One point is available if 100% of all sealants used are ≤ 250 g/l and adhesives ≤ 70 g/l. If adhesives and sealants do not comply with these numbers but comply with the table located at: [http://www.usgbc.org/ShowFile.aspx?DocumentID=3638](http://www.usgbc.org/ShowFile.aspx?DocumentID=3638) (page 82), then the home also receives the point.

**Suggested submittal:** Cut sheet of all sealants and adhesives used.
**Resources:** [http://www.greenguard.org](http://www.greenguard.org)

### H3.5 MINIMIZE CARPET USE 1 Pt.

Certain types of carpet, carpet pad, tack strips, and carpet glues emit VOCs that can contribute to poor indoor air quality. Carpets also have been found to accumulate various allergens unless frequently vacuumed with high efficiency equipment.

**Points:** One point is awarded if carpet is used on less than 50% of all interior flooring.
Suggested submittal: None – visual inspection by certifying agent.
Resources: A good reference on carpet can be found on Green Seal’s website: http://www.greenseal.org/resources/reports/CGR_carpet.pdf.

H3.6 HEALTHY FLOORING 1 Pt.

Depending on the goals of the project, one may want to select points for Eco-friendly Flooring listed under the Materials category rather than this Healthy Flooring criterion. **Points are not available for both criteria.**

**Points:** One point is available if 100% of all finished flooring complies with the following criteria:

- Carpet and cushion with Carpet and Rug Institute (CRI) green seal of approval ([www.carpet-rug.org/residential-customers/selecting-the-right-carpet-or-rug/green-label.cfm](http://www.carpet-rug.org/residential-customers/selecting-the-right-carpet-or-rug/green-label.cfm)) and low-VOC or no adhesives are used for installation.
- Flooring certified under the Floor Score® program ([www.rfci.com/int_FloorScore.htm](http://www.rfci.com/int_FloorScore.htm))
- Linoleum or cork tile-sheet with water-based adhesive.
- Ceramic tile.
- Hard surface flooring (wood, bamboo, etc) that is mechanically fastened or attached with a water-based adhesive.
- Laminate flooring (wood, cork, etc.) with no urea-formaldehyde and glueless or water-based glue installation.
- Concrete (stamped, stained, etc.)

**Suggested submittal:** Listing of types of flooring, installation methods, and accessories (glues, etc.) used for installation.
**Resources:** N/A

H3.7 HEALTHY INSULATION 1 Pt.

Depending on the goals of the project, one may want to select points for Eco-friendly insulation listed under the Materials category rather than this Healthy Insulation criterion. **Points are not available for both criteria.**

**Points:** One point is available if 100% of all insulation complies with following criteria:

- Water sprayed foam insulation
- Formaldehyde-free fiberglass insulation
- Expanded Polystyrene (EPS)
- GREENGUARD certified insulation
- Cotton insulation
Suggested submittal: Listing of types of insulation used.
Resources: http://www.greenguard.org

H3.8  PROTECT DUCTS DURING CONSTRUCTION  1 Pt.

Points: One point is awarded if all duct register boxes and other openings are sealed off with cardboard, rigid ductboard or other suitable method directly following mechanical rough in. Ducts must remain sealed until HVAC system start-up. If interior finish work (painting, etc.) continues after HVAC start up, ducts must be re-sealed until work is complete.
Suggested submittal: Photo.
Resources: N/A

H3.9  INTEGRATED PEST MANAGEMENT  3 Pts.

Integrated pest management (IPM) is a process for achieving long term, environmentally sound pest suppression through the use of a wide variety of technological and management practices. Control strategies in an IPM program extend beyond the application of pesticides to include structural and procedural modifications that reduce the food, water, harborage, and access used by pests. IPM can reduce the use of chemicals and provide economical and effective pest suppression. IPM does not involve the complete elimination of the use of pesticides, nor does it involve solely substituting “good” pesticides for “bad” pesticides. IPM attempts to achieve a balance of both chemical and non-chemical methods to control pest problems. Integrated pest management (IPM) can reduce or eliminate the need for chemicals to control pests inside and outside of the house. IPM may benefit both the environment and the health of the occupants, especially children.

The builder and the pest management company work together to develop and implement a plan. Details of the plan must be submitted along with the Green Home application. The plan must address how the IPM strategy considers the following important aspects of IPM:
• Monitoring and prevention of pest populations.
• Application of pesticides only “as needed” after prevention and physical controls have been implemented.
• Selecting the least hazardous pesticides for control of targeted pests.
• Precision targeting of pesticides to areas not contacted or accessible to the occupants.

To properly implement IPM, there are maintenance issues that need to be undertaken by the homeowner after construction, therefore an IPM maintenance plan should be developed and included in a homeowner’s manual that is presented to the homeowner.

Points: Because IPM methods and techniques vary according to location and building details, to receive 3 points the applicant must consult with a pest control professional that is skilled in IPM to develop and implement a plan that addresses the four aspects of IPM described above.

Required submittal: IPM plan.


H4 Cleanability

A home that is easily cleaned is not only less maintenance for the homeowner, but the indoor air quality can be improved due to less accumulation of allergens and pollutants. This section contains suggestions on use of effective cleaning equipment, along with design issues that will improve the effectiveness of cleaning.

H4.1 CENTRAL VACUUM SYSTEM 1-2 Pts.

A central vacuum system will improve the air quality of the home by providing effective removal of dust, dirt, and pollen. A regular vacuum cleaner releases some portion of the dust and other allergens it collects back into the air, whereas a central vacuum system deposits 100 percent of vacuumed substances into the central canister (usually located outside of the conditioned space in the garage). In addition, a central vacuum system is more powerful than a traditional vacuum and due to their ease of use, tends to be used more often than uprights.

Points: One point is available for system rough-in. Two points are available for the installation of a central vacuum system with the vent from the dust canister exhausting to the outside of the conditioned space. Alternatively, the points can be obtained if the unit vents inside the home through a HEPA filter.
**Suggested submittal:** Photo or cut sheet of system.
**Resources:** N/A

**H4.2 GROUT LINES LESS THEN 1/4”**  
1 Pt.

Grout tends to harbor bacteria and other indoor air pollutants due to its porosity.

**Points:** One point is awarded if all grout lines between tiles must be less than 1/4 inches wide.
**Suggested submittal:** Photo.
**Resources:** N/A

**H4.3 USEABLE ENTRY AREA**  
1 Pt.

Dust and pollen tracked indoors on shoes and outerwear is a major source of allergen. The best strategy is to prevent it from entering the home, or keep it contained to a particular area that can be cleaned frequently.

**Points:** One point is awarded for providing a well defined area in the garage and/or main entry where shoes and outerwear can be comfortable removed and stored. Provisions should include a track off mat, a bench, and shoe and outerwear storage. Alternately, the shoe and outerwear storage can be located in a nearby closet.
**Suggested submittal:** Photo or plan detail.
**Resources:** N/A

**H4.4 LOW DUST COLLECTING WINDOW COVERINGS**  
1 Pt.

**Points:** One point is available for installing only low dust collecting window coverings, or window coverings that are easily cleanable. Do not use horizontal mini-blinds as they not only accumulate dust, but are difficult to clean.
**Suggested submittal:** Photo or list of window coverings.
**Resources:** N/A

**H5 Universal Design**

Universal design/independent living is a concept referring to the design of different products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. The intent of the universal design concept is to simplify life for everyone by making products, communications, and the built environment usable by more people at little or no extra cost. The universal design concept targets all people of all ages, sizes, and abilities. Universally planning the home will create a safer space for all users. Many universal design features are no-cost options. They may only require different product choices or design decisions. Some general guidelines on features to include are listed below.
H5.1 BARRIER FREE ENTRANCE 1 Pt.

Points: One point is awarded if at least one entrance to the home conforms to the following specifications:

- Curb cut from the street level to sidewalk
- Level walks
- Wide doorway – 36 inch entry from exterior
- Covered stoop
- Front door package shelf outside
- ½ inch maximum vertical edge at threshold

Suggested submittal: Photos or detailed plans.

Resources: N/A

H5.2 UNIVERSALLY DESIGNED LIVING AREA 1-3 Pts.

Points: A total of three points are possible for this criterion. One point is available if at least one bathroom on the first floor conforms to the following specifications:

- Ample clear floor space (5 x 5 foot turning radius) to ensure maneuverability at lavatories, toilets, and tubs/showers
- The bathroom walls must be reinforced for grab bars which are installed at commode, tub, and shower (according to state building code height and size specifications).
- 32 inch minimum door width; 36 inches preferred
- 24 inch space on latch side of doors
- Light switches 38 inches above the floor
- Lever handles on doors or doors without latches
- Rocker or touch switches
- Include at least one of the following options
  - Standard tub with a fold-up seat
  - Tub with a transfer seat
  - Whirlpool tub
  - 3 x 3 foot transfer shower
  - 5 x 5 foot roll-in shower

Two points are available if the bathroom specs are met and at least one bedroom on the first floor must conform to the following specifications:

- 32 inch minimum door width; 36 inches preferred
- 24 inch space on latch side of doors
- Light switches 38 inches above the floor
- Electrical outlets 18 inches above the floor
- Lever handles on doors or doors without latches
• Rocker or touch switches

Three points are available if the bathroom and bedroom specs are met and the entire first floor living space conforms to the following specifications:

• 32 inch minimum door width; 36 inches preferred
• 24 inch space on latch side of doors
• 32 inch wide circulation path
• 48 inch clearance in hallway
• 5 x 5 foot turning radius in activity areas
• Light switches 38 inches above the floor
• Electrical outlets 18 inches above the floor
• Lever handles on doors or doors without latches
• Rocker or touch switches

Suggested submittal: Photos and detailed plans.
Resources: N/A

H6 Ventilation

New homes are being constructed “tighter” than ever before. This can be beneficial in terms of energy efficiency, for less exchange occurs between the conditioned air inside the home and unconditioned air outside of the home. From a health aspect however, tighter homes do not allow enough air exchange to provide adequate ventilation and removal of various indoor air pollutants such as VOC’s, allergens, etc. A home must be designed and constructed to not only permit enough air exchange, but in addition, the exchange must take place in a controlled fashion, either through mechanical or natural means. For health and durability concerns, it is imperative that air entering the home should travel through a desired, predefined pathway. This will ensure that the air remains clean, and depending on the strategy, often be conditioned for temperature and humidity concerns.

H6.1 CONTROLLED MECHANICAL VENTILATION 4 Pts.

The most effective way to ensure that enough air exchange takes place within a home is to institute a controlled, mechanical ventilation strategy. Positive ventilation is preferable over whole house exhaust in a humid climate, for it causes the house to be under positive pressure with respect to the outdoors, minimizing the uncontrolled intrusion of outside air.

At a minimum, such a system must contain a fresh air duct to the outside of the home with a backdraft damper that also allows for full shut off in the event of unfavorable outside conditions (forest fire, etc.). Alternately, delivery of the outside air can be controlled by the home’s HVAC system, by another device such as an energy recovery ventilator, or a central dehumidification system. It is strongly recommended that the outside air be filtered before entering the duct. Bathroom
exhaust fans and kitchen range hoods are considered temporary exhaust devices rather than continuous.

**Points**: To receive the 4 points, a mechanical ventilation strategy must be installed that positively pressurizes the conditioned area of the home with respect to the outdoors while the home’s air handler is running and any continuous forced exhaust systems are running.

**Required submittal**: Schematic or plan detail of system.

**Resources**: N/A

**H6.2 RADON/SOIL GAS VENT SYSTEM INSTALLED**

**Points**: One point is awarded if a radon/soil gas vent system is installed in the home. It is recommended that the installation be performed by licensed plumber.

**Slab on grade**: The least expensive way of venting for radon gases under a slab on grade would be to install a series of passive vent stacks (2 – 3 per home) that, in the event radon gas is present, will allow any trapped gas to vent thru the path of least resistance, using 3” PVC piping venting thru the roof. This is accomplished by installing the pipes prior to slab pour, in a dry well made of crushed stone. The end of the pipe must be capped with a well point or screen then buried in the stone. PVC should extend vertically above slab level and be temporarily capped to prevent being plugged by construction debris. Once home has been framed and is in the rough plumbing stage, the pipe should be extended thru the roof and finished in the same manner as a plumbing vent stack.

**Slab with stemwalls**: See slab on grade method above

**Foundation and Basement or Crawl space**: Can be accomplished in the same manner as slab on grade but insuring that pipe still extends completely thru roof. Basements and crawl spaces should also be ventilated in the sidewalls using windows, foundation vents, or some type of mechanical ventilation system.

**Suggested submittal**: Specs of system installed.

**Resources**: N/A

**H6.3 FLOOR DRAINS SEALED**

**Points**: FGBC awards one point for insuring the sealing of all floor drains (tub, shower, etc.) with any non-asphalt based or equally flexible moisture resistant sealer.

**Suggested submittal**: Photo and cut sheet of sealing product used.

**Resources**: N/A
H6.4 ENERGY STAR® BATHROOM EXHAUST FANS
WITH TIMER OR HUMIDISTAT 1 Pt.

In addition to utilizing efficient fans, advanced controls are important for often times fans are not left on long enough to remove sufficient moisture, and other times fans are inadvertently left on for long periods of time due to their quiet operation.

**Points:** FGBC awards 1 point for the installation of high efficiency, low noise bathroom exhaust fans with timers or humidistats in each bathroom throughout the home. Fans must vent to the exterior and must move 1 cfm of air per 0.30 Watts (e.g., a 50 cfm fan must use less than 15 Watts, a 70 cfm fan must use less than 21 Watts) and be HVI certified to produce less than 1.0 sones.  
**Suggested submittal:** Cut sheet of fan and control.  

H6.5 KITCHEN RANGE HOOD VENTED TO EXTERIOR 1 Pt.

**Points:** FGBC will award 1 point to a home equipped with a range hood vented to the exterior of the home. Non-vented or ductless range hoods are not eligible for the point. Hood ducting must be of building code-approved materials and completely sealed to prevent leakage. Exterior of vent must also contain building code approved termination cover. FGBC recommends use of a quiet energy efficient model, but does not require it.  
**Suggested submittal:** Cut sheet of hood.  
**Resources:** N/A

H6.6 LAUNDRY ROOMS INSIDE CONDITIONED SPACES MUST HAVE WINDOW OR OTHER MAKE-UP AIR SOURCE 1 Pt.

When a clothes dryer is running it pulls a great quantity of air from the interior of the home. The purpose of this criterion is to maintain equalized air pressure in the laundry room when dryer is running even when the laundry room door is closed. If the laundry room is separated from the main portion of the home by an insulated wall and has no ducted supply of conditioned air, it is considered outside of the conditioned space and can receive points in the Energy category.

**Points:** FGBC will award 1 point for a home with an inside laundry room that contains an operable window or other make-up air source. The make-up air source can be any of the following: window, through the wall vent or jump duct from adjoining room in home, or pressure activated fan to bring in air as pressure drops in room when dryer is activated.  
**Suggested submittal:** Plan detail of strategy.  
**Resources:** N/A
H6.7  WHOLE HOUSE FILTRATION          3 Pts.

Points: FGBC will award 3 points for the use of a high efficiency whole house filtration system. To qualify, the system must be greater than 95% efficient at removing pm 0.025 (particulate matter greater than 0.025 microns in diameter). The system must have at least one dedicated intake from the interior of the home, and can supply filtered air through a dedicated supply vent, or utilize the HVAC supply system. The system should have its own fan, and not rely on the fan in the home’s HVAC system.

Suggested submittal: Cut sheet of system.
Resources: N/A

H6.8  EFFICIENT HVAC FILTER          1-2 Pts.

Certain 1” pleated media filters qualify for this credit. Pleated media filters greater than 1” are available, however can lead to excessive pressure drop across the filter. Such filters are also more expensive and more difficult to find. Contact a local HVAC contractor for recommendations. Pleated media filters are available at most local home improvement stores, and have a longer life than standard HVAC filters.

Points: FGBC will award 1 point for a filter with at least a minimum efficiency reporting value (MERV) of 8 and 2 points for a filter with at least a MERV 10. If the home contains more than 1 HVAC system, a qualifying filter must be installed on each unit. Filters must be maintained as per manufacturer’s specifications. Passive electrostatic filters may not be used.

Suggested submittal: Cut sheet of filter.
Resources: N/A

H6.9  HVAC FILTER EASILY ACCESSIBLE          1 Pt.

HVAC filter maintenance is important to not only maintain the equipment itself, but also for maintaining a healthy living environment.

Points: FGBC awards 1 point if the HVAC filter is installed in a location easily accessible by the homeowner. The homeowner must be able to change the HVAC filter without the use of any tools, or ladders.

Suggested submittal: None – visual inspection by Certifying Agent.
Resources: N/A

H6.10  INSTALL SCREENS ON ALL WINDOWS AND DOORS 1 Pt.

Points: FGBC will award 1 point to a home that contains screens for all windows and doors, excluding the front door, to allow for adequate passive ventilation as needed. A screen enclosure surrounding a pool will suffice for windows and doors contained in this space.
H6.11 NO AIR HANDLER / RETURN DUCTS IN GARAGE 3 Pts.

Keeping a home’s air handler and return ducts out of a garage alleviates potential for fumes and other contaminants to be pulled into the air conditioning system via leaks.

Points: FGBC awards 3 points if no air handlers or return ducts are in a garage. A sealed and insulated closet may be built around equipment if it must be in the garage. The sealed closet must conform to the following specifications:

- Insulate the four walls of the closet.
- Finish the walls and ceiling with drywall.
- Seal all holes and air leakage pathways through the walls, floor, and ceiling that can connect the closet to the garage (plumbing, gas lines, wiring, and bottom plate).
- Install a non-louvered door that is weather-stripped and equipped with a properly adjusted threshold.
- Seal the ducts to the ceiling.
- The closet must not be depressurized by more than 3 Pa with respect to the garage.

Suggested submittal: None required – visual inspection by Certifying Agent.

Resources: N/A

H6.12 WRITTEN PLAN FOR THE LOCATION OF EXHAUST AND INTAKE VENTS 1 Pt.

Points: FGBC will award 1 point if all exhaust and intake vents are located a minimum of 10 feet from each other as to not cross contaminate the air being moved. It is also important that all intake vents be as far from the garage, dryer vent, and air conditioning condenser units as possible.

Suggested submittal: Plan or hand drawn location of all exhausts and intakes.

Resources: N/A

H6.13 MANUAL D DUCT DESIGN 1 Pt.

Points: FGBC awards 1 point for correctly sizing and laying out the duct system using ACCA Manual D to deliver the proper room by room cfm as calculated by ACCA Manual J.

Required submittal: Calculations and layout plan for entire duct system.

Resources: N/A
CATEGORY 6: Materials

The criteria in this section give examples on the use of resource efficient materials and techniques. Such materials include materials with rapidly renewable content, materials with recycled content, materials that are easily recyclable, and materials/techniques that produce less waste when implemented. Also included are examples to improve the durability of the structure.

M1 Components

M1.1 RECYCLED CONTENT ROOF MATERIAL 1 Pt.

Points: To receive the one point, roofing must be made of 100% recycled rubber and plastic or 100% recycled polymer and rubber or 100% recycled wood and plastic. Roofing may also be metal with 70% recycled content or fiber cement with recycled content.
Suggested submittal: Material cut sheet.
Resources: N/A

M1.2 ENGINEERED WOOD PRODUCTS FOR ROOF AND/OR FLOOR 1-2 Pts.

Representative materials include wood I-joists and wood trusses. Most engineered lumber is a more resource efficient replacement for solid dimensional lumber. Some engineered lumber is comprised of small chips of wood, often reclaimed from another manufacturing process. Wood trusses often use a lower grade of lumber, and can replace solid dimensional rafters.

Points: One point is given when at least 80% (or as much as code will allow) of the floor structure uses engineered wood products and/or one point is given when at least 80% (or as much as code will allow) of the roof structure uses engineered wood products.
Suggested submittal: photo or material cut sheets.
Resources: N/A

M1.3 CERTIFIED SUSTAINABLE LUMBER 2-3 Pts.

Certified sustainable lumber originates from a sustainably managed forest. To receive the points, wood must be certified by a sustainable forestry certification agency such as the Forest Stewardship Council and Sustainable Forestry Initiative.

Points: Three points are available if the home has at least 1 story with wood frame exterior walls and 80% of all lumber used in the home is certified. Two points are available if the home does not have any wood frame exterior walls, yet 80% of all lumber used for the home is certified.
Suggested submittal: Documentation of forest certification.
M1.4 ENGINEERED / ALTERNATIVE MATERIAL FOR OUTDOOR LIVING 1 Pt.

Engineered or alternative materials such as recycled plastic lumber utilize less virgin lumber, and are generally more durable than wood products.

**Points:** One point is available if a minimum of 100ft² or 50% of all outdoor structures, whichever is greater, shall be of a product using 50% or more recycled content material.

**Suggested submittal:** Photo or material cut sheet.

**Resources:** N/A

M1.5 CONCRETE WITH FLY ASH 1 Pt.

**Points:** One point is awarded if all concrete used for the construction of the home has a minimum of 18% of the total cement composed of fly ash or blast furnace slag. Such materials are the waste product of power production.

**Required submittal:** Material cut sheet.

**Resources:** N/A

M1.6 RECYCLED CONTENT SIDING OR SOFFIT MATERIAL 1 Pt.

**Points:** One point is available for a home that uses siding or soffit material with recycled content of at least 70%.

**Suggested submittal:** Material cut sheet.

**Resources:** N/A

M1.7 ECO-FRIENDLY INSULATION 1 Pt.

Depending on the goals of the project, one may want to select points for Healthy insulation listed under the Health category rather than this resource efficient insulation criterion. **Points are not available for both criteria.**

**Points:** One point is available if 100% of all insulation used is comprised of any of the following:

- Recycled cellulose insulation
- Recycled cotton denim insulation
- Recycled mineral wool insulation
- Recycled perlite composite board

**Suggested submittal:** Listing of types of insulation used.

**Resources:** N/A
M1.8 RECYCLED CONTENT DRYWALL  1 Pt.

Sources of recycled drywall are becoming available in Florida. Such manufacturers recycle scrap drywall into new product. The usefulness of this criterion may depend on the home’s proximity to a source of recycled product.

**Points:** One point is awarded if all drywall used contains pre- and or post-consumer recycled content.
**Suggested submittal:** Material cut sheet and vendor.
**Resources:** N/A

M1.9 RECYCLED CONTENT PAINT  1 Pt.

Depending on the goals of the project, one may want to select points for low or zero VOC paints listed under the Health category rather than this resource efficient paint criteria. **Points are only available for one selection.** Chemically sensitive individuals may wish to have paint with no mildewcides or surfactants added.

**Points:** To receive the one point, 100% of all paint used (interior and exterior) must have 75% post consumer recycled content and be reformulated with mildewcides, surfactants, etc. as specified for original manufacturing.
**Suggested submittal:** Material cut sheets.
**Resource:** N/A

M1.10 RECYCLED CONTENT AIR CONDITIONER CONDENSER PAD  1 Pt.

**Points:** One point is given if all air conditioner condenser pads are constructed with 100% recycled plastic.
**Suggested submittal:** Photo.
**Resources:** N/A

M1.11 FINGER JOINTED OR LAMINATED PRODUCTS  1 Pt.

Finger-jointed material is lumber that is made of short lengths of off-cuts from truss and other manufacturing processes that is finger jointed and glued together to make usable lengths of lumber. Finger-joint lumber may only be used for structural applications when used vertically such as stud framing. Laminated veneer lumber is composed of thin layers or veneers of wood glued together and sawn to make dimensional lumber; it can be used in any position.

**Points:** One point is given when a minimum 80% of the following building components are finger-jointed or laminated materials, or a combination thereof: studs, top plate, headers, rim joists, beams, and columns.
**Suggested submittal:** Listing of types of materials used for listed applications.
**Resources:** N/A
M1.12  ECO-FRIENDLY TRIM  1 Pt.

**Points:** One point is given when a minimum of 80% of the interior trim is finger jointed (finger jointed trim is generally paint grade only) or recycled plastic material.

**Suggested submittal:** Indicate where finger jointed trim has been used.

**Resources:** N/A

M1.13  STEEL INTERIOR STUDS  1 Pt.

**Points:** One point is awarded if 80% of all interior studs are made from recycled steel. Steel studs are recyclable again after they have been used.

**Suggested submittal:** Photo.

**Resources:** N/A

M1.14  ECO-FRIENDLY FLOORING  1 Pt.

Depending on the goals of the project, one may want to select points for Healthy flooring listed under the Health category rather than this resource-efficient flooring criterion. **Points are not available for both criteria.**

**Points:** One point is available if 100% of all finished flooring used meets any of the following criteria:

- Domestically produced hardwood materials from sustainably managed forests.
- Bamboo flooring.
- Reuse of salvaged wood.
- Floor tiles made from recycled glass or other 100% recycled content material
- Cork flooring.
- Natural linoleum.
- Concrete (stamped, stained, etc.)
- Recycled content carpet/carpet pad and rugs: Carpets/rugs must have a minimum recycled content of 80% with 60% post consumer recycled content or be 100% PET plastic. Carpet pads must have 80% total recycled content. Examples include 80% post consumer tires, 80% nylon, 100% recycled newsprint and 80% textile waste.
- Natural content carpet/carpet pad and rugs: Carpets/rugs must be composed of 100% natural materials such as wool, sisal, jute, and hemp. Carpet pad must also be of a natural material such as 85% recycled burlap bags made from fibrous jute plants.

**Suggested submittal:** Listing of types of flooring and accessories (glues, etc.) used and installation methods.

**Resources:** N/A
M1.15  ECO-FRIENDLY CEILING MATERIALS  1 Pt.

Points: One point is given if 80% of the ceiling material meets any of the following criteria:

• Domestically produced hardwood materials from sustainably managed forests
• Material consisting of 60% recycled content of mineral wool and cellulose fiber
• Material consisting of 25% recycled content glass
• Salvaged wood.

Suggested submittal: Listing of all ceiling materials used.
Resources: N/A

M1.16  LOCALLY PRODUCED MATERIALS  1-2 Pts.

Points: One point given when a minimum of 80% of all new windows are from Florida manufacturers and are operable and/or one point is available if 80% of the structural material used to build the house, on a cost basis, is from a Florida manufacturer.

Suggested submittal: Name and address of manufacturers.
Resource: N/A

M2  Waste Reduction

M2.1  RESOURCE EFFICIENT WALL SYSTEM WITH INTEGRAL INSULATION  3 Pts.

Autoclaved aerated concrete (AAC) is composed of cement, sand, lime, and an aerating agent, which is baked in an autoclave oven. The result is a very lightweight insulated concrete product. Blocks and panels are stacked similar to bricks and held together with adhesive.

Insulated concrete forms (ICF) are a family of exterior wall systems that provide the strength of structural concrete walls with the thermal performance of integral insulation and high thermal mass. Generally a Styrofoam form is filled with poured concrete, or concrete is used to surround a Styrofoam core.

Structural Insulated Panels (SIP) generally consist of two (outer) layers of structural sheet material and foam core, ranging from 2 to 12 inches thick. They can be used to build exterior walls, roofs, and floors. To receive points SIP walls must be elevated minimum 24” above soil grade.
**Points:** To receive the 3 points a minimum of 80% of the first floor living area exterior walls must be AAC, ICF, or SIP or a combination thereof.

**Suggested submittal:** Photo, detailed plans, or material cut sheets.

**Resources:** N/A

**M2.2 DEVELOP A CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN**

**Points:** Two points are awarded if the contractor submits a written plan that consists of the following items:

- Estimated amount of waste and types of materials from project.
- Names/locations of waste disposal companies, recyclers, reuse centers for waste materials from project located within the project’s county or neighboring county.
- Estimated costs of hauling and disposal, recycling, and revenues from reuse and recycling for major waste materials from project.
- Goals for waste diversion by amount (weight or volume) and types of materials.

**Required submittal:** Detailed waste management plan.

**Resources:** N/A

**M2.3 IMPLEMENT JOB SITE WASTE MANAGEMENT**

**Points:** Two points are awarded if at least two of the following are implemented. Three points are awarded if 3-5 of the following are implemented. Four points are awarded if greater than 6 of the following are implemented. In order to receive the credit one individual must be designated as job-site “environmental manager” to inspect job-site roll-offs and other materials handling strategies to prevent commingling, damage, other waste creation activities.

- Contractor writes into specifications/contracts with sub-contractors and vendors to be responsible for and remove materials and systems packaging upon either delivery or installation of products.
- Contractor writes into specifications/contract with drywall sub-contractor a price by the square foot of finished drywall wall/ceiling area.
- Clean drywall waste is used as soil amendment on-site where allowable and in proper quantities as approved by county extension service and/or landscape architect.
- Clean and dry drywall scraps are securely placed in interior wall cavities where additional sound-proofing may be desirable.
- A covered area or container is provided, with adequate separation from the ground, labeled as wood off-cuts for reuse in project.
- Individually labeled roll-offs are placed on site for separation of C&D waste materials, for at least 2 different materials, for example, metals, cardboard,
concrete, brick, wood, and solid waste recyclables such as cans, plastic bottles.

- Job-site trailer or office implements paper, plastic bottle, and can recycling bins.
- Materials to be stored on site are kept off the ground and protected from weather, machinery, dust, and vehicle routes.
- Job-site fabrication stations or areas implement ground covering, magnets, bins or other means to collect nails, screws, plates, clips, off-cut rebar, electrical wiring, sheet metal off-cuts for metals recycling.
- Use of job site framing plan and cut list.
- Use of concrete formwork that has been used at least once before or is reused / reusable by contractor.
- Separation and removal of leftover paint to local paint recycling facility.

**Suggested submittal:** Indicate which options chosen and provide name and contact of designated job-site environmental manager.

**Resources:** N/A

**M2.4 COMPOST BIN/BUILT IN COLLECTION OF RECYCLABLES** 1 Pt.

**Points:** One point is awarded if the homeowner is provided with a pre-fabricated compost bin (includes wire mesh type) or if the home has built in (i.e. permanent) recycle bins. Points for built in recycle bins are only awarded if the home is served by a municipal curbside recycling program.

**Suggested submittal:** Photo.

**Resources:** N/A

**M2.5 PERIMETER ADHERES TO 2 FT. DIMENSIONS** 1 Pt.

**Points:** One point is awarded if the exterior layout of the home adheres to 2 ft. dimensions. Adhering to 2 ft dimensions reduces waste and allows for easier future addition.

**Suggested submittal:** Floor plan

**Resources:** N/A

**M2.6 INTERIOR FLOOR PLAN ADHERES TO 2 FT. DIMENSIONS** 1 Pt.

**Points:** One point is given when over 50% of the interior rooms adhere to a 2-foot layout.

**Suggested submittal:** Floor plan

**Resources:** N/A
M2.7 STACKED FRAMING 1 Pt.

Stacked framing is a structural framing scheme where first floor, second floor, and roof framing line up horizontally which often reduces the overall amount of lumber used. For example, sometimes single top plates can be used instead of double top plates.

Points: One point is given to a home that uses a stacked framing scheme.
Suggested submittal: Framing plan
Resources: N/A

M2.8 TWO STUD CORNERS WITH DRYWALL CLIPS 1 Pt.

Two stud corner framing eliminates non-structural studs and allows for full corner insulation through the use of drywall clips, horizontal nailers, or other means to support drywall.

Points: One point is given to a home that uses two stud corners.
Suggested submittal: Framing plan
Resources: N/A

M2.9 T-WALLS WITH DRYWALL CLIPS 1 Pt.

The intersection of exterior and interior walls shall eliminate non-structural studs and allow for full exterior wall insulation through the use of advanced ladder T-wall framing or other technique.

Points: One point is given to a home that uses two stud corners.
Suggested submittal: Framing plan
Resources: N/A
M3  Durability

M3.1  3 IN 12 ≤ ROOF SLOPE ≤ 6 IN 12  1 Pt.

Roof slopes following outside the 3 in 12 to 6 in 12 range allow strong winds to pass over them at high velocities which can create uplift forces likely to damage your roof, especially if fenestrations (windows and doors) have been damaged. Roof slopes of 5 in 12 may be best suited for uplift resistance during hurricane force winds, reduce wasted material in the attic and help “throw” water further away from the building walls than higher sloped roofs. Roofs with less than 3/12 with low or no slopes do not shed rainwater well which can lead to leaks during heavy storm events.

Points: To receive the point, roof slope shall be less than or equal to 6 in 12 to but greater than or equal to 3 in 12.
Suggested submittal: Photo or detailed plan.
Resources: N/A

M3.2  LARGE OVERHANGS (EAVE AND GABLE)  1 Pt.

Points: One point is awarded if overhangs are 1 ft on gable ends and at least 2 ft everywhere else. Large overhangs help shed rain water away from the walls and foundation.
Suggested submittal: Photos or detailed plans.
Resources: N/A

M3.3  AIR ADMITTANCE VENTS  1 Pt.

Air admittance valves are pressure-activated, one-way mechanical venting ports, used in a plumbing system to eliminate the need for conventional pipe venting and roof penetrations. Wastewater discharges cause the AAV to open, allowing air to circulate for proper drainage. Otherwise, the valve remains closed, preventing the escape of sewer gas and maintaining the trap seal. Using air admittance vents can significantly reduce the amount venting materials needed for a plumbing system, increase plumbing labor efficiency, allow greater flexibility in the layout of fixtures, and reduce long-term maintenance problems where conventional vents break the roof surface.

Points: One point is available if all plumbing penetrations through the roof are replaced with the use of air admittance vents.
Suggested submittal: Photo or equipment cut sheet.
M3.4 WOOD FRAME HOUSE USES VENTED RAIN SCREEN 1 Pt.

Providing an air gap between siding and house wrap/building paper will allow water to drain down the wrap and out at the bottom more effectively, producing a more durable structure. To provide the air space, generally furring strips are installed to the exterior of the drainage plane, before the installation of siding.

**Points:** One point is available for wood frame houses using a vented rain screen. Drainage plane must be 2 layers of 15lb felt or house wrap installed shingle style.

**Suggested submittal:** Photo or detailed.

**Resource:** N/A

M3.5 SIDING AND EXTERIOR TRIM PRIMED ALL SIDES 1 Pt.

Priming all sides of siding and exterior trim will retard moisture penetration into the material.

**Points:** One point is available if all siding material and exterior trim is pre-primed before installation on all sides, including cut edges.

**Suggested submittal:** Photo or visual inspection by Certifying Agent.

**Resources:** N/A

M3.6 WINDOW AND DOOR FLASHING 1 Pt.

Proper window flashing is required for moisture intrusion mitigation. For wood frame walls, adhere to the flashing detail developed by NAHB Research Center which involves creating a head and pan flashing with building paper, house wrap, or self adhering membrane.

Proper flashing for concrete block, ICF, SIP, and AAC walls involves using a “seat” in the concrete slab to act as a pan flashing for doors, and a precast masonry sill with rib for pan flashing for windows. Also, jambs are to be caulked to walls.

**Points:** FGBC awards one point for proper flashing of all exterior windows and doors. For concrete block, ICF, SIP, and AAC walls adhere to the recommendations in the EEBA builder’s guide which can be purchased from the Building Science site listed below.

**Suggested submittal:** Photo or detailed plans.

**Resources:** For more details visit:
- [www.buildingscience.com/housesthatwork/hothumid/default.htm](http://www.buildingscience.com/housesthatwork/hothumid/default.htm)
- [www.nahbrc.org/docs/mainnav/moistureandleaks/792_moisture.pdf](http://www.nahbrc.org/docs/mainnav/moistureandleaks/792_moisture.pdf)

M3.7 PLANTS/TURF MINIMUM OF 2 FT. FROM FOUNDATION 1 Pt.

Inorganic ground covers such as stones or rocks are sometimes a better landscape choice beside the foundation for irrigated plant material can lead to water accumulating near the foundation.
**Points:** One point is awarded if all plants, trees, and turf are kept at least 2 ft away from the foundation.

**Suggested submittal:** Photo or visual inspection by Certifying Agent.

**Resources:** N/A

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**M3.8 USE ARMORED OR METAL HOSES FROM SERVICE TO ALL FIXTURES/APPLIANCES**

1 Pt.

Water consuming fixtures and appliances typically use unarmored hoses for their water supply. Plastic and rubber hoses have a finite life, and are likely to eventually fail, potentially causing flooding and unnecessary water use, especially if not discovered immediately.

**Points:** FGBC awards 1 point if all water using appliances (clothes washer, refrigerator, faucets, toilets, etc.) use armored or metal hoses.

**Suggested submittal:** None – visual inspection by Certifying Agent.

**Resources:** N/A

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**M3.9 AUTOMATIC IN HOME WATER SENSORS/SHUTOFF SYSTEM INSTALLED**

2 Pts.

If water using appliances such as clothes washers and water heaters are installed inside the conditioned space, leaks and failures can cause severe damage due to flooding.

**Points:** Two points are available for a whole house water sensor / shutoff system that detects any sign of water leakage anywhere inside the conditioned space, and cuts off the main water supply to the house. At a minimum, sensors must be installed in the vicinity of a clothes washer and tank water heater.

**Suggested submittal:** Cut sheet of sensor/shutoff system.

**Resources:** N/A

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**M3.10 ACCESS PANEL TO EACH NON-ACCESSIBLE PLUMBING FIXTURE INSTALLED**

1 Pt.

Typically, when there is a problem, access to piping that supplies water to tubs and showers must be accessed by creating a hole in the wall. Installing an access panel provides for easier repair and monitoring.

**Points:** FGBC awards 1 point to a home that has plumbing access panels installed for each shower and tub.

**Suggested submittal:** Photo of access panel.

**Resources:** N/A
M3.11 USER-FRIENDLY (LEVER STYLE) CLOTHES WASHER WATER SHUTOFF VALVES  1 Pt.

Typically, water supply shutoff for clothes washers is installed in a difficult to reach location behind the appliance, and valves typically require several turns of the handle before water supply is effectively cut off. Installing lever style shutoff valves that only require 90° of turn are much easier to handle, and can even be operated with a reaching tool (or broom handle) if located in a difficult to reach location. Valves that are easy to operate are more likely to be turned off before extended periods of non-use (vacations), thereby minimizing potential flooding. Insurance companies report that washing machine failure is a common claim.

Points: FGBC awards 1 point for a home that has user-friendly washer water shutoff valves.
Suggested submittal: Photo of valves.
Resources: N/A

M3.12 LAUNDRY ROOM BELOW LIVING FLOOR OR DRAIN INSTALLED  1 Pt.

Points: One point is awarded if the home contains a floor drain in the laundry room, or the level of the laundry room floor is below the level of the living space floor.
Suggested submittal: None – visual inspection by Certifying Agent.
Resources: N/A
CATEGORY 7: Disaster Mitigation

DM1 Hurricane (wind, rain, storm surge)

DM1.1 SAFE ROOM 3 Pts.

Points: FGBC awards 3 points if a safe room is constructed in accordance with the guidelines set forth in the NSSA publication: “Building Codes and Storm Shelter Safety.” These shelters are designed to provide near absolute protection from the high winds expected during tornadoes and hurricanes and from associated flying debris, such as wood studs.

Suggested submittal: Detailed plans of safe room.

Resources: The NSSA publication complete with construction plans, specifications, and cost estimates, is available at http://www.nssa.cc/Publications/Building_codes_and_storm_shelter_safety.pdf

DM1.2 UNVENTED OR NO ATTIC 2 Pts.

An unvented attic minimizes the risk of air infiltration which has been proven to increase the risk of roof uplift during a hurricane. Creating an unvented attic can be achieved by extending a home’s air and thermal barrier to the underside of the roof deck creating an attic that is sealed from the outside environment, with no venting. This design also allows all of the HVAC duct systems to be housed in “conditioned” space.

Points: FGBC awards 2 points if a home contains an unvented attic or no attic at all.

Suggested submittal: Photos of attic.

Resources: N/A

DM1.3 WINDOW AND SKYLIGHT PROTECTION OR IMPACT RESISTANT TYPE 2 Pts.

Points: FGBC awards 2 points if all windows, skylights, sliding glass doors, and other doors comprised of at least 60% glass in the home are protected with a Dade County approved shutter or screen product or are classified by Dade County as impact resistant, or any other product of equivalent values.

Suggested submittal: Photos of shutters or window cut sheets.

Resources: A list of approved shutter and impact resistant products can be found at www.buildingcodeonline.com. If unsure whether a particular product is approved, just ask the manufacturer. Strengthening of existing skylights may include repair of surrounding roof.
DM1.4 ATTACHED GARAGE AND EXTERIOR DOOR PROTECTION OR IMPACT RESISTANT TYPE 1 Pt.

Points: FGBC awards 1 point if all exterior doors of the home are protected with a Dade County approved shutter or screen product or are classified by Dade County as impact resistant. At least one door must be impact resistant, and not have a shutter or screen, to provide a means of egress from the house. (It is best to have at least two means of egress from the home, which may mean also installing at least one impact resistant window rather than shuttering them all.) In addition all attached garage doors must be classified as impact resistant or be reinforced (braced) according to Dade County specifications. If the home has a detached garage, points are still available for exterior door bracing.

Suggested submittal: Photos of shutters or door cut sheets.
Resources: N/A

DM1.5 EXTERIOR STRUCTURES PROPERLY ANCHORED 2 Pts.

Points: FGBC awards 2 points if exterior structures, such as pool equipment and other pumps, generators, sheds, etc. are properly anchored to a foundation or the building itself. The anchoring must be specified or certified by an engineer (i.e. during wind load calculations).

Suggested submittal: Copy of certifications/specifications for the specific anchored structures.
Resources: N/A

DM1.6 SECONDARY WATER PROTECTION INSTALLED ON ROOF 2 Pts.

Wind damage accounts for only a fraction of the destruction in homes hit by hurricanes. The greatest destruction is caused by water infiltration. Should the shingles or other roofing material fail during a hurricane, secondary water protection will offer defense against bulk water intrusion.

Points: FGBC awards 2 points for a home with secondary water protection on the roof. Secondary water protection can be achieved if the entire roof has self-adhering polymer bitumen roofing underlayment (thin rubber or asphalt sheets with peel and stick underside installed beneath the roof covering and on top of the sheathing). Alternately, joints may be sealed with a self-adhering polyethylene or rubberized asphalt tape that has a minimum width of 6 inches prior to installation of felt or other type of roof underlayment. Roofing felt or similar paper based products alone are not eligible for secondary water resistance points.

Suggested submittal: Photos or cut sheets for sealing materials used.
Resources: N/A
DM1.7 ADHESIVE APPLIED TO ROOF 2 Pts.

A spray-on adhesive, when applied to the underside of the roof sheathing from the attic, creates a positive bond between the joists and the sheathing. This step provides added protection from uplift caused by high winds.

Points: FGBC awards 2 points if a spray-on adhesive with a minimum uplift capacity of 260 psf for a 4x8 ft panel is applied to the underside of the roof sheathing continuously to within at least one foot of the eaves.
Suggested submittal: Photos or cut sheet of adhesive used.
Resources: N/A

DM1.8 ROOF COVERING ABOVE AND BELOW FLASHING 2 Pts.

Flashing is likely to be peeled off by high winds, and if it is installed on top of the roof felt, with a single layer of roof covering installed over it, is likely to take this part of roof covering with it. With final roof covering installed above and below the flashing, waterproof material will still remain in place should the top layer of roof covering be blown off.

Points: Two points are awarded if roof flashing is installed on top of the final roofing with a secondary cover of roofing on top of it. Clips must also be installed periodically along the flashing to anchor it to the roof.
Suggested submittal: Photo or detailed plans.
Resources: N/A

DM1.9 COMPLY WITH FORTIFIED FOR SAFER LIVING STANDARDS 5 Pts.

Points: FGBC awards 5 points if the home earns a certification under the Fortified for Safer Living Standard, a program of the Institute for Home and Business Safety. The Institute for Business & Home Safety’s mission is to reduce the social and economic effects of natural disasters and other property losses by conducting research and advocating improved construction, maintenance and preparation practices.
Required submittal: Copy of certification.
Resources: For more information, visit http://www.ibhs.org/about.

DM2 Flood 3 Pts.

Points: FGBC awards 3 points for incorporating all of the following criteria:

Finished floor level at least 12” above 100 yr. flood plain: The finished floor level must be at least 12” above the 100-year flood plain as determined by the water management district or the local building department.
Bottom of slab or first floor at least 8" above the top of backfilled dirt, graded for proper drainage: The bottom of the slab (or in the case of a crawlspace, the floor) must be at least 8" above the adjacent dirt level. This strategy may help with flooding and termite inspections. Please check with appropriate civil engineer to verify if this strategy is appropriate for the given foundation and home.

Grade slopes away from building on all sides: Grade must be sloped away from the building on all sides to allow water to drain away from the home.

Garage floor and driveway properly sloped to drain out. Garage floor at least 4” lower than living floor: The garage and driveway must have a slope of 1” per twenty feet minimum, and the average height in the garage must be 4” lower than the lowest location on the first floor.

**Suggested submittal:** FEMA flood zone information, foundation plans, landscape plans

**Resources:** N/A

### DM3  Wild Fire  3 Pts.

**Points:** FGBC awards 3 points for incorporating all of the following criteria:

- **Fire resistant exterior wall cladding:** An exterior cladding other than wood or vinyl must be used on all exterior walls. Examples include stucco, unfinished CBS, brick, aluminum, stone and fiber-cement.

- **Fire resistant roof covering or sub-roof:** A roof covering other than asphalt shingles or wood shakes must be used on the entire roof. Examples include metal, concrete, fiber-cement, and tile. Credit is also available if the sub-roof (roof deck) is of a fire resistant material, instead of the covering.

- **Fire resistant soffit and vent material:** A soffit and vent material other than wood or vinyl must be used. When these parts of the home are compromised, embers from nearby fires can enter into the attic. Examples include aluminum and fiber-cement.

**Suggested submittal:** Photos or material cut sheets.

**Resources:** N/A
DM4  Termites

DM4.1 CHEMICAL SOIL TREATMENT USED 10 Pts.

Points: A project may elect to take points for either DM4.1 or DM 4.2, but not both. Receive 10 points for incorporating all of the following requirements:

The following co-requisites from other sections must be incorporated:

Seal slab penetrations (Category 5: Health/Moisture Control)
Plants/turf minimum of 2 ft. from foundation (Category 6: Materials/Durability)
Grade slopes away from building on all sides (Category 7: Disaster Mitigation/Flood)

The following additional criteria must also be incorporated:

Exterior cladding installed to prohibit intrusion. The exterior cladding of the home must terminate at least 8" above grade. This will help prevent termites from entering the home undetected.

Rain gutters installed or meet the “Large Overhangs” co-requisite under Materials/Durability: Rain gutters must be installed to collect water from all roof slopes and convey it away from the building foundation. Alternatively, credit can be obtained for incorporating the “Large Overhangs” criteria listed under Materials/Durability. Keeping moisture away from the foundation discourages termite nesting in that vicinity.

If present, downspouts must discharge 3 or more feet from building: If rain gutters have been installed, the downspouts must discharge 3 or more feet from the building to keep moisture away from the building's foundation.

If installed, irrigation/sprinkler system located 2 or more feet from building, water shown not to hit building while operating: This criterion will again reduce moisture levels in the vicinity of the building foundation, discouraging termites from nesting there.

Condensate line(s) discharge 2 or more feet from building and are located 5 or more feet from dryer vent: Condensate drainage must be done away from the building. High humidity, temperature and moisture all contribute to potential termite infestation. By keeping condensate lines and dryer vents apart, the likelihood of termite problems may be decreased.

Damage replacement warranty issued and available for annual renewal: Florida law requires that a contract be issued whenever a termite treatment is conducted. A "full" or "unlimited" warranty requires the pest control company to restore any property damaged by wood-destroying organisms during a specified period after the treatment. Generally, for this to be in effect with new construction, the first warranty
issued (with the pre-construction treatment) must be a full or unlimited warranty that can be renewed by the homeowner. The duration of post-construction contracts and warranties can vary from one year to five years depending on the policy of the pest control company. Normally, the annual renewal fee will remain the same during the term of the contract. If a "limited" guarantee or warranty is issued, the pest control company promises only to provide additional treatment if an infestation occurs during a specified period after treatment. A full or unlimited warranty is required for this credit.

**Suggested submittal:** Photos and visual inspection by Certifying Agent, copy of damage replacement warranty.

**Resources:** N/A

### DM4.2 CHEMICAL SOIL TREATMENT AVOIDED 10Pts.

**Points:** A project may elect to take points for either DM4.1 or DM 4.2, but not both. Receive 10 points for incorporating the following requirements:

- Chemical soil treatment avoided.

AND


OR

- All wood products serving structural or exterior finish purposes are borate or ACQ treated.

**Required submittal:** Details of foundation protection and/or detailed plans showing construction materials and materials list.

**Resources:** N/A
CATEGORY 8: General

There are a variety of items that either do not apply to any one category or apply across many categories. These points have been grouped under this category.

G1  Small House Credit

G1.1  CONDITIONED HOUSE SIZE  0-40 Pts.

Small homes use less material for construction, less energy for heating and cooling, and occupy a smaller footprint than similar larger homes.

Points: FGBC awards 0 – 40 points based on the following table.

<table>
<thead>
<tr>
<th>Conditioned House Size (square feet)</th>
<th>Points</th>
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<tbody>
<tr>
<td>&lt; 1000</td>
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<tr>
<td>1700 - 1799</td>
<td>8</td>
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<tr>
<td>1800 - 1899</td>
<td>4</td>
</tr>
</tbody>
</table>

Suggested submittal: Indication of home’s square footage.

Resources: N/A
G2  Adaptability

G2.1  ROOF TRUSSES DESIGNED FOR ADDITION  2 Pts.

Points: Two points are available for a home that has the roof trusses designed in such a way that a room can be added to the attic space. To qualify for the two points, minimum room size must be 100 square feet with an average finished height of at least seven feet.

Suggested submittal: Photo or detailed plans.

Resources: N/A

G2.2  UNFINISHED ROOMS  1-2 Pts.

Points: Receive one point for each 100 square feet of unconditioned, unfinished space that is built such that it can easily be finished at a later time. A maximum of two points are available.

Suggested submittal: Photo or detailed plans.

Resources: N/A

G2.3  PRE-WIRED FOR SECURITY, SOUND, AUTOMATION  1 Pt.

Points: Receive one point if the house includes central pre-wiring for at least 2 of the following: security, house automation, computer network, or central sound system. Pre-wiring during construction prevents the need for renovation later.

Suggested submittal: Electrical Plan or description of wiring.

Resources: N/A
G3  Renewable Power Generation

G3.1 REDUCE PEAK DEMAND OR ANNUAL LOAD  1-5 Pts.

Points: FGBC will award points for renewable power systems (photovoltaic’s, fuel cell, micro turbine, geothermal power systems, etc.) installed at the site that meet loads not specifically described and credited under different categories (e.g., outside lighting). The calculation to determine the renewable contribution will be based on measured or estimated peak demand or annual electric loads for the home. Receive 1 point for each 10% contributed towards either peak demand or annual load.

Required submittal: Modeling results for peak demand or annual load reduction.

Resources: N/A

G4  Remodel

Credits G4.1 trough G4.3 are only available to projects involving remodeling of an existing structure. Unless otherwise specified, to be considered a remodel, the house must have been issued a certificate of occupancy at least two years before the date of the Green Home Standard application. Remodels meeting specifications for credits contained elsewhere in this standard are eligible for those points as well.

G4.1 REMODELING OF AN EXISTING STRUCTURE  10 Pts.

Anyone who performs remodeling is saving resources by not building new and by overcoming barriers put in place many years before.

Points: Earn 10 points for a home that is at least 2 years old and has achieved a HERS Index of 90 or below.

Required submittal: Proof of age of home such as property appraiser report and signed HERS rating guide.

Resources: N/A

G4.2 TOILETS 1.6 GPF & SHOWERS 2.5 GPM OR LESS  3 Pts.

Points: For homes with certificate of occupancy before 1992, earn 3 points if all water fixtures in home meet current code. All toilets must be 1.6 gallons per flush or less, and all showerheads must be 2.5 gallons per minute or less.

Suggested submittal: Manufacturers specs.

Resources: N/A
G4.3  UPGRADED IRRIGATION SYSTEM  2 Pts.

Points: Earn 2 points if an existing irrigation system is upgraded to include a rain sensor, timer based controller, and code irrigation heads.

Suggested submittal: Manufacturers specs.
Resources: N/A

G5  Other

G5.1  HOME BUILDER/DESIGNER/ARCHITECT  LANDSCAPE ARCHITECT MEMBER OF FGBC  1-2 Pts.

FGBC members are aware of a variety of issues and solutions to problems that may occur in building green.

Points: Receive one point for each member of the design/construction team that is a member of FGBC. Maximum one point per company. Maximum two points total. The Certifying Agent(s) cannot be counted.
Suggested submittal: Names of persons on the construction team that are FGBC members.
Resources: N/A

G5.2  HOMEOWNER’S MANUAL GIVEN TO HOMEOWNER  2 Pts.

Points: Two points are available if the homeowner has received a manual that will help them understand how to operate the house and take care of the landscape so that the intended benefits of a green home are realized for the customer and the earth.
Suggested submittal: Copy of homeowner’s manual.
Resources: N/A

G5.3  EDUCATIONAL MATERIAL GIVEN TO HOMEOWNER  2 Pts.

Homeowner lifestyle has a significant influence on indoor air quality as well as energy and water usage. In addition to the green operation information listed in the homeowner’s manual, educational material includes energy-saving, water-conserving, and healthy lifestyle tips and the corresponding benefits. This information will help the homeowner operate more efficiently within the home.

Points: Two points are available for a builder going beyond the standard homeowner’s manual to provide lifestyle tips for maintaining healthy indoor air quality and conservation of water and energy.
Suggested submittal: Copy of educational material.
Resources: N/A
G5.4 TRAINING PROVIDED TO HOMEOWNER 2 Pts.

Providing onsite training to the homeowner will help them understand how to operate the house and take care of the landscape so that the intended benefits of a green home are realized for the customer and the earth.

Points: Two points are available for providing a homeowner with “green maintenance” training lasting at least 1 hour.
Suggested submittal: Details training offered.
Resources: N/A

G5.5 PLAN FOR EDIBLE LANDSCAPE/FOOD GARDEN 2 Pts.

Homeowner food production is often organic, requiring less fertilizer and pesticide use, and is free from pollution associated with transporting the produce.

Points: FGBC awards 2 points if a minimum of 50 square feet is dedicated to edible landscape plants. The 50 sqft can be a combination of garden space, area under fruit/nut tree drip lines, and shrubs. To estimate area under tree drip line, measure the distance from the outer leaves to the trunk. This is the radius of the tree. For immature trees, use the 1/5 of the mature tree radius (1/2 the published diameter or “width” as given in plant directories). This is the effective radius. Then calculate the area using the actual radius or the effective radius, whichever is greater:

\[ \text{Area under tree} = 3.1413 \times \text{radius} \times \text{radius} \]

Homeowner also must be in possession of, or receive at closing, a one-page handout on growing fruit/vegetables organically, available form the local extension service or other suitable source, in order to claim credit.
Suggested submittal: Landscaping plan, copy of handout.
Resources: N/A

G5.6 GUARANTEED ENERGY BILLS 2 Pts.

In most guarantee programs, the entity guaranteeing the bills agrees to pay the difference for any energy bill that exceeds the predetermined maximum amount.

Points: To be eligible for the two points, the home must have its energy bills guaranteed by the builder or another entity not to exceed a maximum amount for at least two years.
Suggested submittal: Copy of written guarantee.
Resources: N/A
G5.7 COOLING SYSTEM USES NON-HCFC REFRIGERANT 2 Pts.

Hydrochlorofluorocarbon (HCFC) refrigerants are suspected of contributing to ozone depletion in the earth’s upper atmosphere and are being phased out of production.

**Points:** FGBC awards two points to a home that has a cooling system with a non-HCFC refrigerant, such at R-410a.
**Suggested submittal:** Cooling system cut sheet.
**Resources:** N/A

G5.8 INNOVATIVE CREDITS 1-5 Pts.

**Points:** Projects may seek up to 5 additional points for use of green materials, techniques, or strategies that are not contained elsewhere on this checklist.
**Required submittal:** Completed Green Home Standard Modification Form for each innovative request.
**Resources:** N/A
# Florida Green Home Standard

## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>AAC</td>
<td>Autoclaved Aerated Concrete</td>
</tr>
<tr>
<td>AAV</td>
<td>Air Admittance Vent</td>
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<tr>
<td>ACCA</td>
<td>Air Conditioning Contractor’s Association</td>
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<tr>
<td>ACQ</td>
<td>Alkaline Copper Quaternary</td>
</tr>
<tr>
<td>ASHRAE</td>
<td>American Society of Heating, Refrigerating, and Air-Conditioning Engineers</td>
</tr>
<tr>
<td>BMP</td>
<td>Best Management Practices</td>
</tr>
<tr>
<td>BTU</td>
<td>British Thermal Unit</td>
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<tr>
<td>C&amp;D Waste</td>
<td>Construction and Demolition Waste</td>
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<tr>
<td>CFM</td>
<td>Cubic Feet per Minute</td>
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<tr>
<td>CPVC</td>
<td>Chlorinated Poly-Vinyl Chloride</td>
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<tr>
<td>CRI</td>
<td>Carpet and Rug Institute</td>
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<tr>
<td>DCA</td>
<td>Department of Community Affairs</td>
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<td>Energy and Environmental Building Association</td>
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<td>Florida Solar Energy Center</td>
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<td>Florida Yards and Neighborhoods</td>
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<td>GPF</td>
<td>Gallons per Flush</td>
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<td>HCFC</td>
<td>Hydrochlorofluorocarbon</td>
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<td>Home Energy Rating System</td>
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<td>HVAC</td>
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</tr>
<tr>
<td>MaP</td>
<td>Maximum Performance</td>
</tr>
<tr>
<td>MERV</td>
<td>Minimum Efficiency Reporting Value</td>
</tr>
<tr>
<td>NAHB</td>
<td>National Association of Home Builders</td>
</tr>
<tr>
<td>NSSA</td>
<td>National Storm Shelter Association</td>
</tr>
<tr>
<td>Pa</td>
<td>Pascal</td>
</tr>
<tr>
<td>PET Plastic</td>
<td>Poly-Ethylene Terephthalate Plastic</td>
</tr>
<tr>
<td>PV</td>
<td>Photovoltaic</td>
</tr>
<tr>
<td>PVC</td>
<td>Poly-Vinyl Chloride</td>
</tr>
<tr>
<td>SIP</td>
<td>Structural Insulated Panels</td>
</tr>
<tr>
<td>UV</td>
<td>Ultra-Violet</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile Organic Compounds</td>
</tr>
<tr>
<td>WF</td>
<td>Water Factor</td>
</tr>
<tr>
<td>UNAR</td>
<td>Unified North American Requirements</td>
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</tbody>
</table>
Florida Green Home Standard

Glossary

**Aerating**: to expose to the action or effect of air or to cause air to circulate through: to aerate milk in order to remove odors.

**Autoclaved aerated concrete**: precast building stone made of all-natural raw materials. It is economical, environmentally friendly, cellular, and lightweight, resists fire & termites, and provides insulation.

**Back draft**: an explosive surge in a fire produced by the sudden mixing of air with other combustible gases, or airflow in a backwards direction.

**Bitumen**: any of various natural substances, as asphalt, maltha, or gilsonite, consisting mainly of hydrocarbons.

**Blackwater**: wastewater containing bodily or other biological wastes, as from toilets, dishwashers, or kitchen drains.

**Capillary action**: a manifestation of surface tension by which the portion of the surface of a liquid coming in contact with a solid is elevated or depressed, depending on the adhesive or cohesive properties of the liquid.

**Caulk**: to fill or close seams or crevices of (a tank, window, etc.) in order to make watertight, airtight, etc.

**Clerestory**: windows that are above the eye level for privacy and allow sunlight in while reducing heat gain.

**Combustion**: a process in which a substance reacts with oxygen to give heat and light.

**Conditioned Space**: an area or volume of a home that is air conditioned.

**Conduit**: a pipe, tube, or the like, for conveying water or other fluid.
Cross Ventilation: relies on wind to force cool exterior air into the building through an inlet (window, door, etc.) and to force warm interior air out of the building through an outlet (window, door, etc.).

Deciduous: shedding the leaves annually, as certain trees and shrubs.

Dehumidification: to remove moisture from.

Eaves: the overhanging lower edge of a roof.

Elastomeric: an elastic substance occurring naturally, as natural rubber, or produced synthetically, as butyl rubber or neoprene.

Electrostatic: of or pertaining to static electricity.

Exotic: of foreign origin or character; not native; introduced from abroad, but not fully naturalized or acclimatized: exotic plants.

Fascia: any relatively broad, flat, horizontal surface, as the outer edge of a cornice, a stringcourse, etc.

Fenestration: the design and disposition of windows and other exterior openings of a building.

Finger jointed: a method of joining two pieces of lumber end-to-end by sawing into the end of each piece a set of projecting "fingers" that interlock.

Flashing: pieces of sheet metal or the like used to cover and protect certain joints and angles, as where a roof comes in contact with a wall or chimney, esp. against leakage.

Formaldehyde: a colorless, toxic, potentially carcinogenic, water-soluble gas, CH₂O, having a suffocating odor, usually derived from methyl alcohol by oxidation: used chiefly in aqueous solution, as a disinfectant and preservative, and in the manufacture of various resins and plastics.

Gasket: a rubber, metal, or rope ring, for packing a piston or placing around a joint to make it watertight.

Greywater: domestic wastewater from any source except toilets and the kitchen sink—this includes laundry, shower/bath, faucets, and dishwasher.

Harborage: any shelter or lodging.

Herbicides: a chemical substance used to destroy or inhibit the growth of plants, especially weeds.
**Humidistat:** an instrument for measuring and controlling humidity.

**Infiltration:** to pass into or through a substance, assembly, etc..

**Kraft:** a tough, usually brown paper made from wood pulp treated with a solution of sodium sulfate.

**Laminar flow:** the flow of a viscous fluid in which particles of the fluid move in parallel layers, each of which has a constant velocity but is in motion relative to its neighboring layers.

**Linoleum:** a hard, washable floor covering formed by coating burlap or canvas with linseed oil, powdered cork, and rosin, and adding pigments to create the desired colors and patterns.

**Louvered:** A framed opening, as in a wall, door, or window, fitted with fixed or movable horizontal slats for admitting air and light and shedding rain.

**Manual D:** Air Conditioning Contractors Association guidelines for designing forced air ductwork.

**Manual J:** Air Conditioning Contractors Association guidelines providing complete instructions for estimating heat loss and heat gain for residential structures.

**Mastic:** any of various preparations containing bituminous materials and used as an adhesive or seal.

**Mildewcide:** a chemical for destroying mildew.

**Percolation:** the slow movement of water through the pores in soil or permeable rock.

**Pervious:** admitting of passage or entrance; permeable.

**Photovoltaic:** Capable of producing a voltage when exposed to radiant energy, especially light.

**Plenum:** a space, usually above a ceiling or below a floor, that can serve as a receiving chamber for air that has been heated or cooled to be distributed to inhabited areas.

**Polystyrene:** clear plastic or stiff foam, a polymer of styrene, used chiefly as an insulator in refrigerators and air conditioners.

**Polyurethane:** a thermoplastic polymer containing the group NHCOO: used for padding and insulation in furniture, clothing, and packaging, and in the manufacture of resins for adhesives, elastomers, and fillers.
**Potable:** fit or suitable for drinking.

**Recessed IC(AT) fixtures:** light fixtures installed flush with the ceiling that are rated for insulation contact (and are air tight).

**Reclaimed water:** wastewater that has received at least secondary treatment and basic disinfection and is reused after flowing out of a domestic wastewater treatment facility.

**Sill plate:** bottom horizontal member of a wall or building to which vertical members are attached

**Slag:** the more or less completely fused and vitrified matter separated during the reduction of a metal from its ore.

**Soffit:** the underside of an architectural feature, as a beam, arch, ceiling, vault, or cornice.

**Stormwater:** a term used to describe water that originates during precipitation events.

**Structural Insulated Panel:** two (outer) layers of oriented strand board and foam core, ranging from 2 to 12 inches thick. They can be used to build exterior walls, roofs, and floors.

**Swale:** A shallow trough like depression that carries water mainly during rainstorms or snow melts.

**Terrace:** a raised level with a vertical or sloping front or sides faced with masonry, turf, or the like, esp. one of a series of levels rising one above another

**Unconditioned Space:** an area of a home that does not have air conditioned supplied to it, i.e. garage, etc...

**Urethane:** a white, crystalline, water-soluble powder, C$_3$H$_7$NO$_2$: used chiefly as a solvent, in organic synthesis, as a fungicide and pesticide.

**Wastewater:** water that has been used in washing, flushing, manufacturing, etc.; sewage.

* Some definitions provided by www.dictionary.com