

Florida Green Building Coalition

GREEN HIGH RISE RESIDENTIAL BUILDING DESIGNATION STANDARD

REFERENCE GUIDE

**Version 1.0
May 2006**

OVERVIEW

The intent of this Standard is to encourage Owners of High Rise Residential Projects to adopt green and sustainable strategies during the design and construction of their project and to receive recognition for their efforts.

This High Rise Residential Building Designation Standard covers all residential occupancies above three (3) stories listed in the current Florida Building Code.

To use this Standard, the project design team reviews the Checklist (Schedule A) along with this Reference Guide. The team determines which Credit Points will be pursued (or targeted). The Owner authorizes one of the design team members to be the Designated Professional. The Designated Professional compiles the appropriate documentation for each achieved Credit Point as the design process evolves. Once all documentation has been collected, organized, and reviewed, the Designated Professional completes the Application Form and the remainder of the Checklist (Schedule A), attaches all supporting letters and documentation, and submits it (with a check for the appropriate fee) to FGBC for processing.

The FGBC appoints a Project Evaluator who reviews the submittal and determines its compliance with the Standard and issues the Certification. A Certificate is delivered to the Designated Professional for use by the Owner. The project is listed on the FGBC website as a certified Florida Green High Rise Residential Building.

In the event that the Project Evaluator finds the submittal not in compliance with the Standard, the Designated Professional will be notified and informed of the specific deficiencies in the submittal. The Designated Professional will consult with the project team and then correct the deficiencies and resubmit the required revisions to the FGBC. If the re-submittal fails to comply with the Standard, then the process for each subsequent re-submittal is repeated with the additional requirement of payment of a re-submittal fee equal to 20% of the original fee (this fee is paid for each subsequent re-submittal).

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Category 1: ENERGY

Prerequisite 1

Required

Fundamental Building Systems Commissioning

Intent

Verify and ensure that fundamental building elements and systems are designed, installed and calibrated to operate as intended.

Requirements

Implement or have a contract in place to implement all of the following fundamental best practice commissioning procedures.

- Engage a commissioning authority.
- Develop owner's performance requirements for energy, water and IEQ and review the basis of design to verify performance requirements have been met.
- Incorporate commissioning requirements into the construction documents.
- Develop and utilize a commissioning plan.
- Verify installation, functional performance, training and operation and maintenance documentation.
- Complete a commissioning report.

Technologies & Strategies:

Engage a commissioning authority and adopt a commissioning plan. Include commissioning requirements in bid documents and task the commissioning agent to produce a commissioning report once commissioning activities are completed.

Submittals

- Provide the completed Letter Template, signed by the commissioning authority, certifying that the fundamental commissioning procedures as listed in the credit requirements have been successfully executed and the design intent of the building has been achieved.

OR

- Provide the completed Letter Template, signed by the owner or responsible party, affirming that commissioning services will be provided under contract. Include a copy of the signed contract.

Category 1: ENERGY

Prerequisite 2

Required

Minimum Energy Performance, 10% more efficient than Code

Intent

Establish the minimum level of energy efficiency for the base building and systems.

Requirements

Design the building to comply with the local energy code and provide the owner with a 10% improvement in efficiency.

Technologies & Strategies:

Design the building envelope and systems to maximize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost effective energy measures. Quantify energy performance compared to the baseline building.

The software program used to show compliance with the Florida Energy Code is “Energy Gauge FlaCom”. This program can also be used to show compliance with this credit.

Submittals

- ❑ Provide the completed Letter Template, signed by the mechanical engineer or architect, stating that the building complies with local energy codes. Provide a copy of the Energy Gauge FlaCom printouts and energy calculations that demonstrate that the building achieved a 10% more efficient design.

OR

- ❑ For Existing buildings being renovated, Design should bring building up to current code requirements.

Category 1: ENERGY

Prerequisite 3

Required

CFC Reduction in HVAC&R Equipment

Intent

Reduce ozone depletion.

Requirements

Zero use of CFC-based refrigerants in new base building HVAC&R systems. When reusing existing base building HVAC equipment, complete a comprehensive 5-year CFC phase-out conversion.

Technologies & Strategies:

When reusing existing HVAC systems, conduct an inventory to identify equipment that uses CFC refrigerants and adopt a 5-year replacement schedule for these refrigerants. For new buildings, specify new HVAC equipment that uses no CFC refrigerants.

Submittals

- ❑ Provide the completed Letter Template, signed by the mechanical engineer or architect, declaring that the building's new HVAC&R systems do not use CFC-based refrigerants and that the existing HVAC&R systems will be phased out in 5 years.

Category 1: ENERGY

Credit 1.1 – 1.4

1 - 4 Points

Energy Performance, 15% New / 5% Existing – 70% New / 60% Existing

Intent

Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use.

Requirements

Reduce design energy consumption compared to the energy budget for energy systems regulated by the Florida Energy Code. Use the table below to determine the applicable points for the reduced energy performance level achieved by the design building compared to the base building.

<u>Credit</u>	<u>New Bldgs.</u>	<u>Existing Bldgs.</u>	<u>Points*</u>
Credit 1.1	15%	5%	1
Credit 1.2	25%	15%	2
Credit 1.3	50%	40%	3
Credit 1.4	75%	65%	4

* Points are cumulative. Find level achieved and use points shown as total for this Credit group.

Regulated energy systems include HVAC (heating, cooling, fans, and pumps), service hot water, and interior lighting. Non-regulated systems include plug loads, exterior lighting, garage ventilation and elevators (vertical transportation). Two methods may be used to separate energy consumption for regulated systems. The energy consumption for each fuel may be prorated according to the fraction of energy used by regulated and non-regulated energy. Alternatively, separate meters (accounting) may be created in the energy simulation program for regulated and non-regulated energy uses.

Technologies & Strategies

Design the building envelope and building systems to maximize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost-effective energy efficiency measures. Quantify energy performance as compared to a baseline building.

The software program used to show compliance with the Florida Energy Code is “Energy Gauge FlaCom”. This program can also be used to show compliance with this credit.

Submittals

- Provide the completed Letter Template, signed by the mechanical engineer or architect, incorporating a quantitative summary table showing the energy saving strategies incorporated in the building design. Provide a copy of the Energy Gauge FlaCom printouts and energy calculations that demonstrate that the building achieved the more efficient design performance level applied for under this credit.

Category 1: ENERGY

Credit 2.1 – 2.3

1 - 3 Points

Renewable Energy, 5% - 20%

Intent

Encourage and recognize increasing levels of self-supply through renewable technologies to reduce environmental impacts associated with fossil fuel energy use.

Requirements

Supply a fraction of the building's total energy use (as expressed as a fraction of annual energy cost) through the use of on-site renewable energy systems.

<u>Credit</u>	<u>Contribution</u>	<u>Points*</u>
Credit 2.1	5%	1
Credit 2.2	10%	2
Credit 2.3	20%	3

* Points are cumulative. Find level achieved and use points shown as total for this Credit group.

Technologies & Strategies

Assess the project for renewable energy potential including solar, wind, geothermal, low-impact hydro, biomass and bio-gas strategies. When applying these strategies, take advantage of net metering with the local utility.

Submittals

- Provide the completed Letter Template, signed by the architect, owner or responsible party, declaring the percentage of the building's energy is provided by on-site renewable energy. Include a narrative describing on-site renewable energy systems installed in the building and calculations demonstrating that the required percentage of total energy costs are supplied by the renewable energy system(s).

Category 1: ENERGY

Credit 3

1 Point

Additional Commissioning

Intent

Verify and ensure that the entire building is designed, constructed and calibrated to operate as intended.

Requirements

In addition to the Fundamental Building Commissioning prerequisite, implement or have a contract in place to implement the following additional commissioning tasks:

1. A commissioning authority independent of the design team shall conduct a focused review of the design prior to the construction documents phase.
2. The independent commissioning authority shall conduct a focused review of the construction documents near completion of the construction document development and prior to issuing the contract documents for construction.
3. The independent commissioning authority shall review the contractor submittals relative to systems being commissioned.
4. Provide information to the owner in a single document (manual) that is required for re-commissioning building systems.
5. Have a contract in place to review building operation with O&M staff, including a plan for resolution of outstanding commissioning-related issues within one year after construction completion date.

Technologies & Strategies

Engage the commissioning authority early in the design phases.

Submittals

- Provide the completed Letter Template, signed by the independent commissioning agent(s), confirming that Tasks 1-5 of the credit requirements have been successfully executed.

OR

- Provide the completed Letter Template, signed by the owner, affirming that these services will be provided under contract(s) together with a signed copy of the contract(s) stating that Tasks 1-5 of the credit requirements will be implemented within one year from completion of the project.

Category 1: ENERGY

Credit 4

1 Point

Ozone Depletion, HCFC Free HVAC&R Equipment

Intent

Reduce ozone depletion and support early compliance with the Montreal Protocol.

Requirements

Install base building level HVAC and refrigeration equipment and fire suppression systems that do not contain HCFCs or Halons.

Technologies & Strategies

When reusing buildings, inventory existing building systems using refrigerants and fire suppression chemicals and replace those that contain HCFCs or Halons. For new buildings, specify refrigeration and fire suppression systems that use no HCFCs or Halons.

Submittals

- ❑ Provide the completed Letter Template, signed by the mechanical engineer or architect, stating that all HVAC&R systems are free of HCFCs and Halons.

Category 1: ENERGY

Credit 5 – 5.2

1 - 3 Points

Green Power, 25% - 75%

Intent

Encourage the development and use of grid-source, renewable energy technologies on a net zero pollution basis.

Requirements

Provide a percentage of the building's electricity from renewable sources by engaging in at least a one-year renewable energy contract.

<u>Credit</u>	<u>%</u>	<u>Points*</u>
Credit 5	25%	1
Credit 5.1	50%	2
Credit 5.2	75%	3

* Points are cumulative. Find level achieved and use points shown as total for this Credit group.

Renewable sources are as defined by the Center for Resource Solutions (CRS) Green-e products certification requirements. Green power may be procured from a Green-e certified power marketer, a Green-e accredited utility program, or through Green-e certified Tradable Renewable Certificates.

Technologies & Strategies

Estimate the energy needs of the building and investigate opportunities to engage in a green power contract with the local utility. Green power is derived from solar, wind, geothermal, biomass or low-impact hydro sources. Visit www.green-e.org for details about the Green-e program.

Submittals

- Provide the completed Letter Template, signed by the owner or other responsible party, documenting that the supplied renewable power is equal to 25%, 50%, 75% of the project's energy consumption and the sources meet the Green-e definition of renewable energy. Provide a copy of the one-year electric utility purchase contract for power generated from renewable sources.

Category 1: ENERGY

Credit 6

2 Points

Energy Star Appliances

Intent

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.

Requirements

FGBC awards 2 points for the installation of ENERGY STAR[®] labeled refrigerator, clothes washer, and dishwasher.

Technologies & Strategies

Refrigerators represent the single largest power consumer of all household appliances. ENERGY STAR[®] models incorporate better insulation, more efficient compressors, better heat transfer surfaces, and more precise temperature and defrost mechanisms. They must exceed federal standards by 20% to be considered ENERGY STAR[®]. As a result of the better insulation and more efficient operation, installation of such a refrigerator will also keep the kitchen cooler, providing more savings from space cooling.

ENERGY STAR[®] dishwashers save by using both improved technology for the primary wash cycle, and by using less hot water to clean. These appliances include energy efficient motors and other advanced technologies such as sensors that determine the length of the washing cycle and the temperature of the water necessary to clean the dishes. Dishwashers use built-in electric heaters to heat water to a temperature hot enough to clean dishes effectively. ENERGY STAR[®] dishwashers minimize water use, saving the energy required to heat it, in addition to other efficiencies. ENERGY STAR[®] dishwashers must exceed minimum federal standards by at least 13% to be considered ENERGY STAR[®].

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 30%-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.

Category 1: ENERGY

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.

Submittals

- Provide the completed Letter Template, signed by the owner or other responsible party, documenting that the supplied appliances are ENERGY STAR® certified. Provide a copy of cut sheet for each appliance.

Category 1: ENERGY

Credit 7

1 Point

Insulate All Hot Water Pipes

Intent

Insulating the piping will minimize heat losses while water is flowing through, or remaining stagnant inside the pipes.

Requirements

All hot water piping (including that which is buried) must be insulated with a minimum of ½” insulation.

Technologies & Strategies

Submittals

- ❑ Provide the completed Letter Template, signed by the owner or other responsible party, documenting that the supplied water pipes were insulated with proper insulation. Provide a copy of a receipt for the appropriate amount of pipe insulation or photo.

Category 1: ENERGY

Credit 8

1 Point

Centrally Locate All Water Heaters

Intent

By centrally locating the water heater, heat losses can be minimized by minimizing piping runs.

Requirements

FGBC awards 1 point if the water heater is installed in a central location (between locations that use hot water), rather than on one end of the home.

Submittals

- Provide the completed Letter Template, signed by the owner or other responsible party, documenting that the water heater is located in a central location. Provide a copy of the floor plan showing water heater location.

Category 1: ENERGY

Credit 9

1 Point

Ductwork Joints Sealed with Mastic

Intent

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.

Requirements

FGBC awards 1 point if all ductwork and joints are sealed with mastic.

Submittals

- ❑ Provide the completed Letter Template, signed by the owner or other responsible party, documenting that all ductwork has been properly sealed with duct mastic.

Category 1: ENERGY

Credit 10

1 Point

Max installed lighting wattage <0.5 W/ft

Intent

In many cases, houses are over-lit: Installed lighting is augmented with freestanding lamps, and more light is available than necessary for various tasks. As previously mentioned, excessive lighting can add to the air conditioning load.

Requirements

FGBC awards 1 point for a home with maximum installed lighting of less than 0.5 watts per square foot of living space. This can be calculated by dividing the total wattage of installed light inside the home by the home's conditioned floor area.

Submittals

- ❑ Provide the completed Letter Template, signed by the owner or other responsible party, documenting that the home meets the above requirements. Provide a copy of the calculations.

Category 2: WATER

Prerequisite 1

Required

Drought Tolerant Landscape, 25%

Intent

Utilize drought tolerant landscapes due to the strain that Florida's water resources are under.

Requirements

Design Landscaping utilizing a minimum of 25% of all plants from Florida drought tolerant species.

Technologies & Strategies

Utilize the Waterwise Florida Landscapes publication available from Florida's various Water Management Districts.

Submittals

- Provide the completed Letter Template, signed by the landscape architect or responsible party, including a detailed plant list with all drought tolerant species identified. Also provide a calculation that illustrates the minimum 25% of species.

Category 2: WATER

Credit 1.1 – 1.3

1 – 3 Points

Drought Tolerant Landscape, 50% - 100%

Intent

Utilize drought tolerant landscapes due to the strain that Florida’s water resources are under.

Requirements

Design Landscaping utilizing a minimum of 50% and a maximum of 100% of all plants from Florida drought tolerant species.

<u>Credit</u>	<u>Utilization</u>	<u>Points*</u>
Credit 1.1	50%	1
Credit 1.2	75%	2
Credit 1.3	100%	3

* Points are cumulative. Find level achieved and use points shown as total for this Credit group.

Technologies & Strategies

Utilize the Waterwise Florida Landscapes publication available from Florida’s various Water Management Districts.

Submittals

- Provide the completed Letter Template, signed by the landscape architect or responsible party, including a detailed plant list with all drought tolerant species identified and quantified. Also provide a calculation that illustrates the percentage of drought tolerant species relative to all species.

Category 2: WATER

Credit 2.1 – 2.2

1 – 2 Points

Water Efficient Irrigation, Reduce Potable Water Use for 50% - 75% of area

Intent

Limit or eliminate the use of potable water for landscape irrigation.

Requirements

Use high-efficiency (micro or drip) irrigation technology OR use captured rain or recycled site water to reduce potable water consumption for irrigation on 50% - 75% of the irrigated area.

<u>Credit</u>	<u>Area Achieved</u>	<u>Points*</u>
Credit 2.1	50%	1
Credit 2.2	75%	2

* Points are cumulative. Find level achieved and use points shown as total for this Credit group.

Technologies & Strategies

Perform a soil/climate analysis to determine appropriate landscape types and design the landscape with indigenous plants to reduce or eliminate irrigation requirements. Use high-efficiency irrigation systems and consider using stormwater and/or greywater for irrigation.

Submittals

- ❑ Provide the completed Letter Template, signed by the landscape architect, engineer or responsible party, declaring that potable water consumption for site irrigation has been reduced by either 50% or 75%. Include a brief narrative of the equipment used and/or the use of drought tolerant or native plants.

Category 2: WATER

Credit 2.3

1 Point

Water Efficient Irrigation, No Potable Use or No Permanent Irrigation

Intent

Limit or eliminate the use of potable water for landscape irrigation.

Requirements

Use only captured rain or recycled site water to eliminate all potable water use for site irrigation (except for initial watering to establish plants), OR do not install permanent landscape irrigation systems.

Technologies & Strategies

Perform a soil/climate analysis to determine appropriate landscape types and design the landscape with indigenous plants to reduce or eliminate irrigation requirements. Consider using stormwater and/or greywater for irrigation.

Submittals

- ❑ Provide the completed Letter Template, signed by the responsible architect and/or engineer, declaring that the project site will not use potable water for irrigation. Include a narrative describing the captured rain system, the recycled site water system, and their holding capacity. List all the plant species used. Include calculations demonstrating that irrigation requirements can be met from captured rain or recycled site water.

OR

- ❑ Provide the completed Letter Template, signed by the landscape architect or responsible party, declaring that the project site does not have a permanent landscape irrigation system. Include a narrative describing how the landscape design allows for this.

Category 2: WATER

Credit 3

1 Point

Ultra Low Flow Toilets

Intent

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, by allowing one to select low (0.8 gal/flush) or high (1.6 gal/flush) flush volumes. ****Suggested submittal: New home – cut sheet for toilet, existing home - None required – visual inspection by Certifying Agent.****

Requirements

For a home built after 1992, FGBC awards 2 points if all toilets installed in the home permit one to flush at volumes lower than required by EPACT.

Technologies & Strategies

Please visit www.terrylove.com/wc/caroma/index.htm for more info. A good source for information on low-flow toilets in general is www.terrylove.com.

Submittals

- ❑ Provide the completed Letter Template, signed by the owner or responsible party, declaring that all toilets meet the above requirements. Include a cut sheet.

Category 2: WATER

Credit 4

1 Point

Hot Water Recirculating system

Intent

Inevitably, some fixtures that deliver hot water in a home are installed some distance away from the hot water heater. When these fixtures are not in use, hot water remains stagnant inside the pipes and lose its heat to the surrounding environment. When the fixture is turned on, the cold water is wasted while it is allowed to run out of the fixture until hot water from the tank can make it to the point of use. Hot water recirculation systems are now on the market to remedy this situation.

Requirements

FGBC awards 1 point if a hot water recirculation system is installed. Such a system is more appropriate for new construction, since replumbing may require extensive renovation.

Technologies & Strategies

Installation of such a system involves installing a hot water line from the fixture the farthest distance from the hot water tank returning back to the tank. A “tee” type fitting combines this line with the cold-water inlet to the tank. Rather than remaining stagnant inside the pipes, as the water cools, it flows back to the tank, and is continuously replaced with hot water. Hot water is then available as soon as the fixture is turned on. By installing the line on the fixture farthest from the tank, all fixtures in the home are included within the loop. Some models are available with pumps to aid circulation, which only present a small added electricity demand. For more information please visit

www.toolbase.org/tertiaryT.asp?TrackID=&DocumentID=2130&CategoryID=1318 and www.metlund.com/.

Submittals

- ❑ Provide the completed Letter Template, signed by the owner or responsible party, declaring that the project has a recirculating pump installed.

Category 2: WATER

Credit 6

1 Point

All showers equipped with 1 showerhead

Intent

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.

Requirements

FGBC awards 2 points if each shower in the home is equipped with only one showerhead.

Technologies & Strategies

Submittals

- Provide the completed Letter Template, signed by the owner or responsible party, declaring that the project has a (1) showerhead per shower installed.

Category 2: WATER

Credit 7

1 Point

Florida Yards & Neighborhoods Certified

Intent

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 you 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 hort.ufl.edu/fyn/hand.htm.

Requirements

Inspection by a Florida Yards and Neighborhoods (FY&N) Professional. This especially applies to existing landscapes, where plant identification can be difficult.

Technologies & Strategies

Submittals

- Provide the completed Letter Template, signed by the Florida Yards & Neighborhoods representative, declaring that the project is certified as a Florida Friendly Yard.

Category 2: WATER

Credit 8

1 Point

Faucet Aerators

Intent

Faucet aerators are also required items under the Florida Building Code. They reduce the flow emitted by a faucet fixture, while also enhancing its quality by injecting air into the water stream, thereby increasing velocity of the flow. In turn, faucet aerators increase the usefulness of a low-flow fixture, thereby allowing the same task to be completed (dish washing, hand washing) in less time, using less water. In your kitchen, you will want a 1.5-2.0 gallon-per-minute (gpm) aerator to make sure the flow of water is enough to wash and rinse dishes. You may want to use a low-flow aerator with an on/off handle that allows you to increase or reduce the flow as needed. Your bathroom faucet is used primarily for rinsing tasks. A 0.5-1.5 gpm aerator will provide enough water for shaving, hand washing and other personal hygiene tasks. In the laundry, a 2.0 gpm aerator works best.

Requirements

Although required by code, FGBC awards 1 point if faucet aerators are installed on all fixtures in the home, which ensures that this sometimes overlooked task is properly completed.

Technologies & Strategies

Submittals

- ❑ Provide the completed Letter Template, signed by the owner or responsible party, declaring that the project has a faucet aerators properly installed.

Category 2: WATER

Credit 8

1 Point

Low - flow fixtures

Intent

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/minute at 80 psi water pressure. There are available fixtures on the market today that exceed these standards.

Requirements

FGBC awards 1 point if all fixtures installed in the home are rated at a flow rate equal to or lower than that mandated by the EPACT.

Technologies & Strategies

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.

Submittals

- Provide the completed Letter Template, signed by the owner or responsible party, declaring that the project has a low flow fixtures installed.

Category 3: SITE

Prerequisite 1

Required

Erosion and Sedimentation Control

Intent

Control erosion to reduce negative impacts on water and air quality.

Requirements

Design a sediment and erosion control plan, specific to the site that conforms to United States Environmental Protection Agency (EPA) Document No. EPA 832/R-92-005 (September 1992), *Storm Water Management for Construction Activities*, Chapter 3, OR local erosion and sedimentation control standards and codes, whichever is more stringent. The plan shall meet the following objectives:

- Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
- Prevent sedimentation of storm sewer or receiving streams and/or air pollution with dust and particulate matter.

Technologies & Strategies

Adopt an erosion and sediment control plan for the project site during construction. Consider employing strategies such as temporary and permanent seeding, mulching, earth dikes, silt fencing, sediment traps and sediment basins.

Submittals

- Provide the completed Letter Template, signed by the civil engineer or responsible party, declaring whether the project follows local erosion and sedimentation control standards or the referenced EPA standard. Provide a brief list of the measures implemented. If local standards and codes are followed, describe how they meet or exceed the referenced EPA standard.

Category 3: SITE

Credit 1

1 Point

Site Selection

Intent

Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site.

Requirements

Do not develop buildings, roads, or parking areas on portions of sites that meet any one of the following criteria:

- Prime farmland as defined by the United States Department of Agriculture.
- Land whose elevation is lower than 5 feet above the elevation of the 100-year flood as defined by FEMA.
- Land which is specifically identified as habitat for any species on Federal or State threatened or endangered lists.
- Within 100 feet of any water including wetlands as defined by 40 CFR, Parts 230-233 and Part 22, and isolated wetland or areas of special concern identified by state or local rule OR greater than distances given in state or local regulations as defined by local or state rule or law, whichever is more stringent.
- Land which prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner (Park Authority projects are exempt).

Technologies & Strategies

During the site selection process, give preference to those sites that do not include sensitive site elements and restrictive land types. Select a suitable building location and design the building with the minimal footprint to minimize site disruption. Strategies include stacking the building program, tuck-under parking, and sharing facilities with neighbors.

Submittals

- Provide the completed Letter Template, signed by the civil engineer or responsible party, declaring that the project site does not meet any of the prohibited criteria.

Category 3: SITE

Credit 2

1 Point

Development Density

Intent

Channel development to urban areas with existing infrastructure, protect greenfields, and preserve habitat and natural resources.

Requirements

Increase localized density to conform to existing or desired density goals by utilizing sites that are located within an existing minimum development density of 60,000 square feet per acre (two story downtown development).

Technologies & Strategies

During the site selection process, give preference to urban sites.

Submittals

- ❑ Provide the completed Letter Template, signed by the civil engineer, Architect or other responsible party, declaring that the project has achieved the required development densities. Provide density calculations for the project and for the surrounding area. Provide an area plan with the project location highlighted.

Category 3: SITE

Credit 3

1 Point

Brownfield Redevelopment

Intent

Rehabilitate or make useful damaged sites where development is complicated by real or perceived environmental contamination, reducing pressure on undeveloped land.

Requirements

Develop on a site documented as contaminated (by means of an ASTM E1903-97 Phase II Environmental Site Assessment) OR on a site classified as a brownfield by a local, state or federal government agency. Provide remediation as required by EPA's Sustainable Redevelopment of Brownfields Program.

Technologies & Strategies

During the site selection process, give preference to brownfield sites. Identify tax incentives and property cost savings. Develop and implement a site remediation plan using strategies such as pump-and-treat, bioreactors, land farming and in-situ remediation.

Submittals

- ❑ Provide a copy of the pertinent sections of the Phase II Environmental Site Assessment documenting the site contamination OR provide a letter from a local, state or federal regulatory agency confirming that the site is classified as a brownfield by a local, state or federal government agency.
- ❑ Provide the completed Letter Template signed by the civil engineer or responsible party, declaring the type of damage that existed on the site and describing the remediation performed.

Category 3: SITE

Credit 4.1

1 Point

Alternative Transportation, Public Transportation Access

Intent

Reduce pollution and land development impacts from automobile use.

Requirements

Locate project within 1/2 mile of a commuter rail, light rail or subway station or 1/4 mile of 1 or more public or campus bus lines usable by building occupants.

Technologies & Strategies

Perform a transportation survey of future building occupants to identify transportation needs. Site the building near mass transit.

Submittals

- ❑ Provide the completed Letter Template with an area drawing or transit map highlighting the building location and the fixed rail stations and bus lines, and indicate the distances between them. Include a scale bar for distance measurement.

Category 3: SITE

Credit 4.2

1 Point

Alternative Transportation, Bicycle Storage & Changing Rooms

Intent

Reduce pollution and land development impacts from automobile use.

Requirements

For commercial or institutional buildings, provide secure bicycle storage, with convenient changing/shower facilities (within 200 yards of the building) for 5% or more of regular building occupants. For multi-family buildings, provide covered storage facilities for securing bicycles for 15% or more of building occupants in lieu of changing/shower facilities.

Technologies & Strategies

Design the building with transportation amenities such as bicycle racks and showering/changing facilities.

Submittals

- ❑ For commercial projects: Provide the completed Letter Template signed by the architect or responsible party, declaring the distance to bicycle storage and showers from the building entrance and demonstrating that these facilities can accommodate at least 5% of building occupants.

OR

- ❑ For multi-family projects: Provide the completed Letter Template, signed by the architect or responsible party, declaring the design occupancy for the buildings, number of covered bicycle storage facilities for securing bicycles, and demonstrating that these facilities can accommodate at least 15% of building occupants.

Category 3: SITE

Credit 4.3

1 Point

Alternative Transportation, Alternative Fuel Refueling Stations

Intent

Reduce pollution and land development impacts from automobile use.

Requirements

Provide alternative fuel vehicles (includes hybrids) for 3% of building occupants AND provide preferred parking for these vehicles, OR install alternative-fuel refueling stations (hybrids not included because they do not require alternative fuel) for 3% of the total vehicle parking capacity of the site. Liquid or gaseous fueling facilities must be separately ventilated or located outdoors.

Technologies & Strategies

Provide transportation amenities such as alternative fuel refueling stations and carpool/vanpool programs. Consider sharing the costs and benefits of refueling stations with neighbors.

Submittals

- ❑ Provide the completed Letter Template with proof of ownership of, or 2 year lease agreement for, alternative fuel vehicles and calculations indicating that alternative fuel vehicles will serve 3% of building occupants. Provide site drawings or parking plan highlighting preferred parking for alternative fuel vehicles.

OR

- ❑ Provide the completed Letter Template with specifications and site drawings highlighting alternative fuel refueling stations. Provide calculations demonstrating that these facilities accommodate 3% or more of the total vehicle parking capacity.

Category 3: SITE

Credit 4.4

1 Point

Alternative Transportation, Parking Capacity

Intent

Reduce pollution and land development impacts from single occupancy vehicle use.

Requirements

Size parking capacity to meet, but not exceed, minimum local zoning requirements AND provide preferred parking for carpools or vanpools capable of serving 5% of the building occupants; OR add no new parking for rehabilitation projects AND provide preferred parking for carpools or van pools capable of serving 5% of the building occupants.

Technologies & Strategies

Minimize parking lot/garage size. Consider sharing parking facilities with adjacent buildings.

Submittals

- ❑ For new projects, provide the completed Letter Template signed by the civil engineer or responsible party stating any relevant minimum zoning requirements and declaring that parking capacity is sized to meet, but not exceed them. Provide copies of photos showing the carpooling slots.

OR

- ❑ For rehabilitation projects, provide the completed Letter Template signed by the civil engineer or responsible party declaring that no new parking capacity has been added.

Category 3: SITE

Credit 5.1

1 Point

Reduced Site Disturbance, Protect or Restore Open Space

Intent

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

Requirements

On greenfield sites, limit site disturbance including earthwork and clearing of vegetation to 40 feet beyond the building perimeter, 5 feet beyond primary roadway curbs, walkways and main utility branch trenches, and 25 feet beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities and playing fields) that require additional staging areas in order to limit compaction in the constructed area; OR, on previously developed sites, restore a minimum of 50% of the site area (excluding the building footprint) by replacing impervious surfaces with native or adapted vegetation.

Technologies & Strategies

Perform a site survey to identify site elements and adopt a master plan for development of the project site. Select a suitable building location and design the building with a minimal footprint to minimize site disruption. Strategies include stacking the building program, tuck under parking and sharing facilities with neighbors. Establish clearly marked construction boundaries to minimize disturbance of the existing site and restore previously degraded areas to their natural state.

Submittals

- ❑ For greenfield sites, provide the completed Letter Template, signed by the civil engineer or responsible party, demonstrating and declaring that site disturbance (including earthwork and clearing of vegetation) has been limited to 40 feet beyond the building perimeter, 5 feet beyond primary roadway curbs, walk ways and main utility branch trenches, and 25 feet beyond constructed areas with permeable surfaces. Provide site drawings and specifications highlighting limits of construction disturbance.

OR

- ❑ For previously developed sites, provide the completed Letter Template, signed by the civil engineer or responsible party, declaring and describing restoration of degraded habitat areas. Include highlighted site drawings with area calculations demonstrating that 50% of the site area that does not fall within the building footprint has been restored.

Category 3: SITE

Credit 5.2

1 Point

Reduced Site Disturbance, Development Footprint

Intent

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

Requirements

Reduce the development footprint (defined as entire building footprint, access roads and parking) to exceed the local zoning's open space requirement for the site by 25%. For areas with no local zoning requirements (e.g., some university campuses and military bases), designate open space area adjacent to the building that is equal to the development footprint.

Technologies & Strategies

Consider placing parking under (or above) the building, increasing the number of floors in the building, or incorporating more efficient use of the circulation space inside the building.

Submittals

- ❑ Provide a copy of the local zoning requirements highlighting the criteria for open space. Provide the completed Letter Template, signed by the civil engineer or responsible party, demonstrating and declaring that the open space exceeds the local zoning open space requirement for the site by 25%. Provide appropriate drawings and calculations.

OR

- ❑ For areas with no local zoning requirements (e.g., some university campuses and military bases), provide the completed Letter Template, signed by the civil engineer or responsible party, demonstrating and declaring that the open space area adjacent to the building is equal to (or greater than) the development footprint. Provide a letter from the property owner stating that the open space will be conserved for the life of the building.

Category 3: SITE

Credit 6.1

1 Point

Stormwater Management, Rate and Quantity

Intent

Limit disruption and pollution of natural water flows by managing stormwater runoff.

Requirements

If existing imperviousness is less than or equal to 50%, implement a stormwater management plan that prevents the post-development 1.5 year, 24 hour peak discharge rate from exceeding the pre-development 1.5 year, 24-hour peak discharge rate.

OR

If existing imperviousness is greater than 50%, implement a stormwater management plan that results in a 25% decrease in the rate and quantity of stormwater runoff.

Technologies & Strategies

Design the project site to maintain natural stormwater flows by promoting infiltration. Specify garden roofs and pervious paving to minimize impervious surfaces. Reuse stormwater volumes generated for non-potable uses such as landscape irrigation, toilet and urinal flushing and custodial uses.

Submittals

- ❑ Provide the completed Letter Template, signed by the civil engineer or responsible party, declaring the 24 hour peak discharge rate does not exceed the pre-development 1.5 year 24 hour peak discharge rate. Provide calculations demonstrating that existing site imperviousness is less than or equal to 50%.

OR

- ❑ Provide the completed Letter Template, signed by the civil engineer or responsible party, declaring that the stormwater management strategies result in at least a 25% decrease in the rate and quantity of stormwater runoff. Provide calculations demonstrating that existing site imperviousness exceeds 50%.

Category 3: SITE

Credit 6.2

1 Point

Stormwater Management, Treatment

Intent

Limit disruption of natural water flows by eliminating stormwater runoff, increasing on-site infiltration and eliminating contaminants.

Requirements

Construct site stormwater treatment systems designed to remove 80% of the average annual post-development total suspended solids (TSS) and 40% of the average annual post-development total phosphorous (TP) based on the average annual loadings from all storms less than or equal to the 2-year/24-hour storm. Do so by implementing Best Management Practices (BMPs) outlined in Chapter 4, Part 2 (Urban Runoff), of the United States Environmental Protection Agency's (EPA's) *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* (Document No. EPA-840-B-93-001c January 1993) or the local government's BMP document (whichever is more stringent).

Technologies & Strategies

Design mechanical or natural treatment systems such as constructed wetlands, vegetated filter strips and bioswales to treat the site's stormwater.

Submittals

- Provide the completed Letter Template, signed by the civil engineer or responsible party, demonstrating and declaring that the design complies with or exceeds EPA or local government Best Management Practices (whichever set is more stringent) for removal of TSS and TP.

Category 3: SITE

Credit 7.1

1 Point

Reduction of Heat Islands, Non-Roof

Intent

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

Requirements

Provide shade (within 5 years) AND/OR use light-colored/high-albedo materials (reflectance of at least 0.3) or open grid pavement for at least 30% of the site's non-roof impervious surfaces, including parking lots, walkways, plazas, etc.; OR place a minimum of 50% of parking spaces underground or covered by structured parking; OR use an open-grid pavement system (less than 50% impervious) for a minimum of 50% of the parking lot area.

Technologies & Strategies

Shade constructed surfaces on the site with landscape features and minimize the overall building footprint.

Consider replacing constructed surfaces (i.e. roof, roads, sidewalks, etc.) with vegetated surfaces such as garden roofs and open grid paving or specify high-albedo materials to reduce the heat absorption.

Submittals

- Provide the completed Letter Template, signed by the civil engineer or responsible party, referencing the site plan to demonstrate areas of paving, landscaping (list species) and building footprint, and declaring that:

A minimum of 30% of non-roof impervious surfaces areas are constructed with high-albedo materials and/or will be shaded within five years

OR

a minimum of 50% of parking spaces have been placed underground or are covered by structured parking

OR

An open-grid pavement system (less than 50% impervious) has been used for a minimum of 50% of the parking lot area.

Category 3: SITE

Credit 7.2

1 Point

Reduction of Heat Islands, Roof

Intent

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

Requirements

Use ENERGY STAR Roof-compliant, high-reflectance AND high emissivity roofing (for low slope roofs: initial reflectance of at least 0.65 and three-year-aged reflectance of at least 0.5 when tested in accordance with ASTM E903 and emissivity of at least 0.9 when tested in accordance with ASTM 408; for steep slope roofs: initial reflectance of at least 0.25 and three-year-aged reflectance of at least 0.15 when tested in accordance with ASTM E903 and emissivity of at least 0.9 when tested in accordance with ASTM 408) for a minimum of 75% of the roof surface; OR Install a “green” (vegetated) roof for at least 50% of the roof area. Combinations of high albedo and vegetated roof can be used providing they collectively cover 75% of the roof area.

Technologies & Strategies

Consider installing high-albedo and vegetated roofs to reduce heat absorption.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, civil engineer or responsible party, referencing the building plan and declaring that the roofing materials comply with the Energy Star Label requirements and have a minimum emissivity of 0.9. Demonstrate that high-albedo and vegetated roof areas combined comprise at least 75% of the total roof area.

OR

- ❑ Provide the completed Letter Template, signed by the architect, civil engineer or responsible party, referencing the building plan and demonstrating that vegetated roof areas comprise at least 50% of the total roof area.

Category 3: SITE

Credit 8

1 Point

Light Pollution Reduction

Intent

Eliminate light trespass from the building and site, improve night sky access and reduce development impact on nocturnal environments.

Requirements

Do not exceed the light levels and uniformity ratios recommended by the Illuminating Engineering Society of North America (IESNA) *Recommended Practice Manual: Lighting for Exterior Environments* (RP-33-99). Design exterior lighting such that all exterior luminaires with more than 1000 initial lamp lumens are shielded and all luminaires with more than 3500 initial lamp lumens meet the Full Cutoff IESNA Classification. The maximum candela value of all interior lighting shall fall within the building (not out through windows) and the maximum candela value of all exterior lighting shall fall within the property. Any luminaire within a distance of 2.5 times its mounting height from the property boundary shall have shielding such that no light or brightness from that luminaire crosses the property boundary.

Technologies & Strategies

Adopt site lighting criteria to maintain safe light levels while avoiding off-site lighting and night sky pollution. Minimize site lighting where possible and model the site lighting using a computer model. Technologies to reduce light pollution include full cutoff luminaires, low-reflectance surfaces and low-angle spotlights.

Submittals

- ❑ Provide the completed Letter Template, signed by the electrical engineer or responsible party, with exterior lighting design drawings demonstrating that the objectives and measures of the credit have been met, that the IESNA RP-33 uniformity of light and maximum illuminance values have not been exceeded, and that the design will not create glare or light trespass onto neighboring property or streets, nor create light pollution in the night sky.
- ❑ Provide cut sheets for all exterior luminaires with more than 3500 lumen lamps, demonstrating that they meet the Full Cutoff IESNA Classification.
- ❑ Provide interior lighting design drawings for the building's perimeter areas demonstrating that the maximum candela value of interior lighting falls within the building and not out through the windows.

Category 4: HEALTH

Prerequisite 1

Required

Environmental Tobacco Smoke (ETS) Control

Intent

Prevent exposure of building occupants and systems to Environmental Tobacco Smoke (ETS).

Requirements

Exposure of non-smokers to ETS by Prohibiting smoking in the building except in designated smoking areas, owners' residences, and locating any exterior designated smoking areas away from entries and operable windows, commissioning plan and report or as a separate document.

Technologies & Strategies

Prohibit smoking in the building except in designated smoking areas and owners' residences.

Submittals

- ❑ Provide the completed Letter Template, signed by the building owner or responsible party, declaring that the building will be operated under a policy prohibiting smoking except in designated smoking areas and owners' residences.

Category 4: HEALTH

Credit 1

1 Point

Carbon Dioxide (CO₂) Monitoring

Intent

Provide capacity for indoor air quality (IAQ) monitoring to help sustain long-term occupant health, comfort and well being.

Requirements

Install a permanent carbon dioxide (CO₂) monitoring system that provides feedback on space ventilation performance in a form that affords operational adjustments. This system should be utilized to increase Fresh air supply to the building and not to reduce fresh air and increase energy efficiency. Refer to the CO₂ differential for all types of occupancy in accordance with ASHRAE 62-2001, Appendix D.

Technologies & Strategies

Design the HVAC system with carbon dioxide monitoring sensors and integrate these sensors with the building automation system (BAS). NOTE: The maximum concentration differential in parts per million (ppm) = 10,300/ventilation rate in cubic feet per minute. For mixed-use buildings calculate CO₂ levels for each separate use.

Submittals

- Provide the completed Letter Template, signed by the mechanical engineer or responsible party, declaring and summarizing the installation, operational design and controls/zones for a carbon dioxide monitoring system.

Category 4: HEALTH

Credit 2

1 Point

Increased Ventilation Effectiveness

Intent

Provide for the effective delivery and mixing of fresh air to support the health, safety, comfort and well-being of building occupants.

Requirements

For mechanically ventilated buildings, design ventilation systems that result in an air change effectiveness greater than or equal to 0.9 as determined by ASHRAE 129-1997. For naturally ventilated spaces demonstrate a distribution and laminar flow pattern that involves not less than 90% of the room or zone area in the direction of air flow for at least 95% of hours of occupancy.

Technologies & Strategies

Design the HVAC system and building envelope to optimize air change effectiveness. Air change effectiveness can be optimized using a variety of ventilation strategies including displacement ventilation, low-velocity ventilation, plug-flow ventilation such as under floor or near floor delivery, and operable windows. Test the air change effectiveness of the building after construction.

Submittals

- ❑ For mechanically ventilated spaces: Provide the completed Letter Template, signed by the mechanical engineer or responsible party, declaring that the design achieves an air change effectiveness of 0.9 or greater in each ventilated zone. Include a table summarizing the air change effectiveness achieved for each zone.

OR

- ❑ For mechanically ventilated spaces: Provide the completed Letter Template, signed by the mechanical engineer or responsible party, declaring that the design complies with the recommended design approaches in ASHRAE 2001 Fundamentals Chapter 32, Space Air Diffusion. Include a table summarizing for each zone the air change effectiveness, which must be 0.9 or greater.

OR

- ❑ For naturally ventilated spaces: Provide the completed Letter Template, signed by the mechanical engineer or responsible party, declaring that the design provides effective ventilation in at least 90% of each room or zone area in the direction of airflow for at least 95% of hours of occupancy. Include a table summarizing for each zone the airflow simulation results. Include sketches indicating the airflow pattern for each zone.

Category 4: HEALTH

Credit 3.1

1 Point

Construction IAQ Management Plan, During Construction

Intent

Prevent indoor air quality problems resulting from the construction/renovation process in order to help sustain the long-term health, comfort and well-being of construction workers and building occupants.

Requirements

Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:

- During construction meet or exceed the minimum requirements recommended in Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995.
- Protect stored on-site or installed absorptive materials from moisture damage.
- Replace all filtration media immediately prior to occupancy. Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13, as determined by ASHRAE 52.2-1999 for media installed at the end of construction, and a MERV of 8, for media used to protect HVAC at each return air grill during construction.

Technologies & Strategies

Adopt an IAQ management plan to protect the HVAC system during construction, control pollutant sources, and interrupt contamination pathways. Sequence the installation of materials to avoid contamination of absorptive materials such as insulation, carpeting, ceiling tile and gypsum wallboard.

Submittals

- ❑ Provide the completed Letter Template, signed by the general contractor or responsible party, listing each different filtration media used during construction and at the end of construction. Include the MERV value, manufacturer name and model number.

AND EITHER

- ❑ Provide 6 photographs at 3 different occasions during construction along with a brief description of the SMACNA approach employed, documenting implementation of the IAQ management measures (such as protection of ducts and on-site stored or installed absorptive materials).

OR

- ❑ Declare the five Design Approaches of SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3, which were used during building construction. Include a brief description of some of the important design approaches employed.

Category 4: HEALTH

Credit 3.2

1 Point

Construction IAQ Management Plan, Before Occupancy

Intent

Prevent indoor air quality problems resulting from the construction/renovation process in order to help sustain the long-term health, comfort and well-being of construction workers and building occupants. Fresh air should be dehumidified and/or conditioned to ensure that fresh air introduced does not bring in high humidity typically found in Florida.

Requirements

Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:

- After construction ends and prior to occupancy conduct a minimum two-week building flush-out with new filtration media at 100% outside air. Replace filtration media used after the flush-out with new filtration media that have a MERV of at least 13.

OR

- Conduct a baseline indoor air quality testing procedure consistent with the United States Environmental Protection Agency's current *Protocol for Environmental Requirements, Baseline IAQ and Materials, for the Research Triangle Park Campus, Section 01445*.

Technologies & Strategies

Prior to occupancy, perform a two-week building flush-out or test the contaminant levels in the building. Portable Dehumidifiers and Air Conditioners should be utilized if main buildings systems can not handle a 100% fresh air load.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, general contractor or responsible party, describing the building flush-out procedures including dates of building flush-out.

OR

- ❑ Provide the completed Letter Template, signed by the architect, general contractor or responsible party, with a copy of the IAQ testing results indicating that the maximum chemical contaminant concentration requirements are not exceeded.

Category 4: HEALTH

Credit 4.1

1 Point

Low-Emitting Materials, Adhesives & Sealants

Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the health, comfort and well-being of installers and occupants.

Requirements

The VOC content of adhesives and sealants used must be less than the current VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168 AND all sealants used as fillers must meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51.

Technologies & Strategies

Specify Low-VOC materials in construction documents. Ensure that VOC limits are clearly stated in each section where adhesives and sealants are addressed.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect or responsible party, listing the adhesives and sealants used in the building and declaring that they meet the noted requirements.

- ❑ Provide a manufacturer's catalog cut sheet and a Material Safety Data Sheet (MSDS) highlighting the stated VOC emissions for each adhesive and sealant used in the building.

Category 4: HEALTH

Credit 4.2

1 Point

Low-Emitting Materials, Paints

Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the health, comfort and well-being of installers and occupants.

Requirements

VOC emissions from paints must not exceed the VOC and chemical component limits of Green Seal requirements.

Interior Coating	Gram / Liter
Non-Flat	150
Flat	50
Exterior Coating	
Non-Flat	200
Flat	100

Technologies & Strategies

Specify Low-VOC paints and coatings in construction documents. Ensure that VOC limits are clearly stated in each section where paints are addressed

Submittals

- ❑ Provide the completed Letter Template, signed by the architect or responsible party, listing all the paints and coatings used in the building and stating that they comply with the current VOC and chemical component limits of Green Seal requirements.
- ❑ Provide a manufacturer's catalog cut sheet and a Material Safety Data Sheet (MSDS) highlighting VOC limits and chemical component limits for each paint or coating used in the building.

Category 4: HEALTH

Credit 4.3

1 Point

Low-Emitting Materials, Carpet

Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the health, comfort and well-being of installers and occupants.

Requirements

Carpet systems must meet or exceed the requirements of the Carpet and Rug Institute Green Label Plus Indoor Air Quality Test Program.

Technologies & Strategies

Specify Low-VOC carpet products and systems in construction documents. Ensure that VOC limits are clearly stated where carpet systems are addressed.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect or responsible party, listing all the carpet systems used in the building and stating that they comply with the current VOC limits of the Carpet and Rug Institute Green Label Plus Indoor Air Quality Test Program.

- ❑ Provide a manufacturer's catalog cut sheet highlighting the Green Label Plus sticker or the VOC limits for each carpet product used in the building.

Category 4: HEALTH

Credit 4.4

1 Point

Low-Emitting Materials, Composite Wood

Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the health, comfort and well-being of installers and occupants.

Requirements

Composite wood and agrifiber products must contain no added urea-formaldehyde resins.

Technologies & Strategies

Specify wood and agrifiber products that contain no added urea-formaldehyde resins in construction documents.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect or responsible party, listing all the composite wood products used in the building and stating that they contain no added urea-formaldehyde resins.
- ❑ Provide a manufacturers catalog cut sheet for each composite wood or agrifiber product used in the building indicating that the bonding agent used in each product contains no added urea-formaldehyde.

Category 4: HEALTH

Credit 4.5

1 Point

Low-Emitting Materials, Insulation

Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the health, comfort and well-being of installers and occupants.

Requirements

Insulation products must contain no formaldehyde.

Technologies & Strategies

Specify insulation products that contain no formaldehyde in construction documents.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect or responsible party, listing all the insulation products used in the building and stating that they contain no formaldehyde.

- ❑ Provide a manufacturers catalog cut sheet for each insulation product used in the building indicating that it contains no formaldehyde.

Category 4: HEALTH

Credit 4.6

1 Point

Low-Emitting Materials, Environmentally Friendly Maintenance

Intent

Reduce the amount of harmful chemicals used in the maintenance operations of the building.

Requirements

Use only non toxic cleaning supplies in the regular maintenance of the building. Non Toxic is defined as having a zero Health Hazard rating on the product's Material Safety Data Sheet (MSDS) and listed as "non-toxic" for Acute Toxicity under "Section V - Health Information" on the MSDS.

Technologies & Strategies

Identify non-toxic cleaning supplies, and service companies that specialize in healthy cleaning supplies. Visit www.ecomall.com for a sample list of products and companies.

Submittals

- Provide the completed Letter Template, signed by the owner, with a list of cleaning procedures and chemicals used in the daily, weekly, and monthly maintenance of the building. Attach the MSDS for each product highlighting the required compliance sections.

Category 4: HEALTH

Credit 5

1 Point

Indoor Chemical & Pollutant Source Control

Intent

Avoid exposure of building occupants to potentially hazardous chemicals that adversely impact air quality.

Requirements

Design to minimize cross-contamination of regularly occupied areas by chemical pollutants:

- Employ permanent entryway systems (grills, grates, etc.) to capture dirt, particulates, etc. from entering the building at all high volume entryways.
- Where chemical use occurs (including housekeeping areas and copying/printing rooms), provide segregated areas with deck to deck partitions with separate outside exhaust at a rate of at least 0.50 cubic feet per minute per square foot, no air recirculation and maintaining a negative pressure of at least 7 PA (0.03 inches of water gauge).
- Provide drains plumbed for appropriate disposal of liquid waste in spaces where water and chemical concentrate mixing occurs.

Technologies & Strategies

Design separate exhaust and plumbing systems for rooms with contaminants to achieve physical isolation from the rest of the building. Install permanent architectural entryway systems such as grills or grates to prevent occupant-borne contaminants from entering the building.

Submittals

□ Provide the completed Letter Template, signed by the architect or responsible party, declaring that: Permanent entryway systems (grilles, grates, etc.) to capture dirt, particulates, etc. are provided at all high volume entryways.

Chemical use areas and copy rooms have been physically separated with deck-to-deck partitions; independent exhaust ventilation has been installed at 0.5 cfm/square foot and that a negative pressure differential of 7 Pa has been achieved.

In spaces where water and chemical concentrate mixing occurs, drains are plumbed for environmentally appropriate disposal of liquid waste.

Category 4: HEALTH

Credit 6.1

1 Point

Controllability of Systems, Perimeter Spaces

Intent

Provide a high level of ventilation and lighting system control by individual occupants or specific groups in multi-occupant spaces (i.e. classrooms or conference areas) to promote the health, productivity, comfort and well-being of building occupants.

Requirements

Provide minimum of one operable window and one lighting control zone per 200 SF for all occupied areas within 15 feet of the perimeter wall.

Technologies & Strategies

Design the building with occupant controls for airflow and lighting. Strategies to consider include, lighting controls, task lighting and operable windows.

Submittals

- Provide the completed Letter Template, signed by the architect or responsible party, demonstrating and declaring that for regularly occupied perimeter areas of the building, a minimum of one operable window and one lighting control zone are provided per 200 square feet on average.

Category 4: HEALTH

Credit 6.2

1 Point

Controllability of Systems, Non-Perimeter Spaces

Intent

Provide a high level of ventilation and lighting system control by individual occupants or specific groups in multi-occupant spaces (i.e. classrooms or conference areas) to promote the health, productivity, comfort and well-being of building occupants.

Requirements

Provide controls for each individual for airflow and lighting for at least 50% of the occupants in non-perimeter, regularly occupied areas.

Technologies & Strategies

Design the building with occupant controls for airflow and lighting. Strategies to consider include task lighting and underfloor HVAC systems with individual diffusers.

Submittals

- Provide the completed Letter Template, signed by the architect or responsible party, demonstrating and declaring that controls for individual airflow and lighting are provided for at least 50% of the occupants in non-perimeter, regularly occupied areas.

Category 4: HEALTH

Credit 7.1

1 Point

Thermal Comfort, Comply with ASHRAE 55-1992

Intent

Provide a thermally comfortable environment that supports the productivity, health and well-being of building occupants.

Requirements

Comply with ASHRAE Standard 55-1992, Addenda 1995, for thermal comfort standards including humidity control within established ranges per climate zone. Projects must employ both thermal and humidity control measures and systems to keep the space within the designated ranges specified by ASHRAE 55-1992.

Technologies & Strategies

Establish temperature and humidity comfort ranges and design the building envelope and HVAC system to maintain these comfort ranges.

Submittals

- For mechanically ventilated spaces: Provide the completed Letter Template, signed by the engineer or responsible party, declaring that the project complies with ASHRAE Standard 55-1992, Addenda 1995. Include a table that identifies each thermally controlled zone, and that summarizes for each zone the temperature and humidity control ranges and the method of control used.

Category 4: HEALTH

Credit 7.2

1 Point

Thermal Comfort, Dehumidification System

Intent

Provide a thermally comfortable environment that supports the productivity, health and well-being of building occupants.

Requirements

Install a permanent temperature and humidity monitoring system configured to provide operators control over thermal comfort performance and the effectiveness of dehumidification systems in the building. The dehumidification system shall be a centrally located and permanent.

Technologies & Strategies

Establish temperature and humidity comfort ranges and design the building envelope and HVAC system to maintain these comfort ranges. Install and maintain a temperature and humidity monitoring system in the building to automatically adjust building conditions as appropriate.

Submittals

- ❑ Provide the completed Letter Template, signed by the mechanical engineer or responsible party, declaring that a permanent temperature and humidity monitoring system will operate throughout all seasons to permit control of the building zones within the seasonal thermal comfort ranges defined in ASHRAE 55-1992, Addenda 1995.

- ❑ Provide the completed Letter Template, signed by the owner or responsible party, declaring that the temperature and humidity controls were included as part of the scope of work for Energy and Atmosphere Prerequisite 1 (fundamental building systems commissioning). Include the document name and section number where the commissioning work is listed.

Category 4: HEALTH

Credit 8.1 – 8.2

1 - 2 Points

Daylight, Daylight 50% - 75% of Spaces

Intent

Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

Requirements

Achieve a minimum Daylight Factor of 2% (excluding all direct sunlight penetration) in a Percentage of all space occupied for critical visual tasks.

<u>Credit</u>	<u>Percentage</u>	<u>Points*</u>
Credit 8.1	50%	1
Credit 8.2	75%	2

* Points are cumulative. Find level achieved and use points shown as total for this Credit group.

Spaces excluded from this requirement include copy rooms, storage areas, mechanical plant rooms, laundry and other low occupancy support areas. Other exceptions for spaces where tasks would be hindered by the use of daylight will be considered on their merits.

Technologies & Strategies

Design the building to maximize daylighting and view opportunities. Strategies to consider include building orientation, shallow floor plates, increased building perimeter, exterior and interior permanent shading devices, high performance glazing and photointegrated light sensors. Model daylighting strategies with a physical or computer model to assess foot-candle levels and daylight factors achieved.

Submittals

- Provide the completed Letter Template, signed by the electrical engineer or responsible party, with area calculations that define the daylight zone and provide prediction calculations or daylight simulation.

Category 4: HEALTH

Credit 9.1 – 9.2

1 - 2 Points

Views, Views for 50% - 75% of Spaces

Intent

Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

Requirements

Achieve direct line of sight to vision glazing for building occupants in a percentage of all regularly occupied spaces, not including copy rooms, storage areas, mechanical, laundry and other low occupancy support areas.

<u>Credit</u>	<u>Percentage</u>	<u>Points*</u>
Credit 9.1	50%	1
Credit 9.2	75%	2

* Points are cumulative. Find level achieved and use points shown as total for this Credit group.

Other exceptions for spaces where tasks would be hindered by the use of daylight will be considered on their merits.

Technologies & Strategies

Design the building to maximize view opportunities. Strategies to consider include building orientation, shallow floor plates, increased building perimeter, exterior and interior permanent shading devices, high performance glazing and photo-integrated light sensors.

Submittals

- Provide the completed Letter Template, signed by the architect, with calculations describing, demonstrating and declaring that the building occupants in 50% or 75% of regularly occupied spaces will have direct lines of site to perimeter glazing.
- Provide drawings highlighting the direct line of sight zones.

Category 4: HEALTH

Credit 10

1 Point

Cleanability – Narrow Grout Lines

Intent

A building that is easily cleaned is not only less maintenance for the owner, 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.

Requirements

All grout lines between tiles must be less than 3/16 inches wide. One point is awarded.

Technologies & Strategies

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

Submittals

- Provide the completed Letter Template, signed by the owner or responsible party, declaring that the building has complied with the requirement.

- Provide picture documenting installation.

Category 4: HEALTH

Credit 11

1 Point

Universal Design

Intent

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 building 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.

Requirements

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

Submittals

- Provide the completed Letter Template, signed by the architect or responsible party, confirming that the building and all its units will conform to universal design.

- Provide drawings highlighting the measures taken.

Category 4: HEALTH

Credit 13.1

1 Point

Combustion - No water heating equipment located inside the conditioned area – or electric

Intent

Sealed combustion appliances eliminate 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.

Requirements

One point is available for use of a sealed combustion water heater, or use of an electric water heating system. If more than one water heating system is installed, all must be of a qualifying type.

Technologies & Strategies

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.
- Seal the ceiling around the flue using sheet metal.
- The area must not be depressurized by more than 3 Pa.

Submittals

- Provide the completed Letter Template, signed by the architect, that each unit will comply with the above requirements.
- Provide drawings highlighting their locations.

Category 4: HEALTH

Credit 13.2

1 Point

Combustion, No gas heating equipment located inside the conditioned area – or electric

Intent

Sealed combustion appliances eliminate 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.

Requirements

One point is available for use of a sealed combustion furnace, or use of an electric heating system, such as a heat pump.

Technologies & Strategies

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.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, that each unit will comply with the above requirements.
- ❑ Provide drawings highlighting their locations.

Category 4: HEALTH

Credit 14

1 Point

Noise, Low noise bathroom exhaust fans with timers or humidistat

Intent

Such 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. Fans must vent to the exterior.

Requirements

FGBC awards 1 point for the installation of high efficiency, low noise bathroom exhaust fans with timers or humidistats (an advanced control that operates the fan based on humidity levels) in each bathroom throughout the building.

Technologies & Strategies

Such 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. Fans must vent to the exterior.

Submittals

- Provide the completed Letter Template, signed by the owner or architect, that each unit will comply with the above requirements.

Category 4: HEALTH

Credit 15

1 Point

Durability, Use armored/metal hoses from service to all fixtures/appliances

Intent

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.

Requirements

FGBC awards 1 point if all such appliances (clothes washer, refrigerator, faucets, toilets, etc.).

Submittals

- ❑ Provide the completed Letter Template, signed by the owner or architect, that each unit will comply with the above requirements.

Category 5: MATERIALS

Prerequisite 1

Required

Storage & Collection of Recyclables

Intent

Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

Requirements

Provide an easily accessible area that serves the entire building and is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, corrugated cardboard, glass, plastics and metals.

Technologies & Strategies

Designate an area for recyclable collection and storage that is appropriately sized and located in a convenient area. Identify local waste handlers and buyers for glass, plastic, office paper, and newspaper, cardboard and organic wastes. Instruct occupants on building recycling procedures. Consider employing cardboard balers, aluminum can crushers, recycling chutes and other waste management technologies to further enhance the recycling program.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect or owner, declaring that the area dedicated to recycling is easily accessible and accommodates the building's recycling needs.
- ❑ Provide a plan showing the area(s) dedicated to recycled material collection and storage.
- ❑ Attach a copy of contract(s) with recyclable waste hauler(s) demonstrating proper disposal of recycled materials collected.

Category 5: MATERIALS

Credit 1.1

1 Point

Building Reuse, Maintain 75% of Existing Shell

Intent

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements

Maintain at least 75% (by surface area or weight) of existing building structure and shell (exterior skin and framing, excluding window assemblies).

Technologies & Strategies

Consider reuse of existing building structure, shell and non-shell elements. Remove elements that pose contamination risk to building occupants and upgrade outdated components such as windows, mechanical systems and plumbing fixtures. Quantify the extent of building reuse.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, owner or other responsible party, listing the retained elements and the proper calculations showing that the above requirements have been met.

Category 5: MATERIALS

Credit 1.2

1 Point

Building Reuse, Maintain 100% of Existing Shell

Intent

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements

Maintain 100% total of existing building structure and shell (exterior skin and framing, excluding window assemblies) and non-structural roofing material.

Technologies & Strategies

Consider reuse of existing building structure, shell and non-shell elements. Remove elements that pose contamination risk to building occupants and upgrade outdated components such as windows, mechanical systems and plumbing fixtures. Quantify the extent of building reuse.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, owner or other responsible party, listing the retained elements and declaring that the above requirements have been met.

Category 5: MATERIALS

Credit 1.3

1 Point

Building Reuse, Maintain 100% Shell & 50% Non-Shell

Intent

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements

Maintain 100% of existing building structure and shell (exterior skin and framing, excluding window assemblies) AND at least 50% (by surface area or weight) of non-shell areas (interior walls, doors, floor coverings and ceiling systems).

Technologies & Strategies

Consider reuse of existing building structure, shell and non-shell elements. Remove elements that pose contamination risk to building occupants and upgrade outdated components such as windows, mechanical systems and plumbing fixtures. Quantify the extent of building reuse.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, owner or other responsible party, listing the retained elements and the proper calculations showing that the above requirements have been met.

Category 5: MATERIALS

Credit 2.1 – 2.2

1 - 2 Points

Construction Waste Management, Divert 50% - 75%

Intent

Divert construction, demolition and land clearing debris from landfill disposal. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

Requirements

Develop and implement a waste management plan, quantifying material diversion goals. Recycle and/or salvage either 50% or 75% of construction, demolition and land clearing waste. Calculations can be done by weight or volume, but must be consistent throughout.

<u>Credit</u>	<u>Percentage</u>	<u>Points*</u>
Credit 2.1	50%	1
Credit 2.2	75%	2

* Points are cumulative. Find level achieved and use points shown as total for this Credit group.

Technologies & Strategies

Establish goals for landfill diversion and adopt a construction management plan to achieve these goals. Consider recycling and land clearing debris, cardboard, metal, brick, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation. Designate a specific area on the construction site for recycling and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials. Note that salvage may include donation of materials to charitable organizations such as Habitat for Humanity.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, general contractor, owner or other responsible party, tabulating the total waste material, quantities diverted and the means by which diverted and declaring that the above requirements have been met.

Category 5: MATERIALS

Credit 3.1

1 Point

Resource Reuse, Specify 5%

Intent

Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources.

Requirements

Use salvaged, refurbished or reused materials, products and furnishings for at least 5% of building materials (based on cost).

Technologies & Strategies

Identify opportunities to incorporate salvaged materials into building design and research potential material suppliers. Consider salvaged materials such as beams and posts, flooring, paneling, doors and frames, cabinetry and furniture, brick and decorative items.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, owner or other responsible party, declaring that the above requirements have been met and listing each material or product used to meet the credit. Include details demonstrating that the project incorporates the required percentage of reused materials and products and showing their costs and total cost of materials for the project.

Category 5: MATERIALS

Credit 4.1 – 4.2

1 - 2 Points

Recycled Content, Specify 25% - 50%

Intent

Increase demand for building products that incorporate recycled content materials, therefore reducing impacts resulting from extraction and processing of new virgin materials.

Requirements

Use materials with recycled content such that post-consumer and/or post-industrial recycled content constitutes either 25% or 50%.

<u>Credit</u>	<u>Percentage</u>	<u>Points*</u>
Credit 4.1	25%	1
Credit 4.2	50%	2

* Points are cumulative. Find level achieved and use points shown as total for this Credit group.

The value of the recycled content portion of a material or furnishing shall be determined by dividing the weight of recycled content in the item by the total weight of all material in the item, then multiplying the resulting percentage by the total value of the item.

Mechanical and electrical components shall not be included in this calculation. Recycled content materials shall be defined in accordance with the Federal Trade Commission document, Guide for the Use of Environmental Marketing Claims, 15 CFR 260.7 (e), available at www.ftc.gov/bcp/grnrule/guides980427.htm.

Technologies & Strategies

Establish a project goal for recycled content materials and identify material suppliers that can achieve this goal. During construction, ensure that the specified recycled content materials are installed and quantify the total percentage of recycled content materials installed.

Submittals

- Provide the completed Letter Template, signed by the architect, owner or other responsible party, declaring that the above requirements have been met and listing the recycled content products used. Include details demonstrating that the project incorporates the required percentage of recycled content materials and products and showing their costs and percentage(s) of post-consumer and/or post-industrial content, and the total cost of all materials for the project.

Category 5: MATERIALS

Credit 5

1 Point

Recyclable Materials

Intent

Increase the demand for materials that are recyclable at the end of their useful life cycle.

Requirements

Use materials that at the end of their useful lifecycle can be recycled by the manufacturer into the raw materials stream of another product. The value of such products will constitute a minimum of 10% of the total value of the materials in the project

Technologies & Strategies

An example of this credit is the Armstrong Acoustical ceiling recycling program. Old tiles are palleted and picked up by Armstrong Representatives and turned into new ceiling tiles.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, owner or other responsible party, declaring that the above requirements have been met and listing the recyclable products used.

- ❑ Provide documentation from the manufacturer(s) stating that each material or product will be accepted into their recycling program.

Category 5: MATERIALS

Credit 6

1 Point

Demountable / Adaptable Interiors

Intent

Extend the life cycle of interior partition materials, conserve resources, reduce waste and reduce environmental impacts of subsequent renovations as they relate to materials manufacturing and transport.

Provide the option for future reuse of interior partition material and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources.

Requirements

Use demountable / adaptable partitions, which are at least 90% reusable / relocatable during subsequent renovations and that constitute at least 50% of the total square feet of the building interior partitions. Note: This credit does not include the use of systems furniture panels.

Technologies & Strategies

Identify opportunities to incorporate demountable/ adaptable partitions into the building design and research potential material suppliers.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, owner or other responsible party, declaring that the above requirements have been met and listing each material or product used to meet the credit. Include calculations demonstrating that the project incorporates the required percentage of demountable/ adaptable partitions.
- ❑ Provide a plan showing the wall(s) dedicated to demountable/ adaptable interior partitions.

Category 5: MATERIALS

Credit 7

1 Point

Lever style clothes washer water shutoff

Intent

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 90o 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 and high water use concerns in the event of hose or connection failure. Insurance companies report that washing machine failure is a common claim.

Requirements

FGBC awards 1 point for a home that has user-friendly washer water shutoff valves.

Submittals

- Provide the completed Letter Template, signed by the architect, owner or other responsible party, declaring that the above requirements have been met.

Category 5: MATERIALS

Credit 8.1

1 Point

Local/Regional Materials, 20% Manufactured Locally

Intent

Increase demands for building materials and products that are extracted and manufactured within the region, thereby reducing the environmental impacts resulting from transportation and supporting the regional economy.

Requirements

Use a minimum of 20% (by cost) of building materials and products that are manufactured* within the following states: Florida, Georgia, Alabama, Mississippi, South Carolina, North Carolina, or Tennessee.

* Manufacturing refers to the final assembly of components into the building product that is furnished and installed by the tradesman. For example, if the hardware comes from Dallas, Texas, the lumber from Vancouver, British Columbia and the joist is assembled in Kent, Washington; then the location of the final assembly is Kent, Washington.

Technologies & Strategies

Establish a project goal for locally sourced materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed and quantify the total percentage of local materials installed.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, general contractor, owner or other responsible party, declaring that the above requirements have been. Include calculations demonstrating that the project incorporates the required percentage of regional materials/products and showing their cost, and percentage of regional components, distance from project to manufacturer and the total cost of all materials for the project.

Category 5: MATERIALS

Credit 8.2

1 Point

Local/Regional Materials, of 20% Above, 50% Harvested Locally

Intent

Increase demands for building materials and products that are extracted and manufactured within the region, thereby reducing the environmental impacts resulting from transportation and supporting the regional economy.

Requirements

Of these regionally manufactured materials, use a minimum of 50% (by cost) of building materials and products that are extracted, harvested or recovered (as well as manufactured*) within the following states: Florida, Georgia, Alabama, Mississippi, South Carolina, North Carolina, or Tennessee.

* Manufacturing refers to the final assembly of components into the building product that is furnished and installed by the tradesman. For example, if the hardware comes from Dallas, Texas, the lumber from Vancouver, British Columbia and the joist is assembled in Kent, Washington; then the location of the final assembly is Kent, Washington.

Technologies & Strategies

Establish a project goal for locally sourced materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed and quantify the total percentage of local materials installed.

Submittals

- Provide the completed Letter Template, signed by the architect, general contractor, owner or other responsible party, declaring that the above requirements have been. Include calculations demonstrating that the project incorporates the required percentage of regional materials/products and showing their cost, and percentage of regional components, distance from project to manufacturer and the total cost of all materials for the project.

Category 5: MATERIALS

Credit 9

1 Point

Rapidly Renewable Materials

Intent

Reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials.

Requirements

Use rapidly renewable building materials and products (made from plants that are typically harvested within a ten-year or shorter cycle) for 5% of the total value of all building materials and products used in the project.

Technologies & Strategies

Establish a project goal for rapidly renewable materials and identify materials and suppliers that can achieve this goal. Consider materials such as bamboo flooring, wool carpets, straw board, cotton batt insulation, linoleum flooring, poplar OSB, and sunflower seed board and wheatgrass cabinetry. During construction, ensure that the specified rapidly renewable materials are installed and quantify the total percentage of rapidly renewable materials installed.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, owner or other responsible party, declaring that the above requirements have been met. Include calculations demonstrating that the project incorporates the required percentage of rapidly renewable products. Show their cost, and percentage of rapidly renewable components and the total cost of all materials for the project.

Category 5: MATERIALS

Credit 10

1 Point

Certified Wood

Intent

Encourage environmentally responsible forest management.

Requirements

Use a minimum of 50% of wood-based materials and products, certified in accordance with the Forest Stewardship Council (FSC) Guidelines, for wood building components including, but not limited to, structural framing and general dimensional framing, flooring, finishes, furnishings and non-rented temporary construction applications such as bracing, concrete form work and pedestrian barriers. To qualify for this credit, wood-based materials and products must constitute at least 2% of the total value of all materials for the building.

Technologies & Strategies

Establish a project goal for FSC-certified wood products and identify suppliers that can achieve this goal. During construction, ensure that the FSC-certified wood products are installed and quantify the total percentage the FSC-certified wood products installed.

Submittals

- Provide the completed Letter Template, signed by the architect, owner or other responsible party, declaring that the above requirements have been met and listing the FSC-certified materials and products used. Include calculations demonstrating that the project incorporates the required percentage of the FSC-certified wood materials/products and their cost together with the total cost of all materials for the project. For each material/product used to meet the requirements, provide the vendor's or manufacturer's Forest Stewardship Council chain-of-custody certificate number.

Category 5: MATERIALS

Credit 11

1 Point

Durable Materials, Exterior Finish Materials

Intent

Reduce the need to replace existing structural finish components and materials over the expected lifetime of the building thereby reducing impacts resulting from removal and disposal of poorly performing material.

Requirements

Use finish systems and materials capable of withstanding the moisture and heat impacts of the local climate for a period of 40 years on 100% of the exposed exterior surfaces.

Technologies & Strategies

Identify opportunities to utilize systems and materials with a minimum 40-year warranty from the manufacturer or with an established history of use in local buildings older than 40 years.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect or other responsible party, identifying all the systems and materials used for the exterior finish of the building. Attach copies of manufacturer's warranties or documentation supporting the established history for any material without a written warranty.

Category 5: MATERIALS

Category 5: MATERIALS

Credit 12

1 Point

Water Sensors/Shutoff system

Intent

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.

Requirements

Receive one point if a sensor/shutoff system is installed to cut off water supply to a clothes washer and water heater located inside conditioned space. Alternatively, one point is available for a whole house system that detects any sign of water leakage anywhere inside the conditioned space, and cuts off the main water supply to the house.

Submittals

- Provide the completed Letter Template, signed by the architect or other responsible party, identifying all the systems and materials used for the exterior finish of the building. Attach copies of manufacturer's warranties or documentation supporting the established history for any material without a written warranty.

Category 5: MATERIALS

Category 5: MATERIALS

Credit 13

1 Point

Low Maintenance Finishes

Intent

Reduce the need for harsh maintenance chemicals thereby reducing the source pollution within and around the building and improving the indoor air quality.

Requirements

Use materials (on the floors, walls and ceilings) that can be maintained in a serviceable condition using odor free methods for 100% of the interior finishes of the building and 50% (by surface area) of the exterior finishes.

Technologies & Strategies

Identify opportunities to utilize finish materials suitable for the occupancy, which require no maintenance other than vacuuming or cleaning with water and mild soap.

Submittals

Provide the completed Letter Template, signed by the architect or other responsible party, identifying:
All interior finish materials. Attach copies of the manufacturer's recommended maintenance procedures illustrating compliance.

The total area of exterior materials and the type and area of exterior finish materials that comply with this standard. Attach copies of the manufacturer's recommended maintenance procedures illustrating compliance.

Category 6: DISASTER MITIGATION

Credit 1

1 Point

Hurricane, Impact Resistance of Openings

Intent

Increase the structural integrity of the building during high wind conditions, reducing the potential for damage, thus decreasing the potential waste and need for replacement materials after the storm.

Requirements

Demonstrate that all windows, skylights, sliding glass doors, and other doors comprised of at least 60% glass (by area) are protected with a Dade County approved shutter or screen product or are classified by Dade County as impact resistant.

Demonstrate that all other exterior doors are protected with a Dade County approved shutter or screen product or are classified by Dade County as impact resistant.

Technologies & Strategies

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.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect or other responsible party, and manufacturer's cut sheets indicating the required approvals and classifications.
- ❑ Provide a door and window schedule keyed to the list of shutters and impacted resistant products used on the project.

Category 6: DISASTER MITIGATION

Credit 2

1 Point

Flood, Slab Elevation

Intent

Reduce the potential for flooding and the resulting moisture and mildew problems.

Requirements

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.

The bottom of the slab (or in the case of a crawlspace, the floor) must be at least 8” above the finished grade elevation.

Finished grade must be sloped away from the building on all sides (for a distance of 5 feet) to allow water to drain away from the building.

Technologies & Strategies

Use appropriate foundation design to allow for the larger distance between finished floor elevation and finished grade elevation.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, civil engineer, general contractor, or other responsible party, with appropriate drawings illustrating the foundation design, floor elevation and grading requirements. Include appropriate document from the local building department showing the 100-year flood plain elevation.

Category 6: DISASTER MITIGATION

Credit 3

1 Point

Wildfire, Fire Resistant Exterior Finishes

Intent

Increase the fire resistance of the building, reducing the potential for damage from wildfires, thus decreasing the potential waste and need for replacement materials after the fire.

Requirements

An exterior cladding other than wood or vinyl must be used on all exterior walls.

A roof covering other than asphalt shingles or wood shakes must be used on the entire roof. Credit is also available if the sub-roof (roof deck) is of a fire resistant material, instead of the covering.

Soffit and vent materials must be other than wood or vinyl. When these parts of the building are compromised, embers from nearby fires can enter into the attic.

Technologies & Strategies

Use exterior wall materials made of stucco, unfinished CBS, brick, aluminum, stone or fiber-cement. Use roof coverings made of metal, concrete, fiber-cement, or tile. Use soffit and vent materials made of aluminum or fiber-cement.

Submittals

Provide the completed Letter Template, signed by the architect or other responsible party, and appropriate drawings and manufacturer's cut sheets illustrating the fire resistance of the exterior finish materials.

Category 6: DISASTER MITIGATION

Credit 4.1

1 Point

Termite Prevention

Intent

Increase the termite resistance of the building, reducing the potential for damage from termite infestation, thus decreasing the potential waste and need for replacement materials after the damage is detected.

Requirements

A permanent sign, which identifies the termite treatment provider and the need for re-inspection and treatment contract renewal, shall be provided. The sign shall be posted near the water heater or electric panel.

A single slab must be poured monolithically or must have area treated for termites before each portion of slab is poured. After the slab has substantially cured, any penetration through the slab such as piping or conduit shall be sealed around its perimeter with an elastomeric sealer

Any foam insulation must terminate above ground such that none of it extends below grade. The exterior cladding of the building must terminate at least 8" above grade. This will help prevent termites from entering the building undetected. All wood products must be treated with Borate or ACQ.

Rain gutters must be installed to collect water from all roof slopes and covey it at least 3 feet away from the building foundation. Rain gutters must have leaf screens installed to help prevent clogging.

All HVAC condensate line(s) must discharge at least 3 feet away from the building. All plants and irrigation should be at least 3 feet from building.

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.

Technologies & Strategies

No special technologies or strategies required.

Submittals

- Provide the completed Letter Template, signed by the architect or other responsible party, and appropriate drawings and specifications, illustrating compliance to all requirements.

- Provide photos showing all sealed slab penetrations.

Category 6: DISASTER MITIGATION

- ❑ Provide copy of Termite Warranty with highlighting of the section(s) indicating it is a full or unlimited warranty.

Category 6: DISASTER MITIGATION

Credit 4.2

1 Point

Termite, Non Toxic Termite Pretreatment

Intent

Provide a non toxic method to increase the termite resistance of the building, reducing the potential for damage from termite infestation, thus decreasing the potential waste and need for replacement materials after the damage is detected. Note: This Credit cannot be combined with Credit 4.1.

Requirements

The entire structure of the building is constructed of termite-resistant materials. This includes all roof, floor, and exterior/interior wall framing, sheathing, decking, siding, soffit, fascia, and other exterior trim.

Chemical soil treatment must be avoided, and a Florida Building Code approved method of foundation protection must be employed such as Termimesh (www.termimesh.com).

Technologies & Strategies

Use building materials such as concrete, metal, borate or ACQ treated lumber/OSB, or fiber cement.

Submittals

- Provide the completed Letter Template, signed by the architect or other responsible party, and appropriate drawings and specifications illustrating materials used and their resistance to termites.

Category 7: GENERAL

Prerequisite 1

Required

FGBC Designated Professional

Intent

To support and encourage the design integration required by a FGBC Green Building project and to streamline the application and certification process.

Requirements

At least one principal participant of the project team must qualify as the Designated Professional as defined in the FGBC Green High Rise Residential Building Standard (An individual who is: LEED Accredited (by the US Green Building Council); an integral part of the project design team; and is authorized by the project Owner to collect, organize, review, and submit all documents required by the Standard in order to achieve certification.)

Technologies & Strategies

The architect or engineer for the project can also be the Designated Professional if they meet the requirements.

Submittals

- ❑ Provide the completed Letter Template, signed by the owner, authorizing the person to be the Designated professional. Attach a copy of the USGBC LEED accreditation for that person.

Category 7: GENERAL

Prerequisite 2

Required

Project Charrette: Owner & Architect

Intent

To have a design charrette that focuses on the Sustainable Aspects of the project.

Requirements

The team must utilize a design charrette (run by the Designated Professional) that focuses on the green aspects of the project. The Owner and Architectural Design Team must be present at the minimum Full Day Design Charrette.

Technologies & Strategies

Utilize a Full Day Design Charrette to maximize the creativity of all participants. Third party facilitators can be utilized to move the process along.

Submittals

- ❑ Provide the completed Letter Template, signed by the owner, indicating the charrette agenda, results, and attendance sheet (that must be notarized to ensure compliance). The date, location, and time must be included on the attendance sheet.

Category 7: GENERAL

Credit 2

1 Point

Environmental Value Analysis, Cost & Environmental Impact of Each Credit

Intent

To track the cost impact of achieving the certification.

Requirements

The project team must compile the cost impact of each credit and also list any environmental impact of each credit (Energy Use Reduction, Water Use Reduction, etc.) provide the documentation to the Florida Green Building Coalition for review. Only the cost impact and environmental impact for credits achieved need to be provided.

Technologies & Strategies

All team members need to analyze the impact of each credit in terms of environmental impact, design cost, engineering cost, and construction cost.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect, with a spreadsheet that lists all credits submitted for certification and all of the costs associated with achievement of the credit. Break out Design Cost (Architectural), Engineering Cost, and Construction Cost. Items such as daylight modeling, energy analysis and commissioning that affect numerous categories can be submitted in one column.

Category 7: GENERAL

Credit 2.1 – 2.6

1 - 6 Points

Environmental Innovation

Intent

To provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the FGBC Commercial Standards and/or innovative performance in Green Building categories not specifically addressed by the FGBC Commercial Standards.

Requirements

Credit 2.1 (1 point) In writing, identify the **intent** of the proposed innovation credit, the proposed **requirement** for compliance, the **design approach** (strategies) that might be used to meet the requirements, and the proposed **submittals** to demonstrate compliance.

<u>Credit</u>	<u>Description</u>	<u>Points</u>
Credit 2.2	Same as Credit 3.1	1
Credit 2.3	Same as Credit 3.1	1
Credit 2.4	Same as Credit 3.1	1
Credit 2.5	Same as Credit 3.1	1
Credit 2.6	Same as Credit 3.1	1

Technologies & Strategies

Substantially exceed a FGBC Commercial Standard performance credit such as energy performance or water efficiency. Apply strategies or measures that are not covered by FGBC Commercial Standard such as acoustic performance, education of occupants, community development or lifecycle analysis of material choices.

Submittals

- ❑ Provide the completed Letter Template, signed by the architect or responsible party, with the proposal(s) (including intent, requirement, possible strategies, and submittals) and relevant evidence of performance achieved.