Setting the Standards for Green Building in Florida

Florida Green Hi-Rise Residential Certification Standard

REFERENCE GUIDE
This Reference Guide is intended to serve two purposes:

- To provide information on green high-rise residential construction, operation, and maintenance considerations.
- To provide details on how to earn points for obtaining certification under the Florida Green High-Rise Residential Building Standard.

Note:
It is possible to combine many submittals in one detailed plan. Letters or documented verbal communication from vendors can substitute for material and equipment cut sheets where required. No document produced by FGBC is intended to supersede or contradict the Florida Building Code.
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THE PROCESS:
The certification process consists of two stages: (1) The initial project registration of a planned project and (2) submittal of the Final Application and its accompanying supporting documents.

A "Final Application" must be submitted within five (5) years from the date of project registration with FGBC. Projects not submitting the final application within 5 years shall be determined abandoned and not eligible for certification review.

Initial Registration
1. Appoint a project team member to serve as the "Designated Professional." The "Designated Professional" shall be the project's contact person for FGBC and all other project team members, and shall be responsible for submitting the application package.
2. Complete the information in the "Project Registration & Team Tab" and submit it to FGBC along with a non-refundable, minimum deposit of $1,500.
3. FGBC will assign a "Project Evaluator" to your project, whose role is to clarify questions the Designated Professional might have regarding the Standard requirements and to review the project's Final Application for compliance with the Standard.

Final Application
1. Be sure the Project Registration & Team tab has been completed. It is designed to auto-fill the Final Application page.
2. Complete all category pages of the Checklist in the Excel file by using the drop-down menus in the BLUE cells in the Achieved, Possible or NA columns.
3. Submit the completed Checklist, all supporting documents, and final payment to the FGBC. The final payment shall be equal to the stated application fee in this document, less any deposit paid.
4. SUPPORTING DOCUMENTATION shall include:
   a. A signed letter of compliance with a brief narrative explaining how the credit was achieved for each credit claimed.
   b. The submittal for each claimed credit shall also include the documentation specified in the submittal sections of the Reference Guide and Checklist.
5. The Project Evaluator will review the application and contact the Designated Professional if additional information is needed.
6. The submitted Final Application shall be deemed non-compliant and shall expire if the Designated Professional or building owner has been non-responsive for six (6) months to questions and documentation requested from the Project Evaluator or FGBC.

IMPORTANT GUIDELINES:
1. The FGBC High-Rise Building Standard version in effect on the date of the project's registration with FGBC, is the version the project must use for Final Application submittal, EXCEPT, that a project may
2. Each building must comply with the prerequisites in order to be eligible for certification.
3. Select items to obtain the minimum number of points listed for each category (category minimums).
4. The sum of the minimums totals 52 points. Accumulate at least an additional 48 points of your choice to obtain the required 100 total points to qualify for certification. NOTE: If any category minimums are not achieved, those point deficiencies are added to the total minimum required score of 100, creating an "adjusted minimum required points" (the points YOUR project must achieve for certification). Example: Applicant elects to achieve only 5 points from a category with a minimum of 10. Applicant may still qualify for certification if: Total points equal or exceed 105: 100 + [15-10] = 105.
5. There are 382 possible points although all are not likely to be applicable to each project. To assure comprehensive environmental benefit from the project, there are maximum points allowed in any one category. Note that category maximums cannot be exceeded at any time. The Checklist automatically calculates maximum allowed points.
6. Some criteria have "required" submittals. Those are formatted in red text. Suggested submittals for other items are formatted in black text. Refer to the Reference Guide for "required submittals" and other advisory information.
7. If the Excel file is altered in any way, the application will not be accepted. Altered files will be returned unprocessed.

CERTIFICATION LEVELS:
The FGBC Florida Green High-Rise Residential Building Standard uses a tiered rating system. Certification is awarded at different levels according to points achieved over the project's adjusted minimum point requirement.

<table>
<thead>
<tr>
<th>Level</th>
<th>Points Over Project Adjusted Required Minimum</th>
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<tbody>
<tr>
<td>Bronze</td>
<td>0 - 30</td>
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<tr>
<td>Silver</td>
<td>31 - 60</td>
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<tr>
<td>Gold</td>
<td>61 - 90</td>
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<td>Platinum</td>
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CERTIFICATION FEES:

<table>
<thead>
<tr>
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<td>$9,500</td>
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<tr>
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FGBC Member Discount
A 5% discount is available if the Designated Professional is a business category member of the FGBC. An additional 5% discount is available if the building owner, architect, or general contractor on the High-Rise project is a business category member of the FGBC. Maximum discount available is 10% of the total application fee.
INSTRUCTIONS FOR SUBMISSIONS:
Electronic Submission (preferred)
Pay online or complete the credit card authorization on the Final Application Form. (Note: Payment by check is acceptable - see mailing instructions below).

Send the completed Excel file containing the Final Application and Checklist, along with all supporting documents to FGBC on a jump drive, CD, or via the FGBC FTP link below. Maximum file size for FTP is 2 GB. Consider zipping groups of files before sending.
FGBC FTP Link:  https://dropbox.hightrail.com/certifications

Mailing Instructions
Mail check or credit card authorization (see Final Application Form) to FGBC at the address below. Include a printed copy of the Final Application Form. Send a Jump Drive or CD containing electronic files for the Excel Checklist and all supporting documents. Mail to:

FGBC
1415 E. Piedmont Dr., Suite 5
Tallahassee, FL 32308-7954

For Additional Information contact your Project Evaluator or FGBC at PH: 850-894-3422. All documents are available for download on the FGBC website: www.FloridaGreenBuilding.org
CATEGORY 1: PROJECT MANAGEMENT

PM Prerequisite 1: Green Project Meeting

Requirement: Owner and project team decision makers must participate in a 4 hour green design charrette where an FGBC Designated Professional details each line item and requirements of the FGBC High Rise Standard Checklist. The training must be project specific, general green education courses do not comply.

Points: Prerequisite - Required

Intent: Familiarize the project team decision makers with the FGBC checklist requirements and identify a path to pursue certification.

Submittals: Provide copy of the meeting agenda, outline of notes, dated sign in sheet, and a copy of the FGBC Checklist that resulted from the Charrette

Resources:

PM Prerequisite 2: Green Designated Professional

Requirement: The project team includes a certified FGBC Green Designated Professional.

Points: Prerequisite - Required

Intent: The FGBC Green Designated Professional is familiar with the credits, credit requirements, intent and submittals associated with the Green High Rise Standard. The FGBC Green Designated Professional shall act as a liaison between the project team and the FGBC.

Submittals: Copy of FGBC Green Designated Professional Certificate.

Resources:

PM1.1 Comprehensive Design Charrette/Design Team Training

Requirement: Owner and design team decision makers must participate in an 8 hour green project training no later than the design development phase of the project. Attendees must include a participant from all disciplines currently under contract for the project.

Points: 2

Intent: Reduce costs associated with redesign by introducing the design team to the credit requirements prior to completing the building design.

Submittals: Provide copy of the training outline and dated sign in sheet

Resources:

PM1.2 Construction Team Training

Requirement: Owner, design team representatives, general contractor and subs currently under contract for the project participate in a minimum of 2 hour green project training is administered prior to work on the jobsite. A minimum of the subcontractors associated with the following activities must be trained prior to commencing work on the site: General Contracting, MEP, HVAC, irrigation, and interior finishes.

Points: 2
Intent: Clearly identify the credits the project is pursuing towards certification, identify credits that require contractor input, sub bids, documentation during construction, additional training, or participation to minimize any cost associated with construction delays or misinterpretation of targeted credits.

Submittals: Provide copy of the training outline and dated sign in sheet

Resources: -

**PM1.3 Staff Training**

Requirement: Operational staff, including facility manager, leasing agent, sales staff, or any individual that works over 20 hours a week in a capacity managing or maintaining the building must attend a 2 hour green training. Training must include an explanation of the certification, criteria pursued/achieved, and information regarding green operation and maintenance of the building.

Points: 1

Intent: Maintain the integrity of the green certification by educating staff regarding proper operation and maintenance of their high performance building.

Submittals: Provide copy of the training outline and dated sign in sheet

Resources: -

**PM1.4 Homeowner Training**

Requirement: Providing a homeowner with “green maintenance” training lasting at least 1 hour. Builder must have an established procedure, completed by a knowledgeable jobsite superintendent, sales representative, customer service individual, or other appropriate individual. The training may be any combination of office instructions or home walk through with hands-on training.

Points: 1

Intent: Maintain the integrity of the green project by educating the homeowners regarding proper operation and maintenance of their high performance building.

Submittals: Provide copy of the training outline and bio of the approved trainers.

Resources: -

**PM1.5 Green Website**

Requirement: Provide information on the project website regarding the FGBC green certification of the project, a link to the project score sheet, information on green operation and maintenance for homeowners, and helpful links for homeowners regarding FGBC, energy efficiency, water efficiency, and healthy homes.

Points: 1

Intent: Maintain the integrity of the green project by educating the homeowners regarding proper operation and maintenance of their high performance building.

Submittals: Provide the web address and copies of the content.

Resources: -
PM2 Building Information Modeling (BIM)

Requirement: Design team and construction teams use BIM process to optimize the efficiencies related to design, estimating, materials ordering, and construction.

Points: 1 point for Architect
2 points for Architect, Structural, and MEP
5 points for Architect, Structural, MEP, Contractor and Mechanical, Electrical, Plumbing and Fire Subs

Intent: Reduce costs associated with design and construction conflicts by identifying issues prior to construction.

Submittals: Provide the web address and copies of the content.

Resources: -

PM3 Cost Benefit Analysis

Requirement: FGBC project team member shall document the cost impact of each energy and water credit the project is pursuing for certification. Analysis shall include a minimum of two building alternatives considered to achieve the credit, the cost associated with each alternative and calculated annual kWh, gallons of water, and cost savings.

Points: 5

Intent: Provide cost data so that the project owner may make informed decisions regarding energy and water efficiency.

Submittals: The project must submit a copy of the FGBC Checklist from:
1. The team kickoff meeting
2. 100% Construction Document Phase
3. Final FGBC Submittal

Include assumptions regarding interest rates, life of materials, and any other assumptions made for the analysis. A short narrative must accompany each credit explaining the options reviewed, environmental benefits, and reasoning for final selection for inclusion in the project.

Resources: -

PM4 Small Unit Credit

10 Points for weighted average < 1500 SF
15 Points for weighted average < 1200 SF
20 Points for weighted average < 900 SF

Requirement: Design and construct small units. Points are awarded based on the weighted average unit size for the project.

Points: 15

Intent: Small multi-family units use less total resources than larger single family units.

Submittals: Architectural drawings showing floorplans and units, a list of the types of units, square footage of the units, and a weighted average calculation.

Resources: -
CATEGORY 2: ENERGY

E Prerequisite 1: Owner Project Requirements (OPR)
Requirement: Owner designated representative must develop a list of owner project requirements related to each of the categories of the high-rise residential standard. The OPR should indicate minimum goals for each category and any specific credits the Owner wishes to target.
Points: Prerequisite - Required
Intent: Document the owner project requirements so that the design team can refer to the owners project goals throughout the design process.
Submittals: Submit a narrative explaining the OPR for the project.
Resources: -

E Prerequisite 2: Basis of Design (BOD)
Requirement: Design team representatives develop and document how the design will achieve the Owner Project Requirements. The Basis of Design should include specifically how the performance desires of the Owner will be achieved by the proposed design.
Points: Prerequisite - Required
Intent: Provide a document detailing the design so that the commissioning agent can verify that the owner intent is being addressed and so that the construction team can verify design intent is met with the construction documents.
Submittals: The design team must submit a narrative that explains how the design decisions support the Owner project requirements.
Resources: -

E Prerequisite 3: Testing and Balancing of Installed Equipment
Requirement: Mechanical Electrical Plumbing (MEP) Engineering Firm works with the Architect or design team leader to verify field installed equipment meet OPR, BOD and is installed and operating correctly. Testing and verification must include at a minimum, Heating, Ventilation, Air Conditioning and Refrigeration (HVAC&R) systems & controls, lighting systems and controls, renewable energy systems, hot water system, and energy and water measurement devices. Testing and verification shall be performed by a licensed engineer or a professional certified by the National Environmental Balancing Bureau (NEBB), the Associated Air Balance Council (AABC), or other nationally accredited organization.
Points: Prerequisite - Required
Intent: Verify performance of mechanical systems to ensure proper performance.
Submittals: The design team shall provide a copy of the testing and balancing report.
Resources: -

E Prerequisite 4: CFC Reduction in HVAC Equipment
Requirement: Requires that all building HVAC&R systems be free of CFC's and Halons
Points: Prerequisite - Required
**Intent:**
Requires that all building HVAC&R systems be free of CFC’s and Halons:

**Submittals:**
Mechanical engineer will submit a signed letter declaring that the building’s new HVAC&R systems do not use CFC-based refrigerants and a mechanical schedule showing HVAC equipment.

**Resources:**

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**E1 Performance Improvement**

**E1.1 Energy Performance Improvement**

**Requirement:**
The designed building will receive credit for energy performance that is more efficient than the current Florida Energy Code. Refer to the Florida Energy Code Calculations and their provided summary comparing the baseline and design buildings.

**Points:** 2 points for each percent lower than code – Maximum 60 points.

**Intent:**
Improve the overall efficiency of the building

**Submittals:**
A copy of the Florida Energy Code calculations and input summary

**Resources:**

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**E1.2 Pump Motors**

**Requirement:**
All three phase pump motors 1 horsepower or larger shall meet or exceed efficiency standards for NEMA Premium ™ 3 motors. Note: Motors that are packaged as an integral component of mechanical equipment, fire pump motors, and booster pump motors are exempt from this requirement.

**Points:** 1

**Intent:**
Improve the overall efficiency of the building

**Submittals:**
Plumbing plans highlighting location of pumps, cut sheets and photos of complying pumps

**Resources:**

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**E1.3 Lighting Power Density 0.8W/sf**

**E1.3.1 Individual Units**

**Requirement:**
Design the installed lighting in each unit such that the total Watt per square foot does not exceed 0.8.

**Points:** 2

**Intent:**
Improve the overall efficiency of the building

**Submittals:**
Electrical plans showing fixture location and type, summary of the units, total Watts and square feet with the W/sf calculated

**Resources:**

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**E1.3.2 Entire Building**

**Requirement:**
Design the installed lighting for the entire building, to include conditioned spaces (common areas and private residences) such that the total Watt per square foot does not exceed 0.8

**Points:** 3
Intent: Improve the overall efficiency of the building
Submittals: Florida Building Commission approved Energy Code printout, signed by lighting designer or MEP with lighting power densities.
Resources: 

**E2**  
**Prescriptive Energy Features**

**E2.1**  
**Energy Star Refrigerator**

Requirement: Install Energy Star qualified Refrigerators in each unit

Points: 1

Intent: Improve the overall efficiency of the building

Submittals: Copy of the appliance package approved submittal, cut sheet identifying model number and photo of installed appliance


**E2.2**  
**Energy Star Dishwasher**

Requirement: Install Energy Star qualified dishwashers in each unit

Points: 1

Intent: Improve the overall efficiency of the building

Submittals: Copy of the appliance package approved submittal, cut sheet identifying model number and photo of installed appliance


**E2.3**  
**Energy Star Clothes Washer**

Requirement: Install Energy Star qualified clothes washers in each unit

Points: 1

Intent: Improve the overall efficiency of the building

Submittals: Copy of the appliance package approved submittal, cut sheet identifying model number and photo of installed appliance


**E2.4**  
**Energy Star Ceiling Fans**

Requirement: Install Energy Star qualified ceiling fans in the main living area and each bedroom of each unit

Points: 1

Intent: Improve the overall efficiency of the building

Submittals: Copy of the electrical plan showing fan locations and type, appliance package approved submittal, cut sheet identifying model number and photo of installed fixture

E2.5 Energy Star Common Area Appliances

Requirement: Install all Energy Star appliances in common areas to include: refrigerator, dishwasher, clothes washer, and vending machines.

Points: 1

Intent: Improve the overall efficiency of the building

Submittals: Copy of the appliance package approved submittal, cut sheet identifying model number and photo of installed appliance

Resources: http://www.energystar.gov/index.cfm?fuseaction=find_a_product

E2.6 Automated Lighting Controls

Requirement: All non-apartment spaces, except those intended for 24-hour operation or where automatic shutoff would endanger the safety of occupants, must have occupancy sensors or automatic bi-level lighting controls.

Points: 2

Intent: Improve the overall efficiency of the building

Submittals: Copy of the appliance package approved submittal, cut sheet identifying model number and photo of installed appliance

Resources: -

E2.7 Exterior Lighting

Requirement: Fixtures must include automatic switching on timers, photocells, or motion sensor controls, OR provide > 95 lumens/watt, OR be solar powered - except fixtures intended for 24-hour operation, required for security, or located on apartment balconies.

Points: 1

Intent: Improve the overall efficiency of the building

Submittals: Copy of the appliance package approved submittal, cut sheet identifying model number and photo of installed lighting

Resources: -

E2.8 Insulate Hot Water Pipes

Requirement: Piping carrying liquid with temperatures greater than 105°F must have a minimum of 1” of insulation. Pipes over 1.5” in diameter must have a minimum of 1.5” of insulation. Extent and location to be determined by ASHRAE 90.1-2007 Section 7.4.3 or local code. All pipes over 3/4” in diameter conveying hot water must be insulated.

Points: 1

Intent: Improve the overall efficiency of the building

Submittals: Photos of insulated hot water pipes, plan detail, or approved submittal of selected insulation signed by architect

Resources: -
E2.9 Ductwork Sealed With Mastic

Requirement: Seal all duct connections with mastic. This includes rigid and flex duct connections to air handlers and junction boxes.

Points: 2

Intent: Minimize the leakage of conditioned air increasing the comfort in the units and improving the overall energy efficiency of the building.

Submittals: Construction detail and photos.

Resources:

E3 Performance Verification/Testing

E3.1 Commissioning

E3.1.1 Basic Commissioning

Requirement: Fundamental Building Systems Commissioning: Implement or have a contract in place to implement all of the following fundamental best practice commissioning procedures. Commissioning includes verifying installation, functional performance testing, training and documentation for each of the commissioned systems or components as compared to the design intent, training of owner designated O&M professional and completion of the operation and maintenance manuals.

Points: 4

Intent: Verify that the OPR and BOD have been met, identify equipment shortcomings and verify corrections to failures of equipment start-up or inadequate operations

Submittals: Copy of signed contract explaining scope of work (contract amount may be excluded) and a letter from the CxA or the building owner stating all CxA duties were completed. Submit a copy of the OPR, BOD, Commissioning Plan and Commissioning Report. The commissioning Plan should include an overview of the commissioning process, a list of systems and features, the commissioning participants and their roles, a communication and management plan, an outline of the scope of commissioning tasks, and schedule. Where possible, include copies of the start up checklists. The commissioning report should contain the analysis of whether each commissioned system or component meets the design intent, specifications, was properly installed, passed the functional performance tests, was properly documented in the O&M manuals, and was covered in the operator training.

Resources: http://www.wbdg.org/project/buildingcomm.php

E3.1.2 Advanced Commissioning

Requirement: Advanced Building Systems Commissioning: In addition to fundamental commissioning, retain a CxA prior to completing the design phase of the project.

Points: 5

Intent: Provide a design review of the design documents including feedback to the MEP regarding design and compliance what the OPR and BOD. Verify appropriate measures are incorporated into the CD's for compliance with the projects efficiency goals. Identify
equipment shortcomings and verify corrections to failures of equipment start-up or inadequate operations

Submittals: Submit all documentation for Basic Commissioning and a copy of the signed commissioning contract and dated plans to verify CxA was contracted prior to Construction Documents. Submit a copy of the Design Document review, architect and owner responses.

Resources: http://www.wbdg.org/project/buildingcomm.php

E3.2 Midpoint Inspections

E3.2.1 Thermal Bypass Inspections

Requirement: Conduct a thermal bypass inspection of the structure to ensure the integrity of the air and thermal barriers of the building.

Points: 2

Intent: The Thermal Bypass Checklist is a 16-point list of building details where thermal bypass, or movement of heat around or through insulation, frequently occurs due to missing air barriers or gaps between the air barrier and insulation. Reducing thermal bypasses are important as they can lead to comfort and warranty issues as well as higher utility bills.

Submittals: A thermal bypass checklist along with a summary of deficiencies, photos, corrective actions and corrected photos.

Resources:

E3.2.2 Smoke Test Ducts if in Unconditioned Space

Requirement: AC Contractor or Smoke Testing personnel administer smoke test, identify leaks, and verify leaks are sealed. Verify leaks are sealed by visual inspection. Smoke identifies leaks visually. Leaks are sealed when there is no more smoke coming from leaks. AC contractor must be present to seal leaks. Smoke testing protocol as follows:

1. All boots are temporarily sealed by either the AC Contractor or Smoke Testing personnel.
2. Potable smoker or duct tester/fogger is connected to the supply and return sections of the ductwork. All dampers, if installed, to be verified open by AC Representative.
3. AC Representative is present during Smoke Testing to seal observed leakages with approved materials.
4. Smoke Testing personnel note severity and location of leakages.
5. Smoke Testing personnel verify that all leaks have been sealed at rough-in and supply certificate to client attesting to that fact with date and signature of the Smoke Tester.

Points: 2

Intent: Identify and correct any leaks associated with ductwork prior to the installation of drywall to improve the overall building efficiency. Smoke testing ductwork at rough-in allows otherwise invisible leaks to be identified and sealed while it is still accessible. This process provides visual and procedural education for the HVAC installers potentially resulting in improvement on future jobs. Note that inspector must have correctable vision. Leaks are
NOT quantified at this stage because you need leakage from the boots temporary covers to have a path for the fog to flow through the system plus there may be other leakages in the system after the rough in. Other leaks, which are recommended for additional sealing, are drywall to boot interface and leakages associated with the air handler cabinet, along with what other trades may have damaged by their work around the ducts during rough in.

**Submittals:** Photos of duct testing in progress and a summary report of findings and corrections.

**Resources:**

### E3.2.3 Duct Testing/Leakage

**Requirement:** Total duct leakage for in-unit systems shall be ≤ 8 CFM25 per 100 s.f. of conditioned floor area. All units must be tested by a RESNET or BPI energy rater following RESNET protocol.

**Points:** 3

**Intent:** Improve the energy efficiency of the units

**Submittals:** Summary report or each unit leakage and corrective action taken if required

**Resources:**

### E3.3 Blower Door Test Units

**Requirement:** Post-construction, multi-point blower door testing of units must be tested by a RESNET or BPI energy rater following RESNET protocol. All units must pass at the following levels:

- 3 points for < 7 ACH50
- 4 points for < 6 ACH50
- 5 points for < 5 ACH50

*Points are awarded based on worse-case test results.*

**Intent:** Improve the overall efficiency of the building

**Submittals:** Copy of the test results

**Resources:**

### E3.4 Complete Testing and Balancing in All Residential Units

**Requirement:** Mechanical Electrical Plumbing (MEP) Engineering Firm works with the Architect or design team leader to verify field installed equipment meet OPR, BOD and is installed and operating correctly. In addition to the required prerequisite testing and verification, testing and verification of ALL of the residential units shall be performed by a licensed engineer or a professional certified by the National Environmental Balancing Bureau (NEBB), the Associated Air Balance Council (AABC), or other nationally accredited organization.

**Points:** 5

**Intent:** Verify performance of mechanical systems to ensure proper performance.

**Submittals:** Copy of the testing and balancing report

**Resources:**
E4 Design

E4.1 Washer and Dryer Outside Conditioned Space

Requirement: Locate washer and dryer outside of conditioned space — garage, unconditioned utility room, etc. The location must be separated from the main conditioned space of the building. The unconditioned utility room must meet the following requirements:

- Insulate the walls between the utility room and conditioned space (shared walls).
- Finish the shared walls and ceiling (if below conditioned space) with drywall.
- Seal all holes and air leakage pathways through the walls, floor, and ceiling that can connect the utility room to the conditioned space (plumbing, gas lines, wiring, and bottom plate).
- Install a non-louvered door that is weather-stripped and equipped with a properly adjusted threshold.

Points: 1

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

Submittals: Floorplan identifying location of laundry room

Resources:

E4.2 Light Colored Interior Finishes

Requirement: All bedrooms and all major living spaces in the home have light-colored wall and ceiling surfaces with a reflectance of at least 50% (or Light Reflectance Value (LRV) > 50). Bonus point awarded if all major living spaces and bedrooms have light colored flooring. If a documented reflectivity is not available, this credit can only be given to “white” or “off white.”

Points: 1 point for light colored walls/ceiling in main living areas
        1 point for light colored walls in bedrooms

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

Submittals: Photo of completed project interior, paint selection and LRV

Resources:

E4.3 Compact Hot Water Distribution

Requirement: Install compact hot water distribution system. For a conventional system, no branch line from the water heater to any fixture may exceed 25 feet. Branch lines from the central heater to each fixture must be a maximum of ½-inch diameter. One point is also available for use of a manifold system or recirculation loop with an on demand control with auto pump shut-off in the kitchen and each full bathroom.

Points: 1
Intent: By centrally locating the water heater, heat losses can be reduced by minimizing piping runs. Heat losses can also be minimized by installing an on-demand circulation loop, or by installing a manifold system with individual small diameter water lines dedicated to each fixture.

Submittals: Floorplan showing location of hot water heaters/distribution system

Resources:

E5 Renewable Energy

E5.1 Renewable Energy Production
Requirement: 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.

Points: 1 point per 1% of the building power provided. Maximum 20 points.

Intent: Encourage improved efficiencies and reduce reliance on non-renewable energy sources

Submittals: Plan detail highlighting installed renewable energy system and photos

Resources:

E5.2 Green Power
Requirement: Provide a percentage of the building’s electricity from renewable sources by engaging in at least a one-year renewable energy contract to purchase green power. Earn one point by purchasing green power for 50% of the building total annual energy demand from certified green power generator for one year, 2 points is available for purchasing 100% for 1 year and 3 points available for purchasing 100% for 3 years.

Points: 1 point: 50% for 1 year
2 points: 100% for 1 year
3 points: 100% for 2 years

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

Submittals: Provide an executed copy of the contract for the purchase of renewable energy indicating the types of renewable purchased and the total kWh of energy production capacity.

Resources:

E5.3 Solar Hot Water
Requirement: Each unit is serviced by a solar hot water system

Points: 1

Intent: Encourage the use of renewable energy

Submittals: Plan detail highlighting design, equipment cut sheet and photos of installed equipment.

Resources:
E5.4 Solar Pool Heat

Requirement: Install Solar Pool Heater
Points: 1
Intent: Encourage the use of renewable energy
Submittals: Plan detail highlighting design, equipment cut sheet and photos of installed equipment.
Resources:
CATEGOR Y 3: WATER

Exterior

W1 Installed Landscape

W 1.1 Plants/trees from drought-tolerant list:

**Requirement:** Use of at least 60% of the plants and trees incorporated into the landscape are from a local drought tolerant list; 2 points are available if 80% are from such a list; and 3 points are available if 100% of the plants and trees are from such a list. A minimum of twelve total plants must be present in the landscape to qualify for the credit. Plants shall be listed with high or moderate drought tolerance by Florida Friendly Landscape, WaterWise (water management district) or local drought tolerant list.

**Points:**
- 1 Point - 60% drought tolerant
- 2 Points - 80% drought tolerant
- 3 Points - 100% drought tolerant

**Intent:** Decrease the water resources used to irrigate landscape

**Submittals:** Plant list identifying drought tolerant vegetation, landscape plan, and percentage of drought tolerant vegetation calculation.

**Resources:** -

W 1.2 Turf:

**Requirement:** If sod is installed, do not install turf in densely shaded areas (<60% shade on June 21) and only use Bahia, Zoysia, or Bermuda grass.

**Points:**
- 1 point: Install only drought tolerant turf < 50%
- 2 points: Install only drought tolerant turf < 40%
- 3 points: Install only drought tolerant turf < 30%
- 4 points: Install only drought tolerant turf < 20%
- 5 points: Install only drought tolerant turf < 10%

**Intent:** Turf is generally the largest consumer of water in the landscape, and most types will not flourish in shady areas. Use of drought tolerant plants in shaded areas. Excluding turf from the landscape saves both potable and non potable water.

**Submittals:** Landscape plan, and photos of the completed project.

**Resources:** -

W 1.3 Non-Cypress Mulch:

**Requirement:** Apply 3-4” of mulch around plants and trees (extending out to drip line) and in landscaped beds avoiding volcano mulching

**Points:** 1

**Intent:** Encourage use or non-cypress mulch

**Submittals:** Landscape plans and photos of installed vegetation
W2  Installed Irrigation

W 2.1  Properly Installed Irrigation:

Requirement: Comply with the requirements below:

1. **Separate zones for turf and landscape beds – multi program controller:** In addition to grouping plants with similar maintenance requirements together, it is important to design the irrigation system to deliver the appropriate amount of water for each plant type. It is recommended that the irrigation systems be calibrated to supply less than \(\frac{3}{4}\)" of water per zone, per application. Even during the summer, turf areas—which generally require the most water of all landscape features—will not benefit from more than \(\frac{3}{4}\)" of water per application. Applying more than \(\frac{3}{4}\)" will result in excess water being lost to evaporation, runoff, or percolation through the soil. Over-watering turf also allows weeds such as dollar weed to become established. Other plants can suffer from root rot. Most landscape plants do not require as much water as turf, and their zone can be set for less than \(\frac{3}{4}\)" of water per application. An easy way to determine this is to place small containers (i.e. paper cups) throughout each zone and take note of the time it takes the cups to accumulate the desired amount of water. Then, set your irrigation controller to operate for no longer than that time in each zone. The controller must be a multiple program controller that can divide the landscape into zones and operate the different zones for different lengths of time. In this way, high water use zones that require a large amount of water from rotors (application rates of 0.1 – 0.75 inches of water per hour) or spray heads (application rates of 1.0 – 1.5 inches per hour) can be separated from more drought-tolerant plants that require little or no water. In contrast, a single program controller is often set for the watering requirements of the least drought-tolerant landscape feature, and the rest of the landscape ends up being over-watered. The controller must have a battery backup to retain system settings and include a functioning rain sensor in an operable location as required by Florida Statute 373.62.

2. **High volume irrigation does not exceed 60% of the landscape area:** Landscape zones requiring a high volume of water (greater than 30 gph (gallons per hour) supplied by rotors or spray heads cannot exceed 60% of the landscape area.

3. **Head to head coverage for rotor/spray heads:** Irrigation system designs incorporate spray/rotor head pattern that overlap to ensure complete coverage. In order to minimize over-watering in the overlap zone, one emitter’s coverage pattern should not extend past adjacent emitters. Full coverage as depicted in the photo below (courtesy of St. Johns River Water Management District)

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

5. **Provide owner and FGBC with plan and instructions:** The eventual homeowner should receive a copy of as built plans, operating manuals, and warranties. The package should also include a general irrigation schedule with recommendations and instructions on modifying the schedule for local climatic and growing conditions. Each of the following items should be installed adjacent to the controller or in an easily accessible weather-protected area:
   a. Controller handbook/operating instructions
   b. Zone diagram
   c. Specific zone application rates and maintenance run times
   d. Location of rain sensor or soil moisture sensor probe

By having this information where the homeowner can easily find and use it, long-term maintenance of the system is encouraged. Surveys have shown that the typical homeowner is actually afraid to touch the controller because instructions are not available or easy to read. Many times the irrigation contractor does not return to readjust the timer after the establishment period.

**Intent:** To facilitate increased efficiency in the irrigation design and promote water conservation.

**Points:** 5

**Submittals:** Copy of the irrigation design, photos of installed irrigation, copy of field testing of system, and a copy of the instructions.


**W 2.2 Only Drip Irrigation Is Used On Site:**

**Requirement:** Install only drip irrigation systems to service installed landscape

**Points:** 3

**Intent:** Reduce water used for irrigation

**Submittals:** Copy of the irrigation design, and photos of installed irrigation.

**Resources:** -

**W 2.3 No Permanent in-Ground Irrigation System**

**Requirement:** Install only drip irrigation systems to service installed landscape

**Points:** 10

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

**Submittals:** Provide a signed letter from the project owner.

**Resources:** N/A
W 2.4 Soil Moisture Sensors:

Requirement: Soil moisture sensors or other weather-based irrigation is installed appropriately to control irrigation at ground level and for outdoor amenities.

Points: 2

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

Submittals: Cut sheet of sensor and photos of installed sensors

Resources: -

W3 Water Source Conservation

W 3.1 Reclaimed Water for Irrigation

Requirement: Project is supplied with municipal reclaimed water for irrigation

Points: 1

Intent: Reduce potable water used for irrigation

Submittals: Letter from municipality indicating reclaimed water is supplied and used on the project.

Resources: -

W 3.2 Rainwater:

Requirement: Install rainwater harvesting collection and storage system. The minimum requirement for this credit is a simple collection system, which for all intents and purposes would be for demonstration. Achieve additional points, per the break down below, as the rainwater collection system increases in functional use to replace both potable and non-potable water.

1. Simple Collection: Used to supplement irrigation and for demonstration purposes.
2. Dedicated use for irrigation: Harvested Rainwater is used to supply irrigation to landscape.
3. Rainwater is collected and used in lieu of potable water for flushing toilets and urinals: Rainwater is collected and fed to dual piping system as greywater to reduce potable water demand inside the building.
4. Collected and treated to potable standards for whole building use: Water is treated to potable standards and supplements whole building water use

Points: 1 point: Simple Collection
3 points: Collection with dedicated use for irrigation. Collected rainwater must supply a minimum of 25% of the water necessary for irrigation.
5 points: Collection for toilet/urinal flushing. Collected rainwater must supply a minimum of 25% of the water required for toilet/urinal flushing.
10 points: Rainwater is collected and treated to potable standards for use throughout the building. Rainwater collected must provide a minimum of 25% of the buildings annual water use.

Intent: Decrease both potable and non potable water use by collecting and using rainwater
Submittals: Construction drawings indicating design and location of system

Resources:

**W 3.3 Greywater:**

**Requirement:** Greywater system is installed to reduce demand on potable water. System must have a specific collection source and a dedicated use. Greywater system is installed to reduce demand on potable water. System must have a specific collection source and a dedicated use

**Points:**
- 3 points: Collection with dedicated use for irrigation. Collected and treated greywater must supply a minimum of 25% of the water necessary for irrigation.
- 5 points: Collection for toilet/urinal flushing. Collected and treated greywater must supply a minimum of 25% of the water required for toilet/urinal flushing.
- 10 points: Greywater is collected and treated to potable standards for use throughout the building. Greywater collected must provide a minimum of 25% of the building annual water use.

**Intent:** Reduce the consumption of potable water by using alternative sources. For example, air conditioner condensate could be used to refill site water features, used for irrigation, or as make-up water chillers

**Submittals:** Construction drawings indicating design and location of system

**Resources:**

**Interior Water**

**W4 Fixtures**

**W4.1 Low Flow Toilets**

**Requirement:** All installed toilets must comply with the low-flow criteria AND have a minimum MaP (Maximum Performance) rating of 600 OR are WaterSense certified. For dual flush toilets to receive one point, ONE of the two flush options must be ≤ 1.1gpf.

**Points:**
- Water closets in the individual units
  - 1 point: ≤ 1.28 gpf
  - 2 points: Dual Flush
  - 3 points: ≤ 1.0 gpf
- 1 Bonus point is available if all water closets in the common areas are low flow

**Intent:** Toilets represent the largest source of indoor water use in buildings, accounting for up to 30%-40% of water demand. The Florida building code and National Energy Policy Act of 1992 (EPACT) require that all installed toilets be rated at a maximum flow rate of 1.6 gallons/flush. There are toilets on the market today that exceed these standards. To make it easy to find and select water-efficient products with good performance, the EPA (Environmental Protection Agency) has introduced its WaterSense® program, a label that’s backed by independent testing and certification. WaterSense®-labeled products perform their intended functions as well as or better than their less-efficient counterparts. And generally speaking, they’re about 20 percent more water-efficient.
W4.2 Low Flow Lavatory Faucets in Units

**Requirement:** All installed lavatory fixtures must comply with the low flow requirements.

**Points:**
- 1 point: \( \leq 1.5 \text{ gallons per minute (gpm)} \)
- 2 points: \( \leq 1.0 \text{ gpm OR Motion Sensor self-closing faucet (0.25 gal/metering cycle Max} \)

**Intent:** Reduce potable water used inside the building

**Submittals:** Photo of installed low flow fixtures and cut sheets

**Resources:**
- For a list of high efficiency commodes that have earned the WaterSense® label, visit [http://www.epa.gov/watersense/pp/het.htm](http://www.epa.gov/watersense/pp/het.htm). For MaP ratings of commercial residential (flushometer) toilets, select “Reports” from [http://www.veritec.ca](http://www.veritec.ca) (Veritec Consulting, Inc.). For MaP and Water-Sense combined results for Toilets (commercial and non), visit [http://www.cwwa.ca/freepub_e.asp](http://www.cwwa.ca/freepub_e.asp).

W4.3 Low Flow Kitchen Faucets in Units

**Requirement:** All installed kitchen fixtures must comply with the low flow requirements.

**Points:**
- 1 point: \( \leq 2.0 \text{ gallons per minute (gpm)} \)
- 2 points: \( \leq 1.5 \text{ gpm OR WaterSense Certified} \)

**Intent:** Reduce potable water used inside the building

**Submittals:** Photo of installed low flow fixtures and cut sheets

**Resources:**
- For a list of high efficiency commodes that have earned the WaterSense® label, visit [http://www.epa.gov/watersense/pp/het.htm](http://www.epa.gov/watersense/pp/het.htm). For MaP ratings of commercial residential (flushometer) toilets, select “Reports” from [http://www.veritec.ca](http://www.veritec.ca) (Veritec Consulting, Inc.). For MaP and Water-Sense combined results for Toilets (commercial and non), visit [http://www.cwwa.ca/freepub_e.asp](http://www.cwwa.ca/freepub_e.asp).

W4.4 Low Flow Shower Heads in Units

**Requirement:** All installed showerheads must comply with the low flow requirements. A maximum of 1 showerhead per 15sf of shower compartment is allowed.

**Points:**
- 2 points: \( \leq 2.0 \text{ gallons per minute (gpm)} \)
- 1 Bonus point is available if all of the showerheads installed in the common areas are \( \leq 2.0 \text{ gpm} \)

**Intent:** Reduce potable water used inside the building

**Submittals:** Photo of installed low flow fixtures and cut sheets

**Resources:**
- For a list of high efficiency commodes that have earned the WaterSense® label, visit [http://www.epa.gov/watersense/pp/het.htm](http://www.epa.gov/watersense/pp/het.htm). For MaP ratings of commercial residential (flushometer) toilets, select “Reports” from [http://www.veritec.ca](http://www.veritec.ca) (Veritec Consulting, Inc.). For MaP and Water-Sense combined results for Toilets (commercial and non), visit [http://www.cwwa.ca/freepub_e.asp](http://www.cwwa.ca/freepub_e.asp).

W5 Appliances and Equipment

W5.1 High Efficiency Water Saving Clothes Washer

**Requirement:** All installed clothes washers must comply with the stated Water Factor requirement.

**Points:** 2 Point for Water Factor \( \leq 6 \)
3 Points for Water Factor ≤ 4
1 Bonus point is available if all of the clothes washers installed in the common areas have a Water Factor ≤ 6

Intent: Reduce water consumption
Submittals: Photo of installed high efficiency clothes washer and cut sheets
Resources:

W5.2 Tankless, Boiler, or Recirculating Hot Water Heaters

Requirement: Install on demand tankless hot water heaters or hot water recirculation system
Points: 2
Intent: Reduce water consumption
Submittals: Photo of installed tankless water heaters and cut sheets or schematics of recirculation system
Resources:

W6.0 Florida WaterStar Certification

Requirement: Project achieves Florida WaterStar Certification
Points: 2
Intent: Reduce water consumption
Submittals: Copy of WaterStar Certification
Resources: www.FloridaWaterStar.com
CATEGORY 4: SITE

S Prerequisite 1: Copy of Stormwater Pollution Prevention Plan (SWPPP) and Florida Department of Environmental Protection (FDEP) Notice of Intent (NOI) onsite

Requirement: Keep copy of SWPPP & FDEP National Pollutant Discharge Elimination System (NPDES) Notice of Intent (NOI) onsite for contractor to implement & maintain SWPPP Best Management Practices (BMP) as designed by civil engineer or SWPPP designer.

Points: Prerequisite - Required

Intent: Reduce the quantity and improve the quality of stormwater discharge that leaves the jobsite.

Submittals: Copy of Notice of Intent if applicable

Resources:

S Prerequisite 2: Erosion and Sedimentation Control

Requirement: 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.

Points: Prerequisite - Required

Intent: Reduce the quantity and improve the quality of stormwater discharge that leaves the jobsite.

Submittals: Copy of erosion control plan, site details and photos

Resources:

S1 Site Selection

S1.1 Select Appropriate Site

Requirement: 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 which elevation is lower than 5 feet above the elevation of the 100-year flood as defined by FEMA.
- Land that is specifically identified as habitat for any species on Federal or State threatened or endangered lists.
- Within 100 feet of any 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 that was public parkland prior to acquisition for the project, unless land of equal or greater value is accepted as parkland in trade by the public landowner (Park Authority projects are exempt).

**Points:** 1  
**Intent:** Avoid development of environmentally sensitive sites.  
**Submittals:** Site survey and Google earth map  
**Resources:**

### S1.2 Within an FGBC Certified Green Local Government

**Requirement:** Build within an FGBC certified Green Local Government  
**Points:** 1  
**Intent:** Reward projects constructed in certified green local governments as these regions have taken a collaborative approach to improving the overall sustainability of their community.  
**Submittals:** Name of local government  
**Resources:** [www.floridagreenbuilding.org/index.cfm/go/public.certifiedProjects](http://www.floridagreenbuilding.org/index.cfm/go/public.certifiedProjects)

### S1.3 Within an FGBC Certified Green Land Development

**Requirement:** Build within an FGBC certified Green Land Development  
**Points:** 1  
**Intent:** Reward projects constructed in certified green land developments as the horizontal development portion of the project has incorporated features to improve the overall sustainability of the region.  
**Submittals:** Name of land development  
**Resources:** [www.floridagreenbuilding.org/index.cfm/go/public.certifiedProjects](http://www.floridagreenbuilding.org/index.cfm/go/public.certifiedProjects)

### S1.4 High Density

**Requirement:** Project has a minimum of 30 dwelling units per acre  
**Points:** 1  
**Intent:** Encourage compact development  
**Submittals:** Number of units per acre  
**Resources:**

### S1.5 Greyfield/Redevelopment of an existing site

**Requirement:** Locate the building on a site that has existing hardscape or other structure that must be replaced. To achieve this credit, the site must have utility connections available within 1/8 mile boundary.  
**Points:** 3
Intent: Encourage redevelopment, increase density and reduce the need for additional infrastructure.

Submittals: Copy of a site plan with the existing conditions at the time of permit application.

Resources: Many economic development boards have a list of existing sites ready for redevelopment.

**S1.6 Brownfield Redevelopment**

**Requirement:** Development of any EPA or Federal/State/Local Government Classified Brownfield and provide remediation as required by EPA’s Sustainable Redevelopment of Brownfields Program.

**Points:** 3

**Intent:** Rehabilitate and use damaged sites

**Submittals:** Provide a copy of the Phase II Environmental Site Assessment OR a letter from a local, state or federal regulatory agency confirming that the site is classified as a brownfield.

**Resources:** [http://epa.gov/brownfields/](http://epa.gov/brownfields/)

**S1.7 Access to Basic Services (Connectivity)**

**Requirement:** Locate the building on a site that is within 1/2 mile of and has safe and walkable access to basic services (this can be measured as the crow flies). Each type of service may only be counted once, i.e. if there are 3 banks, for the purposes of this checklist that is equal to ONE service. Services include:

- beauty shop
- community center
- convenience grocery store
- day care
- dry cleaners
- financial institutions
- fire station
- fitness center
- hardware store
- Laundromat
- library
- local government facility
- medical/dental office
- museum
- park
- pharmacy
- place of worship
- post office
- restaurant
- school
- senior care facility
- supermarket
- theater

**Points:** 1 point awarded for each 3 unique services

**Intent:** Reduce vehicle miles traveled by locating building close to basic services.

**Submittals:** Aerial context map with building location, and location and type of basic services within ½ mile.

**Resources:**
S1.8  **Access to Public Transportation**

**Requirement:** Site is located within 1/2 mile of an existing or funded rail node OR within 1/4 mile of safe and walkable access to mass transit of at least one active bus stop, trolley or ride share (this can be measured as the crow flies).

**Points:** 2

**Intent:** Reduce traffic, greenhouse gas emissions, need to expand roadways and overall pollution from automobile use.

**Submittals:** Regional/local 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.

**Resources:** Local jurisdiction website.

S2  **Site Enhancement**

S2.1  **Tree Preservation**

**Requirement:** Protect existing trees during construction of project by employing the following techniques to at least 36 inches of tree caliper measured at chest height (i.e. nine 4-inch trees, three 12-inch trees, etc.) per acre.

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

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

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

4. Plan for tree survival when making grade changes, for filling can damage trees. Fill may raise the water table or cause surface drainage to puddle over the roots. A light fill of porous or gravel material up to 6 inches in depth will usually do little harm, however heavier or more impervious fills such as clay and marl will harm the tree. It is often advantageous to install an aeration system before the fill is added, to maintain a normal balance of air and water around the roots. Consult with a tree expert or the Florida Division of Forestry for more information regarding construction of an aeration system that generally includes installing tile for drainage and aeration, constructing a drywell, and filling. Minimize damage to roots during excavation:
   a. Cut roots cleanly and re-trim after excavation.
   b. Treat cuts in larger roots (1/4 inch and up) with wound dressing.
   c. Refill the excavation as soon as possible or construct retaining walls.
   d. Avoid leaving air pockets when refilling.
   e. Mix peat moss or other soil amendment with fill soil to promote new growth.
f. Top-prune to aid in maintaining tree vigor.
g. If cables or piping must be laid through the tree root zone, it is better to tunnel underneath it rather than trench through it.

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

Points: 1
Intent: Preserve site features
Submittals: Tree/native plant identification survey and photo or other documentation of each technique. For multi-family projects, tree protection shall be shown on the site plan or on a tree survey with details on the drawings outlining protection strategies, barricades, fencing, and areas of protection.

Resources:

**S2.2 Minimize Site Disturbance**

**Requirement:** The maximum square footage of the site that may be disturbed, excluding the building footprint, must be less than or equal to the building footprint.

Points: 1
Intent: Minimize site disturbance.
Submittals: Copy of project site indicating building footprint, square footage of building footprint and outlining site cleaning operation boundaries and staging areas. Provide photos of site demonstrating minimal site disturbance.

**S2.3 Site Open Space**

**Requirement:** Exceed minimum zoning requirements for open space by 25%

Points: 1
Intent: Provide natural open space with shade to reduce the heat islands around the building, provide building occupants with outdoor spaces, and enhance the environment with trees.
Submittals: Provide a site plan with the building footprint, square footage of building footprint (or a copy of the local zoning open space requirements) that shows the designated open space and landscape plan. Also provide a list of trees and their projected canopies after 10 years.

Resources:

**S3 Transportation**

**S3.1 Bicycle Storage**

**Requirement:** Project must provide securing locations for bicycles for 5% of total occupants

Points: 1
Intent: Reduce pollution and land development impacts from automobile use.
Submittals: Provide site plan identifying bike storage, cut sheet of bike rack, and photo of installed bike storage

Resources: 

S3.2 Alternative Fuel Refueling Stations

Requirement: Provide preferred parking for 3% of the parking capacity for the use of low-emitting, fuel-efficient and high occupancy vehicles. Preferred parking spaces may also include charging stations for electric vehicles.

Points: 1

Intent: Reduce pollution and land development impacts from automobile use.

Submittals: Plan identifying location of preferred parking, description of charging apparatus and photos of installed equipment

Resources: 

S3.3 Parking Capacity

Requirement: Parking provided on site must be equal to or less than required by local jurisdiction. Design team must work with the local jurisdiction to reduce the typically required parking by proposing shared parking or other multimodal transportation methods.

Points: 1

Intent: Reduce areas that may be impervious, create heat islands, or discourage use of multimodal transportation.

Submittals: Provide a calculation of the zoning required parking spaces, a letter from the local jurisdiction indicating the projects parking requirements and a site plan with a total parking count.

Resources: 

S3.4 Automated Parking

Requirement: Automated parking system - systems include elevators, lifts, or 100% valet parking.

Points: 1

Intent: Minimize the site footprint of construction materials associated with on site parking

Submittals: Detail and description of plan and system

Resources: 

S4 Heat Islands

S4.1 Roof

Requirement: 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 20% of the roof surface (alternatively roof materials may have a LRV \( \geq 50 \)); OR Install a “green” (vegetated) roof for at least 20% of the roof area. Combinations of high albedo and vegetated roof can be used providing they collectively cover at least 20% of the roof area.

Points:  
1 point: 20% roof coverage  
2 point: 40% roof coverage  
3 point: 60% roof coverage  
4 point: 80% roof coverage

Intent: Reduce heat island effect of site development.  
Submittals: Provide a roof drawing with area calculations and cut sheets for the materials used. (Amenity decks and finished roof terraces shall be considered under Credit 4.2: Hardscape)

Resources:

**S4.2 Shaded, Covered or High Albedo Hardscape**

**Requirement:** Shade, cover or use high albedo hardscape for a minimum of 40% of the site hardscape.  
For the purpose of this credit site hardscape includes roads, sidewalks, courtyards, amenity decks, and parking lots. Areas square footage that may be included in this calculation are hardscape shading by trees (within 10 years, structures with roof materials with a SRI \( \geq 78 \) or a LRV \( \geq 50 \), structured parking or hardscape with a SRI > 35. The building footprint, ie. square footage of roof, is NOT considered hardscape unless used as a rooftop terrace amenity. Hardscape shaded by photovoltaic panels or other systems that are generating electricity can be included in the shade square footage calculation and are exempt from meeting the SRI \( \geq 78 \) requirement.

Points:  
2 point: 40% hardscape coverage  
3 point: 60% hardscape coverage  
4 point: 80% hardscape coverage

Intent: Reduce heat islands of the developed site.  
Submittals: Provide a site plan identifying all the site features and a cut sheet for any reflective materials used to achieve this credit.

Resources:

**S4.3 Under Building Parking**

**Requirement:** A minimum of 50% of the parking shall be located under the building.  

Points: 3

Intent: Reduce heat island effect of site development and vertical construction.  
Submittals: Plan details for project parking.

Resources:
S4.4 Building Exterior

Requirement: To qualify for this credit, a minimum of 80% of the exterior wall surface area minus the glazing must have a LRV > 60 for stucco and painted finishes, a SRI ≥ 29 for metal and vinyl. Natural and man-made stone products must be light in color and comparable to LRV > 60 paint.

Points: 1

Intent: Reduce heat island effect of site development and vertical construction.

Submittals: Provide a site plan identifying all the site features and a cut sheet for any reflective materials used to achieve this credit.

Resources:

S5 Light Pollution Reduction

S5.1 Building, Amenity Desk, and Site Lighting are Dark Sky Compliant

Requirement: 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 Cut-off IESNA Classification. If the bulb exceeds 26W the lights shall be full cut-off luminaires so that no light or brightness from those luminaires crosses the property boundary.

Points: 1

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

Submittals: Provide specifications, construction detail and lighting cut sheets indicating dark sky compliance.

Resources:

S6 Stormwater Management

S6.1 Rate and Quantity

Requirement: No net increase in stormwater runoff from pre-development conditions to post-development

Points: 1

Intent: Increase the quality of stormwater discharge. One point is available for a 50% increase in water quality and a maximum 85% predevelopment discharge.

Submittals: Civil engineering stormwater calculations and narrative explaining how the design improves the water quality

Resources:
S6.2 Treatment

Requirement: Provide onsite treatment of stormwater to remove 80% of (TSS) Total Suspended Solids and 40% of (TP) Total Phosphorous

Points: 1

Intent: Improve natural waterways by minimizing stormwater run-off contaminants

Submittals: Civil engineering stormwater calculations and narrative explaining how the design improves the water quality

Resources:

S6.3 Littoral Vegetation

Requirement: Use littoral vegetation surrounding stormwater ponds - a minimum of 75% of the shoreline (calculated based on percentage of linear feet of shoreline) shall be vegetated with littoral plants.

Points: 2

Intent: Use low Impact Development techniques on site to mitigate for stormwater. Littoral zone of man-made stormwater detention basins that function as wet ponds shall have a minimum of 50% of the pond bank vegetated with native wetland plants of diverse species in appropriate locations for the vegetation type. To create this landscaped littoral shelf, the slope between the normal water level elevation and three feet below the normal water level elevation should be no greater than 6:1. Earn one point for 50% of pond bank coverage and earn an additional point for each additional 25% of pond bank coverage.

Submittals: Plant list and detention pond design.

Resources:

S6.4 Alternative Stormwater Detention: Rain Gardens, Infiltration Trenches, Rainwater Harvesting, and Injection Wells

Requirement: Uses Low Impact Development (LID) alternatives to collect and treat stormwater. Alternative systems that qualify include rain gardens, bio-retention filtration systems, infiltration trenches, vegetated roofing and injection wells. A minimum of 50% of the stormwater collection and treatment must use the low impact development treatment system to achieve this credit. Earn one point if 50% of the site stormwater is collected using low LID techniques. Earn an additional point for each additional 25% of total site stormwater that is collected using LID techniques.

Points: 1 point: 50% of stormwater collected using LID
2 points: 75% of stormwater collected using LID
3 points: 100% of stormwater collected using LID

Intent: Improve quality of natural waterways and stormwater discharge

Submittals: Site design, stormwater calculations and construction details of low impact development designs.

Resources:
S6.5 Pervious Hardscape

**Requirement:** Install pervious hardscape for a minimum of 25% of the hardscape. Site hardscape includes roads, sidewalks, courtyards, and parking lots. Hardscape may be porous pavers (open grid pavers) or permeable pavement (minimum percolation rate of 2 gal/min/SF and a minimum of 6 inches of open graded base below).

**Points:** 1

**Intent:** Improve quality of stormwater discharge and allow groundwater recharge.

**Submittals:** Site drawing with pervious hardscape identified and cut sheet or calculations regarding percolation or perviousness.

**Resources:**

S6.6 Treat Stormwater from Adjacent Sites

**Requirement:** Collect and treat stormwater from adjacent properties to assist in controlling both the quantity and quality of stormwater in the community. Earn one point for each additional 10% of stormwater volume the project site can retain and treat.

**Points:** 1

**Intent:** Improve the quality of natural waterways by improving the quality of and reducing the quantity of stormwater discharge.

**Submittals:** Civil engineering stormwater calculations

**Resources:**
CATEGORY 5: HEALTH

H Prerequisite 1 Environmental Tobacco Smoke (ETS) Control

Requirement: No smoking allowed in the common areas of the building and only in outside designated areas that are located 25 feet or more away from all doors, operable windows, HVAC equipment, and fresh air intakes.

Points: Prerequisite - Required

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

Submittals: Site plan indicating designated smoking area.

Resources:

H Prerequisite 2 Construction IAQ Management Plan, During Construction

Requirement: Indoor Environmental Quality shall be protected during construction according to the Sheet Metal & Air Conditioning Contractors’ National Association (SMACNA) guidelines for occupied buildings under construction.

Points: Prerequisite - Required

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.

Submittals: Provide copy of the specifications indicating use of SMACNA guidelines and letter from the contractor signed both by the project manager and field superintendent indicating they have implemented the SMACNA guidelines.

Resources: https://www.smacna.org/

H1 Design - Systems: Protect, Monitor, Remediate Poor IEQ

H1.1 Carbon Dioxide (CO2) Monitoring

H1.1.1 Assembly Areas

Requirement: Systems shall be designed to monitor carbon dioxide (CO2) within the building and activate a system w/ corrective action plan such that mechanical air conditioning system can introduce treated fresh air as needed.

Points: 1

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

Submittals: Construction detail of CO2 Monitoring system on mechanical plans and cut sheet of equipment

Resources:
H1.1.2 All Common Areas

Requirement: Systems shall be designed to monitor carbon dioxide (CO2) within the building and activate a system with corrective action plan such that mechanical air conditioning system can introduce treated fresh air as needed.

Points: 1

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

Submittals: Construction detail of CO2 monitoring system on mechanical plans and cut sheet of equipment

Resources:

H1.1.3 Individual Units

Requirement: Systems shall be designed to monitor carbon dioxide (CO2) within the building and activate a system with corrective action plan such that mechanical air conditioning system can introduce treated fresh air as needed.

Points: 1

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

Submittals: Construction detail of CO2 monitoring system on mechanical plans and cut sheet of equipment

Resources:

H1.2 Increased Ventilation Effectiveness

Requirement: Building system shall be designed to create an air change effectiveness greater than or equal to 0.9 as determined by ASHRAE 62.1-2004. This credit shall be available for projects installing dehumidification systems.

Points: 1

Intent:

Submittals: Provide details on mechanical plans and system design

Resources:

H1.3 Building Entrance - Outdoor Pollutants

Requirement: Project shall employ measures such as permanent walk-off grates or mats located at the building main entrance to reduce pollutant contamination of the building entrances. Building entrance must be under cover or mats provided immediately inside the entrance and a maintenance plan must be included to maintain the integrity of the system.

Points: 1

Intent: Improve the indoor environmental quality by reducing the amount of pollutants brought inside the building by foot traffic.

Submittals: Provide cut sheet and construction detail of the system installed
Resources:

**H1.4 Building Entrance – Covered Entry**

**H1.4.1 Main Entry**

**Requirement:** Main entrance of the building shall be covered with no less than 50 square feet of roof to protect entrance from rain.

**Points:** 1

**Intent:** Protect the building from water intrusion from rain and provide a protected path for building occupants.

**Submittals:** Provide a copy of the dimensioned plan indicating the covered entrance and the square footage of the entrance cover.

**Resources:**

**H1.4.2 Entry from Primary Parking**

**Requirement:** Covered path from parking to the main entrance or a Porte cochere at the main entrance.

**Points:** 1

**Intent:** Protect the building from water intrusion from rain and provide a protected path for building occupants.

**Submittals:** Provide a copy of the dimensioned plan indicating the covered entrance and the square footage of the entrance cover.

**Resources:**

**H1.5 High-Efficiency Air Filtration System**

**H1.5.1 Common Areas**

**Requirement:** Design a mechanical ventilation system to include a minimum MERV 8 air filter.

**Points:** 1

**Intent:** Provide improved indoor air quality.

**Submittals:** Cut sheet of air filter system.

**Resources:**

**H1.5.2 Individual Units**

**Requirement:** Design a mechanical ventilation system to include a minimum MERV 8 air filter.

**Points:** 2

**Intent:** Provide improved indoor air quality.

**Submittals:** Cut sheet of air filter system.

**Resources:**
H1.6 Chemical and Cleaning Product Storage

Requirement: Any room(s) containing chemicals or cleaning products for building O&M is ventilated and under negative pressure with respect to the building. The room must also have a door installed that will automatically close. 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.

Points: 1

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

Submittals: Letter from mechanical engineer indicating the design achieves an air change effectiveness of 0.9 or greater in each ventilated zone or that the design complies with the recommended design approaches in ASHRAE 2001 Fundamentals Chapter 32, Space Air Diffusion.

Resources:

H1.7 Thermal Comfort, Comply with ASHRAE 55-1992


Points: 1

Intent: Increase occupant comfort and productivity by providing individual control over building occupant workspaces.


Resources:

H1.8 Thermal Comfort, Dehumidification System

Requirement: System installed to control building humidity such as a desiccant system, enthalpy wheel, heat pipes, or dual path system. The dehumidification system shall be centrally located and permanent servicing the common areas and individual units of the building.

Points: 5

Intent: Reduce relative humidity inside the building to improve the indoor environment.

Submittals: Letter from the mechanical engineer and cut sheet of dehumidification equipment.

Resources:
H1.9  **Combustion: No Gas Water Heating Equipment Located Inside the Conditioned Area – Or Use of Electric**

**Requirement:** One point is also available for use of a sealed combustion water heater, or use of an electric water heating system.

**Points:** 1

**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.

**Submittals:** Mechanical Schedule

**Resources:**

H1.10  **Combustion: No Gas Heating Equipment Located Inside Conditioned Area – Or Use of Electric**

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

**Points:** 1

**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.

**Submittals:** Mechanical Schedule

**Resources:**

H1.11  **Kitchen Hood Vented to Exterior**

**Requirement:** Home equipped with a range hood vented to the exterior of the building. Non-vented or ductless range hoods are not eligible for the point. Hood ducting must be of building code-approved materials and completely sealed to prevent leakage. Exterior of vent must also contain building code approved termination cover.

**Points:** 2

**Intent:** Improve indoor air quality by exhausting humidity and odors. FGBC recommends use of a quiet, energy-efficient model, but does not require it.

**Submittals:** Schematic of vent, photos of rough in and cut sheet for range vent

**Resources:**
H2 Design – Occupant Experience

H2.1 Daylight

Requirement: Provide natural day lighting to 50% of interior spaces. Achieve a minimum Daylight Factor (the ratio between the measured interior and exterior light levels in lumens) of 2% for a minimum of 25% of the occupied spaces of the building. Note: Occupied space refers to all areas except hallways, bathrooms, laundry rooms and closets.

Points: 2 points: 50%
3 points: 75%

Intent: Increase occupant comfort by providing natural light to the unit owners.

Submittals: Provide plans specifying the daylit areas and day lighting calculations for occupied spaces.

Resources:

H2.2 Views: Views for 75% of Spaces

Requirement: Provide views to vision glazing for 75% of all occupants. Occupants must have line of sight from occupied spaces to the exterior. (Note: Occupied space refers to all areas except hallways, bathrooms, laundry rooms and closets.)

Points: 3

Intent: Increase occupant comfort by providing views to the unit owners.

Submittals: Provide plans showing line of site for occupied areas.

Resources:

H2.3 Acoustics

H2.3.1 Between Individual Units

Requirement: Provide wall assembly with a STC rating ≥ 45

Points: 1

Intent: Increase occupant comfort and productivity by providing appropriate acoustical control for the building occupants.

Submittals: Provide cut sheets for the wall assembly and fenestration indicating the STC ratings.

Resources:

H2.3.2 Between Units and Common Areas

Requirement: Provide wall assembly with a STC rating ≥ 55

Points: 1

Intent: Increase occupant comfort and productivity by providing appropriate acoustical control for the building occupants.

Submittals: Provide cut sheets for the wall assembly and fenestration indicating the STC ratings.
Resources:

**H2.3.3 Exterior Wall Assembly**

**Requirement:** Provide wall assembly with a STC rating ≥ 50

**Points:** 1

**Intent:** Increase occupant comfort and productivity by providing appropriate acoustical control for the building occupants.

**Submittals:** Provide cut sheets for the wall assembly indicating the STC ratings.

**Resources:**

**H2.3.4 Fenestration**

**Requirement:** Provide fenestration with a STC rating ≥ 30

**Points:** 1

**Intent:** Increase occupant comfort and productivity by providing appropriate acoustical control for the building occupants.

**Submittals:** Provide cut sheets for the fenestration indicating the STC ratings.

**Resources:**

**H2.4 Cleanability: Narrow Grout Lines**

**Requirement:** All grout lines between tiles must be less than 3/16" wide

**Points:** 1

**Intent:** Reduce bacteria and indoor air pollutants held in porous materials. 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.

**Submittals:** Specification and photo of installed tile

**Resources:**

**H2.5 15% of Building Units and All Building Common Areas Designed to Meet ADA Standards**

**Requirement:** A minimum of 15% of the units in the building must comply with the following requirements:

- 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 that are installed at commode, tub, and shower (FGBC recommends following the ADAAG for height and size specifications).
- 32 inch minimum door width; 36 inches preferred
- 24 inch space on latch side of doors or automatic door opener
- Light switches a maximum height of 48" from the floor to the top of the switch
- Electrical outlets a minimum of 15" from the floor to the bottom of the outlet
- Lever handles on doors or doors without latches
- Rocker or touch switches
  **AND** 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

**Points:** 2  
**Intent:** Allow for accessibility and Aging in Place  
**Submittals:** Floorplan showing ADA units, cut sheets and signed approved submittal of ADA products, photos of installed features, and plan details

**Resources:**

H3  
**IAQ Management During Construction**

H3.1  
**Protect Ducts, Range Hood, and Bath Exhaust Fans During Construction**

**Requirement:** All duct register boxes, supply plenums, range hood, the bath exhaust fans (housing or fan) and liner boxes are sealed off with cardboard, rigid ductboard, or other suitable method directly following mechanical rough in. The temporary tape used to seal the registers during a smoke test does not comply. Ducts must remain sealed until HVAC system start-up. This step prevents construction dust and pollutants from accumulating in the duct system and being released into the air when the system is turned on. If interior finish work (painting, etc.) continues after HVAC start up, ducts must be re-sealed until work is complete.

**Points:** 2  
**Intent:** Prevent accumulation of pollutants and the damper and/or the blower fan from becoming clogged from spray-on ceiling textures, etc.

**Submittals:** Photo

**Resources:**

H3.2  
**Minimum MERV 13 During Construction**

H3.2.1  
**Common Areas**

**Requirement:** During construction install a minimum of a MERV 13 air filter.

**Points:** 2  
**Intent:** Provide improved indoor air quality.

**Submittals:** Cut sheet of air filter system.

**Resources:**
H3.2.2 Individual Units

Requirement: During construction install a minimum of a MERV 13 air filter.
Points: 2
Intent: Provide improved indoor air quality.
Submittals: Cut sheet of air filter system.
Resources:

H3.3 Pre-Occupancy IAQ testing

Requirement: Test and remediate building prior to occupancy using 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.
Points: 1
Intent: Provide the Owner with the option to test indoor air quality prior to occupancy.
Submittals: Copy of the IAQ testing results indicating that the maximum chemical contaminant concentration requirements are not exceeded.
Resources:

H4 Low-Emitting Materials/Healthy Finishes

H4.1 Adhesives & Sealants

Requirement: All adhesives and sealants shall be low Volatile Organic Compound (VOC) and meet the VOC limits below that were established by the 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.
Points: 2
Intent: All adhesives and sealants shall be low Volatile Organic Compound (VOC) and meet the VOC limits below that were established by the 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.
Submittals: Contractor shall maintain all Material Safety Data Sheet (MSDS) highlighting the stated VOC emissions for each paint and coating used in the building.
Resources:

H4.2 Paint

Requirement: Interior paints and coatings shall be less than 100 g/l for non-flat paint and less than 50 g/l for flat paint. Exterior paints and coatings shall be less than 200 g/l for non-flat and less than 100 g/l for flat.
Points: 2
Intent: Improve indoor air quality by minimizing the VOC’s used during the construction process.
Submittals: Contractor shall maintain all Material Safety Data Sheet (MSDS) highlighting the stated VOC emissions for each adhesive and sealant used in the building.

Resources:

**H4.3 Carpet**

**Requirement:** All carpet and carpet products shall meet the Carpet & Rug Institute Green Label Certification Program.

**Points:** 2

**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.

**Submittals:** Provide carpet cut sheets or the VOC limits for each carpet product used in the building.

**Resources:**

**H4.4 Composite Wood**

**Requirement:** All composite wood and agrifiber products will contain no added urea-formaldehyde.

**Points:** 2

**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.

**Submittals:** 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.

**Resources:**

**H4.5 Insulation**

**Requirement:** All Insulation products will be free of formaldehyde.

**Points:** 2

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.

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

**Resources:**

**H4.6 Minimize Carpet Use**

**H4.6.1 100% Hard Flooring Installed in Individual Units**

**Requirement:** The flooring installed shall be classified as hard or resilient and comply with GreenGuard or similar health related certification.

**Points:** 2

**Intent:** Provide a healthier indoor environment.

**Submittals:** Cut sheets of flooring selections.
H4.6.2 Carpet Tiles Used in Common Areas

Requirement: If carpet is installed in common areas, carpet tiles must be used. All carpet and carpet products shall meet the Carpet & Rug Institute Green Label Certification Program. All carpet and carpet products shall meet the Carpet & Rug Institute Green Label Certification Program.

Points: 2

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. Carpet tiles also reduce the quantity of waste sent to landfills as small portions can be replaced as needed.

Submittals: Provide carpet cut sheets or the VOC limits for each carpet product used in the building.

Resources:

H4.7 Green Cleaning - Environmentally Friendly Maintenance - Green Cleaning Products in Common Areas

Requirement: Owner shall maintain or contract a cleaning service to maintain the property using only non-toxic cleaning supplies in the regular maintenance of the building. A list of approved supplies must be posted in janitor closets and in common areas such as break rooms and restrooms. 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. Alternatively the products may be approved by the EPA’s Design for Environment program or Green Seal.

Points: 2

Intent: Reduce the amount of harmful chemicals used in the maintenance operations of the building

Submittals: Provide a list of approved cleaning products for the building

Resources: http://www.epa.gov/dfe/pubs/projects/formulat/formpart.htm

H4.8 Healthy Pool- Non-Chlorine System

Requirement: Install and use a pool sanitation system that reduces the use of chlorine.

Points: 2

Intent: Provide a healthier sanitation system for home occupants. Traditional pool sanitization requires large quantities of chemicals that are both unhealthy for the environment and individuals. Reduced chlorine systems may be used to maintain the pool, such as recycled salt alternatives, ultra violet or ozone systems.

Submittals: Cut sheet or photo of sanitation system

Resources:
H5 Management

H5.1 Prohibit Smoking

H5.1.1 Reduce Smoke Exposure and Transfer

Requirement:
1. Prohibit smoking in all common areas of the building. The prohibition must be communicated in building rental/lease agreements or condo/coop association covenants and restrictions, and provisions for enforcement must be included.
2. Locate any exterior designated smoking areas, including balconies where smoking is permitted, at least 25 feet from entries, outdoor air intakes and operable windows opening to common areas.
3. Prohibit on-property smoking within 25 feet of entries, outdoor air intakes and operable windows. Provide signage to allow smoking in designated areas, prohibit smoking in designated areas or prohibit smoking on the entire property.

Points: 1

Intent: Provide improved indoor air quality

Submittals: Copy of the covenants and restriction, plan showing designated smoking area, copy of signage

Resources:

H5.1.2 Prohibit Smoking Throughout the Building

Requirement:
1. Prohibit smoking within living units. The prohibition must be communicated in building rental/lease agreements or condo/coop association covenants and restrictions, and provisions for enforcement must be included.
2. Prohibit smoking in all common areas of the building. The prohibition must be communicated in building rental/lease agreements or condo/coop association covenants and restrictions, and provisions for enforcement must be included.
3. Any exterior designated smoking areas must be located at least 25 feet away from all entries, outdoor air intakes, and operable windows.

Points: 1

Intent: Provide improved indoor air quality

Submittals: Copy of the covenants and restriction, plan showing designated smoking area, copy of signage

Resources:

H5.2 Integrated Pest Management

Requirement: Work with a skilled pest control professional to develop an Integrated Pest Management Plan that addresses the following four items:
- Monitoring and prevention of pest populations.
- Application of pesticides only “as needed” after prevention and physical controls have been implemented.
- Selecting the least hazardous pesticides for control of targeted pests.
- Precision targeting of pesticides to areas not contacted or accessible to the occupants
- Provide information to homeowners on non-toxic pest management practices.

**Points:** 2

**Intent:** Integrated Pest Management (IPM) is an environmentally friendly, common sense approach to controlling pests. Traditional pest control involves the routine application of pesticides. IPM, in contrast, focuses on pest prevention and uses pesticides only as needed. This provides a more effective, environmentally sensitive approach. IPM programs take advantage of all appropriate pest management strategies, including the judicious use of pesticides. Preventative pesticide application is limited because the risk of pesticide exposure may outweigh the benefits of control especially when non-chemical methods provide the same results.

**Submittals:** Provide a copy of the pest management plan including identification of the pests and monitor process, action thresholds, prevention activities, and control mechanisms.

**Resources:**
CATEGORY 6: MATERIALS

M1 Waste Management

M1.1 Building Reuse

Requirement: Rehabilitate existing building. Maintain 50% of the existing shell (exterior skin and framing excluding window assemblies) and non structural roofing material.

Points: 3

Intent: Renovate existing building stock to conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Submittals: Floor plan of existing building, demolition plan, and new building floor plan.

Resources:

M1.2 Recycled Content

Requirement: Incorporate recycled materials (based on materials cost). Use materials with recycled content such that post-consumer and/or post-industrial recycled content constitutes a minimum of 5% of the total project cost. Earn one additional point for each additional 5% of recycled content materials. 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.


Points: 1 point: \( \geq 5\% < 10\% \)
2 points: \( > 10\% < 15\% \)
3 points: \( > 15\% < 20\% \)
4 points: \( > 20\% \)

Intent: Encourage the use of recycled content materials to minimize the environmental impacts associated with the extraction of virgin materials.

Submittals: Submit recycled content calculations used in the construction of the project

Resources: https://www.ftc.gov/enforcement/rules/rulemaking-regulatory-reform-proceedings/green-guides

https://www.ftc.gov/tips-advice/business-center/advertising-and-marketing/environmental-marketing

http://www.ecfr.gov/cgi-bin/text-idx?SID=b046a47be3973ae94f0596ef5f9d8292&mc=true&node=se16.1.260_113&rgn=div8
M1.3 Recyclable Materials

**Requirement:** 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. The materials selected to comply with this category must be recyclable through a structured existing program.

**Points:** 1

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

**Submittals:** Submit recyclable materials calculations

**Resources:**

M1.4 Rapidly Renewable >3%

**Requirement:** Incorporate rapidly renewable (plant to harvest cycle <10 years) for 3% of the total value of all building materials and products used in the project

**Points:** 1

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

**Submittals:** Submit calculations demonstrating that the project incorporates the required percentage of rapidly renewable products used in the construction of the project.

**Resources:**

M1.5 Certified Wood

**Requirement:** Wood products are FSC, SFI or CSA certified. 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

**Points:** 1

**Intent:** Encourage environmentally responsible forest management.

**Submittals:** Submit a copy of the wood certification and the calculations showing 50% (based on cost) of the wood purchased for the project is certified.

**Resources:**

M1.6 Bio-based >3%

**Requirement:** Earn one point if 3% of the materials, based on cost, are bio-based such as solid wood, engineered wood, bamboo, wool, cotton, cork, agricultural fibers, or other bio-based materials having at least 50% bio-based content.

**Points:** 1

**Intent:** Encourage the use of natural products.

**Submittals:** Cut sheets of materials used and the calculations showing 3% (based on cost) of the materials purchased for the projects are bio-based.

**Resources:**
M1.7  Resource Efficient or Panelized Wall Systems

Requirement: Install a minimum of 80% of the non-structural exterior walls must be Autoclaved Aerated Concrete (AAC), Insulated Concrete Forms (ICF), or Structural Insulated Panels (SIPs) or a combination thereof.

Points: 2

Intent: AAC is composed of cement, sand, lime, and an aerating agent, which is baked in an autoclave oven. The result is a very lightweight insulated concrete product. Blocks and panels are stacked similar to bricks and held together with adhesive. ICFs are a family of exterior wall systems that provide the strength of structural concrete walls with the thermal performance of integral insulation and high thermal mass. Generally a Styrofoam form is filled with poured concrete, or concrete is used to surround a Styrofoam core. SIPs generally consist of two (outer) layers of structural sheet material and foam core, ranging from 2 to 12 inches thick. They can be used to build exterior walls, roofs, and floors. To receive points SIP walls must be elevated a minimum 24” above soil grade.

Submittals: Photo, detailed plans, or material cut sheets.

Resources:

M1.8  Efficient Drywall Installation: TWalls with Drywall Clips, 2-Stud Corners or Ladder Framing

Requirement: Uses two-stud corners, ladder T-wall framing, and drywall clips in all possible locations.

Points: 2

Intent: Decrease materials used during construction

Submittals: Construction details on plans and photos

Resources:

M2  Material Efficiency and Global Responsibility

M2.1  Recycling for Residents

Requirement: Provide an accessible area that serves all of the building occupants that is dedicated to the collection, separation, and storage of recyclables. Recycling rooms in the buildings shall be a minimum of 0.1% of the total conditioned square footage of the building while recycling areas outside the structure shall accommodate a recycling dumpster equal in size (in CY) to ((# of units x 0.5 x 18) / 173.57) rounded up to the nearest even number OR install integrated recycling trash shoots, which are serviced by a recycling waste hauler, that allow the occupants, when disposing of waste, to select either recycling or waste. FGBC will consider multiple pick-ups per week when reviewing compliance with the credit

Points: 1 point: Provide an accessible recycling area

2 points: Install an integrated recycling trash shoot

Intent: Facilitate recycling and reduce waste

Submittals: Construction detail, cut sheet, and photo

Resources:
M2.2 Construction Waste Management, Divert Waste

**Requirement:** Develop and implement a waste management plan, quantifying material diversion goals. Recycle and/or salvage a minimum of 50% of construction, demolition and land clearing waste. Calculations can be done by weight or volume, but must be consistent throughout. Earn additional points for increased diversion of waste.

**Points:**
- 2 point: ≥ 50% < 75%
- 3 points: > 75% < 90%
- 4 points: > 90%

**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.

**Submittals:** Tabulate the total waste material, quantities diverted and the means by which diverted.

**Resources:**

M2.3 Resource Reuse ≥ 5%

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

**Points:** 1

**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.

**Submittals:** Provide a listing of each material or product and the original source of the material used to meet the credit.

**Resources:**

M3 Local and Regional Materials

M3.1 Local/Regional Materials

**Requirement:** Earn one point by using a minimum of 10% local/regional materials (by cost) that are manufactured within a 700-mile radius of the project site based on the total project cost of building materials and products. Earn one additional point for each additional 5% of materials that are manufactured within 700 miles of the project site.

(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 truss is assembled in Kent, Washington; then the location of the final assembly is Kent, Washington.)

**Points:**
- 1 point: ≥ 10% < 15%
- 2 points: > 15% < 20%
- 3 points: > 20% < 25%
- 4 points: > 25%

**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.
Submittals: Provide calculations demonstrating that the project incorporates the required percentage of regional materials/products and show their cost, and percent of regional components, distance from project to manufacturer and the total cost of all materials for the project.

Resources:

M3.2 Local/Regional Materials, of the Percentage Claimed Above, 5% Harvested Locally

Requirement: Of the regionally manufactured materials, use a minimum 5% (by cost) of building materials and products that are extracted, harvested or recovered within the following states: Florida, Georgia, Alabama, Mississippi, South Carolina, North Carolina, or Tennessee.

Points:
1 point:  $\geq 5\% < 10\%$
2 points:  $> 10\% < 15\%$
3 points:  $> 15\% < 20\%$
4 points:  $> 20\%$

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.

Submittals: Provide calculations demonstrating that the project incorporated the required percentage of regional materials/products and show their cost and percent of regional components, distance from project to manufacturer, and the total cost of all materials for the project.

Resources: FGBC Material Credits Worksheet within the Checklist Excel file.
CATEGORY 7: DISASTER MITIGATION AND DURABILITY

**DMD1 Disaster Mitigation**

**DMD1.1 Hurricane, Impact Resistance of Openings**

**Requirement:** ALL installed glazing is impact resistant.

**Points:** 2

**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.

**Submittals:** Provide the manufacturer’s cut sheets for the impact resistant products indicating the required approvals and classifications.

Provide a door and window schedule listing impact-resistant products used on the project.

**Resources:** www.buildingcodeonline.com or http://hus.parkingspa.com/hc3.asp

**DMD1.2 Flood, Slab Elevation**

**Requirement:** Finished Floor Elevation (FFE) must be 12" above 100-year flood plain or finished grade adjacent to building, whichever is higher. All grades around building must slope away from the foundation a minimum of 6” at 10’-0” distance. The 100-year flood plain is determined by FEMA.

**Points:** 2

**Intent:** Reduce the potential for flooding and the resulting moisture and mildew problems.

**Submittals:** Provide the appropriate drawings illustrating the foundation design, floor elevation and grading requirements. Include a copy of the NFIP Elevation Certificate certified by the surveyor, engineer or architect showing the 100-year flood plain elevation or grade.

**Resources:**

**DMD1.3 Wildfire, Fire Resistant Exterior Finishes**

**Requirement:** Project must utilize fire-resistant exterior wall cladding, roof covering or sub-roof, soffit and vent materials. 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.

**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.

**Points:** 2

**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.
Submittals: Provide appropriate drawings and manufacturer’s cut sheets illustrating the fire resistance of the exterior finish materials.

Resources: -

DMD1.4 Termite Prevention

Requirement: Provide a permanent sign, posted near the water heater or electrical panel, identifying the termite treatment provider, the need for re-inspection and treatment contract renewal. 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. All wood products must be treated with Borate or ACQ. Rain gutters must be installed to collect water from all roof slopes and convey it at least 3 feet away from the building foundation. 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. The warranty shall include the pest control company to restore any property damaged by wood-destroying organisms during a specified period after the treatment.

Points: 2

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.

Submittals: Provide project photos, copy of warrantee, and appropriate construction details

Resources:

DMD1.5 Termite, Non-Toxic Termite Pretreatment

Requirement: The building uses an alternative to traditional soil poison for termite treatment. Systems may include the use of borate or Alkaline Copper Quaternary (ACQ) treated lumber or termite bait systems. To achieve this credit any and all plants, turf and irrigation lines must be a minimum of 3 feet from the foundation. Additionally, any foam insulation must terminate above ground. The exterior cladding of the building must also terminate a least 8” above grade. Rainwater from the roof must be dispersed a minimum of 3 feet from the building foundation (by the use of downspouts or scuppers and extensions or splash blocks). All AC condensate lines must discharge a minimum of 3 feet from the building.

Points: 2

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.

Submittals: Provide appropriate drawings and specifications, illustrating compliance to all requirements.

Resources:
DMD2 Durability

DMD2.1 Durable Materials, Exterior Finish Materials

Requirement: Use finish systems and materials capable of withstanding the moisture and heat impacts of the local climate for a period of 30 years on 100% of the exposed exterior surfaces. Structure shall be Type 1A, exterior materials shall be approved by Miami-Dade County, or have a 30 year warranty.

Points: 1

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.

Submittals: Plan detail identifying all the systems and materials used for the exterior finish of the building. Attach copies of the NOA for Miami-Dade, manufacturer's warranties or documentation supporting the established history for any material without a written warranty.

Resources:

DMD2.2 Lever Style Clothes Washer Water Shutoff

Requirement: Install a lever style shutoff valve that only requires a 90° turn to shut off water supply

Points: 1

Intent: 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.

Submittals: Provide construction detail, signed approved submittal, and photos of installed valves

Resources:

DMD2.3 Water Sensors/Shutoff System

Requirement: 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 unit.

Points: 1

Intent: Water using appliances such as clothes washers and water heaters installed inside the conditioned space can leak or fail, causing severe damage due to flooding.

Submittals: Construction detail, cut sheet, and photo of system installed

Resources:

DMD2.4 Durability: Use Armored/Metal Hoses from Service to All Fixtures/Appliances

Requirement: Install armored, braided, pex, or otherwise reinforced hoses to all water using fixtures or appliances.

Points: 1
**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.

**Submittals:** Cut sheet, construction detail, signed approved submittal, site photos

**Resources:**

**DMD2.5 Low Maintenance Finishes**

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

**Points:** 1

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

**Submittals:** Provide a copy of the manufacturers recommended maintenance procedures, the type and area of materials that comply.

**Resources:**
CATEGORY 8: ENVIRONMENTAL INNOVATION

EI  Environmental Innovation

**Requirement:** Environmental innovative features included in the project, above and beyond any required features that contribute to the project’s sustainability.

**Points:** 1-5

**Intent:** These credits are intended to provide the design team and project the opportunity to be awarded points for exceptional performance above the requirements set by the Florida Green Building Coalition and/or innovative performance in green building categories not specifically addressed by this standard.

**Submittals:** The applicant must submit a summary of the project features including a quantification of their environmental benefit.

**Resources:**