GREEN NEIGHBORHOOD GUIDANCE DOCUMENT FOR HOMES

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Howard County, Maryland
Department of Inspections, Licenses, and Permits

The Howard County Department of Inspections, Licenses, and Permits is pleased to present this

Green Neighborhood Guidance Document for Homes

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APPENDICES

Introduction

The intent of the Green Neighborhood Program is to promote the development of more environmentally sustainable neighborhoods in Howard County by providing housing allocations as an incentive. Under Section 16.1102(b)(7) of the Adequate Public Facilities Ordinance, up to 100 housing unit allocation are set aside annually, beginning in Fiscal Year 2008, for projects that meet Green Neighborhood requirements. Green Neighborhood requirements were established in County Council Resolution 116-2007, adopted on October 1, 2007.

Green Neighborhood requirements are divided into separate Site and Home requirements. To qualify for Green Neighborhood allocations, a residential development project must score a minimum 90 points out of 167 possible points on the Site portion of the Green Neighborhood Checklist. To get a Building Permit and subsequent Use and Occupancy Permit, a residential development that received a Green Neighborhood allocation must get a minimum of 46 out of 84 possible points on the Home portion of the Green Neighborhood Checklist. The checklist is included in this Guidance Document as Appendix A and is available in printed and digital format from the Department of Inspections, Licenses, and Permits (DILP) or the DILP website.

Point Credits in the Green Neighborhood Home Checklist are divided into six sections, and are applicable to only the residential portions of the project:

A. Innovation/Integrated Design Process
B. Materials Beneficial to Environment/Waste Management
C. Energy and Water Efficiency
D. Indoor Environmental Quality
E. Healthy Living Environment
F. Operations and Maintenance Education

This Green Neighborhood Guidance Document for Homes provides information on the intent, criteria for compliance, and submittal requirements for each credit in the Green Neighborhood Home Checklist. In addition, a series of questions and interpretations provides answers for common questions related to each credit. A separate Green Neighborhood Guidance Document for Sites is available for the Green Neighborhood Site Checklist.

The plan review process for Green Neighborhood projects will be similar to other residential projects. Green Neighborhood Home submittals, including the Green Development Plan, must be submitted with each regular plan set—the Building/Structural set, the Plumbing set, and the Mechanical set. The Green Development Plan will provide the additional information needed to evaluate compliance with the Green Neighborhood Home Checklist. The Green Development Plan components will be reviewed by the staff in the Division of Plan Review as part of the normal plan review process, in coordination with other divisions and departments. Comments on the Green Development Plan will be provided in conjunction with comments on the regular plan set.

Prior to issuance of the Use and Occupancy Permit, applicants must provide an updated Green Development Plan, including the Compliance Checklist, and submittals indicated herein as “Use & Occupancy” submittals for review and approval by DILP. These submittals must confirm that the built development complies with the targeted credits in the Green Neighborhood Home Checklist.

More information about the Green Neighborhood Program for Homes is available at:
http://DILP.howardcountymd.gov

A-1 Green Development Plan

Points: Required

Intent

Demonstrate that the proposed development meets the Green Neighborhood Home criteria in order to achieve an environmentally sustainable neighborhood.

Criteria

Submit a Green Development Plan, which includes a Green Neighborhood Plan Sheet and a Green Neighborhood Report, with each plan set submission for Plan Review and Use and Occupancy Permit. The Green Neighborhood Plan Sheet and Green Neighborhood Report must demonstrate how the development meets the mandatory and targeted Green Neighborhood Home criteria.

The Green Neighborhood Plan Sheet (GN Plan Sheet) includes a completed Green Neighborhood Home Compliance Checklist and any supplemental information (notes, tables) needed to verify how specific required and targeted credits will be achieved. The required supplemental information is listed for each individual credit under the Submittals section of this Guidance Document. The GN Plan Sheet may include more than one plan sheet.

The information on the GN Plan Sheet is in addition to information required on typical construction drawings. For some credits, information required to verify Green Neighborhood compliance is typically shown on drawings within the plan set, and so does not have to be duplicated on the GN Plan Sheet. When this is the case, the sheet within the plan set that contains the Green Neighborhood compliance information must be indicated on the Compliance Checklist.

The GN Plan Sheet must be signed by the project's U.S. Green Building Council Leadership in Energy and Environmental Design (LEED®) Accredited Professional (LEED AP), in addition to the signatures required by the Department of Inspections, Licenses, and Permits (DILP) for the Plan Review submission. For the Use & Occupancy Permit, the GN Plan Sheet must be signed by the LEED Accredited Third Party Certifier (see A-3).

The GN Plan Sheet must include the following:

- **Green Neighborhood Home Compliance Checklist.** The Compliance Checklist that shall be used to demonstrate compliance is available in printed and digital format from the Department of Inspections, Licenses, and Permits (DILP) or on the DILP web site. Appendix B is a sample Compliance Checklist with portions of the checklist filled in to show the type and format of information to be included. The Compliance Checklist must be signed by the LEED Accredited Professional team member for the Plan Review submission and by the LEED Accredited Third Party Certifier (see A-3) for the Use and Occupancy Permit.
- **Notes.** Notes shall be numbered to correspond with the credit number. If notes explaining the credit compliance are extensive (more than a few sentences), a narrative should be provided in the Green Neighborhood Report instead.
- **Tables.** Tables shall be numbered to correspond with the credit number (B-1, B-2a, B-2b, etc.). Table layouts are provided in this document for credits that require them.

The Green Neighborhood Report (GN Report) includes supplemental information not required to be on the GN Plan Sheet or the plan sheets, and is more appropriately submitted in a report format. This includes narrative information, documentation, and templates. The supplemental information required is specified for each credit under the Submittals section of this Guidance Document. Clearly identify which credit the supplemental information is associated with and order the materials to correspond with the credit numbers in the GN Home Compliance Checklist. The report may be comprised of separate volumes; however, as much of the supplemental information as possible should be included in a single volume. Binding of the document should take into account the need to insert additional information as needed. Applicants are encouraged to use double-sided printing.

The GN Report must include the following:

- **Project Description.** Completed project description, including the project's sustainable goals statement and table of contents. The goals statement must include an energy analysis explaining how the project reduces energy consumption and promotes energy conservation and renewable energy generation. The Project Description Form shall be used as a title page for the GN Report and is available in printed and digital format from the Department of Inspections, Licenses, and Permits (DILP) or on the DILP web site. Appendix C is a sample Project Description Form.
- **Green Neighborhood Home Compliance Checklist.** The Compliance Checklist that shall be used to demonstrate compliance is available in printed and digital format from the Department of Inspections, Licenses, and Permits (DILP) or on the DILP web site. Appendix B is a sample Compliance Checklist with portions of the checklist filled in to show the type and format of information to be included. The Compliance Checklist must be signed by the LEED Accredited Professional team member for the Plan Review submission and by the LEED Accredited Third Party Certifier (see A-3) for the Use and Occupancy Permit.
- **Team Contact Information.** Full contact information for all team members, including the LEED Accredited Third Party Certifier.
- **Narratives.** Narratives are written explanations of credit compliance whose length exceeds that appropriate for a note on the Green Neighborhood Plan Sheet.
- **Documents.** Documents include test results, such as blower door test, and verification checklists, such as ENERGY STAR Indoor Air Package Verification Checklist.
- **Templates.** Templates provide detailed information, material schedules, and calculations that demonstrate how the applicant will comply with credit requirements. Excel versions of the templates are available on the DILP web site.

Appendix D is a summary table of the various submittals required for each credit.

Submittals

☑ Plan Review
- Provide the Green Development Plan with the regular plan set.

☑ Use & Occupancy
- Provide the Green Development Plan with the regular plan set. If conditions for a credit are identical to a previously submitted plan, indicate "no change" on the Compliance Checklist for that credit. Alternatively, clearly explain any changes on the Compliance Checklist submitted with the revised set of plans. The Certification column of the Compliance Checklist must be completed by the LEED Accredited Third Party Certifier.

Questions and Interpretations

1. Can a customized version of the Green Neighborhood Home Compliance Checklist be submitted?
   No. Developers must use the Green Neighborhood Home Compliance Checklist, available through DILP in printed and electronic format. A sample Compliance Checklist is provided in Appendix B with illustrative entries.

2. Who is the LEED Accredited Third Party Certifier?
   See credit A-3.

3. Does the Green Neighborhood Report need to be submitted for the Use and Occupancy Permit even if there are no changes?
   If there are no changes to the Green Neighborhood Report, it does not have to be resubmitted. If there are changes, only the information that changes needs to be resubmitted.

4. Does information that will be shown on other plans have to be repeated on the GN Plan Sheet to document compliance with Green Neighborhood criteria?
   No, information that would normally be shown as part of the plan submittal, such as construction details on photovoltaic systems, does not have to be duplicated on the GN Plan Sheet. Plan sheets may also be used to indicate compliance with other Green Neighborhood Criteria, such as use of no-VOC paints and primers. The Compliance Checklist should indicate which plan sheets contain the required information.

A-2 Interdisciplinary Project Team

Points: Required

Intent

Use a comprehensive, interdisciplinary approach for the planning, design, and construction of the Green Neighborhood homes in order to achieve an environmentally sustainable neighborhood.

Criteria

Include on the project team at least:

- a U.S. Green Building Council Leadership in Energy and Environmental Design (LEED®) Accredited Professional (LEED AP)

AND

- an architect licensed in the State of Maryland

Submittals

- Provide a note listing all the project team members and their roles on the coversheet of the Green Development Plan. Indicate which members are LEED Accredited Professionals.

Questions and Interpretations

1. Does the LEED AP have to be in addition to the licensed architect?
   No, the LEED AP can also be the licensed architect.

2. Who can be a LEED AP?
   A LEED AP can be anyone who has passed the LEED Accredited Professional exam, including architects and other professionals.

3. Can a professional with extensive experience in green building be substituted for a LEED Accredited Professional?
   No.

4. Can a LEED AP architect licensed in a different state be substituted for the architect licensed in the State of Maryland?
   No.

A-3 Third Party Certification

Points: Required

Intent

Verify that the targeted Green Neighborhood Home credits and point total for the Green Neighborhood development are achieved in order to realize an environmentally sustainable neighborhood.

Criteria

Provide independent, third party verification that the targeted Green Neighborhood Home credits and point total for the Green Neighborhood development are achieved. Verification must be conducted by an independent, LEED Accredited Professional. The LEED Accredited Professional must be a licensed architect, landscape architect, planner, or engineer.

Submittals

☑ Plan Review
- Identify the LEED Accredited Third Party Certifier in the project team member listing on the coversheet of the Green Development Plan.

☑ Use & Occupancy
- Provide a signed letter from the LEED Accredited Third Party Certifier indicating the development has been reviewed and inspected, all targeted Green Neighborhood Home credits have been completed, and the total points achieved.
- The Compliance Checklist must be signed by the LEED Accredited Third Party Certifier. The Certification column of the Compliance Checklist must be completed by the LEED Accredited Third Party Certifier.

Questions and Interpretations

1. Can a professional with extensive experience in green building be substituted for a LEED Accredited Professional?
   No.

2. Can the LEED Accredited Third Party Certifier be an employee of one of the firms providing design/construction/development services for the project?
   No. The LEED Accredited Third Party Certifier must be completely independent from the development team.

A-4 Innovative Design

Points: 1 to 4

Intent

Encourage projects to create more environmentally sustainable neighborhoods by exceeding the performance requirements set by the Green Neighborhood Home Checklist and/or implementing additional green measures that have tangible and demonstrable benefits beyond those in the Green Neighborhood Home Checklist.

Criteria

Implement green measures that exceed the performance requirements set by the Green Neighborhood Home Checklist and/or that have tangible and demonstrable benefits beyond those in the Green Neighborhood Home Checklist. One point is awarded for each exemplary performance or new measure. A maximum of four Innovative Design measures can be submitted at each plan set submission.

Up to 4 points total can be earned with this credit:
A-4a: Innovative Design A (1 point)
A-4b: Innovative Design B (1 point)
A-4c: Innovative Design C (1 point)
A-4d: Innovative Design D (1 point)

Submittals

- Provide a completed Innovative Design template (see Appendix E) describing the proposed measure and its merits. One template must be submitted for each Innovative Design point.
- For each Innovative Design point, provide documentation (such as construction drawings, notes, or photos) demonstrating compliance.

Questions and Interpretations

1. How will these practices and designs be evaluated and awarded points?
   The County will evaluate and award points with assistance from the County's LEED Accredited Professional consultant.

2. Can Innovative Design points be awarded for innovative technologies used to comply with existing Green Neighborhood Home credits?
   No. Innovative Design points are awarded for exceeding the performance requirements set by the Green Neighborhood Home Checklist and/or implementing measures that have tangible and demonstrable benefits beyond those in the Green Neighborhood Home Checklist.

3. What is the threshold for exemplary performance?
   The threshold for exemplary performance varies by credit. The County will evaluate and award points on a case-by-case basis.

4. Can an Innovative Design measure be substituted for another Innovative Design measure between building permit and occupancy permit?
   Yes. Changes should be noted in the Green Neighborhood Home Compliance Checklist and supplementary information must be submitted if required.

5. Can an unlimited number of Innovative Design measures be submitted?
   No. A maximum of four Innovative Design measures can be submitted.

6. Is there a database of approved Innovative Design measures?
   At this time, a database of approved Innovative Design measures is not available. As innovative measures are approved, DILP will develop a database and amend this Guidance Document to include this information.

B-1 Environmentally Preferable Building Products

Points: 2 to 8

Intent

Reduce the environmental impacts of extracting, harvesting, and processing virgin materials through the reuse of materials from the current site and/or the use of environmentally preferable materials.

Criteria

Reuse materials from the current site and/or use environmentally preferable materials for building products. Acceptable materials are listed in Appendix F, Environmentally Preferable Building Products List. Points are awarded based on the total value of the materials qualified as environmentally preferable as a percentage of the total value of the building materials, as specified below:

Percent of Building Materials that are Environmentally Preferable (by Cost)	Points Awarded
25%	2
26 to 50%	4
51 to 75%	6
76 to 100%	8

This credit applies only to materials within CSI MasterFormat 1995 Divisions 2 – 10.

Submittals

☑ Plan Review
- Provide a draft Environmentally Preferable Building Products template (see Appendix F).

☑ Use & Occupancy
- Provide a completed Environmentally Preferable Building Products template (see Appendix F).

Questions and Interpretations

1. How is the cost of a material reused on-site calculated?
   Estimate the cost of an equivalent new item (aka replacement cost).

2. How is the cost of a salvaged or reclaimed material calculated?
   Use the actual cost paid for the material or estimate the cost of an equivalent new item (aka replacement cost), whichever is higher.

3. How is the recycled-content value of assemblies determined?
   The recycled content value of an assembly is determined by weight. The recycled fraction of the assembly is multiplied by the cost of the assembly to determine the value of the recycled content for that assembly. See Appendix F, Environmentally Preferable Building Products, for a sample calculation.

4. What if there is no information available for the recycled content of a steel product?
   Assume the steel product has 25% post-consumer recycled content.

5. How is the value of a product determined if it contains a mixture of environmentally preferable materials?
   The highest percentage of the environmentally preferable material will be used to calculate the value of the product.

B-2a Wood Use, Tropical Wood

Points: Required

Intent

Ensure the use of tropical wood from sustainably managed forests.

Criteria

Use wood that is certified by the Forest Stewardship Council (FSC) for all tropical wood used in the project. Wood products include both permanently installed structural and non-structural interior and exterior components.

Submittals

☑ Plan Review
- Provide a note indicating all tropical wood used is FSC certified.

☑ Use & Occupancy
- Provide a completed Wood Use, Tropical Wood template (see Appendix G).

Questions and Interpretations

1. Can wood certified under a certifying entity other than the Forest Stewardship Council be used?
   No, only FSC-certified wood products are accepted.

2. Do reusable wood forms used on the project need to meet the requirements for this credit?
   No, only permanently installed wood products need to meet the requirements for this credit.

B-2b Wood Use, Non-Tropical Wood

Points: 2

Intent

Encourage the use of non-tropical wood from sustainably managed forests.

Criteria

Use wood that is certified by the Forest Stewardship Council (FSC) for at least 50% of all non-tropical wood used in the project based on cost. Wood products include both permanently installed structural and non structural interior and exterior components.

Submittals

☑ Plan Review
- Provide a draft Wood Use, Non-Tropical Wood template (see Appendix H).

☑ Use & Occupancy
- Provide a completed Wood Use, Non-Tropical Wood template (see Appendix H).

Questions and Interpretations

1. Can wood certified under a certifying entity other than the Forest Stewardship Council be used?
   No, only FSC-certified wood products are accepted.

2. Do reusable wood forms used on the project need to meet the requirements for this credit?
   No, only permanently installed wood products need to meet the requirements for this credit.

B-3 Regionally Provided Materials

Points: 3

Intent

Reduce the environmental impacts from the transport of material through the use of locally produced materials.

Criteria

Use materials that are extracted, harvested or recovered, and manufactured within 500 miles of the site for at least 20% of the total building materials. Calculations are based on the total value of the regionally provided materials as a percentage of the total value of the building materials. If only a portion of a material or assembly is extracted, harvested or recovered, and manufactured within 500 miles of the development site, then only that portion of the cost (by weight) will be counted toward this credit.

This credit applies only to materials within CSI MasterFormat 1995 Divisions 2 – 10.

Submittals

☑ Plan Review
- Provide a draft Regionally Provided Materials template (see Appendix I).

☑ Use & Occupancy
- Provide a completed Regionally Provided Materials template (see Appendix I).

Questions and Interpretations

1. Is it possible to earn more than 3 points if more than 20% of the building materials are provide regionally?
   No, but additional points may be earned under Credit A-4 Innovative Design.

2. How can supplier locations within 500 miles of the site be determined?
   Suggest locating the project site on a map (e.g., Google map) and drawing a 500-mile radius to determine the geographical limits for this credit.

B-4 Materials in Wet Areas: Tub and Shower Enclosure

Points: 1

Intent

Prevent mildew and mold growth through the use of one piece enclosures and/or moisture-resistant materials in bathtubs and showers.

Criteria

Install one-piece fiberglass enclosures, or similar, for bathtubs and showers. For bathtubs and showers with grouted materials, install non-paper-faced backing materials, such as cement board or fiber cement board, and seal all grout after installation.

Submittals

- Provide construction drawings showing one-piece fiberglass enclosures, or similar, and/or non-paper-faced backing materials for all bathrooms.
- Provide a note indicating that all grouted materials will be properly sealed after installation.

Questions and Interpretations

1. Is it necessary for all the bathrooms to meet the credit requirements?
   Yes.

2. Is it acceptable for some bathrooms to have one-piece fiberglass enclosures and others to have grouted materials?
   Yes, as long as the requirements are met for each type of enclosure.

B-5 Building Construction Waste Management

Points: 2 to 4

Intent

Minimize the generation of construction waste and encourage the reuse and recycling of on-site nonhazardous construction and demolition waste to reduce the amount of waste sent to landfills and incinerators.

Criteria

Develop and implement a construction waste management plan to divert, reuse, and/or recycle construction and demolition materials. Points are awarded based on the percentage of total waste diverted, as specified below:

Percent of Waste Diverted	Points Awarded
25%	2
50%	3
75%	4

Calculations can be done by volume or weight, but must be consistent throughout. Hazardous materials and site clearing debris are not included in the calculations.

The construction waste management plan must contain the following information:

- Diversion goal
- Identification of party responsible for construction waste management implementation
- Description of the means and methods to achieve the diversion goal (e.g., sorted on-site or co-mingled)
- Identification of recycling contractors
- Requirements for tracking waste generated and waste recycled/salvaged
- Description of subcontractor and staff training

Submittals

☑ Plan Review
- Provide a construction waste management plan.
- Provide a draft Building Construction Waste Management template (see Appendix J).

☑ Use & Occupancy
- Provide a completed Building Construction Waste Management template (see Appendix J).

Questions and Interpretations

1. Which materials are typically recycled?
   Cardboard, metal, brick, acoustical tile, concrete, plastic, clean wood, glass, and gypsum wallboard.

2. Can excavated soil and land clearing debris count towards this credit?
   No.

3. Can topsoil that is stripped, stockpiled, and reused on site count towards this credit?
   No.

4. Can the reuse of existing buildings count towards this credit?
   Yes, if the building is demolished and the materials are reused, donated, or recycled. No, if the building remains intact.

5. Can existing concrete and asphalt that are crushed and re-used on-site count toward this credit?
   Yes.

6. Can materials that are donated count towards this credit?
   Yes, as long as the material is reused or recycled.

7. Is it possible to earn more than 4 points if more than 75% of the waste is diverted?
   No, but additional points may be earned under Credit A-4 Innovative Design.

C-1a Photovoltaic (PV) Panels or PV Ready Buildings

Points: 2 to 15

Intent

Reduce energy use and associated pollution by promoting the use of photovoltaic systems.

Criteria

Provide the infrastructure for photovoltaic systems and/or install photovoltaic systems. Points are awarded as specified below:

- Photovoltaic (PV) Ready
  Design, engineer, and wire the buildings to accommodate future PV installation (2 points).

AND/OR

- Solar Energy Generation
  Design and install on-site photovoltaic system(s) to offset building energy demand. Five points are awarded based on every 10% of the project's total annual reference electrical load met by the photovoltaic system(s) (up to 15 points).

  Use energy modeling to estimate both the energy supplied by the on-site photovoltaic system(s) and the project's total annual reference electrical load. The annual reference electrical load is defined as the amount of electricity that a typical home (e.g. the HERS Reference Home) would consume in a typical year. The annual reference electrical load for each building must be determined using the procedures specified in the 2006 Mortgage Industry National Home Energy Rating System (HERS) Guidelines. A project's total annual reference electrical load is determined by adding the annual reference electrical load for all buildings in the Green Neighborhood development.

Up to 15 points total can be earned with this credit.

Submittals

- **Photovoltaic (PV) Ready –** Provide construction drawings detailing appropriate structural and wiring designs to accommodate future photovoltaic system(s) installation. Show location of future photovoltaic system(s) installation. Provide load calculations for the structural design. Provide a note describing the parameters for the future photovoltaic system(s).

- **Solar Energy Generation –** Provide construction drawings detailing the photovoltaic system(s) design and the structural and wiring designs to accommodate the photovoltaic system(s). Show location of the photovoltaic system(s). Provide load calculations for the building structural design. Provide a note describing the photovoltaic system(s) design and technology used.

  Provide a table listing the annual reference electrical load for each building, the project's total annual reference electrical load, the annual electricity supplied by photovoltaic system(s), and the percentage that is supplied by photovoltaic system(s).

For on-site photovoltaic systems that feed multiple buildings in the Green Neighborhood development, make reference to the previously approved on-site photovoltaic system in the construction drawings.

Credit C-1a	
Electrical Loads and Photovoltaic System	
Annual Reference Electric Load for Bldg __	
Annual Reference Electric Load for Bldg __	
Annual Reference Electric Load for Bldg __	
Annual Reference Electric Load for Bldg __	
Total Annual Reference Electric Load	
Annual Electricity Supplied by PV	
% Supplied by PV	

Questions and Interpretations

1. Where do the photovoltaic system(s) need to be installed?
   The photovoltaic system(s) need to be installed within the project boundaries, such as mounted on the buildings.

2. How is the percentage of the project's total annual reference electrical load supplied by photovoltaic system(s) calculated?
   Divide the annual electricity supplied by photovoltaic system(s) by the project's total annual reference electrical load.

$$\%\ \text{supplied by PV} = \frac{\text{annual electricity supplied by PV}}{\text{project's total annual reference electrical load}}$$

3. Are passive solar design strategies eligible for points under this credit?
   No. Passive solar design strategies can contribute to Credit C-1c or Credit C-2b.

4. Are solar hot water heating systems eligible for points under this credit?
   No. Points for solar hot water heating systems can be awarded under Credit C-3b.

5. Can a photovoltaic system installed to supplement power for specific site features earn points under this credit?
   No, the only way to receive points for the same photovoltaic system under both the Site and Home checklists is if the system provides supplemental power to both site features and residential buildings located on the property.

C-1b On-Site Power Generation: Renewable Energy Sources

Points: 2 to 6

Intent

Reduce energy use and associated pollution by implementing renewable energy systems.

Criteria

Design and install on-site renewable electricity generation system(s) to offset building energy demand. Two points are awarded for every 5% of the project's total annual reference electrical load met by an on-site renewable source(s) (up to 6 points).

Use energy modeling to estimate both the energy supplied by the on-site renewable electricity generation system(s) and the project's total annual reference electrical load. The annual reference electrical load is defined as the amount of electricity that a typical home (e.g. the HERS Reference Home) would consume in a typical year. The annual reference electrical load for each building must be determined using the procedures specified in the 2006 Mortgage Industry National Home Energy Rating System (HERS) Guidelines. A project's total annual reference electrical load is determined by adding the annual electrical load for all buildings in the Green Neighborhood development.

Photovoltaic systems are not eligible to earn points under this credit, but can earn points under Credit C-1a.

Submittals

- Provide construction drawings detailing the on-site renewable electricity generation system(s) design and the structural and wiring designs to accommodate the on-site renewable electricity generation system(s). Show location of the on-site renewable electricity generation system(s). If the on-site renewable electricity generation system(s) is installed on the building, provide load calculations for the building structural design.
- Provide a note describing the on-site renewable electricity generation system(s) design and technology used.
- Provide a table listing the annual reference electrical load for each building, the project's total annual reference electrical load, the annual electricity supplied by on-site renewable electricity generation system(s), and the percentage that is supplied by on-site renewable electricity generation system(s).
- For on-site renewable electricity generation systems that feed multiple buildings in the Green Neighborhood development, provide a note making reference to the previously approved on-site renewable electricity generation system in the construction drawings.

Credit C-1b	
Electrical Loads and On-Site Renewable Energy System	
Annual Reference Electric Load for Bldg __	
Annual Reference Electric Load for Bldg __	
Annual Reference Electric Load for Bldg __	
Annual Reference Electric Load for Bldg __	
Total Annual Reference Electric Load	
Annual Electricity Supplied by Renewable Energy Sys.	
% Supplied by Renewable Energy Sys.	

Questions and Interpretations

1. Which renewable electricity generation systems are eligible for this credit?
   Eligible renewable energy systems are any renewable energy systems that generate electricity, except for photovoltaics. This includes wind turbines, geothermal systems, and low-impact hydroelectric systems. Photovoltaic systems can earn points under Credit C-1a only.

2. Do geothermal heat pump systems qualify as a renewable energy system?
   No. Geothermal heat pump systems do not generate electricity and are not eligible for this credit. They can contribute to earning points under Credit C-1c or Credit C-2b.

3. Where do the renewable energy systems need to be installed?
   The renewable energy systems need to be installed within the project boundaries, such as mounted on the buildings.

4. Does this credit include exterior site lighting fixtures, such as for parking lots, sidewalks, pathways, and trails?
   No, only exterior lighting installed on buildings are included in the total annual electrical load for this credit.

5. How is the percentage of the project's total annual reference electrical load supplied by on-site renewable electricity generation system(s) calculated?
   Divide the annual electricity supplied by on-site renewable electricity generation system(s) by the project's total annual reference electrical load.

   $$\%\ \text{supplied by renewable} = \frac{\text{annual electricity supplied by renewable elec. generation sys.}}{\text{project's total annual reference electrical load}}$$

   Elec. generation system(s)

6. Do passive solar design strategies qualify as a renewable energy system?
   No. Passive solar design strategies do not generate electricity and are not eligible for this credit. They can contribute to earning points under Credit C-1c or Credit C-2b.

7. Do solar hot water heating systems qualify as a renewable energy system?
   No. Points for solar hot water heating systems can be awarded under Credit C-3b only.

C-1c Added Reductions in Energy Use

Points: 1 to 2

Intent

Reduce building energy demand and associated pollution by implementing energy reduction strategies beyond Howard County minimum requirements.

Criteria

Exceed County code requirements for energy efficiency. One point is awarded for each energy reduction strategy implemented that is not specifically addressed in the Green Neighborhood Home Checklist (e.g., more insulation for building envelope, higher performance windows, etc.) (up to 2 points).

Projects receiving points under Credit C-2b are not eligible for points under this credit.

Submittals

For each energy reduction strategy:

- Provide construction drawings detailing the energy reduction strategy and their locations.
- Provide a note describing the energy reduction strategy design and technology used.
- Provide calculations indicating the energy savings accounted for by the energy reduction strategy.

Questions and Interpretations

1. How will the energy reduction strategy be evaluated and awarded points?
   The County will evaluate and award points with assistance from the County's LEED Accredited Professional consultant.

2. Can on-site renewable energy systems, such as photovoltaics or wind turbines, be used to earn points under this credit?
   No. The intent of this credit is to reduce building energy demand, not to offset the energy demand with energy generated on-site.

3. Can solar hot water heating systems earn points under this credit?
   No. Points for solar hot water heating systems can be awarded under Credit C-3b only.

C-2a ENERGY STAR Appliances

Points: Required

Intent

Reduce energy use and associated pollution by installing ENERGY STAR home appliances.

Criteria

Use only ENERGY STAR labeled home appliances for all buildings.

Submittals

- Provide a note indicating that all home appliances used are ENERGY STAR labeled.
- Provide a table listing the product type, manufacturer, and model number for each ENERGY STAR home appliance used.

Credit C-2a		
ENERGY STAR Appliances		
Product Type	Manufacturer	Model Number

Questions and Interpretations

1. Which appliances must be ENERGY STAR labeled?
   At a minimum, the following appliances must be ENERGY STAR labeled if provided: refrigerators, freezers, dishwashers, and clothes washers.

2. Is there a listing of ENERGY STAR labeled home appliances?
   Listings of ENERGY STAR labeled home appliances can be found on the ENERGY STAR website at: www.energystar.gov.

3. Can other ENERGY STAR equipment and fixtures, such as heating and cooling equipment, ceiling fans, lighting, and programmable thermostat, earn points under this credit?
   No. Points can be awarded for these equipment and fixtures under Credit A-4 or Credit C-1c. These equipment and fixtures may also contribute to earning points under Credit C-2a.

C-2b ENERGY STAR Home

Points: 15

Intent

Reduce energy use and associated pollution and enhance comfort by designing and building ENERGY STAR qualified homes.

Criteria

Design and build all residential portions of the project to meet ENERGY STAR Home standards.

Submittals

☑ Plan Review
- Provide a narrative describing the compliance path (Performance Path or Prescriptive Path) and the strategies implemented to meet the ENERGY STAR Home standards.
- For the Performance Path, provide a note indicating the Home Energy Rating.
- For the Prescriptive Path, provide a note indicating the Builder Option Package used.

☑ Use & Occupancy
- Provide blower door test results, duct blaster test results, and the Thermal Bypass Inspection Checklist completed by an independent, qualified Home Energy Rater (HERS rater).

Questions and Interpretations

1. Is it possible to earn points for partial compliance with ENERGY STAR Home standards?
   No, all the requirements must be met to receive points under this credit. However, projects not eligible for points under this credit may earn points under Credit C-1c.

2. Where can information on the ENERGY STAR Home standards be found?
   Information on ENERGY STAR Home standards is available on the ENERGY STAR website at: www.energystar.gov. Note that there are two options to meet ENERGY STAR New Homes standards: Performance Path (Home Energy Rating) or Prescriptive Path (Builder Option Package). For the Performance Path, energy analysis software is used to model the home's energy use to verify that it meets a target home energy rating. For the Prescriptive Path, the home is built using a prescribed set of construction specifications that meets ENERGY STAR program requirements. All projects must complete the Thermal Bypass Inspection Checklist.

3. Who is a qualified Home Energy Rater?
   A qualified Home Energy Rater (also known as a HERS rater) is anyone who has been certified as a HERS rater through the Residential Energy Services Network (RESNET). More information can be found on the RESNET website at www.natresnet.org.

4. Does the qualified Home Energy Rater have to be in addition to the LEED Accredited Third Party Certifier?
   No, the independent, qualified Home Energy Rater can also be the LEED Accredited Third Party Certifier.

5. Can an independent LEED AP be substituted for the independent, qualified Home Energy Rater?
   No. Only a qualified Home Energy Rater can complete the Thermal Bypass Inspection Checklist.

C-3a Water Heating: Energy-Efficient Hot Water System

Points: 1 to 3

Intent

Reduce energy use and associated pollution by installing energy-efficient hot water distribution systems.

Criteria

Design and install energy-efficient hot water distribution system(s) by implementing one of the methods listed below (2 points):

- Structured Plumbing System: The system must meet all of the following:
  - Circulation loop is demand-controlled and insulated to at least R-4.
  - Total length of the circulation loop piping is < 40 linear feet for a one-story home. Add 2x the ceiling height for two-story homes, and add 4x the ceiling height for three- and four-story homes.
  - Branch lines from the circulation loop to each fixture are ≤ 10 feet long and a maximum of ½ inch in nominal diameter.
  - Each full bathroom and the kitchen have push button control.
  - Pump has automatic shut-off feature.
- Central Manifold Distribution System: The system must meet all of the following
  - Central manifold trunk line is insulated to at least R-4.
  - Total length of the central manifold trunk line to the water heater is ≤ 6 linear feet.
  - Branch lines from the central manifold to each fixture are ≤ 20 linear feet for a one-story home. Add 1x the ceiling height for two-story homes, and add 2x the ceiling height for three- and four-story homes.
  - Branch lines from the central manifold are a maximum of ½ inch in nominal diameter.
- Compact Design of Conventional System: The system must meet all of the following
  - Water heater is located in a central location.
  - Branch lines from the water heater to each fixture are ≤ 20 linear feet for a one-story home. Add 1x the ceiling height for two-story homes, and add 2x the ceiling height for three- and four-story homes.
  - Branch lines from the central header to each fixture are a maximum of ½ inch in nominal diameter.

AND/OR

Insulate all domestic hot water piping, including bends, with minimum R-4 insulation (1 point).

Submittals

- Provide construction drawings detailing the energy-efficient hot water distribution system design and locations. Provide a note describing the energy-efficient hot water distribution system design and technology used.
- Provide a note indicating all domestic hot water piping will be insulated with minimum R-4 insulation.

Questions and Interpretations

1. Are the piping length requirements for both hot water and cold water supply piping?
   Yes.

2. Is it possible to earn points under this credit in spite of a nominal increase in piping length because of construction constraints?
   Yes. Points under this credit may be awarded on a case-by-case basis. the applicant must submit a narrative describing the construction constraint and why longer piping length is unavoidable.

C-3b Water Heating: Solar Hot Water System

Points: 2 to 4

Intent

Reduce energy use and associated pollution by implementing solar hot water heating systems.

Criteria

Install solar hot water system(s) for domestic hot water (DHW) heating. Points are awarded based on the percentage of total annual domestic hot water heating load met by the solar hot water system(s), as specified below:

Percent of Annual DHW Load Met	Points Awarded
20%	2
40%	3
60%	4

Submittals

- Provide construction drawings detailing the solar hot water system(s) design and locations.
- Provide a note describing the solar hot water system(s) design and technology used.
- Provide a table listing the total annual domestic hot water heating load, the annual domestic hot water heating load supplied by the solar hot water system, and the percentage that is met by the solar hot water system.

Credit C-3b	
Domestic Hot Water Heating Loads and Solar Hot Water System	
Total Annual DHW Load	
Annual DHW Load Supplied by Solar Hot Water Sys.	
% Supplied by Solar Hot Water Sys.	

Questions and Interpretations

1. How is the total annual domestic hot water heating load and the annual domestic hot water heating load supplied by the solar hot water system calculated?
   Consult a qualified professional, such as a Mechanical Engineer or a Plumbing Engineer.

2. How is the percentage of the total annual domestic hot water (DHW) heating load met by the solar hot water system calculated?
   Divide the annual DHW heating load supplied by solar hot water system by the total annual DHW heating load.

$$\text{\% DHW load met by solar hot water system} = \frac{\text{annual DHW heating load supplied by solar hot water system}}{\text{total annual DHW heating load}}$$

C-4 Low Flow Water Devices

Points: 2

Intent

Conserve potable water and reduce associated energy use through the use of water conserving fixtures.

Criteria

Meet or exceed specified flow rates and/or flush rates for all lavatory faucets, showerheads, and toilets. Points are awarded as specified below:

- Average flow rate for all lavatory faucets must be ≤ 2.0 gpm AND average flow rate for all showers must be ≤ 2.0 gpm per stall (1 point).

AND/OR

- Average flush rate for all toilets must be ≤ 1.3 gpf OR toilets must be dual-flush and meet the requirements of ASME A112.19.14 OR toilets must meet the U.S. EPA WaterSense specification and be certified and labeled accordingly (1 point).

Submittals

- Provide a table listing the product type, manufacturer, model number, and flow rate/flush rate for each lavatory faucet, showerhead, and toilet used.

Credit C-4			
Low Flow Water Devices			
Product Type	Manufacturer	Model Number	Flow Rate (gpm)/ Flush Rate (gpf)

Questions and Interpretations

2. Is it possible to earn points if only a percentage of the fixtures installed comply with the credit requirements?

   No. Points are awarded only if all fixtures comply with the credit requirements.

2. Can points be awarded for installing low-flow kitchen faucets and/or utility sink faucets under this credit?

   No. However, points may be earned under Credit A-4 Innovative Design.

C-5 Gray Water Reuse System

Points: 2 to 4

Intent

Conserve potable water and reduce associated energy use through the use of gray water systems for non-potable water uses.

Criteria

Capture, store, and reuse waste water from approved gray water sources, including clothes washers, showers, and mechanical condensate. Ensure no cross-contamination with drinking water supply lines. Two points is awarded for each gray water source type that is captured, stored, and reused (up to 4 points).

Submittals

- Provide construction drawings detailing each gray water reuse system design and location. Provide a narrative describing the gray water reuse system design and technology used, including source of gray water, strategies to prevent contamination of drinking water supply lines, storage system and monitoring device, location of the storage system, and the long-term maintenance and management program.

Questions and Interpretations

1. Can the gray water be used for certain non-potable, indoor residential uses?
   Yes, but any gray water used inside the house must be treated per code requirements prior to reuse. Ensure no cross-contamination of the gray water supply lines with drinking water supply lines.

2. Can points be awarded for rainwater collection systems?
   No. Points for rainwater harvesting can be earned in the Green Neighborhood for Sites Checklist under Credit F-1.

C-6 Light Pollution Reduction

Points: 2

Intent

Promote the use of energy-efficient lighting and minimize light pollution to increase night sky access and support nocturnal habitats.

Criteria

Install daylight sensors, motion detectors, and/or timers on all exterior building lighting fixtures.

The following exterior building lighting fixtures are exempt: emergency lighting, lighting required by code for health and safety purposes, lighting used for eye adaptation near covered vehicle entrances or exits, and lighting required by Federal law to illuminate the American flag.

Submittals

- Provide construction drawings indicating locations of daylight sensors, motion detectors, and/or timers.
- Provide a table listing the product type, manufacturer, model number, and location for daylight sensor, motion detector, and/or timer used.
- Provide a note indicating daylight sensors, motion detectors, and/or timers are provided on all exterior site lighting fixtures.

Credit C-6			
Daylight Sensor/Motion Detector/Timer for Exterior Lighting			
Product Type	Manufacturer	Model Number	Location

Questions and Interpretations

1. Do exterior site lighting fixtures, such as for parking lots, sidewalks, pathways, and trails, need to meet the credit requirements?

   No, only exterior lighting installed on buildings must meet the credit requirements.

D-1 ENERGY STAR with Indoor Air Package (IAP)

Points: 3

Intent

Improve indoor air quality to enhance occupant comfort, well being, and productivity.

Criteria

Comply with all ENERGY STAR Indoor Air Package (IAP) specifications for the residential portions of the project.

Submittals

☑ Plan Review
- Provide a note indicating that all applicable ENERGY STAR IAP specifications are incorporated into the construction drawings and specifications.

☑ Use & Occupancy
- Provide a completed ENERGY STAR IAP Verification Checklist with verifications from both the applicant (builder) and the qualified Home Energy Rater or the LEED Accredited Third Party Certifier.

Questions and Interpretations

1. Can partial points be earned for complying with only some of the IAP requirements?
   No.

2. Where can information on the ENERGY STAR Indoor Air Package (IAP) specifications be found?
   Information on ENERGY STAR IAP specifications is available on the ENERGY STAR website at: www.energystar.gov.

3. Who is a qualified Home Energy Rater?
   A qualified Home Energy Rater (also known as a HERS rater) is anyone who has been certified as a HERS rater through the Residential Energy Services Network (RESNET). More information can be found on the RESNET website at www.natresnet.org.

4. Who is the LEED Accredited Third Party Certifier?
   See Credit A-3.

D-2 Combustion Venting

Points: 1

Intent
Maintain indoor environmental quality by minimizing occupant exposure to combustion gases.

Criteria
Install space and water heating combustion equipment with closed combustion or power-vented exhaust OR locate space and water heating combustion equipment in a detached utility building or an open-air facility.

AND

Install at least one hard-wired carbon monoxide (CO) detector with battery back-up per floor (including basements).

AND

Do not install unvented fireplaces, woodstoves, or pellet stoves.

AND

Install tight fitting doors on all fireplaces, woodstoves, and pellet stoves.

Submittals
- Provide construction drawings detailing venting strategies used for space and water heating combustion equipment, including fireplaces and stoves, and their locations.
- Provide a note describing the venting strategies and technology used.
- Provide a note indicating one hard-wired carbon monoxide detector with battery backup is installed per floor.

Questions and Interpretations
1. Can this credit be achieved if there is no combustion equipment, fireplace, woodstove, or pellet stove installed in the building?

   No. The project is eligible to earn points for this credit only if there is at least one type of space or water heating combustion equipment installed.

D-3a Supply Air Filtering and Ventilation: Minimum

Points: Required

Intent

Improve indoor air quality by limiting occupant exposure to chemical pollutants, dust, and other air borne particles from air supply systems.

Criteria

Forced–Air Systems:
Install air filters ≥ MERV 8 and maintain adequate pressure and air flow. Air filtering housings must be airtight to prevent bypass or leakage.

Non-ducted HVAC Systems (e.g., Hydronic Systems):
Install air filters ≥ MERV 8 and maintain adequate pressure and air flow in any mechanical ventilation systems. Air filtering housings must be airtight to prevent bypass or leakage. If the building utilizes only passive or exhaust-only ventilation, then it is exempt from this requirement.

Submittals

- Provide a table listing the filtration media used, including manufacturer, model number, MERV rating, and location of installed filter.
- Provide a note indicating the type of air supply system used, confirming air filtering housings are airtight, and describing how adequate pressure and air flow are maintained.
- If the project is exempt from this requirement, provide a note describing the condition that exempts the project.

Credit D-3a			
Filtration Media			
Manufacturer	Model Number	MERV Rating	Location

Questions and Interpretations

1. What is MERV?
   MERV stands for Minimum Efficiency Reporting Value and is a measure of filter efficiency. The higher the MERV, the more efficient the air filter is at removing particles. A higher MERV also creates more resistance to airflow, resulting in pressure drop, because the filter media becomes denser as efficiency increases. This should be accommodated during systems design.

D-3b Supply Air Filtering and Ventilation: Exceed Minimum

Points: 1 to 2

Intent

Improve indoor air quality by exceeding minimum requirements to limit occupant exposure to chemical pollutants, dust, and other air borne particles from air supply systems.

Criteria

Exceed minimum MERV rating for filters in forced-air systems and non-ducted HVAC systems with mechanical ventilation systems. Maintain adequate pressure and air flow. Air filtering housings must be airtight to prevent bypass or leakage. Points are awarded as specified below:

Filter MERV Rating	Points Awarded
≥10	1
≥13	2

Submittals

- Provide a table listing the filtration media used, including manufacturer, model number, MERV rating, and location of installed filter.
- Provide a note indicating the type of air supply system used, confirming air filtering housings are airtight, and describing how adequate pressure and air flow are maintained.

Credit D-3b			
Filtration Media			
Manufacturer	Model Number	MERV Rating	Location

Questions and Interpretations

1. What is MERV?

   MERV stands for Minimum Efficiency Reporting Value and is a measure of filter efficiency. The higher the MERV, the more efficient the air filter is at removing particles. A higher MERV also creates more resistance to airflow, resulting in pressure drop, because the filter media becomes denser as efficiency increases. This should be accommodated during systems design.

2. Can a project earn points under this credit if it does not have forced-air systems or mechanical ventilation systems?

   No.

D-4 Contaminant Control

Points: Required

Intent
Improve indoor air quality by limiting contamination of the HVAC system during construction.

Criteria
During construction, seal all ducts and vents with plastic prior to installation (if stored on-site) and immediately after installation.

Submittals
- ☑ Plan Review
  - Provide a note indicating that all ducts and vents are sealed with plastic prior to installation and immediately after installation.

- ☑ Use & Occupancy
  - Provide 8 photos to highlight the implemented practice(s).

Questions and Interpretations
1. When can the plastic be removed?
   The plastic can be removed after all phases of construction, including punch out, are completed.

2. Can start-up/testing/balancing of the HVAC system occur before construction completion?
   No. All phases of construction must be completed before start-up/testing/balancing of the HVAC system.

3. Can the HVAC system be used during construction to provide temporary heating and/or cooling?
   No.

E-1 Low/No VOC Paints and Primers

Points: Required

Intent

Reduce the level of potentially hazardous indoor air contaminants that compromise occupant comfort and well-being through the use of interior paints and primers that have low/no Volatile Organic Compound (VOC) content.

Criteria

Use interior paints and primers that comply with the Volatile Organic Compound (VOC) content limits established in the current Green Seal Standard GS-11, Paints and Coatings.

Submittals

☑ Plan Review
- Provide a note indicating all interior paints and primers used will comply with the credit requirements.

☑ Use & Occupancy
- Provide a completed Low/No VOC Paints and Primers template (see Appendix K).

Questions and Interpretations

1. Do all the paints and primers used within the building have to meet the requirements?
   Yes. All paints and primers used within the building, defined as within the weatherproofing system of the building, must meet the requirements.

2. Do shop-applied paints and primers have to meet the requirements?
   No. This requirement is only applicable to field-applied paints and primers.

3. Where can information on Green Seal Standard GS-11, Paints and Coatings, be found?
   Information on Green Seal Standard GS-11, Paints and Coatings, is available on the Green Seal website at: www.greenseal.org.

E-2 Low/No VOC Adhesives and Sealants

Points: Required

Intent

Reduce the level of potentially hazardous indoor air contaminants that compromise occupant comfort and well-being through the use of adhesives and sealants that have low/no Volatile Organic Compound (VOC) content.

Criteria

Use adhesives, sealants, and sealant primers that comply with the Volatile Organic Compound (VOC) content limits established in the current South Coast Air Quality Management District (SCAQMD) Rule #1168, Adhesive and Sealant Applications.

AND

For aerosol adhesives, comply with the Volatile Organic Compound (VOC) content limits established in the current Green Seal Standard GS-36, Commercial Adhesives.

Submittals

☑ Plan Review
- Provide a note indicating all adhesives and sealants used will comply with the credit requirements.

☑ Use & Occupancy
- Provide a completed Low/No VOC Adhesives and Sealants template (see Appendix L).

Questions and Interpretations

1. Do all the adhesives, sealants, and sealant primers used within the building have to meet the requirements?
   Yes. All adhesives, sealants, and sealant primers used within the building, defined as within the weatherproofing system of the building, must meet the requirements.

2. Do shop-applied adhesives, sealants, and sealant primers have to meet the requirements?
   No. This requirement is only applicable to field-applied adhesives, sealants, and sealant primers.

3. Where can information on South Coast Air Quality Management District (SCAQMD) Rule #1168, be found?
   Information on South Coast Air Quality Management District (SCAQMD) Rule #1168, Adhesive and Sealant Applications, is available on the South Coast Air Quality Management District website at: www.aqmd.gov/rules/reg/reg11_tofc.html .

4. Where can information on Green Seal Standard GS-36, Commercial Adhesives, be found?
   Information on Green Seal Standard GS-36, Commercial Adhesives, is available on the Green Seal website at: www.greenseal.org.

E-3 Formaldehyde-free Composite Wood

Points: Required

Intent

Reduce the level of potentially hazardous indoor air contaminants that compromise occupant comfort and well-being through the use of formaldehyde-free composite wood and agrifiber products.

Criteria

Use composite wood and agrifiber products that contain no added urea-formaldehyde resins AND/OR seal all exposed edges and sides of composite wood and agrifiber products containing added urea-formaldehyde resins with low-VOC sealants.

AND

Ensure field-applied and shop-applied laminating adhesives used to fabricate assemblies contain no added urea-formaldehyde resins.

Submittals

☑ Plan Review
- Provide a note indicating composite wood and agrifiber products used contain no added urea-formaldehyde resins or are sealed at all exposed edges and sides with low-VOC sealants (in compliance with Credit E-2).
- Provide a note indicating field-applied and shop-applied laminating adhesives used to fabricate assemblies contain no added urea-formaldehyde resins.

☑ Use & Occupancy
- Provide a completed Formaldehyde-free Composite Wood template (see Appendix M).

Questions and Interpretations

1. Do all composite wood and agrifiber products used within the building have to meet the requirements?
   Yes. All composite wood and agrifiber products used within the building, defined as within the weatherproofing system of the building, must meet the requirements.

2. Do shop-applied laminating adhesives have to meet the requirements?
   Yes. The requirement for laminating adhesives is for both field-applied and shop-applied installations.

3. What are composite wood and agrifiber products?
   Particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates, and door cores. Furniture and equipment are not considered for credit compliance.

4. What are the VOC limits for the “low-VOC sealants?”
   The VOC limits for sealants are defined in credit E-2, Low/No VOC Adhesives and Sealants.

E-4 Ventilation

Points: 3

Intent

Improve indoor air quality to enhance occupant comfort and well-being through provision of adequate fresh air.

Criteria

Design and install a ventilation system that complies with ASHRAE Standard 62.1-2007 for residential buildings above 3 stories or ASHRAE 62.2-2007 for single-family residences and low-rise multifamily buildings.

Submittals

- Provide a narrative describing the project's ventilation design and technology used and confirm compliance with the applicable ventilation standard.

Questions and Interpretations

1. Where can information on ASHRAE Standard 62.1-2007 and ASHRAE 62.2-2007 be found?
   Information on ASHRAE Standard 62.1-2007 and ASHRAE 62.2-2007 is available on the ASHRAE website at: www.ashrae.org/technology/page/548.

F-1 HOA Documents

Points: Required

Intent

Ensure that new occupants (homeowners and renters) are informed about the green building features and are aware of the proper operation and maintenance of these features.

Criteria

Include information about the building's green features and maintenance requirements in homeowner's association (HOA) documents. Ensure the HOA documents are distributed to new occupants.

Submittals

☑ Plan Review
- Provide a narrative indicating that the HOA documents will be developed, listing the green building features that will be included in the HOA documents, and describing how the HOA documents will be distributed to new occupants.

☑ Use & Occupancy
- Provide one copy of the HOA documents per development.
- Provide a narrative briefly describing how the documents will be distributed to new occupants.

Questions and Interpretations

1. How many copies of the HOA documents must be provided to each dwelling unit?
   One copy. Developers and builders are encouraged to provide additional copies upon request by occupants.

2. Are new occupant walk-throughs, orientation, and/or trainings required?
   No, but it is highly encouraged and may earn points under Credit A-4 Innovative Design.

3. Is there a template for including green home features and maintenance requirements in the HOA documents?
   At this time, templates are not available.

F-2 Maintenance Manual for Owner/HOA/Manager

Points: Required

Intent

Maintain the green building features by ensuring that new occupants, homeowner's associations, and property managers are informed about them and their proper operation and maintenance.

Criteria

Provide a manual that includes information on what the green features of the unit/building/home are and how to maintain them. Green features include environmentally preferable building products, ENERGY STAR appliances, low-flow water fixtures, gray water reuse systems, and photovoltaic panels. The manual should also encourage additional green activities such as recycling, green housekeeping, and gardening. Ensure the manual is distributed to new occupants, homeowner's associations, and property managers.

At a minimum, the manual must include the following information:

- Completed Green Neighborhood for Homes Compliance Checklist
- Manufacturer manuals for all installed equipment, fixtures, and appliances
- Guidelines for efficient use of resources, such as energy, water, and landscape
- Operations and maintenance guidance related to equipment installed in the unit/building, including:
    - Space Heating and Cooling equipment
    - Mechanical ventilation equipment
    - Humidity control equipment (if installed)
    - Radon protection system (if installed)
    - Renewable Energy System (if installed)
    - Irrigation, rain water harvesting, and/or grey water system (if installed)
- Sustainable choice and best practices guidance, including:
    - Cleaning materials, methods, and supplies
    - Water-efficient landscaping
    - Impacts of chemical fertilizers, insecticides, and pesticides
    - Irrigation
    - Lighting selection
    - Appliance selection
- Educational information and resources for the purchase of "green power"

Submittals

☑ Plan Review
- Provide a narrative indicating that the manual will be developed, listing the green building features that will be described, and describing how the manual will be distributed to new occupants, homeowner's associations, and property managers.

☑ Use & Occupancy
- Provide a copy of the manual
- Provide a narrative briefly describing how the manual will be distributed to new occupants, homeowner's associations, and property managers.

Questions and Interpretations

1. How many copies of the manual must be provided?
   One copy to each new occupant, homeowner's association, and property management organization. Developers and builders are encouraged to provide additional copies upon request.

2. Are new occupant, homeowner's association, and property manager walk-throughs, orientation, and/or trainings required?
   No, but it is highly encouraged and may earn points under Credit A-4 Innovative Design.

3. Is there a template for the manual?
   At this time, templates are not available within the Green Neighborhood Program. However, Enterprise Community Partners has a Green Communities Template for Green Operations and Maintenance Manual based on the The Plaza Apartments project in San Francisco, California that may help in developing the manual (available at: http://www.practitionerresources.org/showdoc.html?id=63995).

4. What is "green power?"
   "Green power" is electricity generated from environmentally friendly sources such as photovoltaic, wind, geothermal, hydroelectric, and biomass.

F-3 Public Awareness of Sustainable Community

Points: Required

Intent

Encourage more widespread creation of green neighborhoods and redevelopment of existing neighborhoods with green development techniques by promoting the environmental and community benefits of sustainable development.

Criteria

Develop an outreach program using a variety of methods and media to advertise and raise awareness about the environmental and community benefits of sustainable development. At least one of the outreach activities must be long-term (a minimum of 5 years) and frequent (at least quarterly).

Submittals

☑ Plan Review
- Provide a draft narrative describing the types of outreach, advertising, and awareness activities that will be conducted, including the funding source, the parties responsible for conducting the outreach activities, and the frequency and duration of each outreach activity.

☑ Use & Occupancy
- Provide a completed narrative describing the types of outreach, advertising, and awareness activities that will be conducted, including the funding source, the parties responsible for conducting the outreach activities, and the frequency and duration of each outreach activity.
- Provide documentation (such as photos, copies of brochures) verifying any completed outreach activities.

Questions and Interpretations

1. What types of outreach activities are considered long-term?
   Long-term outreach activities include: informational signs made of durable materials, posted on the property and maintained by the HOA or property manager; brochures or other informational material made available through an on-site property management office; an informative project website made accessible to the general public; and an educational video downloadable from a publicly accessible website.

2. Are there examples of green education and outreach programs?
   - Great Seneca Elementary School (aka NW#7): http://www.montgomeryschoolsmd.org/departments/facilities/schools2green/gsc.shtm (look under User Education Signage)
   - Camille Kendall Academic Center (aka SG3): http://www.shadygrove.umd.edu/campus-sustainability/sgiii.cfm

Howard County Council Resolution 116-2007, Exhibit A
GREEN NEIGHBORHOOD CHECKLIST

Key	Category	Comment / Criteria / Metric	Max Points
GREEN NEIGHBORHOOD SITE			
A	**Innovative / Integrated Design Process**		**4**
A-1	Green Development Plan	Shows how plans meet criteria, includes checklist, natural resource inventory and energy analysis	**REQ'D**
A-2	Interdisciplinary Project Team	Includes U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Accredited professional, ecologist / environmental professional / landscape architect, and engineer	**REQ'D**
A-3	Third Party Certification	Certification of credits by independent LEED accredited professional	**REQ'D**
A-4	Innovative Design	Innovative design proposed by applicant, not included in checklist	4
B	**Location, Linkages & Community Context**		**27**
B-1a	Redevelopment Site	Reuse of previously developed site (minimum 25% existing impervious, with sliding scale for credits based on amount or % impervious)	4
B-1b	Redevelopment Site	Brownfield cleanup of redevelopment site	8
B-2	Historic Buildings	Preservation, renovation and / or adaptive reuse of structure that meets criteria for Howard County Historic Sites Inventory	4
B-3a	Transit Access & Amenities for Reduced Auto Dependence	Site is served by transit stop within 1/2 mile (1 point) or 1/4 mile (2 points) walk from property	2
B-3b	Transit Access & Amenities for Reduced Auto Dependence	Provide county-specified transit shelter with benches and lighting at transit stop within 1/2 mile of property and provided pedestrian link to stop if none currently exists	4
B-4	Proximity to Community Resources	Diverse community resources (school, park, library, post office, child care, senior care, community center, shopping, medical offices, service retail, places of worship, restaurants, or other) are within 1/2 mile walk of property (1 point for each type of resource); provide pedestrian link to facility if none currently exists (1 point)	5
C	**Compact, Complete & Connected Development**		**27**
C-1	Diversity of Uses	1 point for each land use type (retail, office, institutional, civic) in addition to residential; 1 point for each additional residential building type (SFD, SFA, APT, Age Restricted)	3
C-2	Planned Service Area	Project located in the planned service area	5
C-3a	Pedestrian System	Off-street paths / trail system provided in addition to required sidewalks	2
C-3b	Pedestrian System	Path connection(s) provided to abutting neighborhoods (connections to external sidewalks required)	2
C-3c	Pedestrian System	Pedestrian experience features (special paving, benches, etc.)	2
C-4	Connected On-site Street Network	Most streets connected to form grid or blocks	2
C-5	Parking does not exceed Required Minimum	Surface parking lots do not exceed required parking ratios (1 point); plan takes advantage of shared parking provisions in regulations (2 points); common parking structure provided (in deck or beneath building; does not include garages within individual units) (4 points)	4
C-6	Exceed Minimum Open Space Requirements	1 point for each 5% above minimum required open space for zoning district up to 5 points; 1 point for every 10% of nonbuildable HOA or county-owned preservation parcels above 50% of site, up to 3 points	5
C-7	Green Spaces and Amenity Areas	Open space or nonbuildable preservation parcel frontage along public roads or along private road that is available for public use (1 point for each parcel with min. 100' frontage); use of amenity areas for passive or active recreation (except for pools and enclosed building) is not restricted to residents and is available to the public, gated communities do not qualify	2

Howard County Council Resolution 116-2007, Exhibit A
GREEN NEIGHBORHOOD CHECKLIST

Key	Category	Comment / Criteria / Metric	Max Points
D	**Environmental Preservation**		**52**
D-1	Stream Restoration or Wetland Creation or Restoration	Restoration of degraded on-site stream channel; on-site restoration of degraded wetland or creation of additional wetlands (sliding scale based on % or length of stream restored and % or acres of wetland created or restored)	16
D-2	Habitat Management Plan	Prepare and implement plan that identifies, conserves and enhances natural resources and ecological communities (may include clean up of debris, removal of invasives, etc.)	4
D-3	25% Steep Slope Preservation	Protect all existing steep slopes as defined by County regulations required; provide 25' minimum buffer at top of 25% slope (2 points)	2
D-4	15% Slope Preservation	Protect existing 15%+ slopes (protect minimum 1/2 acre, with sliding scale based on area or % protected)	4
D-5	Minimize Grading and Site Disturbance	Minimize limit of disturbance: leave at least 20% of site undisturbed (1 point), 30% (2 points), 40% (3 points); balance cut and fill on site (2 points); retaining walls 3-5.9' (deduct 1 point) retaining walls 6-8.9' (deduct 2 points), walls 9' and higher (deduct 3 points), no new created steep slopes over 25% (1 point); amend soil nutrients in turf and planting areas (1 point)	5
D-6	Exceed Minimum Forest Conservation Requirements	1 point for every 10% of existing forest retained above break even point; 1 point for every 10% of on-site forest planted in excess of afforestation obligation	5
D-7	Save Trees above 12" Minimum Caliper	1 point for protecting each 25% of all specimen trees (does not include specimen trees within forest conservation area or within forests that are being cleared)	4
D-8a	Exceed Minimum Stream Buffer Requirements	75' buffer required for perennial and intermittent streams inside PSA, 100' buffer required for perennial and intermittent streams outside PSA	**REQ'D**
D-8b	Exceed Minimum Stream Buffer Requirements	2 points for each additional 25' of buffer provided in excess of requirements in D-8a outside wetland buffer or floodplain	6
D-9	Exceed Minimum Wetland Buffer Requirements	2 points for each additional 25' of wetland buffer buffer outside stream buffer or floodplain	4
D-10	Floodplain Buffer	1 point for each 25' of buffer to floodplain outside required or provided wetland or stream buffer	2
E	**Site Landscape Improvements**		**10**
E-1	Landscaping exceeds Minimum Requirements and Reduces Heat Island Effect	1 point for each 10% increase in number of plants (must be native plants) provided above total minimum required in Landscape Manual; retain or plant trees on south and west sides of buildings and increase trees within parking areas and along sidewalks and paths	5
E-2	Native Plants	1 point for 80%, 2 points for 90%, 3 points for 100% of all plants native to within 200 miles of site	3
E-3	No Invasive Plants	No plants that are on DNR, USDA or Cooperative Extension Service lists of invasive plants	**REQ'D**
E-4	Limit Turf	Turf does not exceed 30% of unpaved site (1 point); no turf on new created steep slopes 25%+ or in densely shaded areas (1 point); unpaved nonturf areas must be planted in native vegetation	2

Howard County Council Resolution 116-2007, Exhibit A
GREEN NEIGHBORHOOD CHECKLIST

Key	Category	Comment / Criteria / Metric	Max Points
F	**Water Conservation / Efficiency / Management**		**17**
F-1	Rainwater Harvesting System	Collect and make use of water runoff from minimum 50% of roof area; provide storage system and monitoring device and maintenance / management program	5
F-2	Water-Permeable Walkways	Use water-permeable materials in 50% or more of pathways; provide maintenance program	4
F-3a	Low Impact Development (LID) Stormwater Treatment	Meets minimum Design Manual requirements; no dry ponds allowed	**REQ'D**
F-3b	Low Impact Development (LID) Stormwater Treatment	Exceeds Design Manual requirements; maximize use of bioretention (esp. for parking lots), rain gardens, rain barrels, stormwater wetlands, green roof, etc.	8
G	**Energy Efficiency**		**13**
G-1	Light Pollution Reduction	Shield all site lighting fixtures to reduce light and spillover below county code requirements; install sensors or timers on all exterior site lighting fixtures	4
G-2	Solar Orientation	Orient 50% (1 point) or 75% (2 points) or 100% (3 points) of buildings to make available for solar strategies (longer axis of SFD homes, TH blocks and apartment blocks is east / west)	3
G-3	Infrastructure Energy Efficiency	Select high efficiency fixtures for parking lot and other site light fixtures and design delivery systems to reduce energy demands; install photovoltaic (PV) panels to provide electricity for site energy needs (sliding scale points for % of energy provided); design, engineer and wire the development to accommodate future PV installation	6
H	**Materials Beneficial to the Environment / Waste Management**		**17**
H-1	Environmentally Preferable Site Products	Select products from a list including: recycled materials (concrete, asphalt, tires, plastic, etc.), materials with recycled content, salvaged or engineered materials; reuse of existing on-site materials; environmentally preferable pedestrian paving, play equipment, decks, boardwalks, patio flooring, etc.	8
H-2	Reduce Heat-Island Effect of Paving	Use light-colored or high albedo materials and/or porous paving with a minimum Solar Reflective Index of 0.6 or over for at least 30% of the site hardscape	2
H-3	Site Construction Waste Management	Develop and implement a construction waste management plan to divert, reuse, recycle or reduce the amount of site material sent to the landfill by 25% (2 points) or 50% (3 points) or 75% (4 points)	4
H-4	Regionally Provided Materials	20% of common and public infrastructure materials from within 200 miles	3
I	**Operations and Maintenance Education**		**0**
I-1	HOA Documents	Include information about green site features and maintenance requirements in HOA documents	**REQ'D**
I-2	Maintenance Manual for Owner / HOA / Manager	Provide a manual that includes information on how to maintain the green features of the site, including paving materials, landscaping and stormwater management LID and encourages additional green activities such as recycling, gardening, etc.	**REQ'D**
I-3	Public Awareness of Sustainable Community	Develop a program to advertise the environmental benefits of the community	**REQ'D**

TOTAL MAXIMUM SITE POINTS 167

Number of points required to obtain Green Neighborhood Allocations 90

Howard County Council Resolution 116-2007, Exhibit A
GREEN NEIGHBORHOOD CHECKLIST

Key	Category	Comment / Criteria / Metric	Max Points
GREEN NEIGHBORHOOD HOME			
A	**Innovative / Integrated Design Process**		**4**
A-1	Green Development Plan	Shows how plans meet criteria, includes checklist, natural resource inventory and energy analysis	**REQ'D**
A-2	Interdisciplinary Project Team	Includes U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Accredited professional and architect	**REQ'D**
A-3	Third Party Certification	Certification of credits by independent LEED accredited professional	**REQ'D**
A-4	Innovative Design	Innovative design proposed by applicant, not included in checklist	4
B	**Materials Beneficial to the Environment / Waste Management**		**18**
B-1	Environmentally Preferable Building Products	Select products from a list including: recycled materials, materials with recycled content, salvaged or engineered materials; ecofriendly flooring (carpets, wood, linoleum, tile); reuse of existing on-site materials; environmentally preferable framing, roofing, siding, etc.	8
B-2a	Wood Use	All tropical woods Forest Stewardship Council (FSC) certified	**REQ'D**
B-2b	Wood Use	All non-tropical wood, 50% FSC certified	2
B-3	Regionally Provided Materials	20% of common materials from within 500 miles	3
B-4	Materials in Wet Areas: Tub & Shower Enclosure	All tubs and showers one-piece fiberglass or similar enclosure	1
B-5	Building Construction Waste Management	Develop and implement a construction waste management plan to reuse, recycle or reduce amount of building material sent to the landfill by 25% (2 points), 50% (3 points) or 75% (4 points)	4
C	**Energy & Water Efficiency**		**53**
C-1a	Photovoltaic (PV) Panels or PV Ready Buildings	Install PV panels to provide electricity for 10% (5 points), 20% (10 points) or 30% (15 points) of energy needs; site, design, engineer and wire the development to accommodate future PV installation (2 points)	15
C-1b	On-Site Power Generation, Renewable Energy Sources	To be identified by applicant (geothermal, wind, passive solar, etc.)	6
C-1c	Added Reductions in Energy Use	To be defined by applicant (additional insulation, etc.)	2
C-2a	Energy Star Appliances	Exclusive use of Energy Star labeled appliances	**REQ'D**
C-2b	Energy Star Home	All buildings meet Energy Star for Homes with third-party testing	15
C-3a	Water Heating	Improve energy efficiency of hot water distribution system & pipe insulation	3
C-3b	Water Heating	Installed solar hot water heater	4
C-4	Low Flow Water Devices	Showerheads, toilets or sinks flow lower than required by Building Code	2
C-5	Gray Water Reuse System	Collect water from certain indoor uses; include storage system; use for irrigation or indoor use; provide monitoring device and maintenance / management program	4
C-6	Light Pollution Reduction	Install sensors or timers on all exterior building fixtures	2

Howard County Council Resolution 116-2007, Exhibit A
GREEN NEIGHBORHOOD CHECKLIST

Key	Category	Comment / Criteria / Metric	Max Points
D	**Indoor Environmental Quality**		**6**
D-1	Energy Star with IAP	Meets Energy Star with indoor air package	3
D-2	Combustion Venting	High performance fire place	1
D-3a	Supply Air Filtering	≥ 8 minimum efficiency rating value (MERV) filters w/ adequate system air flow	**REQ'D**
D-3b	Supply Air Filtering	≥ 10 MERV (1 point) or ≥ 13 MERV (2 points)	2
D-4	Contaminant Control	Seal-off ducts during construction	**REQ'D**
E	**Healthy Living Environment**		**3**
E-1	Low/No VOC Paint & Primer	All interior paints	**REQ'D**
E-2	Low/No VOC Adhesive & Sealant	All interior adhesives and sealants	**REQ'D**
E-3	Formaldehyde-free Composite Wood	No composite wood with exposed particleboard	**REQ'D**
E-4	Ventilation	Install a ventilation system that that provides 15 cubic feet per minute of fresh air / per bedroom	3
F	**Operations and Maintenance Education**		**0**
F-1	HOA Documents	Include information about green building features and maintenance requirements in HOA documents	**REQ'D**
F-2	Maintenance Manual for Owner / HOA / Manager	Provide a manual that includes information on how to maintain the green building features, including building materials, and water, energy and air quality systems, and encourages additional green activities such as recycling, gardening, etc.	**REQ'D**
F-3	Public Awareness of Sustainable Community	Develop a program to advertise the environmental benefits of the community	**REQ'D**

TOTAL MAXIMUM BUILDING POINTS 84

Number of points required to obtain Building Permits for homes in Green Neighborhoods 46

GREEN NEIGHBORHOOD HOME COMPLIANCE CHECKLIST
(Insert Project Name Here)

This chart shows the required format for the Green Neighborhood Homes Compliance Checklist and provides sample language for A and B Credits only.

Credit No.	Credit	Champion (Name, Role)	Plan Review: Strategies	Use & Occupancy: Strategies	Documentation Location	Max Points	Requested Points (for Plan Review Submission ONLY)	Certified Points (for Use & Occupancy Submission ONLY)
A	**Innovative / Integrated Design Process**					**4**	**0**	**0**
A-1	Green Development Plan	*John Smith, Developer*	*Provided*	*No change*	*GN Plan Sheet provided; GN Report provided;*	**REQ'D**	**REQ'D**	**REQ'D**
A-2	Interdisciplinary Project Team	*John Smith, Developer*	*Team includes LEED AP consultant, registered architect, and professional mechanical engineer*	*No change*	*GN Plan Sheet: Team listed ; GN Report: All team members listed*	**REQ'D**	**REQ'D**	**REQ'D**
A-3	Third Party Certification	*Jane Doe, LEED AP Consultant*	*Checklist points requested have been certified by team's LEED AP*	*Checklist points requested have been certified by LEED AP third party certifier*	*GN Plan Sheet: Signed certification on Compliance Checklist; GN Report: Signed certification on Compliance Checklist*	**REQ'D**	**REQ'D**	**REQ'D**
A-4a	Innovative Design A					1	0	0
A-4b	Innovative Design B					1	0	0
A-4c	Innovative Design C					1	0	0
A-4d	Innovative Design D					1	0	0
B	**Materials Beneficial to the Environment / Waste Management**					**18**	**8**	**7**
B-1	Environmentally Preferable Building Products					8	0	0
B-2a	Wood Use, Tropical Wood	*Betty Smith, Architect*	*FSC-certified wood specified; to be ordered from NatureNeutral*	*No change*	*Sheet X of Y: Note shown; GN Report: Template completed*	**REQ'D**	**REQ'D**	**REQ'D**
B-2b	Wood Use, Non-Tropical Wood	*Betty Smith, Architect*	*FSC-certified wood specified; to be ordered from NatureNeutral*	*No change*	*GN Report: Template completed*	2	2	2
B-3	Regionally Provided Materials	*Betty Smith, Architect*	*Regional materials include: concrete, drywall, ceramic tiles*	*Additional regional materials include: carpet*	*GN Report: Template completed*	3	3	2
B-4	Materials in Wet Areas: Tub and Shower Enclosures					1	0	0
B-5	Building Construction Waste Management	*Jim Brown, Contractor*	*Goal is 25% diversion. Materials to be recycled include: drywall, metal, wood*	*Achieved 53% diversion. Additional materials recycled include: bricks, concrete*	*GN Report: Construction Waste Management Plan provided; Template completed*	4	3	3

Date: [insert date]

Appendix B

Appendix C Project Description Form

GREEN NEIGHBORHOOD REPORT FOR HOMES
(Insert Project Name Here)

Project Description

Summary description of site and proposed development including location context and proposed land uses: (please expand response cell if necessary)

Goals

Sustainability Goal/ Mission Statement, including energy analysis explaining how the project reduces energy consumption and promotes energy conservation and renewable energy generation.

Table of Contents

This page should be completed
as the inside cover page of the Green Neighborhood Report

Appendix D Green Development Plan Submittal Matrix

Credit No.	Credit	Green Dev Plan Sheet	Sheet Number in Plan Set			GN Report		
		Note	Note	Table	Drawings	Narrative	Documents	Template
A	**Innovative / Integrated Design Process**							
A-1	Green Development Plan							
A-2	Interdisciplinary Project Team	X						
A-3	Third Party Certification						X	
A-4a	Innovative Design A							X
A-4b	Innovative Design B							X
A-4c	Innovative Design C							X
A-4d	Innovative Design D							X
B	**Materials Beneficial to the Environment / Waste Management**							
B-1	Environmentally Preferable Building Products							X
B-2a	Wood Use, Tropical Wood		X					X
B-2b	Wood Use, Non-Tropical Wood							X
B-3	Regionally Provided Materials							X
B-4	Materials in Wet Areas: Tub and Shower Enclosures		X		X			
B-5	Building Construction Waste Management						X	X
C	**Energy & Water Efficiency**							
C-1a	Photovoltaic (PV) Panels or PV Ready Buildings		X	X	X		X	
C-1b	On-Site Power Generation: Renewable Energy Sources		X	X	X		X	
C-1c	Added Reductions in Energy Use		X		X		X	
C-2a	ENERGY STAR Appliances		X	X				
C-2b	ENERGY STAR Home		X			X	X	
C-3a	Water Heating: Energy-Efficient Hot Water System		X		X			
C-3b	Water Heating: Solar Hot Water System		X	X	X			
C-4	Low Flow Water Devices			X				
C-5	Gray Water Reuse System				X	X		
C-6	Light Pollution Reduction		X	X	X			
D	**Indoor Environmental Quality**							
D-1	ENERGY STAR with Indoor Air Package (IAP)		X				X	
D-2	Combustion Venting		X		X			
D-3a	Supply Air Filtering and Ventilation: Minimum		X	X				
D-3b	Supply Air Filtering and Ventilation: Exceed Minimum		X	X				
D-4	Contaminant Control		X				X	
E	**Healthy Living Environment**							
E-1	Low / No VOC Paints and Primers		X					X
E-2	Low / No VOC Adhesives and Sealants		X					X
E-3	Formaldehyde-Free Composite Wood		X					X
E-4	Ventilation					X		
F	**Operations and Maintenance Education**							
F-1	HOA Documents					X	X	
F-2	Maintenance Manual for Owner / HOA / Manager					X	X	
F-3	Public Awareness of Sustainable Community					X	X	

Appendix E Template A-4a: Innovative Design

Project Name:

Template A-4a: Innovative Design

Submit one Template for each Innovative Design credit requested

Title of Proposed Measure
Intent of Proposed Measure
Proposed Requirement for Compliance
Proposed Documentation to Demonstrate Compliance
Estimated Benefit or Impact of Proposed Measure

Points Documented 0

Appendix F Environmentally Preferable Building Products List & Template B-1

Acceptable products include recycled-content materials, salvaged or reclaimed materials, and products made from environmentally preferable materials.

Recycled-Content Materials

Unless specified below, there is no required minimum recycled content for a material. The recycled content percentage of the material is multiplied by the cost of the material to determine the value of the recycled content. Full credit will be given for a material's post-consumer recycled content percentage and half-credit will be given for a material's pre-consumer recycled content percentage.

Material	Minimum Recycled Content
Aggregate base and aggregate subbase	90% by volume post-consumer recycled aggregate materials
Asphalt base	15% by volume post-consumer recycled asphalt pavement
Asphalt concrete pavement	15% by volume post-consumer recycled asphalt pavement OR 75% by volume post-consumer rubberized asphalt concrete from scrap tires OR 5% (of total weight) of pre-consumer or post-consumer asphalt roofing shingles
Portland cement concrete pavement	Recycled mineral admixtures to reduce the concrete mix's typical Portland cement content by at least 25% AND 10% by volume post-consumer concrete material aggregate
Piping made of Portland cement concrete	Recycled mineral admixtures to reduce the concrete mix's typical Portland cement content by at least 25%

Post-consumer material is waste material generated by end-users of a product, such that the product can no longer be used for its intended purpose. Pre-consumer material is material diverted from the waste stream during the manufacturing process. Not included in this category is reuse of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

The recycled content value of an assembly is determined by weight. The recycled-content fraction of the assembly is multiplied by the cost of the assembly to determine the value of the recycled content for that assembly.

Recycled-content materials can include the following:

- concrete
- steel
- drywall
- rubber
- plastic
- mineral admixtures for cement concrete, including coal fly ash, ground granulated blast furnace slag, rice hull ash, silica fume, other pozzolanic industrial byproduct

- tile
- carpet

Sample calculations for the total value of recycled content of an assembly:

Total cost of assembly = $100
Total weight of assembly = 200 lbs
Total weight of pre-consumer content = 50 lbs
Total weight of post-consumer content = 25 lbs

Total weight of recycled content = (50% x pre-consumer content) + post-consumer content = (50% x 50 lbs) + 25 lbs = 50 lbs

Total percent recycled content = Total weight of recycled content / Total weight of material = 50 lbs / 200 lbs = 25%

Total value of recycled content of the assembly = Percent recycled content x Total cost of assembly =
25% x $100 = $25

Salvaged Materials

Salvaged or reclaimed materials are materials that have been selectively removed from existing buildings and sites and reused in other buildings and/or sites. The cost of a salvaged material is calculated as the actual cost paid for the material or the cost of an equivalent new item (aka replacement cost), whichever is higher.

Environmentally Preferable Materials

Environmentally preferable materials are defined as having one or a combination of the following characteristics:

- PVC-free materials
- Rapidly renewable materials (made from plants/animals that are typically harvested within a ten-year cycle, such as soy, wool, cotton, straw, bamboo, linoleum, sorghum)
- Copper azole (CA-B) or alkaline copper quat (ACQ) treated wood

Non-Environmentally Friendly Products

The following non-environmentally friendly products should be avoided:

- Vinyl decks, fencing, and siding
- Chromated copper arsenate (CCA) treated wood; for alternatives, see: http://www.epa.gov/oppad001/reregistration/cca/index.htm#alternatives
- Hazardous materials such as lead, asbestos, and mercury

Project Name:

Template B-1: Environmentally Preferable Site Products

For each environmentally preferable site product, list the applicable CSI division number, the product name, the manufacturer, the product cost, the percentage for each applicable environmental characteristic, and the information source. Enter total materials cost for all products used in project (Division 2-10 only).

CSI Division Number	Product Name	Manufacturer	Product Cost ($)	Recycled Content		Other Environmental Characteristic				Maximum Compliant Product Value ($)	Environ. Preferable Material Info Source
				Post-Consumer Recycled-Content (%)	Pre-Consumer Recycled-Content (%)	Salvaged/Reused (%)	PVC-Free Alternative (%)	Rapidly Renewable (%)	ACQ or CA-B Treated Wood (%)		
										$0.00	
										$0.00	
										$0.00	
										$0.00	
										$0.00	
										$0.00	
										$0.00	
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										$0.00	
										$0.00	
										$0.00	
										$0.00	
										$0.00	

Total materials cost ($)	$0.00
Total value ($) of environmentally preferable materials	$0.00
Percentage of Environmentally Preferable Materials	**0.00%**
Points achieved based on sliding scale; minimum 25% environmentally preferable site products required	
Points Documented	**0**

Appendix G Template B-2a: Wood Use, Tropical Wood

Project Name:

Template B-2a: Wood Use, Tropical Wood

For each tropical wood material (Division 2-10 only), list applicable CSI division number, product name, vendor, product cost, percentage of material that is wood, percentage of the wood component that is FSC-certified, and FSC chain-of-custody certificate number.

CSI Division Number	Product Name	Vendor	Product Cost ($)	Wood Component Percentage (%)	FSC Certified Wood Percentage of Wood Component (%)	FSC Chain-of-Custody Certificate Number from Vendor or On-Product Label

Total tropical wood component cost ($) $0.00

Total value ($) of FSC-certified tropical wood materials $0.00

Percentage of FSC-Certified Tropical Wood Materials 0.00%

To comply, the percentage of FSC-certified tropical wood materials must be 100% of the total tropical wood materials cost

Mandatory Credit Documented N/A

Appendix H Template B-2b: Wood Use, Non-Tropical Wood

Project Name:

Template B-2b: Wood Use, Non-Tropical Wood

For each non-tropical wood material (Division 2-10 only), list applicable CSI division number, product name, vendor, product cost, percentage of material that is wood, percentage of the wood component that is FSC-certified, and FSC chain-of-custody certificate number.

CSI Division Number	Product Name	Vendor	Product Cost ($)	Wood Component Percentage (%)	FSC Certified Wood Percentage of Wood Component (%)	FSC Chain-of-Custody Certificate Number from Vendor or On-Product Label

Total non-tropical wood component cost ($) $0.00

Total value ($) of FSC-certified non-tropical wood materials $0.00

Percentage of FSC-Certified Non-Tropical Wood Materials **0.00%**

To qualify, the percentage of FSC-certified non-tropical wood materials must be at least 50% of the total non-tropical wood materials cost

Points Documented **0**

Appendix I Template B-3: Regionally Provided Materials

Project Name:

Template B-3: Regionally Provided Materials

For each regionally provided material, list the applicable CSI division number, the product name, the manufacturer, the product cost, the percentage of the material that is compliant with the credit requirements, the harvest distance, the manufacture distance, and the information source. Enter total materials cost for all products used in project (Division 2-10 only).

CSI Division Number	Product Name	Manufacturer	Product Cost ($)	Percent Compliant (%)	Compliant Product Value ($)	Harvest Distance (mi)	Manufacture Distance (mi)	Harvest/ Manufacture Location Info Source
			$100.00		$0.00			
					$0.00			
					$0.00			
					$0.00			
					$0.00			
					$0.00			
					$0.00			
					$0.00			
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					$0.00			
					$0.00			
					$0.00			

Total materials cost ($)	$0.00
Total value ($) of regionally extracted and manufactured materials	$0.00
Percentage of Regional Materials	**0.00%**

To qualify, the percentage of regional materials must be at least 20% of the total materials cost and the harvest and manufacture distances must be within 500 miles

Points Documented	**0**

Appendix J Template B-5: Building Construction Waste Management

Project Name:

Template B-5: Building Construction Waste Management

Unit for quantity of waste (select one): (•) **Ton** ( ) **Cubic Yard**

For each waste material, list the gross quantity of waste generated, the quantity of waste diverted/recycled, and the name of the hauler or location of reuse.

Material Description	Quantity of Waste (ton or cu.yd.)	Quantity of Waste Diverted / Recycled (ton or cu.yd.)	Percent of Waste Diverted / Recycled (%)	Diversion / Recycling Hauler or Location
			0.00%	
			0.00%	
			0.00%	
			0.00%	
			0.00%	
			0.00%	
			0.00%	
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			0.00%	
			0.00%	
			0.00%	
			0.00%	
			0.00%	

Total quantity of waste generated (ton or cu.yd.))	0.00
Total quantity of waste diverted / recycled (ton or cu.yd.)	0.00
Percentage of Total Waste Diverted / Recycled	**0.00%**
Points achieved based on sliding scale; minimum 25% construction waste diverted/recycled	
Points Documented	0

Appendix K Template E-1: Low / No-VOC Paints and Primers

Project Name:

Template E-1: Low / No-VOC Paints and Primers

For each interior paint/primer used on the project, list the manufacturer, product name, product VOC content, allowable VOC content, and source of VOC data. Confirm that the listed products comply with the credit requirements.

Manufacturer	Product Name / Model	Product VOC Content (g/L)	Green Seal GS-11 Allowable VOC Content (g/L)	Source of VOC Data

Mandatory Credit Documented (Yes/No) **NO**

To comply, product VOC content must be equal to or less than Green Seal GS-11 allowable VOC content

Appendix L Template E-2: Low / No-VOC Adhesives and Sealants

Project Name:

Template E-2: Low / No-VOC Adhesives and Sealants

For each indoor adhesive, aerosol adhesive, sealant, and sealant primer used on the project, list the manufacturer, product name, product VOC content, allowable VOC content, and source of VOC data. Confirm that the listed products comply with the credit requirements.

Manufacturer	Product Name / Model	Product VOC Content (g/L)	Allowable VOC Content (g/L)	Source of VOC Data

Mandatory Credit Documented (Yes/No) **NO**

To comply, product VOC content must be equal to or less than allowable VOC content

Appendix M Template E-3: Formaldehyde-Free Composite Wood

Project Name:

Template E-3: Formaldehyde-Free Composite Wood

For each indoor composite wood and agrifiber product used on the project, list the manufacturer, product name, compliance method, and source of compliance statement. Confirm that the listed products comply with the credit requirements.

Manufacturer	Product Name / Model	Compliance Method (Yes / N/A)		Source of VOC Data
		No Added Urea-Formaldehyde Content	All Exposed Edges/Sides Sealed	

Mandatory Credit Documented (Yes/No) **NO**

To comply, products must contain no added urea-formaldehyde content or must be sealed at all exposed edges and sides

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