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Memorandum

Date: November 7, 2023

To: Zoning Committee of the Planning Commission (ZOCO)

From: Olivia Sontag, Columbia Pike Planning Coordinator
Department of Community Planning, Housing and Development (CPHD)

Subject: Green Building Standards within the Columbia Pike Form Based Code District

Introduction

Since its adoption in 2003, the Columbia Pike Special Revitalization District Form Based Code (CP-FBC) encourages Green Building Standards and requires submission of a rating system scorecard but does not require commitments to certifications or sustainability for redevelopment within the commercial centers of this corridor. In 2013, the County Board adopted the Columbia Pike Neighborhoods Special Revitalization District Form Based Code (CPN-FBC) to govern redevelopment within the corridor's residential areas which introduced minimum sustainability standards set at the LEED (Leadership in Energy and Environmental Design) Silver Certification level. Following the approval of two recent development applications within the CP-FBC (The Elliott and 3401 Columbia Pike), staff received feedback from the Planning Commission and County Board urging the Planning Division to address the continued lack of a minimum green building standard in the CP-FBC.

Through its analysis, staff has identified the need to incorporate minimum Green Building Standards into the CP-FBC and revisit the current CPN-FBC Green Building Standards. Proposed Zoning Ordinance amendments outlined further in this memorandum increase the minimum standards for both codes and more effectively contribute to meeting the goals of the County's Community Energy Plan and Green Building Incentive Policy (GBIP). Staff has prepared draft zoning text for the Commission's review, enclosed in Attachment 1 and anticipates the County Board will review a Request to Advertise (RTA) for this amendment in December 2023.

Background

Two Form Based Codes have been adopted in areas along the Columbia Pike corridor, each representing an optional zoning tool for properties located within one of the Special Revitalization Districts established along this corridor (See Figure 1). In 2003, the County Board adopted the Columbia Pike Special Revitalization District Form Based Code (CP-FBC) whose intent was to incentivize development and transform Columbia Pike from an auto-oriented corridor to one that resembles a walkable "Main Street". After 20 years, 17 development projects have been approved under the CP-FBC with only four delivering commitments to sustainability by voluntarily agreeing to achieve LEED or Earthcraft certifications.

In 2013, the County Board adopted the Columbia Pike Neighborhoods Special Revitalization District Form Based Code (CPN-FBC). Much like the earlier (Commercial) Code, the CPN-FBC was developed to continue Columbia Pike's transformation but with a focus on ensuring residents with a diverse range of incomes could continue to find housing options as redevelopment occurred. In addition to requiring on-site affordability, another key distinction from the earlier (Commercial) FBC involves a minimum sustainability requirement that is dependent on the site's Building Envelope Standard (BES) designation. Figure 2 summarizes the sustainability requirements between both Form Based Codes, organized by similar BES designations.

Figure 1: Columbia Pike Form Based Code Boundaries

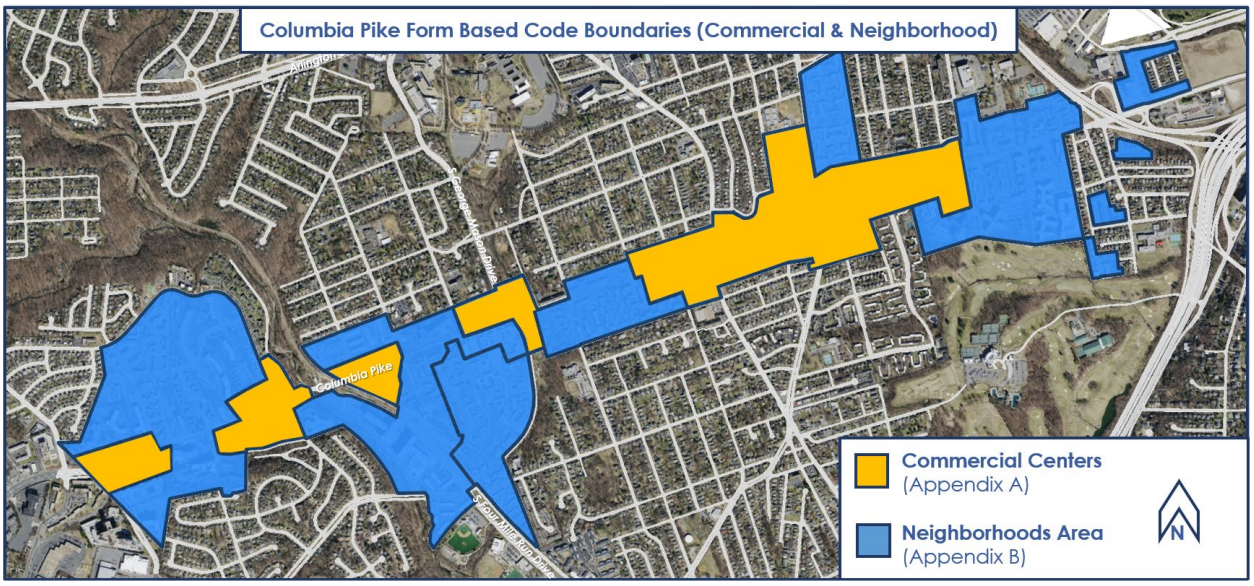

Figure 2: Existing Sustainability Requirements and Building Envelope Standards in each Form Based Code

	Building Envelope Standards (BES)	Existing FBC/N-FBC Minimum Standards
MULTI-FAMILY/ MIXED-USE	Urban Mixed Use (N-FBC) Urban Residential (N-FBC)	• LEED Silver Certification • LEED or Earthcraft Certification (or equivalent) for VHDA projects
	Main Street (FBC) Avenue (FBC)	None
TOWNHOUSE/ DUPLEX/DETACHED	Townhouse (N-FBC) Small Apartment (N-FBC) Detached (N-FBC)	• LEED or Earthcraft Certification or Equivalent Certification • Green Home Choice
	Local (FBC) Neighborhood (FBC)	None
	Major Renovations (N-FBC)	• LEED or Earthcraft Certification

On September 19, 2019, Arlington County adopted an updated Community Energy Plan (2019 CEP), which, among other objectives, includes a goal for Arlington to be a Carbon Neutral Community by 2050. The 2019 CEP reports that 58% of greenhouse gas emissions in Arlington are generated by buildings. Subsequently on December 12, 2020, the County Board amended the Green Building Incentive Policy (GBIP) which represents Arlington's primary tool used to encourage private redevelopment to reduce energy use and greenhouse gas emissions in order to help achieve Arlington's long-term carbon emission goals. This voluntary program relies on five levels of participation offered to developers as one way to earn bonus density (0.25, 0.35, 0.45, 0.55, and 0.70 FAR) in exchange for commitments to specific sustainability criteria associated with each participation level. The GBIP does not specifically apply to the Columbia Pike Form Based Code Districts which are prescriptive and form of development driven, typically relying on minimum standards that all projects must meet. While both Form Based Codes represent optional zoning tools that may provide greater density compared to what is possible with the underlying zoning, unlike the GBIP, the Codes do not specifically guide development by density or offer opportunities where additional density can be negotiated or earned.

Discussion

Staff Analysis & Outreach

Since March 2023, Community Planning, Housing and Development (CPHD) Planning Division staff have met regularly with DES Green Building Program staff to study past LEED/Earthcraft certification achievements for Form Based Code development projects, research current industry certification options, and understand the goals of the County's Community Energy Plan and Green Building Incentive Policy (GBIP). Staff in CPHD Current Planning, CPHD Housing, and Inspection Services Division (ISD) were also consulted to understand the current County-wide challenges and opportunities related to Green Building Standards. To investigate this further, staff also spoke with industry professionals and consulted with adjacent jurisdictions, including Cunningham Quill Architects, the KGD Architecture Sustainability Expert, Fairfax County planners, and the City of Alexandria Green Building Manager. The key findings from staff research and outreach are outlined below:

General:

- County tools such as the GBIP have been revisited periodically to continue to adapt, strengthen, and better incentivize the County's green building program. The CP-FBC has been utilized for 20 years without any Green Building Standards while the CPN-FBC has been in effect for ten years with minimum sustainability standards set at the LEED/Earthcraft Silver Certification level.
- It is important to offer a variety of certification pathways to accommodate a range of development typologies available through the Form Based Code Use Permit process. This also allows applicants flexibility to consider cost, timeline, assistance from consultants, and green building priorities for each site. There are several certification pathways appropriate for development along Columbia Pike which should reinforce the availability of options, as long as they help meet County's sustainability priorities.
- The LEED Building Design and Construction rating system is used for commercial construction (e.g., office, hotel, university, multi-family exceeding 20 stories). Multifamily developments less than 20 stories choose between the LEED Multifamily (Version 4.1), LEED for Homes Midrise (Version 4), or Earthcraft Multifamily rating systems.
- Performance and outcome-based standards continue to prove an effective tool for achieving meaningful sustainability in green building design. More jurisdictions are shifting their focus

towards performance and outcome-based standards, prioritizing energy optimization and benchmarking.

- Energy Star Certification or utility data verifying the project meets the approved energy model's predicted energy use are great ways to demonstrate post-occupancy building performance.
- The International Building Code (IBC) does not require or heavily influence green building standards, but the IBC continues to adapt as green building technologies expand.
- The Green Homes Choice certification pathway is currently on hold with no information regarding when it may become available again.

Columbia Pike Development Projects:

- Though not located along a Metro corridor, development projects on and nearby Columbia Pike consistently score well in the Location and Transportation categories which account for a significant contribution to the overall points total needed for certification.
- Form Based Code development projects also have minimum open contiguous lot area requirements (OCLA) ranging between 15-25%, depending on the BES designation, which accommodate private open space for the tenants of new buildings. This requirement also supports the potential to earn points in categories related to a building's development footprint, open space, and rainwater management.

Affordable Housing Development Projects:

- Development projects earning Virginia Housing Development Authority (VHDA) affordable housing tax credits often pursue green building certification to earn the required credits, a strategy which requires a minimum of LEED Gold or Earthcraft Gold. Two recent projects in the CPN-FBC (Arlington View Terrace East and West) are both targeting Earthcraft Gold to meet the VHDA credit requirement and exceeds the current CPN-FBC minimum requirement of LEED Certification or Earthcraft Certification. Gilliam Place, an earlier development approved under the Commercial FBC which also pursued VHDA tax credits, achieved Earthcraft Platinum certification.
- Development projects earning VHDA affordable housing tax credits often decide to pursue the Earthcraft Gold certification path over LEED Gold, regardless of the minimum requirements applicable for their proposal and site location.

LEED (Leadership in Energy and Environmental Design):

- Without additional prerequisites, LEED Silver certification as the minimum standard no longer yields buildings that support Arlington's Community Energy Plan goals. In some cases, LEED Silver certification is proposed by applicants even without regulatory requirements or incentives.
- DES anticipates the LEED Version 5 beta version will be released soon, however the timeline for implementation is uncertain. Until more information is available, this subject amendment, any associated use permit condition language, and the Zoning Administrator approval letter for Form Based Code administrative approvals will continue to reference LEED Version 4 and 4.1.

- The 10-point gap between LEED Silver and LEED Gold is manageable to achieve if targeted early in the design process.
- The LEED certification process can be expensive and lengthy when compared to Earthcraft.

Earthcraft:

- Earthcraft Gold is a comparable certification pathway to LEED Gold. These two certification pathways are currently offered in the GBIP.
- Development projects earning Virginia Housing Development Authority (VHDA) affordable housing tax credits often prefer the Earthcraft certification path over LEED.
- Earthcraft requires a Technical Advisor, which is assigned early in the process, and places greater emphasis on performance than LEED.
- The overhead cost for Earthcraft is generally considered to be lower than LEED.

In addition to considering this feedback from County staff and other stakeholders, staff also reviewed past Form Based Code development projects. Following 20 years of implementation, 17 development proposals have been approved under the CP-FBC with four delivering commitments to sustainability by voluntarily agreeing to achieve LEED or Earthcraft certification. Of the six development projects approved under the CPN-FBC, all are targeting certification pathways which include LEED, Earthcraft, and National Green Building Standard (NGBS). The development projects are outlined in Figure 3 and are in various stages of completion.

Figure 3: Form Based Code Development Projects Green Building Certifications

Project	Green Building Certification	Year Approved	Status
CP-FBC (Voluntary)			
Pike 3400	LEED Certification	2012	Completed
Gilliam Place (APAH)	Earthcraft Platinum	2015	Completed
Elliott (Fillmore Gardens)	LEED Silver	2022	Not Built
3401 Columbia Pike (Bank of America)	LEED Certified	2023	Not Built
CPN-FBC (Required)			
Carver Place	LEED Silver	2015	Completed
Columbia Hills	LEED Silver	2015	Completed
Trove (Wellington)	LEED Silver	2016	Completed
Pike West (Greenbrier Apartments)	LEED Silver	2020	Not Built
Arlington View Terrace East (AHC)	Earthcraft Gold	2020	Completed
Barcroft Renovations (Section 3)	NGBS Silver	2023	Under Construction

Consistency with Adopted Comprehensive Plan Policy
The proposed amendment furthers the following goals outlined in the 2019 CEP:

- Goal 1 (G1): Increase the energy and operational efficiency of all buildings
- Goal 2 (G2): Ensure Arlington's energy resilience
- Goal 3 (G3): Increase Arlington's renewable energy resources

In addition to exploring updated rating systems, staff also considered additional prerequisites used in the GBIP to further strengthen the commitment to sustainability and address the goals of the 2019 CEP. The additional prerequisites under consideration include:

- ENERGY STAR Appliances and Fixtures: ENERGY STAR labels are required for all clothes washers, dryers, refrigerators, dishwashers, and at least 90% LED or ENERGY STAR labeled light fixtures installed in residential and hotel units.
- WaterSense Plumbing Fixtures: WaterSense labels are required for all toilets, bathroom faucets, and showerheads installed in residential and hotel units.
- Refrigerant Leakage: Refrigerants are a potent greenhouse gas emission. This provision requires the team to have a third-party consultant oversee the on-site refrigerant charging process for any building systems to reduce refrigerant leakage.
- Equity, Diversity, and Inclusion Program: In keeping with the County Board's Equity Resolution adopted on September 21, 2019, staff included a provision to support racial equity, diversity, and inclusion policies and programs within the firms on the development team. This provision was modeled after similar criteria developed by Arlington's Department of Human Services and also used in CPHD's NOFA Guidelines.
- Energy Benchmarking: Energy models are predictive and guide the design and construction of the building. However, they do not ensure that the building will operate to the specified level of energy efficiency. All building types must comply with post occupancy energy performance standards either through Energy Star certification or by demonstrating with utility data that the project meets the LEED approved energy model's predicted energy use.
- Air Sealing of Ventilation Supply and Exhaust: To ensure fresh air is delivered as intended to all occupied spaced in the building, all supply and exhaust ventilation ductwork must meet enhanced sealing and performance test requirements.
- Electric Vehicle Charging Infrastructure: All projects will include electric vehicle charging stations and electric vehicle "ready" infrastructure to support anticipated future demand for electric vehicle charging.
- Human Interaction with Nature (Biophilia): To address how buildings interact with nature, applicants must submit a narrative describing how the project optimizes energy efficiency and environmental conservation in the community, the project must minimize bird strikes by meeting specific criteria outlined by the American Bird Conservancy, and the project must meet minimum light pollution reduction criteria for exterior light fixtures to safely reduce light pollution.
- Bird-friendly Materials: A bird friendly material is defined as a building material or assembly that has or has been treated to have a maximum threat factor of 30 in accordance with the American Bird Conservancy Bird Collision Deterrence Material Threat Factor Reference Standard, or with the American Bird Conservancy Bird-friendly Materials Evaluation Program at Carnegie Museum's Avian Research Center test protocol, or with a relevant ASTM standard.
- Renewable Energy: Applicants must install on-site solar generation (or other acceptable forms of renewable energy) equal to at least 2.0 watts per square foot of roof area. For most buildings this would result in about 15-20% of the roof area being covered by solar panels. An off-site renewable purchase option is available. For buildings without sufficient solar exposure due to unavoidable shading, a contribution to the Green Building Fund ($4/ square foot or roof area) is

permitted. This update supports Arlington's Community Energy Plan goal to increase Arlington's renewable energy resources with the installation and use of 160 megawatts (MW) of on-site solar electricity.

- Light Pollution Reduction: At least 90% of exterior fixtures, excluding streetlights required by the County, shall meet the Dark Sky-approved "Friendly Fixture" certification specifications and have motion sensor controls, integrative photovoltaic cells, photosensors or astronomic time-clock operation.

Recommended Changes

Through this analysis, staff found that modest levels of certification such as LEED Silver or Earthcraft are frequently considered by developers even in instances where such commitments are not required. Various stakeholders continue to indicate that the LEED Silver and Earthcraft certification have become much easier to achieve, regardless of overall density, height, or construction method. Considering that the commercial areas of the Columbia Pike corridor have never had a minimum sustainability requirement, and their locational credits alone can achieve a significant portion of their overall score, it seems feasible and appropriate to introduce a minimum standard of LEED/Earthcraft Gold certification at this time. Similarly, the N-FBC minimum standards have not been revisited for ten years and are equally informed by staff's analysis and research. The work completed to date suggests both Codes can benefit from a consistent Green Building Design standard which will ensure these zoning tools could more effectively contribute to meeting the goals of the County's Community Energy Plan and Green Building Incentive Policy (GBIP).

The proposed amendment also distinguishes townhomes and detached forms of residential development from the more typical multi-family/mixed-use projects and aims to strike a balance with lowering the commitments for the smaller scaled projects. Beyond those commitments, future redevelopment along Columbia Pike should also prioritize other elements that help meet the County's GBIP which are captured in the associated lists of energy optimization and other prerequisites. Moving forward, the proposed amendment will achieve a major equity objective by ensuring Columbia Pike can benefit from sustainable development opportunities that already exist elsewhere in the County.

Staff has alerted the applicants for two preliminary Commercial FBC development applications currently under review (1101 S. Glebe Road and 2801 Columbia Pike) of these potential zoning amendments and made them aware they may be required to meet new requirements if these are adopted prior to the final application filing for their respective projects. The proposed updates to the FBC and N-FBC Green Building Standards are outlined in Figure 4. Enforcement of these standards will be enabled through an update to the standard Form Based Code use permit conditions of approval and the Zoning Administrator's Approval Letter which is utilized in instances of administrative applications.

Figure 4: Proposed Sustainability Requirements in each Form Based Code

	Building Envelope Standards (BES)	Existing FBC/N-FBC Minimum Standards	Proposed FBC/N-FBC Minimum Standards
MULTI-FAMILY/ MIXED-USE	Urban Mixed Use (N-FBC) Urban Residential (N-FBC)	• LEED Silver Certification • LEED or Earthcraft Certification (or equivalent) for VHDA projects	• LEED Gold or Earthcraft Gold or Equivalent Certification* • Energy Optimization • Additional Prerequisites
	Main Street (FBC) Avenue (FBC)	None	
TOWNHOUSE/ DUPLEX/DETACHED	Townhouse (N-FBC) Small Apartment (N-FBC) Detached (N-FBC)	• LEED or Earthcraft Certification or Equivalent Certification • Green Home Choice	• LEED or Earthcraft Certification or Equivalent Certification* • Energy Star Certification
	Local (FBC) Neighborhood (FBC)	None	
	Major Renovations (N-FBC)	• LEED or Earthcraft Certification	

Next Steps and Timeline

Following discussion at the ZOCO meeting, staff intends to bring the request to authorize the advertisement of the proposed Zoning Ordinance amendment to the County Board at its December 2023 meeting. It is anticipated the Planning Commission and County Board would subsequently consider the proposed amendment at their respective meetings in February 2024.

Study Schedule	
March 2023	Kick-Off Meeting with Project Team
April – August 2023	Stakeholder interviews with industry professionals, adjacent jurisdictions, and County staff
August – November 2023	Staff research and draft amendment development, with review by CPHD leadership
October 11, 2023	Presentation to NAIOP on study's scope, goals, and draft recommendations
November 7, 2023	Presentation to ZOCO on study's scope, goals, and draft recommendations
November 15, 2023	Presentation to Form Based Code Advisory Working Group (FBC AWG) on study's scope, goals, and draft recommendations
December 18, 2023	Presentation to Climate Change, Energy and Environment Commission (C2E2) on study's scope, goals, and draft recommendations
December 16/19, 2023	**County Board** to authorize Request to Advertise
February 2024	**Planning Commission** recommendation of draft text
February 2024	**County Board** adoption of study recommendations

Attachments

- Attachment 1:
    - Recommended text changes to Appendix A Columbia Pike Special Revitalization District Form Based Code (CP-FBC)
    - Recommended text changes to Appendix B Columbia Pike Neighborhoods Special Revitalization District Form Based Code (CPN-FBC)
    - Where paragraphs have been inserted or deleted, all subsequent paragraphs will be renumbered accordingly; and all references throughout the FBC will be updated accordingly.

- Attachment 2: Recommended Attachment 803 outlining the additional prerequisites to Appendix A Columbia Pike Special Revitalization District Form Based Code (CP-FBC)

- Attachment 3: Recommended Attachment C outlining the additional prerequisites to Appendix B Columbia Pike Neighborhoods Special Revitalization District Form Based Code (CPN-FBC)

Attachment 1

Appendix A Columbia Pike Special Revitalization District Form Based Code (CP-FBC)

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403. Green Building Standards

A. All Main Street and Avenue BES SITES shall achieve a minimum of LEED (Leadership in Energy and Environmental Design) Gold Certification, Earthcraft Gold Certification, or an equivalent in stringency green building certification. In addition to achieving one of the above certification levels, DEVELOPMENT PROJECTS shall also achieve at least one of the Energy Optimization metrics and all of the Additional Prerequisites listed in Table 4.1 and further outlined in Attachment 805.

B. All Local and Neighborhood BES SITES shall achieve a minimum of LEED Certification, Earthcraft Certification, or equivalent in stringency green building certification. In addition to achieving one of the above certification levels, the DEVELOPMENT PROJECT shall also achieve Energy Star Certification.

C. All proposals that include major* renovation of existing buildings designated as either HISTORIC STRUCTURES or HISTORIC FACADES, or in other existing buildings proposed to remain, shall achieve a minimum of LEED Certification, Earthcraft Certification, or an equivalent in stringency green building certification. In addition to achieving one of the above certification levels, the DEVELOPMENT PROJECT shall also achieve Energy Star Certification. (Note: *Major renovation as defined by Earthcraft to determine eligibility for certification).

Table 4.1 Green Building Standards: Energy Optimization and Additional Prerequisites

Energy Optimization (Choose 1):
At least 14% performance improvement for LEED version 4.1 EA credit Optimize Energy Performance
At least 24% performance improvement for LEED version 4 EA credit Optimize Energy Performance/Annual Energy Use
HERS index of 60 or lower if pursuing LEED version 4.1 Multifamily EA credit Optimize Energy Performance Option 3 HERS index rating
HERS index of 60 or lower if pursuing Earthcraft Multifamily certification
Additional Prerequisites (Achieve All):
ENERGY STAR Appliances and Fixtures
WaterSense Plumbing Fixtures
Refrigerant Leakage
Equity, Diversity, and Inclusion Program
Energy Benchmarking
Air Sealing of Ventilation Supply and Exhaust
Electric Vehicle Charging Infrastructure
Human Interaction with Nature (Biophilia)
Bird-friendly Materials
Renewable Energy
Light Pollution Reduction

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403. Green Building Standards

A. All Urban Mixed Use and Urban Residential BES SITES shall achieve a minimum of LEED (Leadership in Energy and Environmental Design) ~~Silver~~ Gold Certification, Earthcraft Gold Certification, or an equivalent in stringency green building certification ~~except as allowed below~~. In addition to achieving one of the above certification levels, the DEVELOPMENT PROJECT shall also achieve at least one of the Energy Optimization metrics and all of the Additional Prerequisites listed in Table 4.1 and further outlined in Attachment E.

B. All Small Apartment, Townhouse, and Detached BES SITES~~, and for DEVELOPMENT PROJECTS earning Virginia Housing Development Authority (VHDA) affordable housing tax credits,~~ shall achieve a minimum of LEED Certification, Earthcraft ~~c~~Certification ~~(with the Energy Star certification compliance path)~~, or equivalent in stringency green building certification. ~~Green Home Choice is permitted for Detached and Townhouse BES SITES.~~ In addition to achieving one of the above certification levels, the DEVELOPMENT PROJECT shall also achieve Energy Star Certification.

C. All proposals that include major* renovation of existing units in either CONSERVATION AREAS as shown on the REGULATING PLAN, or in other existing buildings proposed to remain, shall achieve a minimum of ~~Earthcraft certification or~~ LEED ~~c~~Certification, Earthcraft Certification, or an equivalent in stringency green building certification. In addition to achieving one of the above certification levels, the DEVELOPMENT PROJECT shall also achieve Energy Star Certification. (Note: *Major renovation as defined by Earthcraft to determine eligibility for certification).

Table 4.1 Green Building Standards: Energy Optimization and Additional Prerequisites

Energy Optimization (Choose 1):
At least 14% performance improvement for LEED version 4.1 EA credit Optimize Energy Performance
At least 24% performance improvement for LEED version 4 EA credit Optimize Energy Performance/Annual Energy Use
HERS index of 60 or lower if pursuing LEED version 4.1 Multifamily EA credit Optimize Energy Performance Option 3 HERS index rating
HERS index of 60 or lower if pursuing Earthcraft Multifamily certification
Additional Prerequisites (Achieve All):
ENERGY STAR Appliances and Fixtures
WaterSense Plumbing Fixtures
Refrigerant Leakage
Equity, Diversity, and Inclusion Program
Energy Benchmarking
Air Sealing of Ventilation Supply and Exhaust
Electric Vehicle Charging Infrastructure
Human Interaction with Nature (Biophilia)
Bird-friendly Materials
Renewable Energy
Light Pollution Reduction

Attachment 2

Attachment 803: Additional Prerequisites (CP-FBC)

ENERGY STAR Appliances and Fixtures

ENERGY STAR label for all clothes washers, dryers, refrigerators, dishwashers, and at least 90% LED or ENERGY STAR labeled light fixtures installed in residential and hotel units.

WaterSense Plumbing Fixtures

WaterSense label for all toilets, bathroom faucets, and showerheads installed in residential and hotel units.

Refrigerant Leakage

In addition to the energy code requirements for commissioning activities, the Commissioning Agent shall oversee the on-site refrigerant charging process and verify the following:

- Collect as-built refrigerant piping line length calculations (as-designed lengths will not be accepted)
- Collect and review the detailed refrigerant pipe pressure and vacuum testing reports that have been based on the as-built calculations for completeness and accuracy
- Collect the charge confirmation documentation

Equity, Diversity, and Inclusion Program

At least one member of the development team shall be employed by an organization with a racial and ethnic diversity, equity, and inclusion program within its management operations. Specifically, the firm's program shall include:

- Staff training plan that reflects the firm's understanding of structural racism and its intersection with the building industry.
- Professional development opportunities and data-driven policies used to identify and invest in staff diversity among leadership levels.
- Strategies in place to ensure racial and ethnic inclusion at all levels of the organization, including the Board of Directors level.

Document compliance with a written description of how the firm implements and institutionalizes diversity through policy, management philosophy, and training. Describe how the firm, on a day-to-day basis, fosters a work environment that is inclusive and conducive to diverse staff. Include copies of personnel and other relevant policies, training provided to staff, description of the general management philosophy as it relates to diversity.

Energy Benchmarking

Permanently install energy meters or monitoring devices and software service capable of tracking and remote download of at least monthly electric and gas consumption for the entire building. Utility billing data may be used as an alternative if the owner receives energy utility bills for all energy uses in the building directly from the utility. After occupancy, provide utility reporting data through Energy Star Portfolio Manager each year for 10 years.

Air Sealing of Ventilation Supply and Exhaust

To ensure fresh air is delivered as intended to all occupied spaces in the building, seal all central vertical and horizontal supply ductwork with aerosolized duct sealant. All code requirements for joints, sealants, and connections must be met. For commercial and multifamily buildings, meet the criteria for central ventilation exhaust testing and performance as required by Energy Star Multifamily High-Rise certification.

Electric Vehicle Charging Infrastructure

Exceed the criteria that would earn the project points for LEED version 4.1 credit Electric Vehicles option 1- Electric Vehicle Charging and option 2 - Electric Vehicle Charging Infrastructure, with electric vehicle charging stations for at least 4% of parking spaces and electric vehicle infrastructure for at least 15% of parking spaces.

Human Interaction with Nature (Biophilia)

Provide a narrative describing how the project enhances existing and/or creates new natural spaces for occupants and the public to interact with nature and creates habitat for people, plants and wildlife. Components to be evaluated include (but are not limited to):

- Enhance connections between humans and nature at the ground level and as part of the building
    - Provide opportunities to interact with nature at the ground level
    - Provide opportunities to interact with nature as part of the building (indoor gardens, green walls, atria, balconies, roof amenity space, etc.)
    - Enhance views of nature and green spaces
    - Provide access to water, where possible
    - Provide views of the sky
    - Create access to nature sounds
    - Create linkages to existing natural resources and adjoining open space (physical or visual connections)
- Create or expand natural habitats
    - Plant native trees and plants (including pollinator gardens, butterfly gardens, bird nesting areas, meadows, etc.)
    - Show that the Project meets or exceeds tree canopy requirements stipulated in the applicable sector plan
- Use natural forms and materials in design and construction
- Provide energy and environmental conservation co-benefits
    - Renewable energy (solar) access
    - Shading of outdoor space
    - Mitigate heat island o Reduced stormwater runoff (minimize impervious area)
    - Minimized air quality impacts (indoor – low VOC materials, minimize natural gas combustion; and outdoor – bike parking, EV charging)

Bird-friendly Materials

A bird friendly material is defined as a building material or assembly that has, or has been treated to have a maximum threat factor of 30 in accordance with the American Bird Conservancy Bird Collision Deterrence Material Threat Factor Reference Standard, or with the American Bird Conservancy Bird-friendly Materials Evaluation Program at Carnegie Museum's Avian Research Center test protocol, or with a relevant ASTM standard.

The exterior wall envelope, and any associated openings, shall be constructed with bird friendly materials between 8 feet and 36 feet above grade. Alternatively, the exterior wall envelope between 8 feet and 36 feet above grade, and any associated openings, shall on a weighted average be constructed to achieve a maximum total building Bird Collision Threat Rating (BCTR) of 15 or less according to the methodology of LEED credit Bird Collision Deterrence. Materials other than bird friendly materials shall not exceed an aggregate of 10 square feet within any 10 feet by 10 feet square area of exterior wall between 8 and 36 feet above grade.

Renewable Energy

i. Provide on-site solar generation (or other acceptable forms of renewable energy) equal to at least 2.0 watts per square foot of the roof area (including mechanical area) -or-

ii. ii. Co-locate an integrated vegetated roof and solar whereby vegetated roof meets Virginia DEQ BMP standards and is equal to at least 12% of the roof area (including mechanical area) -and- on-site solar generation (or other acceptable forms of renewable energy) is equal to at least 1.5 watts per square foot of the roof area (including mechanical area) -or-

iii. iii. Procure off-site solar ((or other acceptable forms of renewable energy) to meet the criteria that would earn the project at least one point for renewable energy procurement of Tier 2 renewable energy as outlined in LEED version 4.1 Energy and Atmosphere credit Renewable Energy.

iv. iv. Alternative Compliance Path for Developments without sufficient solar exposure - Developments without sufficient solar exposure due to shading by surrounding development shall contribute to the Green Building Fund in the amount of $4/s.f. roof area (including mechanical equipment). Insufficient solar exposure is defined as having a Total Solar Resource Fraction (TSRF) or equivalent solar industry metric of less than 80% for square footage of roof area needed to accommodate the minimum required solar PV array. A request to qualify for the alternative compliance path must include a report prepared by a qualified solar professional that documents insufficient TSRF.

Light Pollution Reduction

At least 90% of exterior fixtures, excluding streetlights required by the County, shall meet the following specifications and have motion sensor controls, integrative photovoltaic cells, photosensors or astronomic time-clock operation. Note, Dark Sky-approved "Friendly Fixture" certification automatically meets the following specifications.

- Luminaires shall be fully shielded emitting no light above 90 degrees (with the exclusion of incidental light reflecting from fixture housing, mounts, and pole). The luminaire's mounting hardware shall not permit mounting in any configuration other than those maintaining full shielding.

- Fixture shall have no sag or drop lenses, side light panels, up-light panels.
- Fixture shall employ warm-toned (3000K and lower) white light sources or may employ amber light sources or filtered LED light sources. Note: Exterior emergency lighting and lighting required by code for health and safety purposes are exempt shall be permitted to be exempted.

Attachment 3

Attachment C: Additional Prerequisites (CPN-FBC)

ENERGY STAR Appliances and Fixtures

ENERGY STAR label for all clothes washers, dryers, refrigerators, dishwashers, and at least 90% LED or ENERGY STAR labeled light fixtures installed in residential and hotel units.

WaterSense Plumbing Fixtures

WaterSense label for all toilets, bathroom faucets, and showerheads installed in residential and hotel units.

Refrigerant Leakage

In addition to the energy code requirements for commissioning activities, the Commissioning Agent shall oversee the on-site refrigerant charging process and verify the following:

- Collect as-built refrigerant piping line length calculations (as-designed lengths will not be accepted)
- Collect and review the detailed refrigerant pipe pressure and vacuum testing reports that have been based on the as-built calculations for completeness and accuracy
- Collect the charge confirmation documentation

Equity, Diversity, and Inclusion Program

At least one member of the development team shall be employed by an organization with a racial and ethnic diversity, equity, and inclusion program within its management operations. Specifically, the firm's program shall include:

- Staff training plan that reflects the firm's understanding of structural racism and its intersection with the building industry.
- Professional development opportunities and data-driven policies used to identify and invest in staff diversity among leadership levels.
- Strategies in place to ensure racial and ethnic inclusion at all levels of the organization, including the Board of Directors level.

Document compliance with a written description of how the firm implements and institutionalizes diversity through policy, management philosophy, and training. Describe how the firm, on a day-to-day basis, fosters a work environment that is inclusive and conducive to diverse staff. Include copies of personnel and other relevant policies, training provided to staff, description of the general management philosophy as it relates to diversity.

Energy Benchmarking

Permanently install energy meters or monitoring devices and software service capable of tracking and remote download of at least monthly electric and gas consumption for the entire building. Utility billing data may be used as an alternative if the owner receives energy utility bills for all energy uses in the building directly from the utility. After occupancy, provide utility reporting data through Energy Star Portfolio Manager each year for 10 years.

Air Sealing of Ventilation Supply and Exhaust

To ensure fresh air is delivered as intended to all occupied spaces in the building, seal all central vertical and horizontal supply ductwork with aerosolized duct sealant. All code requirements for joints, sealants, and connections must be met. For commercial and multifamily buildings, meet the criteria for central ventilation exhaust testing and performance as required by Energy Star Multifamily High-Rise certification.

Electric Vehicle Charging Infrastructure

Exceed the criteria that would earn the project points for LEED version 4.1 credit Electric Vehicles option 1- Electric Vehicle Charging and option 2 - Electric Vehicle Charging Infrastructure, with electric vehicle charging stations for at least 4% of parking spaces and electric vehicle infrastructure for at least 15% of parking spaces.

Human Interaction with Nature (Biophilia)

Provide a narrative describing how the project enhances existing and/or creates new natural spaces for occupants and the public to interact with nature and creates habitat for people, plants and wildlife. Components to be evaluated include (but are not limited to):

- Enhance connections between humans and nature at the ground level and as part of the building
    - Provide opportunities to interact with nature at the ground level
    - Provide opportunities to interact with nature as part of the building (indoor gardens, green walls, atria, balconies, roof amenity space, etc.)
    - Enhance views of nature and green spaces
    - Provide access to water, where possible
    - Provide views of the sky
    - Create access to nature sounds
    - Create linkages to existing natural resources and adjoining open space (physical or visual connections)
- Create or expand natural habitats
    - Plant native trees and plants (including pollinator gardens, butterfly gardens, bird nesting areas, meadows, etc.)
    - Show that the Project meets or exceeds tree canopy requirements stipulated in the applicable sector plan
- Use natural forms and materials in design and construction
- Provide energy and environmental conservation co-benefits
    - Renewable energy (solar) access
    - Shading of outdoor space
    - Mitigate heat island o Reduced stormwater runoff (minimize impervious area)
    - Minimized air quality impacts (indoor – low VOC materials, minimize natural gas combustion; and outdoor – bike parking, EV charging)

Bird-friendly Materials

A bird friendly material is defined as a building material or assembly that has, or has been treated to have a maximum threat factor of 30 in accordance with the American Bird Conservancy Bird Collision Deterrence Material Threat Factor Reference Standard, or with the American Bird Conservancy Bird-friendly Materials Evaluation Program at Carnegie Museum's Avian Research Center test protocol, or with a relevant ASTM standard.

The exterior wall envelope, and any associated openings, shall be constructed with bird friendly materials between 8 feet and 36 feet above grade. Alternatively, the exterior wall envelope between 8 feet and 36 feet above grade, and any associated openings, shall on a weighted average be constructed to achieve a maximum total building Bird Collision Threat Rating (BCTR) of 15 or less according to the methodology of LEED credit Bird Collision Deterrence. Materials other than bird friendly materials shall not exceed an aggregate of 10 square feet within any 10 feet by 10 feet square area of exterior wall between 8 and 36 feet above grade.

Renewable Energy

i. Provide on-site solar generation (or other acceptable forms of renewable energy) equal to at least 2.0 watts per square foot of the roof area (including mechanical area) -or-

ii. ii. Co-locate an integrated vegetated roof and solar whereby vegetated roof meets Virginia DEQ BMP standards and is equal to at least 12% of the roof area (including mechanical area) -and- on-site solar generation (or other acceptable forms of renewable energy) is equal to at least 1.5 watts per square foot of the roof area (including mechanical area) -or-

iii. iii. Procure off-site solar ((or other acceptable forms of renewable energy) to meet the criteria that would earn the project at least one point for renewable energy procurement of Tier 2 renewable energy as outlined in LEED version 4.1 Energy and Atmosphere credit Renewable Energy.

iv. iv. Alternative Compliance Path for Developments without sufficient solar exposure - Developments without sufficient solar exposure due to shading by surrounding development shall contribute to the Green Building Fund in the amount of $4/s.f. roof area (including mechanical equipment). Insufficient solar exposure is defined as having a Total Solar Resource Fraction (TSRF) or equivalent solar industry metric of less than 80% for square footage of roof area needed to accommodate the minimum required solar PV array. A request to qualify for the alternative compliance path must include a report prepared by a qualified solar professional that documents insufficient TSRF.

Light Pollution Reduction

At least 90% of exterior fixtures, excluding streetlights required by the County, shall meet the following specifications and have motion sensor controls, integrative photovoltaic cells, photosensors or astronomic time-clock operation. Note, Dark Sky-approved "Friendly Fixture" certification automatically meets the following specifications.

- Luminaires shall be fully shielded emitting no light above 90 degrees (with the exclusion of incidental light reflecting from fixture housing, mounts, and pole). The luminaire's mounting hardware shall not permit mounting in any configuration other than those maintaining full shielding.

- Fixture shall have no sag or drop lenses, side light panels, up-light panels.
- Fixture shall employ warm-toned (3000K and lower) white light sources or may employ amber light sources or filtered LED light sources. Note: Exterior emergency lighting and lighting required by code for health and safety purposes are exempt shall be permitted to be exempted.