

DELAWARE STATE HOUSING AUTHORITY
ENERGY CONSERVATION MEASURES

Certification should only be completed and included in Exhibit #32 if attempting to achieve points in the Energy Conservation Measures point category.

The undersigned applicant hereby makes application to the Delaware State Housing Authority's (DSHA) Low Income Housing Tax Credit program for tax credits and/or a loan pursuant to one or more of the DSHA's housing development funding programs and certifies that

_____ (DEVELOPMENT NAME) will utilize the energy conservation measures as outlined below.

A. Comprehensive Green Certifications (please check the applicable program):

NOTE: This section corresponds with the Base THREE Point category for scoring purposes.

As the design architect, I hereby certify that I have either designed or will design the referenced development to include one of the following energy conservation measures and will meet the associated Requirements for Comprehensive Green Certifications:

Enterprise Green Communities 2020 certification, with the additional requirement that the 7.7 Ventilation criteria, which is mandatory for new construction and substantial rehabilitation/new creation, must be selected as one of the additional criteria for moderate rehabilitation projects;

National Green Building Standards 2020 certification, with the additional requirement that the following optional Green Building Practices must be included among the selected practices to achieve the required points:

- **Installation & Performance Verification** 705.62 for all projects
- **Building Ventilation Systems** 902.2 for New Construction and 11.902.2 for Remodeling

LEED for Homes Multifamily or Midrise Multifamily certification, Version 4, which requires a HERS index rating based on Energy Star Version 4.

Requirements for Comprehensive Green Certifications:

For New Construction projects, Applicant and Development project teams shall hire HERS Raters who provide the necessary energy modeling, field testing, and verification to achieve ENERGY STAR certification. This should be done as early as possible in the design process to inform initial project plans and equipment selection. This engagement helps to achieve compliance with ENERGY STAR and improve the overall performance of the property.

For moderate, substantial, or gut-rehab projects, ENERGY STAR certification may not be possible. Instead, these projects may require HERS Index scores. Applicant and Development project teams shall hire HERS Raters who provide the necessary energy modeling, field testing, and verification to achieve HERS Index scores. This should be done as early as possible in the design process, to inform initial project plans and equipment selection. The project architect should define the level of alteration or extent of rehab for their project.

As the design architect, I hereby certify that the architectural documents submitted with the application meet these requirements for Comprehensive Green certifications, and that I understand the additional requirements that will apply if the project is approved. The following must be submitted at the following times:

At application:

- A preliminary checklist and narrative for how the Enterprise Green Communities, NGBS, or LEED certifications and advanced energy efficiency measures will be achieved.
- For any of the above certification paths selected, a design stage HERS rating should be determined and submitted with the application. The applicant must provide a HERS rating for each unit type (one-bedroom, two-bedroom, etc.) in the form of a projected HERS certificate (generated by Ekotrope) or a batch summary report (generated by REMRate). The ratings submitted should be for the unit expected to result in the highest HERS rating for that unit type. For each HERS rating provided, the applicant must provide the “Building Summary Report” generated by either REMRate or Ekotrope and the “2018 IECC Building UA Compliance” report (if using REMRate) or the “IECC 2018 Building UA Compliance” report (if using Ekotrope). These preliminary models and reports must correspond to the R and U values of all exterior assemblies and the mechanical systems efficiencies detailed in the design plans submitted to DSHA.

At carryover/or sixty (60) days prior to construction closing:

- The Applicant and Development team will be required to provide evidence of an integrated design process (a required element for certification through Enterprise Green Communities and LEED) through which the project developer, architect, engineer, general contractor, and energy consultant (ie: HERS Rater) discuss the project’s energy performance goals, strategies, and design options. Review of drawings is certainly useful. The Applicant shall provide minutes of a project kick-off meeting which reflects participation of the critical parties and records the discussion and decisions. It is critical that design and construction teams provide regularly updated, written construction schedules to maintain effective and efficient project oversight and inspections.
- Applicant and Developments project teams shall hire HERS Raters, who provide the necessary energy modeling, field testing, and verification to achieve ENERGY STAR certification, as early as possible in the design process to inform initial project plans and equipment selection. This

engagement helps to achieve compliance with ENERGY STAR and improve the overall performance of the property.

- HERS Raters should be expected to conduct reviews of project plans and specifications and to provide written comments to the project design team. This practice helps ensure fidelity of energy models to the project design and provides a basis for discussion among the parties regarding options to improve energy performance and to address any anticipated challenges through construction.
- Architects and development teams should consider referencing the ENERGY STAR requirements or inclusion of the Checklists on construction drawings when soliciting bids to ensure contractors understand that they will need to comply with program requirements.
- HERS Raters should be included in construction kick-off meetings and be expected to discuss the process and protocols to achieve the planned certification, such as the testing and inspections, apartment sampling, review of submittals, and the certification process.
- Similarly, HERS Raters should be expected to partner with the project team to coordinate an onsite meeting with the site superintendent, framing, air sealing/ insulation and HVAC subcontractors to discuss the project's energy performance targets, construction and testing protocols, and any anticipated challenges. This is a unique and critical opportunity to delineate roles and responsibilities with key parties.
- Humidity control and moisture management is a growing area of need and concern in the Mid Atlantic. Design, equipment, and practices regarding humidity control are still in development and it's useful for the owner, architect, mechanical engineer, mechanical contractor, general contractor and HERS Rater to each be involved in discussion of applicable strategies. Preliminary blower door and duct blaster testing (where applicable) should be performed as early as possible to verify the project is on track to achieve ENERGY STAR standards.
- Architects and Development teams are expected to familiarize all revisions to ENERGY STAR programs as modified.
- A final checklist and narrative providing information on any changes since application submittal.

Upon completion of construction and prior to request of IRS Form 8609:

- Evidence of final certification by Enterprise Green Communities, NGBS Certification, or LEED Certification.

B. Advanced Energy Efficiency Measures (please check the program that is applicable):

NOTE: This section corresponds with the Intermediate TWO Point category for scoring purposes.

You cannot score in this section if you do not score in the previous section.

As the design architect, I hereby certify that I have either designed or will design the referenced development to include the following Advanced Energy Efficiency Measures, in addition to the comprehensive green certifications noted above:

For New Construction:

Passive House certification; or

DOE Zero Energy Ready Home (<http://energy.gov/eere/buildings/zero-energy-ready-home>)

For Acquisition/Rehabilitation:

HERS index rating of 70 or less for each dwelling unit with the exception for substantial rehabs of buildings with walls made only of brick / masonry and built before 1980, as well as moderate rehabs of buildings built before 1980, which are permitted to have a HERS Index score of 90 or less for each unit.

Requirements for Passive House and DOE submissions:

As the design architect, I hereby certify that the architectural documents submitted with the application meet these requirements for Advanced Energy Efficiency Measures, and that I understand the additional requirements that will apply if the project is approved.

Passive House

At application submit:

- Plans and specifications at a level of 50% or higher with section details at the proposed building envelope at key intersections (footings, foundations, slabs, floors, walls, windows, doors, projections/overhangs, roofs, etc.); **The energy consultant, along with the architect, should be able to determine the level of documentation that will work at the time of application.**
- A detailed narrative outlining the scope of passive house design measures. The narrative must be prepared, in coordination with the architect, by a qualified third party Certified Passive House Consultant or PHI Designer who has completed a minimum of one similar Passive House building.
- preliminary modeling analysis/output report through the Passive House Planning Package (PHPP) or DesignPH as developed by the Passive House Institute (PHI) or WUFI Passive as developed by the Passive House Institute United States (PHIUS) indicating that the preliminary data meets Passive House Criteria;
- An affidavit signed by the qualified Certified Passive House Consultant or Designer, and the architect, and the developer indicating that the project has been designed and priced to reflect compliance with the Passive House requirements.

As part of the design development drawing and specifications submit:

- A completed Passive House Planning Package (PHPP), DesignPH, or WUFI Passive modeling analysis, which includes compliance documentation by the certifying agency.

As part of the construction completion submit:

- All required rater-verified test results and inspection reports final certification documentation from the certifying agency.

DOE Zero Energy Ready Home

At application submit:

- Plans and specifications at a level of 50% or higher with section details at the proposed building envelope at key intersections (footings, foundations, slabs, floors, walls, windows, doors, projections/overhangs, roofs, etc.); **The energy consultant, along with the architect, should be able to determine the level of documentation that will work at the time of application.**
- A detailed narrative identifying the strategies that will be employed to meet the mandatory requirements outlined in the DOE Zero Energy Ready Home program specifications developed by the project's HERS rater;
- PV ready roof is required in Delaware regardless of average annual solar radiation levels at the site, as long as shading and orientation issues are adequate. For multifamily buildings 'PV-Ready' provisions can be applied to the electric service for

the building's common space, instead of being applied to each dwelling unit. A second alternative is if a units are served by a community solar system, the PV-Ready provisions do not need to be met. An exemption to the requirement for PV-ready roofs will be considered if the applicant/developer provides evidence that an existing or permitted community solar project could serve the tenants.

- Vapor retarder provisions of the IRC are required for long-term durability.
- Preliminary HERS certificates for worst case modeled units;
- An affidavit signed by the HERS rater, and project architect, and the developer indicating that the project has been designed and priced to reflect compliance with the Zero Energy Ready Home requirements.

As part of the design development drawing and specification submission submit:

- HERS certificates for modeled units.

As part of the construction completion submission submit:

- All required rater-verified test results and inspection reports and final certification documentation from the certifying agency.

HERS Compliance for Acquisition/Rehabilitation

At application:

- A design stage HERS rating should be determined and submitted with the application. This preliminary model is based upon mechanical systems and thermal envelope assumptions.

At final approval of tax credits and/or 60 days before construction closing:

- Preliminary HERS scores based on modeling for all unique unit types and details for air sealing and insulation as part of the construction document set.

Upon completion of construction and prior to request of IRS Form 8609:

- Final HERS scores based on updated models that incorporate testing and verification data collected at closeout of construction.

C. Additional Resiliency Credits (please check which program is applicable)

NOTE: This section corresponds with the Advanced THREE Point category for scoring purposes.

You cannot score in this section if you do not score in the previous two sections.

As the design architect, I hereby certify that I have either designed or will design the referenced development to include the following Resiliency Credit certification programs, in addition to the comprehensive energy and green certifications noted above:

[] Enterprise Green Communities 2020 Resiliency Credits

Integrative Design

1.6 Resilient Communities: Multi-Hazard/Vulnerability Assessment Conduct a four-part assessment (social, physical, functional, strategy) to identify critical risk factors of your property and implement at least two sets of strategies to enable the project to adapt to, and mitigate, climate related or seismic risks. See full criterion for more guidance.

Operating Energy

8 5.9 Resilient Energy Systems: Floodproofing (Not relevant for Rehab projects in Special Flood Hazard Areas) Conduct floodproofing of lower floors, including perimeter floodproofing (barriers/shields). Design and install building systems as specified by the full criterion so that the operation of those systems will not be grossly affected in case of a flood.

8 5.10 Resilient Energy Systems: Critical Loads Provide emergency power to serve at least three critical energy loads as described by the full criterion. Option 1: Islandable PV system OR Option 2: Efficient generator

[] National Green Building Standard 2020 Resilience Credits

613 RESILIENT CONSTRUCTION

613.1 Intent. Design and construction practices developed by a licensed design professional or equivalent are implemented to enhance the resilience and durability of the structure (above building code minimum design loads) so the structure can better withstand forces generated by flooding, snow, wind, or seismic activity (as applicable) and reduce the potential for the loss of life and property. NGBS resilience language is to rely on the judgement of the architect or design professional when determining the appropriate evaluation and implementation of resilience measures. Both Green Communities and LEED have specific guidance on resilience compliance and can be used to guide design professionals when addressing resilience. Teams following NGBS should not submit materials to Green Communities or LEED but would use guidance from those rating systems when determining compliance.

613.2 Minimum structural requirements (base design). The building is designed and constructed in compliance with structural requirements in the IBC or IRC as applicable.

613.3 Enhanced resilience (10% above base design). Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 10% higher than the base design.

613.4 Enhanced resilience (20% above base design). Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 20% higher than the base design.

613.5 Enhanced resilience (30% above base design). Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 30% higher than the base design.

613.6 Enhanced resilience (40% above base design). Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 40% higher than the base design.

613.7 Enhanced resilience (50% above base design). Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 50% higher than the base design.

[] LEED Pilot Credits in Building Design and Construction certification

Assessment and Planning for Resilience (IPpc98): This credit encourages project teams to determine potential vulnerabilities at the project location. With recent revisions to the credit, risks that must be considered as part of this credit now include sea level rise, extreme heat and more intense winter storms. To earn the credit, project teams must identify risks related to the effects of climate change (this consideration was previously considered optional).

Designing for Enhanced Resilience (IPpc99): This credit ensures that the risk-related information collected as mandated by credit IPpc98 is taken into account via mitigation measures. Originally, this credit required the top three hazards to be addressed in turn for one point. The revised credit states that project teams must address either one or two of the top hazards, with one point available for each. This tiered approach allows teams to earn acknowledgement for mitigating multiple types of risks.

Passive Survivability and Back-Up Power During Disruptions (IPpc100): This credit centers around the concept that buildings should be able to safely shelter occupants during a power outage, as well as be able to provide back-up power. Originally, this credit also addressed access to potable water, but that path has been rewritten as an option for one of the compliance paths.

D. Electric Conversion (Rehabilitation Projects only)

[] All Electric

Rehabilitation projects that currently utilize gas appliances and mechanical systems may be eligible for up to two (2) additional points if they agree to convert to all electric systems as part of the renovation work.

Further, I understand that:

- Verification of the compliance with green and energy certifications may be required by DSHA at any time and throughout the development's compliance period;
- Failure to implement and maintain energy conservation systems and operational practices consistent with certifications after points are awarded and a carryover agreement is executed or any time during the compliance period will result in a penalty against the Applicant in the subsequent LIHTC application submission. The penalty will be equal to the point(s) awarded for this category; and
- DSHA will review the architectural documents submitted with the application exhibits to confirm the existence of the proposed energy amenities and/or requirements. Confirmation from the construction contract administration architect is required with the submission and will be verified prior to closing should tax credits be awarded. Verification of the availability of all energy systems may be required by DSHA at any time and throughout the development's compliance period.

IN WITNESS WHEREOF, the architect and applicant has caused this document to be duly executed.

ARCHITECT:

Signed: _____

Date: _____

Print: _____

Acknowledged and Accepted by the APPLICANT(S)/OWNER:

Signed: _____

Date: _____

Print: _____

Signed: _____

Date: _____

Print: _____