

## Chapter 6 Energy And Water Conservation

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### 6.1 Purpose and Summary Requirements

Conservation of energy and water at multifamily properties reduces property operating costs and increases physical durability. Conservation is achieved by good design and engineering, superior products, careful construction, conscientious maintenance and property management practices, and incentives that change utility consumption behavior of tenants and employees. This chapter describes the minimum energy efficiency requirements for FHA-insured properties, available incentives for energy and water conservation and the requirements for obtaining these incentives.

#### A. Required Minimum Standards -New Construction and Substantial Rehabilitation

All buildings proposed for new construction or substantial rehabilitation with FHA-insured mortgage proceeds must meet or exceed the International Energy Conservation Code (IECC version 2009) or, if greater than 3 stories above grade, the American Society of Heating, Refrigerating and Air Conditioning Engineers Standard 90.1 (ASHRAE 90.1 version 2007) or such later versions of these standards as HUD adopts. These HUD minimum standards do not over-ride or replace existing state or local requirements when such state or local requirements exceed the HUD minimum standards.

#### B. Incentives for Improved Building Performance

Owners of existing buildings may use reduced, underwritten operating expenses by documenting estimated reductions in energy and water consumption and costs (See Chapter 6.9) Also, as detailed in HUD's annual Federal Register publication of mortgage insurance premium (MIP) rates, lenders may qualify for a green MIP rate for loans on properties that obtain a green building certification and demonstrate continuing energy efficiency performance (See Chapter 6.3 and 6.4).

### 6.2 Statutes and Regulations

The Energy Independence and Security Act of 2007 (EISA) requires HUD (and USDA) to adopt energy conservation standards. Section 481 of EISA amended section 109 of the Cranston-Gonzalez National Affordable Housing Act of 1990 (Cranston-Gonzalez) (42 U.S.C. 12709), establishing procedures for setting minimum energy standards for certain HUD programs, including HUD-FHA multifamily mortgage insurance programs for new construction and substantial rehabilitation. On May 6, 2015, HUD and USDA jointly adopted the IECC 2009 and ASHRAE 90.1 2007 codes by Federal Register notice (80 FR 25901).

On March 31, 2016, HUD published revised mortgage insurance premiums in the Federal Register (81 FR, page 18473, the “MIP Notice”). Section D of the MIP Notice outlined an MIP rate category for loans on properties that obtain a recognized green building certification and maintain performance thereafter as evidenced by annual submission of an ENERGY STAR® Score of not less than 75. The MIP Notice authorizes HUD to recognize additional green building certifications.

### **6.3 Green Building Certifications Recognized for Green MIP**

Multiple organizations sponsor and maintain green building certifications. These organizations (sometimes also referred to as “standard-keepers”) and their certification programs vary widely in the types of projects that can be certified, the jurisdictions in which the certification is available, and the methods used to verify green building features and compliance. It is the responsibility of the lender and borrower, acting in concert with the project architect, to select a certification appropriate for their proposed project, and to ensure that the property will meet continuing performance requirements including annual whole building data reporting.

#### **A. Certifications for New Construction and Substantial Rehabilitation**

The following green building certifications are accepted for the purpose of earning green MIP rates for new construction and substantial rehabilitation projects or for such projects recently completed and proposed for refinancing or acquisition:

Enterprise Green Communities Criteria; LEED-Home, LEED Home Midrise and LEED-New Construction; ENERGY STAR® New Construction Single Family (covers 1 and 2 family structures and townhouses); ENERGY STAR® New Construction Multifamily; ENERGY STAR® Multifamily Hi-Rise; EarthCraft House and EarthCraft Multifamily; Earth Advantage New Homes; Greenpoint Rated New Home; National Green Building Standard; Passive Building Certification from Passive House Institute US or International Passive Housing Association; and Living Building Challenge from the International Living Future Institute.

#### **B. Certifications for Existing Buildings**

The following green building certifications qualify for green MIP rates for acquisition or refinancing of existing properties:

Enterprise Green Communities Criteria; EarthCraft House and EarthCraft Multifamily; Greenpoint Rated Existing Home-Whole Building Label; and National Green Building Standard. If a building is occupied for the period necessary for benchmarking and is benchmarked (See Chapter 6.6.C.2), then an existing building certification may be used even if HUD defines the proposed scope of work as substantial rehabilitation.

For existing but newly constructed buildings, ENERGY STAR® Existing Building Certification will qualify for green MIP in limited circumstances (See Chapter 6.6.B).

#### **C. Use of National or Multi-State Certifications Not Currently Recognized by HUD**

HUD may accept other national or multistate green building certifications to qualify for green MIP rates for applications proposing new construction or improvements to existing

buildings provided that the project architect certifies to HUD that the procedures and requirements of the proposed certification meet all of the following requirements:

### **1. Minimum Required Performance Improvement for Non-Recognized Certifications**

For new construction and substantial rehabilitation (of properties with no benchmarked recent history) the certification must require designed building performance that achieves not less than a 25% reduction in estimated energy use (not energy costs) by comparison with the energy use estimated for the same structures if built to the HUD minimum codes (See Chapter 6.1.A). For existing buildings (with a benchmarked recent history, see Chapter 6.6.C.2) the certification must require a reduction in energy use (not energy cost) of not less than 15% by comparison with the benchmarked energy use.

### **2. Independent Verification of Design & Construction**

The proposed certification requires independent verification of energy conservation measures and sustainable products and methods. Such verification should occur at appropriate, identified milestones during design and during the progress of construction. (Appropriate milestones include: review of final drawings and specifications prior to application for firm commitment; on-site inspections of the building envelop and rough mechanical installation prior to drywall or closing of wall cavities; and a final inspection or commissioning after construction completion.) The standard-keeper must designate or approve the verifier(s). The independent verifier may have no identity of interest with the sponsor, the borrower, the lender, the project architect, the general contractor or any subcontractor or engaged trades.

### **3. Documentation of Procedures, Findings, Award of Certification**

The standard-keeper for any national or multi-state green building certification must require from the verifier and furnish to the project architect and/or borrower timely written documentation of results or conclusions at each milestone of practice or achievement that is necessary for certification including the final award (or denial) of the certification after construction completion.

### **4. Architect's Certification**

The identity of the standard keeper, the name of the proposed national or multi-state green building certification, the selected level or grade of achievement (e.g., silver, gold, platinum, etc.) as well as the project architect's certification, must accompany the mortgage insurance application. (See Project Architect's Certification, Appendix 5H.1 for new construction or substantial rehabilitation or 5H.2 for refinance or acquisition of existing properties).

## **6.4 General Requirements for Green MIP**

Applications proposing a green MIP rate are subject to requirements over and above those for all other insured mortgages, including the following for applications under all Sections of the Act:

### **A. Continuing Performance Required for Properties with Green MIP**

All borrowers with loans endorsed at green MIP rates and secured by properties of 20 or more units must annually demonstrate continuing performance by delivering to HUD an ENERGY STAR® Statement of Energy Performance (SEP) showing an ENERGY STAR® Score of not less than 75. (See Chapter 6.4.E on planning for future data collection for purposes of demonstrating continuing performance.) It is the property owner's obligation to maintain, repair, and replace components as necessary to retain this minimum performance score for the life of the insured mortgage.

## **B. ENERGY STAR® Appliances and High-Performance Components**

The Capital Needs Assessment (CNA) prepared in the CNA e-Tool must specify all appliances and heating and air conditioning systems as ENERGY STAR® as and when replaced, and for lighting, electrical and mechanical equipment, and building envelope components with no available ENERGY STAR® label, the Capital Needs Assessment must specify high performance and/or sustainable replacements.

## **C. HUD Forms- Borrower's Certifications**

HUD Form 92013D evidences the applicant's commitment to achieve and/or deliver an indicated green building certification. The executed form must be submitted with the Application for Firm Commitment, and among other purposes, identifies the specific green building certification the property has or will obtain. Lender requests to switch the identified green building certification after submitting an application for Firm Commitment will result in HUD returning the application pending lender submission of a fully revised set of plans and specifications consistent with the newly selected certification. HUD will not consider changes in the selection of green building certification after the issuance of a Firm Commitment. At endorsement HUD form 91070M titled "Consolidated Certification-Borrower" states the borrower's commitment to deliver a named green building certification and to demonstrate continuing performance with an ENERGY STAR® Score of 75 or more in each year of the mortgage term.

## **D. Regulatory Agreement Rider 5 Required for Green MIP**

HUD Form 92466-R-5 (Rider 5) is a rider to the Regulatory Agreement that the borrower must execute at initial endorsement. Rider 5 obligates the borrower to complete all construction as well as any and all tests, evidences, or assurances as may be necessary to perfect and obtain the selected green building certification. In addition, Rider 5 specifies the borrower's on-going energy performance obligations during the life of the insured mortgage.

HUD's Office of Asset Management and Portfolio Oversight (OAMPO) oversees servicing of insured multifamily mortgages. OAMPO provides instructions to borrowers and lenders on how to comply with green MIP continuing performance requirements in Mortgagee Letter 2020-1 (ML 2020-1). Borrower's failure to deliver a correctly prepared and verified Statement of Energy Performance (SEP) and/or failure to maintain a minimum ENERGY STAR® Score of 75 (or in the event of a change in the calibration of the Score, failure to maintain the expected Energy Use Intensity Score [EUI Score] equivalent to a score of 75 at the time of application), after notice and opportunity to cure will result in sanctions consistent with ML 2020-1. The EUI Score is energy use, expressed in British Thermal Units

(BTUs) per square foot per annum. The EUI is reported on the SEP in addition to the ENERGY STAR® Score.

## **E. Data Collection Plan**

Because the borrower is obligated to demonstrate continuing performance through the maturity of the green MIP mortgage using EPA's Portfolio Manager, a web-based utility benchmarking application, it is essential that the borrower prepare a plan for collecting valid energy consumption data for each month and correctly entering this data in Portfolio Manager. The most valid and convenient solution is to obtain 100% whole building data from the utility provider(s) or to install energy consumption monitoring technology that collects monthly data from all meters on the property. (Whole building data means recording of all energy consumption on site, both owner and tenant paid.) The data collection plan should identify and describe the method(s) to be used and describe exactly how data will be collected and recorded, what persons or officers will be responsible and how the data will be entered in Portfolio Manager. The data collection plan should be prepared by the energy professional in consultation with the borrower and the property manager and must conform to the instructions in subparagraphs 1 and 2 as follows:

### **1. Instructions for Preparing an SEP to Evidence Continuing Performance**

The SEP must be verified by a qualified energy professional evidenced by the energy professional's signature on the SEP. Verification means that the energy professional has reviewed the data entered in Portfolio Manager, compared these entries to the borrower's documentation of energy consumption reported for each utility meter on the property, and compared the utilities and meters currently reported to prior SEP or project records, and confirmed the accuracy of data entered. Note that a verified SEP is not the same as an application for ENERGY STAR® Certification and does not require a site visit nor the seal and signature of a registered architect or professional engineer. (In some cases, the energy professional may need to visit a site to resolve conflicting information and to assure that all existing utility meters and/or uses of energy are reported.) Firms providing energy consumption monitoring services may serve as energy professionals for purposes of verifying a borrower's continuing performance.

### **2. Sampling of Tenant Meters Not Permitted**

For purposes of demonstrating continuing performance, extrapolation of energy use data from a sample of units at a property is not acceptable. Owners applying for green MIP rates must propose and implement a plan to obtain 100% whole building utility data for all utilities, whether from the utility providers, or through the installation of energy consumption monitoring technology capable of measuring, recording and reporting energy consumption for all meters, including metered tenant spaces.

## **F. Real-Time Consumption Monitoring, Smart Home Tools Reduce Tenant Energy Use**

In addition to providing utility consumption data needed for continuing compliance, hardware and software that delivers valid, real-time energy use data to owners and tenants allows users to make informed choices, change behavior, and reduce their utility costs. (Studies have shown that tenants with real-time feedback on utility consumption reduce

usage by an average of 10%). Applicants are encouraged to augment their data collection plan with such technology.

## **G. Experience and Qualifications of Design and Construction Team**

When planning project development, the developer/sponsor should pay attention to high-performance building experience and qualifications when assembling the project team. When preparing an application for a green MIP mortgage, the lender also should give attention to the experience and qualifications of key firms and personnel. The lender should also note that some green building certifications specify additional qualifications for members of the design team.

## **H. Experience and Qualifications of Energy Professionals**

Energy professionals must be persons with not less than three years work experience evaluating utility consumption in multifamily buildings and employing energy modeling and benchmarking software, including specifically EPA's Portfolio Manager and related ENERGY STAR® resources and products. Energy professionals must have professional certifications or credentials appropriate for analyzing multifamily properties and must remain current with new energy monitoring, measurement methods, and technologies.

### **1. Expected Tasks for Energy Professionals**

The energy professional's primary tasks include: a) benchmarking existing buildings including obtaining and/or reviewing and consolidating raw consumption data (monthly bills, utility-provider supplied data); b) managing use of EPA Portfolio Manager software and assuring correct data entry; c) conducting site inspections and energy audits per ASHRAE Level II or III standards and conducting field tests, e.g., blower door tests for detecting air infiltration and air handling leaks; d) selecting appropriate energy modeling software and e) correctly modeling various design assumptions, e.g., a building built to current code, the same building with energy conservation features that exceed the current code; f) advising the project architect of building components most likely to improve performance; g) preparing the borrower's data collection plan; h) reviewing and entering data to Portfolio Manager and verifying resulting Statements of Energy Performance to support borrower's annual demonstration of continuing performance; and i) estimating the local utility providers average price per unit of use for each utility at a site (see Chapter 6.9.C for obstacles to estimating utility price per unit of use).

### **2. Specialization of Energy Professional's Experience and Qualifications**

The qualifications and experience of the energy professional(s) on a green MIP application must be appropriate to the subject building types.

RESNET Home Energy Raters, utilizing the software and products for RESNET Home Energy Ratings, are acceptable for single homes, townhouses and or multi-unit structures

up to three stories with no common space (assuming site energy is included). These building types (buildings up to three stories), as described at Chapter 6.1.A, must comply with the International Energy Conservation Code.

Generally, software and products used by RESNET Home Energy Raters do not accommodate appropriate analysis of the most common multifamily building types, as the appropriate methods and software used to analyze energy use in houses, townhouses, and small buildings differ substantially from those necessary for larger buildings. Further, buildings of four or more stories must comply with ASHRAE Standard 90.1, and RESNET Home Energy Raters generally do not work with ASHRAE 90.1. Therefore, RESNET Home Energy Ratings are not acceptable for the more common building and property types found in multifamily mortgage applications, where larger buildings including common spaces and all site improvements must be considered.

### **3. Professional Certifications Required for Energy Professionals**

Registered architects or licensed professional engineers (PE) may serve as energy professionals provided that they have demonstrated the requisite experience. Other professional certifications for qualified energy professionals include one or more of the following: a) American Energy Engineers Association's Certified Energy Manager (CEM) or Certified Energy Auditor (CEA) designations; b) American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) High Performance Building Design Professional (HPBDP) designation; c) Building Performance Institute (BPI) Multifamily Building Analyst (MFBA) designation; or d) for townhouses and buildings up to three stories with no common space, a Residential Energy Services Network (RESNET) Home Energy Rating System (HERS) Rater. When building energy modeling is employed the lead modeler or energy professional must hold a professional certification specific to simulation modeling: ASHRAE Building Energy Modeling Professional (BEMP) or Association of Energy Engineers Building Energy Simulation Analyst (BESA).

#### **I. Energy Modeling and Modeling Software**

Modeling or simulation of expected building performance is a common technique for estimating and comparing utility use results achievable with alternative designs or construction methods. Certifications that allow performance-based options require modeling to verify expected results. (Many green building certifications allow the designer a choice of a "prescriptive" option for meeting certification requirements or a "performance" option. Prescriptive in this context means a fixed "recipe" of building parts and components each with an individual qualitative metric or specification, e.g., fiberglass batt insulation rated R-30. By contrast a performance standard allows the design professional flexibility to create a unique "recipe" provided the whole building design is modeled to estimate overall performance. Prescriptive options do not require modeling.) The energy professional and the project architect are responsible for selection and proper use of appropriate, industry recognized energy modeling software. In general, selected modeling software must simulate

the actual buildings, common spaces, accessory structures and site improvements proposed (See Chapter 6.4.H above). For buildings over three stories or containing common spaces, the modeling must be completed in accordance with the requirements of ASHRAE 90.1 Appendix G. For buildings up to three stories with no common space, the HERS Resnet rating system may be used, provided that other specialized modeling software or methods, (e.g., for site lighting, clubhouse and pool, etc) are used to document all energy use apart from the residential buildings. In a property with buildings of both kinds, the energy professional may use ASHRAE 90.1 Appendix G or a combination of both methodologies provided that all energy use for the entire property is included in results. Plans and specifications for construction should be at least 80% complete and include all design elements that impact energy use. All factors other than design variations must be held constant from one modeled iteration to the next. Modeling for an existing property must incorporate as-built design as modified by proposed repairs and alterations, and for any buildings, units or spaces unchanged, the model should incorporate benchmarked consumption. Recognized software and modeling standards are described in Appendix 6.

#### **J. Change Orders Modifying Energy Conservation Measures after Endorsement**

For properties where construction is proposed to achieve green building certification, change orders that modify construction (including repairs and alterations to existing buildings) by reducing the proposed level of performance or reducing the approved level of certification may only be approved if HUD determines that the change is a necessary change order. In no event may a change order result in construction that will fail to achieve the approved green building certification.

### **6.5 Green MIP requirements for Section 223(a)(7) Applications**

Green MIP rates are available to 223(a)(7) applicants only when the existing mortgage has a green MIP rate, or when the property is previously certified by one of the green building certifications named above (Chapter 6.3.A and 6.3.B). In either circumstance, the qualifying certification must have been earned not more than 15 years prior to the date of application. The borrower must demonstrate continuing performance as described in paragraphs 6.5.A, B and C below:

#### **A. Existing Green MIP Mortgages**

If the existing mortgage is green MIP then all Statements of Energy Performance for all prior years must have been correctly prepared, timely submitted and have a score of 75 or higher.

#### **B. All Applicants-Continuing Performance Proven with an ENERGY STAR® Existing Building Certification**

Whether the existing insured mortgage is Green MIP or not, an ENERGY STAR® for Existing Building Certification must be provided with the application to establish continuing performance and to demonstrate that 100% whole building data is available. The Existing Building Certification should be based on a performance period ending less than six months before the date of loan application. The Existing Building Certification requires 100% whole



building data. No sampling of units is permitted. The application for the Existing Building recognition must be signed and sealed by a Registered Architect or Professional Engineer as required by EPA.

### **C. Time for Delivery of ENERGY STAR® Existing Building Certification**

The Existing Building Certification must be delivered with the application. It may not be deferred. The Firm Commitment may not be conditioned upon receipt or future delivery of the Existing Building Certification. A single exception is permitted if the Existing Building Certification cannot be obtained because the borrower is unable to provide consumption data for twelve consecutive, whole months for every meter on the property, including any and all tenant meters. In this circumstance, the application must include a Statement of Energy Performance consistent with the benchmarking procedures described at Chapter 6.6.C.2 indicating that the property likely will achieve the minimum ENERGY STAR® Score after 100% whole building data is available. In addition, the borrower must include as non-critical repairs the installation of energy consumption monitoring technology (as described at Chapter 6.4.E.2) to provide 100% whole building consumption data collection. If the Existing Building Certification is deferred, it must be delivered not more than 15 months after the completion of the non-critical repairs.

### **D. Recording Baseline Data- CNA**

Section 223(a)(7) applications qualify for green MIP only if previously certified and construction activity in such applications is limited to repairs not exceeding aggregate cost per unit as defined in Chapter 5 (See Chapter 5.1.E.4). Accordingly, the needs assessor or energy professional is not required to enter utility consumption data for each component identified in the CNA. However, the needs assessor or energy professional must download the HUD Custom SEP (an excel spreadsheet) and attach it to the CNA in the CNA e-Tool. This will automatically record the actual (or expected) ENERGY STAR® Score as well as the related Energy Use Intensity (BTUs per square foot). In the event that EPA revises or recalibrates the multifamily ENERGY STAR® Score resulting in a property reporting an annual continuing performance less than the minimum 75, the Energy Use Intensity reported with the application will become the minimum performance requirement.

## **6.6 Green MIP Requirements for Section 223(f) Applications**

Existing properties proposed for 223(f) financing may qualify for green MIP in one of two ways. The first is by providing a previously earned certification recognized by HUD (See Chapter 6.3.A or 6.3.B) earned not more than 15 years prior to the date of the loan application. The second is by committing to obtain a certification (either a HUD recognized certification or a non-recognized certification per Chapter 6.3.C) after completing repairs and alterations sufficient to earn the selected certification.

### **A. Properties with Previously Earned Certifications**

An existing property with a HUD recognized certification earned within 15 years of the date of application may qualify for a green MIP rate provided that the borrower evidences continuing performance in the same manner as prescribed for Section 223(a)(7) loans (See

Chapter 6.5.A, B and C). Baseline data for these properties should be recorded by downloading the HUD Custom SEP and attaching it to the CNA prepared for the property in the CNA e-Tool.

Some recently built properties may not have achieved and sustained occupancy for a time-period sufficient to permit benchmarking consistent with Chapter 6.6.C.2 below. These recently built projects may qualify for green MIP rates if the owner delivers with the application one of the certifications named in Chapter 6.3.A (for new construction or substantial rehab) and has complied with the general requirements described at Chapter 6.4.A through 6.4.E (data collection plan, Rider 5, etc.) In addition, any recently built project must have been equipped with ENERGY STAR® appliances and conform to other requirements for new construction or substantial rehabilitation as described in Chapter 6.7.A. Recording baseline data for recently built projects with no benchmarked results is accomplished by downloading a HUD Custom SEDI (Statement of Energy Design Intent) based on the as-built drawings and specifications and attaching it to the CNA in the CNA e-Tool.

## **B. Transition Period for Newly Built Properties with No Prior Certification**

Recently built properties without a HUD-recognized green building certification will not qualify for green MIP. Owners and developers contemplating a possible future FHA-insured mortgage refinancing with a green MIP rate for a prospective new development should select and implement a HUD recognized green building certification appropriate for new construction before beginning the prospective development.

However, to allow lenders and borrowers time to plan projects, the ENERGY STAR® for Existing Buildings Certification will qualify for green MIP for 223(f) applications filed within two years after publication of this MAP Guide provided the application is consistent with the general provisions of Chapter 6.4 as well as the following additional conditions:

1. The Certificate of Occupancy must be issued within three years of the date of mortgage application.
2. Properties that have achieved at least 12 months of occupancy meeting the minimum occupancy for the ENERGY STAR® for Existing Buildings Certification must deliver the Certification with the application for firm commitment.
3. If a property lacks the 12 consecutive months of minimum occupancy, a Statement of Energy Design Intent (SEDI) based on the as-built drawings and specifications of the property and signed by the Project Architect may qualify provided that the owner commits to deliver the ENERGY STAR® for Existing Building Certification within three months after the 12 consecutive months at or above the minimum occupancy is achieved. Repairs or alterations are not permitted as a means of achieving a prospective Certification.
4. The minimum ENERGY STAR® Score required for use of the ENERGY STAR® for Existing Building Certification is 90.
5. Baseline data will be recorded by attaching the HUD Custom SEP, or SEDI as applicable, to the Capital Needs Assessment prepared for the property.

## **C. Existing Properties Without a Prior HUD Recognized Green Building Certification**

Properties not recently built (See Chapter 6.6.B, above) and without a prior HUD recognized green building certification (a certification named in Chapter 6.3.A or B earned within 15 years of the date of application) may qualify by committing to obtain one of the certifications available for existing buildings (Chapter 6.3.B) or an unrecognized certification appropriate for renovations of existing buildings and selected consistent with Chapter 6.3.C. The owner must propose repairs and alterations consistent with and sufficient to achieve the selected certification. In addition, borrowers must meet the following requirements:

### **1. Existing Properties-Selection and Achievement of Green Building Certification**

The project architect must assure the lender and HUD that the green building certification selected is appropriate for the building(s) composing the property and for the level of construction activity proposed and must certify that the borrower's proposed repairs and alterations when completed will reasonably achieve the requirements of the designated green building certification. The borrower is responsible for achieving the selected certification and maintaining performance for the life of the mortgage.

### **2. Energy Due Diligence-Benchmarking**

All owners of existing properties proposing repairs and alterations in order to obtain a green building certification must benchmark their property to establish the annual energy utility consumption against which the expected result of proposed improvements is measured. (Note that Chapter 6.4.E specifies an annual benchmarking procedure to demonstrate continuing performance by green MIP properties during the mortgage term and that procedure does not permit sampling. By contrast, this paragraph requires a one-time benchmarking procedure required for candidate properties which procedure does contemplate sampling.) While sampling is permitted to benchmark energy use prior to certification, Lenders/borrowers able to obtain and use 100% whole building data for establishing the benchmark must do so because this is a conclusive demonstration of the ability to meet the future, continuing performance requirement. Whole building, whole property data means 100% of all meters on the property or at the building and/or all fuels delivered to the property or the building.

The borrower must retain a qualified, third-party, energy professional who must benchmark energy consumption for twelve whole, consecutive months, or consecutive utility billing periods consistent with a 12-month period, with the last month ending not more than six months prior to firm commitment application. Physical occupancy for each month must be at least 85%.

If 100% whole-building data is not available, a sampling regimen consistent with the requirements for ASHRAE Level II Energy Audits may be used, provided that tenant usage must be determined based on a sample of not less than 25% of units. If whole building data is available for some but not all buildings in a property, then the sampling requirements may be applied to the buildings lacking whole building data. Similarly, if some (but not all) utility providers serving the property provide whole building data, then sampling may be used to estimate usage for the utility where 100% whole building data is not available. For any

sample, the applicant must demonstrate how the sample is representative and clearly identify sampled units and buildings. Actual usage must be documented with copies of source material, i.e., utility bills or statements from the utility provider. If sampling is used, the documentation must identify the unit and the time period for which usage is reported. If a utility provides whole building data, the utility's documentation must show the name and address of the property and/or building and a count of tenant meters and owner meters by building or by site utility use as applicable.

The benchmarked results and documentation should be reported in the energy professional's ASHRAE Energy Audit, which should summarize aggregate, annual consumption for each energy source and organize supporting documentation so that a lender or HUD underwriter can quickly verify the accuracy of the information. When a sample is used, the method of extrapolating the sample results to the whole must be shown. When the data collection and extrapolation of any sampled data is complete, the energy professional should enter monthly usage in the borrower's EPA Portfolio Manager account. A Statement of Energy Performance (not the HUD Custom SEP) representing the benchmarked results should be included in the ASHRAE Energy Audit. The ASHRAE Energy Audit should be attached to the CNA prepared in the CNA e-Tool.

### **3. Energy Due Diligence-Energy Audits**

The borrower's energy professional must conduct an energy audit for the property in accordance with the standard of work for an ASHRAE Level II Energy Audit. Key features of Level II audits include: a) benchmarking existing use; b) identifying specific components, assemblies, appliances, equipment or systems that use, move or transmit energy; c) allocating benchmarked usage to these same items; d) recommending specific repairs, replacements and alterations to these items likely to reduce energy consumption; e) estimating per item and total cost of such items together with the per item and total reduction in energy use and cost resulting from the recommendation. In addition, a Level II Energy Audit should calculate the number of years required for the estimated annual energy savings to equal or exceed the cost of the recommendation for each item (the payback period). Level III audits provide an investment grade report that adds the following: a) whole building computer simulation (modeling) calibrated with field data; b) modeling of conservation measures and corresponding changes in energy consumption; and c) bid-level construction cost estimating. Accordingly, for Section 223(f) applications where a general contractor is retained to estimate total costs and complete construction, an ASHRAE Level II Energy Audit is required, but if no general contractor is retained, a Level III audit is required to provide bid-level construction cost estimating for energy conservation measures.

### **4. Energy Due Diligence-Capital Needs Assessment**

The Capital Needs Assessment prepared in the CNA e-Tool for a green MIP application for an existing building must indicate that an ASHRAE Energy Audit has been prepared, and must identify the energy professional as a participant. (Note that many due diligence providers may qualify as both needs assessors and energy professionals.) In addition, energy usage for each item or component named in the Energy Audit should be entered for each component and alternative. If a component (e.g., windows) does not use, but rather transmits, energy then the usage entered for the existing component is "0" and the usage entered for each alternative for that component is either a negative number (indicating

expected energy saved relative to the existing component) or a positive number (indicating additional expected energy use). The CNA e-Tool will calculate the Total Cost of Operation (TCO) per item for each component and alternative. Also, it will compare the TCO of a component to each of its alternatives, allowing the user to see and demonstrate the relative life cycle cost. At a future date, the CNA e-Tool will also calculate and display net energy dollar savings for each recommended action (e.g., recommended replacement of 52 existing refrigerators with new ENERGY STAR® refrigerators saves \$XX in energy costs per year.) In the meantime, such dollar savings (increases) should be provided in the ASHRAE Energy Audit.

## **5. Demonstrating Ability to Achieve and Maintain Minimum ENERGY STAR® Score**

In addition to obtaining green building certification, a green MIP property must achieve and maintain an ENERGY STAR® Score of 75 or better. To demonstrate a high probability that this score will be achieved, the energy professional must calculate the estimated, annual, whole building, whole property energy use expected upon completion of all proposed repairs and alterations. If the selected green building certification allows a performance-based method for compliance, and the performance option is used for purposes of certification, then modeling or simulated results should be reported (See Chapter 6.4.I). The energy professional must then enter these estimated results in EPA's Portfolio Manager to obtain a Statement of Energy Design Intent (SEDI) displaying an ENERGY STAR® Score that must equal or exceed the required minimum score of 75. The energy professional must download a HUD Custom SEDI, an excel spreadsheet, which should be attached to the CNA in the CNA e-Tool. This attachment records the expected ENERGY STAR® Score. It also records the expected Energy Use Intensity (i.e., BTUs per square foot) against which continuing performance will be measured in the event that EPA at a future time recalibrates or revises its multifamily ENERGY STAR® Score.

## **6. Project Architect Required**

Borrowers applying for green MIP under Section 223(f) with a proposed (not already earned) green building certification must retain a project architect (or Professional Engineer) whose green MIP responsibilities include the same responsibilities as described for construction at Chapter 6.7.B. In addition, the project architect must certify the acceptability of any national or multi-state green building certification selected by the borrower but not recognized by HUD (See Chapter 6.3.C). An architect may not serve as both project architect representing the borrower, and green building certification verifier or validator representing the standard-keeper of the green building certification.

## **7. Green MIP - HUD Repair Escrow Administration**

For green MIP applications, HUD will not delegate repair escrow administration to lenders. HUD will administer the repair escrow, approve any and all changes to the scope of work, and conduct periodic inspections of the work in progress.

## **8. Delivery of Green Building Certification - Extension of Repair Escrow**

HUD may approve, if necessary to achieve the designated green building certification, an extended completion period of up to fifteen months. The green building certification must be

earned and delivered prior to the release of the borrower's assurance of completion and any hold-back of surplus loan proceeds.

## **6.7 Green MIP Requirements for Sections 220, 221(d)(4), and 231-New Construction, Sub-Rehab**

All new construction and/or substantial rehabilitation applicants can qualify for green MIP by obtaining a HUD recognized green building certification (See Chapter 6.3.A) or an alternative national or multi-state certification consistent with Chapter 6.3.C. The selected green building certification must be earned and delivered prior to Final Endorsement consistent with the Project Architect's Certification (See Appendix 5H1).

### **A. ENERGY STAR® Appliances and Central Air Conditioning Systems Required**

All new construction or substantial rehabilitation applications for green MIP rates must specify installation of ENERGY STAR® appliances and central air conditioning systems (if applicable). Other electrical and mechanical equipment (motors, fans, pumps, etc.) should be high performing, energy efficient products. For water-consuming appliances and components, EPA WaterSense labeled products must be specified.

### **B. Project Architect's Green MIP Responsibilities-New Construction and Substantial Rehabilitation**

In addition to the general responsibilities of the project architect (See Chapter 5), in green MIP projects the architect has these additional responsibilities: a) assure that the selected green building certification is applicable to the contemplated design and scope of construction work; b) coordinate with the green building certification standard-keeper or its designated verifier to assure that the plans and specifications meet all certification requirements, including any requisite verifying proofs, exhibits or procedures; c) when a performance based compliance method is used, select or approve the selection of appropriate building performance modeling software and complete or supervise completion of performance models comparing designed performance to any designated baseline code or benchmarked prior performance using in each modeled design the same assumptions concerning climate, degree days, set temperatures, owner/tenant behavior, etc.; d) prepare or coordinate with an energy professional to prepare an estimate of expected utility consumption based on the assumed completion of the project as designed and operating at stabilized occupancy by the intended tenant profile; e) enter or work with an energy professional to enter estimated utility consumption in Portfolio Manager and obtain a HUD Custom Statement of Energy Design Intent evidencing that the project as designed will achieve and maintain an ENERGY STAR® Score not less than 75; f) coordinate with the contractor(s) to prepare a detailed construction schedule that includes all milestones for completion and inspections required by the green building certification procedures; g) coordinate with the verifier, the contractor(s) and the HUD Inspector to assure that all certification inspections, and any resulting corrective actions are timely completed consistent with the detailed construction schedule; h) coordinate with the verifier, the contractor(s) and

the HUD inspector, to assure that any and all tests, commissioning or similar routines required to perfect the green building certification are completed. (See Appendix 5H1.)

### **C. Recording Baseline Data-CNA**

The Lender's cost analyst will prepare a CNA in the CNA e-Tool reporting future repair and replacement needs only. No utility consumption data for individual components is required. The cost analyst should obtain the HUD Custom SEDI (an excel spreadsheet) and attach it to the CNA in the CNA e-Tool. This will automatically record the expected ENERGY STAR® Score as well as the related Energy Use Intensity (BTUs per square foot). In the event that EPA revises or recalibrates the multifamily ENERGY STAR® Score resulting in a property reporting an annual continuing performance less than the minimum 75, the Energy Use Intensity reported with the application will become the minimum performance requirement.

## **6.8 Green MIP Requirements for Section 241(a) Supplemental Loans**

Section 241(a) Supplemental Loan proceeds may be used for eligible construction costs including repairs and alterations to existing buildings or site improvements, additions to existing buildings or site improvements, as well as construction of new buildings and site improvements. Regardless, a supplemental loan is secured by the entire premises subject to the lien of the first mortgage, and all requirements of both liens apply to the entire premises. Therefore, if green MIP is proposed for a supplemental loan, the entire property must obtain a green building certification. Two green building certifications may be necessary to achieve certification if both renovations of existing, and construction of new buildings, are proposed in a supplemental loan (few, if any, green building certifications contemplate both activities in a single certification). In the event two certifications are proposed, one for existing buildings, the other for new buildings, the property may be characterized as two phases to the extent needed for certification, provided that no exception exists to the requirement that the borrower be a single asset entity. After completion of construction and delivery of the certifications, continuing performance will be demonstrated with a single Statement of Energy Performance (SEP) prepared for the entire property. One or two certifications, as applicable, must be delivered prior to Final Endorsement of the supplemental loan.

## **6.9 Underwriting Owner's Utility Cost as Part of Operating Expense**

For most existing buildings, utility costs are underwritten as part of expected operating expenses based on three years of operating history. But for applications where savings result from utility conservation measures included in the Repair Escrow, these savings may reduce the estimated operating budget for the relevant utility. (Properties with less than three years of operating history are not eligible for underwriting of reduced utility costs as compared to proven annual utility costs.) While substantial rehabilitation involves existing buildings, the estimation of utility cost as a portion of forecasted operating expense is not based on three prior years of expense history, unless the existing building is fully occupied for the three years prior to application and either will remain occupied during construction, or the majority of existing tenants will resume occupancy after temporary relocation. When an application for a stabilized,

operating property proposes green building certification, then 100% of projected savings may offset historic expense, but if no new certification is proposed then only 75% of projected savings may be underwritten. In all other cases of substantial rehabilitation, and in new construction proposals, utility costs included in forecasted operating expense must be derived as follows: a) for green MIP applications, from the modeled or simulated utility consumption calculated for the proposed project; and b) for applications with no green building certification, utility costs may be estimated by comparison to other recently built, non-green-building-certified properties in the same utility pricing market.

#### **A. Methods for Underwriting Owner's Utility Costs Changes**

For existing properties with energy conservation measures included in the Repair Escrow, underwritten utility expenses based on the prior three years of operating history may be adjusted based on the utility cost results of the repairs and alterations as documented in an ASHRAE Level II Energy Audit. The savings (or possible increases) estimated must be for specific utilities or fuels and for the specific uses of these utilities or fuels. For example, forecasted reductions and/or increases in electric consumption must be detailed for each repair, replace, or add-new action that impacts electric usage. When the net of these itemized increases or decreases in usage is converted to dollar costs given the local per unit cost of the utility, only these net costs may be used to offset (or increase) historic costs for electric power. (See 6.9.C below on obstacles to determining utility price per unit of use.) In cases where the alterations and repairs alter the mix and use of owner-paid fuels or utilities, (e.g., gas heat replaces electric heat; or solar hot water replaces or supplements an existing fuel for water heating), the altered and/or substituted mix and cost of fuels must be shown in the calculation of utility cost used to adjust comparable historic costs. It is not sufficient merely to claim a net change and adjust the aggregate historic utility cost. The specific change derived from each repair, replace, or add-new action must be shown.

#### **B. Underwritten Owner Utility Operating Expense for Green MIP New Construction**

Green MIP applications for new construction and most substantial rehabilitation projects have no history of utility use as a benchmark. The energy professional should determine local utility rates and forecast utility operating expense based the simulated or estimated utility consumption for each owner-paid fuel or utility used on the site. Consumption should be estimated in the unit of measure used by the local utility provider to price the fuel, power or water and cost per unit of measure should be the local price per unit of the utility used.

#### **C. CAUTION: Utility Pricing - Changed Use Not Proportionate to Resulting Change in Cost**

A complicating factor when estimating the utility cost results of repairs and alterations, or forecasting utility costs for a new development, is the variability of methods and fixed and variable costs used by utility providers. For example, many providers charge a minimum monthly amount regardless of usage, and other usage-based or flat-fee capital cost surcharges, and usage-based price schedules may include bundled service discounts, volume discounts or surcharges, multiple pricing tiers and peak demand period pricing. It is the responsibility of the energy professional to investigate and determine the appropriate average price per unit of use for each utility used at a property. Therefore, changes in utility consumption often DO NOT result in proportional changes in costs. It is the lender's



responsibility to assure that appropriate expertise and attention are given to estimating utility prices.