



Green Building Standards

2018 CDBG-DR Problem Solving Clinic

Atlanta, GA | December 12-14, 2018

Welcome & Speakers

- Session Objectives
 - Describe green building requirements of CDBG-DR
 - Identify strategies to incorporate green building programs into housing programs
 - Distinguish between available green building programs
- Speakers
 - Armand Magnelli, Livable Housing
 - Dean Gamble, U.S. Environmental Protection Agency
 - Bryan Howard, U.S. Green Building Council
 - Krista Eggers, Enterprise Community Partners



Agenda

- Green Building Overview and CDBG-DR Requirements
- Green Building Programs
 - ENERGY STAR
 - LEED
 - Enterprise Green Communities



Green Building Overview and CDBG-DR Requirements



What is green building?

- Creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction
- Makes efficient use of land, materials, energy and water and generates minimal to no waste
- Provides a healthy indoor environment for its occupants



Green Building Requirements

- CDBG-DR grantees required to adopt a Green Building Standard for:
 - All new construction of residential buildings
 - All replacement of substantially damaged residential buildings (including reconstruction, changes to structural elements)
- Green Building Standards include:
 - ENERGY STAR
 - LEED
 - Enterprise Green Communities
 - ICC-700 National Green Building Standard
 - Other equivalent comprehensive green building program (approved by HUD)
- For rehabilitation of non-substantially damaged residential buildings, CDBG-DR grantees must follow guidelines specified in HUD CPD Green Building Retrofit Checklist,



Green Building Requirements cont.

- Grantees must be able to demonstrate to HUD how they are following these requirements in the relevant files
 - Both when it comes to the identified Green Standards (which one are you using for each project) and the projects that require the CPD Green Building Retrofit Checklist (can HUD staff see that you have followed it for each relevant project)
- If grantees are following local codes because they are the equivalent of the standards required by HUD (or more stringent), grantees must be able to demonstrate this to HUD with an analysis or justification



Overview of 3 Green Building Programs

- Building programs include: ENERGY STAR, LEED, and Enterprise Green Communities
- How to incorporate green building in CDBG-DR funded housing programs including policy and market capacity tips
- Benefits of participation and their overall impact
- Building eligibility
- Programmatic requirements (what)
- Certification process (how)
- Tips for success



ENERGY STAR



ENERGY STAR Residential New Construction: Overview

ENERGY STAR
Homes

ENERGY STAR
Multifamily High-Rise Buildings



ENERGY STAR Residential New Construction: Eligibility Criteria for Homes

- Site-built or modular homes of the following types:
 - Single-family homes;
 - Dwelling units in any multifamily building with:
 - ≤ 4 units, or;
 - ≤ 3 stories above-grade, or;
 - 4 or 5 stories above-grade, where dwelling units are $\geq 80\%$ of the occupiable square footage of the building



ENERGY STAR Residential New Construction: Eligibility Criteria for Multifamily High-Rise

- Multifamily buildings of the following types:
 - 4 or 5 stories above-grade, where dwelling units are < 80% of the occupiable square footage of the building
 - ≥ 6 stories above-grade



ENERGY STAR Residential New Construction: Programmatic Approach

- Binary – you either earn the ENERGY STAR label or you don't
- Combination of performance target + mandatory features
- Achieve efficiency goals without sacrificing durability, comfort, or indoor air quality
- Third-party verified



ENERGY STAR Residential New Construction: Certification Process for Homes

Before Construction Begins:

- Energy rater models home and efficiency measures.
- HVAC designer completes and documents their work.
- Energy rater collects and reviews HVAC design.

After Construction Begins:

- Energy rater visits site twice during construction to complete visual inspections and diagnostic tests; once at pre-drywall and once at the end.
- Energy rater registers home with oversight organization.
- Energy rater applies the ENERGY STAR label to the house.



ENERGY STAR Residential New Construction: Certification Process for Multifamily Buildings

Before Construction Begins:

1. Developer submits a Project Application and designs that meet the program requirements.

After Construction Begins:

1. Developer constructs building with the prerequisites and efficiency measures described by the Proposed Design Submittal.
2. A Licensed Professional submits an As-Built Submittal and, if approved, EPA issues the ENERGY STAR Certification.
3. The developer or property owner assesses the energy performance of the project for a minimum of two years.



ENERGY STAR Residential New Construction: Coming Attraction

ENERGY STAR
Homes

ENERGY STAR
Multifamily New Construction



ENERGY STAR Residential New Construction: How to Get Started

- General technical page: www.energystar.gov/newhomesguidelines
- Homes technical page: www.energystar.gov/newhomesrequirements
- Multifamily technical page: www.energystar.gov/mfhr



LEED



LEED shows the elements that go into a high-performance and sustainable built environment

- Integrative process
- Location and transportation
- Sustainable sites
- Water efficiency
- Energy and atmosphere
- Materials and resources
- Indoor Environmental Quality
- Innovation
- Regional Priority



Program Scope and Applicable Building Types

- Single-family homes
- Low-rise multi-family (1- 3/5)
- Mid-rise (4-8 mandatory, 9-12 optional)
- Single-family production
- Gut rehab

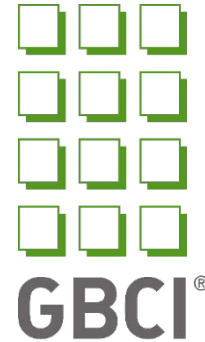


LEED for Homes Performance Testing

List of Special Measures		Responsibility	Performance Level	
Category	Credit		Mandatory	Optional
Energy	1. ENERGY STAR Home	Rater	X	
	3. Envelope Air Leakage	Rater	X	
	5. Duct Leakage	Rater	X	
	11. Refrigerant Charge	Rater	X	
Indoor	4.3 Outdoor Air Flow Test	Rater		X
	5.3 Exhaust Air Flow Test	Rater		X
	6.3 Supply Air Flow Test	Rater		X



Current Process Flow



100% project certification review



LEED Certification

- Save money
- Consume less energy
- Use less water
- Use fewer resources
- Better indoor environmental quality



New Mexico Sustainable Building Tax Credit

- Financial incentive (implemented 2007)
- The value of the credit is based on amount of occupied sq. ft. & rating achieved by the building
- Contributed **\$107.5 million** to NM economy in new construction in the year 2012
- Created approximately **\$108 million** in disposable income from utility bill savings in 1 year & is projected to save **\$32.3 million** over a 30-year period



Enterprise Green Communities



Established in 2004, Enterprise Green Communities is transforming the way America thinks about, designs, builds, and rehabilitates affordable housing.

Green building integrates materials and methods that promote **environmental quality, economic vitality, and social benefits** through design, construction and operations of the built environment.

Enterprise Green Communities aligns affordable housing investment strategies with environmentally responsive building practices.



Eligibility

- Affordable housing, mixed income, mixed use
- New construction, substantial rehab, moderate rehab
- Rural / Tribal / Small Town pathway



Enterprise Green Communities Criteria



Certification Process



Certification Process

- PreBuild (prior to construction)
 - Project overview
 - Intended methods
 - Upload: site plan, context map, energy modeling form, Category 8 outlines, other supplemental documents as necessary
- PostBuild (within 60 days of construction completion)
 - Update information
 - Upload: project photos & release, Category 8 documents, utility access, other supplemental documents as necessary

All submittals reviewed within 30 days.



Tools and Services

- Green communities criteria
- Charrette tools
- Resident engagement
- Operations & maintenance
- Research and evaluation
- Online event archive
- Construction specs templates
- Tools for resilience
- Retrofit toolkit
- Technical assistance database

www.enterprisecommunity.org/Green



A Question for each of the 3 Programs

Please describe, in a little more detail, your program's requirements for energy efficiency.



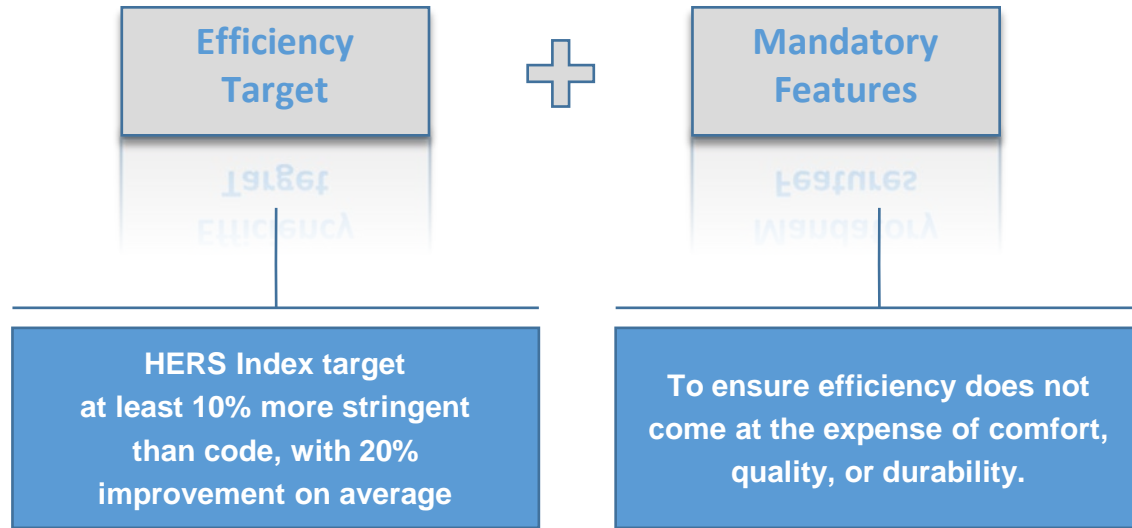
USGBC Homes and Mid-Rise Energy Credits

0	0	0	Energy and Atmosphere	38
Y			Prereq Minimum Energy Performance	Required
Y			Prereq Energy Metering	Required
Y			Prereq Education of the Homeowner, Tenant or Building Manager	Required
PERFORMANCE PATH				
			Credit Annual Energy Use	29
BOTH PATHS				
			Credit Efficient Hot Water Distribution System	5
			Credit Advanced Utility Tracking	2
			Credit Active Solar Ready Design	1
			Credit HVAC Start-Up Credentialing	1
PRESCRIPTIVE PATH				
Y			Prereq Home Size	Required
			Credit Building Orientation for Passive Solar	3
			Credit Air Infiltration	2
			Credit Envelope Insulation	2
			Credit Windows	3
			Credit Space Heating & Cooling Equipment	4

0	0	0	Energy and Atmosphere	37
Y			Prereq Minimum Energy Performance	Required
Y			Prereq Energy Metering	Required
Y			Prereq Education of the Homeowner, Tenant or Building Manager	Required
			Credit Annual Energy Use	30
			Credit Efficient Hot Water Distribution	5
			Credit Advanced Utility Tracking	2



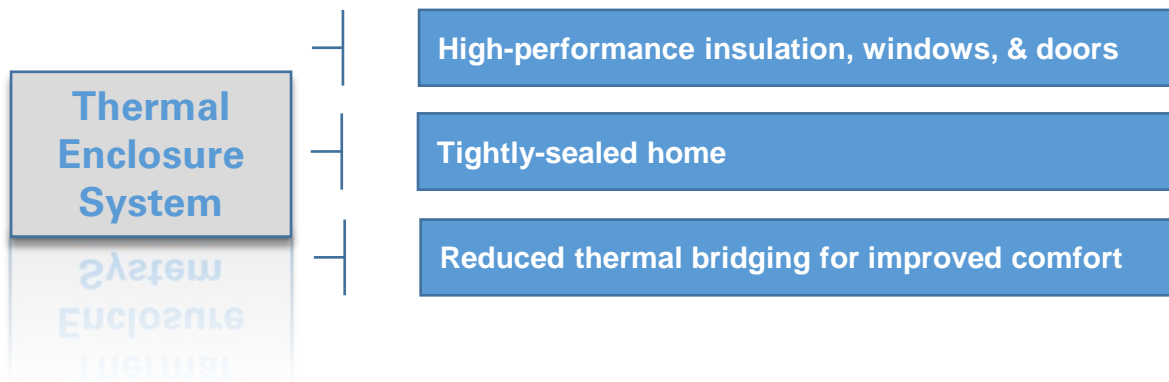
ENERGY STAR New Homes: Two Key Components



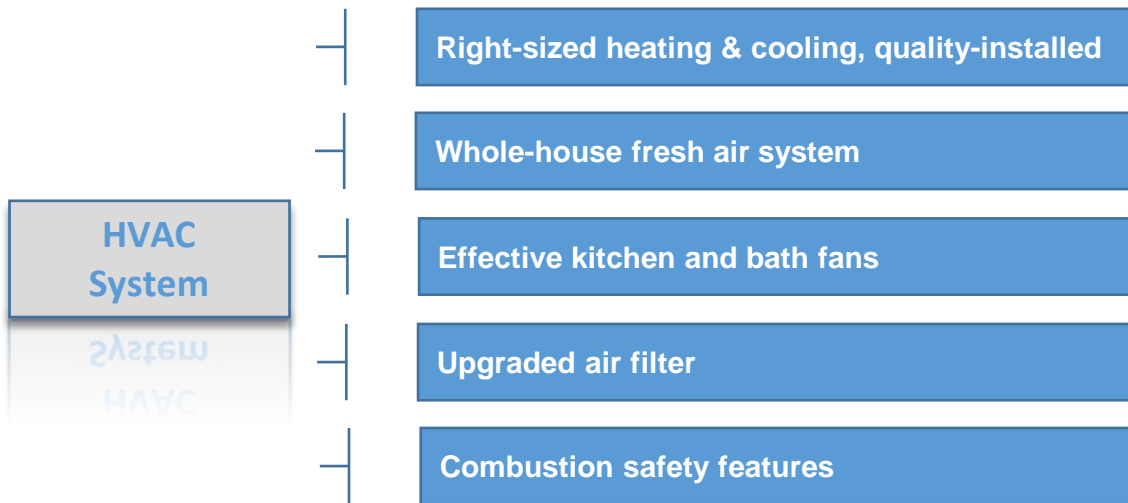
ENERGY STAR New Homes: Efficiency Target



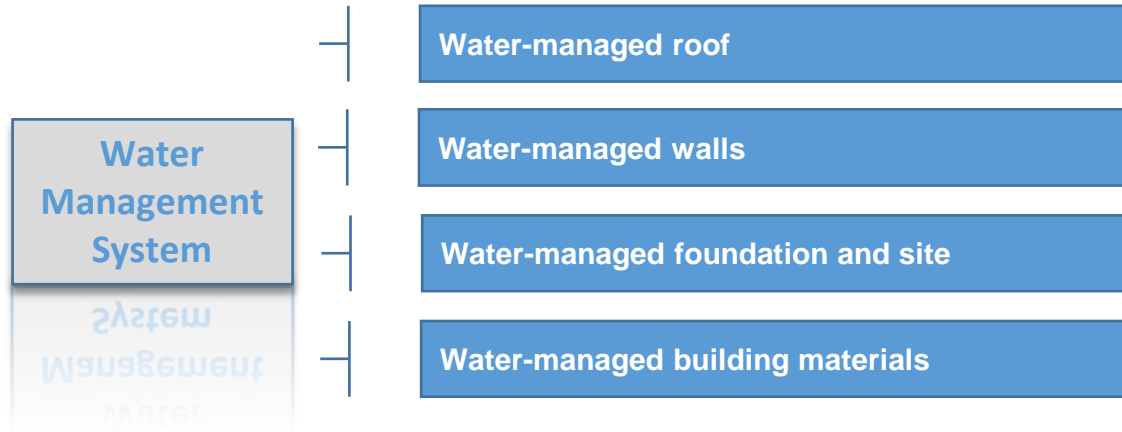
ENERGY STAR New Homes: Mandatory Features



ENERGY STAR New Homes: Mandatory Features



ENERGY STAR New Homes: Mandatory Features



Energy Efficiency



- **5.1 Building Performance Standard**
- 5.2 Additional Reductions in Energy Use
- 5.3 Advanced Certification: Nearing Net Zero
- **5.4 Sizing of Heating and Cooling Equipment**
- **5.5 ENERGY STAR Appliances**
- **5.6 Lighting**
- **5.7 Electricity Meter**
- 5.8 Photovoltaic / Solar Hot Water Ready
- 5.9 Renewable Energy
- 5.10 Resilient Energy Systems: Floodproofing
- 5.11 Resilient Energy Systems: Islandable Power



5.1 Building Performance Standard



- a. New Construction, single family and low-rise MF
Certify to ENERGY STAR
- b. New Construction, mid-rise and high-rise MF
Certify to ENERGY STAR or MFHR / LEED pathway
- c. Sub and Mod Rehab, single family and low-rise MF
HERS Index of 85
- d. Sub and Mod Rehab, mid-rise and high-rise MF
ASHRAE 90.1-2010



Questions

