



ENERGY STAR® Multifamily High Rise Program Update

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Today's Agenda:



- Introduction to MFHR program
- Sponsoring ENERGY STAR in the multifamily sector
- New resources for MFHR partners and stakeholders
- Resources for existing multifamily buildings

ENERGY STAR and Multifamily



1. New construction guidelines that apply to:

- Single Family Homes (detached and attached)
 - Factory Built Homes (manufactured and modular)
 - Low Rise Residential Buildings
 - Mid and High Rise Residential Buildings
- Certified Homes
- MFHR

2. Existing multifamily properties can benchmark energy and water use with Portfolio Manager



New Construction

Why Two Different Programs?



Single Family and Low Rise Multifamily

- Residential Building Code
- Development time (0.5 - 2 years)
- HVAC configurations typically residential
- Existing verification oversight infrastructure in place
- HERS Index energy modeling
- 2-3 verification visits needed
- Common areas of multifamily not addressed

High Rise Multifamily

- Commercial Building Code
- Development time (2 - 5 years)
- HVAC configurations may include large commercial systems
- Currently no national 3rd party Verification Oversight Organization
- ASHRAE 90.1 App. G modeling
- Multiple verification visits needed
- Significant common areas are addressed

ENERGY STAR Program Eligibility



- Low Rise Eligibility

- All buildings with ≤ 3 stories; and
- 4 and 5 story buildings with distributed HVAC and DHW systems, and less than 20% residential associated common space

- High Rise Eligibility

- 4 and 5 story buildings with distributed HVAC and DHW systems, and more than 20%; and
- 4 and 5 story buildings with central HVAC and/or DHW system; and
- All buildings with ≥ 6 stories

ENERGY STAR Multifamily High Rise Process



Design

- Define energy efficient building
- Set requirements to demonstrate design intent

Build

Earn

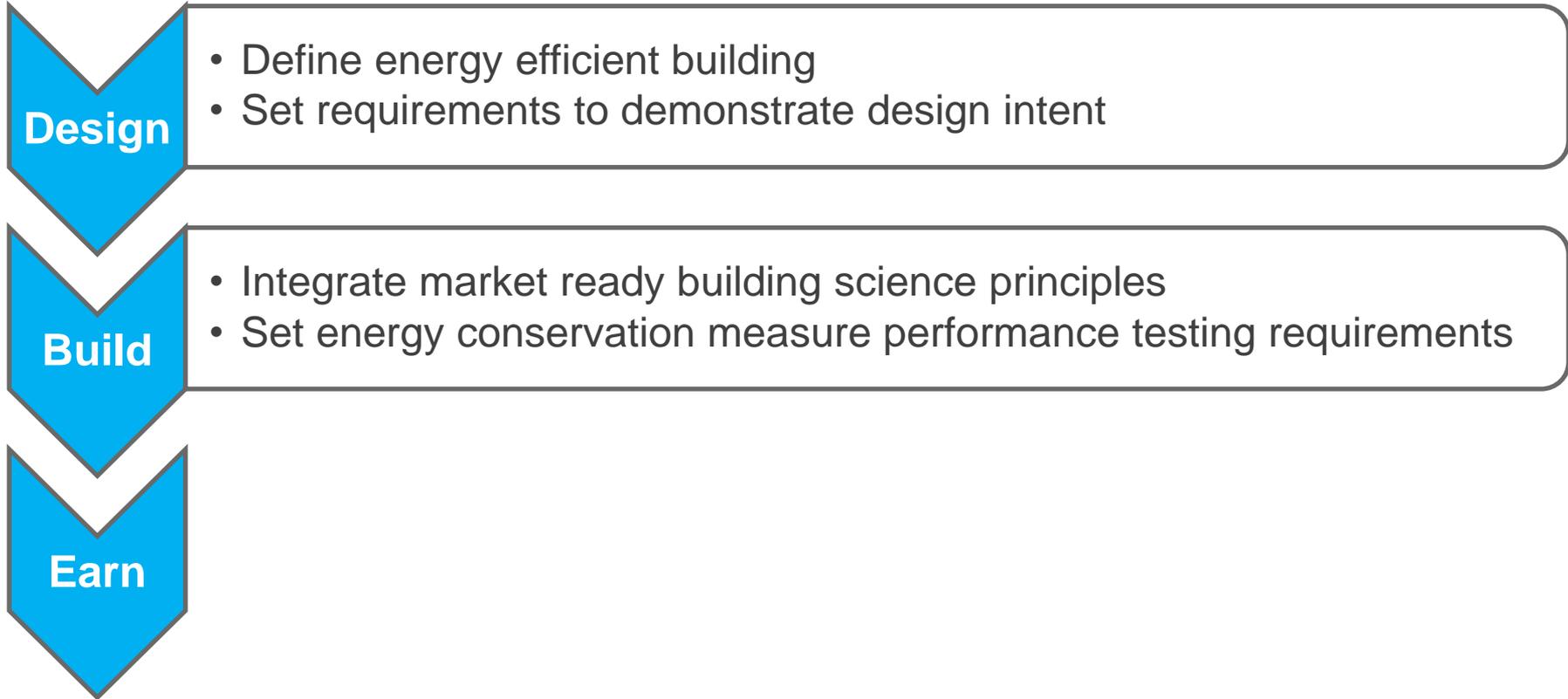
Certified Homes Program

- ENERGY STAR Reference Design
 - Approximately 15% savings above 2009 IECC
- Prescriptive Path
- Performance Path
 - RESNET
 - HERS Index Target

MF High Rise Program

- 15% cost savings above ASHRAE 90.1-2007
- Prescriptive Path
- Performance Path
 - ASHRAE 90.1 Appendix G
 - ENERGY STAR Simulation Guidelines

ENERGY STAR Multifamily High Rise Process



Certified Homes Program

- ENERGY STAR Version 3 Inspection Checklists
 - Thermal Enclosure System
 - HVAC System (Contractor and Rater)
 - Water Management System
- Verification performed by certified HERS Rater

MF High Rise Program

- ENERGY STAR Testing & Verification Worksheets
 - Thermal Enclosure System
 - HVAC & DHW System
 - Lighting, Motors, Pumps, Etc
- Verification performed by an energy consultant(s) and validated by a licensed professional

ENERGY STAR Multifamily High Rise Process



Design

- Define energy efficient building
- Set requirements to demonstrate design intent

Build

- Integrate market ready building science principles
- Set energy conservation measure performance testing requirements

Earn

- Set documentation requirements to show program compliance

Perform

- Encourage strategic management through benchmarking



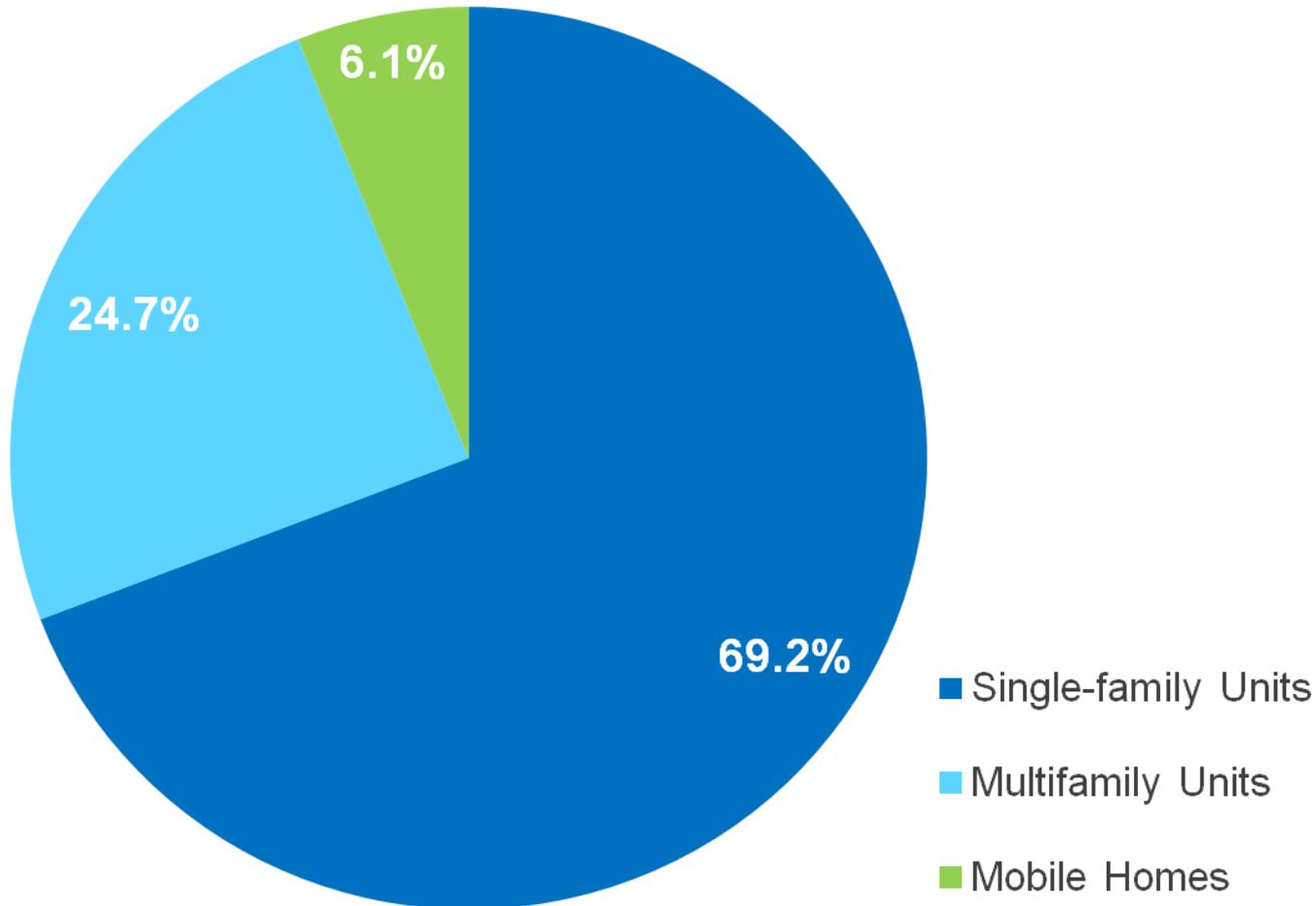
Sponsoring MFHR

Why Sponsor ENERGY STAR for Multifamily?



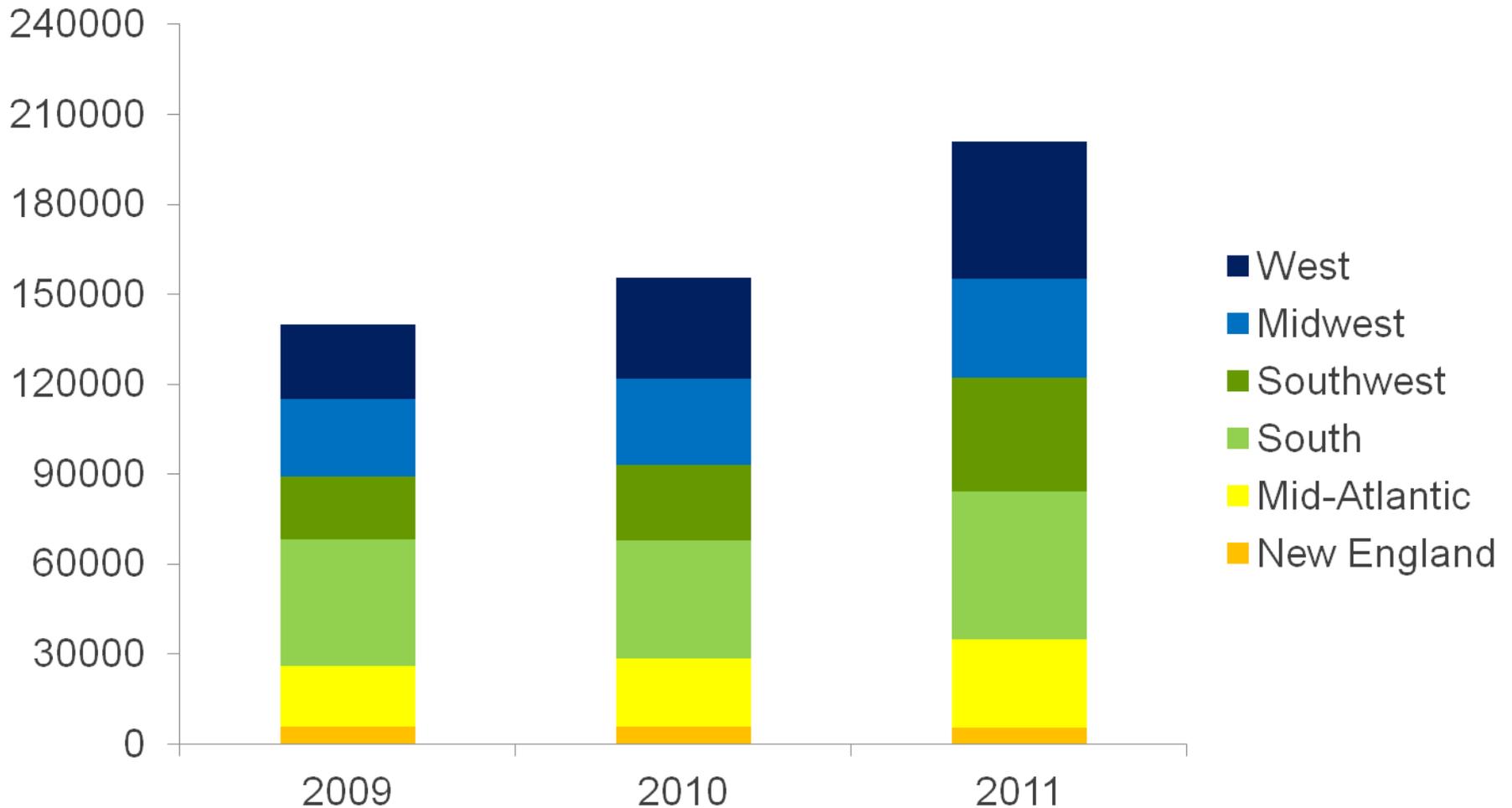
- Significant potential for energy savings
- Affordable housing often multifamily
- Gap in utility programs supporting multifamily mid and high rise

Multifamily Home Market Share



Source: 2009 EIA RECS Survey Data

Multifamily Building Permits: Regional Growth



Source: HUD SOCDs

Opportunities for Program Expansion



Table ES-1: Metropolitan Areas by Type of Program Opportunity

Leaders	Comprehensive Program	Expand Existing Programs	Create New Programs	
New York	Seattle	Baltimore	Philadelphia	Tampa
Boston	Los Angeles	Denver	Miami	Louisville
Portland	Providence	Cincinnati	Cleveland	Kansas City
San Francisco	Hartford	Houston	Riverside	Oklahoma City
Sacramento	Honolulu	Charlotte	Salt Lake City	Richmond
San Diego	Minneapolis	Raleigh	San Antonio	Virginia Beach
Chicago	Detroit	St. Louis	Cape Coral	Memphis
Austin	Indianapolis	Atlanta	Dallas	Nashville
Milwaukee	Phoenix		Jacksonville	Columbus
Washington	San Jose		Las Vegas	Orlando
			North Port (FL)	Pittsburgh

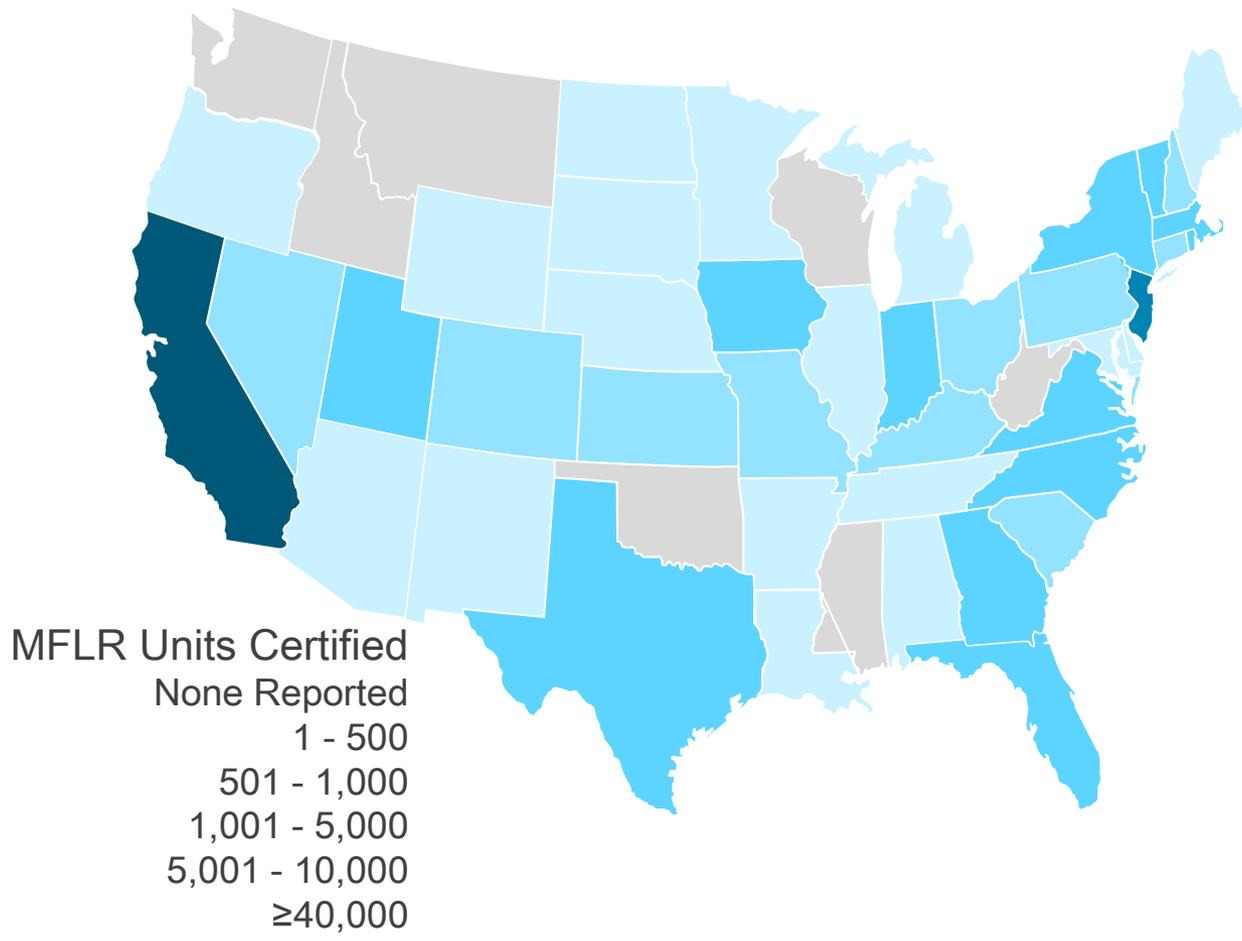
Source: "Scaling up Multifamily Energy Efficiency Programs: A Metropolitan Area Assessment", ACEEE (2013).



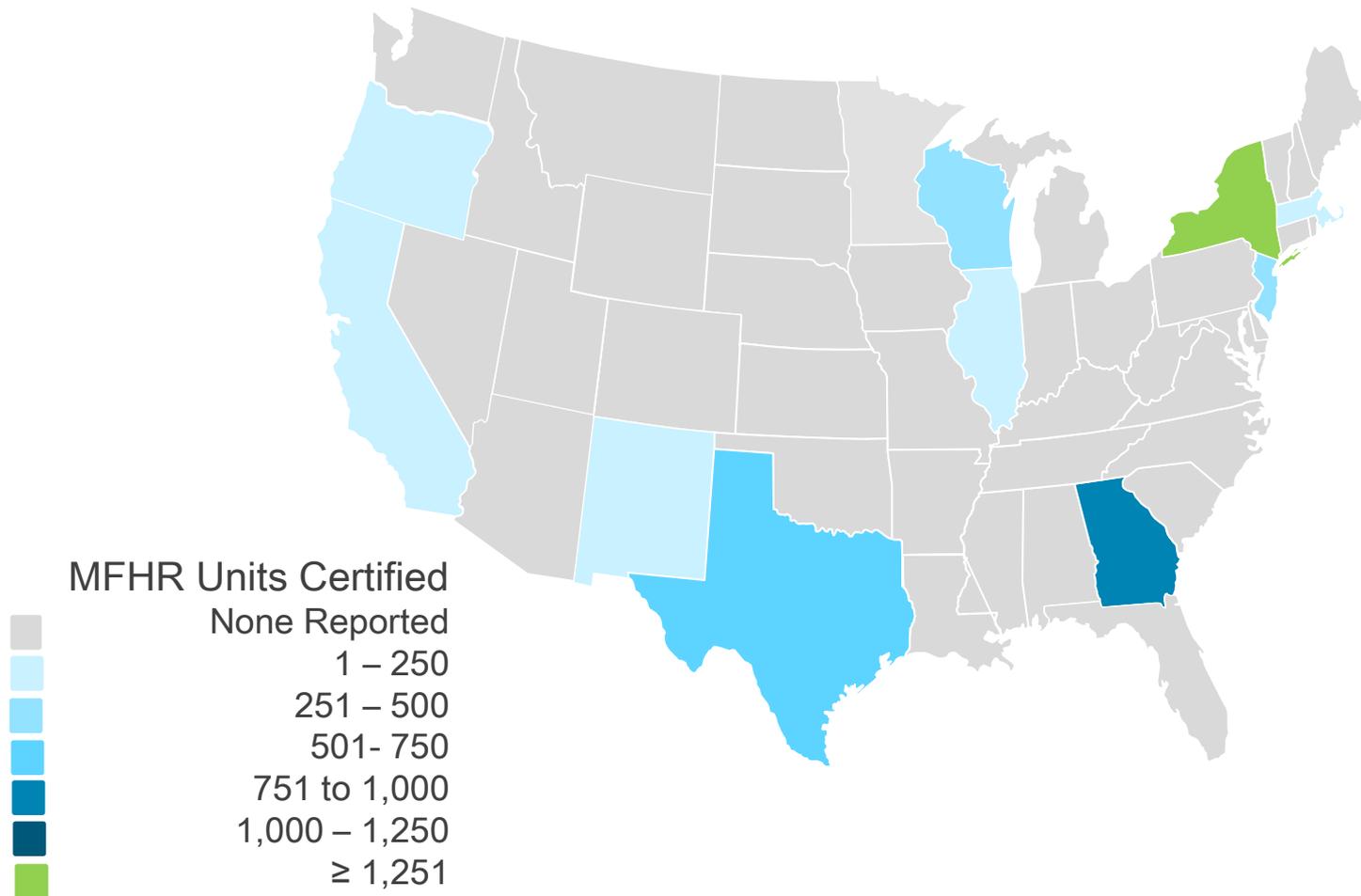
Multifamily Activity

Multifamily Low Rise Activity

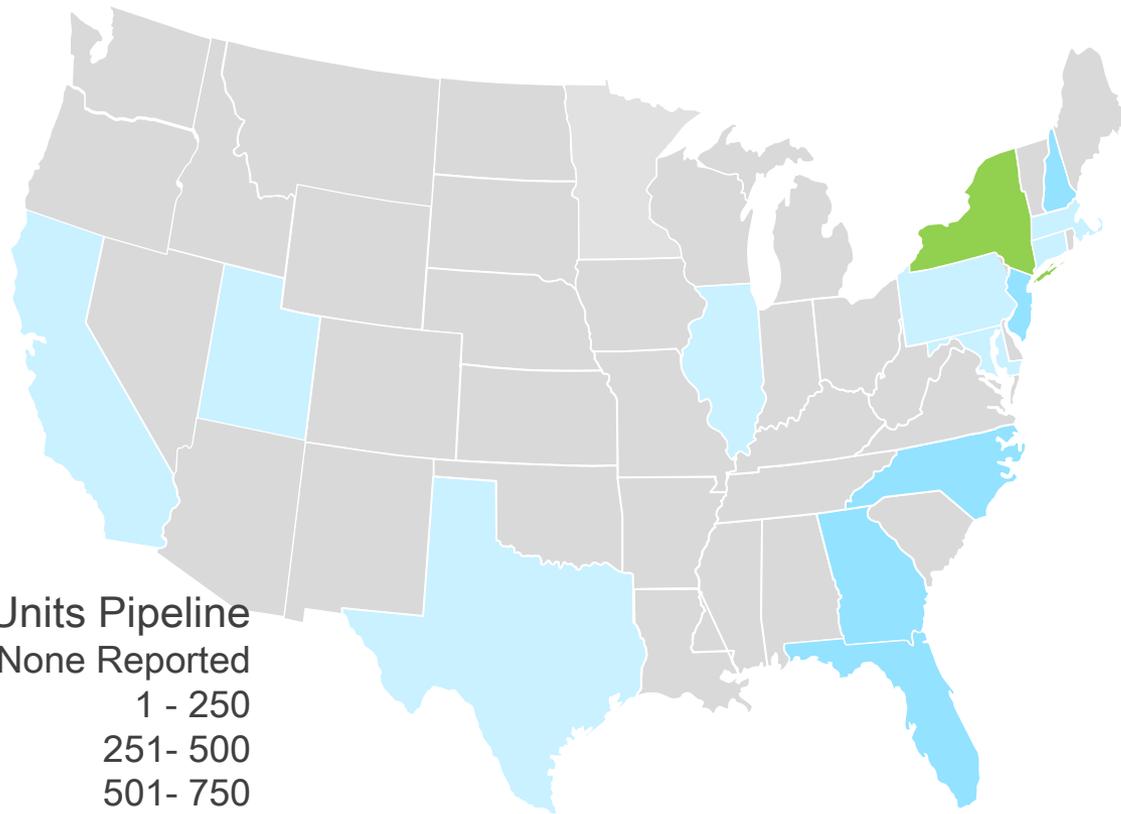
Total > 77,000 (2002 - 2012)



Multifamily High Rise Activity > 4,500 Certified Units (2006 – 2013)



Multifamily High Rise Pipeline (Total > 18,000)



MFHR Units Pipeline

None Reported
1 - 250
251 - 500
501 - 750
751 - 1,000
1,000 - 1,250
≥ 12,000





Resources for Partners and Stakeholders



ENERGY EFFICIENT
products

ENERGY SAVINGS
at home

ENERGY EFFICIENT
new homes

ENERGY STRATEGIES FOR
buildings & plants



- [ABOUT ENERGY STAR](#)
- [PARTNER RESOURCES](#)

Home > Partner Resources > For New Home Industry Professionals > ENERGY STAR Certified Multifamily High Rise Buildings

ENERGY STAR Certified Multifamily High Rise Buildings

Make a Commitment to Energy-Efficient Multifamily High Rise Buildings

Developers across the nation are constructing or substantially rehabilitating Multifamily High Rise (MFHR) buildings to earn the ENERGY STAR, improving building quality and occupant comfort while lowering energy demand and reducing air pollution. Become an ENERGY STAR MFHR Developer Partner and demonstrate your commitment to energy-efficient, quality buildings.

[BECOME A PARTNER →](#)

WORKING WITH ENERGY STAR

Partners



MFHR Developers



Utilities

Other Stakeholders



Licensed Professionals
(Architects and Engineers)



Energy Professionals



Housing Agencies

PROGRAM FEATURES AND RESOURCES



ENERGY STAR Multifamily High Rise (MFHR) Program Requirements

Each ENERGY STAR certified multifamily mid and high rise building is designed to be 15% more energy efficient than a building built to the 2007 ASHRAE 90.1 standard. Multifamily mid and high rise buildings can earn the ENERGY STAR using either the Performance or Prescriptive Path.

[Learn More >](#)



Program
Requirements



Building
Eligibility



Certification
Process



Guidance
Documents



Training
Resources

Partner Resources

Manufacturers

Retailers

New Home Industry

Benefits

Next Generation

Resources

Affordable Housing

RE Ready Home

Utilities/EEPS

Residential &
Commercial Products
ProgramsService & Product
Providers

Buildings & Plants

Small Businesses

Congregations

For Contractors

For Federal Agencies

Join ENERGY STAR

Home > Partner Resources > For New Home Industry Professionals > Benefits > Sponsoring an ENERGY STAR Residential Program

Sponsoring an ENERGY STAR Residential Program

Utilities are increasingly looking to offer energy efficiency programs to meet regulatory obligations, reduce peak demand, and/or contribute to environmental protection. Voluntary partnerships are an important pathway for meeting these goals because energy efficiency delivers an impressive value proposition to both consumers and businesses. ENERGY STAR, the government-backed symbol for energy efficiency recognized by more than 85% of American households, provides a powerful platform for utilities implementing demand side management programs.

Residential buildings consume approximately 22% of the energy used in the United States each year. Therefore, working with the residential new construction market to ensure that homes are built to rigorous energy efficiency standards is an important opportunity to maximize end-use efficiency and avoid or postpone the construction of costly new power generation facilities.

Both single family and multifamily buildings can be qualified to earn the ENERGY STAR label. New construction single family, manufactured, and modular homes as well as units in low rise multifamily buildings (3 stories and below) can earn the ENERGY STAR through the Certified Homes Program. Most mid and high rise buildings (4-5 stories and above with central systems) can earn the ENERGY STAR through the Multifamily High Rise (MFHR) Program.



Sponsor an ENERGY STAR Residential New Construction Program

BECOME A PARTNER →

ENERGY STAR CERTIFIED HOMES

ENERGY STAR certified homes are designed and constructed to be significantly more energy efficient than those built to code while lowering homeowner utility bills and providing superior comfort, quality, and durability. Homes built to the ENERGY STAR guidelines will be at least 15% more energy efficient than homes built to the 2009 International Energy Conservation Code (IECC). As a result, sponsoring an ENERGY STAR Certified Homes program is an opportunity to promote energy efficiency in the residential market and to capture long-term peak and energy demand savings that can stand-alone or complement other residential energy efficiency initiatives.

- [About ENERGY STAR Certified Homes](#)
- [Best Practices for Program Design and Implementation](#)
- [Resources for Utility Sponsors](#)

ENERGY STAR MULTIFAMILY HIGH RISE

Utilities interested in expanding their residential energy efficiency portfolios to include mid and high rise multifamily buildings should consider sponsoring an ENERGY STAR Multifamily High Rise program. To earn the ENERGY STAR, a new or substantially rehabilitated mid or high rise multifamily building must be designed to be at least 15% more energy efficient than MFHR buildings built to the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1-2007. MFHR certified buildings must also undergo rigorous testing and verification to ensure that efficiency measures are properly installed and that MFHR certified buildings achieve their energy savings targets.

- [Utility Support for ENERGY STAR MFHR](#)
- [MFHR Program Requirements](#)

Utility Support for the ENERGY STAR MFHR Program

The ENERGY STAR Multifamily High Rise (MFHR) Program provides a modeling, testing, verification, and benchmarking process that gives utilities confidence that they are capturing energy savings from the MFHR certified buildings they incentivize.



Residential mid and high rise buildings lie at the intersection of the commercial and residential sectors. EPA designed the ENERGY STAR MFHR Program specifically for this unique building type. By sponsoring ENERGY STAR multifamily high rise construction, utilities can complement their existing residential and commercial energy efficiency programs.

To earn the ENERGY STAR, a new or substantially rehabilitated mid or high rise multifamily building must be designed to be at least 15% more energy-efficient than MFHR buildings built to the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1-2007. MFHR certified buildings must undergo rigorous testing and verification all of which is validated by a [Licensed Professional](#) who provides quality assurance for the [Developer Partner](#) and their subcontractors. This process gives utilities greater confidence that the efficiency measures are being properly installed and that certified MFHR buildings meet performance and quality expectations.

Developers and owners of ENERGY STAR MFHR certified buildings must also commit to [benchmarking](#) their buildings with EPA's Portfolio Manager for a period of no less than two years after construction. Portfolio Manager is a free, online, interactive energy management tool that allows developers/owners to measure and track their building's energy and water consumption, identify investment priorities, and verify improvements over time. Utilities are encouraged to work with building developers, owners, and managers to ensure that buildings are performing as efficiently as possible.

BECOME A PARTNER →

Why Support Multifamily Housing?

The multifamily sector provides an opportunity for utilities to capture energy savings as well as support affordable housing in their service territories.

- There is significant potential for energy savings in the multifamily sector. The United States has more than 18 million occupied apartments and condominiums in buildings with five or more units. These building owners and tenants spent almost \$22 billion on energy in 2009 of which \$15.4 billion was spent on electricity, \$5 billion on natural gas, and more than \$1 billion on fuel oil. [1](#) Energy expenditures in rented multifamily units are also on average 38% higher than in owner-occupied single family homes. [2](#) With over 300,000 permits filed for new multifamily units in 2012, the energy savings potential for multifamily new construction continues to grow.
- Mid and high rise multifamily housing has been traditionally underserved by utility-sponsored energy efficiency programs. A limited number of utilities have developed whole-building new construction multifamily energy efficiency programs. Existing multifamily programs are funded at rates far less than other programs given the market share of the multifamily sector. [3](#) It can be difficult for utilities to provide incentives for mid and high rise multifamily buildings for a number of reasons including: multifamily buildings have a wide variety of architectural characteristics and energy usage characteristics; many different actors are involved in designing, constructing, and commissioning multifamily projects, and multifamily owners and developers face split incentive barriers when investing in energy efficiency, among other challenges. The ENERGY STAR MFHR program helps overcome some of these barriers to assist utilities in reaching this market.
- A majority of low income households live in multifamily housing and spend a higher proportion of their income on energy expenses compared to the average household. Over 27 million low-income households live in multifamily housing. Households that earn \$50,000 or more spend just 3% of their income on energy expenditures while households that earn \$10,000 or less spend 33% of their income on energy related expenses. [4](#) Utilities looking to support affordable housing initiatives or programs can make a significant impact by incentivizing energy efficient construction of multifamily buildings through the ENERGY STAR MFHR Program.

Benefits of Incentivizing Multifamily Mid and High Rise Buildings with ENERGY STAR

Utilities can capitalize on the energy savings potential in the multifamily sector by incentivizing mid and high rise buildings through the ENERGY STAR MFHR Program. As a sponsor, utilities can also leverage the following resources:

- Use of the ENERGY STAR brand to promote utility partnership and engage multifamily developers, Licensed Professionals, and other key stakeholders.
- Established MFHR program requirements and verification protocols reduce the burden on utilities to set up their own programs.
- Technical and marketing support from the ENERGY STAR program.

MFHR RESOURCES



[Program Requirements](#)



[Building Eligibility](#)



[Certification Process](#)



[Guidance Documents](#)



[Training Resources](#)

Partner Resources

Manufacturers

Retailers

New Home Industry

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RE Ready Home

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Residential &
Commercial Products
ProgramsService & Product
Providers

Buildings & Plants

Small Businesses

Congregations

For Contractors

For Federal Agencies

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Home > Partner Resources > For New Home Industry Professionals > ENERGY STAR Certified Multifamily High Rise Buildings > Training Resources

Training Resources

Online training for MFHR Developer Partners, Licensed Professionals, Modelers, and other program participants.



Overview of Resources

The training modules below include slides and audio recordings that provide in-depth guidance on various aspects of the ENERGY STAR Multifamily High Rise Program.

These files are helpful tools that can be accessed online or downloaded and viewed at your convenience. The downloadable presentations can also be provided to energy professionals, modelers, and other subcontractors for clarification on the program guidelines, protocols, and required documentation.

For All Program Participants

- [Introduction to Earning the ENERGY STAR for MFHR Projects](#)  (9.22MB)
Provides an introduction to the process of earning the ENERGY STAR including building eligibility, partnership requirements, and how to participate (12 minutes).
- [Overview of ENERGY STAR for MFHR Requirements](#)  (5.26MB)
Provides an overview of the technical requirements for earning the ENERGY STAR.
- [Introduction to the Performance Path](#)  EXIT  | [Introduction to the Performance Path](#)  (2.38MB)
Provides an in-depth review of the program's Performance Path requirements and prerequisites.
- [Introduction to the Prescriptive Path](#)  EXIT  | [Introduction to the Prescriptive Path](#)  (2.38MB)
Provides an in-depth review of the program's Prescriptive Path requirements.

For Licensed Professionals and Energy Modelers

- [Using the ENERGY STAR MFHR Simulation Guidelines](#)  EXIT  | [Using the ENERGY STAR MFHR Simulation Guidelines](#)  (4.84MB)
Provides an in-depth review of the energy modeling guidelines to assist energy modelers in developing the Baseline Building Design, Proposed Building Design, and As-Built models for each project.
- [Using the Performance Path Calculator](#)  EXIT 
Provides an in-depth review for modelers on how to use the *Performance Path Calculator* to generate model inputs.

For Licensed Professionals, Energy Professionals, and Verifiers

- [Testing & Verification Protocols Part I](#)  EXIT  | [Testing & Verification Protocols Part I](#)  (13.3MB)
Provides an introduction to the *Testing & Verification (T&V) Protocols*.
- [Testing & Verification Protocols Part II](#)  EXIT  | [Testing & Verification Protocols Part II](#)  (9.43MB)
Provides an in-depth review of the inspection, testing, and verification requirements for appliances, domestic hot water systems, envelope, garages, and heating and cooling systems.
- [Testing & Verification Protocols Part III](#)  EXIT  | [Testing & Verification Protocols Part III](#)  (8.70MB)

MFHR RESOURCES


[Program Requirements](#)

[Building Eligibility](#)

[Certification Process](#)

[Guidance Documents](#)

[Training Resources](#)

ENERGY STAR Logos



**Partnership
Mark**



Available for developers after signing Partnership Agreement.

**Designed to Earn the
ENERGY STAR Mark**



Available for developers once Proposed Design Submittal is accepted.

**ENERGY STAR
Certification Mark**



Available for developers after As-Built Submittal is accepted.

Building Profile



Sample 1

The Main Street Building

123 Main Street
Washington, DC 20005

Building Developer:

ABC Development Corp.

Licensed Professional:

XYZ Architectural Designs

Type:

New Construction

Sector:

Affordable

Building Description

Year Labeled:

2012

Technologies Used:

- Steel frame walls with R-13 FG and R-5 rigid insulation
- 15 SEER AC
- Low-flow fixtures, ENERGY STAR appliances and CFLS



Template 1 = With Building Picture

MFHR Awards



ENERGY STAR Partner of the Year

Applications due on November 20th, 2013

www.energystar.gov/awards

Leadership in Housing

www.energystar.gov/mfhr/awards

2013 MFHR Leadership in Housing Award Winners

Developer Partners	State
Affordable Housing Associates	CA
Appleton Housing Authority/Horizon Construction	WI
Blue Sea Development Company, LLC	NY
Conifer Realty, LLC	NY
Dunn Development Corp.	NY
Eagle Flats Apartment Homes, LLC	WI
HELP Genesis	NJ
Highland Senior Residences, LLC	NY
Joy Construction	NY
Schneider Development, LLC	NY

Outreach Strategy



- Utility Program Sponsors
 - Currently over 100 programs across the country provide incentive for ENERGY STAR homes
 - EPA will work with current partners to expand offering to multifamily
- Housing Finance Agencies
 - HUD and USDA are exploring ENERGY STAR Certification for new construction portfolio
 - Continuing to grow the market for energy efficient affordable housing
- Home Energy Professionals (e.g., Raters)
 - Provide technical support and work with training and certification programs
- Market Rate Developers
 - Regions with high growth potential
 - Mid to high-end markets
 - Builders ready to capitalize on marketing advantages
- Green Building Programs
 - ENERGY STAR Certification is a pathway to energy points for both LEED for Homes, LEED for Mid Rise and Enterprise Green Communities
- Designers & Licensed Professionals
 - Finding champions that can showcase successes and network with new developers to encourage participation



Existing Buildings

Existing Multifamily Buildings



- By using EPA's tools and resources, property owners and managers can effectively manage their community's GHG emissions by controlling energy consumption
- **18,000+** properties representing **2.8 billion square feet** of space are currently using Portfolio Manager to measure and track GHG emissions, energy use, and water use
 - Disclosure mandates driving increase in benchmarking, especially in New York City
- Property owners and managers can establish a comprehensive energy management program using the ENERGY STAR Guidelines for Energy Management
- Exploring the development of a 1-100 ENERGY STAR score and certification for existing multifamily properties using actual measured whole building data

Discussion



ENERGY STAR Multifamily High Rise Program

Main: www.energystar.gov/mfhr

Email: mfhr@energystar.gov

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