



One ENERGY STAR for Multifamily New Construction

Presented by Rebecca Hudson, EPA &
Gayathri Vijayakumar, Steven Winter Associates



Today's Session

ENERGY STAR Homes Program

ENERGY STAR MFRH Program

1. Program Eligibility

2. Technical Requirements

3. Vision for the Future



Audience Poll

- Who attended the ENERGY STAR: Year Ahead Session on Monday morning with Dean Gamble?
- Who here has successfully certified an apartment in the ENERGY STAR Certified Homes Program?
- Who here has successfully certified an apartment in the ENERGY STAR MFHR Program?
- Who here has struggled with our eligibility tree?



ENERGY STAR for New Construction MF

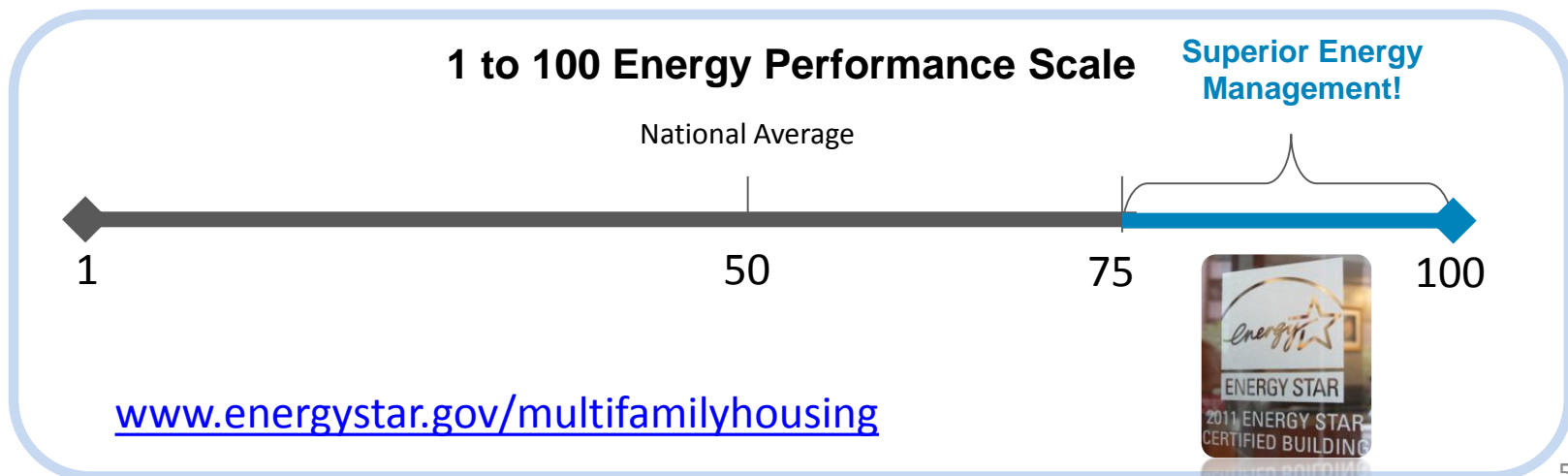
Has guidelines that apply to new (or gut rehab):

- Single Family Homes (detached and attached)
 - Factory Built Homes (manufactured and modular)
 - Low & Mid Rise Multifamily Buildings
- } Certified Homes
-
- Mid & High Rise Multifamily Buildings
 - Covers buildings previously ineligible for Certified Homes
 - Launched in June 2011
- } MFHR



ENERGY STAR for Existing MF

- Recognition ENERGY STAR score of ≥ 75 in Portfolio Manager
 - Same process as commercial buildings (office, retail, etc.)
 - Based on whole property energy use (common areas, retail, parking lots/garages, etc.)
- Awarded based on the calendar year. Properties must have at least 20 units and <50% townhomes. Energy bills must include all units.
- Score for existing multifamily properties available since Sept 2014





ENERGY STAR Multifamily Program Eligibility*

ENERGY STAR Certified Homes

- All Multifamily buildings with ≤ 3 stories or ≤ 4 units; and
- 4 and 5 story multifamily buildings with heating, cooling and DHW separate from other units, and less than 20% residential associated common space
- 4 and 5 story multifamily buildings with heating and cooling separate from other units, central DHW where more than 50% is met by solar, and less than 20% residential associated common space

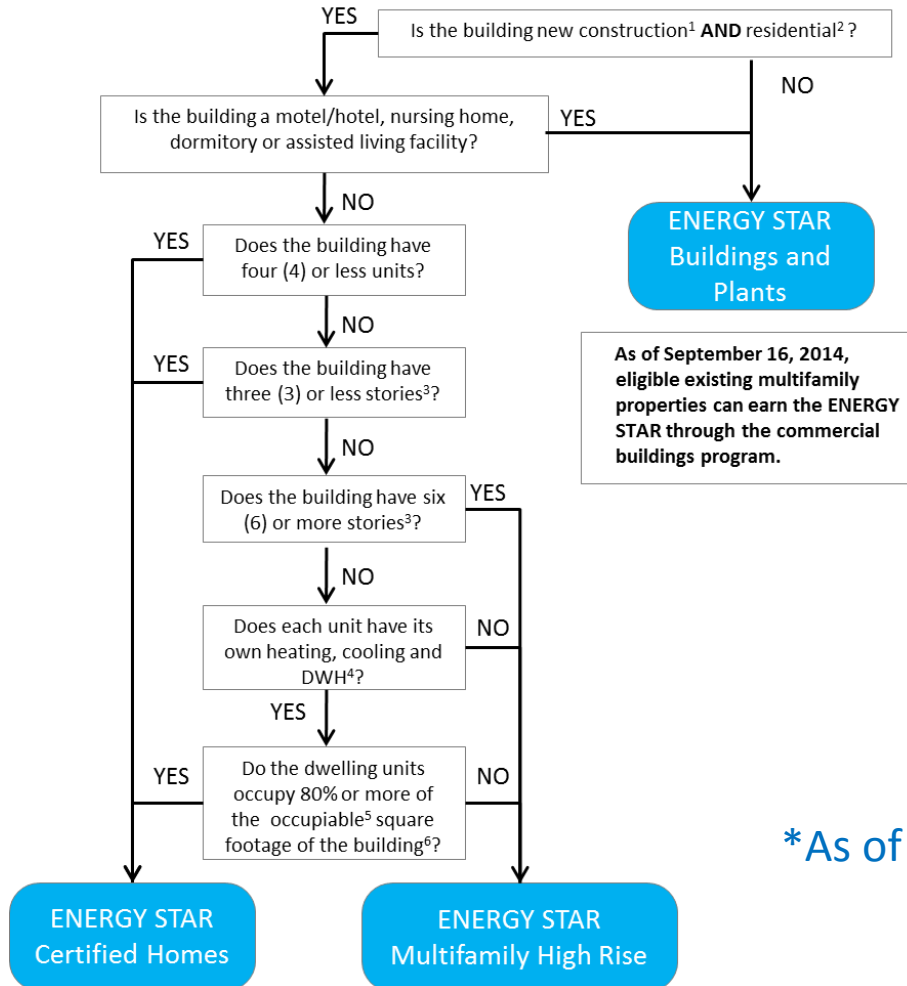
ENERGY STAR Multifamily High Rise

- 4 and 5 story buildings with heating, cooling and DHW separate from other units, and more than 20% residential associated common space; and
- 4 and 5 story buildings with central heating, cooling, and/or DHW; and
- All buildings with ≥ 6 stories

*As of January 2017



ENERGY STAR Multifamily Program Decision Tree*



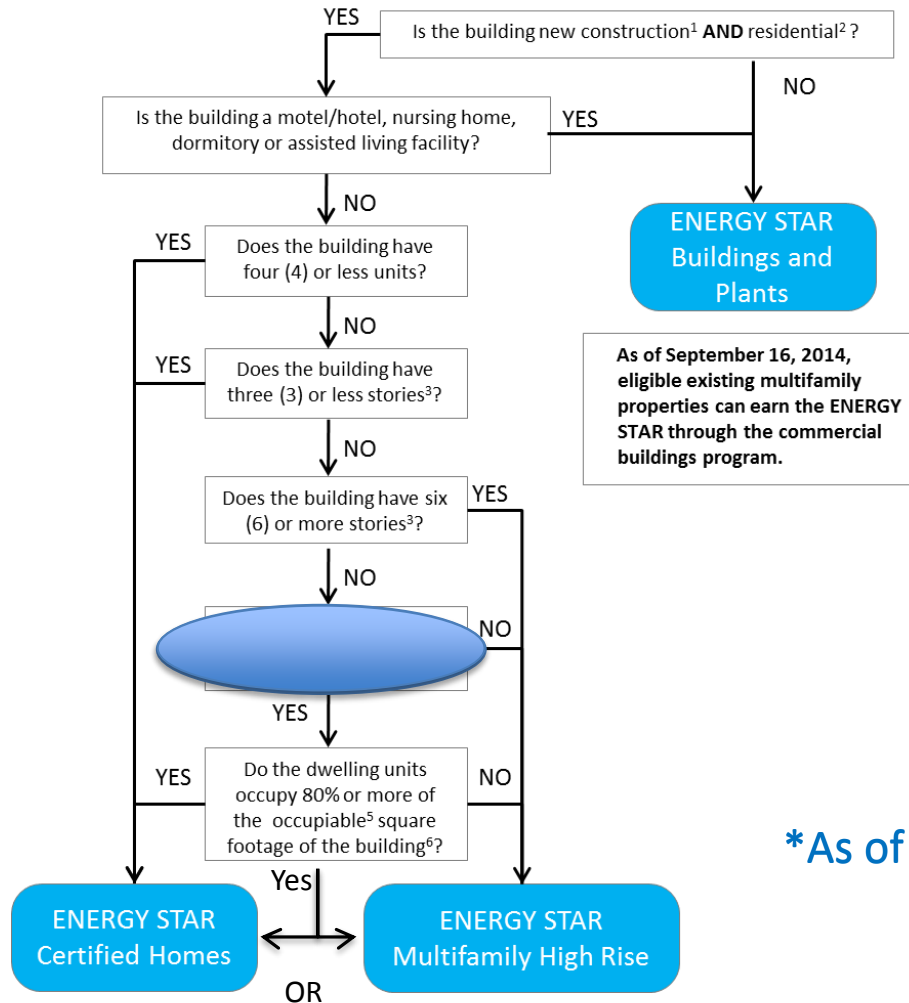
*As of January 2017





Not exactly BREAKING NEWS!

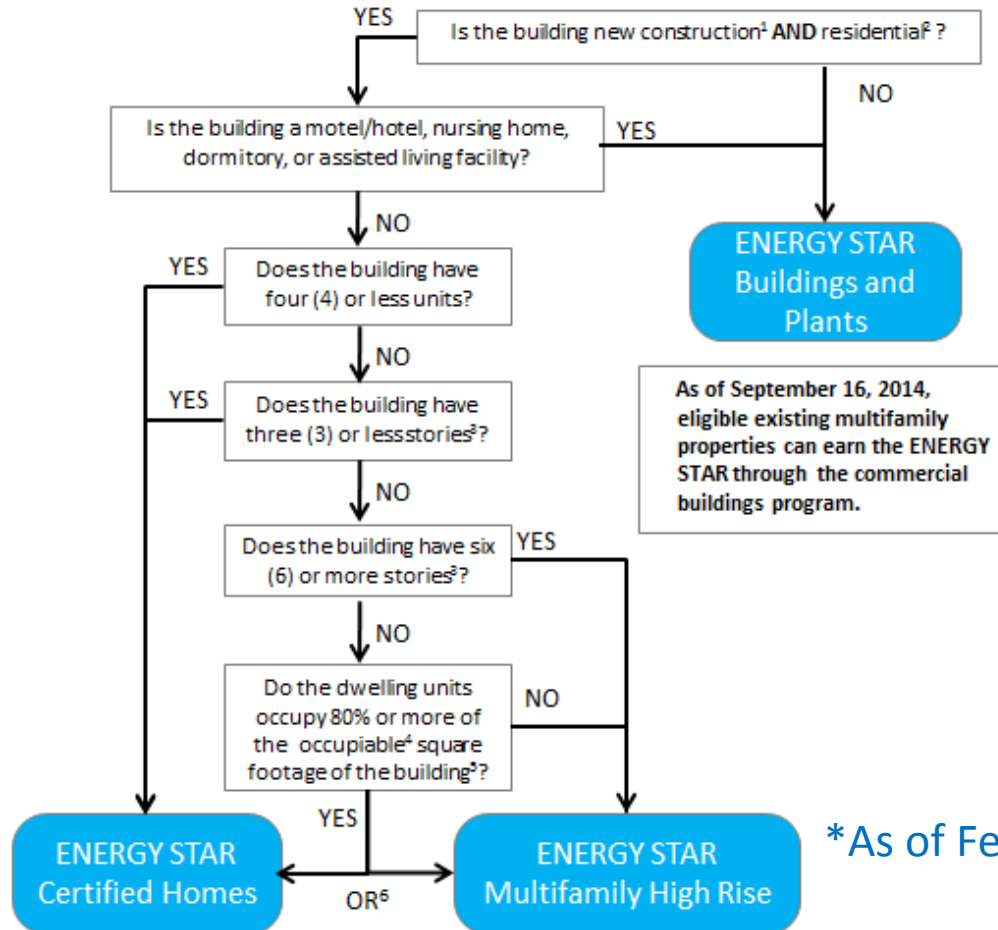
ENERGY STAR Multifamily Program Decision Tree*



*As of February 2017



ENERGY STAR Multifamily Program Decision Tree*



*As of February 2017

ENERGY STAR Multifamily Program Eligibility*

Certified Homes

- All Multifamily buildings with ≤ 3 stories or ≤ 4 units
- 4 and 5 story multifamily buildings with $\leq 20\%$ residential associated common space



Multifamily High Rise

- All buildings with ≥ 4 stories and > 4 units



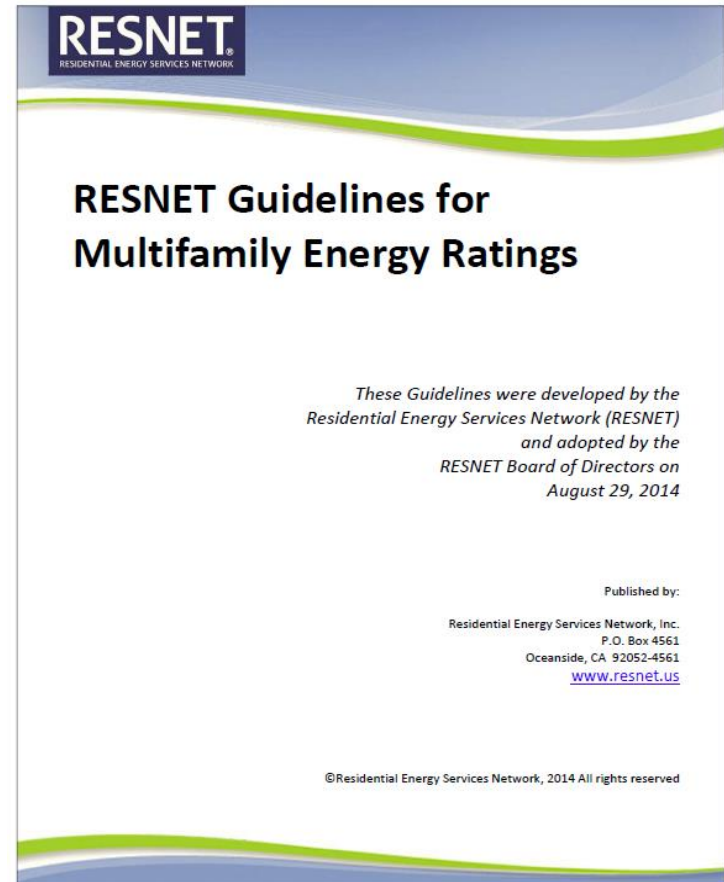


ENERGY STAR Eligibility Footnotes

1. Defines gut rehabs
2. Defines residential common space
3. Defines story
4. Defines occupiable space
5. Explains how to exclude retail space from calculations
6. Recommends RESNET Guidelines for modeling central systems in HERS ratings

RESNET Guidelines for Multifamily Ratings

- HERS Modeling Work - Arounds
 - Central cooling systems
 - Central heating systems
 - Central hot water systems
 - Central ventilation systems
 - And more!
- Sampling
- Testing
- Inspections



[RESNET Guidelines for Multifamily Energy Ratings](#)



MF Building Eligibility Examples

- 4 story, central hot water, less than 20% residential-associated common area
 - ENERGY STAR Certified Homes (new!) or MFHR Program
- 7 story, 2 stories of garage, 5 stories above with residential units, less than 20% residential-associated common area
 - ENERGY STAR Certified Homes or MFHR Program (Footnote 2)
- 7 story, mixed-use, 2 stories of retail, 5 stories above with residential units, less than 20% residential-associated common area
 - ENERGY STAR MFHR Program (Footnote 2,5)
- 3 ½ story, less than 20% common area
 - ENERGY STAR Certified Homes or MFHR Program (Footnote 3)
- If you aren't sure which program your building is eligible for, please email us: mfhr@energystar.gov

Today's Session

1. Program Eligibility

The flowchart titled "ENERGY STAR Homes Program Eligibility" determines if a building is eligible for the program. It starts with the question: "Is the building new construction AND residential?"

- If **NO**, it asks: "Is the building a multi-unit, nursing home, assisted living facility or dormitory?"
 - If **YES**, it asks: "Does the building have three (3) or less stories?"
 - If **YES**, it asks: "Does each unit have its own heating, cooling and electricity?"
 - If **YES**, it asks: "On the dwelling units, does 95% or more of the floor area require forced-air conditioning?"
 - If **YES**, it leads to the **ENERGY STAR Homes Program**.
 - If **NO**, it leads to the **ENERGY STAR HR Program**.
 - If **NO**, it leads to the **ENERGY STAR HR Program**.
 - If **NO**, it leads to the **ENERGY STAR HR Program**.
 - If **NO**, it leads to the **ENERGY STAR HR Program**.

NOTES:

- New construction includes significant gut rehabilitation when defined as a change of use, reconstruction or renovation when reconstruction work requires that the building be out of service for 90 consecutive days.
- The primary use of the building must be for residential purposes, i.e. the residential and residential associated common area floor space must be more than 50% of the building's occupiable square footage. Common areas include any space within the building that serves a function in support of the residential part of the building that is not part of a dwelling unit. This includes spaces used for residential purposes, such as corridors, stairs, lobbies, laundry rooms, exercise rooms, and residential support rooms. This also includes offices used by building management, staff offices or reception and all special care units located in the building and support the residents such as day care facilities, gyms, dining hall, etc.
- A story includes any program floor with living or commercial space. An above-ground story is one that is more than half of the gross surface area of the exterior walls is above ground. A floor that is 30% or more garage or other occupiable space is not considered a story for the purposes of this document.
- Four (4) stories or more buildings with in-unit heating and cooling and a central ducted air conditioning system where solar thermal devices of less than 30% of the building footprint, for water, steam, will qualify through the ENERGY STAR Homes Program as long as all other eligibility requirements of that program are met.
- Four (4) story buildings, including the smallest commercial area when determining the floor area of the building.

2. Technical Requirements

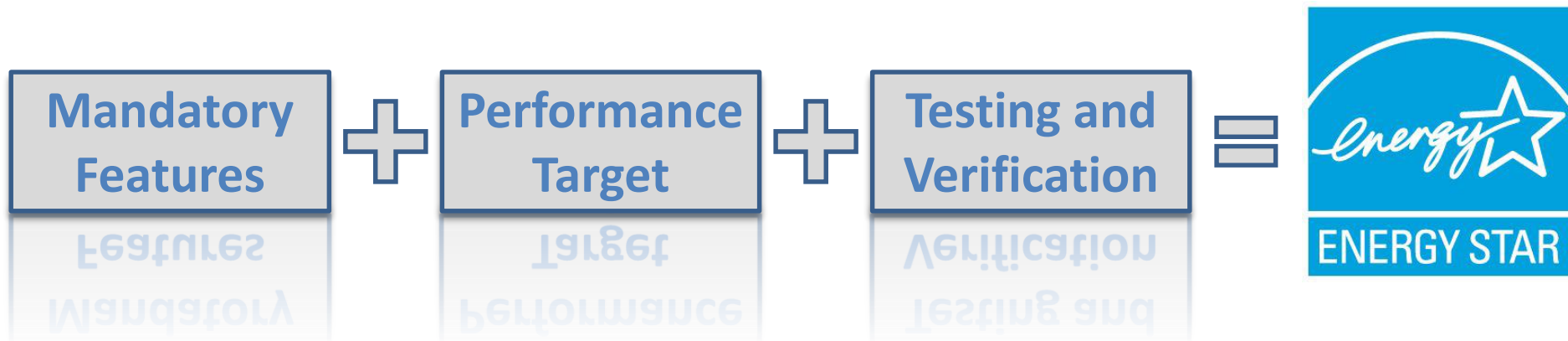
3. Vision for the Future



ENERGY STAR Multifamily Program Requirements (Certified Homes vs MFHR)



Key Components Common to Both Programs





ENERGY STAR Program Entry

Certified Homes

- Builder becomes ENERGY STAR Partner
- HVAC Contractor is credentialed
- HERS Rater is verifier
- No direct project application/enrollment
- Requirements set by permit date

Multifamily High Rise

- Developer becomes ENERGY STAR Partner
- No HVAC credentialed contractor requirements
- Licensed Professional submits paper work, oversees process
- Project Application submitted to EPA and locks in requirements (Performance Target also impacted by permit date)



Mandatory Features

Certified Homes

Units only:

- Grade I insulation
- Reduced thermal bridging
- 2009 IECC windows
- ASHRAE 62.2
- Duct leakage/Ventilation tests, etc.

Multifamily High Rise

Units & common space:

- Grade I insulation
- Reduced thermal bridging
- Double pane windows
- ASHRAE 62.2
- ES appliances
- WaterSense fixtures
- Duct blaster/Ventilation/Compartmentalization tests
- Lighting density/sensors, etc.



Performance Target

Certified Homes

- ~15% savings above 2009/2012/2015 IECC
 - ES Reference Design Home
 - HERS Index Target
- HERS rater performs preliminary ratings, Rater Design Review checklist, HVAC Design Report
- No submission to EPA

Multifamily High Rise

- 15% energy costs savings above ASHRAE 90.1-2007/2010/2013
 - Performance Path: ASHRAE 90.1 Baseline Building
 - Prescriptive Path (not available for 2012/2015 IECC projects)
- Licensed Professional oversees design review and modeling
- EPA reviews Proposed Design



Key Modeling Differences

Certified Homes

- Uses RESNET HERS Ratings
- Modeling doesn't account for common area or parking garage energy use
- Underlying assumptions are based on single family homes

Multifamily High Rise

- Uses ASHRAE 90.1 Performance Rating Method
- Modeling can account for common area, parking & commercial energy use
- Assumptions are modeled as dictated by ASHRAE 90.1 Appendix G and ES MFHR Simulation Guidelines



Testing & Verification

Certified Homes

- ENERGY STAR Version 3 Inspection Checklists (PDF)
 - Rater Design Review and Field Checklist
 - HVAC Design Report & Commissioning Checklist
 - Water Management System Builder Requirements
- In-unit only

Multifamily High Rise

- ENERGY STAR Testing & Verification Worksheets (Excel)
 - Thermal Enclosure System
 - HVAC & DHW System
 - Lighting, Motors, Pumps, Etc.
- Inspections include common areas and performance tests include ventilation riser duct leakage and DHW delivery temperature



Testing & Verification

Certified Homes

- Verification performed by certified HERS Rater
- Photo documentation retained for potential Quality Assurance by Provider, but no mandated templates

Multifamily High Rise

- Verification overseen and validated by a Licensed Professional, but could be performed by a HERS Rater
- Use photo template to submit photo documentation to EPA



Project Completion & Certification

Certified Homes

- HERS Rater revises preliminary HERS ratings to match As-Built conditions
- Rater uploads HERS rating file to RESNET registry
- Retains supporting photos/documentation for potential QA by the Provider
- Provider conducts 10% file QA and 1% field QA.

Multifamily High Rise

- Model and Excel based T&V Worksheets are revised to match As-Built conditions
- LP submits As-Built Submittal to EPA
- If approved, the units are certified.
- Developer commits to benchmarking whole-building energy use for 2 yrs



Certification Process for ENERGY STAR

Join

- Partner with ENERGY STAR
- Project Application (MFHR)

Design

- Mandatory Measures
- Performance Target

Build

- Build to design
- Testing and Verification



Perform

- Benchmark in Portfolio Manager for two years (MFHR)



ENERGY STAR Certified Homes Resources & Training

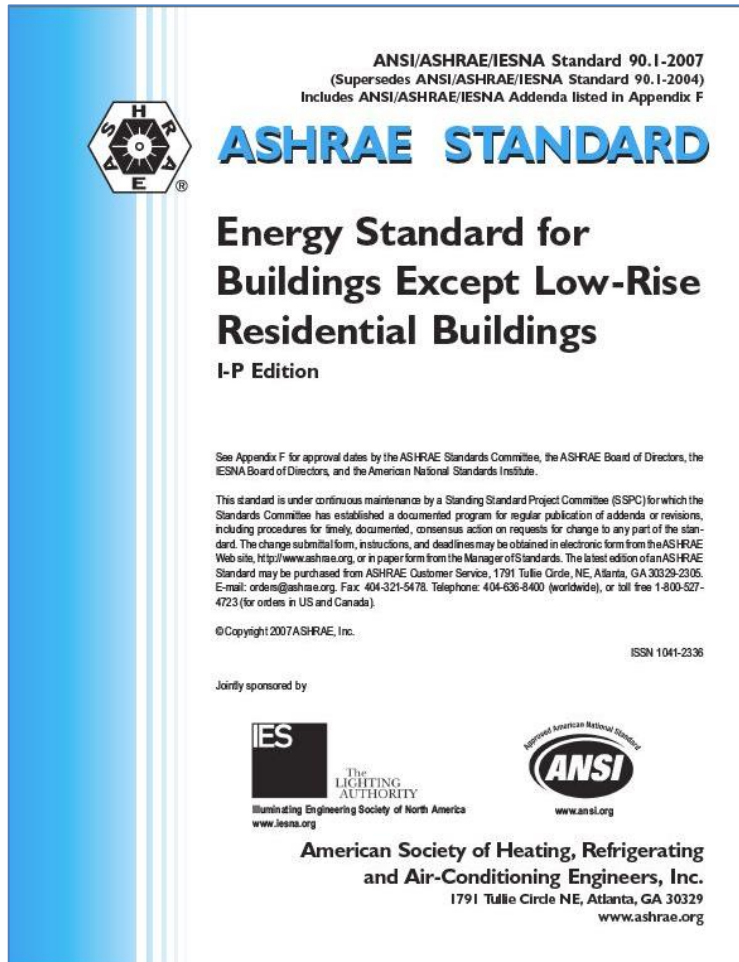
- Main: www.energystar.gov/newhomespartners
 - Program Requirements
 - Educational Resources
 - Marketing Resources
 - Partner Locator
- Training Requirements:
www.energystar.gov/newhomestraining
- HVAC: www.energystar.gov/newhomesHVAC
- Get on our email list: energystarhomes@energystar.gov




Meeting the MFHR Prerequisites

- ENERGY STAR certified appliances and exhaust fans
- ENERGY STAR certified lighting in 80% of light fixtures or 100% high-efficacy lighting
- **Installed lighting power limits**
- **Occupancy sensors for lighting in some common spaces**
- Right-sized heating and cooling equipment
- Double-pane, low-e windows
- **Low-flow faucets (≤ 2.0 gpm) & WaterSense showerheads and toilets**
- Total duct leakage for in-unit systems ≤ 8 CFM25 per 100ft² of conditioned floor area
- **Air-sealing to achieve compartmentalization < 0.30 CFM50/ft² of enclosure**
- Ventilation per ASHRAE 62.2-2007(apts) **and 62.1 (common areas)**

MFHR Performance Path Requirements



ANSI/ASHRAE/IESNA Standard 90.1-2007
(Supersedes ANSI/ASHRAE/IESNA Standard 90.1-2004)
Includes ANSI/ASHRAE/IESNA Addenda listed in Appendix F



ASHRAE STANDARD


**Energy Standard for
Buildings Except Low-Rise
Residential Buildings**
I-P Edition

See Appendix F for approval dates by the ASHRAE Standards Committee, the ASHRAE Board of Directors, the IESNA Board of Directors, and the American National Standards Institute.


This standard is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. The change submital form, instructions, and deadlines may be obtained in electronic form from the ASHRAE Web site, <http://www.ashrae.org>, or in paper form from the Manager of Standards. The latest edition of an ASHRAE Standard may be purchased from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 404-321-5478. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada).

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1791 Tullie Circle NE, Atlanta, GA 30329
www.ashrae.org

- Meet program Prerequisites
- Meet Performance Target
 - 15% better than ASHRAE 90.1-2007/2010/2013 as defined by Appendix G and Simulation Guidelines
- Supporting Tools: Excel calculator and checklist
- Verification and performance testing throughout construction
- Commit to Benchmarking in Portfolio Manager for at least two years



Testing and Verification Protocols

1. ENERGY STAR Certified Appliances
2. Domestic Water Heating (Central or In-Unit Systems)
3. Envelope Construction/Insulation, R-value/U-value/SHGC
4. Garage
5. Heating and Cooling (Central or In-Unit Systems)
6. Lighting (In-unit, common area, exterior, controls)
7. Pump Motors
8. Air-sealing and testing; Ventilation and testing
9. Metering



Testing and Verification Worksheets

- Similar to Inspection Checklists in Certified Homes
- Excel-based; document plan reviews & field verification

ENERGY STAR MFHR T&V Worksheets_Version_1.5_Sept2013_EXAMPLE.xls [Compatibility Mode] - Microsoft Excel

ID	DESCRIPTION	LOCATION/SERVES	QUANTITY	MFR	MODEL #	INPUT (BTU/H) (kW)	OUTPUT (BTU/H) (kW)	EFFICIENCY	HORSE POWER (HP)	ENERGY STAR	LOCATION (dwg/spec)	PLAN REVIEW	INSPECTION	INSPECTION COMMENTS Problems, sample details/apt #s, etc.
AHU - 1-46	Hydronic	Boiler Room (Roof)	46	Carrier	ABC 123	50000	43500	87%	25	NO	M-200	No		
HU 1-2	Supplemental Electric Heating	Stairwells, Lobby	2	McQuay	XYZ 321	3 kW	3 kW	100%	N/A	N/A	M-200	Yes		
MAU 1	Corridor Supply Unit	Roof	1	Trane	ABC838	50000	42500	85%	3		M-200	Yes		
MODELING INPUTS														
PROTOCOL	PATH REQUIREMENT	PROPOSED ERM	ENERGY MODEL	PLAN REVIEW COMMENTS			LOCATION (dwg/spec)	PLAN REVIEW	INSPECTION	INSPECTION COMMENTS Problems, sample details/apt #s, etc.				
Compliance Statement All heating systems are consistent with the project specifications and Proposed Design model or meets or exceeds the requirements listed in the Prescriptive Path.	Heating The heating and cooling systems must comply with ASHRAE 90.1-2007 Sections 6.4 and 6.5.	See below	See below	See below			See below	No						
Space Heating - Sizing Heating loads shall be calculated, equipment capacity shall be selected, and duct systems shall be sized according to the latest editions of Air-Conditioning Contractors Association (ACCA) Manual J, S, & D respectively, ASHRAE 2009 Handbook of	Load sizing calculations must reflect the design; installed capacity cannot exceed design by more than 20%, except when smaller sizes are not available. Heating loads shall be calculated.	Each unit: 50,000 BTUH Rooftop unit: 150,000 BTUH	Baseline: two boilers @1,866,000 BTUH (from model)	In-unit input capacity matches however they are not as efficient and therefore will not meet the heating load. Rooftop unit design matches the assumptions in the energy model.			M-200	No						

Photo Template

- Word-based template to provide photo-documentation to ENERGY STAR at the end of construction.

ENVELOPE – WINDOWS – PROTOCOL 5.4

Include a photo of each unique window type with third party verification (NFRC label if applicable) of U-value, SHGC, and Energy Star certification (if applicable).



Notes: NFRC window label

Notes: Typical installed window

Include a photo of installed window that verifies proper fit and effective connections to envelope's weather and air barriers.



MFHR Prescriptive Path Requirements



ENERGY STAR Multifamily High Rise National Prescriptive Path Requirements, Version 1.0

THE ENERGY STAR MFHR Prescriptive Path is only available in states where buildings are permitted to meet energy codes that are equal to or less stringent than the 2009 IECC or ASHRAE 90.1-2007. EPA has not created a Prescriptive Path for states where energy code exceeds ASHRAE 90.1-2007. Therefore, all buildings permitted under codes that are equal to or more stringent than 2012 IECC or ASHRAE 90.1-2010, must follow the ENERGY STAR Performance Path to achieve certification.

ENERGY STAR MFHR Prescriptive Path Requirements:

To earn the ENERGY STAR using this prescriptive approach, a building must meet the requirements specified below and be verified and field-tested in accordance with the *ENERGY STAR MFHR Testing and Verification Protocols*. Note that compliance with these guidelines is not intended to imply compliance with all local code requirements that may be applicable to the building to be built.

To meet the certification guidelines, the developer of a project participating in the program must provide EPA or its designated agent with program specific submittals. These submittals, which must be validated by a licensed professional (registered architect or professional engineer), are used to demonstrate that all prescriptive measures are included and installed to specification.

ENERGY STAR MFHR Testing and Verification Protocols (T&V Protocols):

The *T&V Protocols* are mandatory requirements for the inspection, testing, and verification of components related to the building's energy performance. All inspections and diagnostic tests described within these protocols are required for each of the energy-related components and systems that exist in the participating building. Results of inspections must be documented and kept on record with the building file by a licensed professional and submitted to EPA, or its designated agent, at the completion of construction. These inspections shall be conducted throughout the project construction phase at a time that is best suited to determine whether the energy efficiency element is installed to specification.

ENERGY STAR MFHR Submittal Requirements:

To meet the certification guidelines, EPA or its designated agent must approve a complete Proposed Design Submittal and a complete As-Built Submittal. EPA or its designated agent will not approve incomplete submittals, but will communicate with Developer Partners and licensed professionals on which requirements must be met to bring the submittal into compliance with program requirements.

Proposed Design Submittal (Submitted prior to construction)

The Proposed Design Submittal is used to ensure that the project design meets the prerequisite and prescriptive requirements of the program and that they have been included in the construction documents. The licensed professional is responsible for submitting a Proposed Design Submittal, with an *ENERGY STAR MFHR Submittal Validation Form* to EPA, or its designated agent for approval, prior to beginning construction. The Proposed Design Submittal includes the following:

- Testing and Verification Worksheets

A full review of all construction documents must be conducted prior to construction and documented using the *T&V Worksheets*. The *Prescriptive Path Checklist* is used at this stage to demonstrate that prerequisites and prescriptive requirements have been properly specified within the construction documents. The checklist is included as part of the *T&V Worksheets* and is automatically completed if the other *T&V Worksheets* are used to document the review process.

Developer partners may not promote the units within their project as ENERGY STAR until all program requirements are met and confirmed by EPA or their designated agent. Eligible projects may use the *Designed to Earn the ENERGY STAR* mark after the design phase of the project if they have an approved Proposed Design Submittal and the design receives a score of 75 or higher, using EPA's *Portfolio Manager*. More information is available in the *Designed to Earn the ENERGY STAR for MFHR* document available on the [Guidance Documents](#) page.

- Not permitted if State code is beyond 2009 IECC
- Install climate/equipment specific prescriptive requirements that meet or exceed Prerequisites
 - Approximately equivalent to 15% better than ASHRAE 90.1-2007, but no modeling
- Third-party verification and performance testing throughout construction
- Commit to benchmarking in Portfolio Manager for at least two years



ENERGY STAR MFHR Resources & Training

- Online training for MFHR developer partners, modelers, field inspectors, licensed professionals, and other program participants available at www.energystar.gov/mfhr/training
- Ten ~30 min narrated webinars that cover:
 - Prescriptive and Performance Paths
 - Energy Modeling
 - Testing and Verification protocols
 - Tools that facilitate program reporting
- Program Documents: www.energystar.gov/mfhr/guidance
- Get on our email list: mfhr@energystar.gov

Today's Session

The flowchart titled "ENERGY STAR Commercial Buildings Program Decision Tree, Version 1.0" determines eligibility. It starts with "Is the building new construction AND residential?". If YES, it asks "Is the building a multi-unit, nursing home, assisted living facility or dormitory?". If YES, it asks "Does the building have three (3) or more units?". If YES, it asks "Does the building have six (6) or more stories?". If YES, it asks "Does each unit have its own heating, cooling and ventilation?". If YES, it leads to "ENERGY STAR Homes Program". If NO at any point, it leads to "ENERGY STAR Commercial Program".

1. Program Eligibility

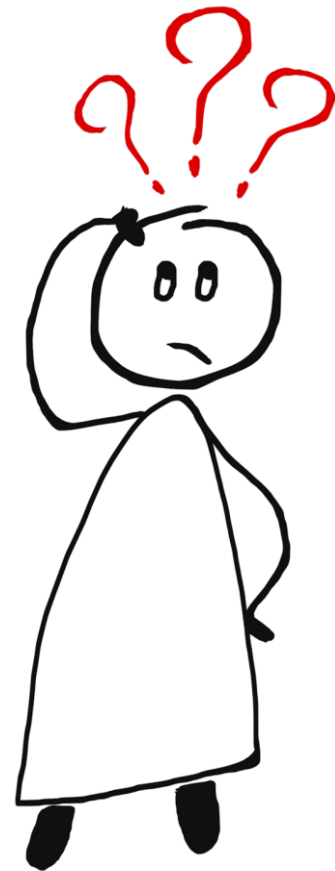
2. Technical Requirements

3. Vision for the Future



Challenges with Current State

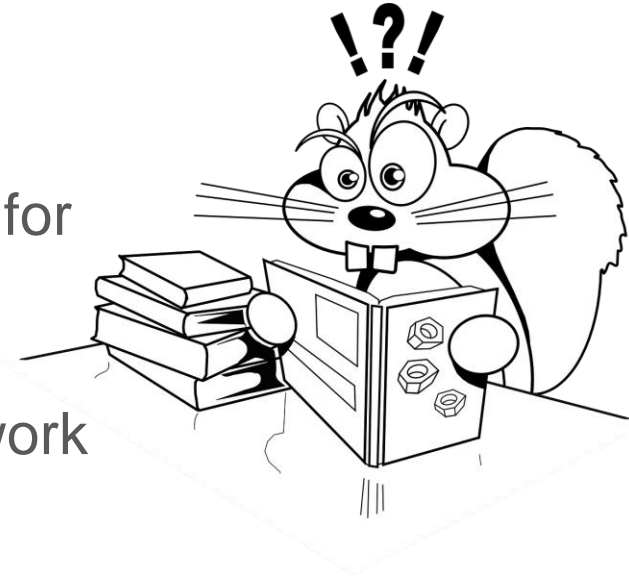
- Eligibility requirements
 - Overly complex
 - Sometimes force projects down a path the partner doesn't want to pursue
 - Because of differences in program design, eligibility of a project has big ramifications
 - Challenging for program implementers
- Program Requirements
 - ES Reference Design Home is not optimized for low-rise multifamily
 - Common areas in low-rise not addressed



Challenges with Current State

- Verification & Oversight

- Lack of expertise/training available for MF testing and verification
- Learning curve for MFHR program leads to large variation in bids for work
- MFHR T&V worksheets formatting make them look harder than reality
- Confusion over ownership of MFHR T&V
- Standardized approach to HVAC testing and verification not available in multifamily
- EPA internal MFHR review process is not sustainable
- EPA management of high-rise modeling, testing & verification protocols not sustainable





Challenges with Current State

- Marketing/Partner Support
 - Homes marketing currently geared to SF homes
 - Multifamily targeted messaging a challenge with separate programs, separate tracking, separate requirements

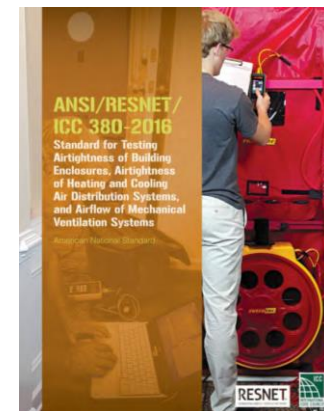
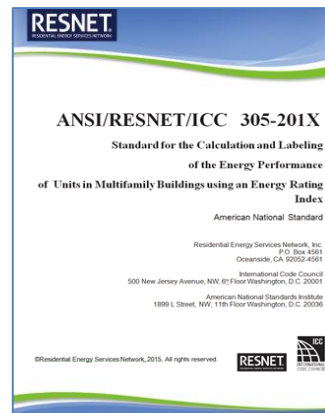
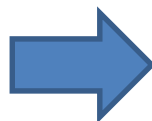
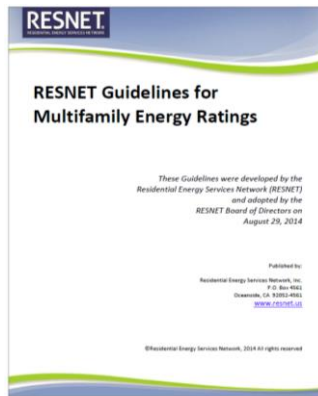
Anything missing?



Meanwhile...

Multifamily Updates - RESNET

- RESNET Multifamily Subcommittee
 - ANSI/RESNET/ICC 305, Standard for the Calculation and Labeling of the Energy Performance of Multi-Family Dwellings using an Energy Rating Index (draft standard)
 - HERS rating software updated for MF calculations
 - Enforceable language
 - Units in multifamily buildings of any height
 - Multifamily amendment to ANSI/RESNET/ICC 380





Multifamily Updates - RESNET

- IAF draft Addendum E to ANSI 301-2014 - pending
 - Reduces the HERS bias against small conditioned floor area homes
 - Large impact for MF units

Want to know more?

HERS Index Adjustment Factor Proposal Assessment

Presenters: Linda Jeng, Dow Building Solutions, Philip Fairey, FSEC & David Roberts, NREL

Room: Apache II

Tuesday, 10:30-12:00



Multifamily Updates

- NBI's Proposal for 2021 IECC Code
 - Create a multifamily section where all R2's (apartments/dorms) together
- ASHRAE 62.2-2016
 - Covers all dwelling units regardless of building height
- Growth in Multifamily Sector
 - 155K units completed in 2010 → 320K units in 2015
- Partner Feedback

Rethinking Multifamily





Goals for the New Concept

Eligibility Requirements

- Provide appropriate flexibility to meeting program requirements
- Provide more flexibility to Program Administrators
- Better align program design so that there are smaller ramifications based on eligibility

Program Requirements

- Requirements governed by building features
 - Optimize reference design for multifamily buildings
 - Testing using multifamily thresholds
 - Common areas are addressed in all projects



Goals for the New Concept

Verification & Oversight

- Oversight for verifiers is available in the market
- Technical expertise is more widely available for multifamily projects
 - Credential and/or training for verifiers
- Where possible, leverage external parties to develop and manage standard protocol

Marketing/Partner Support

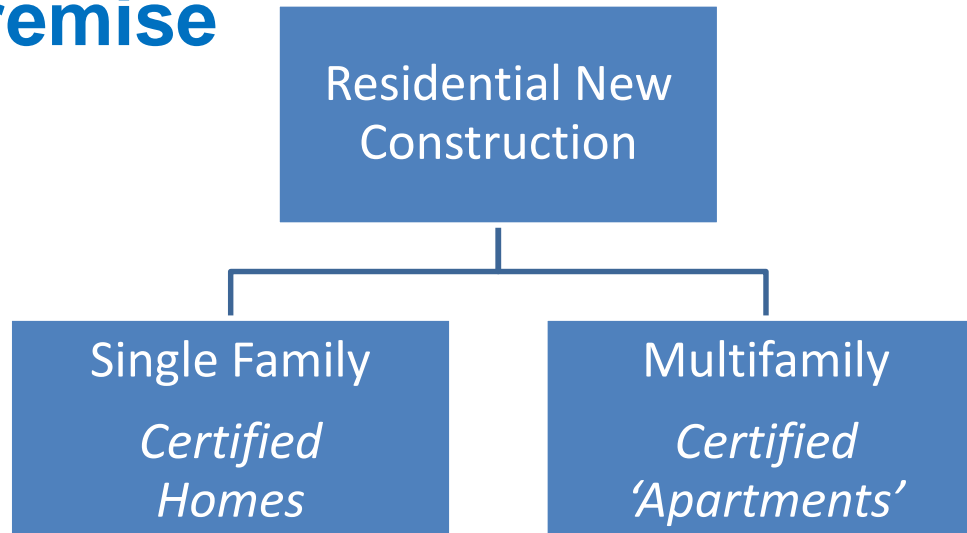
- Overall EPA programmatic support and resources are streamlined and inclusive of multifamily
- More consistent and targeted marketing is across multifamily



New Concept



New Premise



- Delineation between SF and MF
- Consistent specification for multifamily (any height)



Working Definition of ‘Multifamily’

Single-Family: One- and two-family dwellings, and townhomes

Multifamily: All other residential buildings and mixed-use buildings with residential spaces



ENERGY STAR for Multifamily: Requirements Overview

Mandatory Features

Features
Mandatory

- To be developed (with stakeholder input) by evaluating requirements from ESCH and ESMFHR and combining/adjusting as appropriate (both more and less stringent)
- Requirements may vary based on building design (e.g., in-unit vs. central HVAC)
- Will include **in-unit and common area** requirements



ENERGY STAR for Multifamily: Requirements Overview



- Proposing that three options be available for all projects:
 - Whole Building Modeling (ASHRAE 90.1)
 - In-unit model + prescriptive common space (HERS model + Prescriptive)
 - Prescriptive Path (Prescriptive options for in-unit and common space)

Assumptions:

- RESNET creates new or amends current standards related to testing, HERS modeling, sampling and inspections specific to units and common areas, and scope includes all stories
- HERS vs ASHRAE approaches are evaluated and deemed comparable
- Market available ASHRAE and Prescriptive Path oversight option



Performance Target

ASHRAE

- Model residential space (including common areas) to 90.1 using Appendix G and Simulation Guidelines
- MFHR business as usual
- Low-rise also models to 90.1 Appendix G

HERS

- Model units in any height building using HERS
 - Modified ES Reference Design 'Apartment'
 - ANSI 305 for MF calcs in HERS software
- Common space prescriptive requirements

Prescriptive

- In-unit prescriptive requirements (match modified ES Reference Design 'Apartment')
- Common space prescriptive requirements



ENERGY STAR for Multifamily: Requirements Overview

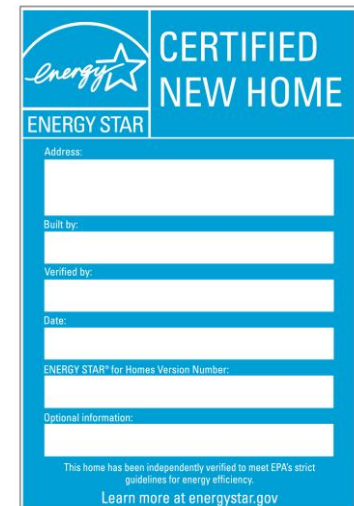
Testing & Verification and Oversight

- Process and documentation to be developed (with stakeholder input) by evaluating current ESCH and ESMFHR requirements and combining/adjusting as established as appropriate
- Verifier requirements and oversight will be specified
- Different “oversight organizations” for different pathways



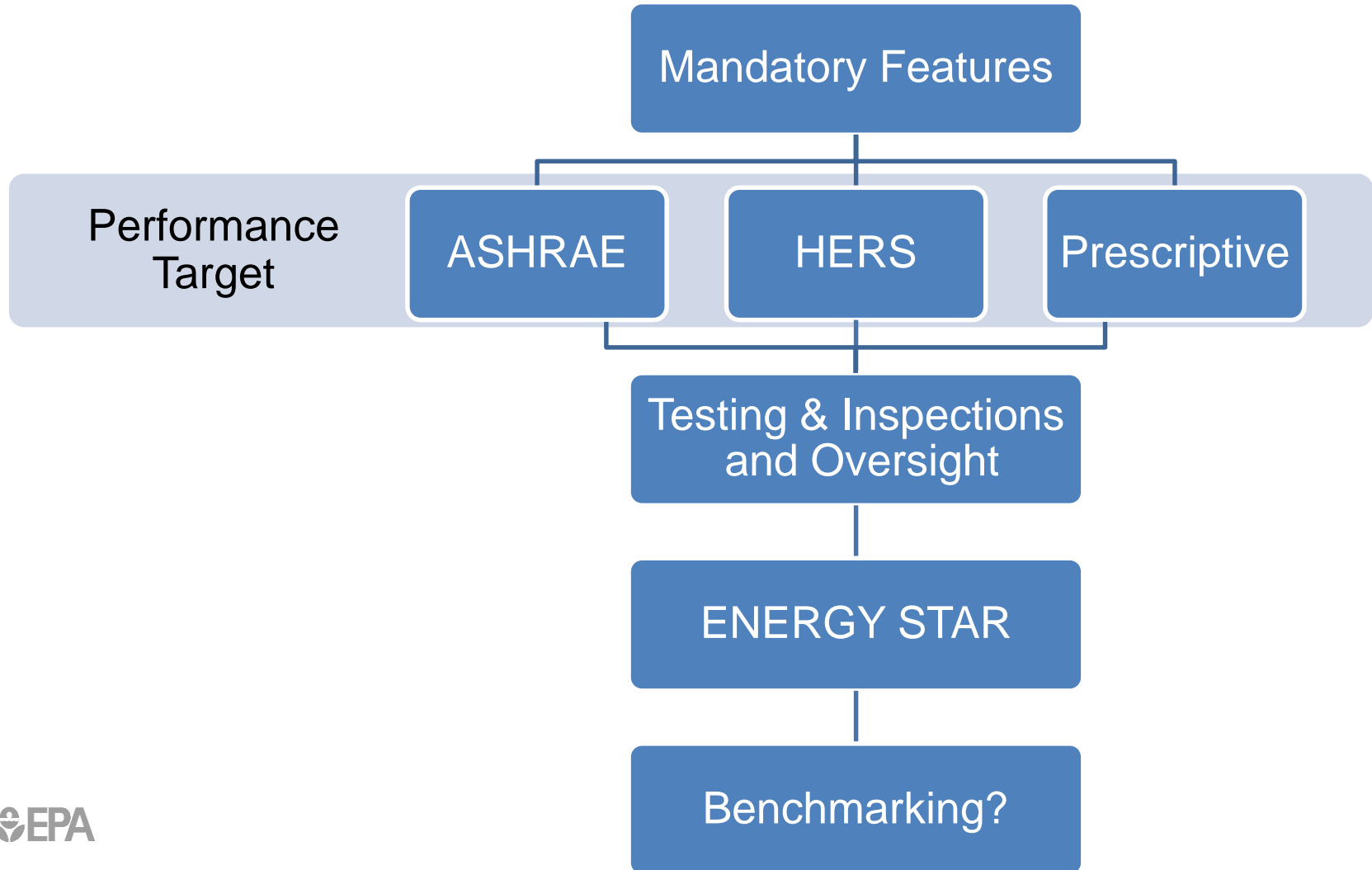
Certification Process

- Consistent process to be developed
- MFHR process requirements to be evaluated: Project Application, Design Approval and Pre-Approval before Certification, Benchmarking requirement
- Reporting process for ES Homes/Apartments should be consistent
- Consistent labeling mechanism needed (what is labeled, how is it distributed)





ENERGY STAR for Multifamily: Requirements Overview





What changes for HERS approach?

- Option to expand into taller buildings
- Potential for adjustments to the reference design
- Addition of prescriptive common space requirements
- Under review:
 - HVAC testing and verification
 - Benchmarking
 - Reporting process
 - Labeling



Current Common Space Requirements in MFHR

- ENERGY STAR appliances & WaterSense fixtures
- Common area ventilation designed and tested to ASHRAE 62.1
- Lighting: efficiency, automatic controls, and caps on total lighting wattage installed
- Envelope requirements similar to in-unit
- Above code HVAC and DHW efficiencies



Status Update

- Completed
 - Eligibility update released



ENERGY STAR Multifamily Program Eligibility*

ENERGY STAR Certified Homes

- All Multifamily buildings with ≤ 3 stories or ≤ 4 units; and

- 4 and 5 story multifamily buildings with $\leq 20\%$ residential associated common space

ENERGY STAR Multifamily High Rise

- All buildings with ≥ 4 stories and > 4 units; including

*As of February 2017



Status Update

- Completed
 - Eligibility update released
- In Progress:
 - Mandatory measures
 - ‘Apartment’ reference home
 - Prescriptive Path
 - New oversight options (ASHRAE/Prescriptive)



Future Steps

- EPA Internal Analysis:
 - Testing and Verification
 - Certification Process
- Stakeholder Input
 - Tentative: Draft ready for comment next winter

Today's Session

The flowchart titled "ENERGY STAR Commercial Buildings Program Decision Tree, Version 1.0" determines eligibility. It starts with "Is the building new construction AND residential?". If YES, it asks "Is the building a multi-unit, nursing home, assisted living facility or dormitory?". If YES, it asks "Does the building have three (3) or more units?". If YES, it asks "Does the building have six (6) or more units?". If YES, it asks "Does each unit have its own heating, cooling and ventilation?". If YES, it leads to "ENERGY STAR Homes Program". If NO at any point, it leads to "ENERGY STAR Commercial Program".

1. Program Eligibility

2. Technical Requirements

3. Vision for the Future



Questions?

ENERGY STAR for Multifamily High Rise

Main: www.energystar.gov/mfhr

Training: www.energystar.gov/mfhr/training

Questions: mfhr@energystar.gov

ENERGY STAR Certified Homes (Low Rise Multifamily)

Main: www.energystar.gov/homes

Training: www.energystar.gov/newhomestraining

Questions: energystarhomes@energystar.gov

ENERGY STAR for Existing Multifamily Buildings

Main: <http://www.energystar.gov/multifamilyhousing>

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