

Draft ENERGY STAR Multifamily New Construction Caribbean Program Requirements, Version 1

August 19th, 2020





Agenda

- National transition to Multifamily New Construction
- Review current Certified Homes ENERGY STAR Caribbean program requirements.
- Proposed ENERGY STAR MFNC Caribbean program requirements.
- Comment Period.
- Q&A.



Current ENERGY STAR Program Requirements: Caribbean Multifamily Opportunities

- Disaster-relief funding for the islands tied, in part, to efficiency programs, which can drive the adoption of ENERGY STAR.
- A successful ENERGY STAR program would also create a robust rating infrastructure on the islands, enabling related services.
- Because of these opportunities, EPA is proposing revised program requirements that address stakeholder feedback.



Multifamily New Construction Eligibility and Key Dates



ENERGY STAR Residential New Construction Programs: **Past**

Guidelines for new or gut rehab:

Single family homes

Low rise multifamily buildings

Some 4+5 story multifamily buildings

Certified Homes



Mid and high rise multifamily buildings

MFHR





ENERGY STAR Residential New Construction Programs: **Present**



} Certified Homes



} MFHR



} MFNC

ENERGY STAR Residential New Construction Programs: **Present**



} Certified Homes



} MFHR



} MFNC

ENERGY STAR Residential New Construction Programs: Future*



Certified Homes

(permit before 7/1/2021)



*As of July 1, 2021

MFHR

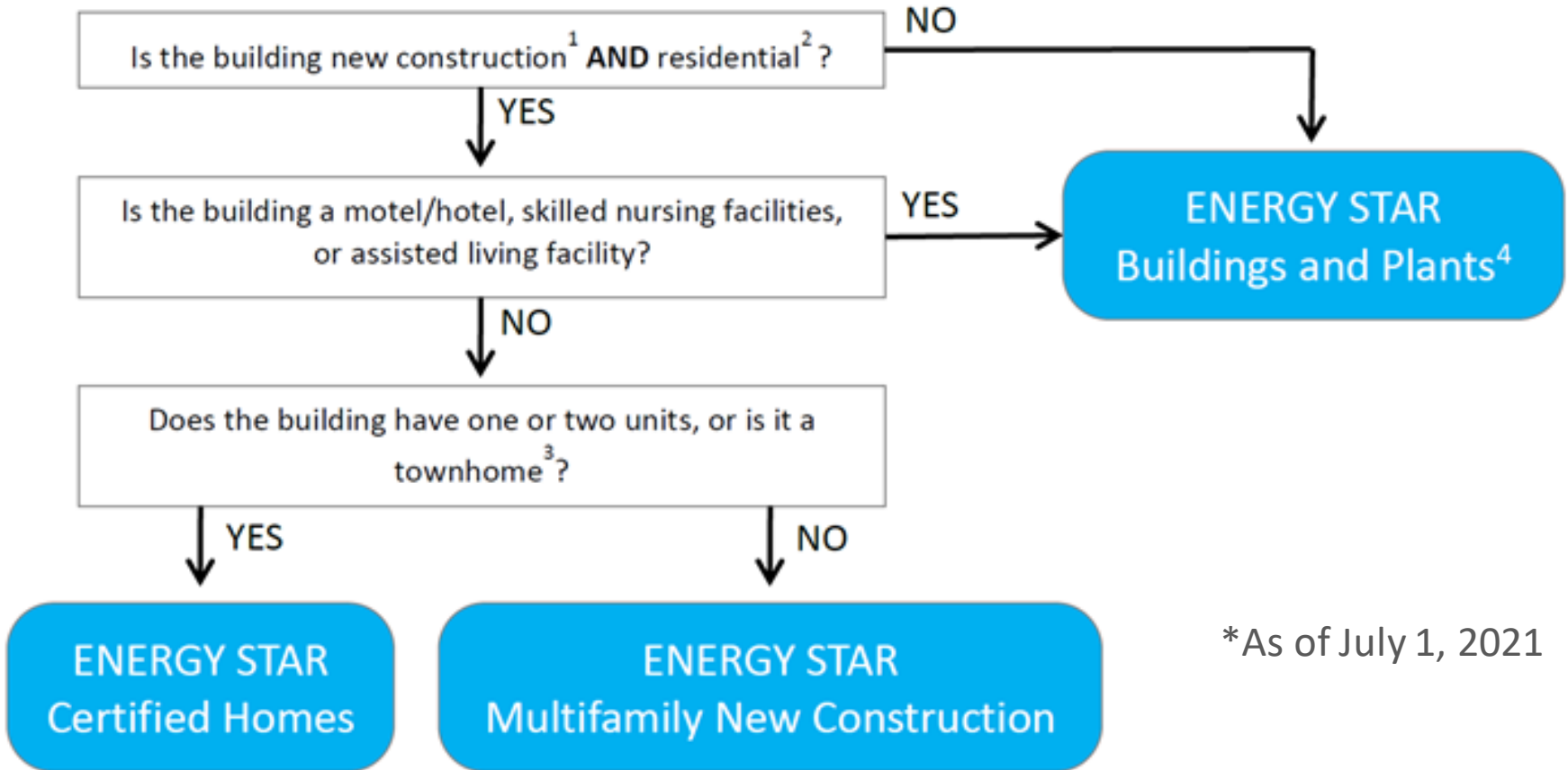
(permit before 7/1/2021 + MFHR application before 1/1/2021)



MFNC



ENERGY STAR Residential New Construction Programs: Future*



*As of July 1, 2021



Current Program Requirements



ENERGY STAR Certified Homes: Caribbean Program Requirements Overview






ENERGY STAR Multifamily New Construction: National Program Requirements Overview





Current ENERGY STAR Program Requirements: Caribbean Challenges for Multifamily


- Solar water heating challenges
- Mini-split installation challenges
- Unique windows



Proposed Multifamily Caribbean Program Requirements

Program Requirements Terminology

- MFNC Caribbean Program Requirements:
 - Applicable to Puerto Rico and the US Virgin Islands
 - All Multifamily projects
 - Excludes single-family detached homes and duplexes
 - Standalone document



DRAFT Caribbean Program Requirements
ENERGY STAR Multifamily New Construction, Version 1 (Rev. 02)

These Program Requirements shall only be used in Puerto Rico & the U.S Virgin Islands

Eligibility Requirements

The following multifamily building types are eligible to participate in the ENERGY STAR Multifamily New Construction program:

- Any multifamily building with dwelling or sleeping units that is NOT a two-family dwelling ¹; OR
- Mixed-use buildings, where dwelling units and common space exceed 50% of the building square footage. Parking garage square footage is excluded from this calculation ²; OR
- Townhouses, if following the requirements listed in Footnote 3. ³

Townhouses are also eligible to earn the ENERGY STAR through the ENERGY STAR Certified Homes program, which is a certification program for single family detached homes and two-family dwellings.¹ For more information, visit: www.energystar.gov/newhomesrequirements. In addition, multifamily buildings with permit dates prior to July 1, 2021, may be eligible to earn the ENERGY STAR through the Certified Homes or Multifamily High Rise programs. ⁴ For more information, visit: www.energystar.gov/mfhr/eligibility.

Also note that compliance with these requirements is not intended to imply compliance with all local code requirements that may be applicable to the building to be built. ⁵

Partnership and Training Requirements

The following requirements must be met prior to certifying multifamily buildings:

- The Builder or Developer for the project is required to sign an ENERGY STAR Partnership Agreement and complete the online "Builder / Developer Orientation", which can be found at www.energystar.gov/homesPA.
- Energy Rating Companies (e.g., rater companies and Providers ⁶) are required to sign an ENERGY STAR Partnership Agreement, which can be found at www.energystar.gov/homesPA, and Raters ⁷ are required to complete EPA-recognized training, which can be found at www.energystar.gov/mftraining.

ENERGY STAR Certification Process for the Caribbean

1. The certification process provides a single set of measures that must be used to construct an ENERGY STAR Certified Multifamily Building in the Caribbean, coupled with either an ERI rating or [Multifamily Review Organization](#) review for quality assurance purposes.



ENERGY STAR Multifamily New Construction Caribbean Program Requirements Overview





ENERGY STAR Multifamily New Construction Caribbean Program Requirements Overview

- Adjustments from Certified Homes:
 - Additional efficiency measure option available: HPWH
 - Additional window efficiency measure option available
 - Includes requirements for common spaces
 - Envelope, lighting, ceiling fans, appliances, ventilation
 - Includes additional MFNC requirements, generally focused on hot water energy use



Performance Target



ENERGY STAR Multifamily New Construction Caribbean Performance Target

- All buildings must include these prescriptive measures:
 1. Wall Insulation: $\geq R-5$ (including common spaces)
 2. Windows in Bedrooms: $U\text{-value} \leq 1.2$ / $SHGC \leq 0.35$
 3. Ceiling Fans: ENERGY STAR certified and installed in all primary living areas and specified common spaces > 75 sq. ft.
 4. Lighting: 100% LED in Dwelling Unit; 90% in Common Spaces
 5. Appliances and Fixtures (including common spaces)
 - Where specified, ENERGY STAR certified refrigerators, dishwashers, clothes washers, dryers
 - WaterSense certified showerheads and dwelling unit lavatory faucets



ENERGY STAR Multifamily New Construction Caribbean Performance Target

- All dwelling units must include these prescriptive measures:
 6. Plus, at least one of the following three measures:
 - Measure A: Solar Water Heater - DHW equipment shall include a solar water heater system with a Solar Fraction $\geq 87\%$.
 - Measure B: Heat Pump Water Heater- DHW equipment shall include heat pump water heater installed within the unit.
 - Must be in a space with at least 1,000ft³; must be ≤ 48 dba
 - Measure C: Bedroom Mini-Split HVAC – Mini/multi-split AC's or HP's ≥ 15 SEER, each with ≤ 10 ft. of ductwork, shall serve all bedrooms.



ENERGY STAR Multifamily New Construction Caribbean Performance Target

- A note about Measures A, B & C– if any space cooling is provided in the building, it must be efficient equipment:
 - If Measure A: Solar Water Heater **OR** Measure B: Heat Pump Water Heater are selected, then no space cooling is required, but if any space cooling is provided, it must be provided using mini/multi-split AC's or HP's ≥ 15 SEER, each with ≤ 10 ft. of ductwork.
 - If Measure C: Bedroom Mini-Split HVAC is selected, then no space cooling is required outside of bedrooms, but if any space cooling is provided outside bedrooms, it must be provided using mini/multi-split AC's or HP's ≥ 15 SEER, each with ≤ 10 ft. of ductwork.



Mandatory Features



ENERGY STAR Multifamily New Construction Caribbean Mandatory Measures

- **National MFNC HVAC Design Report**
 - Only required to complete:
 - Section 1 – Design overview
 - Section 2 – Dwelling-Unit and Common Space Mechanical ventilation design, Local Exhaust
 - Exempted from:
 - Section 3 – Heating & cooling loads
 - Section 4 – Heating & cooling equipment selection
 - Section 5 – Duct design.
 - Section 6 – Duct Quality Installation
- **National MFNC HVAC Functional Testing Checklist**
 - Exempted from this entire checklist



ENERGY STAR Multifamily New Construction Caribbean Mandatory Measures (cont.)

- **National MFNC Water Management System Builder Reqs.**
 - Similar to Certified Homes version
 - Builder/Developer is still required to comply with this
 - Applies to the building
 - Exemption for capillary break under open or ventilated garage slabs



ENERGY STAR Multifamily New Construction Caribbean Mandatory Measures (cont.)

- **MFNC Caribbean Rater Design Review Checklist**
 - This version of the checklist will be only be used for the Caribbean program requirements.
 - Section 1: Partnership
 - Builder and/or Developer must be a Partner
 - Section 2: Review HVAC Design Report
 - Dwelling Unit Mechanical Ventilation <150% of ASHRAE 62.2-2013 requirements
 - Section 3: Solar Water Heating System
 - Same as Certified Homes



ENERGY STAR Multifamily New Construction Caribbean Mandatory Measures (cont.)

- **MFNC Caribbean Rater Design Review Checklist**
 - Item 4.1 is only applicable to dwelling units, same as Certified Homes; Items 4.2 and 4.3 apply to the building.
 - Item 4.2a contains a new option for window & skylight U-value and **SHGC without overhang or PF requirements**.
 - Item 4.2b contains overhang, window & skylight U-value and SHGC, and window area requirements customized for the Caribbean.
 - Item 4.3 requires ceiling fans to be ENERGY STAR certified and installed in all primary living areas and designated common spaces > 75 sq. ft.



ENERGY STAR Multifamily New Construction Caribbean Mandatory Measures (cont.)

- **MFNC Caribbean Rater Design Review Checklist – Items 4.2 and 4.3**

4.2 Solar gain through windows, including for common spaces, shall be reduced through one of the following options:		
4.2a Option A		
4.2.2a Windows shall have ≤ 0.85 U-Value; ≤ 0.25 SHGC, AND ;	<input type="checkbox"/>	<input type="checkbox"/>
4.2.3a Skylights shall have ≤ 0.70 U-Value; ≤ 0.30 SHGC, AND ;	<input type="checkbox"/>	<input type="checkbox"/>
4.2.4a If total window-to-floor area ratio $> 15\%$, then SHGCs adjusted as outlined in Footnote 13. ¹² OR	<input type="checkbox"/>	<input type="checkbox"/>
4.2b Option B		
4.2.1b North-facing windows shall have an overhang with a projection factor ≥ 0.30 ¹³ , AND ;	<input type="checkbox"/>	<input type="checkbox"/>
4.2.2b All windows not North-facing shall have an overhang ≥ 3 ft. deep and with a projection factor ≥ 0.40 ¹³ , AND ;	<input type="checkbox"/>	<input type="checkbox"/>
4.2.3b Windows in all bedrooms and any mechanically cooled rooms shall have: ≤ 1.2 U-Value; ≤ 0.35 SHGC, AND ;	<input type="checkbox"/>	<input type="checkbox"/>
4.2.4b Skylights shall have ≤ 0.70 U-Value; ≤ 0.30 SHGC, AND ;	<input type="checkbox"/>	<input type="checkbox"/>
4.2.5b Window-to-floor area ratio $\leq 18\%$.	<input type="checkbox"/>	<input type="checkbox"/>
4.3 One ceiling fan (i.e., not just a junction box) specified in every primary living area and designated common space ^{7,14} greater than 75 ft ²	<input type="checkbox"/>	<input type="checkbox"/>



ENERGY STAR Multifamily New Construction Caribbean Mandatory Measures (cont.)

- **MFNC Caribbean Rater Design Review Checklist**

- Section 5 requires pre-installation details to be included where mini-split is not installed at time of certification:
 1. An outdoor and indoor location must be designated on the plans for the future installation of a mini-split condensing unit and wall-mounted mini-split fan-coil units to serve the bedrooms.
 2. A wall-mounted junction box must be specified for the condensing unit along with electrical conduit from the junction box to the main electric panel board for the dwelling.
 3. A 3" pipe sleeve through the exterior wall must be specified for future power, communication, and refrigerant line connections between the area designated for the condensing unit and fan-coil units.
 4. If the designated location of the wall-mounted mini-split fan-coil units is on an interior wall, then an insulated condensate drain line must be specified with a point of connection at the fan-coil units and that terminates in storm water lines or outdoors.



ENERGY STAR Multifamily New Construction Caribbean Mandatory Measures (cont.)

- **MFNC Caribbean Rater Design Review Checklist**
 - **Section 6** is an optional review for additional Rater Field Checklist Items



ENERGY STAR Multifamily New Construction Caribbean Mandatory Measures (cont.)

- **MFNC Caribbean Rater Field Checklist**

- This version of the checklist will only be used for the Caribbean program requirements.
- Section 1 & 2: Dwelling-unit & Common space mechanical Ventilation & Local Mechanical Exhaust
 - Includes fan efficiency requirements
 - Missing in draft: In Certified Homes, exemption from Item 2.2 bathroom mechanical exhaust for bathrooms with operable window area totaling a minimum of 12% of the floor area specified for that bathroom.
- Section 3: Required controls on stair + elevator shaft dampers
- Section 4: Combustion Appliances- Similar to Certified



ENERGY STAR Multifamily New Construction Caribbean Mandatory Measures (cont.)

- **MFNC Caribbean Rater Field Checklist**

- Section 6 requires six air sealing details:

1. Sealing at ducts, flues, shafts, plumbing, piping, wiring, exhaust fans, & other penetrations to unconditioned space.
2. Sealing at window and door rough openings.
3. Walls that separate attached garages from occupiable space sealed and, also, an air barrier installed and sealed at floor cavities aligned with these walls.
4. Doors adjacent to unconditioned space or ambient conditions made substantially air-tight with weatherstripping or equivalent gasket.
5. Gap between common walls between units sealed **at exterior**
6. Doors serving as unit entrance made substantially air-tight with weatherstripping or equivalent gasket



ENERGY STAR Multifamily New Construction Caribbean Mandatory Measures (cont.)

- **MFNC Caribbean Rater Field Checklist**
 - Section 7: requires the pre-installation details for homes without a mini-split to be verified in the field.
 - **Section 8: Domestic Hot Water**
 - Heat traps required for in-unit storage water heaters
 - DHW piping in the dwelling unit must be insulated to R-3
 - Rater measured delivery temperatures at faucets and showerheads do not exceed 125°F



ENERGY STAR Multifamily New Construction Caribbean Mandatory Measures(cont.)

- **MFNC Caribbean Rater Field Checklist**
 - **Section 9: Lighting**
 - Common space lighting controls for all locations except the lobby
 - Total common space lighting power density (LPD) does not exceed ASHRAE 90.1-2007 allowances
 - Shared garages LPD limit 0.24 W/sf
 - Exterior lighting controls.
 - **Section 10: Whole Building Energy Data Acquisition Strategy (buildings > 50,000 ft²):** Lease agreements, utility aggregated data, energy monitors. Reporting not required.



Oversight and Quality Assurance



ENERGY STAR Multifamily New Construction: Oversight and Quality Assurance

Oversight Organizations

Home Certification Organization (e.g., RESNET)

ERI Path

Provide oversight similar to Certified Homes

Multifamily Review Organization

MRO Path

Provide oversight similar to MFHR, MFNC Prescriptive Path



ENERGY STAR Multifamily New Construction: Oversight and Quality Assurance

- ERI Path Requirements:
 - An accurate energy model must be created for each unit, so that its ERI value can be calculated, including:
 - The prescriptive efficiency measures,
 - Any other efficiency measures selected,
 - The architectural attributes of the units: size, window area, etc.
 - No specific ERI target must be met, but all the prescriptive efficiency measures must be used.
 - All the Dwelling Units **must** be registered with the Rater's Home Certification Organization so that quality assurance protocols are triggered, such as file and field reviews.



ENERGY STAR Multifamily New Construction: Oversight and Quality Assurance

- Multifamily Review Organization Path Requirements:
 - The building must be submitted to the Rater's Multifamily Review Organization for file review
 - Design Review: Submit the Rater Design Review Checklist, the National MFNC HVAC Design Report, applicable sections of the Multifamily Workbook, and construction documents (Optional, but highly recommended)
 - As-Built Review: Submit the Caribbean Rater Field Checklist, the Multifamily Workbook, and photo documentation



RESNET Standard Reminders and Updates



RESNET Standards Reminders

- The first temporarily exempts the infiltration test / blower door test:

“RESNET Home Energy Ratings conducted in Puerto Rico and the US Virgin Islands shall comply with the provisions of ANSI/RESNET/ICC 301, except that Ratings of homes with a permit date prior to January 1, 2022 are permitted to use a default infiltration rate of 10 ACH50 in lieu of conducting an airtightness test in accordance with Standard ANSI/RESNET/ICC 380.”



RESNET Standards Reminders

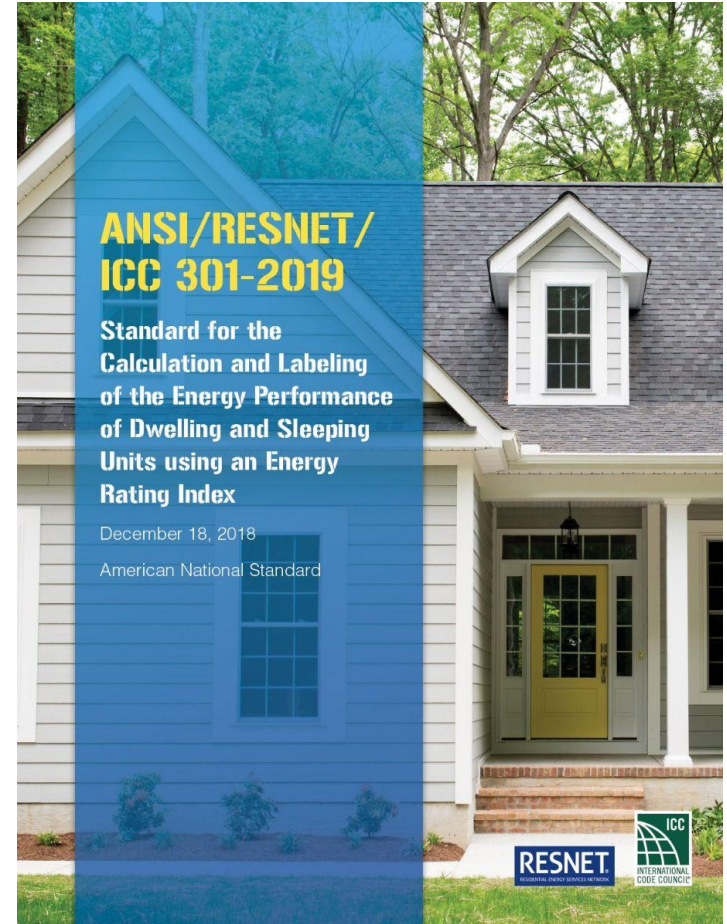
- The second provides guidance on modeling homes without full AC:

“In addition, for a home in the Tropical Climate Zone for which its Living Space is not serviced by a space heating mechanical system and not more than one-half of its Living Space is serviced by a space cooling mechanical system, the Conditioned Space Volume shall be defined as the volume of its Living Space and the Conditioned Floor Area shall be defined as the floor area of its Living Space.”

Living Space - Any enclosed space inside the primary air enclosure boundary separating indoor and outdoor air and intended for continual human occupancy, including but not limited to living, sleeping, dining, and cooking; or intended for human activities, including but not limited to toilets, closets, halls, storage and utility areas, and laundry areas.”

RESNET Standard Updates

- ANSI 301-2019 allows an ERI on units in buildings of **any** height
- “Allowed” since October 1, 2019 but **must** be used for HERS ratings with permit dates after January 1, 2021
- While “allowed”, no software compliant (yet) with ANSI 301-2019, so ESMFNC ERI Path is limited to 1- 5 story bldgs until software is compliant





MFNC Caribbean Timeline



Proposed Caribbean Implementation Timeline

- Once the MFNC Caribbean Program Requirements, v1, are finalized, stakeholders will be allowed to use them immediately to certify buildings.
- Multifamily projects with 3 or more units permitted in Puerto Rico or USVI on or after July 1, 2021 will be required to be certified using the MFNC Caribbean Program Requirements, v1.
 - Projects pursuing Multifamily High Rise must submit their Project Application to an MRO prior to January 1, 2021.
 - Single-family detached homes, duplexes and townhomes may continue using the ENERGY STAR Certified Homes Caribbean Program Requirements, v3.



Comment Period

Comment Period Timeline and Next Steps

- Draft program requirements have been posted to: https://www.energystar.gov/partner_resources/residential_new_program_reqs/mfnc_building_eligibility/caribbean_prog_reqs_v1
- Comment period began on August 13th and will end on Thursday September 10th, 2020
- Visit webpage to view draft program documents.
- Submit comments via email to energystarhomes@energystar.gov

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Residential New Construction

- Program Requirements
- Single Family Homes
- Multifamily Buildings
 - Multifamily New Construction Certification Process
 - Multifamily New Construction Building Eligibility
 - MFNC Caribbean Program Requirements, Version 1**
 - Multifamily High Rise Program (New Construction)

MFNC Caribbean Program Requirements, Version 1

Open Comment Period: August 13 - September 10, 2020

EPA has received feedback about challenges and applicability of implementing the [Multifamily New Construction National Program](#), in Puerto Rico and the US Virgin Islands as well as the potential challenges with the Certified Homes Caribbean Program Requirements, Version 1 for multifamily high-rise projects. Acting on that feedback, EPA has drafted a modified set of program requirements based on the Certified Homes Caribbean Program Requirements, named the MFNC Caribbean Program Requirements, Version 1.

EPA is conducting a comment period from August 13 through September 10, 2020 on these draft program requirements. EPA requests feedback on the below documents.

- Draft MFNC Caribbean Program Requirements, Version 1 (PDF, 213 KB)
- Draft MFNC Caribbean Rater Design Review Checklist, Version 1 (PDF, 234 KB)
- Draft MFNC Caribbean Rater Field Checklist, Version 1 (PDF, 268 KB)

Join us for the Draft MFNC Caribbean Program Requirements [EXPLN](#) webinar on Wednesday, August 19, from 2:00 - 3:00 pm EDT for more information and contact about the changes and an overview of the modified program requirements.

Submit feedback on these draft program requirements to energystarhomes@energystar.gov.



Q&A



ENERGY STAR MFNC

Web:

Main: www.energystar.gov/newhomespartners

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