

DRAFT National ERI Target Procedure (ANSI 301-2019) ENERGY STAR Multifamily New Construction, Version 1.2 (Rev. 02)

National ERI Target Procedure for use with ANSI/RESNET/ICC 301-2019

This document provides detailed instructions for determining the ENERGY STAR ERI Target, the highest ERI value that each rated multifamily unit, excluding townhouses, may achieve to earn the ENERGY STAR. Note that, in addition to meeting the ENERGY STAR ERI Target for each unit, units shall also meet all Mandatory Requirements for All Multifamily New Construction Projects in Exhibit 2 of the National Program Requirements for ENERGY STAR Multifamily New Construction, Version 1 / 1.1 / 1.2 While Townhouses are eligible to earn ENERGY STAR Multifamily New Construction by meeting their ENERGY STAR ERI Target and also meeting all Mandatory Requirements for All Multifamily New Construction Projects in Exhibit 2 of the National Program Requirements, the instructions for determining their ENERGY STAR ERI Target is in the National ERI Target Procedure for ENERGY STAR Single-Family New Homes.

An EPA-recognized Home Certification Organization's (HCO) Approved Software Rating Tool shall automatically determine (i.e., without relying on a user-configured ENERGY STAR Multifamily Reference Design) this target for each Rated Unit. This shall be done by configuring the ENERGY STAR Multifamily Reference Design in accordance with Exhibit 1, the Expanded ENERGY STAR Multifamily Reference Design Definition, and calculating its associated ERI value. The ERI value shall be calculated using ANSI / RESNET / ICC Standard 301-2019 including all Addenda and Normative Appendices, with new versions and Addenda implemented according to the implementation schedule defined by the HCO that the building is being certified under. RESNET interpretations of Standard 301-2019 shall also be followed. Any exceptions shall be approved by EPA and reported at www.energystar.gov/ERIExceptions. This value, rounded to the nearest whole number, shall equal the ENERGY STAR ERI Target.

The National ERI Target Procedure (ANSI 301-2014) must instead be used to determine the ENERGY STAR ERI Target when using ANSI / RESNET / ICC Standard 301-2014.



Revised 10/18/2021



ENERGY STAR Multifamily New Construction, Version 1.2 (Rev. 02)

Exhibit 1: Expanded ENERGY STAR Multifamily Reference Design Definition

| Controlletions Controlletion Page 8 Structural Mace Same as Resided Unit 2 Controlletions Controlletions Controlletions Page 8 Controlletions Controlletions Controlletions Controlletions Controlletions Controlletions Controlletions Page 8 Controlletions Control | Building | | | | | | | | | | | |
|--|---|---|--|--|--|--|--|--|--|---|--|--|
| - Formasonry floor slabs, modeled with 88% of floor area coviend by carpet and 20% of floor directly exposed to room air Continuing Types area as Rated Unit 1. Accept 1. Continuing Types are as Rated Unit 2. Continuing Types area as Rated Unit 3. Continuing Types are as Rated Unit 3. Continuing Types are as Rated Unit 3. Continuing Types Types are as Rated Unit 3. Continuing Types Ty | Component | Expanded ENERGY STAR Multifamily Reference Design Definition 1 Construction Type & Structural Mass: Same as Peted Unit 2 expent: | | | | | | | | | | |
| Conditioning Type: Same as Rated Unit ¹ , except: | Foundations: | | | | | | | | | | | |
| - Crawispaces shall be modeled as vented with net free vent aperture = 1sq. ft. per 150 sq. ft. of crawispace floor area and control insulation shall be localed on interior insulation shall be localed on interior assembly unaction for the building component section for floors over throunditioned Spaces - Slab floors with a floor surface less than 2st fellow grade shall be insulated to the Slab Insulation R-value. The insulation is the building component section for floors over throunditioned Spaces - Slab floors with a floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floors with a floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floors with a floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floors with a floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floors with a floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floors with a floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floors with a floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floors with a floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floors with a floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floor surface less than 2st fellow grade shall be insulated to the Slab Insulation Spaces - Slab floor surface less than 2st fellow | | | | | | | | | | | | |
| Cross Area Same as Rated Unit | | | | | | | | | | | | |
| Insulation - 1 | | | | | | | | | | | | |
| Basement Wall Continuous Insulation R-Value only applies to conditioned basements; if applicable, insulation shall be located on interior side of walls Floor assembles above crawlepace foundations shall be configured to meet the applicable floor assembly. U-factor listed in the building component section for Floors Cover Unconditioned Spaces. Climate Zone: Component section for Floors Cover Unconditioned Spaces. Climate Zone: Component section for Floors Cover Unconditioned Spaces. Climate Zone: Cover Cover Unconditioned Spaces. Climate Zone: Cover Cover Cover Unconditioned Spaces. Climate Zone: Cover | | | n level below: | | | | | | | | | |
| Floor assemblies above crawlepane foundations shall be configured to meet the applicable floor assembly U-factor itselde in the building components extend not floors over Unconditioned downward from the top of the side on the outside of the foundations wall and then vertically below-grade to the Side Insulation R-value. The insulation begins to downward from the top of the side on the outside of the foundation wall and then vertically below-grade to the Side Insulation Depth Claractoric | | | | pplies to c | onditioned | basements; | if applicable, insulati | ion shall be l | ocated on | interior | | |
| Comproment section for Floors Over Unconditioned Spaces Slab floors with a floor surface less than 24* below grade shall be insulated to the Slab Insulation R-value. The insulation's shall extend decident the slab of the outside of the foundation wall and then vertically below-grade to the Slab Insulation Depth (Insulation: C2 to | | | • | | | | | | | | | |
| Slala floors with a floor surface less than 24° below grade shall be insulated to the Slab Insulation Avalue. The insulation hall extend downward from the top of the slab on the Outside of the foundation wall and then vertically below-grade to the Slab Insulation Depth (ID Climate Zone: Collimate Zone: | | | | | jured to me | et the applic | able floor assembly | U-factor liste | d in the bu | ilding | | |
| Climate Zone: Construction Type: Wood frame Construction | | | | | | | | | | | | |
| Climate Zone: C21 C22 C23 C24 C24 C2 6 C27 C28 C27 C28 Slab Insulation R-Value: 0 0 0 2 4 4 4 4 4 4 4 4 4 4 8 | | Slab floors with a floor surface less than 24" below grade shall be insulated to the Slab Insulation R-value. The insulation shall extend | | | | | | | | | | |
| Slab Insulation R-Value: | | downward from the top of the slab on | | | | | | | | | | |
| Slab Insulation Depth (ft): | | | | | | | | | | | | |
| Basement Wall Assembly U-Factor: 0.360 0.360 0.091 0.059 0.050 0 | | | | | | | | | | | | |
| Construction Type: Wood frame Construction Type: Wood fram | | | | | | - | · · · · · · · · · · · · · · · · · · · | | = | - | | |
| Unconditioned Space Cross Area : Same as Rated Unit Space Columes | Floors Over | | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Insulation: 3-4 Climate Zone: CZ 1 CZ 2 CZ 3 CZ 4 CZ 4 C 8.5 CZ 6 CZ 7 CZ 8 Space or outdoor environment: | | , i | | | | | | | | | | |
| Climate Zone: CZ 1 CZ 2 CZ 3 CZ 4 CZ 4 CZ 6 CZ 7 CZ 8 | Space | | | | | | | | | | | |
| Non-Freezing Space or outdoor | | | CZ 1 | C7.2 | C7 3 | C7 4 | C7 4 C & 5 | C7 6 | C7 7 | C7 8 | | |
| Floor Assembly U-Factor: 0.064 0.084 0.047 0.047 0.033 0.033 0.038 0.028 0.028 | | Offinate Zone. | 02 1 | | 02 0 | 0 <u>2</u> 4 | 02 4 0 0 0 | 02 0 | OL 1 | 02 0 | | |
| Exercised Nation Construction Type: Wood frame Corosa Area: Same as Rated Unit Solar Absorptance 0.75 | | Floor Accombly II Footors | 0.064 | 0.064 | 0.047 | 0.047 | 0.022 | 0.022 | 0.000 | 0.000 | | |
| Interior and Exterior Construction Type: Wood frame | | Floor Assembly O-Factor. | 0.004 | 0.004 | 0.047 | 0.047 | 0.033 | 0.033 | 0.026 | 0.026 | | |
| Same as Rated Unit Same as | | | | | | | | | | | | |
| Solar Absorptance = 0.75 Emittance = 0.90 | | | od frame | | | | | | | | | |
| Emittance = 0.90 Insulation: \(\frac{1}{100} \) | , | | | | | | | | | | | |
| Carage: Insulation: \(\frac{1.00}{1.00} \) | | | | | | | | | | | | |
| Climate Zone: CZ 1 CZ 2 CZ 3 CZ 4 CZ 4 CZ 6 8 CZ 6 CZ 7 CZ 8 CZ CZ 8 CZ 6 CZ | | | | | | | | | | | | |
| Mail Assembly U-Factor: 0.084 0.084 0.060 0.045 0. | Garage. | | | | | | | | | | | |
| Thermally Isolated Solare Area: Same as Rated Unit 2 with door seal properly installed to minimize air leakage between the door and door frame, to avoid the 140 CFM50 addition to measured airflow per ANSI / RESNET / ICC Std. 380 | | | | | | | | | | | | |
| Isolated Sourcoms: Sourcoms: Sourcoms: Area: Same as Rated Unit ², with door seal properly installed to minimize air leakage between the door and door frame, to avoid the 140 CFM50 addition to measured airfliow per ANSI / RESNET / ICC Std. 380 | | Wall Assembly U-Factor: | 0.084 | 0.084 | 0.060 | 0.045 | 0.045 | 0.045 | 0.045 | 0.045 | | |
| Area: Same as Rated Unit ² , with door seal property installed to minimize air leakage between the door and door frame, to avoid the 140 CFM50 addition to measured airflow per ANSI / RESNET / ICC Std. 380 | Thermally | | | | 0.000 | 0.010 | 0.0.0 | | | 0.010 | | |
| Addition to measured airflow per ANSI / RESNET / ICC Std. 380 | | None | | | 0.000 | 0.010 | 0.0.0 | | | 0.010 | | |
| Orientation: Same as Rated Unit 2 Oraque \$ 1/2-Lite > 1/2-Lite > 1/2-Lite CZ 1-3 > 1/2-Lite CZ 4-8 O.30 O.30 | Isolated | | | | | | | | | | | |
| Door Type: | Isolated Sunrooms: | Area: Same as Rated Unit ² , with door seal | | ed to minir | | | | | oid the 140 | | | |
| U-Factor: | Isolated Sunrooms: | Area: Same as Rated Unit ² , with door seal addition to measured airflow per ANSI / RE | | ed to minir | | | | | oid the 140 | | | |
| SHGC: | Isolated Sunrooms: | Area: Same as Rated Unit ² , with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² | SNET / ICC Sto | ed to minir 1. 380 | mize air lea | akage betwee | en the door and door | frame, to av | |) CFM50 | | |
| Total Area: AG = 0.15 x CFA x FA x F, without exceeding available wall area 6 | Isolated Sunrooms: | Area: Same as Rated Unit ² , with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: | SNET / ICC Sto | ed to minir 1. 380 | mize air lea ≤ 1 | akage betwee | en the door and door | frame, to av | > 1/2-Lite (| CZ 4-8 | | |
| Orientation: Same as Rated Unit ², by percentage of area Interior Shade Coefficient: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC Std. 301 | Isolated Sunrooms: | Area: Same as Rated Unit ² , with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: | Opaque 0.17 | ed to minir 1. 380 | mize air lea ≤ 1 | nkage between /2-Lite 0.25 | en the door and door > 1/2-Lite CZ 0.30 | frame, to av | > 1/2-Lite (0.30 | CZ 4-8 | | |
| Interior Shade Coefficient: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC Std. 301 External Shading: None Climate Zone: | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ² , with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: | Opaque 0.17 n/a | ed to minir 1. 380 | mize air lea | nkage between /2-Lite 0.25 | en the door and door > 1/2-Lite CZ 0.30 | frame, to av | > 1/2-Lite (0.30 | CZ 4-8 | | |
| External Shading: None CI CZ CZ CZ CZ CZ CZ CZ | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ² , with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with | Opaque 0.17 n/a out exceeding a | ed to minir 1. 380 | mize air lea | nkage between /2-Lite 0.25 | en the door and door > 1/2-Lite CZ 0.30 | frame, to av | > 1/2-Lite (0.30 | CZ 4-8 | | |
| Climate Zone: | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ² , with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ² , by percentage of the percentage | Opaque 0.17 n/a out exceeding a | ed to minir 1. 380 | mize air lea | /2-Lite 0.25 0.25 | > 1/2-Lite CZ 0.30 0.25 | frame, to av | > 1/2-Lite (0.30 | CZ 4-8 | | |
| U-Factor: SHGC: 0.40 0.40 0.30 0.30 0.30 0.27 0.27 0.27 0.27 0.27 SHGC: 0.25 0.25 0.25 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.4 | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ² , with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy | Opaque 0.17 n/a out exceeding a | ed to minir 1. 380 | mize air lea | /2-Lite 0.25 0.25 | > 1/2-Lite CZ 0.30 0.25 | frame, to av | > 1/2-Lite (0.30 | CZ 4-8 | | |
| SHGC: 0.25 0.25 0.25 0.40 | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ² , with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None | Opaque 0.17 n/a out exceeding a entage of area Rating Referen | ed to minir 1. 380 e available w | mize air lea ≤1 ((vall area ⁶ , as defined | /2-Lite 0.25 0.25 d by ANSI / F | > 1/2-Lite CZ 0.30 0.25 | 1-3 : | > 1/2-Lite 0 0.30 0.40 | CZ 4-8 | | |
| Class AW Assembly U-Factors (i.e., Structural) Windows based on 2021 IgCC Climate Zone: | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ² , with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: | Opaque 0.17 n/a out exceeding a entage of area Rating Referen | ed to minir 1. 380 e available w nce Home | mize air lea ≤1 ((vall area 6 , as defined CZ 3 | /2-Lite 0.25 0.25 d by ANSI / F | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 | 1-3 :: | > 1/2-Lite (0.30 0.40 CZ 7 | CZ 4-8 | | |
| Climate Zone: CZ 1 CZ 2 CZ 3 CZ 4 CZ 4 C & 5 CZ 6 CZ 7 CZ 8 | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ² , with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: | Opaque 0.17 n/a out exceeding a entage of area Rating Referen | ed to minir 1. 380 evailable we nce Home CZ 2 0.40 | mize air lea ≤1 ((((((((((((((((((| /2-Lite 0.25 0.25 0.25 d by ANSI / F | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 | 1-3 :: 601 CZ 6 0.27 | > 1/2-Lite (0.30 0.40 CZ 7 0.27 | CZ 4-8 CZ 8 0.27 | | |
| Fixed Window U-Factor: 0.48 | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: | Opaque 0.17 n/a out exceeding a entage of area 7 Rating Referen CZ 1 0.40 0.25 | ed to minir d. 380 evailable we nee Home CZ 2 0.40 0.25 | mize air lea ≤ 1 (((((((((((((((((((| /2-Lite 0.25 0.25 0.25 d by ANSI / F | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 | 1-3 :: 601 CZ 6 0.27 | > 1/2-Lite (0.30 0.40 CZ 7 0.27 | CZ 4-8 CZ 8 0.27 | | |
| Operable Window U-Factor: 0.59 0.57 0.51 0.43 0.43 0.40 0.34 0.30 | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structe | Opaque 0.17 n/a out exceeding a entage of area Rating Referer CZ 1 0.40 0.25 ural) Windows b | ed to minir 1. 380 evailable we nce Home CZ 2 0.40 0.25 eased on 2 | mize air lea ≤ 1 (((((((((((((((((((| /2-Lite 0.25 0.25 0.25 d by ANSI / F | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 | 1-3 :: 601 CZ 6 0.27 0.40 | > 1/2-Lite (0.30 0.40 CZ 7 0.27 0.40 | CZ 4-8 CZ 8 0.27 0.40 | | |
| Skylights: None Skylights: None Skylights: None Skylights: Construction Type: Wood frame Space Ceiling Assembly U-Factor: O.035 O.026 O.024 O.02 | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structe Climate Zone: | Opaque 0.17 n/a out exceeding a entage of area Rating Referer CZ 1 0.40 0.25 ural) Windows b CZ 1 | ed to minir d. 380 evailable we nee Home CZ 2 0.40 0.25 evased on 2 CZ 2 | mize air lea ≤ 1 (((((((((((((((((((| /2-Lite 0.25 0.25 0.25 d by ANSI / F | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 | 1-3 :: CZ 6 0.27 0.40 CZ 6 | > 1/2-Lite (0.30 0.40 CZ 7 0.27 0.40 | CZ 4-8 CZ 8 0.27 0.40 | | |
| Skylights: None Ceilings, adjacent to Exterior or Unconditioned Space Volumes: Attics: Construction Type: Vented with aperture = 1sq. ft. per 300 sq. ft. ceiling area 1.7 Radiant Barrier: None Roofs: Area: Same as Rated Unit 2 Construction Type: Composition shingle on wood sheathing Solar Absorptance = 0.92 | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structe Climate Zone: Fixed Window U-Factor: | Opaque 0.17 n/a out exceeding a entage of area Rating Referer CZ 1 0.40 0.25 ural) Windows b CZ 1 0.48 | ed to minir 1. 380 evailable we nice Home CZ 2 0.40 0.25 eased on 2 CZ 2 0.43 | mize air lea ≤ 1 (((((((((((((((((((| /2-Lite 0.25 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 | 1-3 :: CZ 6 0.27 0.40 CZ 6 0.32 | CZ 7 0.40 CZ 7 0.40 CZ 7 0.40 | CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.27 | | |
| Ceilings, adjacent to Exterior or Unconditioned Space Volumes: Attics: Construction Type: Wood frame Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1sq. ft. per 300 sq. ft. ceiling area 1.7 Radiant Barrier: None Construction Type: Composition shingle on wood sheathing Gross Area: Same as Rated Unit 2 Solar Absorptance = 0.92 | Isolated Sunrooms: Doors: ⁵ | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structed Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: | Opaque 0.17 n/a out exceeding a entage of area Rating Referen CZ 1 0.40 0.25 ural) Windows b CZ 1 0.48 0.59 | ed to minir d. 380 example we have Home CZ 2 0.40 0.25 eased on 2 CZ 2 0.43 0.57 | mize air lea ≤ 1 (((((((((((((((((((| /2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.34 0.34 | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.34 0.43 | 1-3 :: CZ 6 0.27 0.40 CZ 6 0.32 0.40 | CZ 7 0.27 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.34 | CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.27 0.30 | | |
| adjacent to Exterior or Unconditioned Space Volumes: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1sq. ft. per 300 sq. ft. ceiling area 1,7 Radiant Barrier: None Construction Type: Composition shingle on wood sheathing Gross Area: Same as Rated Unit 2 Solar Absorptance = 0.92 Construction Type: Vented with aperture = 1sq. ft. per 300 sq. ft. ceiling area 1,7 Radiant Barrier: None | Isolated Sunrooms: Doors: ⁵ Glazing: ⁵ | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structe Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: | Opaque 0.17 n/a out exceeding a entage of area Rating Referen CZ 1 0.40 0.25 ural) Windows b CZ 1 0.48 0.59 | ed to minir d. 380 example we have Home CZ 2 0.40 0.25 eased on 2 CZ 2 0.43 0.57 | mize air lea ≤ 1 (((((((((((((((((((| /2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.34 0.34 | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.34 0.43 | 1-3 :: CZ 6 0.27 0.40 CZ 6 0.32 0.40 | CZ 7 0.27 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.34 | CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.27 0.30 | | |
| Exterior or Unconditioned Space Volumes: Climate Zone: C2 1 C2 2 C2 3 C2 4 C2 4 C 8 5 C2 6 C2 7 C2 8 Ceiling Assembly U-Factor: 0.035 0.026 0.024 0.024 0.024 0.024 0.024 0.024 0.024 Attics: Construction Type: Vented with aperture = 1sq. ft. per 300 sq. ft. ceiling area 1,7 Radiant Barrier: None Construction Type: Composition shingle on wood sheathing Gross Area: Same as Rated Unit 2 Solar Absorptance = 0.92 | Isolated Sunrooms: Doors: ⁵ Glazing: ⁵ | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structu Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None | Opaque 0.17 n/a out exceeding a entage of area Rating Referen CZ 1 0.40 0.25 ural) Windows b CZ 1 0.48 0.59 | ed to minir d. 380 example we have Home CZ 2 0.40 0.25 eased on 2 CZ 2 0.43 0.57 | mize air lea ≤ 1 (((((((((((((((((((| /2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.34 0.34 | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.34 0.43 | 1-3 :: CZ 6 0.27 0.40 CZ 6 0.32 0.40 | CZ 7 0.27 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.34 | CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.27 0.30 | | |
| Unconditioned Space Volumes: Climate Zone: C21 C2 C23 C24 C24 C85 C26 C27 C28 Ceiling Assembly U-Factor: 0.035 0.026 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 Attics: Construction Type: Vented with aperture = 1sq. ft. per 300 sq. ft. ceiling area 1.7 Radiant Barrier: None Roofs: Construction Type: Composition shingle on wood sheathing Gross Area: Same as Rated Unit 2 Solar Absorptance = 0.92 | Isolated Sunrooms: Doors: ⁵ Glazing: ⁵ Skylights: Ceilings, | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structu Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame | Opaque 0.17 n/a out exceeding a entage of area Rating Referen CZ 1 0.40 0.25 ural) Windows b CZ 1 0.48 0.59 | ed to minir d. 380 example we have Home CZ 2 0.40 0.25 eased on 2 CZ 2 0.43 0.57 | mize air lea ≤ 1 (((((((((((((((((((| /2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.34 0.34 | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.34 0.43 | 1-3 :: CZ 6 0.27 0.40 CZ 6 0.32 0.40 | CZ 7 0.27 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.34 | CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.27 0.30 | | |
| Space Volumes: Ceiling Assembly U-Factor: 0.035 0.026 0.024 0.02 | Isolated Sunrooms: Doors: ⁵ Glazing: ⁵ Skylights: Ceilings, adjacent to | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structous Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² | Opaque 0.17 n/a out exceeding a entage of area Rating Referen CZ 1 0.40 0.25 ural) Windows b CZ 1 0.48 0.59 | ed to minir d. 380 example we have Home CZ 2 0.40 0.25 eased on 2 CZ 2 0.43 0.57 | mize air lea ≤ 1 (((((((((((((((((((| /2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.34 0.34 | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.34 0.43 | 1-3 :: CZ 6 0.27 0.40 CZ 6 0.32 0.40 | CZ 7 0.27 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.34 | CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.27 0.30 | | |
| Volumes: Ceiling Assembly U-Factor: 0.035 0.026 0.024 0.024 0.024 0.024 0.024 0.024 Attics: Construction Type: Vented with aperture = 1sq. ft. per 300 sq. ft. ceiling area ^{1,7} Radiant Barrier: None Roofs: Construction Type: Composition shingle on wood sheathing Gross Area: Same as Rated Unit ² Solar Absorptance = 0.92 | Isolated Sunrooms: Doors: ⁵ Glazing: ⁵ Skylights: Ceilings, adjacent to Exterior or | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structe Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: 1, 3 | Opaque 0.17 n/a out exceeding a entage of area Rating Referen CZ 1 0.40 0.25 ural) Windows b CZ 1 0.48 0.59 0.25 | ed to minir 1. 380 available was cell to make Home CZ 2 0.40 0.25 assed on 2 CZ 2 0.43 0.57 0.25 | mize air lea ≤ 1 (((((((((((((((((((| /2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.34 0.43 0.43 | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.34 0.43 0.43 | CZ 6 0.27 0.40 CZ 6 0.32 0.40 0.40 | CZ 7 0.27 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.34 0.40 | CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.27 0.30 0.40 | | |
| Attics: Construction Type: Vented with aperture = 1sq. ft. per 300 sq. ft. ceiling area ^{1,7} Radiant Barrier: None Construction Type: Composition shingle on wood sheathing Gross Area: Same as Rated Unit ² Solar Absorptance = 0.92 | Isolated Sunrooms: Doors: ⁵ Glazing: ⁵ Skylights: Ceilings, adjacent to Exterior or Unconditioned | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structe Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: 1, 3 | Opaque 0.17 n/a out exceeding a entage of area Rating Referen CZ 1 0.40 0.25 ural) Windows b CZ 1 0.48 0.59 0.25 | ed to minir 1. 380 available was cell to make Home CZ 2 0.40 0.25 assed on 2 CZ 2 0.43 0.57 0.25 | mize air lea ≤ 1 (((((((((((((((((((| /2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.34 0.43 0.43 | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.34 0.43 0.43 | CZ 6 0.27 0.40 CZ 6 0.32 0.40 0.40 | CZ 7 0.27 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.34 0.40 | CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.27 0.30 0.40 | | |
| Radiant Barrier: None Roofs: Construction Type: Composition shingle on wood sheathing Gross Area: Same as Rated Unit ² Solar Absorptance = 0.92 | Isolated Sunrooms: Doors: ⁵ Glazing: ⁵ Skylights: Ceilings, adjacent to Exterior or Unconditioned Space | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structuce Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: 1, 3 Climate Zone: | Opaque 0.17 n/a out exceeding a entage of area Rating Referen CZ 1 0.40 0.25 ural) Windows b CZ 1 0.48 0.59 0.25 | ed to minir 1. 380 evailable we nice Home CZ 2 0.40 0.25 eased on 2 CZ 2 0.43 0.57 0.25 | mize air lea ≤ 1 (vall area 6 , as definer CZ 3 0.30 0.25 0221 IgCC CZ 3 0.40 0.51 0.25 | /2-Lite 0.25 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.34 0.43 0.40 | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.34 0.43 0.40 | CZ 6 0.32 0.40 0.40 | CZ 7 0.27 0.40 CZ 7 0.28 0.34 0.40 | CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.27 0.30 0.40 | | |
| Roofs: Construction Type: Composition shingle on wood sheathing Gross Area: Same as Rated Unit ² Solar Absorptance = 0.92 | Isolated Sunrooms: Doors: ⁵ Glazing: ⁵ Skylights: Ceilings, adjacent to Exterior or Unconditioned Space Volumes: | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structu Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: 1, 3 Climate Zone: Ceiling Assembly U-Factor: | Opaque 0.17 n/a out exceeding a entage of area Rating Referen CZ 1 0.40 0.25 ural) Windows b CZ 1 0.48 0.59 0.25 CZ 1 0.035 | ed to minir 1. 380 evailable we nice Home CZ 2 0.40 0.25 eased on 2 CZ 2 0.43 0.57 0.25 | mize air lea ≤ 1 (vall area 6 , as definer CZ 3 0.30 0.25 0221 IgCC CZ 3 0.40 0.51 0.25 CZ 3 0.024 | /2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.34 0.43 0.40 CZ 4 0.024 | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.34 0.43 0.40 | CZ 6 0.32 0.40 0.40 | CZ 7 0.27 0.40 CZ 7 0.28 0.34 0.40 | CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.27 0.30 0.40 | | |
| Gross Area: Same as Rated Unit ² Solar Absorptance = 0.92 | Isolated Sunrooms: Doors: ⁵ Glazing: ⁵ Skylights: Ceilings, adjacent to Exterior or Unconditioned Space Volumes: | Area: Same as Rated Unit ², with door seal addition to measured airflow per ANSI / RE Orientation: Same as Rated Unit ² Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, with Orientation: Same as Rated Unit ², by perce Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structu Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: 1, 3 Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = | Opaque 0.17 n/a out exceeding a entage of area Rating Referen CZ 1 0.40 0.25 ural) Windows b CZ 1 0.48 0.59 0.25 CZ 1 0.035 | ed to minir 1. 380 evailable we nice Home CZ 2 0.40 0.25 eased on 2 CZ 2 0.43 0.57 0.25 | mize air lea ≤ 1 (vall area 6 , as definer CZ 3 0.30 0.25 0221 IgCC CZ 3 0.40 0.51 0.25 CZ 3 0.024 | /2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.34 0.43 0.40 CZ 4 0.024 | > 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.34 0.43 0.40 | CZ 6 0.32 0.40 0.40 | CZ 7 0.27 0.40 CZ 7 0.28 0.34 0.40 | CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.27 0.30 0.40 | | |
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ENERGY STAR Multifamily New Construction, Version 1.2 (Rev. 02)

| Internal | ENERGY STAR MUILII | | | | | | • | | | | |
|---------------------------------|--|--|--|--|--|---|--|--|--|--|--|
| | Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC Std. 301 | | | | | | | | | | |
| Mass: | Additional mass specifically designed as a Thermal Storage Element for the Rated Unit shall be excluded | | | | | | | | | | |
| Lighting, | Lighting: Fraction of qualifying Tier I fixtures to all fixtures in qualifying light fixture locations 100% for interior; 100% for exterior and garage | | | | | | | | | | |
| Appliances, | Refrigerator: 450 kWh per year Dishwasher: Capacity Same as Rated Unit ² , or Standard if no dishwasher installed in Rated Unit For Standard capacity: LER = 270, GHWC = \$22.23, Elec\$ = \$0.12, Gas\$ = \$1.09, LCY = 208 For Compact capacity: LER = 203, GHWC = \$14.20, Elec\$ = \$0.12, Gas\$ = \$1.09, LCY = 208 | | | | | | | | | | |
| Fixtures & | | | | | | | | | | | |
| Internal | | | | | | | | | | | |
| Gains: | | | | | | | | | | | |
| | | Ceiling Fan: 122 CFM per Watt; Quantity = Number of bedrooms + 1 when ceiling fans present in the Rated Unit; otherwise, Quantity = 0 | | | | | | | | | |
| | Clothes Washer: Efficiency equal to "Std 20 | | | | | nes washer pi | esent in the | Rated Unit; | otherwise | | |
| | same as Energy Rating Reference Home, a | | | | | | | | | | |
| | Clothes Dryer: Same as Energy Rating Refe | | , as defined b | y ANSI / RE | SNET/ICCS | Std. 301 | | | | | |
| | Water fixtures: all showers and faucets ≤ 2.0 | O1 | 1.6. 11 | ANGL / DE | ONET / IOO / | 011.004 | | | | | |
| | Internal Gains: Same as Energy Rating Refe | | | | SNET/ICC | Std. 301, exc | ept for adjus | stments for the | he lighting, | | |
| Llooting | refrigerator, dishwasher, clothes washer, ar Heating capacity shall be selected in accord | | | | ada aalaulat | ad for the Def | aranaa Daa | ian in accer | danaa with | | |
| Heating Systems: | ACCA Manual J, Eighth Edition, ASHRAE H | | | | | | | | | | |
| Systems. | degraded capacity from other-than-Grade I | | | | | | | | | | |
| | Home. Where heat from a central boiler is d | | | | | | | | | | |
| | the Rated Home in ANSI / RESNET / ICC S | | | | | | | | | | |
| | separate heating systems: 1) a heat pump v | | | | | | | | | | |
| | boiler with the balance of the capacity of (1- | | | | | | | | | | |
| | Fuel Type: Same as Rated Unit, except Ref | erence Desig | n shall be cor | figured with | gas where R | Rated Unit has | s non-electri | c equipment | t ^{2, 8} | | |
| | Installation Quality: For forced-air HVAC sys | | | r fan airflow | deviation, G | rade II 0.52 V | V / CFM blov | wer fan effic | iency, and | | |
| | for air-source heat pumps, Grade III refriger | | | <u> </u> | | | . 5 | | | | |
| | System Type: Same as Rated Unit ² , except | | | e configured | with air-sour | ce heat pump | where Rate | ed Unit has | electric | | |
| | strip heat or electric baseboard heat; efficier Climate Zone: | | | | C7.4 | C7 4C 9 E | C7 6 | CZ 7 | | | |
| | Gas Furnace AFUE: | CZ 1 80 | CZ 2 80 | CZ 3 80 | CZ 4 90 | CZ 4C & 5 95 | CZ 6 95 | 95 | CZ 8 95 | | |
| | Gas Boiler AFUE: | 80 | 80 | 80 | 90 | 95 | 95 | 95 95 | 95 | | |
| | Central Boiler, ≥ 300 KBtu/h E _t : | 80 | 80 | 80 | 86 | 95 | 95 | 95 | 95 | | |
| | Central Boiler w/WLHP, ≥ 300 KBtu/h E _t : | 80 | 80 | 80 | 89 | 90 | 90 | 90 | 90 | | |
| | Air-Source Heat Pump HSPF: | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | | |
| | Air-Source Heat Pump Backup: | Electric | Electric | Electric | Electric | Electric | Electric | Electric | Electric | | |
| | Ground-Source Heat Pump COP: | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | | |
| | For non-electric warm air furnaces and non- | electric boile | rs, serving the | Rated Unit | and no other | units, the Ele | ectric Auxilia | ry Energy sl | hall be | | |
| | | | | | | | | | | | |
| | | determined in accordance with the methodology for the Energy Rating Reference Home in ANSI / RESNET / ICC Std. 301. For non-electric boilers and GSHPs, serving the Rated Unit and other units through a shared circulation loop, the Electric Auxiliary Energy shall be determined | | | | | | | | | |
| | in accordance with the methodology for the Rated Home in ANSI / RESNET / ICC Std. 301, using the same Shared Pump Power (SPkw) OR | | | | | | | | | | |
| I | | | in ANSI / RES | SNET / ICC S | Std. 301, usir | | Shared Pum | | | | |
| Cooling | using 0.85 for motor efficiency and using the | e same HP as | in ANSI / RES the pump se | SNET / ICC s rving the Ra | Std. 301, usir ted Unit | ng the same \$ | | p Power (SF | P _{kW}) OR | | |
| Cooling Systems: | using 0.85 for motor efficiency and using the Cooling capacity shall be selected in accord | e same HP as ance with AC | in ANSI / RES the pump se CCA Manual S | SNET / ICC S rving the Ra based on lo | Std. 301, usir ted Unit ads calculate | ng the same sed for the Ref | erence Desi | ip Power (SF | P _{kw}) OR | | |
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ENERGY STAR Multifamily New Construction, Version 1.2 (Rev. 02) Exhibit 1: Expanded ENERGY STAR Multifamily Reference Design Definition (Continued)

| EXIIIDIC I. | Expanaca ENERGI | TAIL Mailia | ining iten | or crice De | aigh Den | 111011 (001 | itiiiaca | | | | |
|---------------------------|---|-------------------------|---------------|---------------|-----------------|-----------------|--------------|----------------|---------|--|--|
| Thermal | Duct Leakage to Outside: 0 CFM25 per 100 sq. ft. of conditioned floor area | | | | | | | | | | |
| Distribution | Duct Insulation: None, because 100% of ducts are in conditioned space | | | | | | | | | | |
| Systems: | Duct Surface Area: Same as F | Rated Unit ² | | | | | | | | | |
| | Supply and Return Duct Locat | ions shall be config | jured to be 1 | 00% in condit | ioned space | | | | | | |
| Thermostat: | Type: Programmable | | | | | | | | | | |
| | Temperature Setpoints: Same RESNET / ICC Std. 301 | as Energy Rating | Reference H | ome, but with | offsets for a p | orogrammable tl | hermostat, a | s defined by A | ANSI / | | |
| Infiltration & Mechanical | Compartmentalization Rates: 0.3 cfm50/ft2 Enclosure Area, with Aext applied to calculate Infiltration Rate, in accordance with ANSI / RESNET / ICC Std. 301 | | | | | | | | | | |
| Ventilation: | Mechanical ventilation system without heat recovery | | | | | | | | | | |
| | Rate: CFM = 0.01 * CFA + 7.5 * (Nbr + 1), where CFA = Conditioned Floor Area and Nbr = Number of Bedrooms; Runtime: 24 Hours / Day | | | | | | | | | | |
| | Fan Watts: Watts = CFM Rate / 2.8 CFM per Watt, where CFM Rate is determined above | | | | | | | | | | |
| | Climate Zone: | CZ 1 | CZ 2 | CZ 3 | CZ 4 | CZ 4 C & 5 | CZ 6 | CZ 7 | CZ 8 | | |
| | Ventilation Type: | Supply | Supply | Supply | Supply | Exhaust | Exhaust | Exhaust | Exhaust | | |





ENERGY STAR Multifamily New Construction, Version 1.2 (Rev. 02)

Footnotes:

- 1. Any parameter not specified in this exhibit shall be identical to the value entered for the Rated Unit. Where envelope building components do not exist in the Rated Unit, such as a foundation or slab, they should not be modeled in the ENERGY STAR Multifamily Reference Design, unless explicitly stated, such as vented attics where unvented attics are present in the Rated Unit. Where the envelope component is adiabatic in the Rated Unit, it shall also be adiabatic in the Multifamily Reference Design. Where the envelope component is not adiabatic but is adjacent to a space other than those specified in the Building Component column of Exhibit 1, model as uninsulated in the Reference Design.
- 2. "Same as Rated Unit" indicates that the parameter shall be identical to the value entered for the Rated Unit.
- 3. Slab insulation R-values represent nominal insulation levels; and assembly U-factors for foundations, floors, walls, and ceilings represent the overall assembly, inclusive of sheathing materials, cavity insulation, installation quality, framing, and interior finishes.
- 4. If software allows the user to specify the thermal boundary location independent of the conditioned space boundary in the basement of the Rated Unit, then the thermal boundary of the ENERGY STAR Multifamily Reference Design shall be aligned with this boundary. For example, if the thermal boundary is located at the walls, then the wall insulation shall be configured as if it was a conditioned basement. If the thermal boundary is located at the floor above the basement, then the floor insulation shall be configured as if it was a floor over an unconditioned space.
- 5. Note that the U-factor requirement applies to all fenestration while the SHGC only applies to the glazed portion.
- 6. When determining the ENERGY STAR ERI Target, the following formula shall be used to determine total window area of the ENERGY STAR Multifamily Reference Design:

 $AG = 0.15 \times CFA \times FA \times F$

Where:

- AG = Total glazing area
- CFA = Total conditioned floor area
- FA = (Gross above-grade thermal boundary wall area) / (Gross above-grade boundary wall area + 0.5 x Gross below-grade thermal boundary wall area)
- F = 1- 0.44 x (Gross common wall area) / (Gross above-grade thermal boundary wall area + Gross common wall area)

And where:

- Thermal boundary wall is any wall that separates conditioned space from unconditioned space, outdoor environment, or the surrounding soil;
- Above-grade thermal boundary wall is any portion of a thermal boundary wall not in contact with soil;
- Below-grade boundary wall is any portion of a thermal boundary wall in soil contact; AND
- Common wall is the total wall area of walls adjacent to other conditioned space, not including foundation walls.
- 7. A vented unconditioned attic shall only be modeled in the Multifamily Reference Design where attics (of any type) exist in the Rated Unit or when specified as the Duct Location in the Thermal Distribution Systems section of this Exhibit. Where the Rated Unit has more than one ceiling type, the ceiling area used to calculate the vent aperture area shall be the area of the ceiling that is exposed to exterior, under attics, and/or under other unconditioned common spaces. Where the Rated Unit is entirely located beneath another dwelling unit or unrated conditioned space, no attic is modeled in the Reference Design.
- 8. Fuel type(s) shall be same as Rated Unit, including any dual-fuel equipment where applicable. For a Rated Unit with multiple heating, cooling, or water heating systems using different fuel types, the applicable system capacities and fuel types shall be weighted in accordance with the loads distribution (as calculated by accepted engineering practice for that equipment and fuel type) of the multiple systems, unless otherwise specified by ANSI / RESNET / ICC Std. 301.
- For a Rated Unit without a heating system, the ENERGY STAR Multifamily Reference Design shall be configured with a 78% AFUE
 gas furnace system, unless the Rated Unit has no access to natural gas or fossil fuel delivery. In such cases, the ENERGY STAR
 Reference Multifamily Design shall be configured with a 7.7 HSPF air-source heat pump.
- 10. For a Rated Unit without a cooling system, the ENERGY STAR Multifamily Reference Design shall be configured with a 13 SEER electric air conditioner.
- 11. That is to say, representative of low-flow plumbing fixtures, reference or "Std-Present" Standard Clothes Washer Model gallons per day, standard distribution system water use effectiveness, a hot water piping ratio of 1.0, no pipe insulation, and no drain water heater recovery.

Revised 10/18/2021