

National ERI Target Procedure for use with ANSI/RESNET/ICC 301-20194

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 / OR-WA 1.2. While Townhouses are eligible to earn ENERGY STAR Multifamily New Construction certification by meeting their ENERGY STAR ERI Target and also meeting all Mandatory Requirements for All Multifamily New Constructions for determining their ENERGY STAR ERI Target is in the National ERI Target Procedure for ENERGY STAR Certified Homes.

An EPA-recognized Verification Oversight Organization's 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 301-20194 including all Addenda and Normative Appendices, with new versions and Addenda implemented according to the Effective Date and Transition Period End Date defined by RESNET. RESNET interpretations of Standard 301-20194 shall also be followed. Any exceptions shall be approved by EPA and reported at <u>www.energystar.gov/ERIExceptions</u>. This value, rounded to the nearest whole number, shall equal the ENERGY STAR ERI Target.

The National ERI Target Procedure (ANSI 301-20149) must instead be used to determine the ENERGY STAR ERI Target when using ANSI / RESNET / ICC Standard 301-20149.





Exhibit 1: Expanded ENERGY STAR Multifamily Reference Design Definition

Building Component	Expand		STAR Mul	tifamily R	eference De	sian Definition ¹					
Foundations:	Expanded ENERGY STAR Multifamily Reference Design Definition ¹ Construction Type & Structural Mass: Same as Rated Unit ² , except: • For masonry floor slabs, modeled with 80% of floor area covered by carpet and 20% of floor directly exposed to room air										
	 For masonry noor stabs, modeled with 80% of noor area covered by carpet and 20% of noor directly exposed to room an Conditioning Type: Same as Rated Unit ², except: Crawlspaces shall be modeled as vented with net free vent aperture = 1sq. ft. per 150 sq. ft. of crawlspace floor area 										
	Crawispaces shall be modeled as vented with net free vent aperture = 1sq. it. per 150 sq. it. of crawispace floor area Gross Area: Same as Rated Unit ²										
	 Insulation: ^{3,4} Choose appropriate insulation level below; Basement Wall Continuous Insulation R-Value only applies to conditioned basements; if applicable, insulation shall be located on interior 										
	 side of walls Floor assemblies above crawlspace foundations shall be configured to meet the applicable floor assembly U-factor listed in the building component 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 shall 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 										
	Climate Zone:	CZ 1	CZ 2	CZ 3	CZ 4	CZ 4 C & 5	CZ 6	CZ 7	CZ 8		
	Slab Insulation R-Value: Slab Insulation Depth (ft):	0	0	0 0	10 2	10 2	15 2	15 2	20 2		
	Basement Wall	Ŭ	•	-							
	Continuous Insulation R-Value:	0	0	0	7.5	7.5	7.5	10	12.5		
Floors Over	Construction Type: Wood frame										
Unconditioned Spaces:	Gross Area: Same as Rated Unit ² Insulation: ^{3, 4}										
Opaces.	Climate Zone:	CZ 1	CZ 2	CZ 3	CZ 4	CZ 4 C & 5	CZ 6	CZ 7	CZ 8		
	Floor Assembly U-Factor:	0.066	0.033	0.033	0.033	0.033	0.033	0.033	0.033		
Above-Grade	Interior and Exterior Construction Type: Woo		0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Walls:	Gross Area: Same as Rated Unit ²										
	Solar Absorptance = 0.75										
	Emittance = 0.90										
	Insulation: ³ Climate Zone:	C7.4	CZ 2	<u> </u>	CZ 4		C7 6	C7 7	07.0		
	Wall Assembly U-Factor:	CZ 1 0.064	0.064	CZ 3 0.064	0.064	CZ 4 C & 5 0.064	CZ 6 0.051	CZ 7 0.051	CZ 8 0.036		
Thermally Isolated Sunrooms:	None	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000		
Doors:	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 ANSL/RES			nize all lea	ikage betwee		Traine, to a) CFM50		
	addition to measured airflow per ANSI / RES Orientation: Same as Rated Unit ²				ikage betwee) CFM50		
	Orientation: Same as Rated Unit ² U-Factors and SHGCs:	SNET / ICC Sto	<u>1. 380</u>		-						
	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor:		<u>1. 380</u>	≤1	/2-Lite).25	> 1/2-Lite CZ 0.30		> 1/2-Lite (0.30	CZ 4-8		
	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC:	Opaque 0.17 n/a	<u>1. 380</u>	≤ 1 (/2-Lite	> 1/2-Lite CZ		> 1/2-Lite (CZ 4-8		
Glazing:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho	Opaque 0.17 n/a put exceeding a	<u>1. 380</u>	≤ 1 (/2-Lite).25	> 1/2-Lite CZ 0.30		> 1/2-Lite (0.30	CZ 4-8		
Glazing:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy	Opaque 0.17 n/a put exceeding a ntage of area	<u>1. 380</u> e available v	≤ 1 ((vall area ⁵	/2-Lite).25).25	> 1/2-Lite CZ 0.30 0.25	1-3	> 1/2-Lite (0.30	CZ 4-8		
Glazing:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None	Opaque 0.17 n/a put exceeding a ntage of area	<u>1. 380</u> e available v	≤ 1 ((vall area ⁵	/2-Lite).25).25	> 1/2-Lite CZ 0.30 0.25	1-3	> 1/2-Lite (0.30	CZ 4-8		
Glazing:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs:	Opaque 0.17 n/a put exceeding a ntage of area Rating Referen	available v	≤ 1 (((vall area ⁵ , as defined	/2-Lite 0.25 0.25 d by ANSI / F	> 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3	01	> 1/2-Lite (0.30 0.40	CZ 4-8		
Glazing:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho 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 ntage of area Rating Referen	available w nce Home CZ 2	≤ 1 ((((vall area ⁵ , as defined CZ 3	/2-Lite 0.25 0.25 d by ANSI / F CZ 4	> 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5	1-3 01 CZ 6	> 1/2-Lite (0.30 0.40	CZ 4-8		
Glazing:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone:	Opaque 0.17 n/a put exceeding a ntage of area Rating Referen	available v	≤ 1 (((vall area ⁵ , as defined	/2-Lite 0.25 0.25 d by ANSI / F	> 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3	01	> 1/2-Lite (0.30 0.40	CZ 4-8		
Glazing:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor:	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25	4. 380 available w nce Home CZ 2 0.40 0.25	≤ 1 ((() () () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30	> 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27	1-3 01 CZ 6 0.27	> 1/2-Lite (0.30 0.40 CZ 7 0.27	CZ 4-8		
Glazing:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone:	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1	available w nce Home CZ 2 0.40 0.25 ased on 2 CZ 2	≤ 1 ((() () () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4	> 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 01 CZ 6 0.27 0.40 CZ 6	> 1/2-Lite (0.30 0.40 0.27 0.27 0.40	CZ 4-8 CZ 8 0.27 0.40 CZ 8		
Glazing:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor:	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48	available v nce Home CZ 2 0.40 0.25 ased on 2 CZ 2 0.48	≤ 1 (() () /all area ⁵ , as defined CZ 3 0.30 0.25 015 IgCC CZ 3 0.44	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36	> 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.36	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34	> 1/2-Lite (0.30 0.40 CZ 7 0.27 0.40	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.28		
Glazing:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor:	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48 0.62	Available w available w nce Home CZ 2 0.40 0.25 ased on 2 CZ 2 0.48 0.62	≤ 1 (() () () () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36 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 0.36 0.43	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34 0.34 0.41	> 1/2-Lite (0.30 0.40 0.27 0.27 0.40 CZ 7 0.23 0.23	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.28 0.28 0.35		
	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC:	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48	available v nce Home CZ 2 0.40 0.25 ased on 2 CZ 2 0.48	≤ 1 (() () /all area ⁵ , as defined CZ 3 0.30 0.25 015 IgCC CZ 3 0.44	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36	> 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.36	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34	> 1/2-Lite (0.30 0.40 CZ 7 0.27 0.40	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.28		
Skylights:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48 0.62	Available w available w nce Home CZ 2 0.40 0.25 ased on 2 CZ 2 0.48 0.62	≤ 1 (() () () () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36 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 0.36 0.43	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34 0.34 0.41	> 1/2-Lite (0.30 0.40 0.27 0.27 0.40 CZ 7 0.23 0.23	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.28 0.28 0.35		
	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC:	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48 0.62	Available w available w nce Home CZ 2 0.40 0.25 ased on 2 CZ 2 0.48 0.62	≤ 1 (() () () () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36 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 0.36 0.43	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34 0.34 0.41	> 1/2-Lite (0.30 0.40 0.27 0.27 0.40 CZ 7 0.23 0.23	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.28 0.28 0.35		
Skylights:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48 0.62	Available w available w nce Home CZ 2 0.40 0.25 ased on 2 CZ 2 0.48 0.62	≤ 1 (() () () () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36 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 0.36 0.43	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34 0.34 0.41	> 1/2-Lite (0.30 0.40 0.27 0.27 0.40 CZ 7 0.23 0.23	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.28 0.28 0.35		
Skylights:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: ³ Climate Zone:	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48 0.62	Available w available w nce Home CZ 2 0.40 0.25 ased on 2 CZ 2 0.48 0.62	≤ 1 (() () () () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36 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 0.36 0.43	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34 0.34 0.41	> 1/2-Lite (0.30 0.40 0.27 0.27 0.40 CZ 7 0.23 0.23	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.28 0.28 0.35		
Skylights: Ceilings:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: ³ Climate Zone: Climate Zone:	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48 0.62 0.25 CZ 1 0.48	Available w available w nce Home CZ 2 0.40 0.25 ased on 2 CZ 2 0.48 0.62 0.25 CZ 2 0.48 0.62 0.25	≤ 1 () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36 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 0.36 0.43 0.40	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34 0.41 0.40	> 1/2-Lite (0.30 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.35 0.40	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.28 0.28 0.35 0.40		
Skylights: Ceilings: Top Floor Unit	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: ³ Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48 0.62 0.25 CZ 1 0.48	Available w available w nce Home CZ 2 0.40 0.25 ased on 2 CZ 2 0.48 0.62 0.25 CZ 2 0.48 0.62 0.25	≤ 1 () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36 0.43 0.40 CZ 4 0.36	> 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.36 0.43 0.40 CZ 4 C & 5	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34 0.41 0.40 CZ 6	> 1/2-Lite (0.30 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.35 0.40 CZ 7	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.35 0.40 CZ 8		
Skylights: Ceilings: Top Floor Unit Attics:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: ³ Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1 Radiant Barrier: None	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48 0.62 0.25 CZ 1 0.48 0.62 0.25 CZ 1 0.027 sq. ft. per 300	A 380 Available v nce Home CZ 2 0.40 0.25 Ased on 2 CZ 2 0.48 0.62 0.25 CZ 2 0.027 Sq. ft. ceil	≤ 1 () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36 0.43 0.40 CZ 4 0.36	> 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.36 0.43 0.40 CZ 4 C & 5	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34 0.41 0.40 CZ 6	> 1/2-Lite (0.30 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.35 0.40 CZ 7	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.35 0.40 CZ 8		
Skylights: Ceilings: Top Floor Unit	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: ³ Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1 Radiant Barrier: None Construction Type: Composition shingle on the section of the	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48 0.62 0.25 CZ 1 0.48 0.62 0.25 CZ 1 0.027 sq. ft. per 300	A 380 Available v nce Home CZ 2 0.40 0.25 Ased on 2 CZ 2 0.48 0.62 0.25 CZ 2 0.027 Sq. ft. ceil	≤ 1 () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36 0.43 0.40 CZ 4 0.36	> 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.36 0.43 0.40 CZ 4 C & 5	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34 0.41 0.40 CZ 6	> 1/2-Lite (0.30 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.35 0.40 CZ 7	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.35 0.40 CZ 8		
Skylights: Ceilings: Top Floor Unit Attics:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: ³ Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1 Radiant Barrier: None	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48 0.62 0.25 CZ 1 0.48 0.62 0.25 CZ 1 0.027 sq. ft. per 300	A 380 Available v nce Home CZ 2 0.40 0.25 Ased on 2 CZ 2 0.48 0.62 0.25 CZ 2 0.027 Sq. ft. ceil	≤ 1 () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36 0.43 0.40 CZ 4 0.36	> 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.36 0.43 0.40 CZ 4 C & 5	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34 0.41 0.40 CZ 6	> 1/2-Lite (0.30 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.35 0.40 CZ 7	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.35 0.40 CZ 8		
Skylights: Ceilings: Top Floor Unit Attics:	Orientation: Same as Rated Unit ² U-Factors and SHGCs: Door Type: U-Factor: SHGC: Total Area: AG = 0.15 x CFA x FA x F, witho Orientation: Same as Rated Unit ² , by perce Interior Shade Coefficient: Same as Energy External Shading: None Assembly U-Factors and SHGCs: Climate Zone: U-Factor: SHGC: Class AW Assembly U-Factors (i.e., Structur Climate Zone: Fixed Window U-Factor: Operable Window U-Factor: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Unit ² Insulation: ³ Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1 Radiant Barrier: None Construction Type: Composition shingle on y Gross Area: Same as Rated Unit ²	Opaque 0.17 n/a out exceeding a ntage of area Rating Referen CZ 1 0.40 0.25 ral) Windows b CZ 1 0.48 0.62 0.25 CZ 1 0.48 0.62 0.25 CZ 1 0.027 sq. ft. per 300	A 380 Available v nce Home CZ 2 0.40 0.25 Ased on 2 CZ 2 0.48 0.62 0.25 CZ 2 0.027 Sq. ft. ceil	≤ 1 () () () () () () () () () ()	/2-Lite 0.25 0.25 d by ANSI / F CZ 4 0.30 0.40 CZ 4 0.36 0.43 0.40 CZ 4 0.36	> 1/2-Lite CZ 0.30 0.25 RESNET / ICC Std. 3 CZ 4 C & 5 0.27 0.40 CZ 4 C & 5 0.36 0.43 0.40 CZ 4 C & 5	1-3 01 CZ 6 0.27 0.40 CZ 6 0.34 0.41 0.40 CZ 6	> 1/2-Lite (0.30 0.40 CZ 7 0.27 0.40 CZ 7 0.28 0.35 0.40 CZ 7	CZ 4-8 CZ 8 0.27 0.40 CZ 8 0.35 0.40 CZ 8		



Systems:	Heating capacity shall be selected in accorda		A Manual S	based on lo	bads calculat	ed for the Ref	erence Desig	n in accord				
2,000110.	ACCA Manual J, Eighth Edition, ASHRAE Handbook of Fundamentals, or an equivalent computation procedure. <u>Where heat from a central</u> boiler is distributed by water-loop heat pumps within the Rated Unit, in accordance with the methodology for the Rated Home in ANSI /											
	RESNET / ICC Std. 301, the Reference Desi											
	heat pump with a capacity that is equal to the											
	capacity of (1-1/4.2) or 76.19%											
	Fuel Type: Same as Rated Unit ^{2, 6}											
	System Type: Same as Rated Unit ² , except	Reference Desi	ign shall be	configured	with air-sou	rce heat pump	in CZ 1-6 wh	nere Rated	Unit is			
	modeled with air-source or ground-source heat pump, electric strip heat or electric baseboard heat, and Reference Design shall be configured with ground-source heat pump in CZ 7 & 8 where Rated Unit is modeled with air-source or ground-source heat pump, electric strip heat or electric baseboard heat; applicable efficiency selected from below ⁷											
	Climate Zone:	CZ 1	CZ 2	CZ 3	CZ 4	CZ 4C & 5	CZ 6	CZ 7	CZ 8			
	Gas Furn. AFUE:	80	80	80	95	95	95	95	95			
	Oil Furn. AFUE:	80	80	80	85	85	85	85	85			
	Gas Boiler AFUE:	80	80	80	90	90	90	90	90			
	Oil Boiler AFUE:	80	80	80	86	86	86	86	86			
	Central Boiler, ≥ 300 KBtu/h Et:	<u>86</u>	<u>86</u>	<u>86</u>	<u>86</u>	<u>86</u>	<u>86</u>	<u>86</u>	<u>86</u>			
	<u>Central Boiler w/WLHP, ≥ 300 KBtu/h E_t:</u>	<u>89</u>	<u>89</u>	<u>89</u>	<u>89</u>	<u>89</u>	<u>89</u>	<u>89</u>	<u>89</u>			
	Air-Source Heat Pump HSPF:	.8.2	.8.2	.8.2	_ 8.5	9.25	9.5	n/a	n/a			
	Air-Source Heat Pump Backup:	Electric	Electric	Electric	Electric	Electric	Electric	n/a	n/a			
	Ground-Source Heat Pump COP:	n/a	n/a	n/a	n/a	n/a	n/a	3.6	3.6			
	For non-electric warm furnaces and non-election determined in accordance with the methodol											
	determined in this Section. For non-electric b											
	accordance with the methodology for the Rat								Inneu			
ooling	Cooling capacity shall be selected in accorda							n in accord	lance wi			
ystems:	ACCA Manual J, Eighth Edition, ASHRAE Ha											
jetemer	Fuel Type: Same as Rated Unit ^{2, 6}		aamontalo,	01 011 0 9 011	alone compe							
	System Type: Same as Rated Unit ² , except	Reference Desi	ian shall be	configured	with air-sou	rce heat pump	in CZ 1-6 wł	nere Rated	Unit is			
	modeled with air-source or ground-source he											
	with ground-source heat pump in CZ 7 & 8 w											
	electric baseboard heat; applicable efficiency				0			•				
	Climate Zone:	CZ1 C	Z2 (CZ 3	CZ4 C	Z4C&5	CZ 6	CZ 7	CZ			
	AC SEER:	15 1	15	15	13	13	13	13	13			
	Air-Source Heat Pump SEER:			15	15	15	15	n/a	n/a			
	Ground-Source Heat Pump EER:			<u>n/a</u>	n/a	n/a	n/a	17.1	<u>17.′</u>			
	Where system type is a chiller or cooling tow											
	the methodology for the Rated Unit in ANSI / RESNET / ICC Std. 301, using motor efficiency of 0.85. For chillers, Reference Design SEEReg											
	shall be determined using 0.79 k///ten Form	shall be determined using 0.78 kW/ton. For water-loop heat pumps, Reference Design SEEReq shall be determined using 14 EER										
anico												
	Use (Gallons per Day): Same as Energy Rat	ing Reference I	Home, as de	efined by Al	NSI / RESNE	ET / ICC Std. 3			usage			
Vater	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the	ing Reference H Lighting, Applia	Home, as de ances, Fixtu	efined by Al ires & Interr	NSI / RESNE nal Gains Se	ET / ICC Std. 3			usage			
Vater leating	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating	ing Reference H Lighting, Applia Reference Hom	Home, as de ances, Fixtu ne, as define	efined by Al res & Interr ed by ANSI	NSI / RESNE nal Gains Se / RESNET /	ET / ICC Std. 3 oction ⁹ ICC Std. 301			usage			
/ater leating	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating Recirculation Pump Energy (for pumps serving	ing Reference H Lighting, Applia Reference Hom ng the Rated Ur	Home, as de ances, Fixtu ne, as define nit and no o	efined by Al res & Interr ed by ANSI ther units):	NSI / RESNE nal Gains Se / RESNET / 0 kWh per y	ET / ICC Std. 3 oction ⁹ ICC Std. 301 ear	01, except fo	r reduced				
/ater leating	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating Recirculation Pump Energy (for pumps servin Recirculation Pump Energy (for pumps servin	ing Reference H Lighting, Applia Reference Hom ng the Rated Ur ng the Rated Ur	Home, as de ances, Fixtu ne, as define nit and no o nit and othe	efined by Al res & Interr ed by ANSI ther units): r units): as	NSI / RESNE nal Gains Se / RESNET / 0 kWh per y	ET / ICC Std. 3 oction ⁹ ICC Std. 301 ear	01, except fo	r reduced				
/ater leating	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating Recirculation Pump Energy (for pumps servin Recirculation Pump Energy (for pumps servin motor efficiency and using the same HP as the	ing Reference H Lighting, Applia Reference Hom ng the Rated Ur ng the Rated Ur	Home, as de ances, Fixtu ne, as define nit and no o nit and othe	efined by Al res & Interr ed by ANSI ther units): r units): as	NSI / RESNE nal Gains Se / RESNET / 0 kWh per y	ET / ICC Std. 3 oction ⁹ ICC Std. 301 ear	01, except fo	r reduced				
/ater leating	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating Recirculation Pump Energy (for pumps servin Recirculation Pump Energy (for pumps servin motor efficiency and using the same HP as the Fuel Type: Same as Rated Unit ^{2, 6}	ing Reference H Lighting, Applia Reference Hom ng the Rated Ur ng the Rated Ur he pump serving	Home, as de ances, Fixtu ne, as define nit and no o nit and othe g the Rated	efined by Al rres & Interr ed by ANSI <u>ther units)</u> : r units): as I Unit	NSI / RESNE hal Gains Se / RESNET / 0 kWh per y defined by A	ET / ICC Std. 3 ction ⁹ ICC Std. 301 ear NSI / RESNE	01, except fc	or reduced).85 for			
/ater leating	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating Recirculation Pump Energy (for pumps servin Recirculation Pump Energy (for pumps servin motor efficiency and using the same HP as the	ing Reference H Lighting, Applia Reference Hom ng the Rated Ur ng the Rated Ur he pump serving a commercial s	Home, as de ances, Fixtu ne, as define nit and no o nit and othe g the Rated	efined by Al rres & Interr ed by ANSI <u>ther units)</u> : r units): as I Unit	NSI / RESNE hal Gains Se / RESNET / 0 kWh per y defined by A	ET / ICC Std. 3 ction ⁹ ICC Std. 301 ear NSI / RESNE	01, except fc	or reduced).85 for			
/ater leating	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating Recirculation Pump Energy (for pumps servin Recirculation Pump Energy (for pumps servin motor efficiency and using the same HP as the Fuel Type: Same as Rated Unit ^{2, 6} System Type (when Rated Unit is served by	ing Reference H Lighting, Applia Reference Hom ng the Rated Ur ng the Rated Ur he pump serving a commercial s EF	Home, as de ances, Fixtu ne, as define nit and no o nit and othe g the Rated ystem): Sar	efined by Al ares & Interr ed by ANSI ther units): r units): as I Unit me as syste	NSI / RESNE hal Gains Se / RESNET / 0 kWh per y defined by A em serving th	ET / ICC Std. 3 ction ⁹ ICC Std. 301 ear NSI / RESNE	01, except fc / ICC Std. 3 For boilers of	or reduced).85 for ters, us			
Service Vater leating Systems:	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating Recirculation Pump Energy (for pumps servin Recirculation Pump Energy (for pumps servin motor efficiency and using the same HP as the Fuel Type: Same as Rated Unit ^{2, 6} System Type (when Rated Unit is served by 85% Et. For electric water heaters, use 0.95 System Type (when Rated Unit is served by unless Rated Unit uses instantaneous water	ing Reference H Lighting, Applia Reference Hom ng the Rated Ur ng the Rated Ur he pump serving a commercial s EF residential system heater in which	Home, as de ances, Fixtu ne, as define nit and no o nit and othe g the Rated ystem): Sar ems): Conv a case selec	efined by Al res & Interr ed by ANSI ther units): r units): as I Unit me as syste entional sto t 50 gallon	NSI / RESNI nal Gains Se / RESNET / 0 kWh per y defined by A em serving th prage water h	ET / ICC Std. 3 ction ⁹ ICC Std. 301 ear NSI / RESNE he Rated Unit.	01, except fo	or reduced	<u>).85 for</u> ters, us			
Vater leating	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating Recirculation Pump Energy (for pumps servin Recirculation Pump Energy (for pumps servin motor efficiency and using the same HP as the Fuel Type: Same as Rated Unit ^{2, 6} System Type (when Rated Unit is served by <u>85% Et</u> . For electric water heaters, use 0.95 System Type (when Rated Unit is served by unless Rated Unit uses instantaneous water Select applicable efficiency from below using	ing Reference H Lighting, Applia Reference Hom ng the Rated Ur ng the Rated Ur he pump serving a commercial s EF residential system heater in which	Home, as de ances, Fixtu ne, as define nit and no o nit and othe g the Rated ystem): Sar ems): Conv a case selec	efined by Al res & Interr ed by ANSI ther units): r units): as I Unit me as syste entional sto t 50 gallon	NSI / RESNI nal Gains Se / RESNET / 0 kWh per y defined by A em serving th prage water h	ET / ICC Std. 3 ction ⁹ ICC Std. 301 ear NSI / RESNE he Rated Unit.	01, except fo	or reduced).85 for ters, us			
Vater leating	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating Recirculation Pump Energy (for pumps servin Recirculation Pump Energy (for pumps servin motor efficiency and using the same HP as the Fuel Type: Same as Rated Unit ^{2,6} System Type (when Rated Unit is served by 85% Et. For electric water heaters, use 0.95 System Type (when Rated Unit is served by unless Rated Unit uses instantaneous water Select applicable efficiency from below using Gas Storage Tank Capacity:	ing Reference H Lighting, Applia Reference Hom ng the Rated Ur ng the Rated Ur he pump serving a commercial s EF residential system heater in which	Home, as de ances, Fixtu ne, as define nit and no o nit and othe g the Rated ystem): Sar ems): Conv o case selec eference De ≤ 55	efined by Al res & Interr ed by ANSI ther units): r units): as I Unit me as syste entional sto t 50 gallon esign 5 Gal	NSI / RESNI nal Gains Se / RESNET / 0 kWh per y defined by A em serving th prage water h	ET / ICC Std. 3 ction ⁹ ICC Std. 301 ear NSI / RESNE he Rated Unit.	01, except fo	or reduced).85 for ters, us			
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/ater leating	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating Recirculation Pump Energy (for pumps servin Recirculation Pump Energy (for pumps servin motor efficiency and using the same HP as the Fuel Type: Same as Rated Unit ^{2,6} System Type (when Rated Unit is served by 85% E ₁ . For electric water heaters, use 0.95 System Type (when Rated Unit is served by unless Rated Unit uses instantaneous water Select applicable efficiency from below using Gas Storage Tank Capacity: Electric Storage Tank Capacity: Electric DHW EF:	ing Reference H Lighting, Applia Reference Hom ng the Rated Ur he pump serving a commercial s EF residential syste heater in which tank size of Re	Home, as de ances, Fixtu ne, as define nit and no o nit and othe g the Rated ystem): Sar ems): Conv o case selec eference De ≤ 55 0.67 ≤ 55 0.99	efined by Al res & Interr ed by ANSI ther units): r units): as <u>I Unit</u> me as syste entional sto t 50 gallon sign Gal 7 EF Gal 5 EF	NSI / RESNE hal Gains Se / RESNET / 0 kWh per y defined by A em serving th brage water h tank for gas	ET / ICC Std. 3 ction ⁹ ICC Std. 301 ear <u>INSI / RESNE</u> he Rated Unit. heater with tan systems and 6	01, except fo <u>F / ICC Std. 3</u> For boilers of k size equal t 0 gallon tank > 55 Gal 0.77 EF > 55 Gal 2.00 EF	or reduced).85 for ters, us ated Un c system			
/ater eating	Use (Gallons per Day): Same as Energy Rat resulting from the equipment specified in the Tank Temperature: Same as Energy Rating Recirculation Pump Energy (for pumps servin Recirculation Pump Energy (for pumps servin motor efficiency and using the same HP as the Fuel Type: Same as Rated Unit ^{2,6} System Type (when Rated Unit is served by 85% Et. For electric water heaters, use 0.95 System Type (when Rated Unit is served by unless Rated Unit uses instantaneous water Select applicable efficiency from below using Gas Storage Tank Capacity: Electric Storage Tank Capacity: Electric DHW EF: Oil Storage Tank Capacity: ¹⁰	ing Reference H Lighting, Applia Reference Hom ng the Rated Ur he pump serving a commercial s EF residential syste heater in which tank size of Re 30 Gallo	Home, as de ances, Fixtu ne, as define nit and no o nit and othe g the Rated ystem): Sar ems): Conv ems): Conv ems): Conv case selec eference De ≤ 55 0.67 ≤ 55 0.67 0.93 0 90 40 G	efined by Al res & Interr ed by ANSI ther units): r units): as <u>I Unit</u> me as syste entional sto t 50 gallon sign Gal 7 EF Gal 5 EF allon 56	NSI / RESNE hal Gains Se / RESNET / 0 kWh per y defined by A em serving th brage water h tank for gas 	ET / ICC Std. 3 ction ⁹ ICC Std. 301 ear <u>INSI / RESNE</u> he Rated Unit. heater with tan systems and 6 	01, except fo <u>F / ICC Std. 3</u> For boilers or k size equal t 0 gallon tank > 55 Gal 0.77 EF > 55 Gal 2.00 EF 70 Gallon	or reduced 01, using (water hea to that of R for electric 80 G	<u>).85 for</u> ters, us ated Un c systen			
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Exhibit 1: Expanded ENERGY STAR Multifamily Reference Design Definition (Continued)

	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										
`	/entilation:	Mechanical ventilation	system without heat	recovery								
		Rate: CFM = 0.01 * CF	⁻ A + 7.5 * (Nbr + 1), v	where CFA = Condi	tioned Floor A	rea and Nb	r = Number of Be	edrooms; Ru	ntime: 24 Ho	urs / Day		
		Fan Watts: Watts = CFM Rate / 2.8 CFM per Watt, where CFM Rate is determined above										
		Climate Zone:	CZ	21 CZ 2	CZ 3	CZ 4	CZ 4 C & 5	CZ 6	CZ 7	CZ 8		
		Ventilation Type:		oply Supply	Supply	Supply	Exhaust	Exhaust	Exhaust	Exhaust		
	Lighting,	Lighting: Fraction of qualifying Tier I fixtures to all fixtures in qualifying light fixture locations 90% for interior; 0% for exterior and garage										
	Appliances,	Refrigerator: 423 kWh per year										
	Fixtures &	Dishwasher: 0.66 EF, Place Setting Capacity Same as Rated Unit ² ; use 12 settings if no dishwasher installed in Rated Unit										
	nternal Gains:	Clothes Washer: Use the ENERGY STAR values below, even if no clothes washer is installed or if the ratio of dwelling units to installed										
	Jailis.	washers is more than							-loading com	mercial		
		clothes washers, Combination All-In One Washer-Dryers), model the same as the Rated Unit clothes washer										
			LER	\$/kWh	AGC		\$/therm	CAP	V	IMEF		
		ENERGY STAR	152	0.12	12	L	1.09	4.2		2.06		
		Clothes Dryer: Field Use Factor is 1.04 and CEF is 3.93 for electric and 3.43 for gas, even if no clothes dryer is installed. Exception: If installed clothes dryer is not available as ENERGY STAR certified (e.g., commercial clothes dryers, Combination All-In One Washer-Dryers), model the same as the Rated Unit clothes dryer										
		Ceiling Fan: 122 CFM per Watt; Quantity = Number of bedrooms + 1 when ceiling fans present in the Rated Unit; otherwise Quantity = 0										
		Water fixtures: all showers and faucets ≤ 2.0 gpm										
		Internal Gains: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC Std. 301, except for adjustments for the lighting,										
		refrigerator, dishwashe										
- I I		Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC Std. 301										
-	nternal ⁄lass:	Same as Liferyy Ratin	ig Reference Home,	as defined by ANSI	/ RESNET / I	CC Sta. 301						



Footnotes:

- 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. Where the envelope component is adiabatic in the Rated Unit, it shall also be adiabatic in the Multifamily 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. 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.
- 6. 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, <u>unless otherwise specified by ANSI / RESNET / ICC Std. 301</u>.
- 7. 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.
- 8. For a Rated Unit without a cooling system, the ENERGY STAR Multifamily Reference Design shall be configured with a 13 SEER electric air conditioner.
- 9. That is to say, representative of standard-flow plumbing fixtures, reference clothes washer 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.
- 10. To determine domestic hot water (DHW) EF requirements for additional tank sizes, use the following equation: Oil DHW EF ≥ 0.70 (0.002 x Tank Gallon Capacity).

For a Rated Unit with conditioned space below, that does not indirectly use corridor air as the ventilation supply air, software shall either automatically apply a 15% reduction to the compartmentalization results of the Rated Unit or instruct the Rater to apply the reduction. If automatically applied, the software shall make that known, such that the Rater does not also apply the same reduction, which is based on the RESNET Guidelines for Multifamily Energy Ratings.