

DRAFT ENERGY STAR Single-Family New Homes National ERI Target Procedure, Version 3.2 (Rev. 11)

This document provides instructions for determining the ENERGY STAR ERI Target, the highest ERI value that each rated home may achieve to earn the ENERGY STAR. Note that, in addition to meeting the ENERGY STAR ERI Target, homes shall also meet all Mandatory Requirements for All Certified Homes in Exhibit 2 of the National Program Requirements for ENERGY STAR Single-Family New Homes, Version 3.2.

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



Revised 10/18/2021



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Exhibit 1: Expanded ENERGY STAR Reference Design Definition

Building	Exhibit 1: Expanded											
Component	Expanded ENERGY STAR Reference Design Definition 1											
Foundations:	Construction Type & Structural Mass: Same as Rated Home, except: • For masonry floor slabs, modeled with 80% of floor area covered by carpet and 20% of floor directly exposed to room air											
	Conditioning Type: Same as Rated Home, except: • Crawlspaces shall be modeled as vented with net free vent aperture = 1sq. ft. per 150 sq. ft. of crawlspace floor area											
	Gross Area: Same as Rated Home ²											
	Insulation: ^{3, 4} Choose appropriate insulation level below:											
	Basement Wall Assembly U-factor only applies to conditioned bsmt.'s; if applicable, insulation shall be located on interior side of walls Consequently											
	 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 12" below grade shall be insulated to the Slab Insulation R-value. The insulation shall extend 											
	downward from the top of the slab on the											
	Climate Zone:	CZ 1	CZ 2	CZ 3	CZ 4	CZ 4C & 5	CZ 6	CZ 7	CZ 8			
	Slab Insulation R-Value:	0	0	10	10	10	10	10	10			
	Slab Insulation Depth (ft):	0	0	2	4	4	4	4	4			
FI 0	Basement Wall Assembly U-Factor:	0.360	0.360	0.091	0.059	0.050	0.050	0.050	0.050			
Floors Over Unconditioned Spaces:	Construction Type: Wood frame				\leftarrow							
	Gross Area: Same as Rated Home Insulation: ^{3,4} Climate Zone:	CZ 1	CZ 2	CZ 3	CZ 4	CZ 4C & 5	C7 C	CZ 7	C7 0			
	Floor Assembly U-Factor:	0.064	0.064	0.047	0.047	0.033	CZ 6 0.033	0.028	CZ 8 0.028			
Above-Grade	Interior and Exterior Construction Type: Woo		0.004	0.047	0.047	0.033	0.033	0.020	0.020			
Walls:	Gross Area: Same as Rated Home	d frame										
	Solar Absorptance = 0.75											
	Emittance = 0.90											
	Insulation: 3 Climate Zone:	CZ 1	CZ 2	CZ 3	CZ 4	CZ 4C & 5	CZ 6	CZ 7	CZ 8			
	Wall Assembly U-Factor:	0.084	0.084	0.060	0.045	0.045	0.045	0.045	0.045			
Thermally Isolated	None											
Sunrooms:												
Doors: 5	Area: Same as Rated Home											
	Orientation: Same as Rated Home Door Type:	Opaq		z 1/2	l ito	> 1/2 Lito	C7 1 2	> 1/2 Lit	0 C7 4 9			
	U-Value: SHGC:	0.1 N/A	7	≤ 1/2-Lite 0.25 0.25		> 1/2-Lite CZ 1-3 0.30 0.25		> 1/2-Lite CZ 4-8 0.30 0.40				
Glazing: 5					J	0.20)	0.4	+0			
Giaziliy.	Total Area: (except in homes with conditioned basements and attached homes ⁶) • Same as Rated Home, where Rated Home glazing area is less than 15% of conditioned floor area; OR • 15% of the conditioned floor area, where the Reted Home glazing area is 15% or more of the conditioned floor area.											
	 15% of the conditioned floor area, where 	• 15% of the conditioned floor area, where the Rated Home glazing area is 15% or more of the conditioned floor area Orientation: Equally distributed to North, East, South, and West										
	Orientation: Equally distributed to North, Eas	t, South, and	West					l .				
	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy	t, South, and	West					l				
	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None	st, South, and Rating Refere	West ence Home,	as defined b	y ANSI / RE	ESNET / ICC S	td. 301		C7.8			
	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone:	st, South, and Rating Reference CZ 1	West ence Home,	as defined b	y ANSI / RE	ESNET / ICC S	td. 301	CZ 7	CZ 8			
	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value:	ct, South, and Rating Reference CZ 1 0.40	West ence Home, CZ 2 0.40	as defined b CZ 3 0.30	y ANSI / RE CZ 4 0.30	CZ 4C & 5 0.27	td. 301 CZ 6 0.27	CZ 7 0.27	0.27			
Skyliahts:	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC:	st, South, and Rating Reference CZ 1	West ence Home,	as defined b	y ANSI / RE	ESNET / ICC S	td. 301	CZ 7				
	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None	ct, South, and Rating Reference CZ 1 0.40	West ence Home, CZ 2 0.40	as defined b CZ 3 0.30	y ANSI / RE CZ 4 0.30	CZ 4C & 5 0.27	td. 301 CZ 6 0.27	CZ 7 0.27	0.27			
Skylights: Ceilings:	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC:	ct, South, and Rating Reference CZ 1 0.40	West ence Home, CZ 2 0.40	as defined b CZ 3 0.30	y ANSI / RE CZ 4 0.30	CZ 4C & 5 0.27	td. 301 CZ 6 0.27	CZ 7 0.27	0.27			
	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame	ct, South, and Rating Reference CZ 1 0.40	West ence Home, CZ 2 0.40	as defined b CZ 3 0.30	y ANSI / RE CZ 4 0.30	CZ 4C & 5 0.27 0.40	td. 301 CZ 6 0.27	CZ 7 0.27	0.27			
	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home	ct, South, and Rating Reference CZ 1 0.40 0.25	West ence Home, CZ 2 0.40 0.25	cz 3 0.30 0.25	CZ 4 0.30 0.40	CZ 4C & 5 0.27	CZ 6 0.27 0.40	CZ 7 0.27 0.40	0.27 0.40			
	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone:	cz 1 0.40 0.25 CZ 1 0.035	CZ 2 0.40 0.25 CZ 2 0.026	cz 3 0.30 0.25 CZ 3 0.026	CZ 4 0.30 0.40	CZ 4C & 5 0.27 0.40	CZ 6 0.27 0.40	CZ 7 0.27 0.40	0.27 0.40			
Ceilings:	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1: Radiant Barrier: None	cz 1 0.40 0.25 Cz 1 0.035 sq. ft. per 300	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceilin	cz 3 0.30 0.25 CZ 3 0.026	CZ 4 0.30 0.40	CZ 4C & 5 0.27 0.40	CZ 6 0.27 0.40	CZ 7 0.27 0.40	0.27 0.40			
Ceilings: Attics:	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1	cz 1 0.40 0.25 Cz 1 0.035 sq. ft. per 300	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceilin	cz 3 0.30 0.25 CZ 3 0.026	CZ 4 0.30 0.40	CZ 4C & 5 0.27 0.40	CZ 6 0.27 0.40	CZ 7 0.27 0.40	0.27 0.40			
Ceilings: Attics:	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1: Radiant Barrier: None	cz 1 0.40 0.25 Cz 1 0.035 sq. ft. per 300	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceilin	cz 3 0.30 0.25 CZ 3 0.026	CZ 4 0.30 0.40	CZ 4C & 5 0.27 0.40	CZ 6 0.27 0.40	CZ 7 0.27 0.40	0.27 0.40			
Ceilings: Attics:	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1: Radiant Barrier: None Construction Type: Composition shingle on version of the construction Type: Composition Shingle on version Absorptance = 0.92	cz 1 0.40 0.25 Cz 1 0.035 sq. ft. per 300	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceilin	cz 3 0.30 0.25 CZ 3 0.026	CZ 4 0.30 0.40	CZ 4C & 5 0.27 0.40	CZ 6 0.27 0.40	CZ 7 0.27 0.40	0.27 0.40			
Ceilings: Attics: Roofs:	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1: Radiant Barrier: None Construction Type: Composition shingle on version of the construction Type: Composition Shingle on version Absorptance = 0.92 Emittance = 0.90	cz 1 0.40 0.25 CZ 1 0.035 sq. ft. per 300	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceilling	cz 3 0.30 0.25 cz 3 0.026 ng area	CZ 4 0.30 0.40 CZ 4 0.024	CZ 4C & 5 0.27 0.40	CZ 6 0.27 0.40	CZ 7 0.27 0.40	0.27 0.40			
Ceilings: Attics: Roofs:	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1: Radiant Barrier: None Construction Type: Composition shingle on version Gross Area: Same as Rated Home Solar Absorptance = 0.92 Emittance = 0.90 Same as Energy Rating Reference Home, as	cz 1 0.40 0.25 cz 1 0.035 sq. ft. per 300 wood sheathi	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceilling	cz 3 0.30 0.25 cz 3 0.026 ng area	CZ 4 0.30 0.40 CZ 4 0.024	CZ 4C & 5 0.27 0.40 CZ 4C & 5 0.024	CZ 6 0.27 0.40	CZ 7 0.27 0.40	0.27 0.40			
Ceilings: Attics: Roofs: Internal Mass:	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1: Radiant Barrier: None Construction Type: Composition shingle on version Gross Area: Same as Rated Home Solar Absorptance = 0.92 Emittance = 0.90 Same as Energy Rating Reference Home, as Additional mass specifically designed as a Tenergy Rating Reference as Energy Rating Reference Home, as Additional mass specifically designed as a Tenergy Rating Reference Home, as Additional mass specifically designed as a Tenergy Rating Reference Home, as Additional mass specifically designed as a Tenergy Rating Reference Home, as Additional mass specifically designed as a Tenergy Rating Reference Home, as Additional mass specifically designed as a Tenergy Rating Reference Home, as Additional mass specifically designed as a Tenergy Rating Reference Home, as Additional mass specifically designed as a Tenergy Rating Reference Home, as Additional Mass Specifically designed as a Tenergy Rating Reference Home, as Additional Mass Specifically designed as a Tenergy Rating Reference Home, as Additional Mass Specifically designed as a Tenergy Rating Reference Home, as Additional Mass Specifically designed as a Tenergy Rating Reference Home, as Additional Mass Specifically designed as a Tenergy Rating Reference Home, as Additional Mass Specifically designed as Additional Rating Reference Home, as Additional Rating	cz 1 0.40 0.25 cz 1 0.035 sq. ft. per 300 wood sheathi	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceilling	cz 3 0.30 0.25 cz 3 0.026 ng area	CZ 4 0.30 0.40 CZ 4 0.024	CZ 4C & 5 0.27 0.40 CZ 4C & 5 0.024	td. 301 CZ 6 0.27 0.40 CZ 6 0.024	CZ 7 0.27 0.40 CZ 7 0.024	0.27 0.40			
Ceilings: Attics: Roofs: Internal Mass: Lighting,	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1: Radiant Barrier: None Construction Type: Composition shingle on videous Area: Same as Rated Home Solar Absorptance = 0.92 Emittance = 0.90 Same as Energy Rating Reference Home, as Additional mass specifically designed as a Talighting: Fraction of qualifying Tier II fixtures	cz 1 0.40 0.25 cz 1 0.035 sq. ft. per 300 wood sheathi	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceilling	cz 3 0.30 0.25 cz 3 0.026 ng area	CZ 4 0.30 0.40 CZ 4 0.024	CZ 4C & 5 0.27 0.40 CZ 4C & 5 0.024	td. 301 CZ 6 0.27 0.40 CZ 6 0.024	CZ 7 0.27 0.40 CZ 7 0.024	0.27 0.40			
Ceilings: Attics: Roofs: Internal Mass: Lighting, Appliances, &	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1: Radiant Barrier: None Construction Type: Composition shingle on videous Area: Same as Rated Home Solar Absorptance = 0.92 Emittance = 0.90 Same as Energy Rating Reference Home, as Additional mass specifically designed as a Talighting: Fraction of qualifying Tier II fixtures Refrigerator: 450 kWh per year	cz 1 0.40 0.25 cz 1 0.035 sq. ft. per 300 wood sheathi	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceiling ANSI / RESI ge Element s in qualifying	cz 3 0.30 0.25 cz 3 0.026 ng area	CZ 4 0.30 0.40 CZ 4 0.024	CZ 4C & 5 0.27 0.40 CZ 4C & 5 0.024	td. 301 CZ 6 0.27 0.40 CZ 6 0.024	CZ 7 0.27 0.40 CZ 7 0.024	0.27 0.40			
Ceilings: Attics: Roofs: Internal Mass: Lighting, Appliances, &	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1: Radiant Barrier: None Construction Type: Composition shingle on version Gross Area: Same as Rated Home Solar Absorptance = 0.92 Emittance = 0.90 Same as Energy Rating Reference Home, as Additional mass specifically designed as a Talighting: Fraction of qualifying Tier II fixtures Refrigerator: 450 kWh per year Dishwasher: Capacity Same as Rated Home	cz 1 0.40 0.25 CZ 1 0.035 sq. ft. per 300 wood sheathi	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceiling ANSI / RESI ge Element in qualifying	cz 3 0.30 0.25 CZ 3 0.026 ng area	CZ 4 0.30 0.40 CZ 4 0.024 d. 301. Home shallocations 1 Rated Home	CZ 4C & 5 0.27 0.40 CZ 4C & 5 0.024	td. 301 CZ 6 0.27 0.40 CZ 6 0.024	CZ 7 0.27 0.40 CZ 7 0.024	0.27 0.40			
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Ceilings: Attics: Roofs: Internal Mass: Lighting, Appliances, &	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone:	cz 1 0.40 0.25 CZ 1 0.40 0.25 CZ 1 0.035 sq. ft. per 300 wood sheathi s defined by hermal Stora to all fixtures e, or Standard \$22.23, Elec \$14.20, Elec	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceiling ANSI / RESI ge Element in qualifying if no dishwes = \$0.12, 0 \$ = \$0.12, 0	cz 3 0.30 0.25 CZ 3 0.026 ng area NET / ICC St. for the Rated g light fixture asher in the I Gas\$ = \$1.09 Gas\$ = \$1.09	CZ 4 0.30 0.40 CZ 4 0.024 d. 301. Home shallocations 1 Rated Home, LCY = 208, LCY = 208, LCY = 208	CZ 4C & 5 0.27 0.40 CZ 4C & 5 0.024 Il be excluded. 00% for interior	td. 301 CZ 6 0.27 0.40 CZ 6 0.024	CZ 7 0.27 0.40 CZ 7 0.024	0.27 0.40 CZ 8 0.024			
Ceilings: Attics: Roofs: Internal Mass: Lighting, Appliances, &	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone:	cz 1 0.40 0.25 CZ 1 0.035 sq. ft. per 300 wood sheathi s defined by a hermal Stora to all fixtures e, or Standard \$\frac{2}{3}, Elec \$\frac{2}{	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceiling ANSI / RESI ge Element is in qualifying If if no dishw. \$\$ = \$0.12, 0 drooms + 1	CZ 3 0.30 0.25 CZ 3 0.026 ng area NET / ICC Stream of the Rated of light fixture asher in the I Gas\$ = \$1.09 when ceiling	CZ 4 0.30 0.40 CZ 4 0.024 CZ 4 0.024 d. 301. Home sha locations 1 Rated Home, LCY = 200 fans presen	CZ 4C & 5 0.27 0.40 CZ 4C & 5 0.024 Il be excluded. 00% for interior	CZ 6 0.27 0.40 CZ 6 0.024	CZ 7 0.27 0.40 CZ 7 0.024 and garage	0.27 0.40 CZ 8 0.024			
Ceilings: Attics: Roofs: Internal Mass: Lighting, Appliances, &	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone:	cz 1 0.40 0.25 Cz 1 0.40 0.25 Cz 1 0.035 sq. ft. per 300 wood sheathi s defined by a hermal Stora to all fixtures e, or Standard \$\frac{2}{3}\$ 2.23, Elect \$\frac{1}{4}\$ 2.0, Elect Jumber of be	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceiling ANSI / RESI ge Element in qualifying I if no dishw. \$\$ = \$0.12, 0 drooms + 1 standard Clo	CZ 3 0.30 0.25 CZ 3 0.026 ng area NET / ICC Stream of the Rated of light fixture asher in the I Gas\$ = \$1.09 when ceiling thes Washer	CZ 4 0.30 0.40 CZ 4 0.024 CZ 4 0.024 d. 301. Home shallocations 1 Rated Home, LCY = 200, LCY = 200 fans presen	CZ 4C & 5 0.27 0.40 CZ 4C & 5 0.024 Il be excluded. 00% for interior e 3 3 at in the Rated othes washer p	CZ 6 0.27 0.40 CZ 6 0.024	CZ 7 0.27 0.40 CZ 7 0.024 and garage	0.27 0.40 CZ 8 0.024			
Ceilings: Attics: Roofs: Internal Mass: Lighting, Appliances, &	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: Ceiling Assembly U-Factor: Construction Type: Vented with aperture = 1. Radiant Barrier: None Construction Type: Composition shingle on with Gross Area: Same as Rated Home Solar Absorptance = 0.92 Emittance = 0.90 Same as Energy Rating Reference Home, as Additional mass specifically designed as a Tilighting: Fraction of qualifying Tier II fixtures Refrigerator: 450 kWh per year Dishwasher: Capacity Same as Rated Home For Standard capacity: LER = 270, GHWC = For Compact capacity: LER = 203, GHWC = Ceiling Fan: 122 CFM per Watt; Quantity = Nicothes Washer: Efficiency equal to "Std 201 otherwise, same as Energy Rating Reference Clothes Dryer: S	cz 1 0.40 0.25 Cz 1 0.40 0.25 Cz 1 0.035 sq. ft. per 300 wood sheathi s defined by hermal Stora to all fixtures c, or Standard s \$22.23, Electory lamber of be l8-Present" Se Home, as cerence Home,	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceiling ANSI / RESI ge Element is in qualifying diff no dishw s\$ = \$0.12, 0 drooms + 1 drandard Clo lefined by Al as defined	cz 3 0.30 0.25 Cz 3 0.026 ng area NET / ICC Stror the Rated of light fixture asher in the Isas = \$1.09 when ceiling thes Washer NSI / RESNE	CZ 4 0.30 0.40 CZ 4 0.024 CZ 4 0.024 d. 301. Home shallocations 1 Rated Home, LCY = 208, LCY = 208, fans presell Model if cleft T / ICC Storms SNET / ICC STORM SNET / ICC Storms SNET / ICC STORM SNET	CZ 4C & 5 0.27 0.40 CZ 4C & 5 0.024 Il be excluded. 00% for interior e B B B B Int in the Rated othes washer p I. 301. C Std. 301.	CZ 6 0.27 0.40 CZ 6 0.024 CZ 6 0.024 CZ 6 0.024	CZ 7 0.27 0.40 CZ 7 0.024 and garage erwise, Quartie Rated Hore	0.27 0.40 CZ 8 0.024			
Ceilings: Attics: Roofs: Internal Mass: Lighting, Appliances, &	Orientation: Equally distributed to North, Eas Interior Shade Coefficient: Same as Energy External Shading: None Climate Zone: U-Value: SHGC: None Construction Type: Wood frame Gross Area: Same as Rated Home Insulation: 3 Climate Zone:	cz 1 0.40 0.25 Cz 1 0.40 0.25 Cz 1 0.035 sq. ft. per 300 wood sheathi s defined by hermal Stora to all fixtures c, or Standard s \$22.23, Electory lumber of bee 18-Present" See Home, as cerence Home, erence Home,	CZ 2 0.40 0.25 CZ 2 0.026 0 sq. ft. ceiling ANSI / RESI ge Element is in qualifying di if no dishw s\$ = \$0.12, 0 drooms + 1 dtandard Clo lefined by Al as defined as defined	cz 3 0.30 0.25 Cz 3 0.026 ng area NET / ICC Stror the Rated of light fixture asher in the Isas = \$1.09 when ceiling thes Washer NSI / RESNE	CZ 4 0.30 0.40 CZ 4 0.024 CZ 4 0.024 d. 301. Home shallocations 1 Rated Home, LCY = 208, LCY = 208, fans presell Model if cleft T / ICC Storms SNET / ICC STORM SNET / ICC Storms SNET / ICC STORM SNET	CZ 4C & 5 0.27 0.40 CZ 4C & 5 0.024 Il be excluded. 00% for interior e B B B B Int in the Rated othes washer p I. 301. C Std. 301.	CZ 6 0.27 0.40 CZ 6 0.024 CZ 6 0.024 CZ 6 0.024	CZ 7 0.27 0.40 CZ 7 0.024 and garage erwise, Quartie Rated Hore	0.27 0.40 CZ 8 0.024			



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Exhibit 1: Expanded ENERGY STAR Reference Design Definition (Continued)

Heating	Heating capacity shall be selected in a	ccordance wit	th ACCA Ma	nual S based	d on building	heating and d	cooling loads	calculated in		
Systems:	accordance with ACCA Manual J, Eigh									
,	forced-air HVAC systems, degraded capacity from other-than-Grade I installation shall be accounted for using same methodology applied to									
	Energy Rating Reference Home.									
	Fuel Type: Same as Rated Home, exce	ept Reference	e Design sha	II be configu	red with gas	where Rated	Home has no	on-electric eq	uipment 7	
	Installation Quality: For forced-air HVA									
	and, for air-source heat pumps, Grade					,			,	
	System Type: Same as Rated Home, e	xcept Refere	nce Design :	shall be conf	figured with a	air-source hea	t pump where	e Rated Hom	e has air-	
	source or ground-source heat pump, el									
	Climate Zone:	CZ 1	CZ 2	CZ 3	CZ 4	CZ 4C & 5	CZ 6	CZ 7	CZ 8	
	Gas Furnace AFUE:	80	80	80	90	95	95	95	95	
	Gas Boiler AFUE:	80	80	80	90	95	95	95	95	
	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	
	For non-electric warm furnaces and no					all be determin	ed in accorda	ance with the		
	methodology for the Energy Rating Ref									
Cooling	Cooling capacity shall be selected in ac									
Systems:	accordance with ACCA Manual J, Eigh									
	forced-air HVAC systems, degraded ca	ipacity from o	itner-tnan-Gr	ade i installa	ation snall be	e accounted to	r using same	e metnodolog	y applied to	
	Energy Rating Reference Home.		D		1 20	. 5.1			7	
	Fuel Type: Same as Rated Home, exce									
	Installation Quality: For forced-air HVA and, for AC's & air-source heat pumps,				airflow devia	ition, Grade II	0.52 W / CFN	d blower fan o	efficiency,	
	System Type: Same as Rated Home, e				figured with :	air-source hea	t numn when	e Rated Hom	e has air-	
	source or ground-source heat pump, el								o nao an	
	Climate Zone:	CZ 1	CZ 2	CZ 3	CZ 4	CZ 4C & 5		CZ 7	CZ 8	
	AC SEER:	16	16	16	16	14	14	14	14	
Comiloo	Air-Source Heat Pump SEER:	16	16	16	16	16	16	16	16	
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DRAFT ENERGY STAR Single-Family New Homes National ERI Target Procedure, Version 3.2 (Rev. 11)

Footnotes:

- 1. Any parameter not specified in this exhibit shall be identical to the value entered for the Rated Home.
- 2. "Same as Rated Home" indicates that the parameter shall be identical to the value entered for the Rated Home.
- 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 home, then the thermal boundary of the ENERGY STAR 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 for homes with conditioned basements and for attached homes, the following formula shall be used to determine total window area of the ENERGY STAR 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 thermal 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 thermal 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 another conditioned living unit, not including foundation walls.
- 7. Fuel type(s) shall be same as Rated Home, including any dual-fuel equipment where applicable. For a Rated Home 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.
- 8. For a Rated Home without a heating system, the ENERGY STAR Reference Design Home shall be configured with a 78% AFUE gas furnace system, unless the Rated home has no access to natural gas or fossil fuel delivery. In such cases, the ENERGY STAR Reference Design Home shall be configured with a 7.7 HSPF air-source heat pump.
- 9. For a Rated Home without a cooling system, the ENERGY STAR Reference Design Home shall be configured with a 13 SEER electric air conditioner.
- 10. That is to say, representative of standard-flow plumbing fixtures, reference or "Std 2018-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 drainwater heater recovery.

Revised 10/18/2021