ENERGY STAR® Residential New Construction Programs

Historical Document

This document is provided for reference because it has been superseded by a more recent Version or Revision. Please find current program documents on the <u>Program Requirements</u> webpage.

Use of older Versions and Revisions, such as this document, are typically limited to homes and buildings with a permit date (or, for manufactured homes, a production date) prior to a specified date. Consult the Implementation Timeline table to assess whether a home or apartment is still eligible to be certified using this document.

For questions or more information, contact us at energystar.gov.



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 Pacific Program Requirements for ENERGY STAR Single-Family New Homes, Version 3.

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 using the following procedure:

- 1. The software shall configure the ENERGY STAR Reference Design Home in accordance with Exhibit 2, the Expanded ENERGY STAR Reference Design Definition for the Pacific, and calculate its associated ERI value. The ERI value shall be calculated using ANSI / RESNET / ICC 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.
- For all single-family detached homes, townhomes, rowhomes, duplexes, triplexes, and quadplexes the software shall calculate the Size Adjustment Factor (SAF) using the following equation:

SAF = [CFA Benchmark Home / CFA Home To Be Built] 0.25, not to exceed 1.0

Where:

CFA Benchmark Home = Conditioned Floor Area of the Benchmark Home, using Exhibit 1 below

CFA Home to be Built = Conditioned Floor Area of the Home to be Built

For the purposes of this step, the software shall calculate the number of bedrooms and the CFA of the home to be built in accordance with the definitions in ANSI / RESNET / ICC 301 with the following exception: floor area in basements with at least half of the gross surface area of the basement's exterior walls below grade shall not be counted. ¹ Because the SAF cannot exceed 1.0, it only modifies the ERI Target for homes with conditioned floor area greater than the Benchmark Home. For condos and apartments in multi-family buildings the SAF shall always equal 1.0.

3. The software shall calculate the ENERGY STAR ERI Target, rounded to the nearest whole number:

ENERGY STAR ERI Target = ERI of ENERGY STAR Reference Design Home x SAF

Exhibit 1: Benchmark Home Size 2,3

Bedrooms in Home to be Built	0	1	2	3	4	5	6	7	8
Conditioned Floor Area Benchmark Home	1,000	1,000	1,600	2,200	2,800	3,400	4,000	4,600	5,200

Revised 09/15/2022



Exhibit 2: Expanded ENERGY STAR Reference Design Definition for the Pacific

Desil dieses	EXHIBIT 2: EXPANDED ENERGY 517	art recording Beergi					
Building Component	Expanded E	ENERGY STAR Reference Des	sign Definition ⁴				
Foundations:	Construction Type & Structural Mass: Same as Rated • For masonry floor slabs, modeled with 80% of floor	Home, except: area covered by carpet and 20	0% of floor directly exposed to room	ı 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 ⁵						
	Insulation: 6,7 Choose appropriate insulation level belo)W;					
	 Basement Wall Assembly U-factor only applies to conditioned bsmt.'s; 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 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 outside of the foundation wall and then vertically below-grade to the Slab Insulation Depth Location: Hawaii / Guam / Northern Mariana Islands						
	Slab Insulation R-Value:	Tia		narias			
	Slab Insulation Depth (ft):		0				
FI	Basement Wall Assembly U-Factor:		0.360				
Floors Over Unconditioned	Construction Type: Wood frame Gross Area: Same as Rated Home						
Spaces:	Insulation: 6,7 Location:	Hawaii / G	Guam / Northern Mariana Islands				
	Floor Assembly U-Factor:		0.257				
Above-Grade	Interior and Exterior Construction Type: Wood frame						
Walls:	Gross Area: Same as Rated Home						
	Solar Absorptance = 0.75						
	Emittance = 0.90 Insulation: Location:	Hawaii ⁶	Guam / Norther	n Mariana Islands			
	Wall Assembly U-Factor:	0.082	0.4				
Thermally Isolated	None	0.002		<u>01</u>			
Sunrooms: Doors: 8	Area: Same as Rated Home						
Doors.	Orientation: Same as Rated Home						
	Door Type: Opaque		≤ 1/2-Lite	> 1/2-Lite			
	U-Value: 0.21		0.27	0.32			
Glazing: 8	SHGC: N/A	ents and attached homes 9)	0.30	0.30			
Glazilig.	Total Area: (except in homes with conditioned basements and attached homes ⁹) • Same as Rated Home, where Rated Home glazing area is less than 15% of conditioned floor area; <u>OR</u> • 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,						
	Interior Shade Coefficient: Same as Energy Rating Re	eference Home, as defined by A	ANSI / RESNET / ICC 301				
	External Shading: None Location:	Hawaii / G	iuam / Northern Mariana Islands				
	Location: Hawaii / Guam / Northern Mariana Islands U-Value: 0.60						
	SHGC:		0.27				
Skylights:	None						
Ceilings:	Construction Type: Wood frame						
	Gross Area: Same as Rated Home Insulation: 6 Location:	Hawaii / C	Norma / Norman Morrison Colonsia				
	Ceiling Assembly U-Factor:	nawaii / G	Guam / Northern Mariana Islands 0.035				
Attics:	Construction Type: Vented with aperture = 1 sq. ft. pe	r 300 sq. ft. ceiling area	0.000				
	Radiant Barrier: Included if > 10 linear ft. of ductwork Included in all homes in Guam / Nort	are located in unconditioned a	ttic in Hawaii;				
Roofs:	Construction Type: Composition shingle on wood shear	athing					
	Gross Area: Same as Rated Home						
	Solar Absorptance = 0.92 Emittance = 0.90						
Internal Mass:	Same as Energy Rating Reference Home, as defined	by ANSI / RESNET / ICC 301					
internal Mass.	Additional mass specifically designed as a Thermal St		lome shall be excluded.				
Lighting,	Lighting: Fraction of qualifying Tier I fixtures to all fixtures in qualifying light fixture locations: 80% for interior; 0% for exterior and garage						
Appliances, & Internal Gains:	Refrigerator: 423 kWh per year						
	Dishwasher: Capacity Same as Rated Home, or Standard if no dishwasher in the Rated Home For Standard capacity: LER = 270, GHWC = \$22.23, Elec\$ = \$0.12, Gas\$ = \$1.09, LCY = 208						
	For Compact capacity: LER = 270, GHWC = \$22.23, I For Compact capacity: LER = 203, GHWC = \$14.20, I						
	Ceiling Fan: 122 CFM / Watt; Quantity = Number of be			Quantity = 0			
	Clothes Washer and Dryer: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Internal Gains: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, except for adjustments for the lighting,						
			NET / ICC 301, except for adjustment	ents for the lighting,			
	refrigerator, dishwasher, and ceiling fans specified in t	ans section.					



Exhibit 2: Expanded ENERGY STAR Reference Design Definition for the Pacific (Cont.)

with ACCA Manual J. Eighth Edition, ASHRAE Handbook of Fundamentals, or an equivalent computation procedure. For forced-air HVAC systems, degraded capacity from Grade III install shall be accounted for using same methodology applied renery Rating Reference Home. Fuel Type: Same as Rated Home, except Reference Design shall be configured with air-source heat pump where Rated Home has air-source or ground-source heat pump, electric strip heat, or electric baseboard heat; applicable efficiency scaled from below." Climato Zone: Gas Furnace vIUE: Gas / Oil Boiler AFUE: Air-Source Heat Pump Backup: For non-electric boilers, the Electric Auxiliary Energy shall be determined in accordance with the methodology of the Energy Rating Reference Home in ANSI / RESNET / ICC 301. Cooling Systems: Cooling Systems: Cooling Cooling Systems: For on-electric boilers, the Electric Auxiliary Energy shall be determined in accordance with the methodology for the Energy Rating Reference Home in ANSI / RESNET / ICC 301. Cooling Systems: For on-electric boilers, the Electric Auxiliary Energy shall be determined in accordance with the methodology for the Energy Rating Reference Home in ANSI / RESNET / ICC 301. Cooling Cooling capacity shall be selected in accordance with ACCA Manual J. Eighth Edition, ASHRAE Handbook of Fundamentals, or an equivalent computation procedure. For forced-air HVAC systems: For on-electric boilers, the Electric Auxiliary Energy shall be accounted for using same methodology applied renergy Rating Reference Home. Fuel Type: Same as Rated Home. For Installation Quality For forced-air HVAC systems, Grade III airflow and watt draw, for AC's & air-source heat pumps, electric strip heat, or electric baseboard heat; applicate efficiency scale from below. For System Type: Same as Rated Home, except Reference Design shall be configured with air-source heat pump where Rated Home has air-source or ground-source heat pump, electric strip heat, or electric baseboard heat; applicate efficiency (EF): Gervice Ga		Exhibit 2: Expanded E	NERGY STAR Referen	ce Design Definition for the	Pacific (Cont.)				
Systems, degraded capacity from Crade III install shall be accounted for using asme methodology applied to Energy Rating Reference Hon Fuel Type: Same as Rated Home. "Installation Quality, For forced-air HVAC systems, Grade III airflow and wait draw, for air-source heat pumps, also Grade III ref. charge. System Type: Same as Rated Home. "Energy Systems, Grade III airflow and wait draw, for air-source heat pumps, also Grade III ref. charge. System Type: Same as Rated Home. "Energy Systems, Grade III airflow and wait of the Configured with air-source heat pump where Rated Home has air-source or ground-source heat pump, electric strip heat, or electric baseboard heat; applicable efficiency selected from heldw." Climate Zone: Hawaii / Quam / Northern Martana Islands Oil Furnace AFUE: Gas / Oil Boller AFUE: Air-Source Heat Pump Backup: For non-electric bollers, the Electric Auxiliary Energy shall be determined in accordance with the methodology for the Energy Rating Reference In a MSI/I RESNET / ICC 301. Cooling capacity shall be selected in accordance with ACCA Marual S based on building heating and cooling loads calculated in accordance in ANSI/ RESNET / ICC 301. Cooling capacity shall be selected in accordance with ACCA Marual S based on building heating and cooling loads calculated in accordance in ANSI/ RESNET / ICC 301. Cooling capacity shall be selected in accordance with ACCA Marual S based on building heating and cooling loads calculated in accordance with ACCA Marual S leads to a selection of the selection of the ACCA Marual S Leghth Edition, ASHARAE Hardbook of Fundamentals, or an equivalent computation procedure. For forced-air HVAC systems, Grade III airflow and wait draw, for ACs as dis-source heat pump. Fuel Type. Same as Rated Home. Except Reference Design shall be configured with air-source heat pump where Rated home has air-source or ground-source heat pump, electric strip heat, or electric baseboard with air-source heat pump where Rated from below. If AIC source graund-source heat pump	Heating Systems:	Heating capacity shall be selected in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance							
Fuel Type: Same as Rated Home. Sexoept Reference Design shall be configured with air-source heat pumps, also Grade III ref. charge. System Type: Same as Rated Home, except Reference Design shall be configured with air-source heat pump where Rated Home has air-source or ground-source heat pump, electric strip heat, or electric baseboard heat, applicable efficiency selected from below. " Climate Zone: Gas Furnace AFUE: Gas / Oil Eolier AFUE: Gas / Oil Eolier AFUE: Air-Source Heat Pump HSPF: Air-Source Heat Pump HSPF: Air-Source Heat Pump Backup: For non-electric boles, the Electric Auxiliary Energy shall be determined in accordance with the methodology for the Energy Rating Reference Home in ANSI / RESNET / ICC 301. Cooling Cooling Gapacity shall be selected in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated by ACCA Manual S based on building heating and cooling loads calculated by ACCA Manual S based on building heating and cooling loads calculated by ACCA Manual S based on building heating and cooling loads calculated by ACCA Manual S based on building heating and cooling loads calculated by ACCA Manu	- ,	systems, degraded capacity from Grade III install shall be accounted for using same methodology applied to Energy Rating Reference Home.							
Installation Quality. For forced-air HVAC systems, Grade III airflow and wall clraw, for air-source heat pumps, also Grade III of the charge. System Type: Same as Rated Home, except Reference Design shall be configured with air-source heat pump, where Rated Home has air-source or ground-source heat pump, electric strip heat, or electric baseboard heat, applicable efficiency selected from below. " Climate Zone: Gas Furnace AFUE: Gas / Oil Boiler AFUE: For non-electric boilers, the Electric hundred in accordance with hor electric boilers, the Electric hundred in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and building heat									
System Type: Same as Rated Home, except Reference Design shall be confligured with air-source heat pump where Rated Home has air- source or ground-source heat pump, electric strip heat, or electric baseboard heat, applicable efficiency selected from below. " Climate Zone: Gas Furnace APUE: OI Fur									
Climate Zone: Gas Furnace AFUE: 01 Furnace AFUE: 03 (01 Boilar AFUE: 03 (01 Boilar AFUE: 03 (01 Boilar AFUE: 04 (03 (01 Boilar AFUE: 05 (04 (01 Boilar AFUE: 05 (04 (01 Boilar AFUE: 06 (04 (01 Boilar AFUE: 07 (04 (04 Boilar AFUE: 08 (04 Boilar AFUE: 08 (04 (04 Boilar AFUE: 08 (04 Boilar AFUE: 09 (04 Boilar AFUE: 0									
Climate Zone: Gas Furnace AFUE: 01 Furnace AFUE: 03 (01 Boilar AFUE: 03 (01 Boilar AFUE: 03 (01 Boilar AFUE: 04 (03 (01 Boilar AFUE: 05 (04 (01 Boilar AFUE: 05 (04 (01 Boilar AFUE: 06 (04 (01 Boilar AFUE: 07 (04 (04 Boilar AFUE: 08 (04 Boilar AFUE: 08 (04 (04 Boilar AFUE: 08 (04 Boilar AFUE: 09 (04 Boilar AFUE: 0									
Oil Furnace AFUE: Gas / Oil Boiler AFUE: Air-Source Heat Pump Backup: For non-electric boilers, the Electric Auxiliary Energy shall be determined in accordance with the methodology for the Energy Rating Reference Incidence in ANSI / RESNET / I/C 301. Cooling capacity shall be selected in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated by ACCA Manual S based on building heating and accordance with ACCA Manual S based on building heating and water the ACCA Manual S based on building heating and water the ACCA Manual S based on building heating and water the ACCA Manual S based on building heating and water the ACCA Manual S based on building heating and water the ACCA Manual S based on building heating and buil									
Gas / Oil Boller AFUE: AIr-Source Heat Pump BSPF: AIr-Source Heat Pump BAckup: For non-electric bollers, the Electric Auxiliary Energy shall be determined in accordance with the methodology for the Energy Rating Referer Home in ANSI / RESNET / I.CC 301. Cooling Systems: Systems shall be selected in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual J. Eighth Edition, ASHRAE Handbook of Fundamentals, or an equivalent computation procedure. For forced-air HVAC systems, degraded capacity from Grade III install hall be accounted for using same methodology applied to Energy Rating Reference Normal Publishing of the Cooling Capacity For forced-air HVAC systems, Grade III install hall be accounted for using same methodology applied to Energy Rating Reference Design shall be configured with air-source heat pumps, also Grade III install hall be accounted for using same methodology applied to Energy Rating Reference Design shall be configured with air-source heat pumps, also Grade III install hall be accounted for using same methodology applied to Energy Rating Reference Design shall be configured with air-source heat pumps, also Grade III install hall be accounted for using same methodology applied to Energy Rating Reference Design shall be configured with air-source heat pumps, also Grade III install hall be accounted for using same methodology applicable efficiency selected from below. ² Climate Zone: ASSER: AIR-Source Heat Pump SEER: Service Water Leading Systems: Service Value (Sallons per Day): Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 except for reduced usage result from the dishwasher specified in the Light, Appliances, & Internal Gains Section, 3 Tark Temperature, Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Fuel Type: Solar with electric backup, if Rated Home fuel type is electric and / or solar, otherwise, natural gas. Fuel Type: Solar with electric backup, if Rated Hom		Gas Furnace AFUE:		80					
Air-Source Heaf Pump BSPF: Air-Source Heaf Pump Backup: For non-electric boilers, the Electric Auxiliary Energy shall be determined in accordance with the methodology for the Energy Rating Referer Home in ANSI / RESNET / I/C 301. Cooling capacity shall be selected in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S Lighth Edition, ASHRAE Handbook of Fundamentals, or an equivalent computation procedure. For forced-in HVAC systems, degraded capacity from Grade III install shall be accounted for using same methodology applied to Energy Rating Reference Home Fuel Type: Same as Rated Home or Installation Quality. For forced-air HVAC systems, Grade III airflow and want draw, for AC's & air-source heat pump where Rated Home has air-source or ground-source heat pump, electric strip heat, or electric baseboard heat; applicable efficiency selected from below. 12 Climate Zone: AC SEER: Air-Source Heat Pump SEER: Use (Gallons per Day): Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Fuel Type: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Fuel Type: Slare with electric backup. If Rated Home fuel type is leader; and / or solar, otherwise, natural gas. System Type: firsolar with electric backup. If Rated Home fuel type is leader; and / or solar, otherwise, natural gas. System Type: firsolar with electric backup. If Rated Home fuel type is leader; and / or solar, otherwise, natural gas. System Type: firsolar with electric backup. If Rated Home fuel type is leader; and / or solar, otherwise, natural gas. System Type: firsolar with electric backup. If Rated Home fuel type is leader; and / or solar, otherwise, natural gas. System Type: firsolar with electric backup. If Rated Home fuel type is leader; and / or solar, otherwise, natural gas. Solar Water Heater Goldcort Type and Area: Orientation/Azimuth: 180° of true North Storage Tank Size: Solar Water Heater Goldcort Type and Area: Or		Oil Furnace AFUE:		80					
Air-Source Heaf Pump Backup: For non-electric bollers, the Electric Auxiliary Energy shall be determined in accordance with the methodology for the Energy Rating Reference Home in ANSI / RESNET / ICC 301. cooling capacity shall be selected in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual J, Eighth Edition, ASHRAE Handbook of Fundamentals, or an equivalent computation procedure. For forced-air HVAC systems, degraded capacity from Grade III install shall be accounted for using same methodology applied to Energy Rating Reference Design shall be configured with air-source heat pump, also Grade III ref. char System Type: Same as Rated Home. Except Reference Design shall be configured with air-source heat pump where Rated Home has air-source or ground-source heat pump, electric strip heat, or electric baseboard heat, applicable efficience elected from below. ¹² Climate Zone: AC SEER: Air-Source Heat Pump SEER: Air-Source Heat		Gas / Oil Boiler AFUE:		80					
For non-electric bollers, the Electric Auxiliary Energy shall be determined in accordance with the methodology for the Energy Rating Referer Home in ANSI / RESNET / ICC 301. Cooling capacity shall be selected in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA was a special from Grade III install shall be accounted for using same methodology applied to Energy Rating Reference Hom Fuel Type: Same as Rated Home 10 Installation Quality. For forced-air HVAC systems, Gerade III airflow and watt draw; for AC's & air-source heat pumps, also Grade III ref. chan System Type: Same as Rated Home in except Reference Design shall be configured with air-source hard pump where Rated Home has air-source or ground-source heat pump, electric strip heat, or electric baseboard heat; applicable efficiency selected from below. 12 Climate Zone: AC SEER: AI-Source Heat Pump SEER: Les (Gallons per Day): Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 except for reduced usage result from the dishwasher specified in the Light, Appliances, & Internal Gains Section. 13 Institute of the Light, Appliances, & Internal Gains Section. 14 Institute of the Light Appliances, & Internal Gains Section. 15 Institute Putper Solar with electric backup, if Rated Home feel by the Selectric and / or solar, otherwise, natural gas. System Type: If solar with electric backup, if Rated Home feel by the Selectric and / or solar, otherwise, natural gas. System Type: If solar with electric backup, if Rated Home feel by the Selectric and / or solar, otherwise, natural gas. System Type: If solar with electric backup, if Rated Home feel by the Selectric and / or solar, otherwise, natural gas. System Type: If solar with electric backup, if Rated Home feel by the Selectric and / or solar, otherwise, natural gas. Solar Water Heater System type. Solar Water Heater Efficiency (EF): 0.90 Gas		Air-Source Heat Pump HSPF: 8.2							
Home in ANSI / RESNET / ICC 301. Cooling capacity shall be selected in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual J. Eighth Edition, ASHRAE Handbook of Fundamentals, or an equivalent computation procedure. For forced-air HVAC systems, degraded capacity from Grade II linstall shall be accounted for using same methodology applied to Energy Rating Reference Home Fuel Type: Same as Rated Home 1º0. Installation Quality. For forced-air HVAC systems, Grade III airflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. chan System Type: Same as Rated Home, except Reference Design shall be configured with lair-source heat pumps, also Grade III ref. chan System Type: Same as Rated Home, except Reference Design shall be configured with lair-source heat pump where Rated Home has air-source or ground-source heat pump, electric strip heat, or electric baseboard heat; applicable efficiency selected from below. 1º Climate Zone: AC SEER: Air-Source Heat Pump See See See See See See See See See Se									
Cooling capacity shall be selected in accordance with ACCA Manual S based on building heating and cooling leads calculated in accordance with ACCA Manual J. Eighth Edition. ASHRAE Handbook of Fundamentals, or an equivalent computation procedure. For forecd-air HVAC systems, degraded capacity from Grade III install shall be accounted for using same methodology applied to Energy Rating Reference Hom Fuel Type: Same as Rated Home ¹⁰ Installation Quality. For forced-air HVAC systems, Grade III install shall be accounted for using same methodology applied to Energy Rating Reference Hom Type: Same as Rated Home, except Reference Design shall be configured with air-source heat pumps, also Grade III ref. char System Type: Same as Rated Home, except Reference Design shall be configured with air-source heat pumps, also Grade III ref. char System Type: It shall be configured with air-source heat pumps, also Grade III ref. char System Crope III ariflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. char System Crope III ariflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. char System Crope III ariflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. char System Crope III ariflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. char System Crope III ariflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. char System Crope III ariflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. char System Crope III ariflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. char System Crope III ariflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. char System Crope III ariflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. char System Crope III ariflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. char System Crope III ariflow and watt draw, for AC's & air-source heat pumps, also Grade III ref. char System Crope III ariflow		For non-electric boilers, the Electric Auxiliary Energy shall be determined in accordance with the methodology for the Energy Rating Reference							
with ACCA Manual J, Eighth Edition, ASHRAE Handbook of Fundamentals, or an equivalent computation procedure. For forced-air HAVAC systems, degraded capacity from Grade III install shall be accounted for using same methodology applied to Energy Rating Reference Puel Type: Same as Rated Home. Puel Type: Same as Rated Home, except Reference Design shall be configured with air-source heat pumps, also Grade III ref. char. System Type: Same as Rated Home, except Reference Design shall be configured with air-source heat pump where Rated Home has air-source or ground-source heat pump, electric strip heat, or electric baseboard heat, applicable efficiency selected from below. Puel Type: Same as Energy Rating Reference Home, as defined by ANSI (RESNET / ICC 301 except for reduced usage result freating Psystems. Puel Glallons per Day): Same as Energy Rating Reference Home, as defined by ANSI (RESNET / ICC 301 except for reduced usage result freating Psystems. Puel Type: Solar with electric backup, if Rated Home fuel type is electric and / or solar. otherwise, natural gas. System Type: If solar with electric backup, in the fuel type is electric and / or solar. otherwise, natural gas. System Type: If solar with electric backup, in the parameters below for Solar Water Heater System Type: If ratural gas, then use the parameters below for Gas Condensing Water Heater system type. Solar Water Heater Collector Type and Area: Liquid Direct: 12+8 ft? per bedroom Orientation/Azimuth: 180° of true North Storage Tank Size: 50 gal Tit: 25° Water Heater Efficiency (EF): 0.90 Gas Condensing Water Heater Gas Driw Efficiency (EF): 0.80 Duct Insulation: *R-8 on supply ducts located in unconditioned attic Duct Insulation *R-8 on supply ducts located in unconditioned attic Duct Insulation *R-8 on supply ducts located in unconditioned attic Duct Surface Area: Same as									
systems, degraded capacity from Grade III install shall be accounted for using same methodology applied to Energy Rating Reference Hom Fuel Type: Same as Rated Home, except Reference Design shall be configured with air-source heat pumps, also Grade III ref. chan System Type: Same as Rated Home, except Reference Design shall be configured with air-source heat pump where Rated Home has air-source or ground-source heat pump, electric strip heat, or electric baseboard heat; applicable efficiency selected from below. ¹? Climate Zone: Hawaii / Guam / Northern Mariana Islands AC SEER: 14.5 Air-Source Heat Pump SEER: 14.5 Fuel Type: Solar with electric backup, then use the parameters below for Solar Wall Pump See Type. If natural gas. then use the parameters below for Solar Wall Pump See Type. If natural gas. then use the parameters below for Solar Wall Pump See Type. If natural gas	Cooling								
Fuel Type: Same as Rated Home 9	Systems:	with ACCA Manual J, Eighth Edition, ASHRAE Handbook of Fundamentals, or an equivalent computation procedure. For forced-air HVAC							
Installation Quality, For forced-air HVAC systems, Grade III artiflow and watt draw, for AC2 is air-source heat pumps, also Grade III ref. char System Type: Same as Rated Home, except Reference Design shall be configured with air-source heat pump where Rated Home has air-source or ground-source heat pump, electric stip heat, or electric baseboard heat, applicable efficiency selected from below. ¹² Climate Zone: Hawaii / Guam / Northern Mariana Islands AC SEER: 14.5 Air-Source Heat Pump SEER: 14.5 Fuel Type: If solar with electric backup, if Rated Home fuel type is electric and / or solar, otherwise, natural gas. System Type: If solar with electric backup, then use the parameters below for Solar Water Heater System Type. If natural gas, then use the parameters below for Solar Water Heater System Type. If natural gas, then use the parameters below for Solar Water Heater System Type. If natural gas. Title Interest Type: If solar with electric backup, then use the parameters below for Solar Water Heater System Type. If natural gas. Title Interest Type. If natural gas. Interest T		systems, degraded capacity from Grade III install shall be accounted for using same methodology applied to Energy Rating Reference Home.							
System Type: Same as Rated Home, except Reference Design shall be configured with air-source hat pump where Rated Home has air- source or ground-source heat pump, electric strip heat, or electric baseboard heat; applicable efficiency selected from below. 12 Climate Zone: AC SEER: It.5 It.5 Use (Gallons per Day): Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 except for reduced usage result from the dishwasher specified in the Light, Appliances, & Internal Gains Section. 13 Tank Temperature: Same as Energy, Rating Reference Home, as defined by ANSI / RESNET / ICC 301 except for reduced usage result from the dishwasher specified in the Light, Appliances, & Internal Gains Section. 13 Tank Temperature: Same as Energy, Rating Reference Home, as defined by ANSI / RESNET / ICC 301 except for reduced usage result from the dishwasher specified in the Light, Appliances, & Internal Gains Section. 13 Tank Temperature: Same as Energy, Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Fuel Type: Solar with electric backup, if Rated Home fuel type is electric and of or solar, otherwise, natural gas. System Type: If solar with electric backup, then use the parameters below for Solar Water Heater System Type. If natural gas, then use the parameters below for Solar Water Heater System Type. If natural gas, then use the parameters below for Solar Fraction: Solar Water Heater Collector Type and Area: Liquid Direct; 12+8 ft² per bedroom Orientation/Azimuth: 180° of true North Solar Fraction: 90% Storage Tank Capacity: Gas Storage Tank Capacity: Gas Storage Tank Capacity: All Capacities Gas Out Insulation: *R-8 on supply ducts located in unconditioned attic *R-8 on supply ducts located in unconditioned floor area or ≤ 40 CFM25. Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct		, ·							
source or ground-source heat pump, electric strip heat, or electric baseboard fieat; applicable efficiency selected from below. 12 Climate Zone: AC SEER: AIr-Source Heat Pump SEER: 14.5		Installation Quality: For forced-air	HVAC systems, Grade III airflow	and watt draw; for AC's & air-source he	eat pumps, also Grade III ref. charge.				
Climate Zone: AC SEER: 14.5 Air-Source Heat Pump SEER: 14.5 Use (Gallons per Day): Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 except for reduced usage result from the dishwasher specified in the Light. Appliances, & Internal Gains Section. 13 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, but with the Conditions of the Conditions shall be configured to be 100% in attic space. Foundation Type: Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab One Story Above-Grade: Town Story Above-Grade: To		System Type: Same as Rated Ho	ome, except Reference Design sh	all be configured with air-source heat pu	ump where Rated Home has air-				
AC SERR: Air-Source Heat Pump SEER: 14.5 Juse (Gallons per Day): Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 except for reduced usage result from the dishwasher specified in the Light, Appliances, & Internal Gains Section. Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Fuel Type: Solar with electric backup, if Rated Home fuel type is electric and / or solar, otherwise, natural gas. System Type: If solar with electric backup, then use the parameters below for Solar Water Heater System Type. If natural gas, then use the parameters below for Gas Condensing Water Heater system type. Collector Type and Area: Cilector Type and Area:		source or ground-source heat pu	mp, electric strip heat, or electric						
Air-Source Heat Pump SEER: Valer (Sallons per Day): Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 except for reduced usage result from the dishwasher specified in the Light, Appliances, & Internal Gains Section. 13 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 To All Capacities Solar Water Heater System Type: If natural gas, then use the parameters below for Solar Water Heater System Type: If natural gas, then use the parameters below for Solar Water Heater System Type: In natural gas. Title: 25° Water Heater Efficiency (EF): 0.90 Gas Condensing Water Heater Gas Storage Tank Size: 50 gal Title: 25° Water Heater Efficiency (EF): 0.90 Gas Condensing Water Heater Gas Storage Tank Capacity: All Capacities Gas Condensing Water Heater Gas DHW EF: 0.80 Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: *R-6 on all other ducts located in unconditioned spaces Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct		Climate Zone:		Hawaii / Guam / Northern Ma	riana Islands				
Use (Gallons per Day): Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 except for reduced usage result from the dishwasher specified in the Light, Appliances, & Internal Gains Section. 13		AC SEER:		14.5					
Ifrom the dishwasher specified in the Light, Appliances, & Internal Gains Section. 13		Air-Source Heat Pump SEER:		14.5					
Ifrom the dishwasher specified in the Light, Appliances, & Internal Gains Section. 13	Service	Use (Gallons per Day): Same as	Energy Rating Reference Home,	as defined by ANSI / RESNET / ICC 30	1 except for reduced usage resulting				
Tank Temperature: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Fuel Type: Solar with electric backup, if Rated Home fuel type is electric and / or solar, otherwise, natural gas. System Type: If solar with electric backup, if Rated Home fuel type is electric and / or solar, otherwise, natural gas. System Type: If solar with electric backup, then use the parameters below for Solar Water Heater System Type. If natural gas, then use the parameters below for Gas Condensing Water Heater system type. Solar Water Heater Collector Type and Area: Liquid Direct; 12+8 ft² per bedroom Orientation/Azimuth: 180° of true North Solar Fraction: 90% Storage Tank Size: 50 gal Water Heater Efficiency (EF): 0.90 Gas Condensing Water Heater Gas Storage Tank Capacity: All Capacities Gas DHW EF: 0.80 Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crear Story Above-Grade: 100% Attic 100% Crawlspace Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Mechanical ventilation system is present in Rated home; otherwise none. Infiltration & ACH50: Mechanical ventilation system without heat recovery Rate: CFM = 0.01 * CFA + 7.5 * (Nbr + 1), where CFA = Conditioned Floor Area and Nbr = Numb	Water								
Fuel Type: Solar with electric backup, if Rated Home fuel type is electric and / or solar, otherwise, natural gas. System Type: If solar with electric backup, then use the parameters below for Solar Water Heater System Type. If natural gas, then use the parameters below for Gas Condensing Water Heater system type. Solar Water Heater Collector Type and Area: Liquid Direct; 12+8 ft² per bedroom	Heating								
System Type: If solar with electric backup, then use the parameters below for Solar Water Heater System Type. If natural gas, then use the parameters below for Gas Condensing Water Heater system type. Solar Water Heater Collector Type and Area: Liquid Direct; 12+8 ft² per bedroom Orientation/Azimuth: 180° of true North Storage Tank Size: 50 gal Tilt: 25° Water Heater Efficiency (EF): 0.90 Gas Condensing Water Heater Gas Storage Tank Capacity: All Capacities Gas DHW EF: 0.80 Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: *R-8 on supply ducts located in unconditioned attic •R-8 on supply ducts located in unconditioned attic Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Foundation Type: Slab One Story Above-Grade: 100% Attic 100% Crawlspace Basement Thermostat Thermostat Thermostat Thermostat Thermostat Thermostat Thermostat Thermostat Thermostat ACH50: Behamid- Behamid- Type: Porgammable Thermostat Type: Porgammable Type: Porgammable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Mechanical ventilation system without heat recovery ACH50: Mechanical ventilation system without heat recovery ACH50: Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands	Systems:	Fuel Type: Solar with electric bac	kup, if Rated Home fuel type is e	lectric and / or solar, otherwise, natural	gas.				
parameters below for Gas Condensing Water Heater system type. Solar Water Heater Collector Type and Area: Liquid Direct; 12+8 ft² per bedroom Pipe Insulation: None Orientation/Azimuth: 180° of true North Solar Fraction: 90% Storage Tank Size: 50 gal Tillt: 25° Water Heater Efficiency (EF): 0.90 Gas Condensing Water Heater Gas Storage Tank Capacity: All Capacities Gas DHW EF: 0.80 Thermal Distribution Plystems: Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: - R-8 on supply ducts located in unconditioned attic - R-6 on all other ducts located in unconditioned spaces Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement One Story Above-Grade: 100% Attic 100% Crawlspace 100% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infilitration Rates: Climate Zone: Hawaii / Guam / Northern Mariana Islands Mechanical Fermi Infilitration Rates: Climate Zone: Hawaii / Guam / Northern Mariana Islands CH50: Hawaii / Guam / Northern Mariana Islands Fran Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands									
Solar Water Heater Collector Type and Area: Liquid Direct; 12+8 ft² per bedroom Orientation/Azimuth: 180° of true North Solar Fraction: 90% Storage Tank Size: 50 gal Tilt: 25° Water Heater Efficiency (EF): 0.90 Gas Condensing Water Heater Gas Storage Tank Capacity: All Capacities Gas Dut Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: *R-8 on supply ducts located in unconditioned attic R-8 on all other ducts located in unconditioned spaces Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement Thermostat Thermostat Thermostat Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & ACH50: Mechanical Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands Hawaii / Guam / Northern Mariana Islands					,, , , , , , , , , , , , , , , , , , ,				
Collector Type and Area: Liquid Direct; 12+8 ft² per bedroom Solar Fraction: 90% Storage Tank Size: 50 gal Tilt: 25° Water Heater Efficiency (EF): 0.90 Gas Condensing Water Heater Gas Storage Tank Capacity: All Capacities Gas DHW EF: 0.80 Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: *R-6 on all other ducts located in unconditioned spaces Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned Floor Area and Nbr = Number of Bedrooms Alechanical Ventilation system is present in Rated home; otherwise none. Infiltration & Action Action Action Action Action Action Action Action A			V						
Orientation/Azimuth: 180° of true North Solar Fraction: 90% Storage Tank Size: 50 gal Tilt: 25° Water Heater Efficiency (EF): 0.90 Gas Condensing Water Heater Gas Storage Tank Capacity: All Capacities Gas DHW EF: 0.80 Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: • R-8 on supply ducts located in unconditioned attic • R-6 on all other ducts located in unconditioned spaces Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab CrawIspace Basement Two Story Above-Grade: 100% Attic 100% CrawIspace 100% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% CrawIspace 50% Attic / 50% Basement Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & Mechanical ventilation system is present in Rated home; otherwise none. Infiltration Rates: Climate Zone: Hawaii / Guam / Northern Mariana Islands ACH50: Basement Filtration Rates: Climate Zone: Hawaii / Guam / Northern Mariana Islands ACH50: Hawaii / Guam / Northern Mariana Islands ACH50: Hawaii / Guam / Northern Mariana Islands Collimate Zone: Hawaii / Guam / Northern Mariana Islands Collimate Zone: Hawaii / Guam / Northern Mariana Islands		Collector Type and Area:	Liquid Direct: 12+8 ft2 per b	pedroom Pipe Insulation:	None				
Storage Tank Size: 50 gal Tilt: 25° Water Heater Efficiency (EF): 0.90 Gas Condensing Water Heater Gas Storage Tank Capacity: All Capacities Gas DHW EF: 0.80 Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: • R-8 on supply ducts located in unconditioned attic • R-6 on all other ducts located in unconditioned spaces Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement One Story Above-Grade: 100% Attic 100% Crawlspace Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Thermostat: Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Phehumid- Infiltration & ResNET / ICC 301 Infiltration Rates: Climate Zone: Hawaii / Guam / Northern Mariana Islands ACH50: 6 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands				•	90%				
Water Heater Efficiency (EF): 0.90 Gas Condensing Water Heater Gas Storage Tank Capacity: All Capacities Gas DHW EF: 0.80 Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: • R-8 on supply ducts located in unconditioned attic • R-6 on all other ducts located in unconditioned spaces Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement Thermostat: Thermostat: Type: Programmable Type: Programmable Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands									
Gas Condensing Water Heater Gas Storage Tank Capacity: Gas DHW EF: 0.80 Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: • R-8 on supply ducts located in unconditioned attic • R-8 on supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement Two Story Above-Grade: 100% Attic 100% Crawlspace 100% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Pehumidiers Iffiltration & Resnet (Climate Zone: Mechanical 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 Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands			<u> </u>	1110	20				
Gas Storage Tank Capacity: All Capacities Gas DHW EF: 0.80 Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: PR-8 on supply ducts located in unconditioned attic PR-6 on all other ducts located in unconditioned spaces Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement Two Story Above-Grade: 100% Attic 100% Crawlspace 100% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands			0.30						
Thermal Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: • R-8 on supply ducts located in unconditioned attic • R-8 on all other ducts located in unconditioned spaces Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement One Story Above-Grade: 100% Attic 100% Crawlspace 100% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Pehumid- Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301 Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & ACH50: Mechanical 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands		_	All Capacities						
Duct Leakage to Outside: The greater of ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area or ≤ 40 CFM25. Duct Insulation: • R-8 on supply ducts located in unconditioned attic • R-6 on all other ducts located in unconditioned spaces Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement One Story Above-Grade: 100% Attic 100% Crawlspace 100% Attic / 50% Crawlspace Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Dehumid-fiers Action Infiltration Rates: Climate Zone: 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 Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands			-						
Duct Insulation: • R-8 on supply ducts located in unconditioned attic • R-6 on all other ducts located in unconditioned spaces Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement Two Story Above-Grade: 100% Attic: 100% Crawlspace 100% Basement Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Dehumid- filers Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration Rates: Climate Zone: 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands	Thormal			of conditioned floor area ar < 10 CEM)E				
**R-8 on supply ducts located in unconditioned attic Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement 100% Attic 100% Crawlspace 100% Basement Two Story Above-Grade: 100% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Type: Programmable Thermostat: Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Poehumidication: A Mechanical ventilation system is present in Rated home; otherwise none. Infiltration & 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands Climate Zone: Hawaii / Guam / Northern Mariana Islands			eater of \$ 4 CFM25 per 100 sq. it	. Of conditioned floor area of \$ 40 CFM2	30.				
Duct Surface Area: Same as Rated Home Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement One Story Above-Grade: 100% Attic 100% Crawlspace 100% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Dehumid- Tipe: Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & ACH50: Hawaii / Guam / Northern Mariana Islands ACH50: 6 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands			re Lee	D.O	100				
Supply and Return Duct Locations shall be configured according to the table below or, if Rated home does not meet any of the conditions below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab CrawIspace Basement One Story Above-Grade: 100% Attic 100% CrawIspace 100% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% CrawIspace 50% Attic / 50% Basement Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Ochumid-fiers Ochumid-fiers Offiltration & Acceptable A	Gysterns.								
below (e.g., multifamily dwelling unit with conditioned unit below), then duct locations shall be configured to be 100% in attic space. Foundation Type: Slab Crawlspace Basement One Story Above-Grade: 100% Attic 100% Crawlspace 100% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Ochumid- Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & ACH50: Hawaii / Guam / Northern Mariana Islands ACH50: 6 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands									
Foundation Type: Slab Crawlspace Basement One Story Above-Grade: 100% Attic 100% Crawlspace 100% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Thermostat: Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Dehumid- fiers Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & Infiltration Rates: Climate Zone: Hawaii / Guam / Northern Mariana Islands Mechanical /entilation: 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands Hawaii / Guam / Northern Mariana Islands									
One Story Above-Grade: 100% Attic 100% Crawlspace 100% Basement Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Thermostat: Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Dehumid- fiers Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & ACH50: 6 Mechanical Ventilation: ACH50: 6 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands Hawaii / Guam / Northern Mariana Islands									
Two Story Above-Grade: 75% Attic / 25% Conditioned 50% Attic / 50% Crawlspace 50% Attic / 50% Basement Thermostat: Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Dehumid-fiers Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & ACH50: Hawaii / Guam / Northern Mariana Islands ACH50: 6 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands				•					
Thermostat: Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Dehumid- fiers Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & ACH50: ACH50: ACH50: Bechanical ventilation system without heat recovery Rate: CFM = 0.01 * CFA + 7.5 * (Nbr + 1), where CFA = Conditioned Floor Area and Nbr = Number of Bedrooms Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Type: Programmable Temperature Setpoints: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, where dehumidification system is present in Rated home; otherwise none. Hawaii / Guam / Northern Mariana Islands Figure 1. Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, where dehumidification system is present in Rated home; otherwise none. Hawaii / Guam / Northern Mariana Islands		_							
Temperature Setpoints: Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC 301 Dehumid- fiers Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, whe dehumidification system is present in Rated home; otherwise none. Infiltration & Infiltration Rates: Climate Zone: Mechanical 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands		-	75% Attic / 25% Conditioned	50% Attic / 50% Crawlspace	50% Attic / 50% Basement				
RESNET / ICC 301 Dehumid- Deh	Thermostat:	71 3							
dehumidification system is present in Rated home; otherwise none. Infiltration & Infiltration Rates: Climate Zone: Hawaii / Guam / Northern Mariana Islands Mechanical /entilation: 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands			Energy Rating Reference Home	, but with offsets for a programmable the	ermostat, as defined by ANSI /				
Mechanical /entilation: 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands	Dehumid- ifiers		Type, capacity, efficacy, and dehumidistat setpoint same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC 301, when dehumidification system is present in Rated home; otherwise none.						
/entilation: 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 Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands	Infiltration &								
Rate: CFM = 0.01 * CFA + 7.5 * (Nbr + 1), where CFA = Conditioned Floor Area and Nbr = Number of Bedrooms Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands	Mechanical			6					
Hours per Day: 24 Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands	Ventilation:								
Fan Watts: Watts = CFM Rate / 2.2 CFM per Watt, where CFM Rate is determined above Climate Zone: Hawaii / Guam / Northern Mariana Islands			Nbr + 1), where CFA = Condition	ed Floor Area and Nbr = Number of Bed	drooms				
Climate Zone: Hawaii / Guam / Northern Mariana Islands									
Ventilation Type: Supply					ariana Islands				
		Ventilation Type:		Supply					



Footnotes:

- 1. To determine whether at least half of the basement wall area is below grade, use the gross surface area of the walls that are in contact with either the ground or ambient outdoor air, measured from the basement floor to the bottom of the basement ceiling framing (e.g., the bottom of the joists for the floor above). Note that the exception regarding the floor area in basements is only for the purpose of determining a home's Benchmark Home Size and Size Adjustment Factor. The full conditioned floor area should be used when rating the home (e.g., determining compliance with duct leakage requirements).
- 2. The average-size home with a specific number of bedrooms is termed the "Benchmark Home". A bedroom is defined by ANSI / RESNET / ICC 301-2014 as a room or space 70 sq. ft. or greater size, with egress window and closet, used or intended to be used for sleeping. A "den", "library", or "home office" with a closet, egress window, and 70 sq. ft. or greater size or other similar rooms shall count as a bedroom, but living rooms and foyers shall not.

An egress window, as defined in 2009 IRC section R310, shall refer to any operable window that provides for a means of escape and access for rescue in the event of an emergency. The egress window definition has been summarized for convenience. The egress window shall:

- have a sill height of not more than 44 inches above the floor; AND
- have a minimum net clear opening of 5.7 sq. ft.; AND
- have a minimum net clear opening height of 24 in.; AND
- have a minimum net clear opening width of 20 in.; AND
- be operational from the inside of the room without the use of keys, tools or special knowledge.
- 3. The conditioned floor area of a Benchmark Home (CFA Benchmark Home) is determined by selecting the appropriate value from Exhibit 1. For homes with more than 8 bedrooms, the CFA Benchmark Home shall be determined by multiplying 600 sq. ft. times the total number of bedrooms and adding 400 sq. ft.

Example: CFA Benchmark Home for a 10 bedroom home = (600 sq. ft. x 10) + 400 sq. ft. = 6,400 sq. ft.

- 4. Any parameter not specified in this exhibit shall be identical to the value entered for the Rated Home.
- 5. "Same as Rated Home" indicates that the parameter shall be identical to the value entered for the Rated Home.
- 6. 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.
- 7. 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.
- 8. Note that the U-factor requirement applies to all fenestration while the SHGC only applies to the glazed portion.
- 9. 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.
- 10. 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.
- 11. 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.
- 12. For a Rated Home without a cooling system, the ENERGY STAR Reference Design Home shall be configured with a 13 SEER electric air conditioner.

13. 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 drainwater heat recovery.

Revised 09/15/2022