

2005 Oregon Residential Specialty Code (ORSC) - Modeling Inputs & Assumptions					
	Component	Input	Assumption Notes	Methodology or Market & Data Source	
Building Components	Climate Zone	Salem & Redmond	Salem (4C) used in National reporting. Redmond represents most populous Metropolitan Statistical Area (MSA) in 5B.	Preliminary Energy Savings Analysis: 2018 IECC Residential Requirements.	
	Size	2,376	54-ft-by-22 ft, two-story, 8.5-ft height each floor.	Methodology: PNNL-21294 Rev 1	
	Volume	20,196	2,376sf x 8.5-ft-high ceilings.		
	Number of Bedrooms	4	Occupants not specified in REM/Rate. Use bedrooms +1 (5) for number of occupants if necessary.	Methodology: DOE Zero Energy Ready Home National Program Requirements (Rev. 06). Exhibit 3: Benchmark Home Size	
	Orientation	South	Smallest wall w/ front door faces south. Rear door opposite.	Market: Typical home orientation on narrow deep lot.	
Envelope Components	Slab Edge Perimeter	R-15 w/ 2-ft. Vertical Depth (F-0.520)	Area: 1,188-sf (54-ft-by-22ft). Perimeter Length: 152-lf. Used for Slab-On-Grade (SOG) home analysis.	2005 ORSC, Table N1101.1(1) for R-Values; ASHRAE 90.1 Appendix A for U-values (Table A3.4.3.1 Assembly U-Factors for Wood-Frame Walls, and Table A5.4.3.1 Assembly U-Factors for Wood-Joist Floors); PNNL-21294 Rev 1 for dimensions; All REM/Rate envelope inputs assume Insulation Grade I	
	Underfloors	R-25 (U-0.039)	Area: 1,188-sf. Used for enclosed 'vented' crawl spaces (2' high) with thermal boundary location at the 'floor' and uninsulated foundation walls.		
	Rim and Band Joist	R-21	Area: 152 sf (152 lineal feet x 1' height). Joist spacing = 24 inches o.c.		
	Wall Insulation - Above Grade	R-21 (U-0.063)	Area: 352-ft ea. (16'x 22' South/North) & 864-ft. ea. (54'x16' East/West). 'Medium' Exterior Color.		
	Window Areas	Total: 356.4-sf. Each wall: 89.1-sf	No overhangs or shading.		PNNL-21294: 15% relative to (CFA), equally distributed to the cardinal directions.
	Windows	U-0.40	SHGC 0.40		2005 ORSC, Table N1101.1(1) and ASHRAE 90.1-Table A2.4.3 Assembly U-Factors for Attic Roofs with Wood Joists for U-Values. NEEA Regional Data indicates SHGC value. PNNL-21294 Rev 1 for dimensions.
	Exterior Doors	U-0.20	Area: 42-sf. (1-South/1-North)		
	Flat Ceilings	R-38 (U-0.027)	Area: 1,188-sf. Use REM/Rate default of 1,485 SF for Attic Exterior Area. 'Medium' Exterior Color		
Components	Heating (Gas)	AFUE 78%	AFUE = Federal Minimum standard.	2005 ORSC. Furnace location in attic. Cooling tonnage and heating output capacity based on REM/Rate Equipment Sizing Summary Report or other modeling software analysis. Sensible Heat Fraction = 0.75 (Mid-Range of 0.50-1.00).	
	Cooling (Gas)	13 SEER	SEER = Federal Minimum standard.		
	Split Heat Pump (Electric)	HSPF 7.7	AFUE = Federal Minimum standard.		
	Split Cooling (Electric)	13 SEER	SEER = Federal Minimum standard.		
	Zonal (Electric)	99% EFF	Zonal electric assumes electric radiant heat. No cooling. No ducts.		Ductless heat pump is not readily available in marketplace at this time.
	Furnace Fan Motor	766 Eae (4C)/868 Eae(5B)	Default Eae in REM/Rate. Gas Furnace = Eae 149 + 10.3*Capacity (kBtu/h)	ANSI-RESNET Std. 301. https://www.resnet.us/wp-content/uploads/archive/resblog/2012/07/RESNET-PDF-301-01.pdf	
	Heating Set Point	71°F	Thermostat set points based on the optimum seasonal temperature for human comfort as defined in Building America House Simulation Protocols.	4.2 Space Conditioning (Page 48): https://www.nrel.gov/docs/fy14osti/60988.pdf	
	Cooling Set Point	76°F			
	Thermostat	Manual	Leave box un-checked for both heating and cooling.	2005 ORSC Section N1105.	
	Water Heater (Gas)	EF = 0.57	EF = Federal Minimum standard. 40-Gallon.	Location in Conditioned Area. No Garage per PNNL-21294 Rev 1	
	Water Heater (Electric)	EF = 0.90	EF = Federal Minimum standard. 50-Gallon.		

Mechanical	Faucets/Shower Heads	>= 2.0 GPM	Leave box un-checked.	The maximum water consumption of fixtures and fixture fittings shall comply with the flow rates specified in 2005 OPSC.
	HW Pipe Insulation	None.	None required by ORSC Chapter 11.	All piping in conditioned area
	HW Pipe Distribution	Farthest Fixture: 35' Total Pipe length: 55'	Horizontal length is 35' and REM/Rate default value for vertical pipe of 20' included in the 55' length.	Location of HWH in center of home, thus the hypotenuse equals 35' (27' length and 22' width)
	Forced Air Duct Location	Attic, exposed	No location standard in 2005 ORSC.	n/a
	Air Duct Insulation	R-8	As required by 2005 ORSC Table N1101.1(2)	N1105.2 Insulation of ducts.
	Air Duct Leakage	Total and Leakage to Outside: 285 CFM	Per Ecotope Study for Washington, Appendix A, Page 55: 12 CFM/100SF https://sbcc.wa.gov/sites/default/files/2020-03/ResilienceStudy_FinalReport_032320.pdf	Using CFM/100SF metric for duct leakage since SF is constant while home HVAC system volume varies. Pages 27 (ACH) and 29 (Ducts).
	Air Sealing	8.0 ACH@50 Pa	2006 IECC rate per PNNL Report	https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-22068.pdf
	Shelter Class	4	Options range from '0 - No Obstructions' to '5 - Urban'. Shelter Class 4 'Suburban' is the default for compliance program calculations.	Based on the original Sherman-Grimsrud paper & ASHRAE Fundamentals 2013 Table 5 on page 16.23
	Ventilation Type	Exhaust Only	Utilize one intermittent bath fan.	2005 ORSC Section M1505.4
	Ventilation Quantity/Time	50 cfm/8-Hours per Day	Section M1505.4.3 Mechanical ventilation rate.	2005 ORSC Table M1506.3 for Bathrooms
	Ventilation Fan Energy	100.0 watts	Average builder grade fan = 0.5 w/cfm	Sample: https://www.broan-nutone.com/en-us/product/ventilationfans/e050
Lighting	Interior Lighting	100% Incandescent. 0% LED. 0% CFL.	No lighting efficiency standards in 2005 ORSC.	Assume 100% as least cost pathway.
	Exterior Lighting			
Unregulated Components	Plug/Internal Load Heat Gain	2,851 kWh/yr.	REM/Rate default output. Use for other models. Aligns with PNNL-24240 Appendix A.4. Internal Gains.	https://www.energycodes.gov/sites/default/files/documents/2015IECC_CE_Residential.pdf
	Appliances	2,400 kWh/yr. (Gas). 2,850 kWh/yr. (Electric).	Refrigerator 959-kWh/yr. Dishwasher 201-kWh/yr. Clothes Washer Default. Dryer 2.62 CEF. Range = Gas or Electric	Electric range utilizes additional energy. Appliance energy use from RBSA Metering.
Weighting	4C, Gas, Crawl	23.93%	Homes with NO A/C are modeled without cooling. Zonal Homes are modeled without cooling and ducts.	Constructions weights provided by NEEA in June of 2020. See weighting tab for additional information.
	4C, Gas, Crawl, NO A/C	12.66%		
	4C, Electric, Crawl	3.76%		
	4C, Electric, Crawl, Zonal	3.78%		
	4C, Gas, SOG	8.19%		
	4C, Gas, SOG, NO A/C	4.33%		
	4C, Electric, SOG	1.29%		
	4C, Electric, SOG, Zonal	1.30%		
	5B, Gas, Crawl	16.46%		
	5B, Gas, Crawl, NO A/C	8.71%		
	5B, Electric, Crawl	2.58%		
	5B, Electric, Crawl, Zonal	2.60%		
	5B, Gas, SOG	5.64%		
	5B, Gas, SOG, NO A/C	2.98%		
5B, Electric, SOG	0.89%			
5B, Electric, SOG, Zonal	0.89%			

Oregon Building Code Division (BCD) & Oregon Department of Energy (ODOE)

Per paragraph 6(C) of Executive Order 20-04, BCD, in cooperation with ODOE, has agreed on these metrics, based on best practice and academic research, to inform the baseline and reductions associated with the code updates set forth in paragraph 6(B). Version 1. Dated 01-22-2021