Simple Heating System Size: Washington State

This heating system sizing calculator is based on the Prescriptive Requirements of the 2015 Washington State Energy Code (WSEC) and ACCA Manuals J and S. This calculator will calculate heating loads only. ACCA procedures for sizing cooling systems should be used to determine cooling loads.

Please fill out all of the green drop-downs and boxes that are applicable to your project. As you make selections in the drop-downs for each section, some values will be calculated for you. If you do not see the selection you need in the drop-down options, please call the WSU Energy Extension Program at (360) 956-2042 for assistance.

Project Information	*Contact Information*
Marshall Residence	Brad Sturman-Sturman Architects
4307 East Mercer Way	9- 103rd Ave NE Ste. 203
Mercer Island, WA 98040	Bellevue, WA 98004

Heating System Type: (•) All Other Systems ( ) Heat Pump

To see detailed instructions for each section, place your cursor on the word "Instructions".

Design Temperature

Instructions: Mercer Island

Design Temperature Difference (ΔT) 45

ΔT = Indoor (70 degrees) - Outdoor Design Temp

Area of Building

Conditioned Floor Area

Instructions: Conditioned Floor Area (sq ft) 3,614

Average Ceiling Height

Instructions: Average Ceiling Height (ft) 8.3

Conditioned Volume 29,996

	U-Factor	X	Area	=	UA
Glazing and Doors (Instructions: U-0.30)	0.300		804		241.20
Skylights (Instructions)	0.50				---
Insulation					
Attic (Instructions: R-49)	0.026		2,657		69.08
Single Rafter or Joist Vaulted Ceilings (Instructions: No Vaulted Ceilings in this project.)	---				
Above Grade Walls *(see Figure 1)* (Instructions: R-21 Intermediate)	0.056		3,140		175.84
Floors (Instructions: R-38)	0.025		1,808		45.20
Below Grade Walls *(see Figure 1)* (Instructions: R-10 Continuous Exterior)	0.064		500		32.00

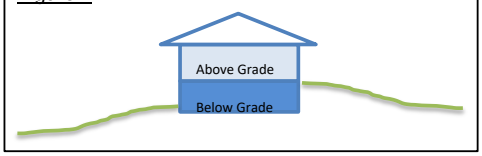
	F-Factor	X	Length	=	UA
Slab Below Grade *(see Figure 1)* (Instructions: R-5 Thermal Break at slab edge)	0.570		122		69.54
Slab on Grade *(see Figure 1)* (Instructions: R-10 Perimeter)	0.540		100		54.00

Location of Ducts

Instructions: Conditioned Space

Duct Leakage Coefficient 1.00

Figure 1.



Sum of UA	686.86	
Envelope Heat Load *Sum of UA X ΔT*	30,909	Btu / Hour
Air Leakage Heat Load *Volume X 0.6 X ΔT X .018*	14,578	Btu / Hour
Building Design Heat Load *Air Leakage + Envelope Heat Loss*	45,487	Btu / Hour
Building and Duct Heat Load *Ducts in unconditioned space: Sum of Building Heat Loss X 1.10* *Ducts in conditioned space: Sum of Building Heat Loss X 1*	45,487	Btu / Hour
Maximum Heat Equipment Output *Building and Duct Heat Loss X 1.40 for Forced Air Furnace* *Building and Duct Heat Loss X 1.25 for Heat Pump*	63,682	Btu / Hour