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 E. 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) 2,742

Average Ceiling Height

Instructions: Average Ceiling Height (ft) 8.0

Conditioned Volume 21,932

Glazing and Doors

Instructions: U-0.30

U-Factor	X	Area	=	UA
0.300		461		138.30

Skylights

Instructions

U-Factor	X	Area	=	UA
0.50		14		6.85

Insulation

Attic

Instructions: R-49

U-Factor	X	Area	=	UA
0.026		1,952		50.75

Single Rafter or Joist Vaulted Ceilings

Instructions: No Vaulted Ceilings in this project.

U-Factor	X	Area	UA

Above Grade Walls *(see Figure 1)*

Instructions: R-21 Intermediate

U-Factor	X	Area	UA
0.056		2,176	121.86

Floors

Instructions: R-30

U-Factor	X	Area	UA
0.029		1,031	29.90

Below Grade Walls *(see Figure 1)*

Instructions: R-21 Interior

U-Factor	X	Area	UA
0.042		656	27.55

Slab Below Grade *(see Figure 1)*

Instructions: R-5 Thermal Break at slab edge

F-Factor	X	Length	UA
0.570		719	409.83

Slab on Grade *(see Figure 1)*

Instructions: No Slab on Grade in this project.

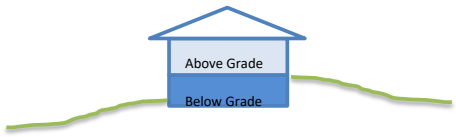
F-Factor	X	Length	UA

Location of Ducts

Instructions: Conditioned Space

Duct Leakage Coefficient 1.00

Figure 1.



Sum of UA	785.04	
Envelope Heat Load *Sum of UA X ΔT*	35,327	Btu / Hour
Air Leakage Heat Load *Volume X 0.6 X ΔT X .018*	10,659	Btu / Hour
Building Design Heat Load *Air Leakage + Envelope Heat Loss*	45,986	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*	45,986	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*	57,482	Btu / Hour