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

Valentin Residence
4350 E. Mercer Way Parcel No.004610-0151
Mercer Island, WA 980940

Contact Information

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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) 6,395

Average Ceiling Height

Instructions: Average Ceiling Height (ft) 9.0

Conditioned Volume 57,555

Glazing and Doors

Instructions: U-0.30

U-Factor	X	Area	=	UA
0.300		1,499		449.64

Skylights

Instructions

U-Factor	X	Area	=	UA
0.50		64		32.00

Insulation

Attic

Instructions: R 49

U-Factor	X	Area	=	UA
0.026		2,897		75.32

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		4,265	238.84

Floors

Instructions: R 30

U-Factor	X	Area	UA
0.029		923	26.77

Below Grade Walls *(see Figure 1)*

Instructions: R-21 Interior

U-Factor	X	Area	UA
0.042		751	31.53

Slab Below Grade *(see Figure 1)*

Instructions: R 10 Fully insulated

F-Factor	X	Length	UA
0.303		2,552	773.26

Slab on Grade *(see Figure 1)*

Instructions: R 10 Fully Insulated

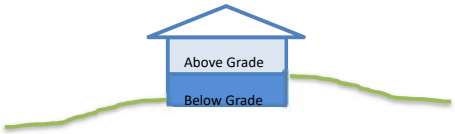
F-Factor	X	Length	UA
0.360		0	

Location of Ducts

Instructions: Conditioned Space

Duct Leakage Coefficient
1.00

Figure 1.



Sum of UA	1627.35	
Envelope Heat Load *Sum of UA X ΔT*	73,231	Btu / Hour
Air Leakage Heat Load *Volume X 0.6 X ΔT X .018*	27,972	Btu / Hour
Building Design Heat Load *Air Leakage + Envelope Heat Loss*	101,203	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*	101,203	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*	141,684	Btu / Hour