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

Mounger Residence
4006 E. Mercer Way
Mercer Island, WA 98040

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): 4,327

Average Ceiling Height

Instructions — Average Ceiling Height (ft): 8.1

Conditioned Volume: 35,049

Glazing and Doors

Instructions: U-0.30

U-Factor	X	Area	=	UA
0.300		707		212.07

Skylights

Instructions

U-Factor	X	Area	=	UA
0.50		0		---

Insulation

Attic

Instructions: R-49

U-Factor	X	Area	=	UA
0.026		1,713		44.53

Single Rafter or Joist Vaulted Ceilings

Instructions: R-49 Advanced

U-Factor	X	Area	UA
0.020		438	8.76

Above Grade Walls *(see Figure 1)*

Instructions: R-21 Intermediate

U-Factor	X	Area	UA
0.056		2,892	161.95

Floors

Instructions: R-30

U-Factor	X	Area	UA
0.029		2,461	71.38

Below Grade Walls *(see Figure 1)*

Instructions: R-21 Interior

U-Factor	X	Area	UA
0.042		511	21.48

Slab Below Grade *(see Figure 1)*

Instructions: R-10 Fully insulated

F-Factor	X	Length	UA
0.303		0	

Slab on Grade *(see Figure 1)*

Instructions: Select R-Value

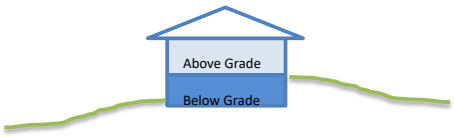
F-Factor	X	Length	UA
No selection		0	---

Location of Ducts

Instructions: Unconditioned Space

Duct Leakage Coefficient
1.10

Figure 1.



Sum of UA	520.16	
Envelope Heat Load *Sum of UA X ΔT*	23,407	Btu / Hour
Air Leakage Heat Load *Volume X 0.6 X ΔT X .018*	17,034	Btu / Hour
Building Design Heat Load *Air Leakage + Envelope Heat Loss*	40,441	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*	44,485	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*	55,606	Btu / Hour