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

Forest Ave Residence
5202 Forest Ave SE
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): 4,889

Average Ceiling Height

Instructions — Average Ceiling Height (ft): 9.0

Conditioned Volume: 44,001

Glazing and Doors

Instructions — U-0.30

U-Factor	X	Area	=	UA
0.300		935		280.47

Skylights

Instructions

U-Factor	X	Area	=	UA
0.50				---

Insulation

Attic

Instructions — Select R-Value

U-Factor	X	Area	=	UA
No selection				---

Single Rafter or Joist Vaulted Ceilings

Instructions — R-38 Vented

U-Factor	X	Area	UA
0.027		2,133	57.59

Above Grade Walls *(see Figure 1)*

Instructions — R-21 Intermediate

U-Factor	X	Area	UA
0.056		4,158	232.85

Floors

Instructions — R-38

U-Factor	X	Area	UA
0.025		895	22.38

Below Grade Walls *(see Figure 1)*

Instructions — R-21 Interior

U-Factor	X	Area	UA
0.042		326	13.69

Slab Below Grade *(see Figure 1)*

Instructions — Select conditioning

F-Factor	X	Length	UA
No selection			---

Slab on Grade *(see Figure 1)*

Instructions — R-10 Perimeter

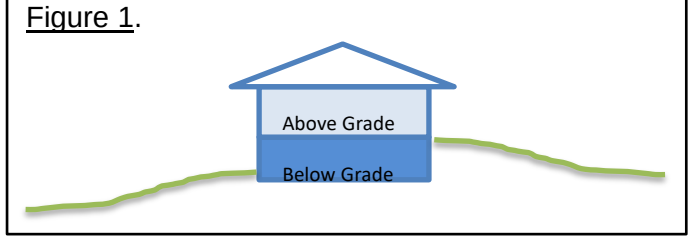
F-Factor	X	Length	UA
0.540		135	72.90

Location of Ducts

Instructions — Conditioned Space

Duct Leakage Coefficient
1.00

Figure 1.



Sum of UA 679.88

Envelope Heat Load 30,594 Btu / Hour
Sum of UA X ΔT

Air Leakage Heat Load 21,384 Btu / Hour
Volume X 0.6 X ΔT X .018

Building Design Heat Load 51,979 Btu / Hour
Air Leakage + Envelope Heat Loss

Building and Duct Heat Load 51,979 Btu / Hour
Ducts in unconditioned space: Sum of Building Heat Loss X 1.10
Ducts in conditioned space: Sum of Building Heat Loss X 1

Maximum Heat Equipment Output 64,974 Btu / Hour
Building and Duct Heat Loss X 1.40 for Forced Air Furnace
Building and Duct Heat Loss X 1.25 for Heat Pump