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*
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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): 3,340

Average Ceiling Height

Instructions — Average Ceiling Height (ft): 9.0

Conditioned Volume: 30,060

Glazing and Doors

Instructions — U-0.28

U-Factor	X	Area	=	UA
0.280		654		183.12

Skylights

Instructions

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

Insulation

Attic

Instructions — Select R-Value

U-Factor	X	Area	=	UA
No selection		0		---

Single Rafter or Joist Vaulted Ceilings

Instructions — R-38 Vented

U-Factor	X	Area	UA
0.027		1,443	38.96

Above Grade Walls *(see Figure 1)*

Instructions — R-21 Intermediate

U-Factor	X	Area	UA
0.056		2,375	133.00

Floors

Instructions — R-38

U-Factor	X	Area	UA
0.025		765	19.13

Below Grade Walls *(see Figure 1)*

Instructions — R-21 Interior

U-Factor	X	Area	UA
0.042		873	36.67

Slab Below Grade *(see Figure 1)*

Instructions — R-10 Fully insulated

F-Factor	X	Length	UA
0.303		101	30.60

Slab on Grade *(see Figure 1)*

Instructions — No Slab on Grade in this project.

F-Factor	X	Length	UA
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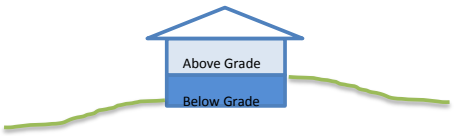
Location of Ducts

Instructions — Conditioned Space

Duct Leakage Coefficient: 1.00

Figure 1.



Sum of UA	441.48	
Envelope Heat Load *Sum of UA X ΔT*	19,866	Btu / Hour
Air Leakage Heat Load *Volume X 0.6 X ΔT X .018*	14,609	Btu / Hour
Building Design Heat Load *Air Leakage + Envelope Heat Loss*	34,476	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*	34,476	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*	43,094	Btu / Hour