Simple Heating System Size: Washington State

This heating system sizing calculator is based on the Prescriptive Requirements of the 2018 Washington State Energy Code (WSEC) and ACCA Manuals J and S. This tool will calculate heating loads only. ACCA procedures for sizing cooling systems should be used to determine cooling loads.

Please complete 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 contact the WSU Energy Program at energycode@energy.wsu.edu or (360) 956-2042 for assistance.

Project 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): 3,213

Average Ceiling Height

Instructions — Average Ceiling Height (ft): 9.5

Conditioned Volume: 30,521

Glazing and Doors

Instructions — U-0.28

U-Factor	X	Area	=	UA
0.280		888		248.64

Skylights

Instructions

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

Insulation

Attic

Instructions — R-49

U-Factor	X	Area	=	UA
0.026		2,419		62.89

Single Rafter or Joist Vaulted Ceilings

Instructions — No Vaulted Ceilings in this project.

U-Factor	X	Area	UA
---		0	

Above Grade Walls ***(see Figure 1)***

Instructions — R-21 Intermediate

U-Factor	X	Area	UA
0.056		4,223	236.50

Floors

Instructions — R-38

U-Factor	X	Area	UA
0.025		1,777	44.43

Below Grade Walls ***(see Figure 1)***

Instructions — R-21 Interior

U-Factor	X	Area	UA
0.042		0	

Slab Below Grade ***(see Figure 1)***

Instructions — R-21 int Plus R-5 ci

F-Factor	X	Length	UA
0.303		0	

Slab on Grade ***(see Figure 1)***

Instructions — No Slab on Grade in this project.

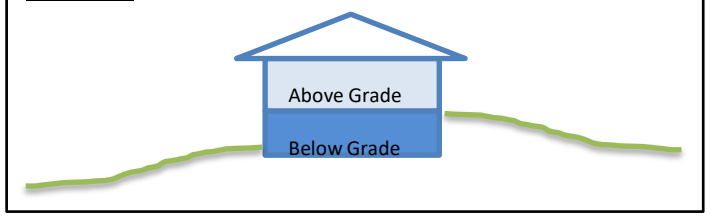
F-Factor	X	Length	UA
---		0	

Location of Ducts

Instructions — Conditioned Space

Duct Leakage Coefficient
1.00

Figure 1.



Sum of UA	592.47	
Envelope Heat Load	26,661	Btu / Hour
Sum of UA x ΔT		
Air Leakage Heat Load	14,833	Btu / Hour
Volume x 0.6 x ΔT x 0.018		
Building Design Heat Load	41,494	Btu / Hour
Air leakage + envelope heat loss		
Building and Duct Heat Load	41,494	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	51,868	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		