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

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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)   **2,656**

Average Ceiling Height
Instructions
Average Ceiling Height (ft)   **8.8**

Conditioned Volume   23,375

Glazing and Doors
Instructions

U-0.28 ▼

	U-Factor	X	Area	=	UA
	0.280		911		255.02

Skylights
Instructions

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

Insulation

Attic
Instructions

R-49 ▼

	U-Factor	X	Area	=	UA
	0.026		0		_____

Single Rafter or Joist Vaulted Ceilings
Instructions

R-38 Vented ▼

	U-Factor	X	Area		UA
	0.027		590		15.93

Above Grade Walls *(see Figure 1)*
Instructions

R-21 Intermediate ▼

	U-Factor	X	Area		UA
	0.056		1,816		101.70

Floors
Instructions

R-38 ▼

	U-Factor	X	Area		UA
	0.025		867		21.68

Below Grade Walls *(see Figure 1)*
Instructions

R-21 int plus R-5 ci ▼

	U-Factor	X	Area		UA
	0.028		475		13.30

Slab Below Grade *(see Figure 1)*
Instructions

R-10 Fully insulated ▼

	F-Factor	X	Length		UA
	0.303		152		45.93

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.

Above Grade

Below Grade

Sum of UA	453.56
Envelope Heat Load	20,410 Btu / Hour
Sum of UA X ΔT	
Air Leakage Heat Load	11,360 Btu / Hour
Volume X 0.6 X ΔT X .018	
Building Design Heat Load	31,770 Btu / Hour
Air Leakage + Envelope Heat Loss	
Building and Duct Heat Load	34,947 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	48,926 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	

(07/01/13)