

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

Medved Residence
 4752 89th Ave SE
 Mercer Island, WA 98040

Contact Information

Brad Sturman-Sturman Architects
 9- 103rd Ave NE Ste. 203
 Bellevue, WA 98004

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](#)

Merced Island

Design Temperature Difference (ΔT) 45
 $\Delta T = \text{Indoor (70 degrees)} - \text{Outdoor Design Temp}$

Area of Building

Conditioned Floor Area

[Instructions](#)

Conditioned Floor Area (sq ft)

3,107

Average Ceiling Height

[Instructions](#)

Average Ceiling Height (ft)

8.0

Conditioned Volume
 24,854

Glazing and Doors

[Instructions](#)

U-0.30

U-Factor X Area = UA
 0.300 X 474 = 142.26

Skylights

[Instructions](#)

U-Factor X Area = UA
 0.50 X [] = ---

Insulation

Attic

[Instructions](#)

Select R-Value

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

Single Rafter or Joist Vaulted Ceilings

[Instructions](#)

R-38 Vented

U-Factor X Area = UA
 0.027 X 1,666 = 44.98

Above Grade Walls (see Figure 1)

[Instructions](#)

R-21 Intermediate

U-Factor X Area = UA
 0.056 X 2,722 = 152.43

Floors

[Instructions](#)

R-30

U-Factor X Area = UA
 0.029 X 1,666 = 48.31

Below Grade Walls (see Figure 1)

[Instructions](#)

Select R-value

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

Slab Below Grade (see Figure 1)

[Instructions](#)

Select conditioning

F-Factor X Length = UA
 No selection X [] = ---

Slab on Grade (see Figure 1)

[Instructions](#)

R-10 Perimeter

F-Factor X Length = UA
 0.540 X 2,089 = 1128.06

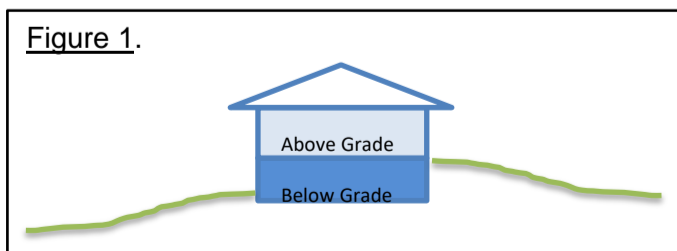
Location of Ducts

[Instructions](#)

Conditioned Space

Duct Leakage Coefficient
 1.00

Figure 1.



Sum of UA	1516.05
Envelope Heat Load	68,222 Btu / Hour
<i>Sum of UA X ΔT</i>	
Air Leakage Heat Load	12,079 Btu / Hour
<i>Volume X 0.6 X ΔT X .018</i>	
Building Design Heat Load	80,301 Btu / Hour
<i>Air Leakage + Envelope Heat Loss</i>	
Building and Duct Heat Load	80,301 Btu / Hour
<i>Ducts in unconditioned space: Sum of Building Heat Loss X 1.10</i>	
<i>Ducts in conditioned space: Sum of Building Heat Loss X 1</i>	
Maximum Heat Equipment Output	112,421 Btu / Hour
<i>Building and Duct Heat Loss X 1.40 for Forced Air Furnace</i>	
<i>Building and Duct Heat Loss X 1.25 for Heat Pump</i>	