

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

Mounger Residence
 4006 E Mercer Way
 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
 $\Delta T = \text{Indoor (70 degrees)} - \text{Outdoor Design Temp}$

Area of Building

Conditioned Floor Area

[Instructions](#)

Conditioned Floor Area (sq ft)

5,147

Average Ceiling Height

[Instructions](#)

Average Ceiling Height (ft)

9.1

Conditioned Volume

46,839

Glazing and Doors

[Instructions](#)

U-0.28

U-Factor X Area = UA
 0.280 X 995 = 278.49

Skylights

[Instructions](#)

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

Insulation

Attic

[Instructions](#)

R-49

U-Factor X Area = UA
 0.026 X 2,384 = 61.97

Single Rafter or Joist Vaulted Ceilings

[Instructions](#)

Select R-Value

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

Above Grade Walls (see Figure 1)

[Instructions](#)

R-21 Intermediate

U-Factor X Area = UA
 0.056 X 3,200 = 179.19

Floors

[Instructions](#)

R-30

U-Factor X Area = UA
 0.029 X 2,244 = 65.07

Below Grade Walls (see Figure 1)

[Instructions](#)

R-21 Interior

U-Factor X Area = UA
 0.042 X 842 = 35.36

Slab Below Grade (see Figure 1)

[Instructions](#)

R-10 Fully insulated

F-Factor X Length = UA
 0.303 X 547 = 165.74

Slab on Grade (see Figure 1)

[Instructions](#)

Select R-Value

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

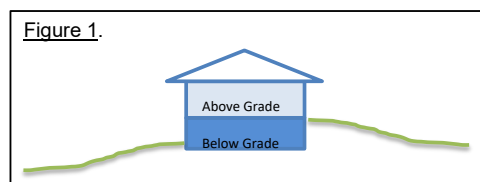
Location of Ducts

[Instructions](#)

Unconditioned Space

Duct Leakage Coefficient

1.10



Sum of UA	785.82
Envelope Heat Load	35,362 Btu / Hour
<i>Sum of UA x ΔT</i>	
Air Leakage Heat Load	22,764 Btu / Hour
<i>Volume x 0.6 x ΔT x 0.018</i>	
Building Design Heat Load	58,126 Btu / Hour
<i>Air leakage + envelope heat loss</i>	
Building and Duct Heat Load	63,938 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	79,923 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>	