

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

Macdiarmid Remodel
 2953 74th Ave SE
 Mercer Island, WA 98040

Contact Information

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 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](#)

Bellevue

Design Temperature Difference (ΔT) 46
 $\Delta T = \text{Indoor (70 degrees)} - \text{Outdoor Design Temp}$

Area of Building

Conditioned Floor Area

[Instructions](#)

Conditioned Floor Area (sq ft)

181

Average Ceiling Height

[Instructions](#)

Average Ceiling Height (ft)

8.0

Conditioned Volume
 1,448

Glazing and Doors

[Instructions](#)

U-0.30

U-Factor X Area = UA
 0.300 X 143 = 42.75

Skylights

[Instructions](#)

U-Factor X Area = UA
 0.50 X 11 = 5.40

Insulation

Attic

[Instructions](#)

R-49

U-Factor X Area = UA
 0.026 X 87 = 2.26

Single Rafter or Joist Vaulted Ceilings

[Instructions](#)

Select R-Value

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

Above Grade Walls (see Figure 1)

[Instructions](#)

R-21 Intermediate

U-Factor X Area = UA
 0.056 X 460 = 25.76

Floors

[Instructions](#)

R-38

U-Factor X Area = UA
 0.025 X 181 = 4.53

Below Grade Walls (see Figure 1)

[Instructions](#)

Select R-value

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

Slab Below Grade (see Figure 1)

[Instructions](#)

Select conditioning

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

Slab on Grade (see Figure 1)

[Instructions](#)

Select R-Value

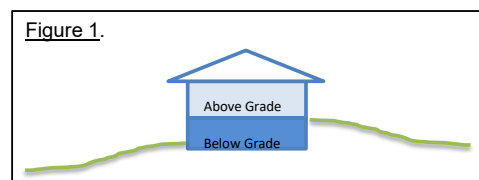
F-Factor X Length = UA
 No selection = ---

Location of Ducts

[Instructions](#)

Unconditioned Space

Duct Leakage Coefficient
 1.10



Sum of UA	80.70
Envelope Heat Load	3,712 Btu / Hour
<i>Sum of UA x ΔT</i>	
Air Leakage Heat Load	719 Btu / Hour
<i>Volume x 0.6 x ΔT x 0.018</i>	
Building Design Heat Load	4,431 Btu / Hour
<i>Air leakage + envelope heat loss</i>	
Building and Duct Heat Load	4,875 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	6,093 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>	