

Simple Heating System Size: Washington State

This heating system sizing calculator is based on the Prescriptive Requirements of the 2018 and 2021 Washington State Energy Code (WSEC) . 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.

This tool is for the permitting purposes only. A Manual J calculation is required to meet the requirement of the Washington State Energy Code.

Project Information

Lund Remodel
8520 SE 82nd St
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 25

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)

4,924

Average Ceiling Height

[Instructions](#)

Average Ceiling Height (ft)

8.0

Conditioned Volume

39,392

Glazing and Doors

[Instructions](#)

U-0.25

U-Factor X Area = UA
0.250 X 990 = 247.50

Skylights

[Instructions](#)

U-0.50

U-Factor X Area = UA
0.50 X 16 = 8.00

Insulation

Attic

[Instructions](#)

R-60

U-Factor X Area = UA
0.024 X 1,498 = 35.95

Single Rafter or Joist Vaulted Ceilings

[Instructions](#)

R-60

U-Factor X Area = UA
0.017 X 719 = 12.22

Above Grade Walls (see Figure 1)

[Instructions](#)

R-20 STD +R-5 ci

U-Factor X Area = UA
0.045 X 5,154 = 231.93

Floors

[Instructions](#)

R-30

U-Factor X Area = UA
0.029 X 419 = 12.15

Below Grade Walls and Slabs (see Figure 1)

[Instructions](#)

Wall & Slab R13 Batt + R5 ci

Depth 2' depth

Wall U-Factor X Area = UA
0.040 X 844 = 34.04

Slab F-Factor X Length = UA
0.679 X 211 = 143.20

Slab on Grade (see Figure 1)

[Instructions](#)

No Slab on Grade in this project.

F-Factor X Length = UA
--- X --- = --

Location of Ducts

[Instructions](#)

No Ducts

Duct Leakage Coefficient

1.000

Sum of UA 725.00

Envelope Heat Load 32,625 Btu / Hour

Sum of UA x ΔT

Air Leakage Heat Load 19,145 Btu / Hour

Volume x 0.6 x ΔT x 0.018

Building Design Heat Load 51,769 Btu / Hour

Air leakage + envelope heat loss

Building and Duct Heat Load 51,769 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 64,712 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

Figure 1.

