

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

PREMIUM HOMES
2906 74th Ave SE
Mercer Island WA 98040

Contact Information

PS Home Designs
253-282-2277

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)

4,111

Average Ceiling Height

Instructions

Average Ceiling Height (ft)

8.1

Conditioned Volume

33,299

Glazing and Doors

Instructions

U-0.22

U-Factor X Area = UA
0.220 X 540 = 118.76

Skylights

Instructions

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

Insulation

Attic

Instructions

R-49

U-Factor X Area = UA
0.026 X 2,773 = 72.10

Single Rafter or Joist Vaulted Ceilings

Instructions

No Vaulted Ceilings in this project.

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

Above Grade Walls (see Figure 1)

Instructions

R-21 Intermediate

U-Factor X Area = UA
0.056 X 2,844 = 159.26

Floors

Instructions

R-30

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

Below Grade Walls (see Figure 1)

Instructions

Select R-value

U-Factor X Area = UA
No selection X 912 = ---

Slab Below Grade (see Figure 1)

Instructions

Select conditioning

F-Factor X Length = UA
No selection X 1,367 = ---

Slab on Grade (see Figure 1)

Instructions

Select R-Value

F-Factor X Length = UA
No selection X 1,334 = ---

Location of Ducts

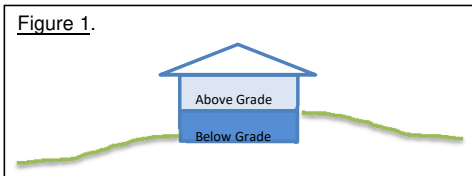
Instructions

Unconditioned Space

Duct Leakage Coefficient

1.10

Figure 1.



Sum of UA	350.12
Envelope Heat Load	15,755 Btu / Hour
<i>Sum of UA x ΔT</i>	
Air Leakage Heat Load	16,183 Btu / Hour
<i>Volume x 0.6 x ΔT x 0.018</i>	
Building Design Heat Load	31,939 Btu / Hour
<i>Air leakage + envelope heat loss</i>	
Building and Duct Heat Load	35,133 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	43,916 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>	