

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

GIOLA // ALDEHAYYAT RESIDENCE
 2969 74TH AVE. SE
 MERCER ISLAND, WA 98040

Contact Information

KELLEN WHITE // LANE WILLIAMS ARCHITECTS
 KELLEN@LANEWILLIAMS.COM // 206.284.8355

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

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)

Average Ceiling Height

Instructions Average Ceiling Height (ft)

Conditioned Volume 36,699

Glazing and Doors

Instructions

U-Factor X Area = UA
 0.300 X 1,030 = 309.00

Skylights

Instructions

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

Insulation

Attic

Instructions

U-Factor X Area = UA
 0.026 X 1,869 = 48.59

Single Rafter or Joist Vaulted Ceilings

Instructions

U-Factor X Area = UA
 0.020 X --- = ---

Above Grade Walls (see Figure 1)

Instructions

U-Factor X Area = UA
 0.056 X 3,345 = 187.32

Floors

Instructions

U-Factor X Area = UA
 0.029 X 1,708 = 49.53

Below Grade Walls (see Figure 1)

Instructions

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

Slab Below Grade (see Figure 1)

Instructions

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

Slab on Grade (see Figure 1)

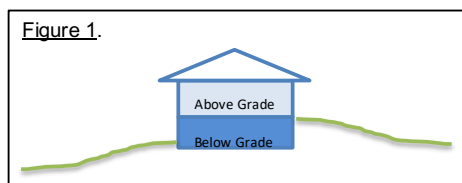
Instructions

F-Factor X Length = UA
 0.360 X 685 = 246.60

Location of Ducts

Instructions

Duct Leakage Coefficient
 1.10



Sum of UA	841.05
Envelope Heat Load	37,847 Btu / Hour
<i>Sum of UA x ΔT</i>	
Air Leakage Heat Load	17,835 Btu / Hour
<i>Volume x 0.6 x ΔT x 0.018</i>	
Building Design Heat Load	55,683 Btu / Hour
<i>Air leakage + envelope heat loss</i>	
Building and Duct Heat Load	61,251 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	76,563 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>	