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

Lanctot Residence - DADU
4603 89th Ave SE
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
ΔT = Indoor (70 degrees) - Outdoor Design Temp

Area of Building

Conditioned Floor Area

Instructions — Conditioned Floor Area (sq ft): 421

Average Ceiling Height

Instructions — Average Ceiling Height (ft): 12.0

Conditioned Volume: 5,057

Glazing and Doors

Instructions — U-0.28

U-Factor	X	Area	=	UA
0.280		219		61.32

Skylights

Instructions

U-Factor	X	Area	=	UA
0.50		29		14.65

Insulation

Attic

Instructions — R-49

U-Factor	X	Area	=	UA
0.026		460		11.96

Single Rafter or Joist Vaulted Ceilings

Instructions — No Vaulted Ceilings in this project.

U-Factor	X	Area	UA

Above Grade Walls *(see Figure 1)*

Instructions — R-21 Intermediate

U-Factor	X	Area	UA
0.056		864	48.38

Floors

Instructions — No Floors above unconditioned spaces.

U-Factor	X	Area	UA

Below Grade Walls *(see Figure 1)*

Instructions — No Below Grade Walls in this project.

U-Factor	X	Area	UA
0.028			

Slab Below Grade *(see Figure 1)*

Instructions — No Slab Below Grade in this project.

F-Factor	X	Length	UA
0.303			---

Slab on Grade *(see Figure 1)*

Instructions — R-10 Fully Insulated

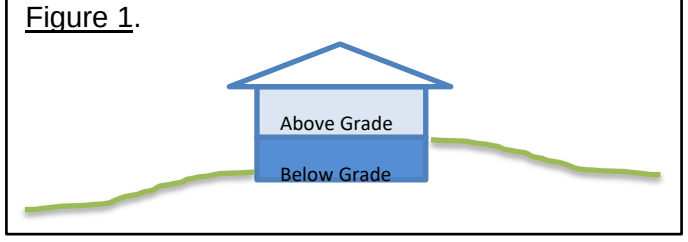
F-Factor	X	Length	UA
0.360		421	151.56

Location of Ducts

Instructions — Conditioned Space

Duct Leakage Coefficient
1.00

Figure 1.



Sum of UA 287.87

Envelope Heat Load 12,954 Btu / Hour
Sum of UA x ΔT

Air Leakage Heat Load 2,458 Btu / Hour
Volume x 0.6 x ΔT x 0.018

Building Design Heat Load 15,412 Btu / Hour
Air leakage + envelope heat loss

Building and Duct Heat Load 15,412 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 19,265 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