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

RADER RESIDENCE
7310 86TH AVE SE
MERCER ISLAND, WA 98040

Contact Information

H2D ARCHITECTURE + DESIGN
23020 EDMONDS WAY #113
EDMONDS WA 98020

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 — Seattle: Sea-Tac AP

Design Temperature Difference (ΔT) 46
ΔT = Indoor (70 degrees) - Outdoor Design Temp

Area of Building

Conditioned Floor Area

Instructions — Conditioned Floor Area (sq ft): 4,019

Average Ceiling Height

Instructions — Average Ceiling Height (ft): 7.6

Conditioned Volume: 30,542

Glazing and Doors

Instructions — U-0.28

U-Factor	X	Area	=	UA
0.280		662		185.44

Skylights

Instructions

U-Factor	X	Area	=	UA
0.50				---

Insulation

Attic

Instructions — R-49

U-Factor	X	Area	=	UA
0.026		2,620		68.11

Single Rafter or Joist Vaulted Ceilings

Instructions — R-38 Vented

U-Factor	X	Area	UA
0.027		207	5.58

Above Grade Walls *(see Figure 1)*

Instructions — Select R-Value

U-Factor	X	Area	UA
No selection		2,646	

Floors

Instructions — R-38

U-Factor	X	Area	UA
0.025		2,591	64.77

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 — No Slab on Grade in this project.

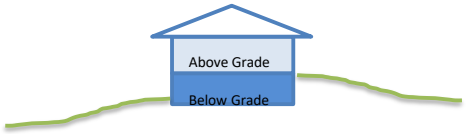
F-Factor	X	Length	UA

Location of Ducts

Instructions — Unconditioned Space

Duct Leakage Coefficient
1.10

Figure 1.



Sum of UA	323.90	
Envelope Heat Load	14,900	Btu / Hour
Sum of UA x ΔT		
Air Leakage Heat Load	15,173	Btu / Hour
Volume x 0.6 x ΔT x 0.018		
Building Design Heat Load	30,073	Btu / Hour
Air leakage + envelope heat loss		
Building and Duct Heat Load	33,080	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	41,350	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		