

## 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](mailto:energycode@energy.wsu.edu) or (360) 956-2042 for assistance.

### Project Information

HOUT KAING RESIDENCE  
921 PTH ST SW  
SEATTLE WA 98115

### Contact Information

JMDESIGNS AND PERMITTING LLC  
206-565-2109  
415-520-3294

### 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](#)

Puyallup

Design Temperature 19

Design Temperature Difference ( $\Delta T$ ) 51

$\Delta T = \text{Indoor (70 degrees)} - \text{Outdoor Design Temp}$

### Area of Building

#### Conditioned Floor Area

[Instructions](#)

Conditioned Floor Area (sq ft)

2,673

#### Average Ceiling Height

[Instructions](#)

Average Ceiling Height (ft)

8.5

Conditioned Volume

22,721

### Glazing and Doors

[Instructions](#)

U-0.22

U-Factor X Area = UA  
0.220 X 386 = 85.01

### Skylights

[Instructions](#)

U-Factor X Area = UA  
0.50 X [ ] = 0.00

### Insulation

#### Attic

[Instructions](#)

R-60

U-Factor X Area = UA  
0.024 X 1,251 = 30.02

#### Single Rafter or Joist Vaulted Ceilings

[Instructions](#)

No Vaulted Ceilings in this project.

U-Factor X Area = UA  
--- X [ ] = --

#### Above Grade Walls (see Figure 1)

[Instructions](#)

R-21 Intermediate

U-Factor X Area = UA  
0.056 X 3,150 = 176.40

#### Floors

[Instructions](#)

R-38

U-Factor X Area = UA  
0.025 X 2,670 = 66.75

#### Below Grade Walls and Slabs (see Figure 1)

[Instructions](#)

Wall & Slab Select Wall & Slab Insulation  
Depth Select nearest slab depth

Wall U-Factor X Area = UA  
[ ] X [ ] = --

Slab F-Factor X Length = UA  
[ ] X [ ] = --

#### Slab on Grade (see Figure 1)

[Instructions](#)

Select R-Value

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

### Location of Ducts

[Instructions](#)

Unconditioned Space

Duct Leakage Coefficient

1.100

Sum of UA 358.18

Envelope Heat Load 18,267 Btu / Hour

Sum of UA x  $\Delta T$

Air Leakage Heat Load 12,514 Btu / Hour

Volume x 0.6 x  $\Delta T$  x 0.018

Building Design Heat Load 30,782 Btu / Hour

Air leakage + envelope heat loss

Building and Duct Heat Load 33,860 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 42,325 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.

