

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

2 Bed Unit - 3 Story Stack w/ Basement
 Bradley Heights Apartments
 Puyallup, WA

Contact Information

Milbrandt Architects
 25 Central Way Suite 210
 Kirkland, WA 98033 425.454.7130

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 Difference (ΔT) 51
 $\Delta T = \text{Indoor (70 degrees)} - \text{Outdoor Design Temp}$

Area of Building

Conditioned Floor Area

[Instructions](#) Conditioned Floor Area (sq ft) 4,076

Average Ceiling Height

[Instructions](#) Average Ceiling Height (ft) 9.1

Conditioned Volume 37,092

Glazing and Doors

[Instructions](#) U-0.22

U-Factor X Area = UA
 0.220 X 626 = 137.72

Skylights

[Instructions](#)

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

Insulation

Attic

[Instructions](#) R-49

U-Factor X Area = UA
 0.026 X 1,007 = 26.18

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 3,449 = 193.13

Floors

[Instructions](#) No Floors above unconditioned spaces.

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

Below Grade Walls (see Figure 1)

[Instructions](#) R-21 Interior

U-Factor X Area = UA
 0.042 X 574 = 24.13

Slab Below Grade (see Figure 1)

[Instructions](#) No Slab Below Grade in this project.

F-Factor X Length = UA
 0.303 X 0 = ---

Slab on Grade (see Figure 1)

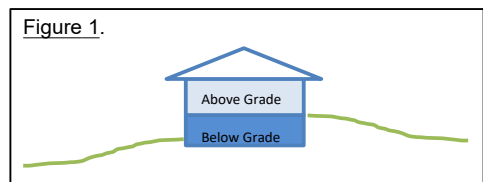
[Instructions](#) R-10 Perimeter

F-Factor X Length = UA
 0.540 X 1,019 = 550.26

Location of Ducts

[Instructions](#) Unconditioned Space

Duct Leakage Coefficient
 1.10



Sum of UA	931.42
Envelope Heat Load	47,503 Btu / Hour
<i>Sum of UA x ΔT</i>	
Air Leakage Heat Load	20,430 Btu / Hour
<i>Volume x 0.6 x ΔT x 0.018</i>	
Building Design Heat Load	67,933 Btu / Hour
<i>Air leakage + envelope heat loss</i>	
Building and Duct Heat Load	74,726 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	93,407 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>	

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