



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

1 Bed End Unit - 3 Story Stack

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)

2,136

Average Ceiling Height

[Instructions](#)

Average Ceiling Height (ft)

9.1

Conditioned Volume

19,438

Glazing and Doors

[Instructions](#)

U-0.22

U-Factor X Area = UA
0.220 X 357 = 78.54

Skylights

[Instructions](#)

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

Insulation

Attic

[Instructions](#)

R-49

U-Factor X Area = UA
0.026 X 825 = 21.45

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 2,624 = 146.96

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 0 = ---

Slab Below Grade (see Figure 1)

[Instructions](#)

No Slab Below Grade in this project.

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

Slab on Grade (see Figure 1)

[Instructions](#)

R-10 Perimeter

F-Factor X Length = UA
0.540 X 67 = 36.18

Location of Ducts

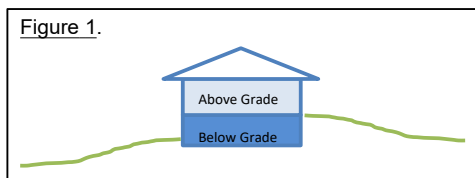
[Instructions](#)

Unconditioned Space

Duct Leakage Coefficient

1.10

Figure 1.



Sum of UA	283.13
Envelope Heat Load	14,439 Btu / Hour
Sum of UA x ΔT	
Air Leakage Heat Load	10,706 Btu / Hour
Volume x 0.6 x ΔT x 0.018	
Building Design Heat Load	25,146 Btu / Hour
Air leakage + envelope heat loss	
Building and Duct Heat Load	27,660 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	34,575 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	

FULL SIZED LEDGIBLE COLOR REPORT IS
REQUIRED TO BE PROVIDED BY THE PERMITTEE
ON SITE FOR ALL INSPECTIONS