

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 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) 2,761

Average Ceiling Height

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

Conditioned Volume 25,125

Glazing and Doors

[Instructions](#) U-0.22

U-Factor X Area = UA
0.220 476 104.72

Skylights

[Instructions](#)

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

Insulation

Attic

[Instructions](#) R-49

U-Factor X Area = UA
0.026 825 21.45

Single Rafter or Joist Vaulted Ceilings

[Instructions](#) No Vaulted Ceilings in this project.

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

Above Grade Walls (see Figure 1)

[Instructions](#) R-21 Intermediate

U-Factor X Area = UA
0.056 3,236 181.21

Floors

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

U-Factor X Area = UA
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Below Grade Walls (see Figure 1)

[Instructions](#) R-21 Interior

U-Factor X Area = UA
0.042 501 21.02

Slab Below Grade (see Figure 1)

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

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

Slab on Grade (see Figure 1)

[Instructions](#) R-10 Perimeter

F-Factor X Length = UA
0.540 712 384.48

Location of Ducts

[Instructions](#) Unconditioned Space

Duct Leakage Coefficient
1.10

Sum of UA	712.89
Envelope Heat Load	36,357 Btu / Hour
<i>Sum of UA x ΔT</i>	
Air Leakage Heat Load	13,839 Btu / Hour
<i>Volume x 0.6 x ΔT x 0.018</i>	
Building Design Heat Load	50,196 Btu / Hour
<i>Air leakage + envelope heat loss</i>	
Building and Duct Heat Load	55,216 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	69,020 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>	

Figure 1.

