

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 ---

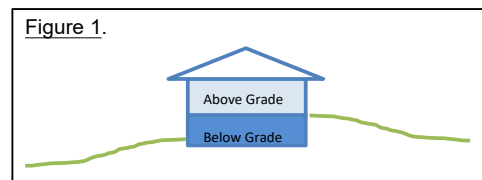
Slab on Grade (see Figure 1)
[Instructions](#) R-10 Perimeter

F-Factor X Length = UA
 0.540 712 384.48

Location of Ducts

[Instructions](#) Unconditioned Space

Duct Leakage Coefficient
 1.10



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

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>	