

**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

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

Skylights[Instructions](#)**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	0	=	---

Below Grade Walls (see Figure 1)[Instructions](#)

No Below Grade Walls in this project.

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

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 907.30

Envelope Heat Load 46,272 Btu / Hour

Sum of UA x ΔT

Air Leakage Heat Load 20,430 Btu / Hour

Volume x 0.6 x ΔT x 0.018

Building Design Heat Load 66,702 Btu / Hour

Air leakage + envelope heat loss

Building and Duct Heat Load 73,372 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 91,715 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.

