

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		626		137.72

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

Skylights

[Instructions](#)

Insulation

Attic

[Instructions](#)

R-49

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

Single Rafter or Joist Vaulted Ceilings

[Instructions](#)

No Vaulted Ceilings in this project.

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

[Instructions](#)

R-21 Intermediate

U-Factor	X	Area	=	UA
0.056		3,449		193.13

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		574		24.13

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		1,019		550.26

Location of Ducts

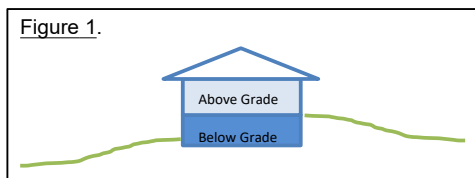
[Instructions](#)

Unconditioned Space

Duct Leakage Coefficient

1.10

Figure 1.



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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