

PRMU20240281



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

## 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](mailto: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 ( $\Delta T$ )

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	X	476	=	104.72

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

### Skylights

[Instructions](#)

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

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

### Insulation

#### Attic

[Instructions](#)

R-49

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

#### Single Rafter or Joist Vaulted Ceilings

[Instructions](#)

No Vaulted Ceilings in this project.

#### Above Grade Walls (see Figure 1)

[Instructions](#)

R-21 Intermediate

U-Factor	X	Area	=	UA
0.042	X	501	=	21.02

#### Floors

[Instructions](#)

No Floors above unconditioned spaces.

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

#### Below Grade Walls (see Figure 1)

[Instructions](#)

R-21 Interior

F-Factor	X	Length	=	UA
0.540	X	712	=	384.48

#### Slab Below Grade (see Figure 1)

[Instructions](#)

No Slab Below Grade in this project.

#### Slab on Grade (see Figure 1)

[Instructions](#)

R-10 Perimeter

### Location of Ducts

[Instructions](#)

Unconditioned Space

Duct Leakage Coefficient

1.10

Sum of UA 712.89

Envelope Heat Load 36,357 Btu / Hour

$\text{Sum of UA} \times \Delta T$

Air Leakage Heat Load 13,839 Btu / Hour

$\text{Volume} \times 0.6 \times \Delta T \times 0.018$

Building Design Heat Load 50,196 Btu / Hour

$\text{Air leakage} + \text{envelope heat loss}$

Building and Duct Heat Load 55,216 Btu / Hour

$\text{Ducts in unconditioned space: sum of building heat loss} \times 1.10$

$\text{Ducts in conditioned space: sum of building heat loss} \times 1$

Maximum Heat Equipment Output 69,020 Btu / Hour

$\text{Building and duct heat loss} \times 1.40 \text{ for forced air furnace}$

$\text{Building and duct heat loss} \times 1.25 \text{ for heat pump}$

Figure 1.

