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	Contact Information
2 Bed Unit - 3 Story Stack w/ Basement	Milbrandt Architects
Bradley Heights Apartments	25 Central Way Suite 210
Puyallup, WA	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

$\Delta T = Indoor\ (70\ degrees) - Outdoor\ Design\ Temp$

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

	U-Factor	X	Area	=	UA
Instructions [U-0.22 ▼]	0.220		626		137.72

Skylights

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

Insulation

Attic

	U-Factor	X	Area	=	UA
Instructions [R-49 ▼]	0.026		1,007		26.18

Single Rafter or Joist Vaulted Ceilings

	U-Factor	X	Area		UA
Instructions [No Vaulted Ceilings in this project. ▼]	---		0		_____

Above Grade Walls *(see Figure 1)*

	U-Factor	X	Area		UA
Instructions [R-21 Intermediate ▼]	0.056		3,449		193.13

Floors

	U-Factor	X	Area		UA
Instructions [No Floors above unconditioned spaces. ▼]	---				_____

Below Grade Walls *(see Figure 1)*

	U-Factor	X	Area		UA
Instructions [No Below Grade Walls in this project. ▼]	0.028		0		_____

Slab Below Grade *(see Figure 1)*

	F-Factor	X	Length		UA
Instructions [No Slab Below Grade in this project. ▼]	0.303		0		---

Slab on Grade *(see Figure 1)*

	F-Factor	X	Length		UA
Instructions [R-10 Perimeter ▼]	0.540		1,019		550.26

Location of Ducts

Instructions [Unconditioned Space ▼]

Duct Leakage Coefficient   1.10
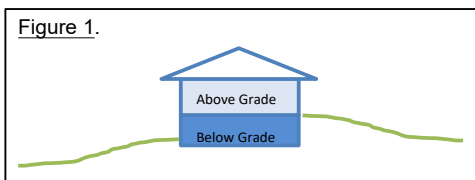
Sum of UA   907.30

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.

Above Grade
Below Grade

(07/01/13)