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

Forest Ave Lot 3
5208 Forest Ave SE
Mercer Island, WA 98040

Contact Information

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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

Mercer Island

Design Temperature Difference (ΔT) 45
ΔT = Indoor (70 degrees) - Outdoor Design Temp

Area of Building

Conditioned Floor Area

Instructions

Conditioned Floor Area (sq ft): 6,272

Average Ceiling Height

Instructions

Average Ceiling Height (ft): 9.3

Conditioned Volume: 58,330

Glazing and Doors

Instructions

U-0.28

U-Factor	X	Area	=	UA
0.280		1,008		282.24

Skylights

Instructions

U-Factor	X	Area	=	UA
0.50		44		22.00

Insulation

Attic

Instructions

Select R-Value

U-Factor	X	Area	=	UA
No selection				---

Single Rafter or Joist Vaulted Ceilings

Instructions

R-49 Advanced

U-Factor	X	Area	UA
0.020		3,092	61.84

Above Grade Walls *(see Figure 1)*

Instructions

R-21 Intermediate

U-Factor	X	Area	UA
0.056		4,799	268.74

Floors

Instructions

R-38

U-Factor	X	Area	UA
0.025		701	17.53

Below Grade Walls *(see Figure 1)*

Instructions

R-21 Interior

U-Factor	X	Area	UA
0.042		1,674	70.31

Slab Below Grade *(see Figure 1)*

Instructions

R-21 int Plus R-5 ci

F-Factor	X	Length	UA
0.303		189	57.27

Slab on Grade *(see Figure 1)*

Instructions

No Slab on Grade in this project.

F-Factor	X	Length	UA
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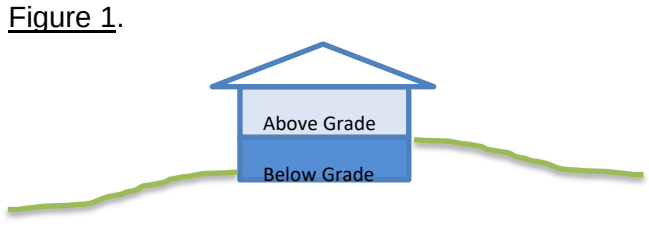
Location of Ducts

Instructions

Conditioned Space

Duct Leakage Coefficient
1.00

Figure 1.



Sum of UA	779.92	
Envelope Heat Load	35,097	Btu / Hour
Sum of UA x ΔT		
Air Leakage Heat Load	28,348	Btu / Hour
Volume x 0.6 x ΔT x 0.018		
Building Design Heat Load	63,445	Btu / Hour
Air leakage + envelope heat loss		
Building and Duct Heat Load	63,445	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	79,306	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		