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

Litchfield Residence
9001 SE 50th ST
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: Bellevue

Design Temperature Difference (ΔT) 46
ΔT = Indoor (70 degrees) - Outdoor Design Temp

Area of Building

Conditioned Floor Area

Instructions: Conditioned Floor Area (sq ft) 1,437

Average Ceiling Height

Instructions: Average Ceiling Height (ft) 8.4

Conditioned Volume 12,039

Glazing and Doors

Instructions: U-0.28

U-Factor	X	Area	=	UA
0.280		225		62.86

Skylights

Instructions

U-Factor	X	Area	=	UA
0.50		16		8.00

Insulation

Attic

Instructions: R-49

U-Factor	X	Area	=	UA
0.026		1,130		29.39

Single Rafter or Joist Vaulted Ceilings

Instructions: R-38 Vented

U-Factor	X	Area	UA
0.027		69	1.86

Above Grade Walls *(see Figure 1)*

Instructions: R-21 Intermediate

U-Factor	X	Area	UA
0.056		1,835	102.73

Floors

Instructions: R-38

U-Factor	X	Area	UA
0.025		1,063	26.57

Below Grade Walls *(see Figure 1)*

Instructions: Select R-value

U-Factor	X	Area	UA
No selection			---

Slab Below Grade *(see Figure 1)*

Instructions: Select conditioning

F-Factor	X	Length	UA
No selection			---

Slab on Grade *(see Figure 1)*

Instructions: Select R-Value

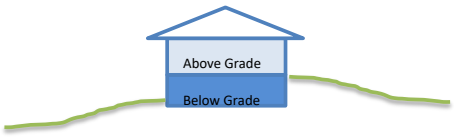
F-Factor	X	Length	UA
No selection			---

Location of Ducts

Instructions: Unconditioned Space

Duct Leakage Coefficient
1.10

Figure 1.



Sum of UA	231.41	
Envelope Heat Load *Sum of UA x ΔT*	10,645	Btu / Hour
Air Leakage Heat Load *Volume x 0.6 x ΔT x 0.018*	5,981	Btu / Hour
Building Design Heat Load *Air leakage + envelope heat loss*	16,626	Btu / Hour
Building and Duct Heat Load *Ducts in unconditioned space: sum of building heat loss x 1.10* *Ducts in conditioned space: sum of building heat loss x 1*	18,289	Btu / Hour
Maximum Heat Equipment Output *Building and duct heat loss x 1.40 for forced air furnace* *Building and duct heat loss x 1.25 for heat pump*	22,861	Btu / Hour