Simple Heating System Size: Washington State

This heating system sizing calculator is based on the Prescriptive Requirements of the 2015 Washington State Energy Code (WSEC) and ACCA Manuals J and S. This calculator will calculate heating loads only. ACCA procedures for sizing cooling systems should be used to determine cooling loads.

The glazing (window) and door portion of this calculator assumes the installed glazing and door products have an area weighted average U-factor of 0.30. The incorporated insulation requirements are the minimum prescriptive amounts specified by the 2015 WSEC.

Please fill out all of 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 call the WSU Energy Extension Program at (360) 956-2042 for assistance.

Project Information

Ogden Point Residence - Lot C
3675 W Mercer Way
Mercer Island, WA 98040

Contact Information

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): 2,481

Average Ceiling Height

Instructions — Average Ceiling Height (ft): 12.8

Conditioned Volume: 31,633

Glazing and Doors

Instructions

U-Factor	X	Area	=	UA
0.30		853		255.75

Skylights

Instructions

U-Factor	X	Area	=	UA
0.50				---

Insulation

Attic

Instructions — R-49

U-Factor	X	Area	=	UA
0.026		1,545		40.17

Single Rafter or Joist Vaulted Ceilings

Instructions — Select R-Value

U-Factor	X	Area	UA
No selection			---

Above Grade Walls *(see Figure 1)*

Instructions — R-21 Intermediate

U-Factor	X	Area	UA
0.056		1,582	88.56

Floors

Instructions — Select R-Value

U-Factor	X	Area	UA
No selection			---

Below Grade Walls *(see Figure 1)*

Instructions — R-21 Interior

U-Factor	X	Area	UA
0.042		1,048	44.02

Slab Below Grade *(see Figure 1)*

Instructions — R-5 Thermal Break at slab edge

F-Factor	X	Length	UA
0.570		88	50.16

Slab on Grade *(see Figure 1)*

Instructions — R-10 Perimeter

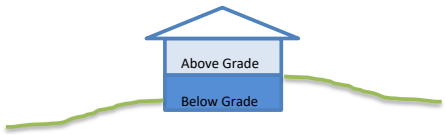
F-Factor	X	Length	UA
0.540		80	43.20

Location of Ducts

Instructions — Unconditioned Space

Duct Leakage Coefficient
1.10

Figure 1.



Sum of UA	521.86	
Envelope Heat Load *Sum of UA X ΔT*	23,484	Btu / Hour
Air Leakage Heat Load *Volume X 0.6 X ΔT X .018*	15,374	Btu / Hour
Building Design Heat Load *Air Leakage + Envelope Heat Loss*	38,857	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*	42,743	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*	59,840	Btu / Hour