



### 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

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](#)

Design Temperature Difference ( $\Delta T$ ) 51  
 $\Delta T = \text{Indoor (70 degrees)} - \text{Outdoor Design Temp}$

#### Area of Building

[Instructions](#) **Conditioned Floor Area**  (sq ft)

[Instructions](#) **Average Ceiling Height**  (ft)

Conditioned Volume 25,125

#### Glazing and Doors

[Instructions](#)

<b>U-Factor</b>	X	<b>Area</b>	=	<b>UA</b>
0.220		<input type="text" value="476"/>		104.72

#### Skylights

[Instructions](#)

<b>U-Factor</b>	X	<b>Area</b>	=	<b>UA</b>
0.50		<input type="text" value="0"/>		---

#### Insulation

[Instructions](#) **Attic**

<b>U-Factor</b>	X	<b>Area</b>	=	<b>UA</b>
0.026		<input type="text" value="825"/>		21.45

[Instructions](#) **Single Rafter or Joist Vaulted Ceilings**

<b>U-Factor</b>	X	<b>Area</b>	=	<b>UA</b>
---		<input type="text" value="0"/>		---

[Instructions](#) **Above Grade Walls (see Figure 1)**

<b>U-Factor</b>	X	<b>Area</b>	=	<b>UA</b>
0.056		<input type="text" value="3,236"/>		181.21

[Instructions](#) **Floors**

<b>U-Factor</b>	X	<b>Area</b>	=	<b>UA</b>
---		<input type="text" value=""/>		---

[Instructions](#) **Below Grade Walls (see Figure 1)**

<b>U-Factor</b>	X	<b>Area</b>	=	<b>UA</b>
0.042		<input type="text" value="501"/>		21.02

[Instructions](#) **Slab Below Grade (see Figure 1)**

<b>F-Factor</b>	X	<b>Length</b>	=	<b>UA</b>
0.303		<input type="text" value="0"/>		---

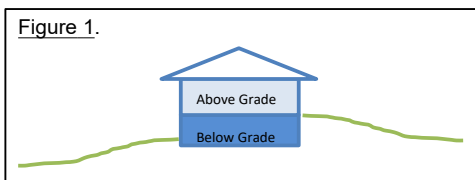
[Instructions](#) **Slab on Grade (see Figure 1)**

<b>F-Factor</b>	X	<b>Length</b>	=	<b>UA</b>
0.540		<input type="text" value="712"/>		384.48

#### Location of Ducts

[Instructions](#)

Duct Leakage Coefficient 1.10



<b>Sum of UA</b>	712.89
<b>Envelope Heat Load</b>	36,357 Btu / Hour
<i>Sum of UA x <math>\Delta T</math></i>	
<b>Air Leakage Heat Load</b>	13,839 Btu / Hour
<i>Volume x 0.6 x <math>\Delta T</math> x 0.018</i>	
<b>Building Design Heat Load</b>	50,196 Btu / Hour
<i>Air leakage + envelope heat loss</i>	
<b>Building and Duct Heat Load</b>	55,216 Btu / Hour
<i>Ducts in unconditioned space: sum of building heat loss x 1.10</i>	
<i>Ducts in conditioned space: sum of building heat loss x 1</i>	
<b>Maximum Heat Equipment Output</b>	69,020 Btu / Hour
<i>Building and duct heat loss x 1.40 for forced air furnace</i>	
<i>Building and duct heat loss x 1.25 for heat pump</i>	

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