



The Renewable Energy site for Do-It-Yourselfers

[Search](#)

[Home](#)

[Getting Started](#)

[Projects](#)

[References](#)

[Half Program](#)

[Experimental](#)

[Site Map](#)

Home Heat Loss Calculator

This calculator will provide an estimate of the heat loss for your home. It estimates the following:

- The maximum heat loss in BTU/hr for a coldest day (helpful for furnace sizing)
- The total yearly heat loss in millions of BTU.
- The total yearly cost for fuel.
- The total ten year cost for fuel (with 10% fuel price inflation per year).
- The number of lbs of CO2 gas emissions for heating your house.

Please note these [important sources of error](#).

[Angie's List Local Rating](#)

Read Local Ratings & Reviews. Find HVAC Techs in Your Area!

www.AngiesList.com/HVAC

[Affordable Solar Panels](#)

Sign Up for Solar by Dec 31 to Get \$500 Off Your Home Solar System

www.SolarCity.com/DecBigSolarSale

[SEARS® New Furnaces](#)

Keep Warm w/ a Sears Heater system. 18 mos no interest if paid in full.

SearsHomeServices.com

AdChoices

To use the Heat Loss Calculator:

Fill in all the input boxes. They look like this --> (medium blue backgrounds)

When you have filled in all the inputs, click the "Calculate" button. It looks like this ----->

When you click "Calculate", the output cells will be calculated and displayed. Note that any time you change an input, you must hit "Calculate" again to update the results. There are links to help files in the form to explain the inputs, and provide some help in figuring out what to enter for your situation.

Examples and Usage Information

There are a couple of worked [examples here](#).

[Help on R values...](#) If you are starting with no insulation, [read this carefully...](#)

[Handling crawl spaces ...](#)

[Handling slabs...](#)

[Help on Heating Degree Day estimates...](#)

Design outdoor Temperature	<input type="text" value="-10"/>	Degrees F	Coldest temperature expected in a "normal" year more...		
Heating Degree Days	<input type="text" value="7665"/>	Degree F - day	Heating Degree Days more...		
<input type="radio"/> Natural Gas <input type="radio"/> Fuel Oil <input type="radio"/> Propane <input checked="" type="radio"/> Electricity	<input type="text" value="0.12"/>	\$'s per KWH	<input type="text" value="100"/>	Furnace Efficiency (%) more...	
Ceilings	Enter the area and R value for each ceiling area in the house that is exposed to outside temperatures. Help on R values ...				
Ceilings	Area	Rvalue	UA (BTU/hr-F)	Design Loss (BTU/hr)	Yearly Heat Loss (BTU/yr)
Ceiling 1	<input type="text" value="228.83"/>	<input type="text" value="26.5"/>	<input type="text" value="8.6"/>	<input type="text" value="691"/>	<input type="text" value="1588512"/>
Ceiling 2	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Ceiling 3	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Ceiling 4	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Walls	Enter the area and R value for each wall area in the house that is exposed to outside temperatures.				
Wall segment	Area	Rvalue	UA (BTU/hr-F)	Design Loss (BTU/hr)	Yearly Heat Loss (BTU/yr)
wall 1	<input type="text" value="448.5"/>	<input type="text" value="20.5"/>	<input type="text" value="21.9"/>	<input type="text" value="1750"/>	<input type="text" value="4024686"/>
wall 2	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
wall 3	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
wall 4	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Windows	Enter the area and R value for each group of windows having the same R value.				
Window Group	Area	Rvalue	UA (BTU/hr-F)	Design Loss (BTU/hr)	Yearly Heat Loss (BTU/yr)
Group 1	<input type="text" value="54.75"/>	<input type="text" value="1.8"/>	<input type="text" value="30.4"/>	<input type="text" value="2433"/>	<input type="text" value="5595450"/>
Group 2	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Group 3	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Group 4	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Floors -- Wood Joist Type	Enter the area and R value for each floor area in the house that is exposed to outside temperatures. Estimating R Value for crawl spaces ...				
Floor segment	Area	Rvalue	UA (BTU/hr-F)	Design Loss (BTU/hr)	Yearly Heat Loss (BTU/yr)
Floor 1	<input type="text" value="221.36"/>	<input type="text" value="20.5"/>	<input type="text" value="10.8"/>	<input type="text" value="864"/>	<input type="text" value="1986409"/>
Floor 2	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Floor 3	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Floor 4	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Slab on Grade Floor	Heat loss from slab on grade floors is primarily dependant on the length of the perimeter and not the area of the floor. Rvalue here is the effective R value per foot of perimeter -- Estimating effective R Value for slabs ...				
Slab segment	Perimeter (ft)	Rvalue per ft of perimeter (1)	UA (BTU/hr-F)	Design Loss (BTU/hr)	Yearly Heat Loss (BTU/yr)
Full Slab	<input type="text" value="0"/>	<input type="text" value="2.0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Infiltration	House Volume: is the total volume of the heated space of the house cubic feet (floor area times the ceiling height) Air Changes Per Hour: 0.33 -- very tight -- minimum for health 0.5 -- tight -- new, <u>careful</u> construction 1.0 -- leaky -- typical existing construction??				
	House Volume	Air Changes per hour	UA (BTU/hr-F)	Design Loss (BTU/hr)	Yearly Heat Loss (BTU/yr)
Whole House	<input type="text" value="1743.21"/>	<input type="text" value="1"/>	<input type="text" value="31"/>	<input type="text" value="2510"/>	<input type="text" value="5772256"/>
Internal Heat Gains	These are heat gains from warm bodies, lights, appliances, ... These heat gains will be subtracted from the total heat loss for the house. If you don't want to account for internal heat gains, enter 0 for the number of occupants More ...				
	Number of Occupants		Internal Gains (BTU/hr)	Design Loss (BTU/hr)	Yearly Heat Loss (BTU/yr)

	<input type="text" value="2"/>		<input type="text" value="774"/>	<input type="text" value="-774"/>	<input type="text" value="-6782868"/>	
Calculate	Click Calculate to update Heat Loss					
Item	UA (BTU/hr-F)	Design Loss (BTU/hr)	Year Loss (Million BTU/yr)	Fuel Cost (US dollars)	Ten Year Cost 10% infla \$'s	Greenhouse Gas (lb CO2)
Ceiling Loss	<input type="text" value="9"/>	<input type="text" value="691"/>	<input type="text" value="1.6"/>	<input type="text" value="56"/>	<input type="text" value="890"/>	<input type="text" value="937"/>
Wall Loss	<input type="text" value="22"/>	<input type="text" value="1750"/>	<input type="text" value="4"/>	<input type="text" value="142"/>	<input type="text" value="2255"/>	<input type="text" value="2375"/>
Window Loss	<input type="text" value="30"/>	<input type="text" value="2433"/>	<input type="text" value="5.6"/>	<input type="text" value="197"/>	<input type="text" value="3135"/>	<input type="text" value="3301"/>
Floor Loss	<input type="text" value="11"/>	<input type="text" value="864"/>	<input type="text" value="2"/>	<input type="text" value="70"/>	<input type="text" value="1113"/>	<input type="text" value="1172"/>
Slab Loss	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Infiltration	<input type="text" value="31"/>	<input type="text" value="2510"/>	<input type="text" value="5.8"/>	<input type="text" value="203"/>	<input type="text" value="3234"/>	<input type="text" value="3406"/>
Totals	<input type="text" value="103"/>	<input type="text" value="8248"/>	<input type="text" value="19"/>	<input type="text" value="667"/>	<input type="text" value="10627"/>	<input type="text" value="11191"/>
Internal heat gains (warm bodies, lights, ...) supply some of the heat listed above -- the line below shows approximately the contribution of internal heat gains -- this is heat that your furnace does NOT have to supply.						
Internal Gains		<input type="text" value="-774"/>	<input type="text" value="-6.8"/>	<input type="text" value="-239"/>	<input type="text" value="-3800"/>	

[Print page...](#)

Definitions of the Output Columns:

Design Heat Loss -- This is the total heat loss from your house per hour when the outside temperature is at the Design Outdoor Temperature that you input. This can be used as a rough guide for sizing your furnace -- but see the discussion on Internal Gains above. (BTU/hour)

Year Heat Loss -- This is a rough estimate of the total heat loss from your house for a typical year. It is based on the number of Heating Degree Days you entered. For the reasons discussed [here](#), it may be somewhat more than what you actually experience. (BTU/year)

Fuel Cost -- This is the cost of the fuel to heat your house based on the Year Heat Loss from the previous column, and the fuel type, fuel cost, and furnace efficiency you entered. For the reasons discussed [here](#), it may be somewhat more than what you actually experience. (Dollars)

Ten Year Cost -- This is the cost of fuel for 10 years with the assumption that fuel costs will rise 10% each year of the 10 years. For the reasons discussed [here](#), it may be somewhat more than what you actually experience. (Dollars)

Greenhouse Gas Emissions -- This is the yearly green house gas emissions from your heat plant. It is based on the type of fuel you selected, the furnace efficiency you entered, the Year Heat Loss. For electricity, it is assumed that the electricity was generated at a coal fired power plant -- about 50% and increasing of electricity in the US is produced in coal fired power plants. For the reasons discussed [here](#), it may be somewhat more than what you actually experience. (lbs of CO2 per year)

Note: You must have Javascript enabled in your browser to run this calculator (Tools -> Internet Options -> Security)

Please Note

I take no responsibility **whatever** for the accuracy or correctness of this software.

I take no responsibility **whatever** for any grief that errors, omissions, or just plain bad design in this software may cause you.

You use this software at your own risk.

Gary 5/5/07, 3/2/08, 12/18/2008

Updated: April 17, 2008 Clarified slab effective R value, added two examples.
Nov 7, 2009 Added some more help files

April 4, 2011 Fixed some formating and nav menu issues

[Contact/About](#)

[Legal Disclaimer](#)

[Copyright 2005 - 2011 by Gary Reysa](#)