

# IS YOUR HOME AN ENERGY WASTER?

## The Home Heating Energy Index

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The Heating Energy Index shows how efficiently heating fuel energy is used in your home.

Using the Heating Energy Index, you can compare your home to others, or keep track of improvements in your home's heating performance as you weatherize and take other energy conservation measures.

To calculate your Heating Energy Index, you'll have to know how much heating fuel you used last winter. If you threw out your old bills, don't despair. Just call your local supplier and request the information; you want to know the amount of fuel you consumed last winter, not the cost.

The units used to measure fuel consumption depend upon the type of fuel. If you heat with natural gas, the consumption will usually be in hundreds of cubic feet (CCF). If you heat with oil or LP gas, the consumption will be in gallons. And, if you heat with electricity, it will be measured in kilowatt hours (KWH).

Natural gas and electric bills will show the old meter reading, a new meter reading and the difference between the two. The difference is the amount of energy you used between the dates the meter was read.

LP gas and fuel oil bills will list the numbers of gallons purchased—in other words, the amount of fuel you used since the last fill up.

In the calculations, you will be working with the number of degree days. A degree day is 65 degrees Fahrenheit, minus the average temperature on any given day. Degree day readings are added together to obtain readings for a period of time, such as a month or a heating season. The U.S. Weather Service calculates daily degree days and many local

newspapers print degree day figures. Figure 1 shows the normal degree days for North Dakota.

If you think, after calculating its Heating Energy Index, your home seems to be an energy waster, you can make some changes to reduce the waste. Consider, for example, reducing the thermostat setting or closing rooms that are not used.

Also consider home weatherization projects: caulking and weatherstripping, a thorough furnace check, improving furnace efficiency, reducing heat loss through windows and adding insulation.

You may want to calculate the Heating Energy Index again after taking some energy saving steps. Use current degree day and fuel consumption figures. Compare the new index number with the old ones to see if there has been any improvement. If you'd like help planning a home weatherization project, contact your County Extension Office.

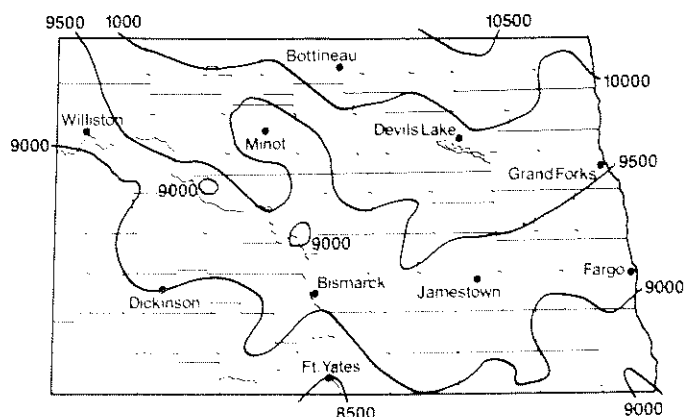


Figure 1. Normal Degree Days (1941-1970 Average).

**STEP 1. Determining your heating energy use:**

You want the amount of energy used for heating your home. Some homes may use more than one type of fuel for heating. This will require some additional calculations.

**HERE'S HOW TO CALCULATE YOUR HOME HEATING ENERGY INDEX:**

A) Record fuel type used and the units of measurement (KWH for electricity, CCF for natural gas and gallons for oil or LP gas). You'll need these units in Step 2. Now, enter the fuel use for October through April of last winter. If you used more than one type of fuel for heating, enter the information for each fuel type used.

TYPE OF ENERGY _____	TYPE OF ENERGY _____
UNITS _____	UNITS _____
MONTH	MONTH
OCTOBER _____	OCTOBER _____
NOVEMBER _____	NOVEMBER _____
DECEMBER _____	DECEMBER _____
JANUARY _____	JANUARY _____
FEBRUARY _____	FEBRUARY _____
MARCH _____	MARCH _____
APRIL _____	APRIL _____
TOTAL _____	TOTAL _____

**STEP 2. Convert your use to BTUs:**

Enter your heating use from A) above into the appropriate blank for the kind of energy you use to heat your home, then multiply it by the number given. This converts your energy use to BTUs.

ELECTRICITY \_\_\_\_\_ KWH × 3,413 = \_\_\_\_\_ BTU

NATURAL GAS \_\_\_\_\_ CCF × 100,000 = \_\_\_\_\_ BTU

FUEL OIL \_\_\_\_\_ GAL × 140,000 = \_\_\_\_\_ BTU

LP GAS \_\_\_\_\_ GAL × 95,000 = \_\_\_\_\_ BTU

**STEP 3. Find the degree days:**

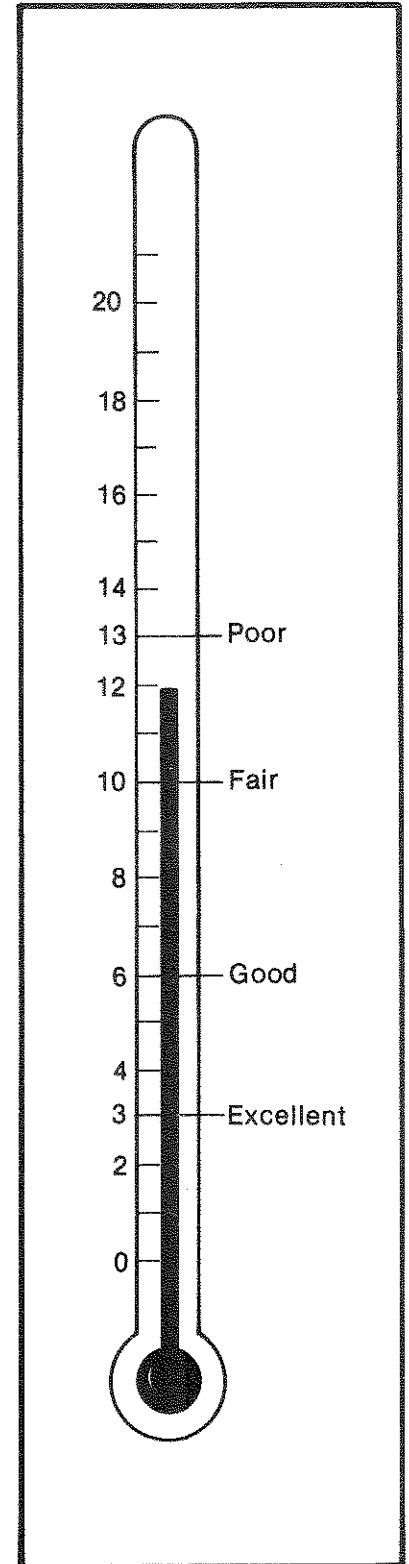
Consult the map and record the degree days for your location.

SEASON DEGREE DAYS (D.D.) \_\_\_\_\_

**STEP 4. Find the square feet heated:**

Include all areas of the home that are usually heated. If some areas are unheated (an extra bedroom or basement area), they should not be included in the square feet of heated areas.

SQUARE FEET (FT<sup>2</sup>) \_\_\_\_\_



### STEP 5. Calculate your Energy Index:

You can use this index number to compare your home to other houses and, over time, to itself.

#### HERE'S HOW:

- A) First, divide the BTU total (Step 2) by the degree days (Step 3). This gives you your energy consumption, corrected for degree days

$$\frac{\text{BTU}}{\text{DEGREE DAYS}} = \text{BTU/D.D.}$$

- B) Then, divide the result of Step 5 A), above, by the square feet of the heated areas of your house (Step 4). The result is your Heating Energy Index.

$$\frac{\text{BTU/D.D.}}{\text{FT}^2} = \text{BTU/D.D./FT}^2, \text{ HEATING ENERGY INDEX}$$

Once you have found your home's Energy Index, locate your house on the Heating Energy Index thermometer.

### EXAMPLE CALCULATION

This example is included to enable you to more easily understand how to calculate your home's heating energy index. The example home uses natural gas as a fuel for a central heating system, clothes dryer, and water heater. The basement contains an electrically heated room. The electricity used by the electrical appliances and lights are also included in this analysis, since the heat they produce helps to heat the house.

#### STEP 1.

Because the example home uses two types of fuel for heating, Step 1 A) would be done like this:

TYPE OF ENERGY	<u>Natural Gas</u>	TYPE OF ENERGY	<u>Electricity</u>
UNITS	<u>CCF</u>	UNITS	<u>KWH</u>
MONTH		MONTH	
OCTOBER	<u>154</u>	OCTOBER	<u>303</u>
NOVEMBER	<u>289</u>	NOVEMBER	<u>376</u>
DECEMBER	<u>439</u>	DECEMBER	<u>354</u>
JANUARY	<u>257</u>	JANUARY	<u>412</u>
FEBRUARY	<u>278</u>	FEBRUARY	<u>461</u>
MARCH	<u>185</u>	MARCH	<u>363</u>
APRIL	<u>104</u>	APRIL	<u>325</u>
TOTAL	<u>1706</u>	TOTAL	<u>2594</u>

**STEP 2.**

In converting the example home's heating use to BTUs (British Thermal Units), we get:

$$\begin{aligned} \text{ELECTRICITY } \underline{2594} \text{ KWH} \times 3,413 &= \underline{8853322} \\ \text{NATURAL GAS } \underline{1706} \text{ CCF} \times 100,000 &= \underline{170600000} \\ \text{TOTAL} &= \underline{179453322} \end{aligned}$$

**STEP 3.**

If the example home is in Minot, its degree days will be approximately:

$$\text{SEASON DEGREE DAYS (D.D.) } \underline{9000}$$

**STEP 4.**

Find the square footage of the heated parts of the home. In our example, we must remember to add the square feet of the electrically heated room in the basement.

$$\text{SQUARE FEET (FT}^2\text{) } \underline{1600}$$

**STEP 5.**

Find the Energy Index for the example home. The calculations would be done like this:

$$\begin{aligned} \text{A) } \frac{179,453,322}{9,000 \text{ D.D.}} &= 19,939 \text{ BTU/D.D.} \\ \text{B) } \frac{19,939 \text{ BTU/D.D.}}{1,600 \text{ FT}^2} &= 12.5 \text{ HEATING ENERGY INDEX} \end{aligned}$$

As you can see, the example home rates only "fair" on the thermometer, and appears to be wasting energy. The family owning such a home could take steps to improve the rating. For information on how to reduce your home's Heating Index, contact your County Extension Office.