

# Therm

## Unit of Heat Energy

by Ian Woofenden

*Derivation: From Greek therme, heat, from thermos, hot; akin to Latin formus, warm, and Sanskrit gharma, heat.*

In recent years, because of rising costs for natural gas and electricity, there has been an increased awareness of the importance of efficient space heating and having a tight, well-insulated building envelope. In fact, space heating accounts for more than 30 percent of the energy used in most homes, so this is a prime place to focus our energy efficiency and conservation efforts—and dollars.

In renewable energy (RE) circles, it's much more common to talk about electrical energy than thermal energy. So we're relatively comfortable with volts, watts, and watt-hours as units. But if your big-picture goal is to use RE for *all* your energy needs, learning about thermal units is especially important. Then you'll be able to understand how to measure and use thermal energy wisely, and move toward reducing your reliance on nonrenewable resources to heat your home.

The *therm* is a unit of heat equivalent to 100,000 British thermal units (Btu). It is often used to measure natural gas, a common fuel used to heat American homes. One of two homes in the United States is heated with natural gas—a nonrenewable resource that's becoming increasingly difficult to find, extract, and transport. Prices vary over the seasons and years—the average cost per therm this past winter was \$1.50. Because natural gas is used in large volumes for heating, and increasingly for utility-scale electricity generation, it's likely that its cost will continue to rise.

One therm of natural gas contains the energy equivalent of about 29 kilowatt-hours (KWH) of electricity. A typical American home that heats with natural gas uses about 780 therms annually, or a little more than 2 therms per day (58 KWH), averaged over the whole year. Of course, your usage will depend on the size of your home, its thermal efficiency, your thermostat setting, and your climate.

**1 Therm**

**= 100,000 Btu**

**= 29,000 WH**

If you want to get a handle on energy use from heating, take a look at last winter's natural gas bills and make a note of how many therms you used per day. Then set a goal to make changes in your home this summer and fall, so that you can see a decrease in your thermal energy use in the coming heating season. To achieve your goals:

- Contact your local utility and see if they offer home energy audits, or hire an independent energy auditor to help prioritize steps to improve your home's thermal efficiency.
- Make sure your home's envelope is well insulated and tightly sealed against air infiltration. These two measures will usually provide the best bang for your efficiency upgrades buck.
- Replace single-pane windows with more energy efficient, double-pane units, and make sure your windows are caulked and weather-stripped.
- Close the doors to unused rooms to help reduce the area requiring heating.
- Purchase a programmable thermostat, and set it to keep your home at a lower temperature overnight and while you're away. Every degree that you dial back your thermostat can shave about 3 percent off your heating bills.

It's been said that to measure something is to know it. If we want to really understand our thermal energy usage, we need to get familiar with its units. For home heating, many of us need to get familiar with the term *therm*.

### Access

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"Efficiency Pays," Bernd Geisler, *HP110*

"The Half Plan: Part One," Gary Reysa, *HP118*

"Window Shopping," Keith Boulac, *HP117*

"Insulation Options," Claire Anderson, *HP111*

"How Efficient Is Your House? Comprehensive Energy Analysis," Allison A. Bailes III, *HP106*

"Home Sweet Solar Home: A Passive Solar Design Primer," Ken Olson & Joe Schwartz, *HP90*

