

# The Best Home Heating



**James Dulley**  
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**If you recently made** a room addition or are looking to replace an old and inefficient heating/cooling system, choosing a replacement system can be a daunting task.

With changing home energy prices, it can be somewhat confusing to determine which type of system will be the best in the long run. The relative prices of electricity, oil, propane, gas and alter-

native fuels vary from region to region, so take some time to do some local cost research. For example, I made several calls recently and I found a 20 percent variation in propane prices among companies in Cincinnati alone.

There are several criteria to consider when selecting a system. Obviously, the size of your monthly utility bill is a primary one for most homeowners. The initial cost of installing the system is another. Also, consider the lifetime maintenance costs and the impact using each fuel type will have on the environment and your children's long-term health and well-being.

If you will consider making some minor life-style changes such as lowering the temperature in unused rooms, this can impact your utility bills and your system selection. For example, even though baseboard electric resistance heating may be one of the most expensive to operate, it could be more economic to install it in a new room addition if it is not often used. It is inexpensive to install and it allows you to switch it completely off and save overall without impacting your central heating system.

Calculating the relative cost of fuels is simple. First, calculate the cost of one Btu of heat from each fuel type. This is done by dividing your local utility rate or price per gallon, cord, bushel, etc., by the Btu heat content in that amount of fuel. Next, divide this result by the efficiency of the heating appliance you are using to determine the amount you are paying for each Btu that actually ends up heating your home.

The following are typical heat contents for common fuels to use in your calculations: natural gas – 1,025 Btu/cubic foot; oil – 138,700 Btu/gallon; propane – 91,000 Btu/gallon; electricity – 3,414 Btu/kilowatt-hour; firewood – 22 million Btu/cord; and shelled corn – 448,000 Btu/bushel. The actual heat content of firewood can vary significantly depending upon the type and how well it is seasoned (its moisture content).

Unless you are a farmer who grows corn or has a free source of firewood, you will generally find geothermal electric heat pumps to be the least expensive to operate. This is because they

tap into the natural heat in the ground. Summertime air-conditioning costs will also be the lowest with geothermal heat pumps. Their drawback is a significantly higher installation cost. Also heat pumps, whether air-to-air or geothermal, have motors, compressors and other moving parts, so you should factor in typical maintenance costs.

In most climates, standard air-to-air heat pumps will also fair well in your heating cost comparison. Electric rates, although they increase with time like most products, are less volatile than fossil fuels (gas, oil, propane). The efficiency of a heat pump varies with the outdoor temperature, so in severely cold weather, your electric resistance furnace will come on to keep your house warm.

Hybrid heat pump systems are becoming more popular. With these systems, you install a regular gas, propane, oil, wood or corn furnace with a heat pump instead of just a central air conditioner. Installing a heat pump will cost several hundred dollars more than a similar central air conditioner. I have an all-electric house, so I use a heat pump with corn and firewood backup heat for very cold weather.

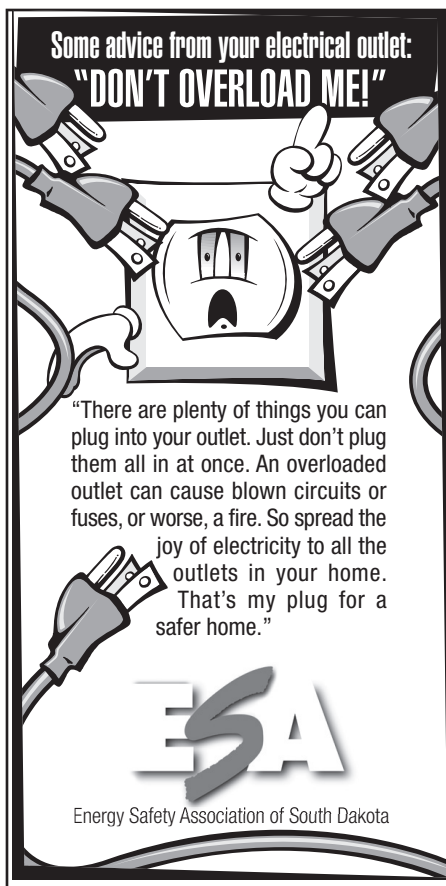
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Other than during very cold weather, a heat pump can be less expensive to operate than a fossil-fuel furnace. As the outdoor temperature drops and the heat pump becomes less efficient, the gas, propane or oil furnace takes over. Your heating contractor should be able to adjust the changeover temperature from heat pump to furnace based upon the relative local cost of gas/oil and electricity.

Alternative fuels, such as corn, wheat, wood pellets, cherry pits, etc., are an option to consider for a furnace or just a freestanding heater, such as the one I use. Fifty-pound bags of corn are available at most farm supply and pet stores. I buy 40-pound bags of wood pellets at any home center, feed supply or wood stove store, but they are often in short supply.

If you plan to use some of these homegrown or recycled fuels for backup heat, consider getting one which can be adjusted to burn different types of fuels. For example, one which is specifically designed to burn wood pellets will not be able to handle the higher ash content of corn.

*Send inquiries to James Dulley, Cooperative Connections, 6906 Royalgreen Dr., Cincinnati, OH 45244*



## Wilton Wind Farm Complete

**While they don't have names** – at least we don't think so – there are now 33 new “residents” of Burleigh County, N.D. The residents are wind turbines that comprise the Wilton Wind Energy Center. The last one became “official” Jan. 14, 2006, when it was declared operational.

The first two wind towers began operating on Dec. 10, 2005. During the time since, the remaining turbines were placed into operation as they were finished. Each turbine has a generating capacity of 1.5 megawatts (MW). The total generating capacity of the wind farm is 49.5 MW.

Construction of the wind farm about four miles southeast of Wilton began in September 2005. It was built by and is owned and operated by FPL Energy, Juno Beach, Fla. All the electricity produced by the wind farm is being purchased by Basin Electric and combined with the production from its other generating facilities.

Ron Harper, Basin Electric CEO and general manager, said with the operation of this wind farm, Basin Electric now has 135 MW of generating capacity powered by wind. “This is part of our commitment to renewable energy development,” he said.

The commitment was formalized at Basin Electric's 2005 annual meeting in November with the adoption of a renewable energy goal for the cooperative. The resolution says Basin Electric must provide 10 percent of its members' demand for electricity from renewable resources by 2010.

“Basin Electric and its members are leading the way in developing renewable energy in the Upper Great Plains,” Harper said.



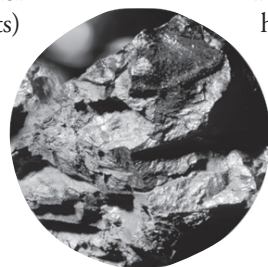
## Credits Available for Lignite Teacher Training

**The Lignite Energy Council** of Bismarck, N.D., and the American Coal Foundation of Washington, D.C., are sponsoring a teacher seminar titled Lignite – Our Regional Resource: Energy, Economics and Environment at Bismarck State College, Bismarck, N.D., on June 13-15, 2006.

This seminar is designed to provide teachers with a broader understanding of the lignite coal industry and the important role it plays in providing electricity to consumers, farmers and businesses in Minnesota, South Dakota and Montana. The seminar includes discussions on how lignite coal is mined and converted into energy and the economic impact of

the industry on the region. It also includes a tour of a lignite mine, a lignite-fired power plant, the Great Plains Synfuels Plant (which converts coal into synthetic natural gas and other valuable byproducts) and the visitor's center at Fort Mandan which was constructed with the use of coal combustion byproducts.

The Lignite Energy Council is offering the seminar for the 21st year in 2006, primarily because of the overwhelmingly positive response that it has received from past teacher seminar participants.



Teachers from all grade levels will be accepted in the program but top consideration will be given to teachers of earth science, social studies and energy education.

The seminar is being held in cooperation with Bismarck State College and the Center for Economic Education at the University of North Dakota.

Each teacher can earn one semester graduate credit (economics – University of North Dakota) by successfully completing the seminar requirements.

Basin Electric Power Cooperative is helping spon-

sor the seminar and will pay your registration fee and transportation costs. Please request application forms or send a letter of interest to Anika Schaff, at the following address: 1717 E. Interstate Ave., Bismarck, ND 58503, call 800-242-2372 or e-mail [aschaff@bepc.com](mailto:aschaff@bepc.com) for more information. You can also find more information at Basin Electric's Web site: [www.basinelectric.com](http://www.basinelectric.com). If you are selected to attend the seminar, you will be required to send in a \$60 deposit that will be returned when registering on the first day of the seminar on June 13, 2006.

If you have any questions, please call Anika at the above toll-free number.