

# ***The Durham Energy Committee***

## ***E-Newsletter***

**Welcome to this issue of the DEC Newsletter!** In an effort to inform, update, and develop community action regarding energy conservation and environmental issues, the Durham Energy Committee has developed ***the DEC E-Newsletter***, with up-to-date articles and practical information. We hope you find this useful and interesting to you. We encourage your comments and ideas.

### **Focus for Autumn- Home Heating**



Last summer was a memorable one. Weatherwise, the region experienced a dangerous and damaging tornado in July, followed by a protracted period of extremely wet weather. Although local tomatoes and corn were slow to ripen because of the weather, local produce was still going strong in late September.

Last summer was also memorable in regard to energy. The spike in oil prices which started in May helped create an economic slowdown, creating high inflation, increasing unemployment, and tightening of budgets. Close to home, the high cost of oil raised concerns that high fuel costs may extend through the winter. At \$4.75 per gallon for heating oil, the cost of filling an oil tank would reach \$1,300.00, nearly double last year's figure of \$700.00. Between increasing fuel costs and tightening budgets, families could suffer. Considering that fall is here, it's high time to ponder some options.

First, let's look at available options for fuel. In New England, approximately 87% of homes heat with light heating oil, also known as #2 fuel oil. Next to kerosene, this is the cleanest-burning oil available.

## Natural Gas

Natural gas is supplied to some locations in Durham. Natural gas burns more cleanly than oil, and because it is piped to customers underground, it is very convenient. The price of natural gas is based on a rate established over a five-year period. When the price of oil is stable, natural gas typically costs slightly more than #2 oil, based on equivalent heating value; when the price of oil suddenly jumps, the price of natural gas becomes cheaper in comparison.

## Propane

Propane is a by-product of oil refining, its price is typically somewhere around 20% more than oil based on equivalent heating value, and changes proportionately with that of oil. Propane is delivered to us in liquid form, and converts to a gas when it passes through a pressure regulating valve. Propane burns as cleanly as natural gas.

## Coal

Coal is rarely used as fuel in New England, even though it is the most abundant fossil fuel remaining in the United States. Coal is the dirtiest-burning fossil fuel, emitting a great quantity and variety of pollutants: sulphur dioxide, nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), and carbon dioxide (CO<sub>2</sub>).

## Biofuels

Biofuels are available to Durham residents in three basic forms: vegetable oil additives to heating oil, cordwood, and wood pellets. These fuels provide "renewable" energy, which is strongly preferred by folks concerned about the environment. Renewable energy sources (trees and plants) take CO<sub>2</sub> from the air during photosynthesis and return the CO<sub>2</sub> to the air during combustion.

"Bio-oil" results from adding 10, 20 or 30 percent processed vegetable oil to #2 oil. Although more expensive than standard #2 oil, and although it has about the same heating value, bio-oil has become increasingly popular because it burns cleaner than #2 oil.

Cordwood is usually not classified as a biofuel, but it certainly qualifies as such. Cordwood is sold by the cord (a cord is a volume of split wood 8 feet long by 4 feet wide by 4 feet high).

The heating value of wood varies according to the species of tree. Typically, hardwoods (deciduous trees) contain more heating value than softwoods (coniferous trees). An exception is willow, which is technically a hardwood, but has a very low heating value.

The following table compares the typical heating values and densities of common species of trees in this region.

Species	Heating Value (BTU per Cord)	Density (Pounds per Cubic Foot)
<b>Hardwoods</b>		
Hickory	27,700,000	50.9
White Oak	25,700,000	47.2
Red Oak	24,000,000	44.2
Beech	24,000,000	44.2
Yellow Birch	23,600,000	43.4
White Ash	23,600,000	43.4
Red Maple	18,700,000	34.4
Poplar	14,500,000	27.0
<b>Softwoods</b>		
Hemlock	15,900,000	29.2
White Pine	14,300,000	26.3
Fir	14,300,000	26.3

The main environmental advantage of cordwood is that it recycles atmospheric CO<sub>2</sub> (CO<sub>2</sub> is released to the atmosphere whether wood burns or decays),. However, it's a bit more complex than that; the decay time of wood is far longer than its burning time, so the CO<sub>2</sub> release/absorption cycle is not quite balanced.

If the use of cordwood as a fuel gains greatly in popularity, a limitation to its use should be established according to the ability of the forests to replenish the wood which is removed.

### Things We Can Do

In recent weeks, the price of oil has significantly dropped. Home heating oil prices are currently around \$3.80 per gallon, down from \$4.75 in early August. However, at the current price oil is still about 1-1/2 times as high as this time last year. Average natural gas and propane prices in New England have increased 15 percent in the same period. Clearly, our household budgets will be stretched this winter. So, what can we do?

### Optimize

In general, it's in our best interests to use the energy we have as effectively as possible. This may mean making sure we waste as little as possible of the energy we use, and also "stretching" the energy we use to accomplish several tasks.

Here are a few ideas:

**Insulation:** In New England, making sure our walls and roof are well-insulated is the best first step we can take toward getting the most out of the fuel we use. Here's a rough guide to evaluating whether your home insulation is up to snuff:

**Insulating the Attic:** Measure the thickness of existing insulation between the ceiling joists.

- If it's 3-1/2 inches thick or less, RUN, don't walk, to your building supply and buy enough 6-inch thick fiberglass batt or roll insulation to cover the entire attic. The BTUs you save may be your own.
- If it's 4 to 6 inches, this is marginal at best. If you install 6 inches of insulation over this, you'll cut your attic heat losses roughly in half. You'll feel the difference.
- 7 to 9 inches: You're doing okay with this much insulation, but another 3-1/2 inches will still make a difference.
- 10-12 inches: Terrific- you're in great shape.

**Insulating Exterior Walls:** Walls are trickier with regard to insulation for two reasons: first, the spaces available for insulating are cavities which are usually tightly enclosed by the exterior siding and our interior walls, so they're hard to access. In addition, the depth of these cavities limits the thickness of the insulation we can install. If the house is built after 1960, the walls are likely to be already insulated. In houses built prior to 1975, the wall cavities are usually between 3-1/2 and 4 inches thick. Houses built more recently tend to have 5-1/2-inch wall cavities.

The challenge in insulating walls lies in how to insert insulation into the wall cavities while maintaining the finished wall surfaces inside or outside the building. Typically, homeowners find that they're better off hiring an experienced insulating contractor or building contractor who will install fiberglass or cellulose insulation rather than doing the work themselves.

To learn more about how to insulate walls of existing houses, the following websites might be helpful:

<http://www.weatherization.org/sidewalls.htm>

[http://extension.unh.edu/news/2007/01/energy\\_efficiency\\_sustainable.html](http://extension.unh.edu/news/2007/01/energy_efficiency_sustainable.html)

[http://apps1.eere.energy.gov/consumer/your\\_home/insulation\\_airsealing/index.cfm/mytopic=11440](http://apps1.eere.energy.gov/consumer/your_home/insulation_airsealing/index.cfm/mytopic=11440)

**Pipes and Ducts:** If you have uninsulated heating ducts or pipes, these should be insulated. For pipes, use preformed pipe insulation, 1 inch thick. Preformed fiberglass insulation with a reinforced paper jacket and adhesive lap seal is the best product, but lately is hard to find. Closed-cell foam insulation and contact adhesive also works, and is relatively easy to find, but doesn't tend to last as long on heating pipes as fiberglass insulation. Fiberglass blanket insulation with a reinforced reflective jacket is typically used on ducts.

**Heating Systems:** Our boilers and furnaces operate more efficiently and safely when they are clean and well maintained. It's well worth the money to have a qualified technician clean and adjust the burner on an annual basis.

For those of us with woodstoves, the most important maintenance task is to check the chimney to make sure it's clean. Creosote is a byproduct of burning wood (particularly softwoods) that

condenses on chimney walls, and can constitute a fire hazard. Having a clean chimney enables us to more safely burn wood as an economical alternative to fossil fuels.

**Using Our Heat Efficiently:** We can save energy (and money) by heating (and not overheating) our homes to comfort conditions only when we're there to enjoy the warmth. Here are some ways we can accomplish this:

- **Provide programmable thermostats:** Programmable thermostats are inexpensive and easy to install and use. They will automatically control heat when we're at home or away, awake or asleep. A good seven-day programmable thermostat can cost about \$40.00, and will pay for itself in less than half of a heating season.
- **Lower thermostat settings:** Studies show that we can reduce our heating costs between 5 and 10 percent for every degree we reduce the thermostat setpoint.
- **Increase our awareness:** Part of using heat efficiently means watching our temperatures and adjusting temperatures down to keep our homes from overheating.

### **Diversify Fuel Use**

When that bill for the oil delivery comes it can be a real shock. To avoid being caught in a budget squeeze, and to stretch oil supplies, many people burn wood or wood pellets in addition to oil. Burning wood in the fall and in the spring reduces the number of days during the heating season when the boiler or furnace is needed. During the winter, using a woodstove to provide comfort heating during peak times allows homeowners to run the boiler only to keep the house at a base temperature (say, 60°). Using this dual-fuel approach, a well-insulated house with an area of about 2000 square feet may require less than a tank of oil and less than a cord of wood over the course of the winter.

As this edition of the **DEC E-Newsletter** goes to print, the price of oil has fallen by about \$1.00 to about \$3.80 per gallon, depending on the dealer. This price makes the onset of winter look a bit less intimidating than last August, budget-wise, even though it's still about 50 percent higher than 2007. We hope some of the ideas expressed in this issue may help make your heating more affordable for future years.

### **Current Events**

Autumn has arrived, and with it are some interesting programs and activities in the Seacoast area worth investigating toward practicing energy conservation and supporting sustainable programs.

Here is a sampling of some local happenings:

**Local farmers' markets:** The farmers' markets which have been taking place in towns across the Seacoast, including Durham and Lee, will still be active through much of the fall. For high quality, locally raised vegetables, canned products (and some meats), plus treats, snacks, and even entertainment, these local farmers' markets just can't be beat!

You can find local farmers' markets at the following locations and times:

- Portsmouth Farmer's Market, Saturday mornings 8AM-12:30PM, City Hall Parking Lot.
- Durham Farmers Market , Mondays from 2:15 - 5:30 Pettee Brook Lane Parking Lot
- Dover Farmers Market, Wednesdays from 2:15 - 5:30 McIntosh Atlantic Culinary Academy on Silver Street
- Lee Farmers Market, Thursdays from 3:00 - 6:00 on the grounds of the old Lee fire station next to Mast Way School

If you haven't been to one yet, they're worth checking out. Get great food and support local, sustainable agriculture at the same time! For a full listing of farmers' markets and other good information, check out <http://www.seacoastgrowers.org/>

### **Developing Durham's Energy Vision**

The Durham Energy Committee is developing a chapter in the Durham Master Plan which will articulate Durham's present energy use and infrastructure, and will develop a comprehensive vision and strategy for the future. **We invite you** to share your own personal ideas and vision and help us produce this very important work. **Our next public "Visioning" meeting will be held on November 19, 2008, at 7:30 PM in the Town Council chambers.** We hope you will be part of this exciting process!

### **New Hampshire Carbon Challenge Upcoming Events**

Wednesday, October 22, 2008, 7 PM, Hampstead Public Library, Hampstead, NH : "New Hampshire's Changing Climate and What You Can Do"

Take the Carbon Challenge: Check out the Carbon Estimator- it's really terrific! Go to: [www.carbonchallenge.sr.unh.edu](http://www.carbonchallenge.sr.unh.edu)

### **UNH Office of Sustainability Upcoming Events**

Annual Student Energy Waste Watch Challenge, October 1 & 2, 2008, Durham campus: A program run by the UNH student group entitled "Ecological Advocates", the Challenge is an energy use reduction competition to engage UNH students in activities which reduce their energy footprints.

We hope you enjoy this issue of **The DEC E-Newsletter**. Please feel free to offer feedback. The Durham Energy Committee has other great projects in the works in addition to the listing above. If you'd like to get involved, please let us know!

Thanks!

Durham Energy Committee