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Greener and cleaner heating options

Ask what's new when it comes to heating a building, and answers range from traditional wood, wood pellets and heating oil to solar, biofuel and geothermal.

The Vermont Fuel Dealers Association represents 150 fuel and heating companies that collectively employ about 4,000 workers. Its products include propane, pellets, heating oil, bio fuels and kerosene.

"If you can put it in a truck and drive it to your house and burn it, we sell it," said Matt Cota, the group's executive director. Most members also sell, maintain, service and install heat and hot water equipment. The trade association provides technical training in certified heating techniques, including over 1,200 classes annually focused on Vermont's fire code.

With attention focused on alternative energy sources, it's easy to overlook the reality that in Vermont, 139,000 households – or 68 percent – rely on heating oil to warm 340,000 Vermonters. Cota estimated Vermonters consume 100 million gallons of heating oil annually.

Propane heats approximately 45,000 homes, and natural gas heats 40,000 homes, almost all in Chittenden County. Electric, wood and wood pellets comprise the remaining heat sources.

Cota said he sees big changes coming on the fossil fuel side. At a recent national convention, he said he witnessed a collective movement to "transform the industry for the 21st century" by focusing on the question of how to move to greener, cleaner fuel.

Targets were set, he said, for every drop of heating fuel to have "ultra-low sulfur" by 2011, making fuel oil "cleaner than wood, pellets and natural gas."

It's conceivable, he said, that this fuel oil – which is cleansed of particulate matter – may in the future include a mixture of renewable fuel such as bio

diesel, perhaps made from recycled vegetable wastes, fats and tallow. He noted that Green Technologies in Winooski pays college students to collect yellow grease from French fries and then distills the grease to bio diesel.

"We have a glut of petroleum right now. There's so much oil in storage, analysts predict a drastic drop in prices. There's more distillate fuel in storage than at any time since 1983," said Cota.

"It's a finite resource, of course. How long will we rely on petroleum? We could have a healthy argument.

"We have a product and infrastructure to deliver a cleaner, renewable fuel to Vermont homes," he said, adding the industry has responded in a "collaborative way to improve the product" it sells.

Ultra-low-sulfur fuels are now required for trucks and cars. While not required for heating oil, "we as an industry want it," he said. "We want everyone to be playing by the same rules so we can market our product as cleaner."

Cota noted that while pellet stoves "exploded last summer," there still isn't a consistent supply of pellets available.

"If pellets are viable, our guys are the ones to sell it," he said. "The problem has always been and will continue to be supply. If you consume 800 gallons of heating oil and get a 100-percent lock on that amount, your fuel company will get the fuel to you when you need it."

The geothermal alternative

Mike Kilburn is the owner of Dee's Electrical Service on Highland Avenue in Manchester Center, but don't let the name fool you: it's also a geothermal enterprise that helps folks capture the planet's heating and cooling attributes, depending on seasonal requirements.

The technology extracts heat from the ground. The geothermal unit moves heat from the ground in the winter and uses it to heat a home. During summer, it moves heat from the house to the ground.

Those looking to upgrade to the best furnace and air conditioning systems will only pay 10 to 15 percent more by going the geothermal route if existing ductwork is adequate and before factoring in the costs of the required ground

loop, said Kilburn. By making that switch, consumers can eliminate dependency on fossil fuels, reduce their carbon footprint and, best of all, lower energy bills, said Kilburn.

"In the real world, it would probably cost from \$10,000 to \$15,000, inclusive of everything you might need and depending on the size of the structure being heated and how well it's insulated," he said. He noted that figure doesn't include the cost of the loop or major ductwork rehabilitation.

A geothermal system works well with properly installed radiant floors, he added.

"If the radiant floor installation is done right, you only need 90-to 100-degree water. We can make that extremely efficiently with a geothermal. If a heating system is already a forced hot air system and the duct work is properly installed, there's an appliance about the size of a refrigerator that attaches to the infrastructure to replace the furnace with geothermal," Kilburn said.

In his own house, he sees 3.5 to 4 units of heat for every unit of power he puts into the system. This translates into monthly electric bills of under \$70 to \$300 for a 2,500-square-foot-house, inclusive of heat, hot water, lights and other electrical items.

Geothermal systems qualify for up to 30-percent energy tax credits without caps and can be rolled over to the following year if the technology meets Energy Star standards.

Kilburn said those who live in Vermont's southern grid get 90 percent of their power from a non-fossil-fuel source, utilizing a combination of nuclear and hydro.

"At the moment, we have a pretty green grid, perhaps the greenest in the world for its size," he said.

Dee's Electric has been in business since 1964 when his father launched it to handle electrical and refrigeration work. In the early 1970s, it expanded to include air conditioning and air-source heated pumps.

In the early 1980s, the company installed a few geothermal units. By 2000, Kilburn said, his office "once again began promoting geothermal that we know will be an important piece of our energy future."

Energy with an agrarian twist

Experiments with bio diesel are underway on some Vermont farms.

"We have the infrastructure if we can get to a point where our farmers who have been hit so hard can grow, crush and manufacture crops into bio diesel and sell to locally owned fuel companies," said Heather Darby of the University of Vermont Extension.

Sometimes, a mix of crops and components is required to meet particular specifications for bio diesel, she added.

A case in point, she said, is John Williamson, proprietor of State Line Farm in Bennington, which is experimenting with different kinds of crops – sunflowers and soy, among others – to determine their viability to turn into bio diesel.

Williamson's is the first farm in Vermont that is functioning on bio diesel fuel made from its own crops on its own land. He said he is experimenting with 50 to 60 oil seed crops, primarily sunflowers.

"I'm always experimenting with crops," including camelina, which is a flax, and field pennycress, a member of the mustard family. These are alternative oil seed crops but less mainstream than soy, sunflower and canola.

His goal: to engage multiple farms in the area to grow oil seed crops and bring them to him to make bio diesel, said Williamson.
