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## Jaffrey firm may hold key to easing nation's energy woes



A Telegraph Column By **Dave Brooks** ⇒ [More Dave Brooks Columns](#)

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**Staff photos by Don Himself**

Charlie Niebling, general manager of New England Wood Pellet in Jaffrey, above, walks by stacks of wood, which will be processed into wood pellets; below, he shows the finished product. The firm could be the test site of wood pellet-burning biomass energy unit that could someday be used to provide power for companies.

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Call it homegrown electricity, the ultimate response to an overburdened power grid and utility rates you'd rather not contemplate – even to global warming.

It sounds good, generating your own power on site, but aside from the very rare individual living off the grid with solar cells and a wood stove, it doesn't exist in New Hampshire. Creating electricity is just too difficult and too expensive to be practical.

Enter New England Wood Pellet, a Jaffrey company that has turned trees into burnable wood-stove pellets for 11 years. If all goes well, this fall it will be the beta-test site for a Texas company called Zilkha that has developed what it says is a better way to generate electricity by burning wood, making do-it-yourself power economically feasible.

"They're the first to crack the nut of the wood-fueled, directly fired, gas turbine generator," said Charlie Niebling, Wood Pellet's general manager.

"There hasn't been much innovation in electric power generation since World War II. . . . We're going to be seeing a lot more of this in years to come," added Niebling, who until last year was one of the bigwigs at the Society for the Protection of New Hampshire Forests.

"We're just barely scratching the surface on the technology revolution that's going to take place in this country, whether we like it or not."

The 60- by 80-foot building, which must first pass muster with Jaffrey's Planning Board, will house the Zilkha Biomass Unit. (Zilkha is the last name of the company founder, who made a fortune drilling oil before turning to renewable energy.)

The unit is built around a turbine generator, which like all turbines combines hot pressurized air and fuel to create a burnable mix. This mix is ignited to create a potent blast that spins electric coils in a magnetic field to produce electricity.

Making a finicky gas turbine work with solid fuel is the devil that had to be solved by the engineering details. Zilkha says it has developed a unique pressurized external combustor that can operate at the needed temperature and pressure, as well as a "proprietary cyclonic separation system" to keep unburned particles from gumming up the works.

Just as interesting as the technology is the business plan.

Zilkha is looking for companies that consume at least 500 kilowatt-hours a year in areas with expensive electricity, and which produce at least 3 dry tons per hour of wood byproduct such as chips, sawdust or shavings that can fuel the turbine.

(Three tons an hour sounds like a lot, but not by Wood Pellet's standards. It processes about 10 tons of dried wood – made from 18 tons of green wood – each hour of each day of the year.)

Zilkha builds the power plant on the property of such companies, but keeps ownership and does all the operating. The company provides wood fuel and buys the resulting electricity – at what promise to be less-than-PSNH rates – with Zilkha selling any excess electricity into the power grid.

The patented turbine and the use of on-site fuel – no transportation cost – make it feasible for relatively small wood-producing companies to cut free of PSNH. Sawmills are an obvious customer, but so are large construction firms that end up with a lot of wood debris, although burning construction debris has pollution issues; as are North Country ski areas, which use a ton of electricity and are surrounded by trees and logging companies.

The monetary benefits for Wood Pellet are several, said Niebling. It'll get about 1.3 megawatts of electricity from Zilkha at cheaper rates, and it'll also be able to use the 1,000-degree exhaust from the generator to help do the wood-drying that is central to its business.

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Currently the drying is done with a conventional furnace, powered by about 15 percent of the trees the company buys from loggers. Wood Pellet will still have to divert some of those trees to power Zilkha's unit, but the turbine's greater efficiency should reduce the amount of fuel needed, leaving more trees to sell to customers.

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Overall, Niebling said, "There are certain guaranteed minimum savings in the contract, and we hope that the savings will be considerably greater." He declined to give numbers, aside from saying they were in the six-figure range.

But there's an attraction for company owner Steve Walker that's above and beyond the money, Niebling said.

Tests indicate that the Zilkha unit will produce fewer pollutants than Wood Pellet's current furnace dryer. That doesn't even count the indirect reduction of pollutants caused by not buying 1.3 megawatts of power from a PSNH plant.

This reduction could have a business benefit by helping New England Wood Pellet meet the European Union's strict greenhouse-gas reduction goals, thus keeping overseas markets open.

But in a world where energy generation is increasingly uncertain, expensive and unhealthy, sometimes the bigger picture holds sway, too.

"Steve is driven by a renewable-energy mission," Niebling said. "The opportunity to become completely self-contained, utilizing renewable, indigenous fuel, was too much to pass up."

***Science from the Sidelines appears Wednesdays in The Telegraph. David Brooks can be reached at 594-5831 or [dbrooks@nashuatelegraph.com](mailto:dbrooks@nashuatelegraph.com).***

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