

For Earth Matters column, Brattleboro Reformer
By Ralph Meima, 1/12/08

Renewable Community Energy: New Prizes, Old Games

We may be on the threshold of a discontinuity in the larger aspects of daily life. Driving it (no surprise) are rising energy costs, changing availabilities of energy media, and concerns about climate. The year 2018 may look a lot different from 2008. And one victim may be: the furnace in your basement!

There are good reasons to think that the biggest changes coming our way will affect the most prosaic, “heavy-duty” aspects of life, like heating, appliances, building codes, where food comes from, where we shop, and small-scale industry in your own town or neighborhood: in other words, everything with energy as a key input or output. With regular gasoline now at \$3.15 a gallon, natural gas prices rising, electricity rates set to rise, and both coal and nuclear under ever-tighter scrutiny, a transformation in energy is guaranteed.

But, back to your furnace. There is something called district energy. Used extensively in Northern Europe but still rare in the US, modern district energy systems consist of large-scale, highly efficient central boilers for a town or campus, with underground hot-water pipes that heat public, commercial/industrial, and residential buildings within their “districts.” District energy systems may also co-generate electricity. In Sweden, for example, district heating warms half of all the buildings in the country, and three-quarters of all apartment buildings. Once upon a time, all these buildings had ordinary, inefficient furnaces burning oil or coal. Today, no traces remain. In their place are pipes and heat exchanger “substations” linking each building served to the thermal distribution network. And the most common fuels burned are climate-friendly, renewable wood chips, trash, and non-toxic demolition waste. The personal furnace has gone the way of the ice man. It makes no sense. The new paradigm is cheaper, more reliable, and more sustainable. But it has yet to take root in the USA.

This will change. District energy advocates and foreign companies are working hard to awaken our slumbering sensibilities. We may witness a true paradigm shift, with much more than the hardware changing. Fundamentally, this is a collective – as opposed to private – solution to building heating. It will require very different forms of ownership, governance, and financing. It is also weighty in the economy of a town. According to an estimate by Brattleboro activist Hervey Scudder, our town imports at least \$30 million worth of heating oil each year, for all uses. That is \$2,500 per inhabitant, and this figure has probably risen appreciably in the years since that estimate.

Few want this to continue. There is a huge incentive to deliver cheaper, better alternatives. And if, for example, IT entrepreneurs saw opportunities to capture about 2-5% of your monthly household budget through cell phones, cable TV, home computers, the Internet, etc., expensive energy may put more than 10-20% up for grabs. Such is the scale of the prize. And biomass district energy has key competitive advantages.

Oil and propane dealers must be concerned. If I were an owner of a saw mill, paper mill, or commercial forest, I would be very curious about potential new revenue streams. And from a

community perspective, we should be asking how district energy might affect everything in our town from rail and truck traffic, to the nature and siting of new industries, to expansion of forestry, to opportunities for cultivating fast-growing energy crops, to air quality, to allied biodiesel and cellulosic ethanol production. How will the economy be transformed?

Biomass-fueled district energy systems can be the engines of whole new regionally based economies. The entire supply chain we see in today's global oil economy gets localized: raw fuel sourcing, transport, refining, storage, combustion – all local. That sounds great, right? But ask who will own and control these systems. Municipalities? State-legislated districts? Co-ops? Private investors? And whose interests will they serve? As they warm and light our homes, will they burn cheap slash from Georgia, contract engineers from Minnesota, and line the pockets of investors in Texas, or will they burn chips from Windham County, employ Vermont-based talent, and return dividends to Brattleboro tax payers, our school system, and the Catamount Health Plan's endowment? Will your hard-earned money circulate locally to employ your neighbors and educate your kids, or evaporate into the global economy?

Key decisions lie ahead about the new system about to literally rise from the “fly ash” of the old. And it's like déjà vu all over again. The new struggles have only just begun.

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