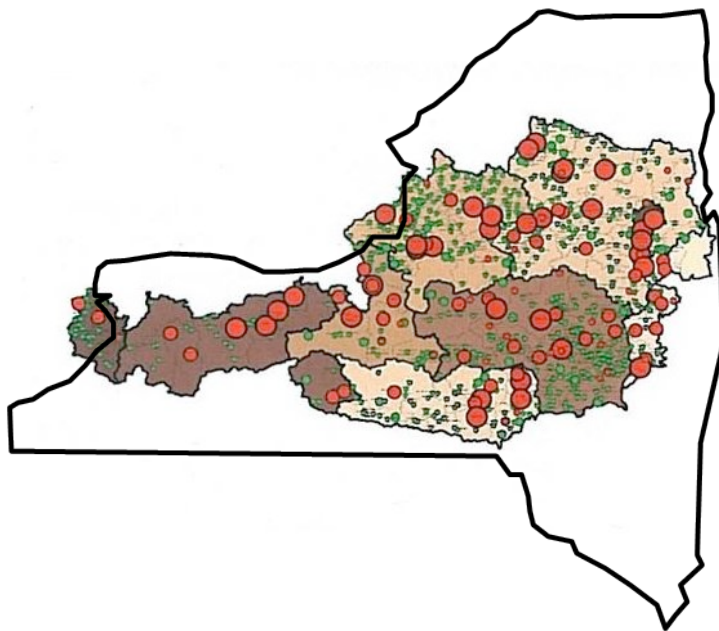


Local Biomass Energy

By Tony Nekut

The time has come to plan and take action to address energy and climate issues. It is generally recognized that a portfolio of renewables, combined with serious conservation efforts, will be required to meet our energy needs in the face of looming fossil energy shortfalls and attendant global warming.

Here in Upstate New York, we can use biomass from local forests and farms to supply a substantial portion of our energy needs. Biomass, the cellulosic structural component of plants, is a natural form of stored solar energy. It is "carbon neutral" because plants absorb the same amount of atmospheric carbon during growth as is released to the atmosphere when they are burned as fuel. It can be used directly as a solid fuel or as the feedstock to make liquid and gaseous fuels. Biomass is a low density solid fuel which is best used locally for space heating or combined heat and electric power generation. This model of localized production and utilization is already widely practiced in Europe. Closer to home, Vermont initiated its *Fuels for Schools* program 15 years ago; 20 percent of the state's public school students currently attend wood heated schools. Now more than ever, Vermont taxpayers are realizing the benefits of planning foresight.



A map of Austria superposed on the outline of New York at the same scale. There are over 1000 district heating plants (green dots) with average thermal capacity of 1MW and over 300 CHP plants (red dots) with total electrical capacity of 350 MW. Biomass supplies about 15% of Austria's current energy needs; plans call for 20-25% by 2020.

How can we go about utilizing biomass in our region? The process has already begun, driven by rising fossil energy prices. The current price of wood fuel is only ten percent of fuel oil for equivalent heating energy content. This price spread is already motivating a growing list of regional industries to convert to wood fuel. Most of the wood being used comes from traditional waste streams, but these are now fully utilized. At present, the local biomass supply is largely undeveloped and we face a classic chicken-and-egg problem: farmers and forest owners are not motivated to produce biomass without a reliable market and potential biomass customers cannot plan projects without reliable supply chain.

Lack of public awareness about biomass energy is also a contributing factor. Most people are familiar with wood stoves and high oil prices are motivating many homeowners to return to traditional wood heating. Pellet stoves are also gaining popularity. Although pellets cost twice as much as firewood on an

energy basis, pellets stoves are somewhat more efficient and less polluting than most wood stoves. Pellet fuel is easy to handle and the stoves are largely automated which makes pellet heating more convenient than traditional firewood heating. Bulk biomass in the form of wood chips or grass bales are the least expensive forms of biomass but require larger, more expensive systems than most homeowners can afford. Such systems are best suited for supplying heat to large buildings, such as schools, or hot water to groups of buildings connected to a central plant in a district heating network. A state-of-the-art wood chip fired boiler will be installed this Spring at the Cayuga Nature Center as part of a NYSERDA funded public demonstration project.

There are many individuals, groups, and institutions here in Tompkins County who are interested in biomass and renewable energy. The County recently added an Energy and Greenhouse Gas Emissions element to the County Comprehensive Plan. The Towns of Caroline, Danby, and Dryden (and maybe others?) have groups looking into energy issues. As part of the sustainability effort at Cornell, the College of Agriculture and Life Sciences has launched CURBI (C. U. Renewable Bioenergy Initiative) to specifically evaluate biomass energy technology. Cornell Cooperative Extension is engaged in efforts to build awareness of biomass energy in the farming and forestry communities. This is only a small sampling of many local grassroots efforts already underway.

Although its potential is large, locally grown biomass cannot supply all our energy needs. Careful planning and cooperation among stakeholders is needed to optimize the benefits of biomass energy. Potential benefits of sustainable local biomass production and utilization include keeping money in the local economy and creating “green” jobs, improving forest health and value, improving soil, water and air quality, sequestering carbon, and conserving petroleum. It is indeed fortunate that easily exploited petroleum reservoirs are being depleted as we increasingly recognize the threats posed by human sourced global warming. This coincidence provides us with the motivation and opportunity to rethink how we produce and use energy.

Tony Nekut is a citizen and forest owner interested in promoting development of local biomass energy. This article originally appeared in the Tompkins Weekly 2008 “Signs of Sustainability” series.