Mad River Valley Energy Series

Presented by the Mad River Valley Planning District with support from the Vermont Energy Climate Action Network

Part 4 of 5:

November 15, 2011
Big Picture Theater, Waitsfield, VT
Summary by Vickie Trihy

MRV Biomass Analysis presented by Cecilia Danks, PhD and Susannah McCandless, PhD

The use of wood for home heating in Vermont has increased 40-60% since 2000. For the past few years, the Community Biomass Project (CBP), a partner project of UVM, Vermont Family Forests, and the National Forest Alliance, has focused on opportunities for increasing the sustainability of the Mad River Valley's local wood supply as part of an overall goal of achieving energy independence in heating and power generation. A survey was conducted to find out how many homes were heated with wood or wood products, where the supply came from, how much it cost, and reasons homeowners chose this heating source. Results of the survey also indicated what conditions responders believed were necessary for sustainability: protecting the environment, maintaining aesthetic and recreational values, providing a fair price to forest landowners and loggers, and using local sources.

A study examined the Valley's potential for producing its own biomass supply according to the sustainability criteria the survey developed. After excluding forest lands that were not suitable for harvest due to slope, environmental impacts, and other impediments, it determined that the Valley could produce 23,000-50,000 green tons per year. That would provide a little less than 5 to a little more than 10 cords of wood per household, which would be more than enough to supply all the homes in the Valley as well as Harwood. The cost could be higher than what people are accustomed to paying.

More information can be found at http://www.uvm.edu/forestcarbon/biomass

Harwood Union Forest Project, presented by Kimberly Coleman, UVM

This forest education and mapping project sprang out of the Community Biomass Project, and is a partnership between teachers, staff, and UVM. The goals of the project are to provide forest-based education opportunities for Harwood students and write a stewardship plan for Harwood's 180-acre forest. Harwood is one of 45 Vermont schools that now heat with wood, some of which could conceivably be harvested from the surrounding forest. This program engages students and the school community in learning more about sustainable forestry and watershed science.

The project involves UVM students and seventh-graders at Harwood in service learning activities, including mapping forest trail systems, and provides resources for teachers interested in forest-based education.

Biomass Heating Systems, presented by David Frank, Sunwood Biomass

Biomass heating systems can use wood, chips, pellets, and even grass. Biomass heat is cheaper than oil or propane, and is carbon neutral, because a rotting tree creates more carbon dioxide than the same tree burned for heat.

Wood stoves heat only about thirty to sixty percent of an average home. Pellet stoves are more efficient, thermostat controlled, don't require a chimney, and have lower emissions. They can be integrated with solar hot water systems. Building your own bulk storage bin for pellets can lower costs over purchasing pellets by the bag. At pelletheat.org, you can plug in your current fuel cost and compare it with what it would cost to heat with pellets.

A gasification boiler burns residual gases, making it 85-90% efficient. Energy retrofits to the building should be done before conversion to a new heating system

Heating Homes & Greenhouses with Compost, presented by Gaelan Brown, Compost Power Network

The Compost Power Network develops best practices for using composted woody biomass to generate emission-free energy. A large compost pile of bark mulch and wood chips creates a significant amount of heat which can be collected by running water lines through the pile. A residential pile can generate 15-25 BTUs per hour, making the pile the equivalent of 5 cords of wood. Heated water can be used for radiant heating or domestic hot water. The pile, created from forest waste, thus generates energy and ultimately creates soil which in turn can grow food or more trees.

Composting piles can be used to heat greenhouses and produce soil to use in them. They could even be designed to produce natural gas to power vehicles.

Information about how to construct a composting pile for heating can be found at compostpower.org