



Vermont Superintendents Association
School Energy Management Program

The Vermont Experience with Wood Chip Heat in Public Schools.

Energy From Wood Conference
North Carolina State University
March 14, 2006
Norm Etkind, Director School Energy
Management Program

Burlington Free Press February 21, 2006

- *HINESBURG -- The boiler room at Champlain Valley Union High School had a distinct whiskey-barrel odor Thursday morning as 60 feet of conveyor belts dumped load after load of oak wood chips into a massive furnace.*

When maple chips are burned, the smell is a little "sweeter," said Kurt Proulx, the school's director of maintenance.

"It's a beautiful system," he said "It purrs like a kitten."







Vermont's School Experience

- 25 Schools over 15 years installed wood chip systems
- Another 5 now approved for construction
- This is comparable to 400 schools in North Carolina
- 10% of student population goes to wood heated schools
- Schools range in size between 23,000 ft² and 270,000 ft², but average is 110,000 ft²
- 12,000 tons of wood chips per year
- Average annual fuel cost is .24/ft²
- Woodchip fuel costs:
 - 44% compared to oil
 - 10% compared to electricity

Why Schools?

- Large buildings in Vermont
- On-site maintenance staff
- Public benefits are an important consideration
- Public funding at 50 – 90% - Cost-effectiveness Test
- Local promoters – pushing the technology envelope
- Not only schools – state bldgs etc.
- Locating forester part-time at Energy Efficiency Division of Department of Public Service

Benefits of Biomass Utilization

- Sustainable Renewable Fuel Source
- Waste Management Strategy
- Local Economic Development
- Greenhouse Gas Benefits
- Low cost fuel



Problem Chips



Good Chips



Consistent size, shape and moisture content

Fuel Transport and Delivery



"Walking floor" trailer



Dump truck

Automated Fuel Handling



Wood-Chip Combustion



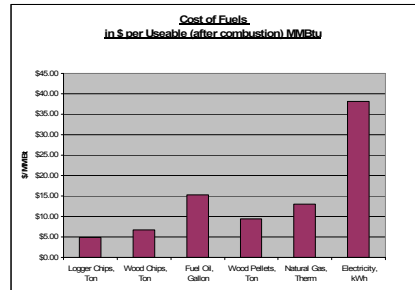
Messersmith boiler



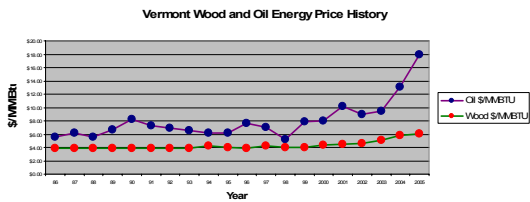
Chiptec Combuster



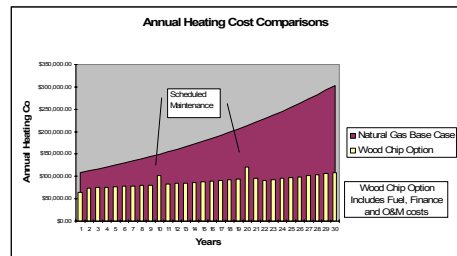
Energy Cost Comparison



Schools – Fuel Prices



Typical impact on school budget



Vermont Fuels for Schools



Program Partners

- VT Superintendent's Association
- VT Dept. of Education
- VT Dept. of Public Service
- VT Dept. of Forest, Parks and Recreation
- US Forest Service
- Biomass Energy Resource Center



A national non-profit helping to develop energy projects using sustainable biomass resources for environmental benefit and local economic development

How BERC Can Help

- Identify barriers to biomass utilization
- Identify market opportunities
- Evaluate existing resources
- R&D on key technologies
- Apply appropriate technologies
- Provide unbiased technical assistance
- Facilitate key projects



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