



Case Study in Biomass Heating

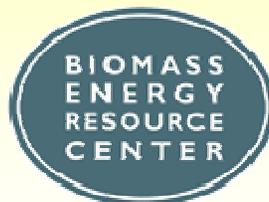
GovEnergy 2007 Conference

Energy Training and Expo for Federal Agencies

NEW ORLEANS, LOUISIANA

AUGUST 6-8, 2007

**Tim Maker, Senior Program Director
Biomass Energy Resource Center**

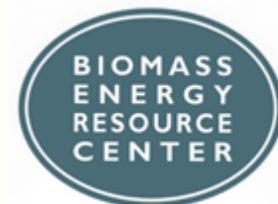




Biomass Energy Resource Center (BERC)

BERC is a national not-for-profit organization working to promote responsible use of biomass for energy.

BERC's mission is to achieve a healthier environment, strengthen local economies, and increase energy security across the United States by developing sustainable biomass systems at the community level.





What's an automated wood heating system all about?

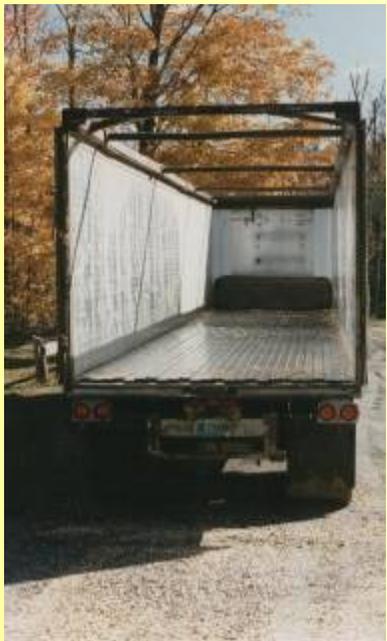
- Fuel, fuel supply and transport
- Fuel storage on site
- Automated fuel handling
- Combustion system and controls
- Emissions and stack



Fuel Sources



Fuel Transport and Delivery



Fuel Transport and Delivery



“Walking floor” trailer

Dump truck



On-Site Fuel Storage



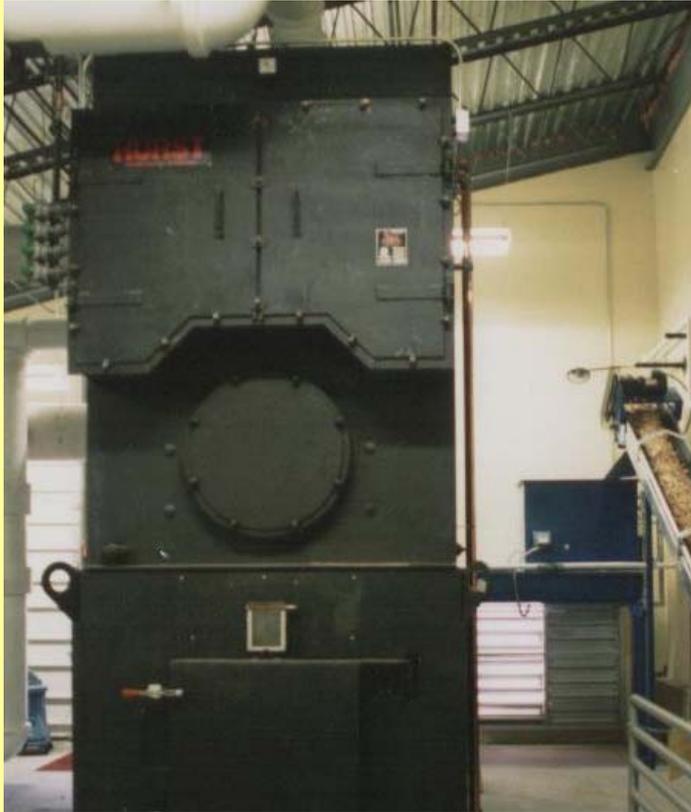
Below-grade bin



Automated Fuel Handling



Wood-Chip Combustion



Wood boiler



Wood and backup boilers



Stack & Emissions Control





How does the wood boiler plant fit with the building?

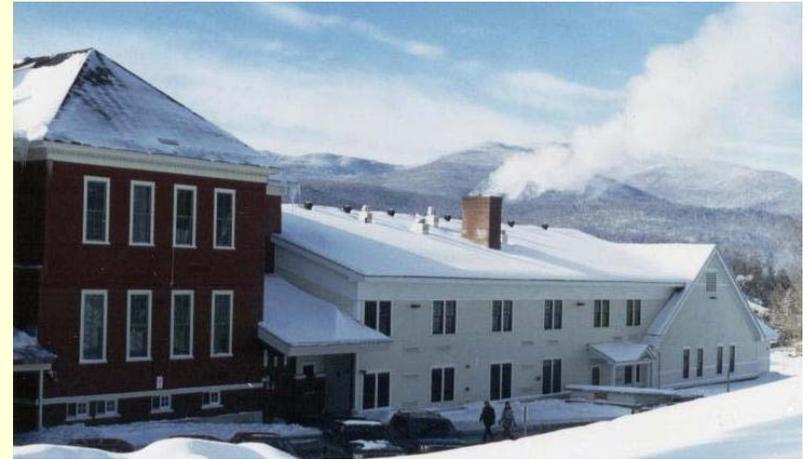
- Boiler room & bin attached to building
- Separate boiler house
- Integrated into building design



Building Space for Wood Systems



Attached



Integrated



Separate



Building Space for Wood Systems



Example: Integrated into Building Design





What Types of Facilities Does Automated Wood Heating Work In?

- Single buildings
(hospitals, office buildings, prisons)
- Schools
- Housing developments
- Campuses and office parks



Single Buildings



State Office Building



Hospital



Schools



Fuels For Schools –

First school in western states – initiated by USFS

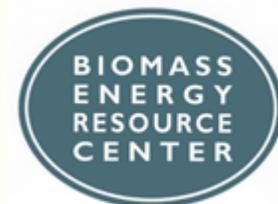
Darby Schools, Montana



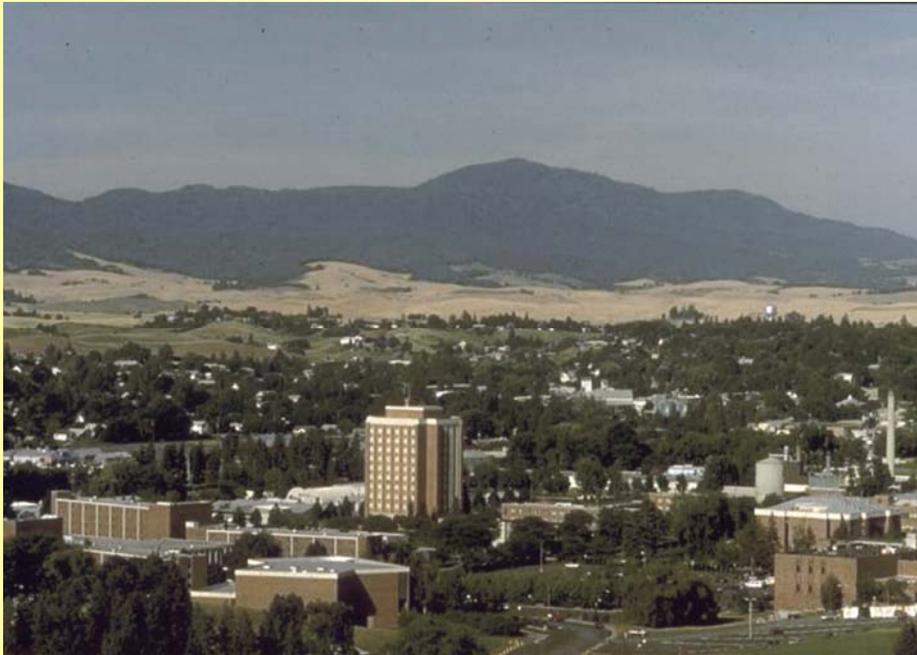
Housing Developments



Green Acres Family Housing

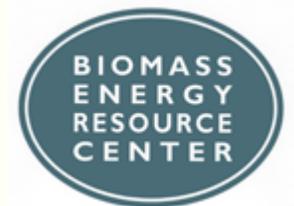


College Campuses



University of Idaho, Moscow

Central plant on
university campus



Office Parks



Montpelier State Capital Complex Plant

Case Study: Boulder County Open Space & Transportation Complex



Longmont, Colorado





Project Concept

Build central wood heating plant into design of new transportation and vehicle maintenance complex for Boulder County Transportation Department in Colorado.

Use “hazardous fuel” wood, cut from County lands to reduce fire threat, as the fuel for the new plant.



Project Development

BERC was hired by Boulder County as wood energy consultant, working closely with project architect and engineer.

Wood boiler house was designed to include a central boiler room with wood and backup boilers, fuel storage bin, and office space, with BERC giving input on integrating the wood system into the overall building design.

BERC also helped the County to set up a unique fuel transport and storage system using moveable containers.



Vendor Selection

BERC used its unique, copyrighted performance specifications to put the wood boiler system out to competitive bids.

BERC helped Boulder County Transportation to evaluate bids and select the successful vendor.





System Integration

The building design was modified to fit the requirements of the selected vendor, with BERC assisting the architect and mechanical engineer in fine-tuning the designs.

The overall project, including the construction of all buildings and the installation of the selected wood boiler system in the boiler house, was put out to general contractors for competitive bidding by the project architect.

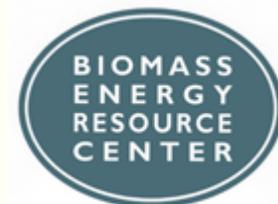




Construction

The selected general contractor carried out site work, construction of all buildings, roads and parking lots, and the installation of the selected wood energy system in the new boiler house.

The wood system vendor selected by the owner became a subcontractor of the general contractor, to assure proper coordination during the installation.



Central Wood Boiler House



Boulder Country Transportation



Wood Storage & Handling



Boulder County Transportation



Wood Boiler Room with Backup Gas Boiler



Boulder County Transportation



Wood Storage & Delivery - Container System



Boulder County Transportation



A vertical strip of wood chips runs down the left side of the slide.

Wood Heating Projects,

Lessons Learned: What Not to Do!

- Only think about wood supply after it's built
- Hire an engineer who's never done wood before
- Oversize the wood boiler, or undersize it
- Buy a wood system based on the paint job
- Let the system vendor be your wood energy expert
- Don't bother to talk to the person who'll operate it



Contact Information

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