Advanced Wood Biomass Heating

Julie Kies
Forest Products and Biomass Program Manager
Montana Department of Natural Resources and Conservation
Benefits of Wood Biomass Energy

- Reduce and stabilize fuel costs
- Provide fuel flexibility
- Local renewable fuel
- Clean, efficient, scalable
- Keep dollars in regional forest economy
- Support forest management
Traditional Wood Fuels

Cordwood
- Residential Heating
- Small buildings

Chips
- Commercial and institutional heating
- Utility-scale power production

Pellets
- Residential Heating
- Small Commercial and Institutional Heating
Where Wood Works Best

• Where heat demand and/or fuel costs are high
• With facility enthusiasm (& capacity)
• Near a forest or wood pellet fuel source
• Near local logging infrastructure (mills/chippers/trucks)
• Near other wood energy users
• New construction projects
Biomass Heating System Configurations

Fuel Storage
- Pellet Silos
- Slab chip bins
- Below grade chip bins

Combustion Equipment
- Stoker/fixed grate
- Stoker/moving grate
- Pneumatic/suspension
- Fluidized bed

Emissions Control Equipment & Stack
- Single cyclone
- Multi-cyclone
- Baghouse
- ESP
Small-scale thermal biomass energy technologies
Biomass Thermal Energy Installations

Clark Fork Valley **Hospital**, Plains, MT

Grant County Regional **Airport**, Oregon

Victor **School**, Victor, MT

Bridger Bowl **Ski Area**, Bozeman, MT
Proven Returns on Investment

• Montana biomass energy users saving 25-75% off energy costs
• Displacing 50-90% of fossil fuels
Thompson Falls School
Fuel Cost Savings

Projected Heating Costs if Using 100% Oil, $108,331

Savings $63,451
Savings $61,392
Savings $31,703

Actual Heating Costs, $30,959
$27,499

$160,000
$140,000
$120,000
$100,000
$80,000
$60,000
$40,000
$20,000
$0

2005 2006 2007 2008 2009 2010

Projected Heating Costs if Using 100% Oil
Actual Heating Costs
Grants and Assistance for Wood Biomass Energy

- **Grants**
  - Preliminary technical/economic feasibility assessments (up to $3,500)
  - Engineering and design

- **Biomass Resource Supply Assessments**

- **Guidance on Financing Options**

- **Tours of Existing Biomass Energy Installations**

**OTHER:**
Wood Innovation Grants, USDA Forest Service
USDA Rural Development

Website: [http://dnrc.mt.gov/forestry/assistance/biomass](http://dnrc.mt.gov/forestry/assistance/biomass)