



North Dakota Fuels for Schools Feasibility Studies

Participants

The North Dakota Forest Service contracted the Energy & Environmental Research Center at the University of North Dakota to perform a feasibility study under the Fuels for Schools Program considering utilization of biomass energy in public institutions.

Goal

The goal of the project was to provide technical support for the feasibility of wood heating systems at three institutions in the Bismarck–Mandan area: the Dakota Adventist Academy, the United Tribes Technical College, and a proposed new public middle school in Mandan, North Dakota.

Scope

Tasks performed during this project included:

- A resource assessment of wood for the study area.
- Determination of cost, availability, and quality of biomass supply.
- Determination of capital expenses, potential energy savings, and return on investment by using wood for fuel.

Results

- The Bismarck landfill produces sufficient quantities of acceptable-quality wood chips on an annual basis to supply heating fuel for four to six institutions.
- Wood chip delivery costs differ depending on the transportation method used and location of the facility, as shown in Figure 1.
- About \$40,000–\$50,000 can typically be saved in annual heating costs by using wood chips as a fuel source.
- Capital expenses range from \$300,000 to \$350,000 for 6–7 MMBtu/hr wood heating systems (Figure 2).
- Simple payback periods average 6–7 years.

Conclusion

Wood heating systems are an economically viable option for institutions in the Bismarck–Mandan area. The dramatic rise in the cost of fossil fuels creates a good opportunity for lower-cost biomass fuels, which benefit both the school and the taxpayer in significant heating savings for public facilities.

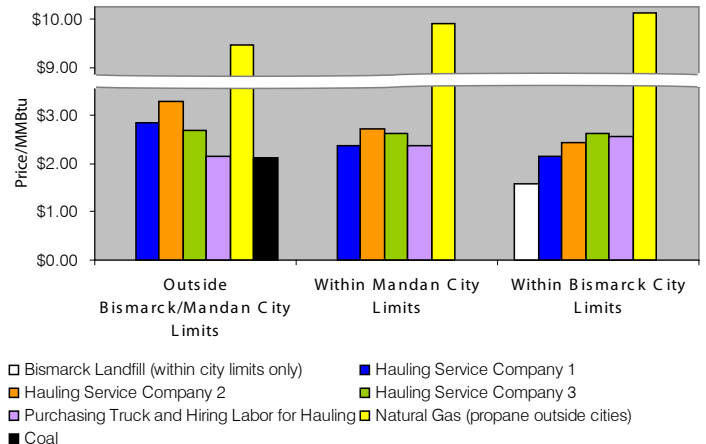


Figure 1. Comparison of wood chip costs by transportation method and fossil fuel prices for the Bismarck–Mandan area.



Figure 2. Example of a wood heating system (www.chiptec.com).

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