**FACT SHEET**

# Cofiring Biomass at the University of North Dakota

A project exploring the benefits of using biomass fuels with coal

## Participants

Through a U.S. Department of Energy grant, the Energy & Environmental Research Center at the University of North Dakota (UND) teamed with the North Dakota Department of Commerce Division of Community Services.

## Goal

The goal of this project was to demonstrate the feasibility of cofiring biomass with subbituminous coal at UND's steam facility.

## Scope

The project, initiated in October 2000, examined the feasibility of using biomass in a UND boiler by:

- Assessing biomass availability within 100 miles.
- Designing a biomass-handling system.
- Test-firing up to 28% sunflower hulls with subbituminous coal.
- Evaluating the engineering and economic feasibility.

*University of North Dakota steam facility.*

## Benefits

**Increased Community Wealth**

- Low-cost disposal of renewable residues for local businesses.
- Demonstration of how using biomass can enhance the use of local coal resources.
- Increased economic returns to both the facility and the surrounding area.
- Creation of jobs.
- Creation of new business opportunities for low-value biomass resources.

**Positive Environmental Benefits**

- Reduced emissions ($SO_x$, $NO_x$, air toxic metals, and zero-net gain of $CO_2$).
- Reduced landfill burden.

**General Benefits**

- Demonstration of the benefits and challenges of using biomass in district energy systems specific to universities.
- Creation of markets for residue fuels otherwise left unused.
- Increased fuel flexibility and energy independence.

## Results

UND has the economic opportunity to use sunflower hulls at $15/ton to offset some of its $30/ton coal purchases. The hulls were determined to be the most promising biomass

*Sunflower hulls, a potential biomass fuel source.*

resource within the region. Firing of 28% sunflower hulls with coal yielded a 15% reduction in sulfur emissions and $NO_x$ emissions, with no increase in stack opacity. Physical testing determined that no significant modifications would be required to the existing solid fuel-handling infrastructure, and sunflower hull storage and metering could be accommodated. An investment of $400,000 would enable cofiring of sunflower hulls at a 5-year payback. UND is currently seeking support for long-term evaluation of firing sunflower hulls.


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