City of Franklin

Eco-Friendly Alternative for Heating City Buildings
How We Did It!

A Simple Biomass Heating Project
Hot Water Heating District
City of Franklin, MN
Biomass Project in Franklin
How We Did It!

• Proposed by a biomass pellet manufacturing business to build a facility in Franklin.
• The City set up a TIF District
• Excitement about using locally grown agricultural waste products for heat.
Bio-Mass Fuel Pellets

Photo by Tom Cherveny West Central Tribune
How We Did It!

• The manufacturing plant never built in Franklin.

• Dan Reek, Rural Energy Connections

• Reek provided assistance with implementation, design, & funding
Bio-Mass Boiler Building
A pellet auger lifts the pellets (fuel) from the bin to feed drop tubes. The sensor checks the drop tube pellet level every hour and adds pellets until the hoppers and drop tubes are filled.
The Auger
The Boilers

Photo by Dan McGonigle Pinchtown Publishing
Two boilers burn the pellets to heat water to 190°F and pump the hot water to the water-to-water heat “plate exchangers” (which extract heat) and returns the water back to the boilers at 160°F. These pumps run the entire heating season.
The plate exchangers transfer heat (not water) from the “open system” (vented) boiler piping loop to the “closed system” pressurized distribution piping loops.
Bio-Mass Heating District

- City Hall
- City Shop
- Fire Station
Buildings with Bio-Mass Heat
The System

- Each building has its own small circulation pump in the boiler building. These pumps run the entire heating season. The closed system hot water (180°F) is circulated by underground insulated piping to the other buildings and circulated back to the plate exchanger.
The Pumps
When heat is needed, a thermostat in each building turns on a fan which extracts heat from the water to warm the building. Warming the blowing air cools the closed loop system water from 180°F to 150°F.
City Hall Furnace
“Zoned” Heating System
“Zoned” Heating System
The System

Additional upgrades to the City Shop
Pellet Burner Project: $71,582.52
Overhead Doors $10,908.54
Total Project Costs: $82,491.06
Grant Funds: $74,863
Net Cost to City: $7,628.06
With only one completed heating season, the savings are difficult to assess.
This past winter of 2011-2012, the savings were approximately 37% less than previous years’ average heating costs.
Future savings are anticipated to be higher and in the 50-55% range.
Funding Provided By

- American Recovery and Reinvestment Act
- Minnesota Department of Commerce EECBG Grant
- City of Franklin
- Renville County HRA/EDA
Because the city’s project was funded primarily by grant dollars, the payback figures are significantly less than a typical installation.

It is expected that there would be a 5 to 10 year payback on future similar projects.
Contractors/Participants

- Rural Energy Connections, Morton & Eden Prairie, MN
- JL Nelson Construction, Franklin, MN
- O & S Construction, Bird Island, MN
- Fahey-Buboltz Tiling, Franklin, MN
- North Star Plumbing and Heating, Morton, MN
- All-Phase Electric, Franklin, MN
- Central Boiler, Green Bush, MN
- Class Act Outdoor Boiler, Montrose, MN
- MNVAP Solid Fuel Pellets, Raymond, MN
A unique feature of this project is that all of the contractors were local and the materials were Minnesota made.
Lessons Learned

- Compliance with prevailing wages
- Contractors vs. engineers
- Pellets
- What to do with the ash
- Training for operations
- Working out the kinks
BIOMASS HEATING FACILITY

Heating three city owned buildings with renewable energy

Funded by the City of Franklin - MN Dept of Commerce - ARRA Act

281 3rd Street
Franklin City Hall
320 2nd Avenue East
PO Box 326
Franklin, MN 55333
507-557-2259
franklin@mchsi.com

For More Information

Photo by Tom Cherveny West Central Tribune