

Benton Area School District

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Background

Benton School District
600 Green Acres Rd.
Benton, PA 17814
<http://www.bentonsd.k12.pa.us/Page/1>

USDA Natural Resource Conservation Service
<http://www.nrcs.usda.gov/>

Benton, Pennsylvania, located in Columbia County, is home to the Benton Area School District. In an attempt to reduce their high bills, they began a project to install a biomass boiler to heat three of their school buildings. During the project, the steps were contracted out to various organizations. The project was also supported by Pocono Northeast Research and Development Council, United States Department of Agriculture: Natural Resources Conservation Services, and the Pennsylvania Department of Environmental Protection. The steps were designed to approach the project from a cooperative, market based, and watershed management standpoint. These different approaches influenced the

steps that include, but are not limited to, growing of the native grass, harvesting the native grass, pelletizing the product, and burning the finalized pellets.

The process begins after winter, when the grass is harvested by local farmers using already owned farm equipment. After harvesting the grass, it is pelletized by Pocono RC&D and other contributing organizations. During the final step, the grass is burned in a boiler designed by Advanced Recycling Systems Inc.

Driving Forces

The Benton Area School District's biomass project has gained wide interest amongst various local organizations. The local economic benefits are one of the many driving forces that have influenced organizations to participate in this project. The biomass boiler is a locally produced unit from Advanced Recycling Equipment Inc., a company out of St. Mary's, Pennsylvania. The biomass is also grown and harvested by local farmers. The biomass is then acquired from the farmers and made into a solidified fuel source by Pocono RC&D, who operates out of Mayfield, Pennsylvania. It is also made into a fuel source by Renewable Energy Resources, who operates out of Bennington, Vermont. This broad scale of local support has helped to keep capital within the local economy as well as influencing local organizations to participate in the local biomass economy.

Pocono Northeast RC&D
1300 Old Plank Rd.
Mayfield, PA 18433
<http://www.pnercd.org/>

While local economic stimulation is important to many organizations, including The Benton Area School District, education has been another large motivator in the project. When the Benton Area School District decided to install a biomass boiler, one of their requirements was that it be designed so that its operation could be viewed. The school district desired anyone from the school or community to have the opportunity to watch the boiler operate. This gave the school district the ability to use the boiler for community education on the operation of a renewable energy facility. It is worth noting that the school district's interest in education helped them to acquire two Pennsylvania Department of Environmental Protection grants.

Benton Area School District is one of the various organizations that is aware of the environmental benefits that come from growing and harvesting biomass. Biomass has a positive impact on land conservation, water management and protection, wildlife maintenance and growth, and pollution reduction. These benefits were vital to acquiring support from wildlife organizations. They were also a key factor in acquiring grants.

Economics

The Benton Area School District biomass project has grown to include a wide span of economic factors and benefits. One benefit of the project is that native grasses are able to grow well on marginal land. Marginal land

is land that is considered agriculturally unproductive for typical farming crops. This means that farmers and land owners utilizing native grasses on marginal land are able to make a profit on land that was previously making none. Once native grasses have become established, an acre can produce three to four tons of biomass. The Benton Area School District used an average of 220 tons of biomass per year for the boiler between 2009 and 2011. This means that the school's fuel could come from 63 acres of local marginal land. In addition to native grasses being able to grow on marginal land, they require little additional equipment to be grown and harvested.

Pennsylvania and its local farmers already have most of the infrastructure to grow, transport, and harvest biograsses. This means the initial cost of growing grasses is low. In the long term, this means profit for the local farmers as well as for the local economy surrounding those farmers. The local economic benefits would not be possible without financial help to begin the project.

Biomass boilers and the infrastructure required for operation need a considerable amount of monetary investment. Due to the steep amount of starting cost, Benton Area School District applied and received two grants from the Pennsylvania Department of Environmental Protection. One grant of \$350,000 was used to purchase and install an Advanced Recycling Equipment Inc. biomass boiler and feeder. The other equivalent grant was used to fund upgrades to the schools electrical and heat distribution system. These upgrades were installed to operate the biomass boiler and feeder. The United States Department of Agriculture, Natural Resources Conservation Services, also provides biomass growing farmers with technical and financial assistance. Although project funding is important, it is even more important to create a sustainable market for biomass activity.

The Benton Area School District has realized that having a market to support their burner is important. This realization is what caused them to contact Pocono Northeast RC&D early in the project. With the help of Pocono RC&D, Benton Area School District has been able to create a local market for their boiler by supporting local manufacturers, local contractors, and local farmers. If other towns follow the example that the Benton Area School District has set, the biomass market will continue to grow nationwide.

**Pennsylvania Department
of Environmental
Protection**

http://www.depweb.state.pa.us/portal/server.pt/community/de_p_home/5968

Production and Utilization



The Advanced Recycling Equipment Inc. Power unit

The Benton Area School District chose Advanced Recycling Equipment Inc. to build the power generation unit. This unit consists of a thermal combustion unit, fuel unloading system, storage bin, and a steam boiler. The power generation unit is powered by native grass pellets and briquettes and is also backed by oil. The native grasses are converted into briquettes and pellets by local companies such as Renewable Energy Resources and Pocono RC&D using mobile pelletizing units. These units take baled grass and convert them into pellets or briquettes.

Recently, the Benton Area School District has contracted biomass pellet supply with a farming cooperative. This organization, known as the Grass Energy Cooperative, consists of local farmers. They have borrowed a briquetting machine from the Agricultural Watershed Institute to begin the production of biogross briquettes.

Renewable Energy Resources

63 Southshire Dr.
Bennington, VT 05201

<http://www.switchgrass-rer.com/>

Grass Energy Cooperative

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<http://www.grassenergycoop.com/>

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