



Advanced Wood Heating For agricultural businesses

The Mettowee Mint garden center is saving almost \$9,000 a year in energy costs by switching to an advanced wood heating system.

Overview

Advanced wood heating systems are a proven and cost-effective way to heat your agricultural spaces. Your business could save a significant amount on annual energy costs by switching from fossil fuels like oil and natural gas to locally sourced wood. That's because wood is a cheaper fuel, and high-efficiency wood heating systems create very little wasted heat. Your space will be warmer, you'll reduce operating costs, and you'll be supporting the Vermont economy. What's not to love?

Key benefits

Save money. Your annual heating costs could decrease significantly compared to a traditional heating system.

Achieve energy independence. If you own forest land, actively managing for valuable forest products can result in a supply of wood for heating.

Support the local economy. When you buy local wood fuel, 80 cents of every dollar stays in Vermont, compared to 25 cents for fossil fuels. Using wood fuel is one way to support Vermont's working forested landscape.

Reduce climate impact. Burning local wood is more climate-friendly than burning fossil fuels.



Fuel options

There are three kinds of fuel used in advanced wood heating systems. Which fuel makes the most sense for you will depend on many factors, including space constraints and your desired level of fuel delivery automation.

Pellets. Wood pellets have the highest density of energy per pound, and the lowest moisture content. Pellets can be stored indoors or outdoors. They are the most highly processed form of wood fuel.

Woodchips. Woodchips are less processed than pellets. They can be green or dry. Dry wood chips have a lower moisture content and provide more energy per ton of fuel.

Cordwood. Cordwood is the least processed fuel option. It requires the most handling, and it must be well seasoned. For this reason, it is recommended to have two years of fuel on site.



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Case Study

Mettowee Mint

📍 Dorset, VT



Overview

Mettowee Mint is a garden center that provides Dorset and the surrounding community with the tools to create healthy, biodiverse landscapes and timeless ornamental gardens. The garden center includes a large retail space with a coffee bar and multiple greenhouses, each of which were historically heated by separate systems using a mix of heating oil, propane, and kerosene.

Challenge

Mettowee Mint's owner, Sarah Linford, says her plants were in high demand during the colder months, but it was becoming financially unsustainable to heat the greenhouses. Her energy bills exceeded the revenue generated by greenhouse plant sales, threatening to shut down that portion of the business. She wanted to spend less on heating the greenhouses and streamline the number of fuel types being used on-site.

Solution

With expert guidance from several partners, Sarah chose to install two high-efficiency cordwood gasification boilers. The new setup was designed as a mini district system, with central boilers providing heat to multiple buildings via insulated underground piping and zone controls in each space. One of the district zones utilizes a radiant slab to efficiently heat a greenhouse. The boilers, thermal storage tanks, and hydronic distribution components are housed in a new boiler house.

Heating with cordwood is labor intensive. Sarah purchases local log-length wood, and her team bucks, splits, and stacks it on the property. This allows her to provide year-round employment to community members. With this advanced wood heating system, Mettowee Mint is saving money, supporting the local forest economy, and positioning itself for future expansion of heated spaces.

Partners

SunWood Biomass Systems installed the advanced wood heat system and integrated it with the existing heat distribution system. It also helped with grant applications to the USDA Rural Energy for America Program.

Efficiency Vermont provided free energy modeling, economic analysis, and system design support. It also provided financial incentives.

Vermont Dept. of Forests, Parks & Recreation provides wood energy financial and technical assistance for working lands businesses.

East Rise Credit Union provided a Business Energy Loan to support Mettowee Mint's capital investment.



We could either pay members of our community that need employment, or we could pay fossil fuel companies.

- Sarah Linford, owner of Mettowee Mint garden center

System specifications

Fröling S3 Turbo cord wood gasification boiler (2)

- 165,000 Btu/hr capacity
- Services 5 district zones

Pressurized thermal storage tanks (3)

- 600-gallon thermal storage capacity (1,800-gallon total)
- Heats radiant slab and fan coil units

Fuel

- Locally sourced 22-inch cordwood
- Bucked, split, stacked, and seasoned on-site

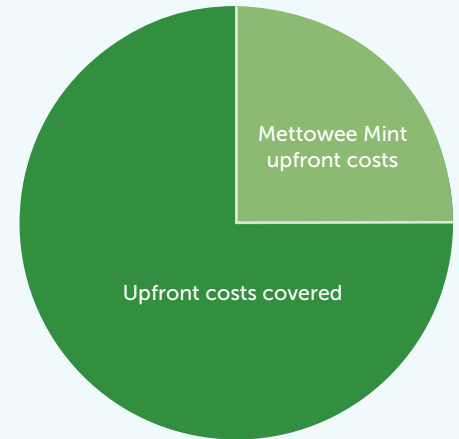


Two wood boilers (left) supply heat via a piped distribution system. The boilers can also "charge" three thermal storage tanks that can hold up to 1,800 gallons.

Project costs

	Item	Value
Expenses*	Materials & distribution system	\$126,500
	Labor & professional services	\$14,500
	Total expenses	\$141,00
Income	Efficiency Vermont incentives	\$20,000
	East Rise Credit Union Business Energy Lloan	\$50,000
	USDA Rural Energy for America grant	\$35,218
	Total income	\$105,218
	Net upfront cost	\$35,782

*Expenses are shown in 2023 dollars.



75% of the upfront project costs were covered through grants and loans.

Efficiency Vermont offers custom incentives for advanced wood heating systems in agricultural businesses. Contact your account manager to learn more.



Benefits



\$8,885

Annual fuel savings



57

Tons of annual CO2 savings



4

Staff employed in winter