

**Boiler:** Our system incorporates a 200 hp Messersmith combustor paired with a Hurst boiler. They can produce up to 6.68mmbtu/hr up to 150 psig. The system incorporates a chip delivery and metering system that automatically stokes the combustor based on demand.

In late summer a second smaller boiler will be installed to supplement the first boiler. It will help carry peak winter loads and increase efficiency during lower summer demands. When it is installed we will be able to supply over 90 % of the steam required to provide heat and hot water to the complex.

**Biomass Fuel:** There are many different biomass fuels with wood being the most common in the northeast. We have chosen to use “bole” wood chips, meaning there are no small branches, only the trunks and large branches are chipped. The typical chip size is 2 ½”x 2 ½” x 5/8” thick or smaller. The moisture content of the chips can range from 15% to 45% with slightly less than 40% being preferred. Chips are delivered to the 320 cubic yard (three truck loads) storage bin through one of three overhead doors. The delivery trucks carry about 29 tons per load and are self unloading using a live bed system. The estimated consumption is 4,000 tons per year with deliveries ranging from 2 per week during the summer to 1 per day in the winter.

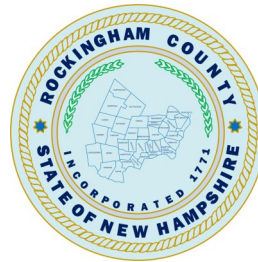
**Fuel Costs Comparison**

Fuel	Price	Est. \$/million BTU
Wood Chips	\$59.95/Ton	\$ 8.20
#6 Oil	\$2.7218/gal	\$ 22.00
#2 Oil	\$3.169/gal	\$ 27.50

The Rockingham County Biomass Facility is projected to displace approximately 245,000 gallons of fuel oil consumption with 4,000 tons of wood chips. The savings to Rockingham County will be in excess of approximately \$400,000 per year, fluctuating with the price of oil. We have procured a five year contract with a chip supplier with only slight annual price increases.

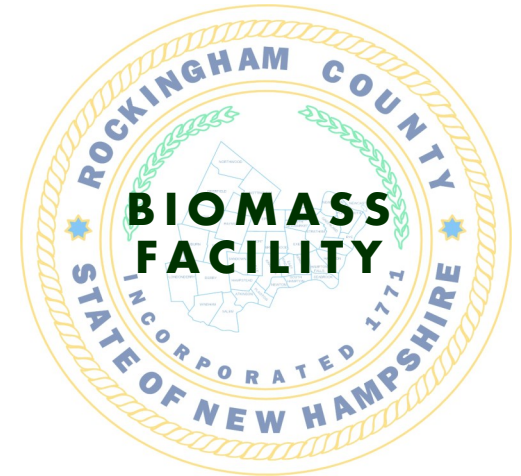
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**THANKS**

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**Burning local wood chips to provide steam for heat, hot water, laundry and kitchen processes at the Rockingham County Long Term Care Campus, and Jail/House of Corrections.**

# The Construction Process



After a lengthy bid, review, and negotiation process the design-build project was awarded to Engineered Construction Services (ECS). The contract was signed in June and the permitting, design and engineering phase began. After the design was accepted construction could begin.



Soil tests on the site identified a deficiency in the load bearing capability. There was a 5 week delay as a solution was engineered & installed. Approximately 125 Geo Pilings were driven to a depth of about 20 feet to provide stable support for the building. Finally in September, grading and preparation for footings and foundations could start.

## Funding

Rockingham County received a \$1.97 million grant, covering approximately half the cost of the project. Additionally, a \$200,000 grant was obtained from the North Country Conservation and Development Area Inc. through the United States Forest Service.



## Construction Milestones:

- Completion of a 60'x62'x25'h block & brick building to house the boiler and chip storage.
- Installation of 600 ft of insulated underground steam line connecting the Jail and RCNH boiler rooms to the new plant.
- Connection to steam systems at existing plants.
- Erection of a 24" diameter x 65'h smoke stack.
- Construction of a new 20 car parking lot to replace lost spaces.
- Installation of the new boiler and chip delivery system.
- Installation of a new 500 kw generator and switch gear to replace the old 300 kw system.



## Training



Engineering & Maintenance technicians get educated on the finer points of running and maintaining a biomass boiler plant.



Checking out the system.