



SULLIVAN COUNTY NEW HAMPSHIRE BIOMASS CHP DISTRICT ENERGY PROJECT



Sullivan County, New Hampshire (SCNH) constructed a Biomass Combined Heat and Power (CHP) District Energy System at its Unity Complex. The system is fueled by locally sourced, renewable wood chips, producing inexpensive heat and electricity for the County's Nursing Home (166

beds) and Jail (168 beds) facilities as well as two smaller onsite buildings. The campus includes over 215,000 square feet of conditioned space.

The system replaces 95% of fuel oil purchases on the campus and 10% of electric purchases in the Nursing Home with renewable biomass energy. Purchased energy costs are reduced by approximately \$300,000 annually.

The system includes an 5 mmBtu/hr output biomass boiler and a 40 kW steam turbine and generator. Steam provided to the Nursing Home is used to drive the turbine/generator which produces electricity. The exhaust steam from the turbine is then used throughout the Nursing Home. The steam distribution system includes ~1,000 ft of pre-insulated underground steel piping. Woodard and Curran was the design build contractor awarded the contract for the project, and Hurst Boiler provided the biomass system.

The project has a total cost of approximately \$3,200,000 with \$625,000 in grant funding provided by the NH PUC, USFS NE Area Woody Biomass Utilization Grant, and a grant from the North Country RC&D / USFS Wood Education and Resource Center. The system also centralizes steam production operations in one building by adding a new propane-fired steam boiler to provide backup. This provides avoidance of future capital costs to replace aging HVAC equipment. The system uses locally sourced renewable energy to provide the County with stable energy prices and to keep over \$100,000 in heating fuel expenditures within the local economy. The County is working with local schools and technical centers to develop educational programs around the efficient use of renewable energy. The USFS Wood Education and Resource Center provided the feasibility study for the project, which was used by the owner to justify investment and pursue project implementation.

PROJECT AT A GLANCE

Project Cost: \$3,200,000

Grant Dollars:

- NH PUC C&I Grant \$300,000
- USFS Woody Biomass Utilization Grant \$250,000
- NCRC&D / WERC Grant \$75,000

Project Savings: \$300,000 annual energy savings + avoided costs

Energy Profile (annual):

- 1,900 Green Tons Wood Chips
- 120,000 gal Fuel Oil + 5,000 gal Propane Offset
- 137,000 kWh Electricity Produced from Renewable Energy
- 1,200 Tonne Net CO₂ Reduction



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