

Contract Details

Contract Type:

Biomass; Energy Efficiency; Energy Savings Performance Contract; Guaranteed Energy Savings; Operations and Maintenance; Renewable Energy

Capacity:

10 MBtu/hr

Energy Project Size:

\$3.3 million

Energy Savings:

\$406,000 annually

Summary

The National Renewable Energy Laboratory (NREL) is the nation's primary laboratory for renewable energy and energy efficiency research and development. Ameresco designed, built and maintains the 10 MBtu/hr wood biomass heating facility at the National Renewable Energy Laboratory in Golden, CO. This project uses waste wood and wood slash harvested from the US Forest Service's hazardous fuels removal program in place of natural gas to heat hot water.



NREL's team researches and tests solar thermal and parabolic trough technologies, advanced optical materials, photovoltaics, advanced thermal storage materials, and heat transfer fluids.



Located in Golden, Colorado, the National Renewable Energy Laboratory project replaced natural gas with wood waste and wood slash to heat hot water at the on-site plant.

Customer Benefits

The Renewable Fuel Heating Facility (RFHF) project provides NREL energy savings resulting from the difference in cost to produce hot water in the existing gas-fired boilers and the cost to produce the same quantity of energy using wood biomass. The project also provides hot water to the new Science and Technology Facility, which has helped secure a higher level of Leadership in Energy and Environmental Design (LEED) certification. The project has a positive impact on the environment by using local woodwaste sources to displace fossil fuel consumption. The RFHF project also has further potential to encourage new development of biomass projects in the area and at other Federal facilities.

Environmental Benefits

Through NREL's partnership with Ameresco, the laboratory will have the following annual carbon reduction equivalents:

- ▶ the planting of 434 acres of trees
- ▶ the removal of 389 cars from the road
- ▶ the emissions of 10.6 railcars' worth of coal
- ▶ the elimination of 229,000 gallons gasoline burned
- ▶ the powering of more than 247 average-size homes

The project helps reduce the need for energy from traditional power plants fueled by fossil fuels.

Services Provided

Ameresco was selected by NREL under the Department of Energy's Biomass and Alternate Methane Fuel (BAMF) Technology-Specific Super Energy Savings Performance Contract (ESPC) to evaluate, engineer and implement (construct) the RFHF. The RFHF uses wood biomass obtained from a mixture of forest thinnings, yard waste and construction debris as a fuel source for a new combustor and a heat recovery boiler to supply hot water to the NREL Campus.

The new facility generates up to 10 MBtu/hr, or approximately 600 gallons of hot water per minute. The project included the installation of a facility, new equipment and the necessary piping to connect the RFHF to both the Solar Energy Research Facility and the Field Test Laboratory Building boiler plants.

The RFHF was constructed in two floors, which include a fuel handling area, a combustor system and boiler room, and a control room. The fuel handling area consists of the unloading system, storage area, screening system and a feeder to the combustion system.

The components of this system were selected to minimize annual maintenance and to provide maximum automation to the plant. The combustion and boiler system is located in a separate bay within

About National Renewable Energy Laboratory (NREL)

The U.S. Department of Energy's National Renewable Energy Laboratory (NREL) is the site of the building, which houses about 800 NREL research support staff. NREL developed the building's low energy requirements and led the innovative design/build construction process. NREL researchers continually monitor the performance of the RFHF and its many energy efficient features, making the building a "living laboratory."

Learn more at www.nrel.gov.

About Ameresco

Ameresco, Inc. (NYSE:AMRC) is one of the leading energy efficiency and renewable energy services providers. Our energy experts deliver long-term customer value, environmental stewardship, and sustainability through energy efficiency services, alternative energy, supply management, and innovative facility renewal all with practical financial solutions. Ameresco and its predecessors have constructed billions in projects throughout North America.

For more information about Ameresco and our full-range of energy efficiency and renewable energy solutions, please visit www.ameresco.com.



The boiler assembly with the boiler above the furnace.



Inside the boiler where the biomass is burned.

Services Provided (cont.)

the RFHF building. We selected the Challenger Combustion System™, which is designed specifically for the combustion of solid waste fuels to optimize energy recovery and minimize air emissions.

Another benefit of this system is the auto de-ash system. A control room above the fuel processing area provides a view of the boiler room and allows the operator to monitor the system. A new operator workstation with Delta Controls OWS software was installed for monitoring the system.



NREL's award-winning team of engineers and scientists research solar technology and equipment, such as the High-Flux Solar Furnace (HFSF), above, and the Large Payload Solar Tracker, below. (NREL photos)

