

Case study

September 2011



Eastern Aroostook RSU 39

Energy upgrades expected to save district more than \$235,000/year
Caribou, Maine

The Eastern Aroostook Regional School Unit (RSU) 39 offers a top quality education program that strives to meet the individual needs of its more than 1,700 students. A staff of 325 professionals and support personnel work together to ensure high academic achievement for every child and to provide students with the knowledge and skills necessary to lead successful lives. In alignment with these educational goals, when faced with an aging infrastructure, the school sought to enhance learning and teaching conditions by implementing measures to reduce costs and improve both their indoor and outdoor environment.

Challenge

Infrastructure improvements were needed throughout the Eastern Aroostook RSU 39 to enhance the learning and teaching conditions, provide better indoor air quality and lower energy costs. The school district sought to upgrade its aging equipment, including the inefficient steam heating system at its Caribou high and vocational schools. Reducing greenhouse gases and helping the environment were also key objectives. In addition to conserving energy, Eastern Aroostook wanted to reduce its dependence on oil as an energy source.

Solution

Eastern Aroostook partnered with Trane on the infrastructure upgrade. Trane conducted a detailed energy audit of school buildings to identify the best solutions to meet district objectives. The school board and superintendent evaluated energy conservation measures (ECMs) proposed by Trane and selected the improvements for implementation. To fund the renovations, the district entered into a performance contract with Trane to allow the use of future energy and operational savings to finance the project.

Reducing oil dependency

An aging oil-burning boiler was replaced with a new biomass boiler plant. The plant serves the Caribou High School complex, which includes the auditorium and technology



The Caribou Technology Center teaches skills to help students adapt to emerging technologies.

center. The boiler is compliant with the latest Environmental Protection Agency guidelines. It burns locally obtained wood chips to produce more efficient and less expensive energy than the oil-burning system it replaces.

Providing a more comfortable, efficient environment

An aging and inefficient steam heating system was replaced with a modern hot water system. The former steam system was noisy and difficult to control. The new hot water system provides better control, which leads to energy savings. The replacement of existing heating equipment with new unit ventilators provides greater system efficiency, more comfort, less noise and improved indoor air quality for students and staff. The system also helps to reduce energy costs.

Conserving resources

To enhance the learning environment and further reduce energy, new lights and lighting controls were installed. New controls were also installed for the walk-in cooler and freezer to improve efficiency and extend life cycle.

Besides the energy saving measures, the school was also interested in conserving water. Low-flow toilets and fixtures were installed to reduce consumption.

Managing the new system and energy use

A Trane Tracer Summit® building automation system (BAS) provides integrated building control through a dedicated PC workstation. The BAS helps school administrators manage the systems, monitor energy consumption and allow proactive adjustments to be made remotely, reducing labor costs.

Systems and services

- Biomass boiler plant burns wood chips to eliminate the school's dependence on fuel oil and save money
- Hot water system replaces inefficient steam heating to reduce energy costs and improve comfort
- Lighting and refrigeration controls conserve energy
- Tracer Summit® BAS helps administrators manage systems and monitor energy consumption

Results

Eastern Aroostook RSU 39 expects its energy conservation measures to save more than 84,000 kWh of electricity, 40,000 gallons of heating fuel and 354,000 gallons of water a year. Projections show a reduction in energy and operational costs of more than \$235,000 annually. The upgrades will improve the learning and teaching environment and reduce the district's dependence on oil as an energy



Newly constructed biomass boiler plant burns locally obtained wood chips.

source. Over 75 percent of the project's overall energy and operational savings can be attributed to a new biomass boiler plant. The savings will be further enhanced by incentives from Efficiency Maine totaling \$11,131.

Funding the project through savings realized via the performance contract will allow Eastern Aroostook RSU 39 to leverage operational savings to support their strategic educational objectives.

"It's exciting to make these changes," said Frank McElwain, superintendent of schools. "They improve the teaching and learning experience, all while saving money and helping the environment. It's even better that the district can accomplish this without any new taxes."



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