

# Arnprior Regional Health

## CASE STUDY



### Challenge

Arnprior Regional Health's two forty-year-old natural gas steam boilers, providing steam for building heat, hot water, humidification, laundry, kitchen operations and sterilization procedures, had become a source of concern for the facility's owners. Due to their age, reliability was becoming an issue, breakdowns were more frequent, and repair costs were increasing. Adding to the owners' stress was the fact that their service vendor was located nearly eight hours away. Should the boilers reach an unserviceable condition, the hospital would be faced with patient relocations and cancellation of surgical procedures. The hospital sought a fast-track solution to upgrade its aging boiler plant.

### Solution

To help meet its challenges, Arnprior Regional Health entered into an energy savings performance contract (ESPC) with Trane. The ESPC would allow the hospital to use guaranteed energy savings to help fund infrastructure upgrades. As their project partner, Trane outlined a comprehensive solution to provide a more efficient boiler plant design that would integrate a new hot water heating system with the existing steam plant. The project scope also included project and construction management, commissioning, and training, as well as measurement and verification.

#### Performing energy analysis

Trane began by performing an energy analysis of the hospital. Using monthly utility information and area weather data, a baseline natural gas use profile was created, showing a typical heating consumption profile for the building calibrated to a typical weather year. In order to ascertain the current energy consumption and end-use breakdown of natural gas use, the energy analysis used site information, engineering reports, utility bills, engineering calculations and estimates based on past experience. The analysis determined that replacing the steam plant would result in energy or water savings in all end use functions.

#### Managing vendor/equipment selection process

Trane proceeded with preliminary engineering and obtained bids for the new boiler plant, the required piping, and electrical work. The bids were evaluated based on price, delivery schedule, proximity of service centers, equipment reliability and quality, and the manufacturer's/contractor's experience. The plant consists of three larger hot-water boilers rated for 2500MBH (75HP output). The boilers are condensing, high efficiency and dual fuel, using natural gas and propane.

### Arnprior Regional Health Arnprior, Ontario

#### PROJECT HIGHLIGHTS

Energy savings performance contract enables fast-track design and integration of more efficient hot water boiler plant; saves \$37,500 in operational/maintenance costs; provides \$38,213 in annual energy savings; results in government and utility incentives of \$21,000.

Providing quality health care services for over 70 years, Arnprior Regional Health oversees a fully accredited community hospital, nursing home and medical centre.

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### Providing superior quality, reducing installation costs

Rather than removing and replacing the equipment, the hot water boiler plant was built in a separate warehouse, while the existing steam plant continued to keep operations running. The controlled environment enabled the group to build a boiler plant of superior quality, while keeping labor rates down and requiring less disruption to operations. The self-contained plant was shipped on skids to the job site, pre-assembled and factory tested, and located adjacent to the existing boiler plant. With the crew only needing to connect to the power source and piping, installation was fast and less costly.

### Ensuring seamless integration

Trane worked closely with the hospital to ensure seamless integration of the new hot water boiler plant with the existing steam boiler plant. The hot water plant provides heating, using stainless steel piping to distribute hot water to different heating zones within the facility, including offices, mechanical rooms, and kitchen. While the steam plant continues to be used for laundry and instrument sterilization, plans are underway to replace the large steam boilers with a smaller, more efficient steam generator for sterilization only.

## Results

A Trane energy performance contract used to integrate Arnprior Regional Health's aging steam boiler plant with a new high-efficiency condensing hot water boiler plant is resulting in a substantial savings for the hospital. As a result of significantly lower repair costs and reduced staff hours due to a more reliable heating plant, the hospital is saving more than \$37,500 in annual operational and maintenance costs. The project also provides a revenue stream of \$38,213 in annual energy savings, which includes gas, water and electricity savings. The savings is the equivalent of saving 3730 GJ of energy and reducing 190 tons of CO2

The measurement and verification plan used to prove project savings was written following the guidelines of the International Performance Measurement and Verification Protocol (IPMVP). Upon completion of the M&V plan, the project qualified for incentives from government agencies and utility providers estimated at \$21,000.

"Based on this success, we are exploring other energy saving improvements with Trane," said John Gruno, manager, Building & Environmental Services, Arnprior Regional Health. "Trane listens well and is absolutely committed to finding solutions to our key issues. They have demonstrated honesty, accountability, and a willingness to work with us to find creative, but responsible, solutions. They are always prepared and show passion for the solutions they can provide."



## About Arnprior Regional Health

Preserving space inside the hospital, the self-contained hot water boiler plant was shipped on skids to the job site, pre-assembled and factory tested, and located outside adjacent to the existing boiler plant.



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