



THE ETHEL TRAFTON LEVASSEUR MEMORIAL Y.M.C.A.

MAINE YMCA SAVES TIME AND MONEY WITH HIGH EFFICIENCY, PROPANE-POWERED SPACE- AND WATER-HEATING SYSTEM

A PROPANE CASE STUDY

RELIABLE, HIGH EFFICIENCY PROPANE BOILER SYSTEM SAVES APPROXIMATELY \$23,500 IN ENERGY COSTS ANNUALLY.

BACKGROUND

When the 26,000-square-foot Sanford-Springvale YMCA opened its doors in Sanford, Maine in 1979, two heating-oil-fired HB Smith cast iron boilers provided both space heating and hot water. Over the years, the YMCA's membership grew to 3,900 individuals and 1,400 families, placing heavy demand on the facility's aging boiler system.

CHALLENGE

In 2011, the YMCA's 32-year-old heating oil boiler system had become inefficient, and also required additional maintenance to simply stay up and running. Sanford-Springvale YMCA CEO Andy Orazio knew it was time to replace the system.

"The key was finding a solution that was not only energy-efficient, but that could also provide enough hot water to meet our facility's peak demands, provide all hydronic space heating, maintain proper indoor pool and hot tub temperatures, and accommodate potential load increases as our membership grows," Orazio said.

Initially, the YMCA planned to replace its outdated boiler system with a modern, energy-efficient version also fueled by heating oil. While the infrastructure

for such a system was already in place, the cost to replace the system was substantial. In addition to replacing the boilers themselves, the YMCA would need to repair the interior and exterior of the system's chimney as well as replace and relocate its oil storage tanks.

The volatility of heating oil prices also concerned the YMCA's leadership, and they saw the replacement of the old boiler system as an opportunity to upgrade to a new solution with better value and performance. Management decided to investigate all available options — including systems powered by on-site wind and solar energy as well as those fueled by more traditional energy sources, like electricity and propane — and evaluated each on its initial system costs, annual energy cost estimates, and overall life-cycle costs.

"We briefly considered using electric water heaters, but there was a challenge with their ability to meet peak demand at our busiest times of the day," Orazio said. "Furthermore, we discovered that if we installed a series of 120-gallon commercial electric water heaters, the estimated cost to provide the hot water would have been twice as much as the propane system."



COMPANY

Sanford-Springvale YMCA
Sanford, Maine

CHALLENGE & SOLUTION

Confronted with the need to replace its aging, heating-oil-fired, cast iron boilers, the YMCA consulted with Downeast Energy to find a reliable, cost-efficient solution that would meet the facility's heavy hot water and space heating demands. The YMCA eventually installed four wall-hung, propane-powered boilers, two 1,000-gallon propane storage tanks, and three hot water storage tanks.

RESULT

The new high-efficiency propane boiler system is realizing annual energy cost savings of approximately \$23,500 per year while also reducing potentially harmful CO₂ emissions.

SOLUTION

After carefully considering performance, fuel supply availability, price stability, and storage options, YMCA management decided that a high efficiency, propane-powered boiler system was the ideal solution for its space- and water-heating needs. The facility's new system would consist of four 95-percent-efficient wall-hung boilers of 399,000 BTU each with simple PVC venting, two 1,000-gallon aboveground propane storage tanks, and three hot water storage tanks.

"As stewards for the towns of Sanford and Springvale, we wanted to be as sustainable and energy-efficient as possible," said Gwen Bedell, CFO for the Sanford-Springvale YMCA. "That further supported our decision to choose propane."

Upon the YMCA's decision to purchase and install the propane-powered boiler system, the YMCA's former heating oil supplier, Downeast Energy, became its propane supplier. "We set up the YMCA's propane pricing on a long-term contract so that they would have a predictable cost outlay for energy following the retrofit," Dave Oullette, Downeast Energy representative, said. "And because we had access to the facility's historical heating oil consumption, we were able to project estimated annual propane usage and costs and create a consistent propane delivery schedule."

YMCA management is planning to build a 22,000-square-foot addition that will nearly double the facility's size. Propane's

flexible storage options will also help the facility easily accommodate any future growth. "We may keep the aboveground propane tanks in an aesthetically-pleasing 'corral,' or we may eventually opt for underground storage," Orazio said. "We have the flexibility to make those decisions as our building's footprint grows."

RESULTS

THE SYSTEM PAYS FOR ITSELF.

The Sanford-Springvale YMCA's new high-efficiency propane boiler space and water heating system is realizing annual energy cost savings of roughly \$23,500. This figure is based upon the facility's average heating oil bill prior to installing the new system compared with its current propane bill.

The project also qualified for a state-provided \$50,000 incentive aimed at encouraging ultra-efficient commercial mechanical system upgrades. Considering the YMCA's energy cost savings, the state-provided incentive, and the system's initial cost of approximately \$120,000, the propane space- and water-heating system will completely pay for itself in just under three years.

"Compared with the option of making expensive repairs and installing a replacement heating oil system, the propane system was estimated to have lower initial cost in addition to lower energy costs," said Oullette. "This system offered the YMCA an immediate return on its investment."

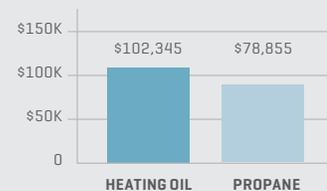
PROPANE PROVIDES GREEN ADVANTAGES.

The high-efficiency propane boiler system also delivers major environmental benefits compared with heating oil. Propane combustion is cleaner than heating oil and results in far fewer CO₂ emissions. The YMCA's new propane-powered space- and water-heating system is keeping more than 183,000 pounds of CO₂ from entering the atmosphere each year — the equivalent of taking 17 cars off the road annually.

SYSTEM PERFORMANCE REQUIREMENTS:

- Provide adequate hot water for showers, sinks, and janitorial needs.
- Meet hot water demand of 1,300 gallons/hour during peak hours, 8-10 a.m. daily.
- Provide all thermostat-controlled hydronic space heating.
- Maintain indoor pool water temperature of 84 degrees Fahrenheit, indoor hot tub temperature of 100 degrees Fahrenheit, and indoor pool ambient air temperature of 82 degrees Fahrenheit.
- Accommodate potential load increases due to a projected 2 percent increase in memberships each year.

ESTIMATED ANNUAL ENERGY COST TYPICAL WEATHER YEAR



FOR MORE INFORMATION

For more information about the Sanford-Springvale YMCA, visit sanfordymca.org.

To learn more about propane heating, building with propane, or the Propane Education & Research Council, visit buildwithpropane.com.

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