

Smith Housing still affordable for Low-Income Families, thanks to New Solar Collection Systems Designed by BNA Engineering

Customer

Smith Housing - a property management company in charge of low-cost housing in the Baleburg region.

Challenges

Smith Housing was losing money due to high gas bills. They would have needed to increase their rents to cover their expenses, becoming unaffordable for nearly half of their tenants.

Solution

Smith hired BNA Engineering to design and oversee the installation of renewable energy systems that would reduce their gas usage.

Results

- Reduced Energy Cost
- Security Against Future Gas Price Increases
- Monitoring for Future Use of Solar Collectors

Contact Information

To find out how BNA Engineering can help you integrate renewables and become more energy independent, visit us at www.bnaengineering.ca or call 1-800-BNA-FIRM

The Customer Background

Since 1976, Smith Housing has been managing housing for low-income families and seniors in the Baleburg district. They have thirty-six (36) apartment buildings in their portfolio, ranging from 12-unit apartments to 96-unit complexes. Their tenants enjoy clean, affordable living while Smith Housing takes care of maintenance and the utilities.

The Challenges

The apartments have centralized HVAC and domestic water heating systems. In most cases, natural gas is used for both space and domestic water heating. Between three harsh winters and increasing natural gas rates, Smith Housing suffered losses in 2005 and 2005. In 2007 Smith appealed to the City for more funding to continue its operations. They were successful, but when costs were even higher in 2008, Smith considered raising rents across the board. Sitting in the red for two years in a row, they were sure to get approval for a substantial rental increase for 2009. Doing this would leave close to 42% of their tenants unable to pay their rents.

The Solution

In a last-ditch effort to avoid increasing rents, Smith Housing approached BNA Engineering for help to figure out ways to cut back on their gas usage. They decided to focus on eight buildings that consumed the largest amount of gas per square foot of liveable space: buildings at Howard Ave, Sycamore Lane, Twelfth Ave, First St, Midland East, Midland West, and two at Willow Crescent. They also wanted a long-term solution that would protect against future gas price increases.

The engineers at BNA considered three options for these buildings:

1. Supplementing part of their heating and cooling systems with geothermal energy
2. Installing solar panels to provide 100% domestic water heating during the summer, with provisions to store excess heat when the supply exceeds the demand.
3. Replace existing heating boilers with condensing boilers.

Option 1 was immediately limited to three of the eight buildings simply due to the space available for geothermal wells. Option 3 was the easiest solution for the short-term but offered no protection against gas price increases.

MacKenzie Black, project manager for Smith Housing capital projects, said, “BNA’s analysis showed that solar collectors offered the greatest benefit per capital dollar spent with paybacks ranging from three to seven years.”

Government incentives allowed Smith to pay for the systems at 24% off the full price, which BNA successfully procured on Smith Housing’s behalf.

BNA carried out the design and construction supervision for the solar collector systems, overcoming several challenges along the way.

BNA Engineer, Erik Novak said, “Most, if not all the contractors in the area had almost no experience with installing thermal storage systems, which would allow the client to store excess heat from the collectors in the daytime for use at night. We considered simplifying the system to reject the heat, but this would have lowered the return for the client. Instead, we modified the pipework and called in controls specialists to tweak the control system so that the basic piping would work.”

A year and a half after project implementation, Black witnessed the commissioning at the Midland East property, a sixty unit apartment building. Within six months, the other seven building systems were up and running.

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The Result

Reduced Energy Cost

“The results were astonishing,” stated Barry Nicholson, Smith Housing accounts manager for the region. “Our costs from gas usage have dropped as much as 18% in three cases and savings average at least 12% annually for these eight properties. We’ve used that cost savings to

keep our rents reasonable across the board for our tenants.”

“In the end, we are here to provide housing to families and seniors who can’t afford to pay full market price. With BNA’s help, we can be confident in our ongoing ability to do so.”

Security Against Future Gas Price Increases

A system independent of gas is also independent of gas prices. This has allowed Smith Housing to reassure tenants that rents will not be increased in the foreseeable

future due to increased gas prices.

“We have added solar collectors to our long term plan for our entire portfolio,” said MacKenzie Black. “We look forward to working with BNA to realize these projects within the next six to ten years.”

A System to Monitor for Future Solar Collector Applications

Now that the solar collection systems are in place, Smith Housing can now monitor the heat generated in the wintertime to properly assess the viability of using solar technology to supplement their space heating systems. This in turn has brought new options for funding to Smith Housing, seen as a pioneer in the application of renewables to low-income housing.

Barry Nicholson states, “In the end, we are here to provide housing to families and seniors who can’t afford to pay full market price. With BNA’s help, we can be confident in our ongoing ability to do so.”

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