

The Impact of Energy Costs on Multi-Family Residential Building Value



Case Study
Pine Harbor Apartments
10 Seventh Street
Buffalo, New York
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This case study presents the impact of energy savings from retrofits and of energy costs generally on the value of Pine Harbor Apartments, a 208-unit subsidized apartment complex in downtown Buffalo, New York.

Property Description: The property consists of a seven-story, 168-apartment main building and a series of attached 3-story buildings which contain 40 additional four-bedroom apartments: 20 garden apartments on the first floor, and 20 townhouse apartments on the second and third floors. The main building contains 85 one-bedroom units, 43 two-bedroom units and 40 three bedroom units as well as a common laundry facility. Three of the one-bedroom apartments and one four-bedroom apartment are used for internal purposes such as maintenance, security and administrative offices as well as a model unit – so Pine Harbor has 208 units of which 204 are rentable. The buildings sit on a 7.5-acre parcel of land that includes a large parking lot.

Construction Detail: The building was constructed in 1974 using concrete block construction.

Rents and Public Assistance: Pine Harbor was financed and built under New York State’s Division of Housing and Community Renewal Section 236 program. The program provided low-cost financing and real property tax credits/exemptions for the property. As part of this program, units must be rented to tenants whose income does not exceed maximum gross income limits which are adjusted annually. Many tenants also receive section-8 housing assistance. Monthly rents collected by Pine Harbor range from \$440 to \$814, depending on apartment size and tenant income.

Case Study

All costs for electricity and natural gas usage at Pine Harbor Apartments are paid by the building owner, including usage by residents inside the apartments. Prior to 1999, space heating at Pine Harbor Apartments was provided by electric-resistance baseboard heaters. Beginning in February 1999, direct-vented, natural gas-fired room heaters made by Rinnai with 81% rated efficiency were installed in each apartment and in selected common areas.¹ The installation was completed by March 2000. Pine Harbor has 208 units, and a total of 287 gas-fired room heaters were installed. However, some rooms in the apartments remain fully or partially heated by electric baseboard heaters.² The total cost of the installation was \$996,286 and was funded by an essentially a zero-interest

¹ The following three Rinnai models were installed at Pine Harbor:

- 1) Model: RHFE-431FA III; Btuh input: 16,700/8,200; Rated Efficiency: 80.8%
- 2) Model: RHFE-556WTA; Btuh input: 21,500/8,200; Rated Efficiency: 80.6%
- 3) Model: RHFE-1004FA; Btuh input: 38,400/10,500; Rated Efficiency: 80.6%

² “Individual room heaters are installed in an exterior wall of each apartment. Each individual heater contains its own burner and is directly vented to the outdoors. . . . There is one vented gas-fired space heater in every apartment living room and one each in the high rise lobby, maintenance office and community room. Vented gas-fired space heaters are also installed in 78 bedrooms at the site.” Quote from Energy Audit of Pine Harbor for the NYSERDA Publicly Assisted Housing Program conducted by Taitem Engineering, September 6, 2001.

second mortgage on the property from the New York State Housing Finance Agency Project Improvement Program.³

In 2003, Pine Harbor's energy costs were \$286,585 (\$1.17 per square foot) or 30.5% of total building expenses. IMT commissioned an analysis of Pine Harbor's energy bills by Taitem Engineering.⁴ The billing analysis estimated that without the retrofits Pine Harbor's annual normalized energy costs would have been \$109,007 (\$0.44 per square foot) higher. Therefore, had the retrofits not been done, Pine Harbor's 2003 energy costs would have been about \$395,600 (\$1.61 per square foot) or 37.8% of total building expenses.⁵ (Buffalo's weather in 2003 was fairly typical as measured in heating degree days.)⁶

Pine Harbor's electric space heating is zoned to each apartment and controlled via a central Energy Management System (EMS). Apartment temperature setpoints are locked at 72 degrees for all the apartments and can only be changed by building engineers. (They raise temperature setpoints for tenants who have a doctor's note requesting it.) The Rinnai space heaters are not controlled by the EMS. They are set individually with their "child safety lock" features engaged to prevent tenants from adjusting them.

Prior to the retrofit, many tenants complained of insufficient heat. Bill McCabe, the building superintendent, reports that some tenants went so far as to hang icepacks on thermostats to fool the thermostats into making apartments warmer, or pulled out the oven's thermostats and ran the appliance with their doors open. (In some cases, the latter practice destroyed ovens by causing their heating elements to overheat and melt; tenants were billed for oven replacements and some left the building to avoid paying the replacement bill.) Since the retrofits, tenants have found their apartments much more comfortable and tenant-management relations have greatly improved.

At the end of 1998 prior to the retrofits, Pine Harbor had 32 vacancies – a 15.7 percent vacancy rate. Today the property has a vacancy rate of 2%, and a waiting list of people who want to move into the building.⁷ Mr. McCabe reports that some tenants from the neighboring Shoreline Apartments have been seeking warmer accommodations, and have moved to Pine Harbor. Shoreline Apartments is similar to Pine Harbor and was built at the same time by the same developer, but electric-resistance base board heat remains its primary heating source. There have been a variety of recent improvements to the management and condition of the property, but Mr. McCabe attributes 90 percent of the vacancy-rate reduction to the heating retrofits.⁸

³ Email from Peter Hoyle of Related Management, March 10, 2004. (Related manages Pine Harbor.)

⁴ See Attachment A.

⁵ Expenses do not include reserves.

⁶ See Attachment B.

⁷ Julie Ortenthal (the property manager) and Bill McCabe of Related Management report that four units are currently empty while each of their future tenant's section-8 housing assistance applications are being processed.

⁸ Personal communication with Bill McCabe, August 30, 2004.

In addition to the energy billing analysis by Taitem Engineering, IMT commissioned an appraisal to value the property and the incremental value attributable to the retrofits. The limited summary appraisal was prepared by Howard Schultz, a certified general appraiser and Member of the Appraisal Institute (MAI).⁹ In August 2004, he valued the property at \$4,650,000, of which \$1,150,000 was attributed to energy cost reductions due to the retrofits. Thus, the energy savings from the retrofits increased the value of the building by 33%, and the value increase was greater than the retrofit cost.

The estimate of the retrofits' incremental value does not factor in any changes in vacancy rates. A 1998-level vacancy rate at current rents would imply an annual vacancy loss of \$221,679. If one were to attribute to the retrofits 90% of the vacancy factor reduction from the 1998 level of 15.7% to the current vacancy level of 2%, then the retrofits would account for an increase in annual gross income of \$174,073. Of course, the increase in gross income was partially offset by an increase in variable costs affected by occupancy levels, including energy costs. Given the variable costs of the building, it is reasonable to expect that \$125,000 of the \$174,073 increase in gross income would accrue to the bottom line as increased net operating income.¹⁰ Capitalizing \$125,000 at 9.5% yields an incremental property value of \$1,316,000.

If we calculate the vacancy reductions to the Schultz appraisal's slightly higher 4% vacancy rate instead of the building's current actual vacancy rate of 2%, then the property value increment from the vacancy reduction attributable to the retrofits would be about \$1,150,000 – equivalent to the value of the energy savings.¹¹ Thus, total value of the retrofits including energy savings and lower vacancy rates would be about \$2,300,000 or 49% of the property's value.

Mr. McCabe was very pleased to report that there have been virtually no maintenance problems with the Rinnai direct-vented natural gas heaters in the four years since they were installed.

This case study is also based on review of articles and documents as well as interviews with individuals directly connected with the events and decisions described.

Conclusion

⁹ See Attachment C.

¹⁰ The \$125,000 is an estimate calculated by subtracting from \$174,073 the estimated increase in variable expenses that would result from the lower vacancy level. This assumes that almost 30% of the increase in revenue will be offset by higher variable costs, including energy, water, personnel, repair and maintenance costs. The assumed increase in variable costs is equal to almost 5% of the property's total 2003 fixed and variable expenses. Based on an examination of the building's actual 2003 variable costs, this assumption is conservative.

¹¹ Assuming a 4% vacancy rate, 90% of the annual effective gross income increase attributable to the lower vacancy rate would equal \$165,151 of which \$109,000 is conservatively assumed to accrue to the bottom line. This assumption is based on an examination of the building's actual expenses. Dividing \$109,000 by a 9.5% capitalization rate yields a value increment of \$1,150,000.

As the largest single operating expense in many apartment buildings, energy costs are usually an important factor in building value. Energy costs therefore merit great attention from appraisers, lenders, building owners and managers, and investments in energy efficiency can produce excellent returns in the value of a building. This is especially true in buildings such as Pine Harbor, where investing in energy improvements can significantly reduce not only energy costs, but also vacancy rates.

Converting most of Pine Harbor's heating from electric to natural gas resulted in an increase of \$1.15 million or \$4.68 per square foot in the in the building's appraised value – a 33% increase in the value of the property. Factoring in reduced vacancy rates attributable to the retrofits might double the retrofits' value. Factoring in vacancies, the return on investment (ROI) for the retrofits is 23.5%, and every dollar invested yielded \$2.31 in increased property value.¹²

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¹² To make the analysis more widely applicable to non-subsidized properties, these calculations do not account for the retrofits' low-cost financing. Accounting for financing would increase the ROI for the retrofits.