

# Multifamily Housing: CheckMate Realty and Development, Chicago

### Summary

CheckMate Realty and Development, Inc. (CheckMate), a Chicago property owner dedicated to providing high-quality affordable housing, worked with Elevate Energy and Community Investment Corporation (CIC) to retrofit a 31-unit multifamily building that provides affordable, unsubsidized housing in Chicago's South Shore neighborhood.

Elevate Energy is a nonprofit organization that designs and implements efficiency programs, with a particular focus on serving low- and moderate-income communities and the nonprofit sector. Elevate Energy offers energy efficiency services for multifamily buildings, with financing options available through CIC, the Chicago metropolitan area's leading lender for the acquisition, rehabilitation, and preservation of affordable rental housing.

**"Energy efficiency can play a key role in helping to preserve high-quality affordable housing. Owners can keep rents affordable by reducing their operating costs, and the upgrades also mean that tenants enjoy more comfortable apartments."**

*—Anne Evans, Chief Executive Officer,  
Elevate Energy*

In this project, CheckMate reduced weather-normalized source energy use intensity (EUI) by 36 percent through energy efficiency measures that included improved air sealing and insulation.<sup>1</sup>

<sup>1</sup> Source energy use intensity is a measure of how much total raw energy a building uses, commonly on a per square foot basis as used here.



Figure 1: Exterior of CheckMate's apartment building courtyard and entrance at 2909-29 E. 78th Street, Chicago.

Courtesy CheckMate

The total project cost was \$30,200, with \$12,000 funded through a low-interest loan.

A discounted cash flow (DCF) analysis calculated a net present value (NPV) of \$80,952 and an internal rate of return (IRR) equal to 46 percent for the retrofit. The total return on investment (ROI) was 368 percent, which corresponds to an annual ROI of 37 percent. In addition, the weather-normalized annual average gas savings of nearly 14,000 therms increased the annual net operating income (NOI) by approximately \$14,000.

### Lessons Learned

- A one-stop-shop advantage, such as that offered by Elevate Energy and CIC, can eliminate many of the transaction costs that can make retrofits overly burdensome for affordable housing property owners and managers.
- Multifamily property owners can often increase their NOI through cost-effective energy efficiency measures.

## Property Background

CheckMate's property at 2909-29 E. 78th Street is a four-story, multifamily property built in 1928 in the South Shore neighborhood of Chicago. The ground floor is unconditioned space that houses mechanical equipment, while the other three stories total 27,140 square feet of conditioned space, with 25 one-bedroom apartments and six two-bedroom apartments. For the last few years, the owner has charged \$650 per month in rent for one-bedroom units and \$750 per month in rent for two-bedroom units. CheckMate owns and manages the property and strives "to provide top-quality rental housing for low- to medium-income families, [often] reviving buildings that would [have] otherwise been left to deteriorate."<sup>2</sup>

The building uses a single-pipe steam heating system with a central gas-fired boiler. The owner pays for the building-wide heat and hot water, which are both master metered, as well as the common area electricity. Tenants pay for their apartment electricity and cooking gas, as these utilities are metered separately.<sup>3</sup>

When CheckMate purchased the building in 2009, 12 apartment units were vacant and the building needed moderate renovations. In 2010, CheckMate completed moderate construction to

2 CheckMate Realty, <http://www.checkmaterealty.com>.

3 The building owner used to pay for cooking gas for the tenants, but after acquiring the building, CheckMate installed separate meters for the cooking gas in each unit when it completed renovations.

## Building Information

**Name:** 2909-29 E. 78th Street

**Location:** Chicago

**Type:** Affordable, unsubsidized multifamily housing

**Units:** 31

**Year Built:** 1928

**"In the South Side multifamily market, rents have been flat while utility costs have risen. So, we look to energy efficiency as a way to help meet our expenses without raising rents."**

**—John Brauc, President,  
CheckMate Realty & Development, Inc.**

both the interior and exterior of the building—from fixing windows, lighting, ceiling fans, and installing new kitchen cabinets and floors, as well as new bathroom tubs, floors, and doors, to adding new electrical service and circuit breakers, repairing plumbing, conducting major repairs to rear porches, and separately metering the cooking gas in each unit. In addition, in 2013 the owner repaired two vacant units that were significantly damaged from fire and water.

## Project Background

In 2009, CheckMate began working with Elevate Energy and CIC to take advantage of Elevate Energy's full-service energy efficiency program for multifamily buildings and CIC's Energy Savers Loan offering, designed to help affordable multifamily building owners in the Chicago-area finance energy and water upgrades.<sup>4</sup> Elevate Energy and CIC have partnered to give building owners access to the information, services, and financing options that they need to make major investments in energy efficiency.

Elevate Energy offers a comprehensive approach to energy upgrades. Once an owner signs on, Elevate Energy conducts audits, identifies retrofit opportunities, helps the owner access incentives and financing, coordinates construction, and monitors post-retrofit energy performance for up to two years. The Energy Savers Loan offering from CIC provides 3 percent, 7-year secondary mortgage financing.

4 "Energy Savers Loan for Apartment Building Owners," Elevate Energy, last accessed July 29, 2015, <http://www.elevateenergy.org/prod/httpdocs/wp/wp-content/uploads/Energy-Savers-Loan-Info-Sheet-2014.pdf>.

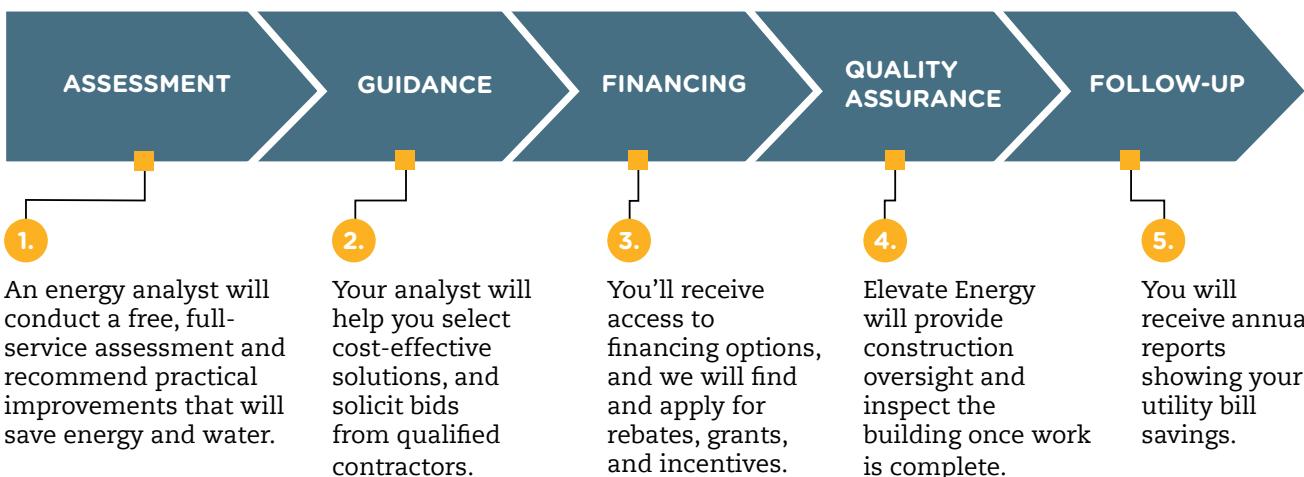


Figure 2: **Elevate Energy offers a full-service approach to building retrofits. Source: Elevate Energy.<sup>5</sup>**

With 29 multifamily properties in the Chicago area, CheckMate is a firm believer in retrofitting its buildings, as the owner has seen significant returns on its investments and increased operating income from energy efficiency measures. This building is located in an area of Chicago where owners often feel the tension between flat rents and increasing utility expenses. Because the market will not support rent increases, CheckMate looked to energy efficiency measures to help offset the rising operating costs.

In addition, multifamily building owners are usually restricted from taking out loans for more than 80 percent of their property's value. However, energy efficiency measures can help building owners leverage additional financing. By adding a low-interest energy efficiency loan from CIC, the same Community Development Financial Institution from which CheckMate obtained a mortgage, the owner was able to leverage up to 90 percent of the property's value.

## Efficiency Measures

Elevate Energy performed an initial building assessment on October 5, 2009, and recommended several energy efficiency measures based on

savings-to-investment analysis informed by an internal energy modeling tool.<sup>6</sup>

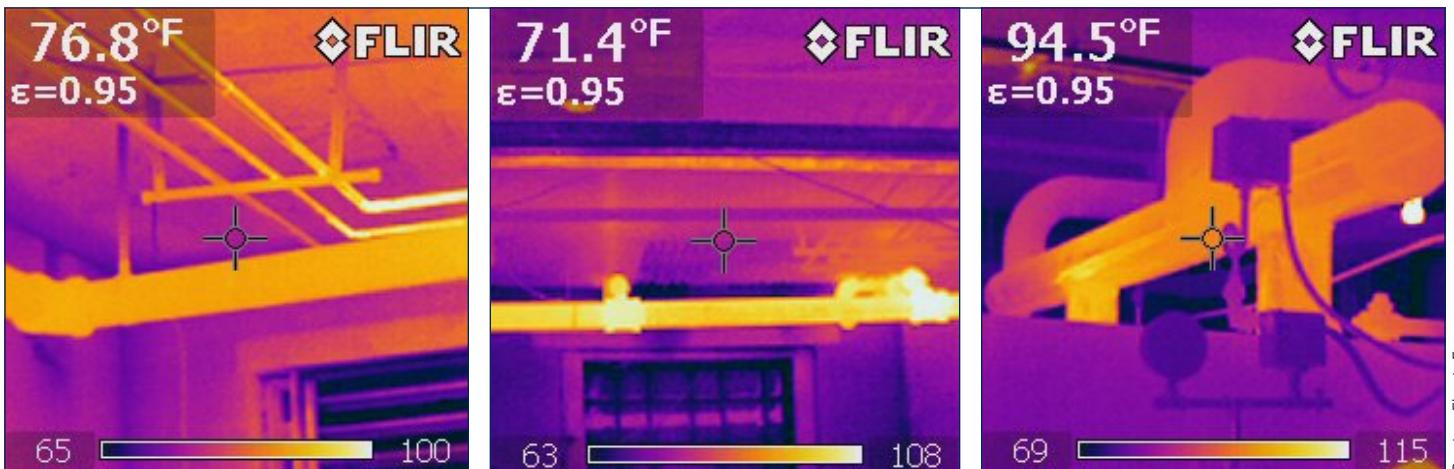
Between February 2011 and January 2013, Elevate Energy worked with CheckMate and qualified contractors to implement multiple energy efficiency measures. Overall, the steam heating system was unbalanced and each apartment was being heated differently. Moreover, the attic and roof were poorly insulated and losing heat, and large third-floor apartment radiators were needed to compensate for the heat loss. To improve the

<sup>6</sup> "Energy Audit Report," Elevate Energy, last accessed July 29, 2015, <http://www.elevateenergy.org/wp/wp-content/uploads/Sample-Energy-Savers-Report.pdf>.

## Retrofit Measures Timetable

- **October 2009:** Energy Assessment
- **February 2011 to January 2013:** Energy Retrofit Construction Period
- **February 2012:** Air Sealing; Roof Cavity and Attic Insulation
- **June 2012:** ComEd Direct Install Program
- **January 2013:** Domestic Hot Water and Heating Pipe Insulation

<sup>5</sup> "About Our Energy Efficient Building Services," Elevate Energy, last accessed July 29, 2015, <http://www.elevateenergy.org/for-building-owners-managers/energy-efficient-building-services>.



Figures 3, 4, and 5: Elevate Energy used thermal imaging to identify patterns and sources of heat loss in CheckMate's property.

Courtesy Elevate Energy

efficiency of the building envelope and heating system, contractors insulated the roof cavity and attic, performed air sealing, and rebalanced the floors. The team also replaced the boiler burners and adjusted the boiler controls.

In addition, the team installed water-saving showerheads, high-efficiency faucet aerators in the kitchens and bathrooms, and compact fluorescent light bulbs in each apartment unit. ComEd, the local utility, offered CheckMate these products for free through its Multi-Family Direct Install Program. Finally, contractors insulated the building's domestic hot water and heating pipes.

## Results

The efficiency measures described above resulted in multiple benefits to the building owner and tenants, with the most obvious benefits being energy savings and resident comfort. Figure 8 highlights the substantial gas savings realized from the efficiency measures by averaging the weather-normalized EUIs from two years of data, for both the pre- and post-retrofit time periods. Both baseload and heating load EUIs decreased after the retrofit, causing a reduction in fuel Source EUI from 152 kBtu per sq. ft. to 98 kBtu per sq. ft.<sup>7</sup> This is equivalent to overall gas

savings of approximately 36 percent.<sup>8</sup>

To more accurately compare energy datasets, Elevate Energy weather normalized the annual EUI data for this property. First, Elevate Energy determined the raw baseload, which is the amount of gas consumption unaffected by weather and unrelated to space heating, by calculating the average monthly consumption in the summer. This amount reflects gas usage for domestic hot water. Then, Elevate Energy subtracted the raw baseload from the total usage, as reflected in the utility bills, to calculate the raw heating load. It adjusted the raw heating load by using the ratio of heating degree days in the given year to the 30-year average for heating degree days in the area. Finally, Elevate Energy compared the pre- and post-retrofit weather-normalized totals to determine gas savings.

While the building occupancy rate increased from 61 percent in 2009 to 94 percent in 2015, occupancy rates generally do not affect the amount of energy that buildings with steam-pipe heating systems consume because such systems will heat entire buildings using central thermostats, and apartment units lack individual controls. Therefore, Elevate Energy did not factor occupancy or vacancy rates into its energy calculations.

<sup>7</sup> To convert site EUI to source EUI, ENERGY STAR Portfolio Manager's Technical Reference publication was consulted, and the conversion ratio of 1.05 for natural gas was applied.

<sup>8</sup> Although the modeling did not account for the cooking gas switch that transferred payment to tenants and would lower gas consumption for the owner, this is a small amount compared to that used for heating.



Figures 6 and 7: **Elevate Energy recommended insulation for the heating pipes in the basement.**

## Financial Performance

The retrofit measures cost \$30,200: the ComEd Direct Install measures were free, the air sealing and roof insulation cost \$12,120, and the domestic hot water and heating pipe insulation cost \$18,080. CheckMate financed \$12,000 of the project with a CIC Energy Savers Loan, and paid for the remaining costs from its replacement reserves.

For this case study, a DCF analysis was employed to calculate the value of the retrofit's energy efficiency measures. The following assumptions were made:

- 10-year useful lives for efficiency measures
- 5 percent discount rate<sup>9</sup>

9 As of publication date, a typical naturally affordable multifamily property in Chicago can access financing at interest rates around 4 percent to 8 percent. This case study uses a discount rate of 5 percent because the owner financed the improvements with a low-interest loan and replacement reserves.

- \$1 per therm initial gas price
- 1 percent annual increase in local gas price<sup>10</sup>

Based on these assumptions, the NPV and IRR of the building energy retrofit were \$80,952 and 46 percent, respectively. The total ROI was 368 percent, which corresponds to an annual ROI of 37 percent.<sup>11</sup>

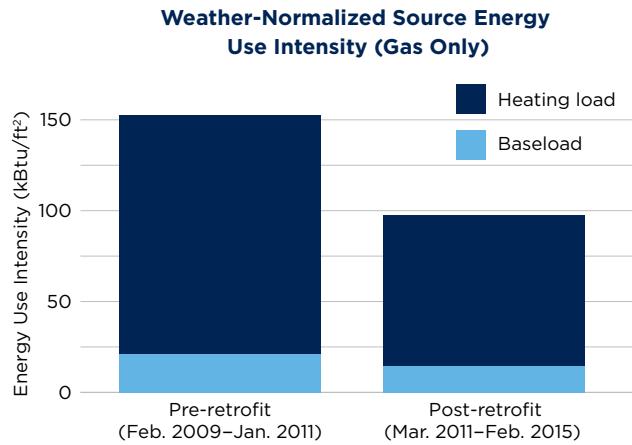
Figure 9 highlights the projected cumulative gas cost savings based on the DCF analysis. Between years two and three, the retrofit passes its break-even point and savings continue to accrue until the end of the assumed useful life for the efficiency measures.

**Property Value Background.** In 2009, CIC commissioned an appraisal from Patricia Maher, who performed the appraisal under the supervision of Ron DeVries, MAI, SRA. The report determined

10 Natural gas rates were \$0.835 in 2011; \$0.782 in 2012; \$0.797 in 2013; \$0.909 in 2014; and \$0.862 in 2015, as reported in BLS "Average Energy Prices, Chicago-Gary-Kenosha, January 2015," available at [http://www.bls.gov/regions/midwest/news-release/2015/pdf/averageenergyprices\\_chicago\\_20150309.pdf](http://www.bls.gov/regions/midwest/news-release/2015/pdf/averageenergyprices_chicago_20150309.pdf).

11 NPV is the sum of the present values of future annual gas cost savings less the initial cost of the efficiency measures. IRR is the discount rate that sets NPV = 0, i.e. the break-even point of the investment. Total ROI is the total present value of the gas cost savings divided by the upfront investment cost, while annual ROI equals total ROI divided by the estimated useful life of the efficiency measures.

Figure 8: **Comparison of weather-normalized fuel source EUIs before and after the retrofit.**



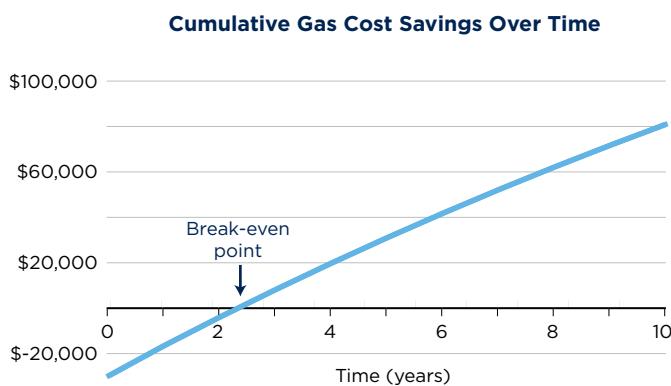
that the market value of the property, as of March 1, 2010, was \$1,350,000.<sup>12</sup> This hypothetical value incorporated the planned renovations and improvements.

The current market for this property is notably different than the market in which the 2009 appraisal was performed. Leading up to the time of the 2009 appraisal, many properties in the area were being purchased for conversion to condominiums until the market slowed down significantly. When properties were purchased for conversion, net income was not a significant factor in the purchase considerations and cap rates were less indicative of the value of walk-up apartment buildings being operated for rental income.

Presently, the real estate market has improved since the recession but the market area surrounding this property has not rebounded as quickly. Nonetheless, general feedback indicates that the value as a rental apartment building is greater today than the recession. Such results would come from a new appraisal but that is beyond the scope of this assignment.

<sup>12</sup> The 2009 appraisal used a 7.5% cap rate to determine income-approach valuation. Back then, the appraised NOI was \$97,560 based on gross annual income of \$227,610, with 10% vacancy loss, and estimated expenses of \$130,050. The 2014 Income Statement shows NOI of \$66,945, with net rental income of \$227,433 and actual operation expenses of \$162,886, including \$47,200 of property and liability insurance and property tax expenses that double the prior year expenses.

**Figure 9: Projected cumulative gas cost savings from the DCF analysis.**



## Financial Metrics

- NPV = \$80,952
- IRR = 46 percent
- Total ROI = 368 percent
- Annual ROI = 37 percent

### Retrofit's Potential Effects on Property Value.

The property's NOI is calculated by subtracting total operating expenses from total revenues. A capitalization rate (cap rate) is an indicator of property value and used by appraisers under the income capitalization approach to value. Dividing the NOI by a cap rate, derived from the market by an appraiser, translates the retrofit's effects on NOI into potential contribution to value. Potential added value of the retrofit measures can be approximated by dividing the increased NOI attributable to the reduced operating expenses by an estimated cap rate.

Market surveys of multifamily housing throughout Chicago show cap rates of 5.1 percent to 16.5 percent. This case study uses a 10 percent cap rate because of the subject's location south of the city core for walk-up properties, the property's consistent cash flow but restricted rental income upside, and increasing expense trends caused by higher tax and operating costs.

Based on the 10 percent cap rate, the potential added value from the energy measures that increased the NOI by \$14,000 from reduced operating expenses is \$140,000, or approximately a 10 percent increase in value based on the prior appraised value. A definitive assessment of value, however, would require a new appraisal and is beyond the scope of this assignment.

**Retrofit Potential Effects on Tenant Satisfaction and Occupancy.** Notably, the last time the building was issued a citation for failing to adequately heat a dwelling unit was in 2008, before Check-Mate owned the property. In addition, Check-Mate bought the property in 2009 when the building

had a 61 percent occupancy rate with 12 vacant units. The current occupancy rate is 93.5 percent, with only two vacant units. As moderate renovations were completed in 2010, and the energy efficiency upgrades were done from 2011 to 2013, it is difficult to determine to what extent the greater occupancy can be attributed to the energy efficiency retrofits. However, it is likely that the increased energy efficiency has led to improved tenant comfort and will help retain tenants in the future.

## Conclusion

Through energy efficient measures, CheckMate was able to improve its energy performance, reduce its operating expenses, and potentially increase its property value by as much as 10 percent. In addition, Elevate Energy's one-stop-shop model offered a complete package of services for the owner, streamlining the financing and construction process and making it easy for the owner to perform cost-effective building improvements.

Written by Megan Houston and Leonard Kolstad, Institute for Market Transformation.

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## Disclaimer

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## About the Institute for Market Transformation (IMT)

The Institute for Market Transformation (IMT) is a Washington, DC-based nonprofit organization promoting energy efficiency, green building, and environmental protection in the United States and abroad. IMT's work addresses market failures that inhibit investment in energy efficiency and sustainability in the building sector. For more information, visit [imt.org](http://imt.org).

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