Building America Case Study

Quantifying the Financial Benefits of Multifamily Retrofits

Chicago, Illinois

PROJECT INFORMATION

Location: Chicago, IL

Partners:

Elevate Energy, *elevateenergy.org*

Partnership for Advanced Residential Retrofit, *gastechnology.org/PARR*

Application: Multifamily

Year Analyzed: 2015

Applicable Climate Zones: All

PERFORMANCE DATA

Year of construction: 1920

Units: 30

Retrofit: Replaced boiler, insulated domestic hot water pipes, installed main line vents

Cost of energy-efficiency measures (including labor): $50,840

Net operating increase: 3.4%

Rental income increase: 7.8%

Gas consumption savings: 11.9%

There are nearly half a million multifamily units in Chicago. More than 250,000 of these units are in census tracts marked as low and moderate income by the New Markets Tax Credit Program database. Furthermore, more than 60% of low-income individuals living in multifamily buildings in Chicago reside in buildings that are more than 75 years old. This situation presents significant potential for energy savings in buildings that operate under very small margins and that need to capitalize on all possible cost savings.

In this project, the U.S. Department of Energy Building America team Partnership for Advanced Residential Retrofit (PARR) worked with Elevate Energy on three tasks: to conduct pre- and post-retrofit analysis on the income and expense data of 13 Chicago-area multifamily buildings, to compare Chicago income and expense data to two national samples, and to explore the ramifications that energy-efficiency retrofits have on nine Chicago-area neighborhoods. The project team collected building, energy, and income and expense data from multiple private and public sources.

The research revealed that the average net operating income from the 13 buildings increased by 1.6% post-retrofit and that national data sets do not accurately represent the income and expense data of Chicago's multifamily buildings. The rent, sales, and loan data from the neighborhoods showed that because of the low sales volume and perceived risk of investing in these neighborhoods, the value of energy-efficiency retrofits was not likely to be realized without the cooperation of the energy, lending, and appraisal industries.

Of the nine neighborhoods included in the study, the South Shore community area best exemplifies these findings. South Shore had a large volume of sales in 2014, yet the area maintains very high capitalization rates that will dampen the market value of these buildings.

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SOUTH SHORE HOUSING STOCK, RENT, AND SALES DATA

Total multifamily units: 3,256

Multifamily properties sold: 34

Average sales price/unit: $30,709

Capitalization rate: 11.3%

Sales volume: $22 million

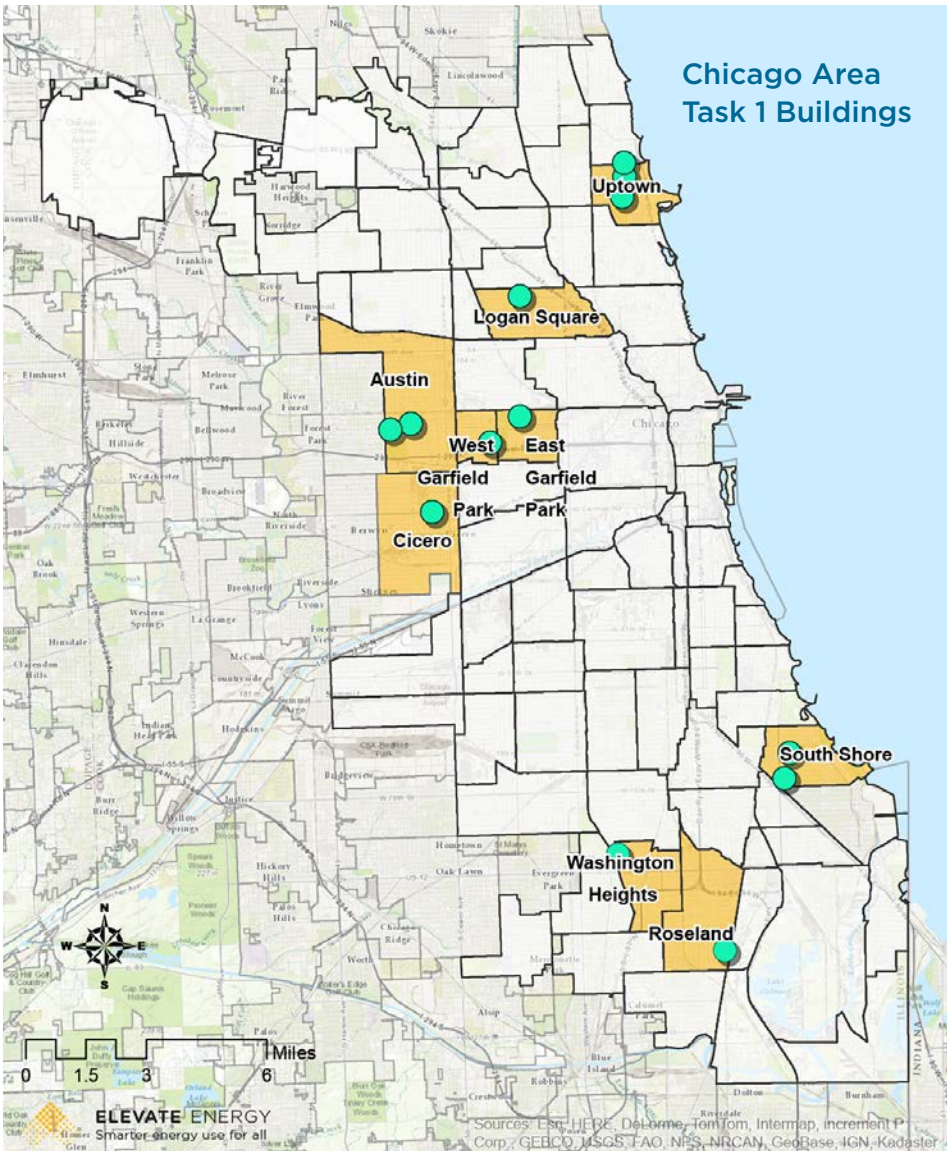
MARKET VALUE

The market value of a building is calculated with inputs of the capitalization rate, which is a measure of risk, and annual net operating income. Energy-efficiency improvements can increase the net operating income and in turn increase the building's value.

Retrofit measures included a new boiler.

For more information see the Building America report *Quantifying the Financial Benefits of Multifamily Retrofits* at *buildingamerica.gov*.

Image credit: All images were created by the PARR team.



Building locations for pre- and post-retrofit analysis and the community analysis.

Lessons Learned

- Financial benefits from energy-efficiency retrofits include increased net operating income, decreased gas costs, and increased rental income.
- In Chicago, utility costs are twice the costs of property taxes, which signals a greater percentage of variable costs that building owners can take steps to control.
- In 2013, 56% of mortgages were refinances; in South Shore, this number was 50%. This rate of refinancing represents significant opportunities—owners who have already invested in energy-efficiency measures can take steps to ensure their properties are fairly valued, and program implementers, lenders, and appraisers can reach building owners at the point of the refinancing transaction.

U.S. DEPARTMENT OF ENERGY
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