

## Leading by Example: How Multifamily Real Estate Companies Approach Energy Management and Savings

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In recent years, several state and local governments have created policies and programs to improve the energy efficiency of multifamily buildings.<sup>1</sup> At the same time, a growing number of private real estate companies have taken it upon themselves to reduce the energy use, greenhouse gas (GHG) emissions, and water consumption of these properties, piloting new ways to reduce the energy use and carbon footprint of their assets while steering their employees toward a focus on continuous energy management.

In the sections that follow, we profile three of these companies. Two are for-profit companies and one is a nonprofit. As table 1 shows, each varies in size, markets served, property holding period, and property class.

**Table 1. Multifamily case study company characteristics**

Characteristics	Urban American	AvalonBay Communities	Joint Ownership Equity (JOE) New York City
Number of U.S. properties owned	30	291	162*
Approximate property portfolio units	6,000	80,000	2,000
Property locations	Northeast	Northeast, Mid-Atlantic, West Coast	New York City
Average ownership/holding period	7–15 Years	10+ Years	10+ years
Primary property class (A, B, C)	B/C	A/B	C

\*An additional 24 developments, comprising 81 buildings and 1,591 units, were in JOE NYC’s acquisition pipeline as of late 2020. While property class definitions vary across the real estate industry, the Building Owners and Managers Association (BOMA) defines class A properties as those having rents above the local market average, class B properties as those having rents of roughly the local market average, and class C properties as those having rents below the local market average.<sup>2</sup>

All three companies have a history of pursuing building retrofit projects that target substantial reductions in energy use, GHG emissions, and water consumption. They are making energy efficiency improvements, installing renewable energy and storage systems, and increasing water conservation. All three companies are pursuing these projects to lower operating costs, improve property net operating income (NOI), and further efforts to mitigate climate change.<sup>3</sup> Other motivations include

<sup>1</sup> Multifamily properties can have varying definitions across jurisdictions and the housing industry. ACEEE defines *multifamily buildings* as those with five or more units.

<sup>2</sup> Building Owners and Managers Association. 2020. “Building Class Definitions.” Accessed September 2020. [boma.org/BOMA/Research-Resources/Industry\\_Resources/BuildingClassDefinitions.aspx](http://boma.org/BOMA/Research-Resources/Industry_Resources/BuildingClassDefinitions.aspx).

<sup>3</sup> Net operating income (NOI) is the revenue generated from a property minus its operating expenses and debt service. Property values are calculated by dividing a building’s NOI by its expected rate of return, also known as its *capitalization rate*. Reducing a property’s energy costs increases its NOI and market value.

improving building residents' comfort and health and preserving housing affordability.<sup>4</sup> We conducted interviews with senior staff at all three companies to learn more about the approaches they have taken to complete these projects and manage energy performance across their portfolios. We highlight one example retrofit project for each company to show how it approached financing or funding energy efficiency improvements. We conclude by highlighting several lessons drawn from their experiences that can benefit the larger multifamily market.

## Urban American

Urban American acquired the Roosevelt Landings Apartments in 2007. The buildings were constructed as part of the State of New York's Mitchell-Lama Housing Program, an initiative created in the middle of the 20th century to incentivize private housing developers to build rental and cooperative housing for middle-income households. However, faced with rising property values and the increased costs of maintaining these aging buildings, owners of nearly one-third of the 65,000 Mitchell-Lama units in New York City have since opted out of their commitment to maintain affordable housing for middle-income households.<sup>5</sup> With buildings constructed between 1974 and 1980, the Roosevelt Landings property is one of several Mitchell-Lama properties that Urban American purchased just before the Great Recession.

Prior to acquiring Mitchell-Lama properties, Urban American purchased and renovated several properties constructed shortly after the end of World War II. In doing so, the company's leaders often found that their usual approach to equipment replacements and renovations achieved substantial energy savings. They did not have a formal systematic approach for energy management in their properties, and they did not track how energy efficiency improvements were affecting their properties' NOI or market value.

In acquiring the Mitchell-Lama properties, Urban American saw an opportunity to expand its energy efficiency work and institutionalize it within the company's ongoing planning and operations. Roosevelt Landings had especially high electrical bills because the buildings had electric baseboard space heating located below aging windows that did not provide adequate insulation. Three electric meters monitored all apartments and residential common areas across 10 buildings. Urban American incurred high operating costs because they paid for all building electricity use. These and other conditions presented the company with significant opportunities to make large energy-saving investments that would substantially lower operating costs, increase NOI, and raise the property's value.

Roosevelt Landings underwent two rounds of energy retrofit projects. The first, in 2008, used energy efficiency incentives from NYSERDA's Multifamily Performance Program. A second, more

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<sup>4</sup> Housing providers that have received subsidies to maintain affordable rents for those with low or moderate incomes often have limited funding to cover operating expenses. Energy efficiency upgrades can help keep utility costs manageable for the property owners and managers while also reducing the risk that property equipment and appliances will quickly fail and need to be replaced.

<sup>5</sup> New York Housing Development Corporation. 2020. "Mitchell-Lama Preservation." Accessed January 2021. [nychdc.com/Mitchell-Lama%20Preservation](http://nychdc.com/Mitchell-Lama%20Preservation).

comprehensive project was undertaken in 2013 and involved both efficiency improvements and the installation of a combined heat and power (CHP) system.

The first retrofit project cost \$6.32 million and achieved a 15% reduction in building energy consumption, using funding from three years of the property's NOI and NYSERDA incentives. In 2012, Urban American saw energy use rise at Roosevelt Landings and identified several opportunities for the property to benefit from more capital-intensive energy-savings investments. Between 2013 and 2014, the company designed a \$7.4 million retrofit project to target an additional 18% in energy savings. The project scope included several energy-reducing measures:

- Upgrading older electric baseboard heaters to newer models equipped with faster heating coil materials
- Installing wireless thermostats that allowed residents to select comfortable temperatures controlled within predetermined time-of-day allowances
- Replacing an older, failing boiler system with a CHP system designed to generate 15% of the property's electricity onsite and fulfill more than 40% of its domestic hot water needs
- Enhancing air sealing for common areas and apartments
- Installing high-density spray foam directly below concrete floor slabs and at wall penetrations in apartments to prevent cold air penetration
- Converting remaining compact fluorescent lighting to LEDs

In addition to building improvements, Urban American also enrolled building maintenance and management staff in Building Performance Institute (BPI) Building Operator Certification courses so that they could better identify and address conservation opportunities.

While the first round of Roosevelt Landings retrofits was small enough in scale to be funded mostly through NOI revenue, the second round of work involved much larger upfront costs. Urban American had to ensure that the project and its financing were structured in a way that would secure internal company backing and attract equity from its investment partners. Doing so would involve several steps, as figure 1 summarizes and we describe in detail below.

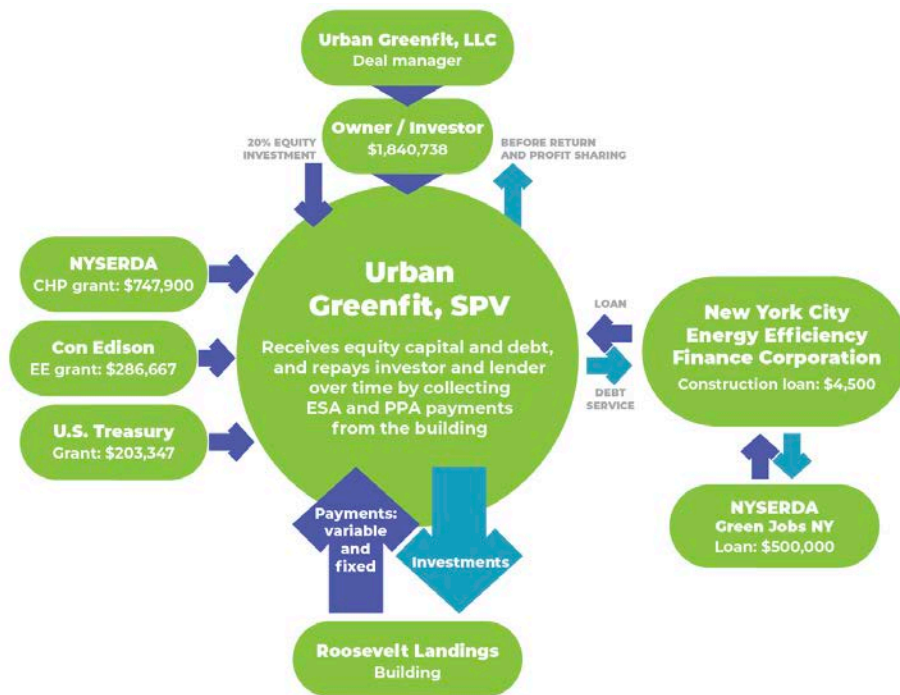


Figure 1. Second Roosevelt Landings retrofit project deal funding structure

First, Urban American set out to create and staff a new subsidiary, Urban Greenfit, to plan, finance, install, and maintain the project’s energy upgrades. Using a power purchase agreement (PPA), Urban Greenfit would finance, own, and operate the new CHP system. Under terms of the PPA, Roosevelt Landings committed to purchase the power generated at a set price for a specified length of time. This arrangement benefited Urban American in that it required no upfront capital commitment from the company and kept utility costs stable in the face of market fluctuations.<sup>6</sup> Urban Greenfit and Urban American also entered into an energy services agreement (ESA) to install insulation, custom air conditioner sleeve gaskets, LED lighting, and – most significantly – to add a new wireless heat control and management system. Urban Greenfit also cleaned and balanced the exhaust ventilation system. Under the ESA’s terms, Urban American agreed to make regular payments to Urban Greenfit from the expected energy-cost savings. Urban Greenfit would use these payments to cover the operating costs and debt associated with the upgrades.

Urban American applied to the New York City Energy Efficiency Corporation (NYCEEC) for a construction loan and to NYISERDA for a CHP grant and green jobs loan. The NYCEEC construction loan had to be approved by the property’s senior mortgage holder, Fannie Mae. While Fannie Mae did not at the time have a history of energy underwriting, it was in the process of developing a multifamily energy efficiency loan product. Fannie Mae ultimately approved the NYCEEC loan, in keeping with its growing commitment to energy efficiency.

<sup>6</sup> The CHP system also provided a resilience benefit to the property in that it could power the building in the event of a grid outage.

The two energy retrofit projects at Roosevelt Landings led to several positive outcomes:

- Between 2008 and 2018, the property experienced an 18% decline in energy use intensity and a 21% decrease in GHG emissions.
- After accounting for operating expenses, the CHP PPA generated revenues of \$226,880 and the ESA generated revenues of \$704,022 for Urban Greenfit.<sup>7</sup>
- Roosevelt Landings’ property value increased by \$20.7 million.<sup>8</sup>

Roosevelt Landings was recently sold, and the success of the prior retrofits led the new owners to pursue further energy-saving work. They financed the project using NOI revenue and investor equity rather than traditional debt. Urban American retrofitted its entire portfolio of Mitchell-Lama properties. Moving forward, the company is launching comprehensive energy retrofits across its entire New York City portfolio to decrease its energy use on the order of 15–25%, reducing operating costs while improving property values. Urban American is also participating in the New York City Mayor’s Carbon Challenge, working toward a goal of reducing its property portfolio’s GHG emissions by at least 30% over 10 years.<sup>9</sup>

### AvalonBay Communities

Avalon Union City, a 439-unit apartment complex in Union City, California, is an example of AvalonBay Communities’ commitment to its sustainability goals of energy and water efficiency. The property, shown in figure 2, was originally constructed in 2009 and underwent a retrofit project in 2018. The company leveraged available efficiency incentives to make sustainability improvements alongside regular capital work. Union City needed four new boilers, and AvalonBay Communities was able to bundle upgrades to high-efficiency boilers with several other improvements to obtain a total utility incentive of \$329,500 for the project. This \$1.44 million project achieved a return on investment (ROI) of 42% with a simple payback of 2.4 years. The comprehensive energy and water efficiency retrofit included several measures:



Figure 2. The Avalon Union City apartment complex

- High-efficiency water heaters
- Hot-water recirculation flow controls
- Variable-speed-drive spa pump
- Common area lighting upgrades
- Low-flow faucet aerators and showerheads

<sup>7</sup> Urban Greenfit accrued these revenues until the building was sold, at which point Urban Greenfit was unwound (closed out), leaving any future savings to accrue to the building’s new owner.

<sup>8</sup> The increase in property value was calculated assuming a 4.5% capitalization rate.

<sup>9</sup> For more information on the NYC Carbon Challenge, see [www1.nyc.gov/site/sustainability/our-programs/carbon-challenge.page](http://www1.nyc.gov/site/sustainability/our-programs/carbon-challenge.page).



In conducting projects such as these, AvalonBay Communities does not use any external financing. Instead, it uses internal funding to make the improvements. The company's experience has demonstrated the value of such projects and generated strong internal support from top management. Water efficiency projects in some of its properties have had especially strong returns. By internally financing projects, the company avoids encumbering its assets. To assess possible projects, AvalonBay Communities applies an internal ROI model and generally uses a 6.5-year simple payback as a threshold for projects to move ahead.

AvalonBay Communities has a long history of pursuing energy efficiency projects for its properties. Until 2014, it initiated these projects in a decentralized fashion, with some teams pursuing retrofits while others did not. This changed in 2014, when AvalonBay formalized its commitment to corporate responsibility and energy management. Together with the company's engineering team, the corporate responsibility and energy management staff began to focus on making strategic, data-driven decisions for company investments in green multifamily retrofits, new construction projects, and operations and maintenance improvements.

Today, a strong corporate commitment to sustainability goals extends throughout the company and all of its various business units, including engineering, development, property management, and finance. For the past several years, the company has worked toward a goal of reducing energy use intensity across its portfolio by 15%. Moving forward, the company has approved science-based targets, focused on reducing scope 1 and 2 GHG emissions by 53% below a 2017 baseline by 2030, and reducing scope 3 emissions by 47% over the same period.<sup>10</sup> The company can commit to these bold long-term goals because, compared to other real estate companies that acquire and sell their properties over a short span, AvalonBay owns and operates its properties for an extended period – roughly 11 years on average. This allows the company to better manage its assets' equipment through their life cycle.

### **Joint Ownership Equity New York City**

Joint Ownership Equity New York City (JOE NYC) is a nonprofit organization formed in 2015 that owns and manages affordable multifamily housing properties in collaboration with its members. JOE NYC members must be community development corporations that own housing in New York City; the members also make up the organization's board of directors. JOE NYC's properties are in four boroughs: Brooklyn, the Bronx, Manhattan, and Queens. Members transfer the beneficial interest of properties to JOE NYC's portfolio, and the net cash flow from these projects is passed to JOE NYC in the form of an asset management fee. These fees first pay for the organization's asset management operations, and a portion of these returns is deposited into a pooled operating reserve for member properties. Any remaining funds are distributed to members as unrestricted grant revenue. Properties contributed to the JOE NYC portfolio are held for a minimum of 10 years, though the expectation is that JOE NYC will be a long-term owner and asset manager of the real estate. The benefits of JOE's ownership increase as the size of the portfolio increases.

JOE NYC buildings tend to be smaller in size than those owned by the other two companies featured in this brief, with an average of 12-14 units per building. These properties can see substantial benefit from

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<sup>10</sup> *Scope 1* emissions are direct emissions from sources controlled by the company. *Scope 2* emissions are indirect emissions from the company's investments and activities. *Scope 3* emissions are from sources that are indirectly influenced by company investments and activities.

participating in a joint ownership entity such as JOE NYC. Smaller multifamily properties such as these can be some of the most difficult to manage for community housing organizations, from both a financial and organizational perspective. These challenges can prevent owners from investing to improve and modernize building systems. One way that JOE NYC addresses these challenges is by creating an economy of scale for purchasing and procuring services and goods. For example, JOE NYC procures group-rate contracts for natural gas and electricity, requiring that a certain percentage of the energy purchased be generated from renewable energy sources. It has also used a single request for proposal to bid out its planned rooftop solar projects for more than 80 properties to a single company, reducing installation, operation, and maintenance costs by as much as half of what would be expected in comparable separate projects. Through JOE NYC's collective effort, members can improve operating margins, reduce asset management burdens, expand access to financing, and ensure housing remains affordable in the long term.

JOE NYC properties typically undergo comprehensive rehab projects on a 15-year cycle. The portfolio includes many properties constructed before World War II, as well as some newer properties. JOE NYC's portfolio holds many opportunities for energy efficiency improvements and renewable energy systems, and the organization has a strong commitment to continually managing and enhancing the energy performance of its properties. To lead these efforts, it created a director of asset management position.

JOE NYC Uptown is a good illustration of the organization's focus on building energy performance. This rehab project involves 34 buildings with 386 units and a total of 348,323 square feet. The project scope includes several energy and health measures:

- New insulated roofs
- New efficient heating systems
- Rooftop solar systems<sup>11</sup>
- Façade work
- New windows
- Lighting upgrades
- Aging-in-place measures in kitchens and bathrooms

One property will be receiving a deep energy retrofit that involves a conversion to all-electric heating and exterior panelized façade insulation. This property is working to acquire an incentive from NYSERDA's RetrofitNY program for this work.<sup>12</sup> Once the JOE NYC Uptown project is complete, JOE expects to continually monitor the energy performance of the involved buildings in line with its standard asset management practices and to meet the requirements of its permanent capital providers. If the project proves successful, JOE NYC plans to explore the possibility of expanding this approach across other properties. In fact, a cohort of three member organizations is already working to coordinate plans for passive-style rehabilitations across 22 properties, sharing their own internal expertise, architectural services, and, potentially, builders.

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<sup>11</sup> Returns from the solar system will offset common space energy costs and may be used to partially buy down the cost of a switch to all-electric heating in one property.

<sup>12</sup> For more information on RetrofitNY, see [nyserdanyc.org/All-Programs/Programs/RetrofitNY](https://nyserdanyc.org/All-Programs/Programs/RetrofitNY).

The total project cost for the JOE Uptown project is roughly \$14,300,000. Seven housing portfolios in Harlem and Highbridge are being restructured into a single entity to pursue a rehabilitation loan from the NYC Department of Housing Preservation and Development (HPD) and a private lender. However, the project would not have been possible without a \$500,000 green predevelopment loan from NYCEEC that was used to fund preconstruction work for project planning and design.<sup>13</sup> NYCEEC's predevelopment loan was used to cover the cost of the Integrated Physical Needs Assessments, Phase I reports (building and surrounding area's environmental history), architectural fees, and hiring an engineering firm to identify and plan for the inclusion of additional efficiency opportunities that may have been missed in earlier assessments.

To apply for NYCEEC's green predevelopment loan, JOE NYC had to first work on securing the permanent rehabilitation loan with HPD and a private lender. NYCEEC worked with the borrower and permanent lender to secure a soft commitment for the predevelopment loan to be repaid when the permanent loan is issued. JOE NYC then filled out a relatively simple NYCEEC application to describe the intended work and the buildings involved. NYCEEC staff conducted its customary due diligence of the proposed transaction and provided loan documentation for final signatures.

## Lessons for the Broader Multifamily Market

In our interviews with the three companies profiled here, several key practices stood out as having the potential to be replicated across the broader multifamily real estate market. The companies used the following three strategies to help achieve substantial energy savings while generating a substantial ROI:

- *Cultivate senior company leadership buy-in for integrating a sustainability focus throughout the company's planning and operations.* All three companies increased their investment in energy efficiency and other green property improvements after creating formal senior-level positions to coordinate such work. This centralized and elevated each company's sustainability work, streamlining retrofit project work alongside other ongoing work. Over time, the staff members leading these efforts have used high-quality research, robust data tracking, and successful demonstration projects to garner buy-in from other senior leaders for increasing the scale of retrofit work across the company's portfolio.
- *Take advantage of available incentive programs to leverage investor equity and match the financial performance of the broader property portfolio.* All case study projects have incorporated incentives from utility programs or local and state government agencies. These incentives allowed all three companies to invest in more comprehensive retrofits – implementing more energy efficiency measures and obtaining higher energy savings than they would have from less comprehensive projects. Limited partner investment in retrofit projects proved to be an important funding source for Urban American and AvalonBay. Incentives also proved important in leveraging these investments to achieve a financial return comparable to that of the company's more conventional real estate transactions.

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<sup>13</sup> For more on NYCEEC's green predevelopment loan, see [nyceec.com/nyc-hpd-borrowers/](https://nyceec.com/nyc-hpd-borrowers/).



- *Use retrofit projects to create and capture new property value.* All three companies tracked the effect of their projects on property NOI and asset value. These companies held properties longer than is typical across the broader multifamily market, but doing so put each in a position to achieve substantial returns. While JOE NYC and many other affordable housing providers have a mission to improve the energy efficiency of residential units, for-profit companies have found it challenging to identify how reducing residents' energy bills can directly add to a company's income or value. However, AvalonBay Communities is exploring ways to justify larger investments in tenant units as part of its work to reduce the company's indirect scope 3 GHG emissions.

All three multifamily property companies featured here prioritize energy efficiency in their capital planning and ongoing operations. Staff within these companies worked hard to persuade leadership of the value in focusing on building energy performance. As a result, all three have dedicated staff and resources to track, plan, and improve the efficiency of their properties. However, not all companies have the same access to funding for this work. While for-profit companies such as Urban American and AvalonBay have access to substantial investor equity and property NOI, affordable housing providers such as JOE NYC face challenges in accessing these same funding sources. Predevelopment costs can be an especially challenging barrier to pursuing energy efficiency and clean energy projects. The JOE Uptown project illustrates that while the predevelopment costs for renovation and retrofit projects may be modest compared to overall project costs, they still can be substantial enough to impede or block projects from moving ahead. Revolving loan funds, such as the one backing NYCEEC's predevelopment loan program, show promise in opening up opportunities for more affordable housing providers to pursue comprehensive energy retrofit projects.