Funding and Financing for Rental Home Energy Upgrades

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Residential Retrofits for Energy Equity

Introduction

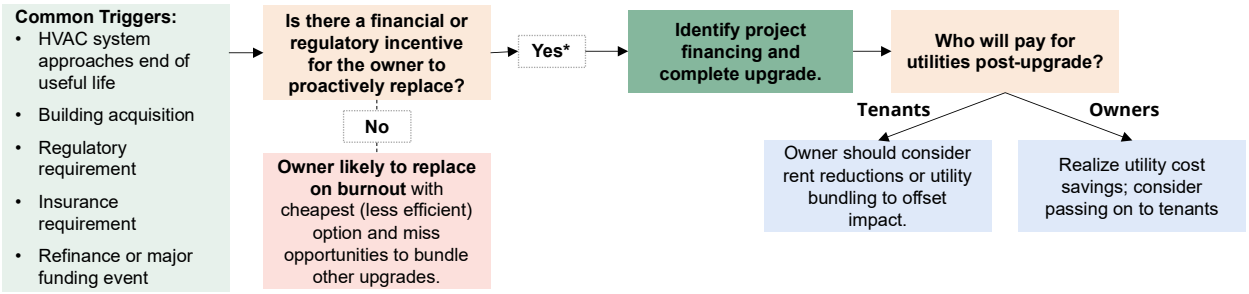
Implementing building energy efficiency upgrades in homes occupied by renter households earning less than 80% of the Area Median Income (AMI)[1] presents unique challenges. This technical assistance resource details considerations for rental property owners financing energy efficiency upgrades. It provides program administrators with creative ideas for leveraging state, local, and utility incentives, along with financing, to implement upgrades. It will assist administrators in designing programs that are responsive to the financial motivators and barriers faced by rental building owners. The resource also details challenges and case studies of funding and financing structures. It focuses on three of the most common building types occupied by renter households earning less than 80% of AMI: single-family (SF) market-rate rentals, 2–5-unit market-rate multifamily buildings, and larger (6+ unit) subsidized affordable housing. Larger market-rate multifamily buildings (6+ units) typically require higher rents due to amenities, scale, and investment of capital, and are less likely to function as naturally occurring affordable housing (NOAH) for households earning below 80% AMI and are not addressed in this resource.

When do rental property owners decide to make upgrades?

Despite the long-term operational benefits of building upgrades, rental property owners often delay or avoid these projects. Owners may struggle with high upfront or ongoing costs, uncertain returns, and renter impacts that make it challenging to proceed. These dynamics mean

[1] Area Median Income (AMI) is a key metric used in housing policy and planning to determine income eligibility for affordable housing programs like Section 8, the Low-Income Housing Tax Credit (LIHTC), and local housing initiatives. It refers to the median income of all households for a specific geographic area and is calculated annually by the U.S. Department of Housing and Urban Development (HUD). These AMI thresholds vary depending on household size.

that owners may delay upgrades until a natural decision point—such as refinancing, equipment failure, vacancy, re-leasing, or a regulatory/insurance requirement—particularly when the financial case for improvements is unclear or unfavorable. When evaluating potential upgrades, owners also assess how changes will affect ongoing payments, such as utility costs, and who will ultimately bear those costs. If an upgrade increases the owner's operating expenses, there is less incentive to pursue it. This challenge is especially pronounced in subsidized affordable rental housing, where rent regulations limit owners' ability to offset new operating or debt-service costs through rent increases, reducing their capacity to absorb higher monthly expenses associated with upgrades.



** Proactive replacement allows for owner to conduct an energy audit to maximize savings and bundle other upgrades.*

Figure 1. Milestones for building upgrades. Source: HR&A Advisors.

Who pays?

One of the greatest challenges to financing and implementing energy upgrades in rental housing is from the misalignment of costs and benefits between property owners and renters—specifically, the mismatch of who pays for utilities and who pays for the upgrades. For instance, if a renter pays for utilities, an owner does not have an incentive to invest in efficiency measures, as illustrated in figure 2. Interventions must work to address these challenges.

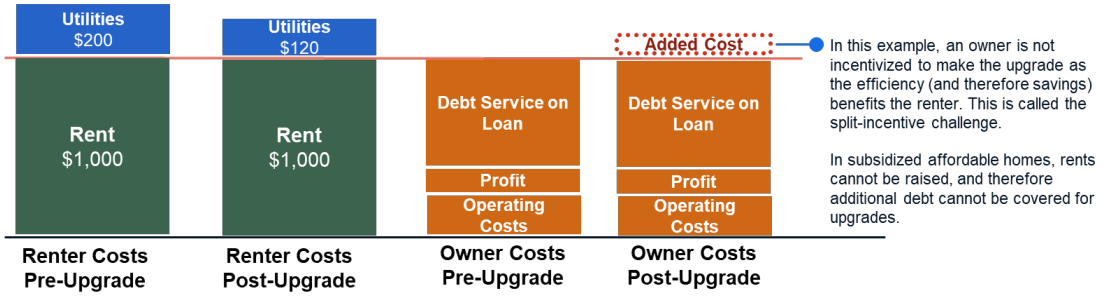


Figure 2. Split incentive and paying for upgrades

When owners decide on a building upgrade and understand the cost implications, the next step is to identify funding and financing sources. The availability of funding and financing sources will vary based on the region, the number of units, and whether the building is market rate or

subsidized affordable housing. There are four main sources of funding and financing for energy upgrades, detailed in figure 3 below, which can operate independently or in combination to maximize impact, depending on project needs and availability.

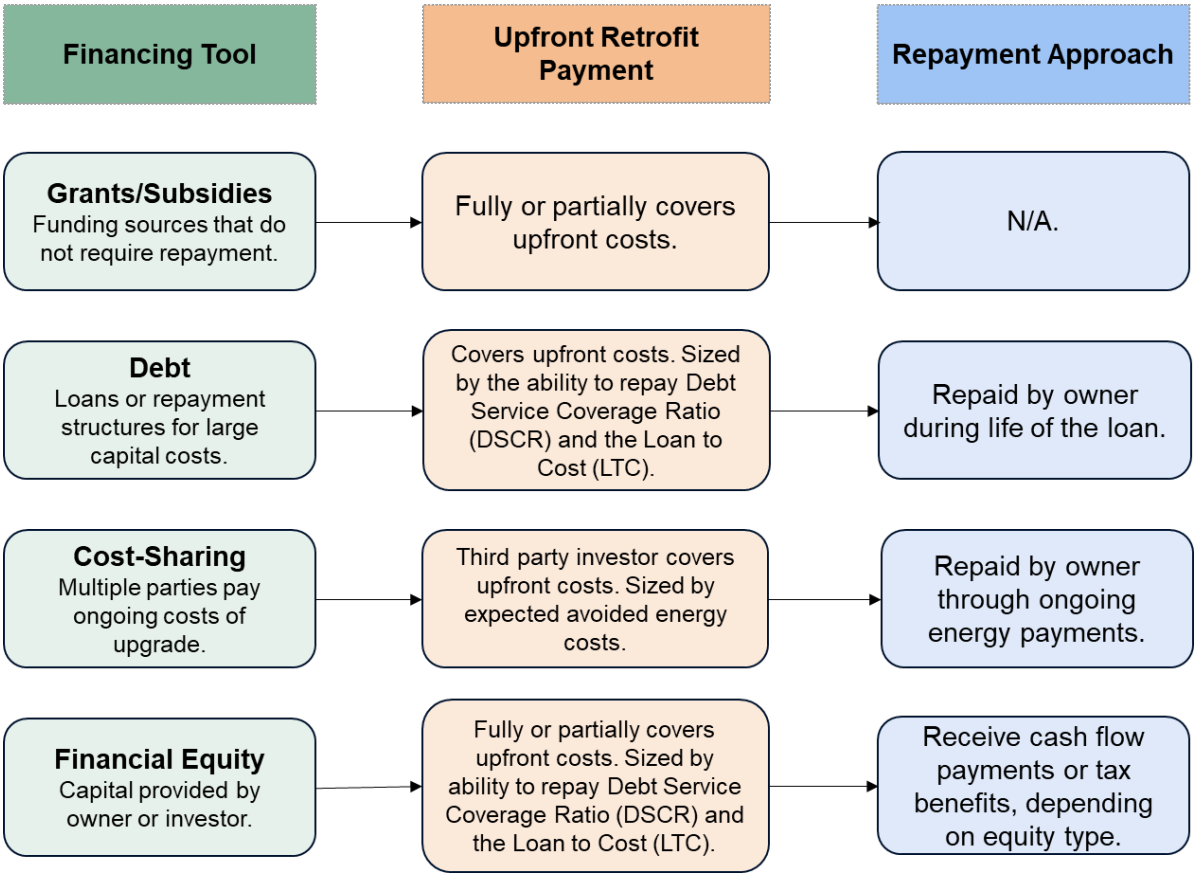


Figure 3. Basic funding and financing stack for building upgrades. Source: HR&A Advisors.

Funding and financing decision tree

When a building owner is deciding which funding or financing sources to use, the first step is to assess what is available in the market, what the owner can contribute, and whether the specific property can support additional debt. Figure 4 identifies some of these decision points.

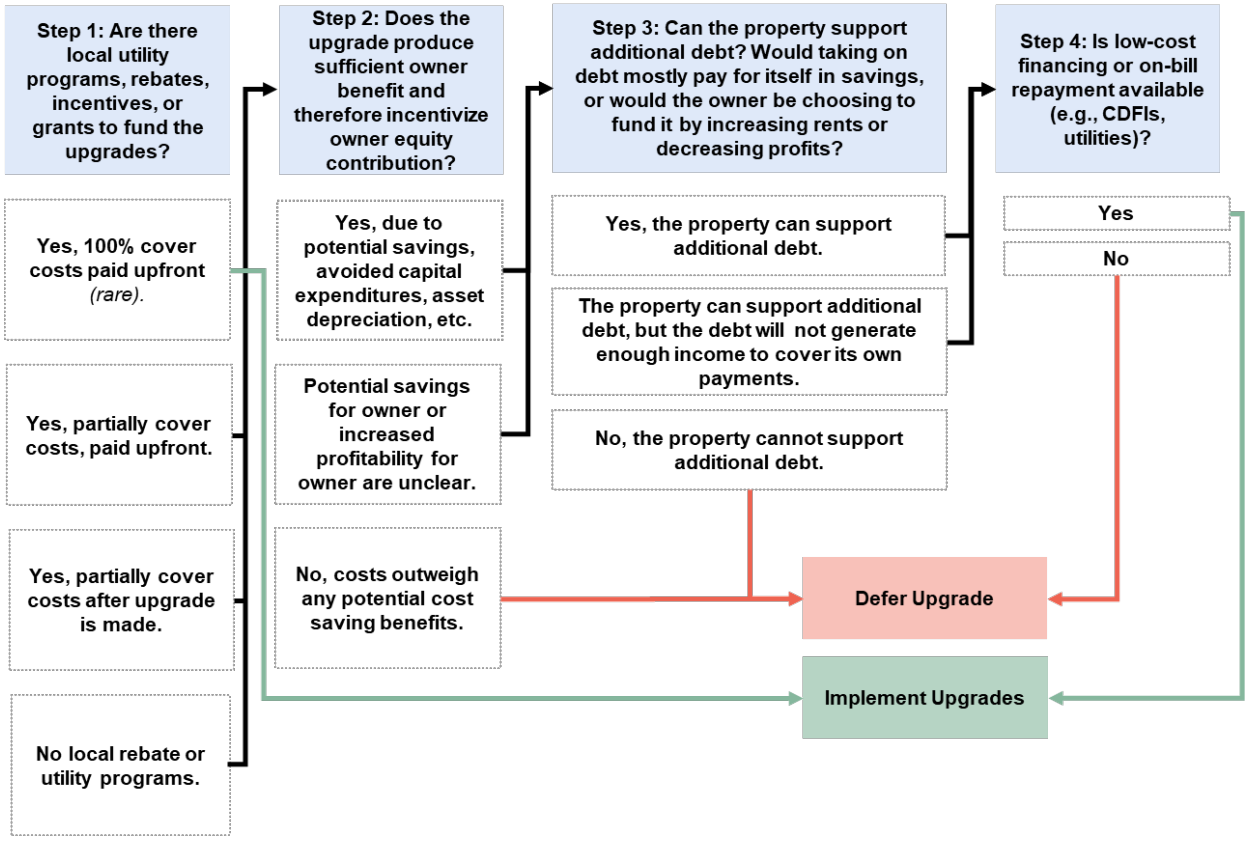


Figure 4. Financing decision tree for single-family and 2-4 unit multifamily. Source: HR&A Advisors.

Single-family rental upgrades

Upgrading single-family (SF) rentals requires a distinct funding and financing approach because upgrades to these properties are defined by unique characteristics, including smaller project scopes, limited returns, and fewer institutional supports compared to multifamily buildings. SF rental upgrades tend to be smaller projects with lower price tags and fewer bureaucratic procedures than their multifamily counterparts.

Motivators and challenges for single-family rental upgrades

Motivators	Challenges
• **Equipment failure** – Owners may be motivated to pursue additional work while already coordinating with contractors to replace failed equipment. • **Property and rental value** – High-efficiency appliances and home energy upgrades increase home resale values and property rental values. • **Resident comfort** – Efficiency and maintenance upgrades increase resident comfort and satisfaction, potentially leading to longer-term renter relationships. • **Reduced operations and maintenance (O&M)** – New, high-efficiency appliances can increase reliability and decrease O&M costs. • **Discounted capital improvements** – Energy efficiency incentives can decrease the cost of a needed upgrade (e.g., if heating, ventilation, and air conditioning (HVAC) or a water heater is at the end of its life).	• **Unclear cost savings** – Few single-family rental owners pay utility costs, and they are unlikely to see immediate savings from upgrades. • **Accessing incentives can be challenging** – Applying energy efficiency incentives often requires onerous paperwork or working with an unfamiliar contractor. This can make property owners feel like costly improvements are more trouble than they are worth. • **Debt aversion** – The single-family rental market is mainly comprised of non-corporate building owners (73% in 2021).[2] Small entities tend to have greater debt aversion. In addition, there may not be sufficient cash flow to support debt while still meeting return requirements. • **Inconvenience** – Many upgrades will occur while renters are occupying a unit. The installation phase can be inconvenient, disruptive, and frustrating for renters.

[2] Hermann, A. "8 Facts About Investor Activity in the Single-Family Rental Market." Joint Center for Housing Studies of Harvard University, July 18, 2023. Source.

Model for the single-family capital stack

Public funding for single-family energy upgrades varies by state and region. Because the total upgrade cost is relatively low compared to multifamily projects, SF property owners can often cover a substantial share of upgrade costs through non-debt incentives. The capital stack graph on the right, for example, represents a potential total cost of $20,000 for a SF retrofit. Income-qualified SF rentals (targeted to families making 80% of AMI or less) tend to have greater access to home repair and energy efficiency funding through municipal and state programs than market-rate housing.

Most SF rental owners are small, independent owners with a lower debt appetite than corporate entities. Given these factors, an ideal capital stack will maximize incentives and, where applicable, incorporate local home repair matching grants while minimizing loan options. If debt is needed to fill a financial gap, property owners may pursue low-interest financing.

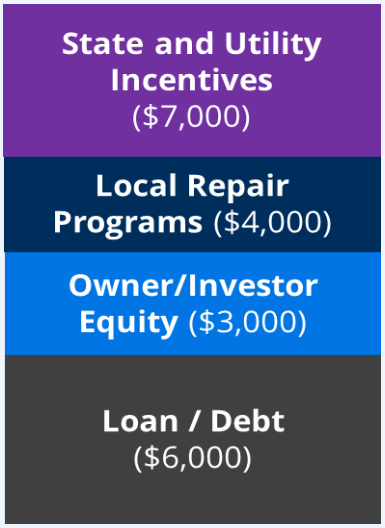


Figure 5. Example single-family retrofit capital sources

FINANCING TOOL SPOTLIGHT | Single-family upgrades in Ann Arbor, Michigan, and Buffalo, New York

The capital stacks below outline the funding sources for two similar home heating projects located in comparable geographic areas: Ann Arbor, Michigan, and Buffalo, New York. These upgrades were facilitated by energy efficiency programs, which assisted in pulling together multiple rebate and incentive sources. In each project, the property owner assessed the cost effectiveness of an air source heat pump installation. The Ann Arbor project was a market-rate property, while the Buffalo project was income qualified, meaning participants had to meet an income threshold to qualify for the program. The property owners' alternative option was to install a non-efficient heating (or HVAC) system at a representative cost of $15,000, the going rate in both cities. In both cities, property owners had access to a range of stackable incentives. The figure 6 below shows their maximum available incentives, financial equity investment, and debt availability.

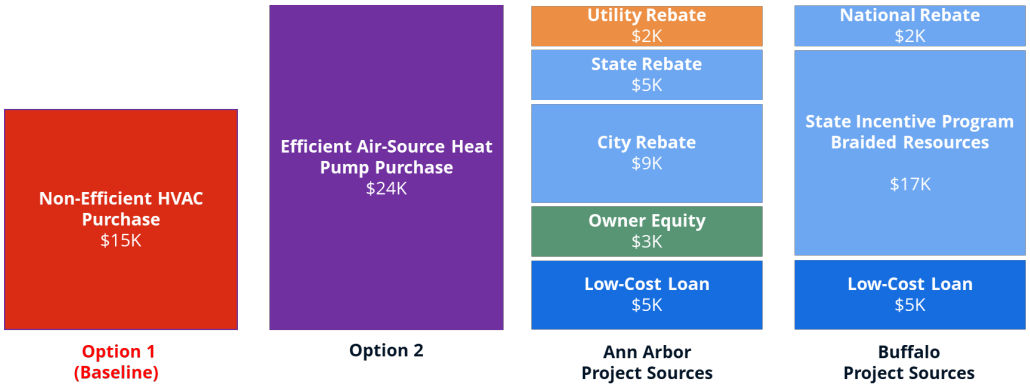


Figure 6. Proposed upgrade: cold climate air source heat pump ($24,000) and alternative non-efficient HVAC ($15,000). Source: Elevate and HR&A.

Accounting for these incentives and rebates, the heat pump was the cheaper option in both the Ann Arbor and Buffalo examples. However, both projects had barriers to entry. For instance, depending on the structure of the rebate, property owners may have needed to provide additional upfront capital. While this would be reimbursed through the rebates, many owners may not have had the ability to provide additional payment upfront.

Example 1: Ann Arbor, Michigan, owner cost by option

The Ann Arbor property owner had the capacity to invest a small amount of financial equity to offset overall debt costs. They also had access to $5,000 of low-interest debt through a local green bank. The Ann Arbor property owner spent $7,000 less and borrowed $5,000 at a lower rate than if they had opted for the standard upgrade.

Example 2: Buffalo, New York, owner cost by option

The Buffalo property owner could not contribute equity and covered the entire incentive gap with low-interest debt. The owner still saved $10,000 in total loan payments compared to a standard upgrade and, given their limited equity, borrowed at a lower rate than they would have been eligible for on a standard upgrade.

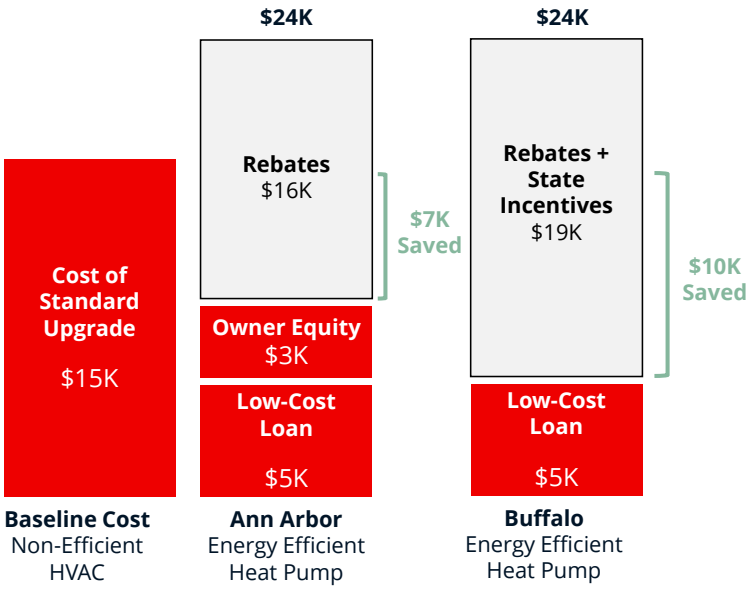


Figure 7. Cost to owners. Source: Elevate and HR&A.

2–5 unit multifamily rental upgrades

Roughly 80% of all housing affordable to households earning less than 80% of AMI is unsubsidized, otherwise known as naturally occurring affordable housing (NOAH).[3] Many of these homes are small multifamily buildings (2–5 homes), which make up a significant share of the U.S. rental stock. NOAH properties remain affordable to low- and moderate-income residents due to their age, condition, or location and they do not rely on government subsidies. Although they are an important source of affordable housing, NOAH properties have access to fewer financing sources than subsidized affordable housing and lack the mechanisms to preserve affordability after upgrades, which risks higher rents and the displacement of renters.

Motivators and challenges for small multifamily rental upgrades

Small multifamily properties (2-5 homes) share many of the same challenges that larger multifamily owners face—navigating funding needs, engaging renters, and managing multifaceted property operations—though often on a different scale. The section below includes specific considerations for small multifamily buildings.

Building energy upgrades for small market-rate multifamily properties are generally privately funded, with some grants or subsidies. Typically, these buildings require less time to secure capital compared to larger subsidized affordable properties but have fewer low-interest financing options. Owners of small, market-rate multifamily properties may consider upgrades during building refinancing or when equipment and systems reach the end of their useful life.

Motivators	Challenges
• **Building value** – Improved financial performance and physical conditions can increase building values. • **Opportunity to leverage subsidies** – Allows owners to address deferred maintenance expenses that they could not otherwise fund. • **Increase cash flow** – Efficiency upgrades can reduce utility bills, maintenance	• **No payback or long-term payback periods** – Utility cost savings are challenging to quantify and may depend on overall efficiency, meter structure, and electricity cost. When renters pay utility bills, there is less direct incentive or clear payback for the owner (i.e., split incentive). • **Onerous program requirements** – Many rebate and low-cost loan programs have strict

[3] Corso, A., P. Coleman, C. Oleksiak, and J. Viner. "Making Naturally Occurring Affordable Housing More Efficient: Outreach to Upgrade." Elevate, 2022. Source.

Motivators	Challenges
costs, and vacancy. These factors increase the buildings' net operating income (NOI). • **Reliability and safety** – New systems reduce the need for costly repairs and disruptions. • **Compliance** – Sometimes required by law within a jurisdiction to meet more-stringent building code standards. • **Require smaller total capital contributions than larger multifamily properties** – It is more feasible for third-party investors or funders to support buildings with a smaller total development cost. • **Risk mitigation** – Improved financial stability from reduced expenses, higher retention of renters, and increased cash flow lower the risk of loan delinquency.	requirements and administrative steps that may be time-consuming for owners. • **High upfront costs** – Owners may not have equity to contribute and properties may not be able to take on additional debt payments. • **Lack of familiarity** – According to a study by the Urban Institute, 77% of 2–4 home properties are owned by small-scale landlords. These owners cannot leverage economies of scale across large portfolios and may require additional technical support.[4] • **Reactive building repairs** – Many owners do not consider repairs until after a system fails, increasing urgency of projects and reducing flexibility in timing/financing sources and equipment selection. In one Terner Center survey, 25% of small multifamily building owners said that they had postponed maintenance of some kind.[5] • **Inconvenience to residents** – Energy upgrades often require access to homes, outages, or noise, which can lead to resistance or delays. • **Temporary renter displacement** – More significant rehabs may require temporarily relocating renters, which requires careful planning, clear communication, and protections to prevent permanent or harmful displacement.

[4] Goodman, L., K. Reynolds, and J. H. Choi. "Owners and Renters of 6.2 Million Units in Small Buildings Are Particularly Vulnerable during the Pandemic." Urban Institute, August 10, 2020. Source.
[5] Manji, S., and N. Decker. "The Ownership and Management of Small Multifamily Rental Properties." Terner Center for Housing Innovation, January 2024. Source.

FINANCING TOOL SPOTLIGHT | Retrofitting small multifamily buildings with Sustain Dane Energy Navigator

Owner challenges

- Insufficient capital to bridge funding gaps for building upgrades.
- Lack of knowledge/access to diverse funding sources.

Efficiency Navigator
Making multi-family housing affordable and resilient
A partnership with Sustain Dane and Elevate

Program

To address these challenges, Dane County, WI, and Elevate created the **Sustain Dane Efficiency Navigator**. The navigator provides building assessments to small- to medium-sized building owners, offering an implementation roadmap and technical assistance to help navigate funding programs and secure contractor support.

The program provides its support by aggregating federal, state, philanthropic, and utility funding under one program roof. The Navigator program is typically able to cover nearly 100% of an upgrade's total cost with projects ranging from $20,000–$80,000.

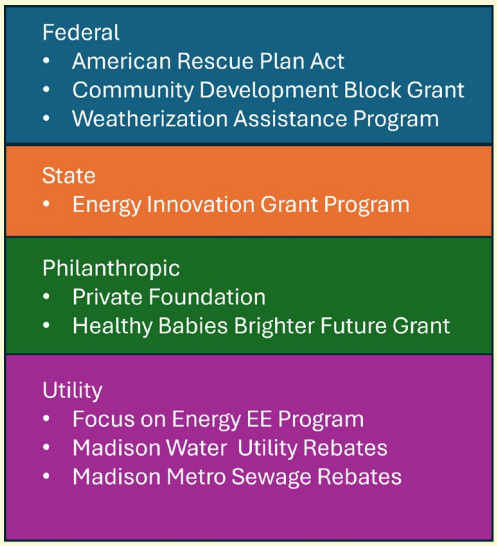


Figure 8. Funding sources for retrofit programs. Source: Elevate.

Subsidized affordable multifamily rental upgrades

Subsidized affordable homes are properties where rents are reduced and supported by public or philanthropic funding to ensure affordability for low- and/or moderate-income households. Subsidized affordable housing makes up 12% of the rental housing stock in the United States.[6] Typically, affordable multifamily homes have rents that are affordable for households earning less than 80% of AMI. Homes may be subsidized through several methods, including the Low-Income Housing Tax Credit (LIHTC) program or a Public Housing Authority (PHA) subsidy, such as tenant-based vouchers, project-based vouchers, or public housing.

Motivators and challenges for subsidized affordable multifamily rental upgrades

Building retrofits for subsidized affordable multifamily properties may access capital from fully public or public-private sources. Affordable multifamily properties typically align retrofit timelines with financing or subsidy milestones, such as the end of a government subsidy or the end of a mortgage term.

Motivators	Challenges
• **Interest in reducing operating costs** – Affordable housing owners are motivated to reduce operating costs as there is limited flexibility to increase their NOI compared to market-rate buildings. • **Portfolio efficiencies** – There is potential for affordable housing owners to replicate and scale energy upgrade scopes across portfolios, creating both cost savings and administrative efficiencies. • **Opportunity to leverage additional subsidy sources** – Owners are accustomed to gathering financing sources from funders that require physical needs assessments, longevity standards, and long-term capital plans.	• **High upfront costs** – Building upgrade costs may be prohibitive in buildings with subsidized affordable rents. Properties may not be able to take on additional debt payments. • **Competing capital need priorities** – Owners may have reduced motivation to pursue energy efficiency measures due to other priorities, such as deferred maintenance challenges, or expiring affordability restrictions. • **Limited staff and resources –** Owners often operate with small teams that are managing competing responsibilities that would often be distributed among multiple job titles, making it difficult to manage

[6] HR&A Advisors analysis of National Housing Preservation Database (NHPD) and U.S. Census Bureau ACS 2023.

Motivators	Challenges
	complex upgrades, funding applications, and renter engagement simultaneously. • **Capped renter payments** – Federal subsidies limit the amount renters pay toward housing, including utilities, which can ultimately impact a building's NOI. For renter-metered utilities, a building upgrade could shift the amount a renter pays toward utilities (see "utility allowance" explanation on the following page) depending on the type of building and source of funding. • **Inconvenience** – Many upgrades will occur while renters are occupying a unit. The installation phase can be inconvenient, disruptive, and frustrating for renters.

Subsidized affordable multifamily considerations

Most financing tools that apply to SF and 2–5 unit market-rate multifamily properties are also applicable to affordable multifamily properties (figure 4). However, subsidized affordable housing owners must account for additional considerations. Most funding and financing sources for subsidized properties also have specific terms for additional debt, lien position, and repayment expectations. Therefore, subsidized affordable housing owners must operate creatively to meet capital repair or maintenance needs and integrate additional subsidy sources targeted at building energy upgrades. At the same time, properties that qualify as subsidized affordable may be eligible for supplemental financing tools not available for market-rate developments, especially to support properties that generate minimal revenue. Affordability regulations attached to these properties also limit rent increases, limiting owners to funding sources and investors that can work within this business structure. Finally, the ability of affordable building owners to pursue financing for energy upgrades is contingent upon the state's subsidy structure and project-specific capital stack.

Appendix A outlines each funding or financing tool by applicability to subsidized affordable housing and considerations, including potential benefits and drawbacks. Appendix B summarizes affordable housing funding sources.

While low-cost funding sources are more prevalent for subsidized affordable housing, existing affordable housing finance structures may increase the complexity of braiding resources together, such as those related to timing constraints, underwriting requirements, or regulatory

barriers. The callout boxes below highlight two commonly used affordable housing finance structures that can integrate energy efficiency measures with funding plans: **Low-Income Housing Tax Credits (LIHTC) and Rental Assistance Demonstration (RAD) Conversions of Public Housing.**

For both LIHTC and HUD-assisted properties, including RAD conversions, maximum rents and total housing cost limits are set based on geography and household income and include an allowance for utilities. When renters pay utilities directly, owners must assign a utility allowance, which affects both rent levels and owner revenue. Following energy efficiency upgrades, utility allowances may be reduced to reflect lower energy use, allowing some of the savings to be captured by the owner within the existing rent structure—without increasing total housing costs—to help support financing for upgrades. For HUD-assisted properties, this has included the use of the Energy Performance Contract (EPC) program, which allows housing authorities to pay for facility upgrades with future energy savings.[7] The extent to which these mechanisms can be used depends on individual subsidy program rules and utility allowance methodologies, and updates are often constrained by regulatory and administrative requirements.[8]

[7] U.S. Department of Housing and Urban Development. "Public Housing Energy Branch." HUD.gov. https://www.hud.gov/helping-americans/public-housing-energy-branch.
[8] *Affordable Housing Owner's Guide to Utility Allowances*. California Housing Partnership Corporation & National Housing Law Project, April 2016. https://chpc.net/wp-content/uploads/2016/04/UA-Guide_April-2016Web.pdf.

Leveraging LIHTC for efficient, affordable buildings

LIHTC is the largest federal program for funding affordable rental housing in the United States, leveraging public-private partnerships to infuse funding equity into projects. State housing finance agencies award LIHTCs to developers through a competitive process. Developers then sell those tax credits to private investors (e.g., banks or syndicators) in exchange for upfront financial equity in the project, reducing the amount of debt that the developer needs. In return, the investor receives tax benefits over 10 years and becomes a limited partner in the project.

Why does this matter for energy upgrade programs?

- Since it is the most common form of subsidy for affordable housing, aligning program design to the needs of LIHTC developers can help to increase uptake. This may include
    - Offering 0% interest loans—with repayment deferred or forgiven if there is insufficient cash flow—aligns better with LIHTC financing than grants, as grants or reductions in hard costs can negatively affect eligible basis.
    - LIHTC application timelines are long and rigid; administrators should align their process with the jurisdiction's LIHTC framework to combine funds.
    - Many state LIHTC programs offer bonus points for energy efficiency.

RAD conversions as a tool to access capital

The Rental Assistance Demonstration (RAD) program is a HUD initiative that allows public housing authorities (PHAs) to shift from fully owning and operating their own affordable housing portfolio (Section 9) to providing subsidies to private developers who set aside affordable units as part of privately owned and operated housing (Section 8 Project-Based Rental Assistance). This allows agencies to combine public with private financing to rehabilitate buildings.

Why does this matter for energy upgrade programs?

- PHAs can **access financing tools** like federal tax credits and private loans and partnerships with private developers or investors.
- With new sources of financing available, energy efficiency upgrades become more feasible.
- Section 8 contracts provide **more predictable income** because of established total housing limits, making it easier to acquire other debt, such as Energy Performance Contracts, which enable property owners to borrow against future cost savings to support improvements.
- Affordability restrictions and built-in renter protections mandated by RAD and Section 8 programs ensure that **energy upgrades will not displace existing residents.**

FINANCING TOOL SPOTLIGHT | Atlanta Housing Energy Efficiency Rent Boost

Owner challenges

Owners of homes occupied by residents who use a Housing Choice Voucher are required to follow a set rent rate (based on the rental payment standard agreement). Therefore, there is low incentive to invest further in the property. Some owners may lack sufficient access to capital for building rehabilitation.

Program

To incentivize energy efficiency upgrades in homes, the Housing Authority of Atlanta (Atlanta Housing) developed the Energy Efficiency Rent Boost. The program, administered by Atlanta

Housing, provides additional monthly rental payments to owners and increases access to low-cost capital through a partnership with the Solar Energy Loan Fund (SELF).[9]

Financing provided

- Landlord incentive programs are a common strategy to increase uptake of tenant-based vouchers (TBV), most commonly HUD's Housing Choice Vouchers (HCV).[10] The Energy Efficiency Rent Boost increases the rental subsidy given for HCV units after a landlord completes qualified energy efficiency retrofits.
- The program can be paired with the Sustainable Energy Efficient Rental (SEER) Loan from SELF.[11] The increased rent rate provided through the program can help offset some loan repayment costs.
- Upgrades may qualify for rebates from the local utility, Georgia Power.

Process

1. Landlord applies for financing of proposed energy upgrades.
2. Energy upgrades completed using loan financing.
3. Verification of upgrade completion. Owner or contractor receives Georgia Power rebate payment.
4. Rent Boost approved based on upgrade level.
5. Boost remains as long as renter remains in the home.

Program benefits

The owner benefits from additional rental payments to offset increased costs for the duration the renter remains within the home. In the case of renter turnover, the same home is eligible for the Rent Boost if the previous Rent Boost level had been certified within the last five years. The renter benefits from improved heating and cooling.

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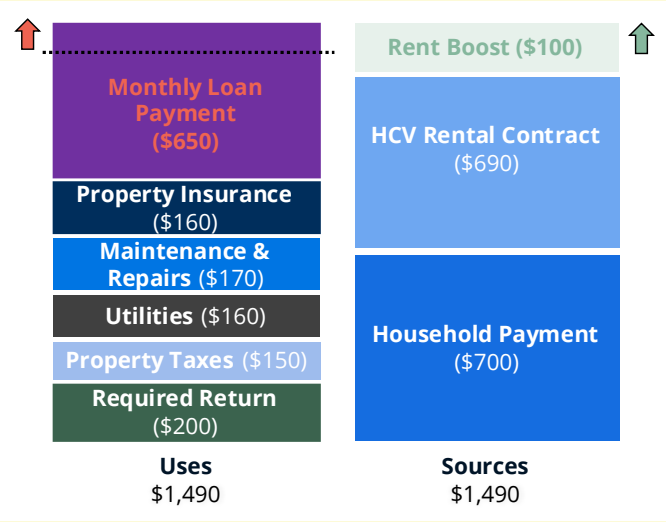
[9] The Solar Energy Loan Fund is a community-based lending organization, certified as a Community Development Financial Institution (CDFI) whose mission is to "rebuild and empower underserved communities by providing access to affordable and innovative financing for sustainable home improvements." Source.

[10] HUD (U.S. Department of Housing and Urban Development). "Landlord Incentives Guidebook: Monetary Incentives and Reimbursements." Source.

[11] Solar and Energy Loan Fund (SELF). "SELF Launches New Loan for Energy Efficiency Upgrades." November 22, 2021. Source.

Solar and Energy Loan Fund (SELF). "Landlord Loans | Energy Improvements Loans for Landlords." Source.

Monthly owner payments (representative example)



In this example, **monthly loan payments** increase with the adoption of energy efficiency measures. To offset this increased cost, the **rent boost program provides additional monthly payments** to the owner, supplementing the existing HCV subsidy.

Acknowledgments

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Appendix A: financing tools

	Funding or finance tool and definition	Applicable housing type	Best suited for scale of upgrades	Reduces upfront cost	Reduces operating costs*	Advantages	Drawbacks
DEBT	Low-cost loans Below-market interest rate debt. Cost of capital often lowered by public or quasi-public sources. Low-cost loans may be forgivable depending on the lender, project type, and affordability restrictions.	Both subsidized affordable and unsubsidized affordable (NOAH)	Moderate to large	Yes	No	Below-market rate financing tied to efficiency and/or affordability restrictions; affordable properties will often get flexible repayment terms.	Administrative burden of compliance/reporting; underwriting requirements; increases debt burden if structured as a mandatory repayment.
	Commercial Property Assessed Clean Energy (C-PACE) Typically, below-market financing for buildings to make energy efficiency improvements that is repaid through a special assessment on property tax bills. The loan stays with the property instead of the owner and can transfer to a new owner upon sale. It reduces the need for equity or other higher-cost debt.	Both subsidized affordable and unsubsidized affordable (NOAH)	Moderate to large	Yes	No	Reduces need for capital for upgrades; long-term, fixed financing rate; transferable with property (useful for sales or refinancing); off-balance sheet.	Complex underwriting and legal process; C-PACE requires being in a senior lien position, meaning it gets top priority for repayment of the loan and may be seen as risky or less attractive to other lenders.
	On-bill financing Loan provided by a third-party lender that is repaid through the customer's utility bill as	Both subsidized affordable and unsubsidized	Small to moderate	Yes	No	No upfront capital required (self-financing); simple repayment through	May shift utility payments to renters depending on structure; long payback periods; availability varies by

	Funding or finance tool and definition	Applicable housing type	Best suited for scale of upgrades	Reduces upfront cost	Reduces operating costs*	Advantages	Drawbacks
	a line item. There is often no upfront cost and sometimes the obligation can remain with the meter, transferring to future residents.	Affordable (NOAH)				utility bill; can tie to meter instead of occupant.	utility; may require renter education around bill structure and how to maximize energy savings in their home.
FINANCIAL EQUITY	Developer or owner financial equity The value of an ownership stake after subtracting debt. For residential projects, it typically takes the form of capital contributions made by the developer, owner, or project sponsor to help finance the project, often required by lenders to demonstrate commitment and reduce risk.	All affordable and market rate	All	Yes	No	In some cases, owner equity can cover upfront costs; may be used to leverage additional financing; signals commitment and reduces risk for other lenders.	Nonprofit developers may have limited access to financial equity; increased risk exposure if project fails; can be complex to structure alongside other sources (e.g., tax credits, loans, subsidies).
COST-SHARING AGREEMENTS	Energy Performance Contracts (EPC) Financing arrangement that lends against future cost savings from reduced energy consumption to repay the installation costs. Normally offered by Energy Service Companies that provide a performance guarantee that energy savings will meet or exceed annual payments.	Affordable	Moderate to large	Yes	Yes	No upfront capital required (self-financing); guaranteed savings, reducing risk.	Complex contracts requiring energy audits, performance guarantees, and long-term legal agreements; limited use for smaller projects; actual performance varies.

Funding or finance tool and definition	Applicable housing type	Best suited for scale of upgrades	Reduces upfront cost	Reduces operating costs*	Advantages	Drawbacks
Green leases Lease agreement typically between a property owner and a renter that includes energy efficiency provisions to improve the building's performance and reduce utility costs.	Affordable and market rate	Moderate to large	No	Yes	Can attract mission-driven investors; often include rent adjustments depending on building performance or utility cost-sharing options; incentivizes renter engagement.	Requires specialized legal language and coordination between landlord and renter; limited awareness/comfort with this tool; enforcement can be difficult (e.g., data sharing, ongoing monitoring).
Power Purchase Agreements (PPA) Third-party ownership or leasing of energy systems (e.g. rooftop solar), allowing residents to purchase power at a reduced rate without upfront capital. Price of energy is typically lower than typical utility payments and does not fluctuate under the contract.	Affordable and market-rate multifamily	Moderate to large	Yes	Yes	PPA rate is often below market utility rates, leading to operating savings; building owner avoids upfront costs; may further reduce utility bills depending on net metering policy.	Not all buildings are suitable for these systems; savings depend on local net metering and incentive policies; renters will only see savings if owner passes them along through lower rent or utility costs.

*****_This means that the tool directly results in a reduction of recurring building operations costs or expenses; note that the energy upgrades included in a project scope may further reduce operating costs because of energy savings._

Appendix B: types of subsidized affordable housing funding sources

Name	Summary of program or resource
Section 8 Project-Based Rental Assistance (PBRA) Contracts	Contract between U.S. Department of Housing and Urban Development (HUD) and building owners, who agree to provide housing to eligible renters in exchange for long-term rental subsidies. Renters contribute no more than 30% of income. HUD no longer creates "new" Section 8 but can renew existing contracts (up to 20 years).
Section 8 Tenant-Based Subsidy Housing Choice Voucher (HCV) Program	A portable voucher (not tied to a specific property), allocated to individual households as a rental subsidy, limiting the renter contribution to 30–40% of the household's adjusted income.
Section 8 Project-Based Voucher	Voucher program allows local housing authorities to contract with property owners to ensure that Section 8 voucher holders will occupy a designated percentage of homes. Differs from PBRA Contracts in that they are agreed on between the housing authority and the owner, as opposed to HUD and the owner.
Section 9 – Public Housing	Public Housing Authorities (PHA) provide affordable rental assistance to households who live in PHA-owned and -operated properties. PHAs administer the program, which is overseen by HUD. Renters pay either 10% of their monthly income, 30% of their monthly adjusted income, or a minimum rent of between $0 and $50 established by each housing authority independently. Across the country, more than 3,300 PHAs maintain and operate the properties, sometimes with enhanced services and programs.
Low Income Housing Tax Credit (LIHTC)	Tax credits are allocated by the Department of Treasury to the states on a per capita basis to award to qualified affordable rental housing development and rehabilitation projects. State agencies administer the program, creating Qualified Allocation Plans that define the eligibility of projects and criteria for allocating the credits, which serve as project "equity." LIHTC program includes both a 4% (shallower subsidy, paired with bonds, noncompetitive) and a 9% credit (competitive).

Name	Summary of program or resource
Section 202 Supportive Housing Program	Program provides funding, in the form of capital assistance, to construct, acquire, or rehabilitate multifamily properties that serve low-income individuals 62 years of age or older. Projects additionally receive a renewable Project Assistance Contract (PRAC) covering necessary operating expenses beyond the renters' portion of rent.
Federal Entitlement Programs: Community Development Block Grant Program (CDBG) and HOME	Provides annual grants on a formula basis to entitled cities and counties to carry out a range of community development activities. Often used as a critical subordinate or soft source of financing for new construction of affordable housing. The flexibility of HOME and CDBG increases the ability to pair financing with state and local housing development programs. These dollars can be allocated on a competitive basis to developers seeking additional funds for their affordable housing project.
Section 515 Rural Rental Housing Program	Loans made by the Department of Agriculture with the Rural Development Housing and Community Facilities Programs Office acting as lender. Borrowers use these funds to acquire buildings or land, construct or renovate housing, and/or build necessary facilities (e.g., waste disposal systems) in support of affordable housing. A portion of these funds is set aside for nonprofits.