

LEVERAGING CATALYTIC CAPITAL

for Small Residential Building
Decarbonization in Boston



About the Boston Foundation

The Boston Foundation is one of the nation's first and most impactful community foundations. Partnering with community members, donors, government, businesses and nonprofits, we exist to advance economic justice and build a more equitable future. Through our civic leadership, we inform public policy, catalyze conversations and advocate not only for equity, but to repair the historical harms of inequity. Ultimately, we aim to create well-being and opportunity in our communities. TBF is also one of the region's largest grantmakers, supporting nonprofits in Greater Boston and working with our donors to fund nonprofits locally, nationally and internationally. For more, visit tbf.org.

About the Building Electrification Institute

The Building Electrification Institute (BEI), a project fiscally sponsored by Innovation Network for Communities (INC), partners with local governments and community leaders to advance policies and programs that repair, preserve, and decarbonize buildings in ways that promote housing affordability, improve public health, and accelerate climate solutions. We provide research, strategy, and coalition support that help cities and their partners design and implement equitable solutions that can scale. As an early leader weaving together national efforts across building decarbonization, housing quality and affordability, and workforce development, BEI has built a wealth of knowledge on the opportunities, hurdles, and tools for public agencies and local organizations to advance an equitable clean energy transition. This includes a longstanding partnership with the City of Boston and local stakeholders to support equitable building decarbonization initiatives.

About Firefly Energy Consulting

Since 2011, Firefly Energy consulting has provided strategy and policy consulting services to cities, states and non-profits to advance their clean energy policy goals. Firefly helps its clients accelerate adoption of energy efficiency, decarbonization, and other resilience retrofits, including program design and how to fund and finance that work.

SEPTEMBER 2026

LEVERAGING CATALYTIC CAPITAL

for Small Residential Building Decarbonization in Boston

PROJECT LEAD

Julia Howard, The Boston Foundation

RESEARCH & AUTHOR TEAM

Caytie Campbell-Orrock, BEI

Bobuchi Ken-Opurum, BEI

Bridgett Neely, Firefly Energy Consulting

EDITOR

Sandy Kendall, The Boston Foundation

DESIGNER

Mel Isidor, Isidor Studio

ADVISORY COMMITTEE MEMBERS

Daniel Block, Prime Coalition

Hessann Farooqi, Boston Climate Action Network

Soni Gupta, The Boston Foundation

Sarah Kearney, Prime Coalition

Oliver Sellers-Garcia, City of Boston Environment Department

Maggie Super Church, Massachusetts Community Climate Bank at MassHousing

Brooks Winner, City of Boston Environment Department

Joel Wool, Boston Housing Authority

EXECUTIVE SUMMARY **8**

PROJECT CONTEXT **20**

Boston's Small & Medium Residential Buildings
Program Landscape
Catalytic Capital & Residential Decarbonization

EVALUATION *of* SOLUTIONS **28**

FINAL RECOMMENDATIONS **32**

Expansion of the Energy Saver Home Loan Program
Financing for Priority Housing Portfolios

OPPORTUNITIES *for* RESEARCH *and* ADVOCACY **48**

Inclusive Utility Investments
Neighborhood-Scale Deployment
Window Heat Pump Technology

KEY TAKEAWAYS **56**

APPENDIX **58**

Dear Reader,

Two and a half years ago, the Boston Foundation took a historic step in creating our first ever climate strategy, and the work that we are undertaking could not feel more consequential. We launched our strategy at a time when optimism around climate action was palpable. The 2022 Inflation Reduction Act (IRA) offered funding at unprecedented levels of investment in climate-friendly solutions, spurring novel proposals. Climate was a top voter issue, and it was becoming more widely part of public conversation. We were seeing progress and innovation at record speed.

Unfortunately, a lot has changed in the last year and a half. Although we still live in a city and state that leads on climate issues, we are facing damaging headwinds from a federal government trying to dismantle climate progress. Executive branch cuts to climate funding, agencies, and projects generate enormous challenges and uncertainty for the governments, businesses, and nonprofits whose work and budgets are affected. They also drive a shift in the public narrative around this work to one that is more fearful and quieter.

Here at the Boston Foundation, however, we affirm that—especially in times of uncertainty and difficulty—our civic responsibility calls us not to back away but to lead and lean in further. And that is just what this research report is helping us do.

We see how rising energy costs place a significant burden on households, especially in lower income communities. Unchecked climate change will bring more extreme temperatures, and our city's buildings, people's homes, must be places where our neighbors can safely live. We learned in our last climate action report that there are some 70,000 small residential buildings in Boston alone that need to be retrofitted—weatherized and moved from direct fossil fuel burning to electricity—to lower our collective carbon footprint and make those households' lives better. This report goes one level deeper to assess how we might support this effort by employing “catalytic capital” to free up sufficient funding for an equitable clean energy transition.

We believe this single high-impact objective—modernizing our small residential buildings—has to be an all-hands-on-deck effort, with government, utilities, nonprofits, and private funders all playing a role. In this report, we have identified a clear place for philanthropy to step in. It's providing us with a roadmap of action. The Boston Foundation is ready and excited to embark on the journey with all who feel inspired and equipped to join us in this work.

Sincerely,

Orlando Watkins

Vice President & Chief Program Officer, The Boston Foundation

EXECUTIVE SUMMARY



Project Overview

Leveraging Catalytic Capital to Decarbonize Boston's Homes

In 2024, the Boston Foundation released *Powering Up Together: Challenges and Opportunities in Getting to Net Zero in Boston's Small Building Stock*, which examined the barriers slowing residential building decarbonization in Boston—particularly for low- and moderate-income (LMI) households¹—and identified catalytic capital as a promising tool for accelerating equitable progress. The report explored the technical, financial, and implementation challenges facing the city's small buildings and called for mission-driven investment to complement public programs, strengthen coordination, and help close persistent funding gaps.

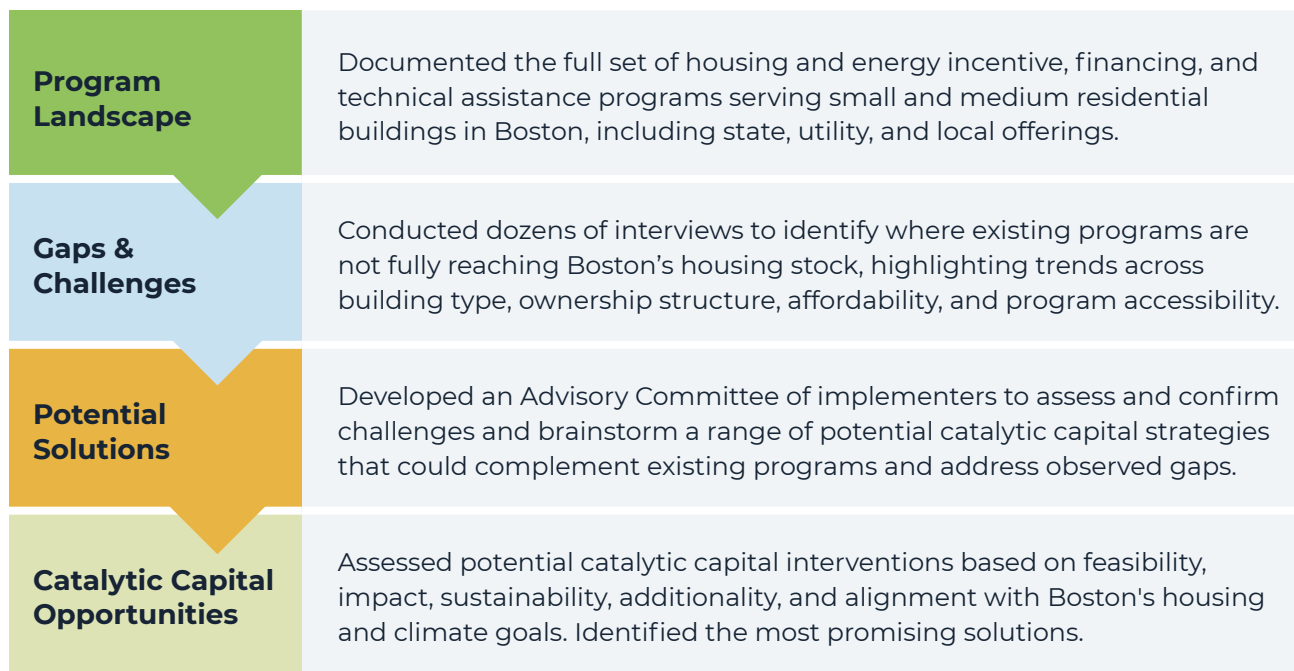
Building on that foundation, the Boston Foundation (TBF), the Building Electrification Institute (BEI), and Firefly Energy Consulting developed this technical addendum to identify where catalytic capital can have the greatest near-term impact. Through stakeholder interviews, workshops with implementers, case study research, and adaptation of BEI's 2024 *Boston Funding Gap Analysis for Residential Decarbonization* modeling, the research team evaluated opportunities to address capital-related barriers facing Boston's small and medium residential buildings. The result is a set of prioritized, actionable strategies for deploying mission-driven capital alongside existing public and utility programs to expand equitable access to residential decarbonization for LMI households across Boston's diverse housing stock.

1. For purposes of this analysis, low- and moderate-income (LMI) households were defined as earning under 80% Area Median Income (AMI) [\$95,200 based on Boston metro area 2020 AMI].



Research Approach

Across four phases of work, the research team assessed the investments needed in Boston's small and medium residential buildings² and identified where catalytic capital could have the greatest benefits for LMI households.



A robust and representative advisory committee (AC) of key stakeholders in the Boston building decarbonization and catalytic capital sectors provided input and feedback throughout the project. AC involvement and contributions were vital to the development of the recommendations in this report and allowed the research team to gather needed information on current program operations.

ADVISORY COMMITTEE MEMBERS

- ▶ **Daniel Block**, Prime Coalition
- ▶ **Hessann Farooqi**, Boston Climate Action Network
- ▶ **Soni Gupta**, The Boston Foundation
- ▶ **Sarah Kearney**, Prime Coalition
- ▶ **Oliver Sellers-Garcia**, City of Boston Environment Department
- ▶ **Maggie Super Church**, Massachusetts Community Climate Bank at MassHousing
- ▶ **Brooks Winner**, City of Boston Environment Department
- ▶ **Joel Wool**, Boston Housing Authority

² In this report, small and medium residential buildings will refer to all 1-4 unit homes and buildings with 5 or more residential units that are 6 stories or less.

Program Landscape

Since BEI's 2024 *Boston Funding Gap Analysis for Residential Decarbonization*,³ Massachusetts and Boston have advanced new tools and delivery models—but significant barriers remain.

The public investment landscape has shifted.

- ▶ Federal climate funding moved rapidly from unprecedented opportunity to uncertainty, with investments delayed, rescinded, or paused—creating greater reliance on state, local, and philanthropic resources.
- ▶ Mass Save has expanded equity investments, but intensifying affordability pressures and program design constraints limit its ability to meet the full scale of need.

Boston agencies are filling program gaps and integrating housing.

- ▶ The City of Boston is strengthening its role as a navigator through programs like Boston Energy Saver, community partnerships, and expanded resident support.
- ▶ Housing agencies and public entities are integrating decarbonization into housing preservation, affordability, and financing strategies.

Key barriers to equitable building retrofits⁴ remain.

- ▶ High upfront costs, health and safety needs, financing limitations, split incentives, and project complexity continue to prevent many LMI households and affordable housing providers from accessing comprehensive upgrades.
- ▶ Existing programs and incentives have created a strong foundation, but additional tools are needed to reach harder-to-serve segments and unlock investment at scale.

Catalytic capital can play an important role in bridging some of the remaining financing gaps by complementing existing programs, reducing financial barriers, and enabling new financing approaches.

3. Learn more at: <https://beicities.org/boston-fga>

4. For purposes of this report, “retrofit” refers to upgrades or improvements to an existing building. Decarbonization retrofits are a subset of these improvements that reduce building-related emissions, such as through energy efficiency, electrification, or other measures. Equitable retrofits prioritize building improvements based on the benefits they provide to residents and communities, ensuring that decarbonization investments address historical inequities and deliver outcomes such as improved health, housing quality, affordability, comfort, and climate resilience.

The Promise of Catalytic Capital

In an ideal world, decarbonization investments for LMI households could be fully supported through federal, state, utility, and philanthropic grants. However, as illustrated in BEI's 2024 Funding Gap Analysis, the scale of investment needed far exceeds available public and philanthropic resources.

Catalytic capital is a way to leverage financing in order to approach the scale required to achieve Boston's equity and climate goals. It will not meet all funding needs of LMI households—particularly those that cannot afford any additional debt—but it can fill critical financing gaps, attract additional investment, and accelerate deployment in the near term when paired with appropriate consumer protections and public support.

What makes catalytic capital distinct is its willingness to prioritize impact alongside financial return by accepting more risk, lower returns, or longer repayment periods than conventional investors.⁵ Rather than replacing grants or private investment, catalytic capital complements both by filling financing gaps and reducing risk to enable projects that might not otherwise move forward.

What is CATALYTIC CAPITAL?

When we talk about catalytic capital, we refer to an investment that accepts higher risks or lower returns compared with a conventional investment. Its aim is less profit than impact. Its presence enables other sources of capital that cannot tolerate the same risk to invest in potentially high-impact endeavors. In other words, by unlocking other investments, it serves as a "catalyst" to achieving full funding for an impact enterprise.

5. Source: Prime Coalition. <https://www.primecoalition.org/glossary/catalytic-capital>



Requirements for Successful Catalytic Capital

Catalytic capital seeks:

- ▶ Projects where investment capital can lower financing barriers, rather than projects that primarily require grant funding.
- ▶ Investments that are expected to be repaid, generally with a modest or below-market financial return and patient investment terms.
- ▶ Measurable additionality, where the investment enables outcomes that otherwise would not be achieved.
- ▶ Measurable positive impact, including economic, social, and environmental outcomes.

Where these conditions are met, catalytic capital can:

- ▶ Absorb risk through tools such as credit enhancements, loan loss reserves, and subordinated capital.
- ▶ Provide patient, flexible and lower-cost capital with longer time horizons than traditional financing.
- ▶ Unlock public, private, and mission-driven investment that would not otherwise flow to the market.
- ▶ Enable more equitable financing structures for LMI households and smaller property owners.

Enabling Conditions

Financing alone will not solve Boston's retrofit challenges. Catalytic capital will be most effective when paired with the systems that can deliver successful projects. No financing solution will succeed in Boston without key enabling conditions, such as:

- ▶ **A strengthened Mass Save** that can maintain the rebates and incentives that make retrofits affordable and reduce financing needs.
- ▶ **Well-supported and trusted navigator services** like Boston Energy Saver to help residents access incentives, financing, and contractors through multilingual, one-on-one support.
- ▶ **Coordination with existing institutions** to build on established programs and agencies, filling financing gaps rather than duplicating existing efforts.

These conditions are necessary to maximize impact, reduce barriers, and ensure any financing option reaches the households and communities that need it most.

Evaluation of Solutions

The research team centered equity, affordability, scalability, and a whole-home retrofit approach throughout the analysis. Building on these guiding principles and with insights from the advisory committee, the research team developed the following evaluation framework to assess and prioritize identified solutions.

Solutions Evaluation Framework

LEVEL OF IMPACT	
Equitable Impact to LMI Communities	Which households and housing types are served? To what extent does the model benefit LMI residents and priority populations?
Financing Additionality	Does the program enable projects or financing that would not otherwise occur? Is it filling a clear market gap?
Scalability	What is the potential scale if deployed within Boston (units reached)? Can the model be expanded statewide or nationally?
IMPLEMENTATION READINESS	
Leverages Existing Programs	Does the model build on existing programs and financial infrastructure?
Implementation Feasibility	How feasible is implementation given policy, operational, administrative and stakeholder considerations?
Participant Risk	How much risk is borne by participating households?
FINANCIAL VIABILITY	
Capital Efficiency	How efficiently does the model combine catalytic capital with complementary grant funding to overcome barriers and achieve impact?
Capital Mobilization	How much additional public or private capital can the model attract?

Final Recommendations

Opportunities: From Exploration to Action

The research team evaluated over a dozen potential solutions where catalytic capital could accelerate equitable building decarbonization. The strongest opportunities were those that could build on existing Boston institutions, address persistent financing gaps, and have the potential to unlock additional investment. The final recommendation of this analysis includes two high-impact solutions where philanthropy can deploy catalytic capital in the next 1-2 years.

Utilize the Massachusetts Community Climate Bank as a delivery vehicle to:

- ▶ Expand the Energy Saver Home Loan Program to key Boston sectors, specifically a focus on 2-4 unit homes (majority in Boston are triple deckers) through existing statewide Climate Bank infrastructure.
- ▶ Develop a fund to enable mission-driven affordable housing owners and developers to pursue deeper efficiency and decarbonization retrofits at time of acquisition, renovation or recapitalization.

Each recommendation will require a design phase to structure the financing approach,⁶ determine the appropriate deployment strategy for catalytic capital, and develop a fundraising plan to mobilize aligned capital partners.

RECOMMENDATION 1: Expand the Energy Saver Home Loan Program in Boston

Engage catalytic capital through the Massachusetts Community Climate Bank (MCCB)⁷ to support a focused Boston deployment of the Energy Saver Home Loan Program (ESHLP) that targets 2-4 unit buildings, which are often more complex to serve.⁸

Catalytic capital could:

- ▶ Prioritize investment in Boston's most common housing segment by raising the total borrowing amount for larger retrofits in owner-occupied 2-4 unit homes, a segment that has been challenging to decarbonize. The ESHLP's current lending cap is generally not high enough for the retrofits required in most multi-unit homes. Moreover, this segment, which often includes units occupied by renters, requires concessional capital, that will help absorb initial risk to help catalyze building owner investment. This kind of concessional capital will reduce the energy burden for building owners and tenants and can serve as a model for how to successfully retrofit 2-4 unit homes in the Boston area.

⁶. See [page 27](#) for an overview of practices to ensure equitable design and deployment of catalytic capital.

⁷. [Massachusetts Community Climate Bank](#)

⁸. More detailed information on this approach can be found on [page 36](#).

Complementary grant capital could:

- ▶ Support critical coordination with the Boston Energy Saver Program for targeted outreach and navigation, helping homeowners identify opportunities, navigate eligibility, and move projects to completion.
- ▶ Support growing coordination between MCCB and the Boston Home Center, which can offer financial support for major health and safety concerns in buildings, particularly when they are unable to be covered by current ESHLP program rules.

SIMILAR NAMES, DIFFERENT PROGRAMS

Boston Energy Saver is a concierge-style service provided by the City of Boston to help renters, homeowners, and small businesses upgrade their buildings. The program offers 1-on-1 support and provides links to all relevant incentive programs, including financing programs.



The Energy Saver Home Loan Program is a low-interest loan offered by the Massachusetts Community Climate Bank for 1-4 unit homes to invest in clean energy retrofits. This program also offers technical assistance and coordinates with all available incentives, rebates and credits.

RECOMMENDATION 2: Finance Decarbonization of Affordable Housing at Acquisition and Renovation

Establish a dedicated fund for priority affordable housing portfolios through MCCB, providing low-cost, patient capital for portfolio-scale energy efficiency and decarbonization for a currently underserved segment of affordable housing providers.⁹

Catalytic capital could:

- ▶ Provide flexible capital for entities acquiring existing housing with the aim of preserving or expanding Boston's affordable housing stock. Pairing access to concessional decarbonization financing can enable mission-driven affordable housing providers to incorporate comprehensive energy efficiency and decarbonization retrofits. This ensures that acquired affordable housing will have a lower energy burden for tenants and can help build the case for requiring energy efficiency and decarbonization as part of core housing finance tools in the future.
- ▶ Provide flexible, below-market capital to bridge financing gaps and enable owners of affordable units to integrate comprehensive energy efficiency and decarbonization upgrades into planned renovations. Such clean energy retrofits are often ruled out during the planning process given limited capital for affordable housing financing. Catalytic capital can help demonstrate the impact that investing in energy efficiency and decarbonization can have on the quality of affordable housing and the energy costs for the tenants in those buildings.

Provide grant capital to:

- ▶ Support coordination between MCCB, Boston Acquisition Fund (BAF), Boston housing agencies, and mission-driven owners to assess investment opportunities across portfolios.
- ▶ Enable dedicated technical assistance to portfolio building owners to navigate decarbonization retrofit prioritization and integration.
- ▶ Explore partnerships with Community Development Financial Institutions (CDFIs) and mission-driven lenders to expand access to financing, reach additional affordable housing providers, and scale implementation.

⁹. For more information, see [page 41](#).

What is the **BOSTON ACQUISITION FUND?**

CITY of BOSTON

The BAF is a public-private revolving loan fund established by the City of Boston, financial institutions, and philanthropic partners to help community ownership or tenant-focused organizations acquire and preserve naturally occurring affordable housing before it is lost to speculative ownership.

Since late 2024, the \$45 million fund has supported the acquisition of 435 homes in Roxbury, Dorchester, Roslindale, and Mattapan, permanently stabilizing rents for more than 1,000 households. Boston Acquisition Fund is already incorporating decarbonization into its program offerings and is well-positioned to complement this effort. (For more detail, see the [page 44](#).)

Opportunities for Research & Advocacy

In addition to the two recommendations outlined above, the research team evaluated several emerging models that show strong potential to advance equitable building decarbonization. While these models are not yet positioned for near-term catalytic capital deployment in Boston, continued policy development, technology demonstration, and program evaluation could create future investment opportunities.¹⁰

Inclusive utility investment (IUI): A utility-enabled financing model that repays clean energy investments through utility bills, reducing upfront cost barriers and expanding access to decarbonization upgrades for underserved households.

Neighborhood-scale deployment: A coordinated approach to deploying building decarbonization across a geographic area or common housing type that can reduce costs, streamline delivery, and improve access through bulk procurement, community engagement, workforce coordination, and potentially funded through infrastructure cost savings.

Window heat pumps: An emerging electrification technology that can provide efficient heating and cooling in affordable housing with lower upfront costs and minimal construction, creating a potential pathway for faster, lower-disruption retrofits. Technologies that can help accelerate market transformation and drive down costs may be well suited to catalytic capital, particularly where early investment can help overcome barriers to wider adoption.

¹⁰. For more information, see [page 49](#).

Key Takeaways



Boston has a strong foundation of incentives, financing programs, and trusted delivery partners, but significant funding and financing gaps remain for low- and moderate-income (LMI) households.



Catalytic capital can accelerate market transformation by targeting specific gaps in availability of low cost capital that traditional public and private capital are not sufficiently filling. Its impact is greatest when targeted philanthropic investment acts as a catalyst—unlocking additional capital, strengthening delivery systems, and accelerating equitable building decarbonization.



Success ultimately depends on the broader ecosystem—including robust incentives, trusted navigators, community partnerships, and coordination across housing and climate programs.



Two near-term, high-impact opportunities stand out to deploy catalytic capital in Boston's small residential homes, both possible through the Massachusetts Community Climate Bank:

- Expand and coordinate deployment of the state's Energy Saver Home Loan Program to Boston's 2-4 unit building segment, including triple-deckers.
- Develop and create a fund to support energy efficiency and decarbonization retrofits to affordable housing projects at time of acquisition and renovation.



A dedicated design phase will be needed to translate these opportunities into scalable investment strategies, including refining program models, validating financing structures, quantifying impact, and identifying the right role for catalytic capital.



New opportunities are emerging, including inclusive utility investment, neighborhood-scale deployment, and innovative electrification technologies. Advocates and investors should monitor these as they mature.

PROJECT CONTEXT



Small & Medium Residential Buildings

This technical addendum focuses on small and medium residential buildings, defined as 1-4 unit homes and 5+ unit multifamily buildings 6 stories or under.



**1-4 Unit
Homes**



**5+ unit multifamily
buildings 6 stories
or under**

Small and medium-sized residential buildings represent 75% of all buildings in Boston and 98% of all residential buildings. It will be a key sector to decarbonize given these residences' prevalence and the extent of LMI communities they house.

In 2024, the Building Electrification Institute completed a funding analysis for Boston that estimated the total upfront costs of residential decarbonization retrofits and estimated how much of those costs would be covered by existing capital sources.

The analysis found that to fully fund upgrades in all small and medium LMI homes through the year 2050, Boston faces an annual funding gap of around \$180-\$200 million.¹¹

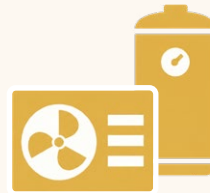
BUILDING TYPOLOGY SUMMARY	TOTAL NUMBER OF BUILDINGS (% of Citywide Buildings)	MEDIAN NUMBER OF UNITS	MEDIAN SQUARE FOOTAGE	MEDIAN YEAR BUILT	% BUILDINGS IN LMI AREAS
Single Family Homes	30,555 (33%)	1	2,690	1925	39%
2-4 Unit Homes	34,195 (37%)	3	4,448	1905	54%
Low-Rise Multifamily (1-3 Floors)	2,244 (2%)	13	10,023	1917	58%
Mid-Rise Multifamily (4-6 Floors)	2,660 (3%)	16	13,730	1909	37%
Total buildings in analysis	69,654 (75%)				

11. *2024 Funding Gap Analysis. Note the Funding Analysis included health and safety repair costs, and excluded solar. The total gap in the analysis was \$4.6 - 5.2 billion.

While portions of this gap may be closed through planned investments from building owners and future public funding, additional financing will be necessary to achieve the scale of investment required. This addendum focuses on catalytic capital in particular, which is one of the strongest financing options to scale up comprehensive home upgrades.



Half of the projected investments are needed in 2 to 4 unit buildings, the majority of which are Boston's classic "triple decker."



About 40% of the investments are for electrification of space and water heating.

Program Landscape

Recent Updates

Federal funding shifted from promise to pullback.

- ▶ **IRA & IIJA investments:** The promise of unprecedented federal climate funding from the Inflation Reduction Act (IRA) and the Infrastructure and Investment Jobs Act (IIJA) spurred implementation-ready programs and projects across Massachusetts.
- ▶ **2025 federal rollbacks:** Much of that funding was later rescinded, paused, or indefinitely delayed, leaving major implementation gaps and increasing reliance on state, local, and philanthropic resources.

Mass Save entered a new era—but structural challenges remain.

- ▶ **2025–2027 Mass Save plan:** The new three-year plan expands investments in equity, customer experience, and electrification, with the largest level of customer incentives to date.
- ▶ **Program improvements:** Redesigned home energy assessments, expanded support for renters and moderate-income households, increased language access, and implemented a statewide call center to improve customer access.
- ▶ **Growing pressures:** The scale and complexity of need now outpaces what Mass Save was designed to incentivize, with affordability concerns, health and safety costs, and funding pressures limiting program reach.

Boston is taking on a stronger navigator role.

- ▶ **Boston Energy Saver Program:** This new City program provides multilingual outreach, one-on-one guidance, contractor coordination, and culturally relevant engagement to help residents access available incentives.
- ▶ **Trusted local partnerships:** The Community First Partnership and Retrofit Resource Hub strengthen coordination between the City, utilities, and community organizations to increase equitable participation in Mass Save.

Housing agencies are becoming decarbonization champions.

- ▶ **Mayor's Office of Housing:** This City housing department is integrating decarbonization into its existing home repair programs, such as the Boston Home Center, its housing preservation efforts through the Boston Acquisition Fund, and piloting approaches through the Health & Green Homes Retrofit Pilot.
- ▶ **Boston Housing Authority:** Advancing portfolio decarbonization while expanding Mass Save participation across public housing and Section 8 Housing Choice Voucher properties.
- ▶ **MassHousing and the Massachusetts Community Climate Bank (MCCB):** MCCB leverages public investment to support programs like the Energy Saver Home Loan Program (ESHLP) and build new pathways for affordable housing decarbonization financing.

Significant Barriers to Equitable Retrofits Remain

Affordability concerns intensify.

- ▶ **Rising utility costs:** Pressure to reduce customer bills—spiked by inflation and large new load centers—creates new challenges for funding decarbonization.
- ▶ **Political Pressure:** In 2025, the Department of Public Utilities reduced the approved 2025–2027 Mass Save budget by \$500 million to limit ratepayer bill impacts, and subsequent affordability legislation proposed further reductions to the program as a means of lowering energy costs.

Reaching LMI households is challenging.

- ▶ **Health & safety barriers:** Deferred maintenance and pre-weatherization repairs continue to prevent many LMI homes from accessing electrification incentives, with costs often exceeding the energy upgrades themselves.
- ▶ **Mass Save HEAT loans:** The Mass Save Home Energy Efficiency (HEAT) Loan remains out of reach for many LMI households due to credit, underwriting, and qualification requirements, as well as financing caps and limited flexibility in how funds can be used.
- ▶ **Navigation support:** Successful retrofits require sustained technical assistance across outreach, financing, contractor coordination, and incentive stacking—services that remain underfunded.

Key technologies are not covered.

- ▶ **Solar Program Gap:** Solar is still largely outside the core Mass Save retrofit pathway, despite its potential to improve electrification project economics and household energy affordability.

Where Are the Opportunities?

Catalytic capital can help close the financing gap.

- ▶ **Scale of need:** Grant funding alone is insufficient. Public and philanthropic dollars are critical, but the volume of retrofit needs among low- and middle-income households calls for financing tools that can leverage and recycle capital.
- ▶ **Unlocking investment:** Flexible, patient capital including below-market or concessional financing can improve project economics, reduce risk, and enable new models to scale.
- ▶ **New approaches:** Boston has an opportunity to test and advance novel solutions to overcome market barriers like high starting costs, split incentives, missing technical assistance, and lack of access to low-cost capital. Existing program, partners, and funding infrastructure create a foundation for connecting decarbonization, affordability, and housing goals.

The remainder of this report explores where catalytic capital can have the greatest impact—including opportunities to strengthen existing programs, unlock private investment, and create new pathways for equitable building upgrades.

The Promise of Catalytic Capital

How We Define Catalytic Capital

Provided by mission-driven entities including philanthropies, foundations, donor advised funds, high net worth individuals, family offices, and anchor institutions such as universities or hospitals, catalytic capital is flexible, risk-tolerant investment that fills early financing gaps, de-risks or validates solutions and unlocks larger-scale public or private capital that would not otherwise be deployed. Because its presence enables other sources of capital to invest in potentially high-impact endeavors, it serves as a "catalyst" to achieving full funding for an impact enterprise.

As shown in this graphic, catalytic capital sits between impact investing and philanthropic grantmaking. It tends to prioritize measured impact over payback.¹²

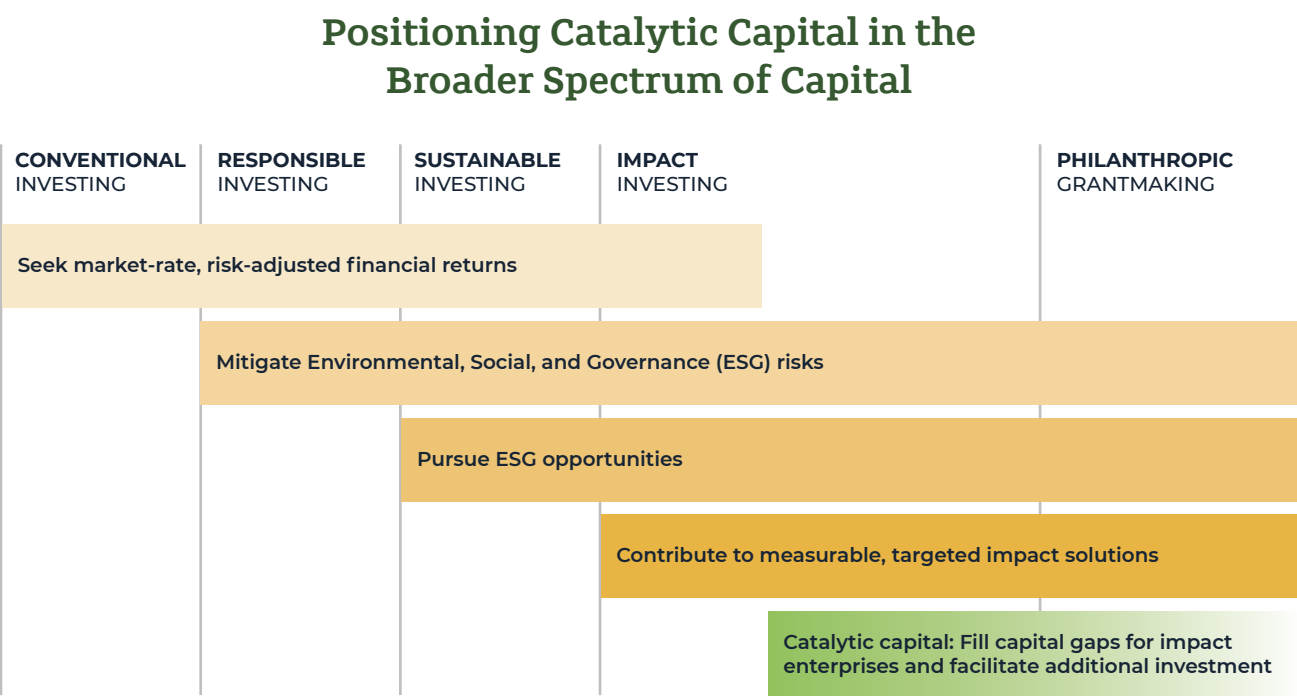


Image Source: Tideline, Catalytic Capital: Unlocking More Investment and Impact. <https://tideline.com/catalytic-capital-unlocking-more-investment-and-impact/>.

¹². For a more detailed discussion of catalytic capital and its role in impact investing, see Debra Schwartz, Why Impact Investing Needs Philanthropy and Catalytic Capital, TriplePundit (2022). <https://triplepundit.com/2022/impact-investing-catalytic-capital/>.

How Can Catalytic Capital Support Residential Decarbonization?

In an ideal world, decarbonization investments for LMI households could be fully supported through federal, state, utility, and philanthropic grants. However, as illustrated in BEI's 2024 Funding Gap Analysis, the scale of investment needed far exceeds available public and philanthropic resources.

That means it will be necessary to leverage financing to achieve Boston's equity and climate goals. While Community Development Financial Institutions (CDFIs), green banks, and other mission-driven lenders are beginning to offer tailored building decarbonization loans, the majority of conventional financing products do not meet the needs of LMI households, affordable housing providers, and other underserved building owners. Without intentional safeguards and tested approaches, borrowers may face higher costs, unfavorable terms, or limited access to capital.

Catalytic capital can help by lowering interest rates, providing loan loss reserves, guarantees, extending repayment terms, and enabling more flexible financing solutions—helping attract additional private investment aligned with the needs of LMI households and housing providers. Unlike traditional investment, catalytic capital prioritizes impact alongside financial return by accepting greater risk, lower returns, or longer repayment periods. Rather than replacing grants or private investment, catalytic capital complements both by addressing financing gaps and reducing risk to enable projects that might not otherwise move forward.

Boston needs an estimated \$180-200 million annual investment through 2050 to equitably and comprehensively decarbonize its small and medium LMI homes.

It would take almost 100 years for Mass Save to fully fund this gap for all LMI homes in Boston at the current rate.

Source: 2024 Funding Gap Analysis,
Building Electrification Institute

Keys to Success for Catalytic Capital

Catalytic capital seeks:

- ▶ Projects where investment capital can address financing barriers, rather than projects that primarily require grant funding
- ▶ Investments that are expected to be repaid, generally with a modest or below-market financial return and patient investment terms
- ▶ Measurable additionality, where the investment enables outcomes that otherwise would not be achieved
- ▶ Measurable positive impact, including economic, social, and environmental outcomes

Where these conditions are met, catalytic capital can:

- ▶ Absorb risk through tools such as credit enhancements, loan loss reserves, and subordinated capital
- ▶ Provide patient, flexible and lower-cost capital with longer time horizons than traditional financing
- ▶ Unlock public, private, and mission-driven investment that would not otherwise flow to the market
- ▶ Enable more equitable financing structures for LMI households and smaller property owners

It's important to note that catalytic capital will not meet all financing needs for LMI households—particularly those that cannot afford *any* additional debt—but it can fill critical financing gaps, attract additional investment and accelerate deployment in the near term when paired with appropriate consumer protections and public support.

Establishing Equitable Practices

Effective catalytic capital deployment requires shared norms across philanthropy, public programs, and private or mission-driven implementers to ensure investments are both scalable and equitable.

- ▶ Establish clear expectations for how deals are identified, analyzed, and underwritten across partners
- ▶ Align on key financial terms such as repayment priority, collateral requirements, and risk-sharing structures
- ▶ Pair catalytic investments with operating grants to build the capacity of community-based and housing organizations that originate and manage projects
- ▶ Strengthen the ecosystem of implementers who can consistently identify, coordinate, and manage a pipeline of viable projects

A well-developed implementation ecosystem is essential to ensuring catalytic capital translates into real, deployable, and equitable investments on the ground.

EVALUATION *of* SOLUTIONS



Enabling Actions for Success

Financing alone will not solve Boston's retrofit challenges. Catalytic capital will be most effective when paired with the systems needed to deliver successful projects. No financing solution will succeed in Boston without key enabling actions, such as:

- ▶ **Protect and strengthen Mass Save** to maintain the rebates and incentives that make retrofits affordable and reduce financing needs.
- ▶ **Invest in trusted navigator services** like Boston Energy Saver to help residents access incentives, financing, and contractors through multilingual, one-on-one support.
- ▶ **Coordinate with existing institutions** by building on established programs and agencies, filling financing gaps rather than duplicating existing efforts.

Together, these actions will help maximize impact, reduce barriers, and ensure financing reaches the households and communities that need it most.

Guiding Principles

The following principles guided our evaluation framework for catalytic capital opportunities based on stakeholder interviews and advisory committee input, helping ensure recommendations advance equitable decarbonization, leverage existing investments, and avoid unintended burdens on LMI households.

Center Equity & Avoid Harm

To evaluate opportunities through an equity lens, ensuring investments maintain or alleviate—not increase—financial burdens for low-income households, we were mindful to:

- ▶ **Recognize the limits of catalytic capital:** This is one tool among many. Grant funding and other subsidies remain essential to reducing financing needs and ensuring equitable access to upgrades.
- ▶ **Prioritize cost savings:** Elevate financing options that stabilize or reduce utility bills, rent levels, or other housing costs; preserve and expand affordable housing; and ensure LMI households benefit from decarbonization.
- ▶ **Take a whole-home approach:** Support investments that improve overall housing quality, including health and safety repairs, resilience measures, efficient air conditioning, and decarbonization upgrades, including solar and storage.

Design for Geographic Scaling and Replication

Advance models that can be expanded across Boston and adapted for broader regional and national application.

Assessing the Possibilities

Based on discussion around the guiding principles, the research team and advisory committee developed an evaluation framework to assess potential Boston-specific solutions.

Solutions Evaluation Framework

LEVEL OF IMPACT	
Equitable Impact to LMI Communities	Which households and housing types are served? To what extent does the model benefit LMI residents and priority populations?
Financing Additionality	Does the program enable projects or financing that would not otherwise occur? Is it filling a clear market gap?
Scalability	What is the potential scale if deployed within Boston (units reached)? Can the model be expanded within MA or nationally?
IMPLEMENTATION READINESS	
Leverages Existing Programs	Does the model build on existing programs and financial infrastructure?
Implementation Feasibility	How feasible is implementation given policy, operational, administrative and stakeholder considerations?
Participant Risk	How much risk is borne by participating households?
FINANCIAL VIABILITY	
Capital Efficiency	How efficiently does the model combine catalytic capital with complementary grant funding to overcome barriers and achieve impact?
Capital Mobilization	How much additional public or private capital can the model attract?

FINAL RECOMMENDATIONS



Opportunities: From Exploration to Action

The research team evaluated over a dozen potential solutions where catalytic capital could accelerate equitable building decarbonization. The strongest opportunities were those that build on existing Boston institutions, address persistent financing gaps, and have the potential to unlock additional investment. The final recommendation of this analysis includes two high-impact solutions where philanthropy can deploy catalytic capital in the next one to two years.

Utilize the Massachusetts Community Climate Bank as a delivery vehicle to:

- ▶ **Expand the Energy Saver Home Loan Program to key building segments**, including a focus on 2-4 unit homes (majority in Boston are triple deckers) through existing statewide Climate Bank infrastructure.
- ▶ **Develop fund to enable mission-driven affordable housing owners to pursue deeper decarbonization at time of acquisition as well as major renovation or recapitalization:** This would enable organizations that often have limited access to capital, such as Community Land Trusts (CLTs), Community Development Corporations (CDCs), and nonprofit and public affordable housing providers to ensure that their tenants benefit from lower energy costs and healthier homes.

Each recommendation will require a design phase to structure the financing approach, determine the appropriate deployment strategy for catalytic capital, and develop a fundraising plan to mobilize aligned capital partners.

Why the Climate Bank?

To identify opportunities for catalytic capital in Boston, the team first examined institutions already designed to deploy capital—green banks. Green banks are mission-driven financing institutions that blend public and private capital to accelerate investment in clean energy and decarbonization projects.

The Massachusetts Community Climate Bank (MCCB) is part of a national network of green banks, and its mission aligns closely with that of catalytic capital: reducing lender risk, attracting private investment, and expanding access to decarbonization financing in underserved markets.

What is the MCCB?

The Massachusetts Community Climate Bank (MCCB), part of a national network of green banks, sits within MassHousing, the Commonwealth's housing finance agency. Launched in 2023 and seeded with \$50 million in state funds from the Department of Environmental Protection, MCCB is the nation's first green bank dedicated to affordable housing.

Source: [Masshousing.com](https://masshousing.com).

The GB 50 Membership



Graphic Source: [US Green Banks](#)

MCCB is well-positioned to deploy catalytic capital for small residential decarbonization because it offers:

- ▶ **An established and proven financing platform**, with existing underwriting, loan servicing, implementer networks, and institutional capacity to receive and deploy mission-driven investments without creating a new financing entity.
- ▶ **The ability to target Boston-specific outcomes**, allowing capital to be dedicated to priority Boston housing segments while leveraging statewide infrastructure, servicing, and administration.
- ▶ **A strong housing and affordability orientation** through its placement within MassHousing, aligning decarbonization goals with the housing finance world and drawing on expertise serving LMI households.
- ▶ **A pathway to scale**, where successful deployment in Boston could inform future expansion to additional communities and housing segments across Massachusetts.

Recommendation 1: Expand the Energy Saver Home Loan Program

Current Program Structure

MCCB already deploys the Energy Saver Home Loan Program (ESHLP), a strong residential financing program that catalytic capital could expand to better focus on and serve Boston's more complex and underserved housing segments.

ESHLP is a statewide financing program supporting energy efficiency and electrification upgrades for Massachusetts homeowners.

- ▶ **Offering:** Second mortgage loans ranging from \$10,000 to \$100,000 with no upfront payments, 0.5% to 2% interest rate over 20-year terms.
- ▶ **Eligibility:** 1-4 unit owner-occupied homes up to 135% AMI (\$209,250 in Boston in 2026).¹³
- ▶ **Covered Retrofits:** Decarbonization and efficiency measures, as well as select health and safety measures that enable energy savings. Requires a minimum threshold of 20% modeled energy savings.

The program was intentionally designed to address many of the barriers to equitable residential decarbonization by:

- ▶ Providing free concierge support to help homeowners navigate assessments, incentives, financing, and project delivery.
- ▶ Expanding access to borrowers underserved by traditional lending, including income-qualified and credit-constrained households.
- ▶ Financing comprehensive retrofits, including efficiency, electrification, solar and storage, and enabling health and safety upgrades.
- ▶ Requiring projects to achieve at least 20% modeled energy savings, encouraging deeper retrofits and prioritizing bill reductions.
- ▶ Leveraging low-cost state-backed capital and MassHousing's financing infrastructure to offer affordable loan terms.

Overall, ESHLP provides a strong foundation for residential retrofit financing, with 125 approved loans to date across the Commonwealth.¹⁴

¹³. Condos and cooperatives currently ineligible, and trusts are reviewed on a case-by-case basis. ESHLP eligibility is based on owner income, not resident income.

¹⁴. Data as of June 2026, provided by the Massachusetts Community Climate Bank.

Boston Opportunity

While the program is performing well as a statewide financing product, current participation has not yet reached the full diversity of Boston’s housing stock.

- ▶ **Boston deployment remains limited:** Despite Boston containing one of the state’s largest concentrations of LMI homeowners, there has been somewhat limited uptake for Boston homes—only seven approved loans for Boston homes to date, even with coordination between the Climate Bank and the Boston Energy Saver program.
- ▶ **Current financing structure is not optimized for Boston’s housing stock:** The opportunity is particularly significant for Boston’s 2 to 4 unit homes, which represent 48% of city housing. MCCB’s existing financing product is well-suited for single-family home retrofits; however, retrofitting 2-4 unit buildings is more complex and more expensive than the current program loan cap of \$100,000 per property, limiting property owners’ ability to implement more comprehensive scopes of work.

Widespread success of the ESHLP product to date has demonstrated feasibility, and early adoption in Boston shows the potential for additional capital to increase participation in the City and in 2-4 unit homes.

ESHLP Statewide Progress

684 qualified leads	461 completed decarbonization plans	125 approved loans (80 in 2-4 unit homes)	56% average modeled energy savings
-------------------------------	---	---	---

ESHLP Early Adoption in Boston

35 qualified leads	24 completed decarbonization plans	7 approved loans (2 in 2-4 unit homes)	60% average modeled energy savings
2 households under 80% AMI	5 households between 80-135% AMI	\$78k Average loan size to date	

Data as of June 2026, provided by the Massachusetts Community Climate Bank.

Catalytic Solution

Deploy catalytic capital through MCCB to support a focused Boston deployment of ESHLP, targeting the 2-4 unit segment that faces higher deployment complexity and cost.

Catalytic capital could:

- ▶ **Raise total borrowing amount for larger retrofits** in owner-occupied 2-4 unit homes. The lending program's current \$100,000 cap reduces the total amount of energy efficiency and decarbonization retrofits that can be implemented in these buildings. Catalytic capital can direct capital to this housing segment that represents a major part of Boston's housing stock. Moreover, because 2-4 unit buildings often house renters, this will also serve as a model for addressing the split incentive in rental housing, where landlords bear the cost of upgrades while tenants benefit from lower energy bills.¹⁵
- ▶ **Support an "ESHLP Plus" financing approach for 2-4 unit retrofits.** Preliminary stakeholder discussions suggest the following structure may work well for this approach:
 - Structure catalytic capital as an "ESHLP Plus" loan to support scopes of work that exceed the existing \$100,000 ESHLP loan cap for 2-4 unit homes in Boston.
 - Provide 10-year term loans with a maximum loan amount of \$50,000–\$75,000 per building.
 - Hold dedicated philanthropic funds in a segregated account at MassHousing to minimize complexity and streamline coordination between the two loan products.
 - Provide grant funding to the Climate Bank for technical assistance to LMI homeowners, enabling the Climate Bank to expand its capacity, direct more existing program funds toward loans, and accelerate capital recycling.

Complementary grant capital could:

- ▶ **Support critical coordination with the Boston Energy Saver Program** for targeted outreach and navigation, helping homeowners identify opportunities, navigate eligibility, and move projects to completion.
- ▶ **Support the burgeoning coordination between MCCB and the Boston Home Center,** which can offer financial support for major health and safety concerns in buildings, particularly when they are unable to be covered by current ESHLP program rules.
- ▶ **Support programmatic analysis and case study development** to validate the outcomes of the Boston investment and share lessons more broadly.

15. Note: Not all LMI homeowners will be able to take on larger debt amounts due to debt-to-income and loan-to-value constraints. In some cases, additional financing capacity may depend on the property's ability to generate income from rental units, while maintaining compliance with program income requirements.

Implementation considerations include:

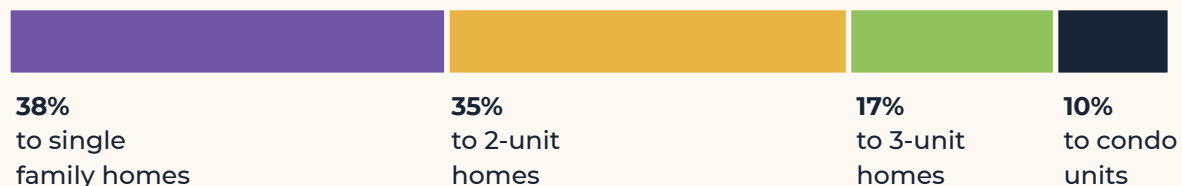
- ▶ Split incentives require intentional renter protections. While this approach could deliver benefits to renters, anti-displacement and affordability protections will be important to ensure those benefits are realized.
- ▶ Solar, which can be covered by the ESLP, is critical to achieving energy savings when electrifying, may be more difficult to achieve in dense urban areas, and is not currently integrated into Mass Save program structures.
- ▶ Outreach, engagement, and coordination is likely the binding constraint. Pulling learnings from the Mayor's Office of Housing Green & Healthy Homes Pilot may help achieve smooth implementation.

What is the THE BOSTON HOME CENTER?

The Boston Home Center offers financial help, training, and counseling to first-time homebuyers as well as loans to homeowners who need to make repairs, and counseling to help avoid foreclosure. The Boston Home Center serves 600 to 800 homes per year.

- ▶ **Offering:** No-interest loans required to be repaid at time of sale.
- ▶ **Focus:** 1-4 unit owner-occupied homes developed for income-eligible, first-time homebuyers; condominiums in 1-6 unit buildings.
- ▶ **Decarbonization Strategy:** The Boston Home Center has worked to integrate decarbonization into its processes and ensure energy efficiency and electrification are achieved in homes it is serving wherever possible.

Distribution of Loans



\$35k

Average loan size over the past 3 years

18%

of projects over the past fiscal year included decarbonization or efficiency measures (July 2025 - June 2026), with efforts to create referral pathways between BHC and Mass Save programs

Catalytic Impact

ESHLP has already addressed one of the primary barriers to residential decarbonization: access to affordable, patient financing. The remaining challenge is expanding market deployment among harder-to-reach segments. To date, ESHLP activity has been relatively limited in Boston, and 2–4 unit homes require higher levels of investment and present additional coordination needs and project complexity that can limit uptake.

Catalytic capital is well suited to address these barriers by:

- ▶ **Providing concessional capital** to focus on an underserved building segment within the structure of an established financing program, which reduces the total investment needed.
- ▶ **Pairing with grant dollars** to absorb implementation costs around outreach and technical assistance.
- ▶ **Creating a replicable model** for a broader scale. The reach of this program could extend beyond Boston to other Massachusetts cities with similar 2-4 unit homes as well as to other Northeastern cities with similar housing stock, such as Philadelphia and Washington D.C.
- ▶ **Expanding equitable access to clean energy financing** for an underrepresented segment in clean energy lending.

Catalytic capital can enable MCCB to confidently extend its reach into Boston and into housing segments that are central to Boston's equity and climate goals.

Evaluation

In summary, an expansion of the Energy Saver Home Loan Program in Boston's priority sectors meets the catalytic capital evaluation framework by addressing market gaps and enabling additional LMI retrofits.

Solution Evaluation: Expanding the Energy Saver Loan Program

LEVEL OF IMPACT	
Equitable Impact to LMI Communities	Enables Boston-specific deployment of a statewide financing program to reach more Boston LMI households Builds on ESHLP success to date ensuring thoughtful implementation with LMI uptake
Financing Additionality	Increases financing cap to enable retrofits in 2-4 unit homes, including coverage of needed health & safety upgrades
Scalability	Builds on a proven statewide program
IMPLEMENTATION READINESS	
Leverages Existing Programs	Builds on an established financing product and delivery infrastructure
Implementation Feasibility	Proven program with existing administration Requires targeted capitalization rather than new infrastructure
Participant Risk	Low borrower risk through affordable financing and program support
FINANCIAL VIABILITY	
Capital Efficiency	Uses catalytic capital to expand an existing platform rather than create a new one with significant grant funding
Capital Mobilization	Leverages existing public incentives and private lending

Recommendation 2: Finance Decarbonization of Affordable Housing at Acquisition and Renovation

Mission-driven affordable housing developers are organizations whose primary mission is long-term affordability and community benefit, not maximizing financial returns. These include community land trusts, community development corporations, and other non-profit or public affordable housing owners. These organizations often own and manage bundled 1 to 4 unit buildings and midsize garden style multi-family properties that are underserved by traditional financing products and are often unable to afford full-fledged energy efficiency and decarbonization retrofits. We recommend creating a fund to be managed by MCCB that enables these mission-driven affordable housing developers to pursue deeper energy efficiency and decarbonization at time of acquisition as well as a times of renovation or recapitalization. Working with these developers can:

- ▶ **Address a Critical Financing Gap:** Smaller-scale affordable housing assets—including scattered-site 1–4 unit homes and mid-size multifamily properties—often don’t fit clearly into existing affordable housing financing programs. They lack the scale of larger affordable housing developments while facing greater complexity than individual home retrofits, and lack the dedicated financing to acquire, preserve, and comprehensively decarbonize, leading to deferred retrofits and missed opportunities.
- ▶ **Shift Borrowing to Institutional Owners:** There is a near-term opportunity to direct catalytic capital toward affordable housing organizations that have the capacity to navigate complex capital stacks.
- ▶ **Unlock Acquisition & Rehabilitation:** Flexible, patient capital can be deployed during acquisition or major rehabilitation—when comprehensive energy efficiency and decarbonization upgrades are most cost-effective—helping preserve affordability while reducing future retrofit costs.
- ▶ **Generate Lasting Community Benefit:** Because these organizations retain long-term ownership and affordability commitments, investments continue to benefit low-income residents for decades through better quality housing and lower energy bills while preserving permanently affordable housing. Supporting these entities can preserve smaller-scale properties that are often vulnerable to speculation, while embedding decarbonization upgrades into long-term ownership strategies.

STEWARDS OF AFFORDABLE HOUSING

These are types of prominent, mission-driven housing developers and owners in Boston. They own in aggregate more than 20,000 units of housing in the City of Boston.

Community Land Trusts (CLTs)

Role: Preserve permanent affordability by separating land ownership from building ownership, enabling permanently affordable homeownership and rental housing. Their long-term stewardship makes them well suited for deep decarbonization investments.

Boston Examples: Boston Neighborhood CLT, Chinatown CLT, Dudley Neighbors Inc. There are 4 major CLTs in Boston with approximately 270 units of housing.

Limited Equity Cooperatives (LECs)

Role: Resident-owned housing models in which residents collectively own and govern a cooperative corporation that owns the building. Resale restrictions preserve long-term affordability by limiting equity gains, while collective ownership can enable building-wide investments that benefit all residents. LECs provide a stable ownership structure and a direct pathway for resident engagement in retrofit decisions.

Boston Examples: St. Josephs Cooperative Homes, Warren Gardens Cooperative, Fensgate Cooperative

Community Development Corporations (CDCs) & Mission-Driven Affordable Housing Providers

Role: Mission-driven nonprofit organizations that develop, own, and manage affordable housing while advancing community development goals. These organizations often operate portfolios of affordable housing properties and may be well positioned to leverage catalytic capital to accelerate building upgrades, particularly where existing financing sources are insufficient to fully cover decarbonization costs.

Boston Examples: East Boston CDC; Jamaica Plain NDC. There are 17 CDCs in Boston which own almost 10,000 units of housing.

Nonprofit & Public Affordable Housing Owners

Role: Public entities that own and manage publicly assisted affordable housing. While public housing provides critical long-term affordability, decarbonization efforts face distinct financing, regulatory, and capital planning constraints due to reliance on federal funding streams and HUD requirements. Targeted catalytic capital could help bridge gaps and accelerate energy improvements in public housing portfolios.

Boston Examples: Boston Housing Authority owns approximately 10,000 units of housing

Catalytic Solution

Establish a dedicated fund for financing the improved efficiency and decarbonization of affordable housing portfolios through MCCB, providing low-cost, patient capital to a currently underserved segment of affordable housing providers.

Catalytic capital could:

- ▶ Pair access to concessional decarbonization financing to enable community ownership or tenant-focused organizations to compete for naturally occurring affordable housing acquisitions, preserve long-term affordability, and incorporate comprehensive energy efficiency and decarbonization retrofits during the housing conversion process. This ensures that acquired affordable housing will have a lower energy burden for tenants and can help build the case for requiring energy efficiency and decarbonization as part of core housing finance tools in the future.
- ▶ Provide flexible, below-market capital to bridge financing gaps and enable owners to integrate comprehensive energy efficiency and decarbonization upgrades into planned investments. These promising but sometimes costly retrofits get dropped in the planning process given limited capital for affordable housing financing. Catalytic capital can serve to demonstrate the impact that investing in energy efficiency and decarbonization can have on the quality of affordable housing and on energy affordability for the tenants in those buildings.

Complementary grant capital could:

- ▶ Fund the staff time and potential additional consulting support needed for coordination between MCCB, Boston Acquisition Fund, Boston housing agencies, and mission-driven owners to assess investment opportunities across portfolios.
- ▶ Fund staff time to explore partnerships with CDFIs and mission-driven lenders to expand access to financing, reach additional affordable housing providers, and scale implementation.

What is the **BOSTON ACQUISITION FUND (BAF)**?

A public-private revolving loan fund established by the City of Boston, financial institutions, and philanthropic partners to help mission-driven organizations acquire and preserve naturally occurring affordable housing before it is lost to speculative ownership.

The fund's primary objective is to acquire and preserve "naturally occurring affordable housing" (NOAH) with goals of:

- ▶ Preventing Displacement: By acquiring occupied buildings, the fund helps stabilize housing for families and individuals at risk of losing their homes due to rising rents or investor buyouts.
- ▶ Preserving Affordability: Housing acquired through the fund will remain permanently affordable, keeping costs manageable for LMI residents.
- ▶ Promoting Equity: The fund encourages applications from teams led by local MWBE developers, ensuring equitable access and community benefits across Boston's neighborhoods.

How does it work?

Administered by the Massachusetts Housing Investment Corporation (MHIC), the BAF provides low-interest loans to nonprofits, community land trusts, and mission-driven developers to purchase occupied tenanted multifamily housing. As loans are repaid, funds are reinvested to support new housing acquisitions, creating a sustainable model for preserving affordability.

The Boston Acquisition Fund provides 100% financing for acquisitions, featuring:

- ▶ Below-market interest rates to reduce carrying costs.
- ▶ Fast and streamlined underwriting for quicker closings.
- ▶ Flexible terms to aid affordability planning.

Key BAF financing products include:

- | | |
|--|--|
| <ul style="list-style-type: none"> ▶ Senior Debt: <ul style="list-style-type: none"> • Loan: Up to \$20M • Term: up to 20 years • Low Fixed / rates • Collateral: First mortgage | <ul style="list-style-type: none"> ▶ Subordinate Debt: <ul style="list-style-type: none"> • Loan: Up to \$5M • Term: 3-10 years • Low fixed rates • Collateral: Second mortgage, repaid via cash flow or capital events. |
|--|--|

Progress to Date:

Since launch in 2024, the \$45 million fund has supported the acquisition of **452 homes** in Roxbury, Dorchester, Roslindale, and Mattapan, permanently stabilizing rents for **more than 1,000 households**.

452 Units

in 20 buildings of all different sizes have received loans from the Boston Acquisition Fund

\$200k

average loan size per unit

4.75% to 5%

Average loan terms and rates range from 3- to 5-year loans

5.5% to 6%

Average loan terms and rates range from 10-year loans

Under consideration: a discounted loan product that would allow projects to take on an additional \$20-30k debt per unit. This would allow them to expand electrification and energy efficiency work (beyond measures covered by MassSave or other programs) that will improve resident comfort and health, and could be supported or expanded through support from catalytic capital.

Catalytic Impact

Catalytic capital can increase access to incremental, affordable financing to support the decarbonization of smaller-scale portfolios while they are being acquired and upgraded. With dedicated coordination, it can expand the capacity of trusted affordable housing providers well-positioned to preserve and acquire affordable housing at portfolio scale to also improve the efficiency and potentially decarbonize these units to make them more affordable to heat and cool and more comfortable to live in.

Catalytic capital is well suited to:

- ▶ **Provide concessional financing to decarbonize** affordable housing portfolios of smaller-sized buildings (including 1-4 unit homes, low-rise garden-style apartments).
- ▶ **Reduce transaction barriers** by enabling portfolio-based lending across scattered-site properties and mid-size multifamily buildings.
- ▶ **Align preservation and decarbonization investments** at critical transaction points.
- ▶ **Expand tenant-focused or community ownership** of naturally occurring affordable housing while protecting long-term housing and energy affordability and delivering resident health and comfort benefits.
- ▶ **Establish a replicable model** that can be scaled through MCCB and CDFI partnerships. This could serve as a national model if proven successful.

Catalytic capital can enable priority affordable housing providers to compete for and steward smaller-scale affordable housing assets while ensuring decarbonization is embedded into long-term preservation strategies.

Evaluation

In summary, a catalytic financing approach for priority housing portfolios aligns with the catalytic capital evaluation framework by using flexible capital to unlock portfolio-scale retrofits and strengthen affordable housing preservation efforts:

Solution Evaluation: Fund to support decarbonization of affordable housing portfolios

LEVEL OF IMPACT	
Equitable Impact to LMI Communities	Preserves and decarbonizes affordable housing portfolios serving LMI residents
Financing Additionality	Fills a major financing gap for underserved affordable housing owners to enable needed retrofits and integrate decarbonization
Scalability	Can be replicated across CDCs, CLTs, and other mission-driven owners
IMPLEMENTATION READINESS	
Leverages Existing Programs	Leverages existing affordable housing acquisition and preservation systems
Implementation Feasibility	Builds on established housing partners and financing mechanisms Requires development of a new financing product
Participant Risk	Limited resident risk; financing managed by tenant-focused or community-owned housing providers
FINANCIAL VIABILITY	
Capital Efficiency	Targets catalytic capital to meet capital gaps from conventional financing
Capital Mobilization	Unlocks additional public, philanthropic, and private capital for portfolio-wide investments

CASE STUDY: CLIMATE FRIENDLY HOMES FUND (CFHF)

The CFHF Program in New York provides financing to decarbonize older and less efficient heating, cooling, and hot water systems with decarbonized options in existing multifamily buildings. The program has a goal of financing electrification retrofits in at least 10,000 units of multifamily housing that serve economically disadvantaged communities, with 7,000 in the pipeline at the end of 2024.

Program Funding:

- ▶ State funding through New York State Division of Homes and Community Renewal provided to nonprofit affordable housing provider The Community Preservation Corporation (CPC)
- ▶ While this program is state funded, catalytic capital could launch a similar program

Program Offerings:

- ▶ Funds committed as grant OR forgivable loan, with a maximum amount of \$25k per unit
- ▶ Five-year term for smaller buildings (<15 units) and ten-year term for larger buildings
- ▶ Properties must be under regulation of a state or city housing agency and in a low-income and/or disadvantaged community census tract
- ▶ Eligible technologies included electrical service upgrades, heat pumps, and heat pump water heaters

Sources: [Climate Friendly Homes Fund](#); [Program Guide](#); [FAQs](#)

OPPORTUNITIES *for* ADVOCACY *and* RESEARCH



Overview

While the previous section offers prioritized recommendations, we also evaluated several emerging models that show strong potential to advance equitable building decarbonization. While they are not yet positioned for near-term catalytic capital deployment in Boston, continued policy development, technology demonstration, and program evaluation could create future investment opportunities.



Inclusive Utility Investment (IUI)

A utility-enabled financing model that repays clean energy investments through utility bills, reducing upfront cost barriers and expanding access to decarbonization upgrades for underserved households.



Neighborhood-Scale Deployment

A coordinated approach to deploying building decarbonization across a geographic area or common housing type that can reduce costs, streamline delivery, and improve access through bulk procurement, community engagement, workforce coordination, and potentially leverage infrastructure cost savings.



Window Heat Pump Technology

An emerging electrification technology that can provide efficient heating and cooling in affordable housing for a wider variety of building types with lower upfront costs and minimized construction needs, creating a potential pathway for faster, lower-disruption retrofits.

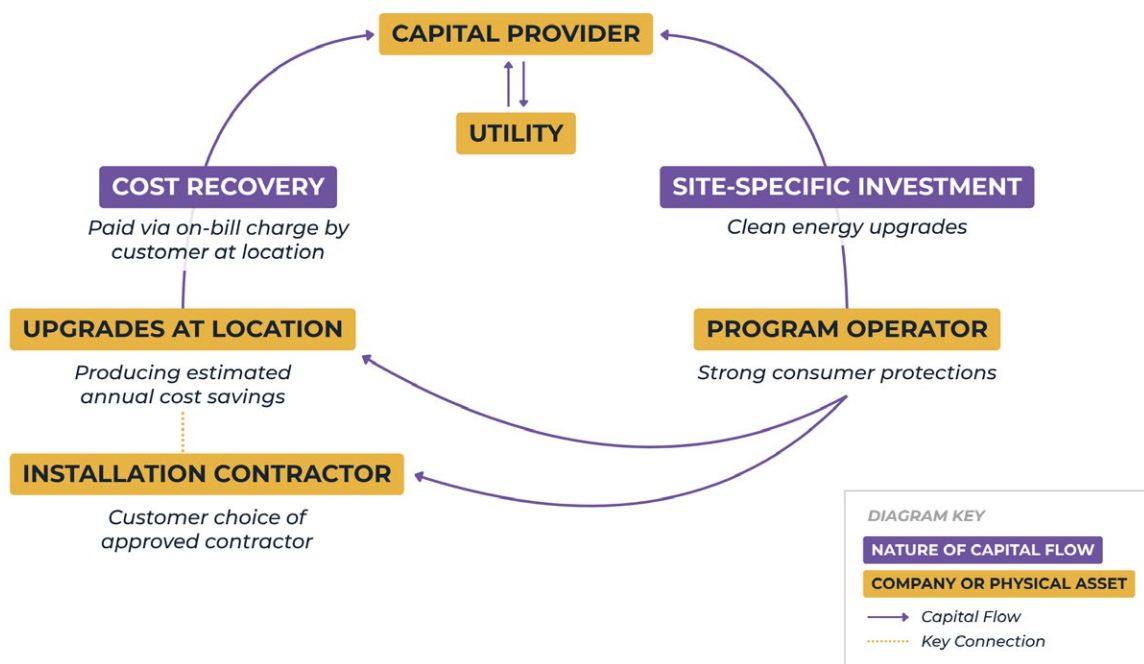
Opportunity: Inclusive Utility Investments

Inclusive utility investment (IUI) programs, administered by energy utilities, fund clean energy investments through a utility bill charge that enables the homeowner to repay the upfront investment over time.

Model Concept

- ▶ Energy savings cover the cost of the investments over time, and customers continue to pay at or below average bill amount prior to upgrades.¹⁶
- ▶ Investment is linked to meter rather than customer, enabling access for renters and LMI families,
- ▶ Must be designed with sufficient customer protection safeguards to avoid unintended consequences or unexpected costs.

Inclusive Utility Investment (IUI) Capital Flow



Sources: CET, Clean Energy Works, Rewiring America Webinar, "Addressing Barriers to Electrification through Inclusive Utility Investments (IUI)", September 2025; [Clean Energy Works Intro to IUI](#)

¹⁶ If the total investment exceeds the ability to be repaid via the bill, that portion must be paid by the building owner upfront.

These types of programs have also been referred to as Tariffed On-Bill Financing Programs or an older rendition called “Pay As You Save” (PAYS).

While municipal utilities in Massachusetts can pursue IUI programs, Boston is served by investor owned utilities, which would require additional regulatory approval and utility implementation before the model could be deployed at scale.

The Potential

If designed with strong consumer protections, inclusive utility investment could provide an equitable financing pathway at scale by eliminating upfront costs and expanding access for underserved households.

Catalytic capital could help make full-fledged energy efficiency and decarbonization investments more economic by adding concessional loans to the capital stack.

While most pilots have focused on single-family homes, many programs are designed to serve 2–4 unit properties, creating a promising opportunity for Boston’s triple-deckers.

What to Watch for in Boston

Pending energy affordability legislation would direct investor-owned utilities to develop IUI programs, signaling growing interest in this approach.

If enacted, implementation and regulatory design will be critical to ensuring strong consumer protections and equitable access, making Massachusetts an important opportunity to monitor and engage through advocacy.

CASE STUDY: CET MUNICIPAL UTILITIES PILOT

In Massachusetts, the nonprofit Center for EcoTechnology (CET) has been working with Massachusetts Clean Energy Center, Barr Foundation, and the Essex County Community Foundation on piloting IUI with Massachusetts municipal utilities, and has completed a pilot in Ipswich. The pilots are easier with a municipal utility because such utilities can participate without a regulatory process and their electric rates are often lower than Investor Owned Utilities, simplifying project finances.

Philanthropic catalytic capital is key to achieving programmatic cost-effectiveness, reducing interest rates and increasing the amount of additional capital. With the presence of this capital:

- ▶ CET pilots have attracted interest from community lenders to provide remaining capital.
- ▶ For every \$100k in philanthropic funding, \$1 million is unlocked in utility investments (9x impact).
- ▶ CET is seeking a \$300-500k grant to support a large-scale pilot with three to five municipal utilities in Massachusetts, enabling validation of the financing approach with a wide variety of customers.

Opportunity: Neighborhood-Scale Deployment

Neighborhood-scale deployment coordinates building decarbonization upgrades across multiple homes within a defined geography or common housing type to reduce costs, streamline implementation, and improve access through collective action.

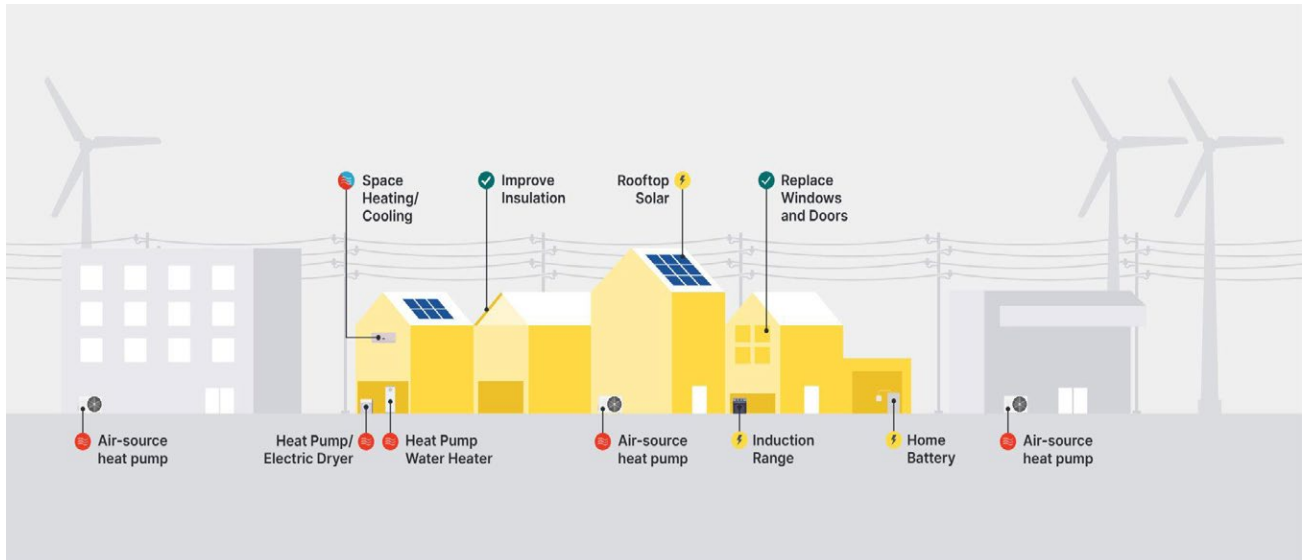


Image Source: [BDC](#)

Model Concept

- ▶ Implement clean energy retrofits across multiple homes to decrease costs, scale upgrades and achieve program efficiencies
 - Program could focus on a geographic area or specific housing type, whichever enables standardized retrofit packages and cost savings
 - Potential to partner with community organizations for outreach and engagement, aggregated workforce contracts to support high-quality jobs, or advance affordability protections
- ▶ Catalytic capital role:
 - Financially support an innovative model to scale deployment of energy efficiency retrofits
 - Subsidize program staff time to braid multiple funding sources together and to conduct resident engagement and education
 - Enable scaled procurement (“bulk purchase”) of equipment for cost reduction and enable higher subsidy levels for LMI households, including barrier removal

There is significant interest in neighborhood-scale deployment, but additional research is needed to determine where it is cost-effective, the amount of savings, and whether savings from avoided infrastructure upgrades can be valued or reinvested under current regulation.

The Potential

A neighborhood-scale model could help overcome common barriers to LMI adoption, including high upfront costs, contractor availability, and the complexity of navigating multiple contractor quotes, incentives, and complexities. Catalytic capital could support early-stage coordination, resident engagement, and market development needed to make these models viable at scale.

What to Watch for in Boston

Massachusetts has several examples of community-based and bulk-purchase models that demonstrate the potential of coordinated deployment, including Laminar Collective, HeatSmart Massachusetts, Solarize Massachusetts, and Abode Energy's bulk buy efforts for the Electrify Cambridge campaign.

Continued evaluation of these approaches can help identify where philanthropic capital can best support scaling, particularly for LMI households and underserved communities.

CASE STUDY: KICKING GAS

Kicking Gas* is a grassroots climate justice organization in Washington's Puget Sound that offers a 50-75% subsidy of heat pump and induction stove costs, and provides education and awareness campaigns.** The program makes electrification retrofits more accessible and affordable to residents of Whidbey Island and Snohomish County.

The program receives catalytic capital from The Russell Family Foundation, which provides loan guarantee for a line of credit with a community bank, providing critical bridge financing.

Additional funding includes:

- ▶ \$2 million from Community Energy Efficiency Program through Washington State University since 2022
- ▶ Federal Home Energy Rebates program funds, which Kicking Gas distributes as an implementer for the state
- ▶ Low-rate microloans for remaining costs from Salish Sea Cooperative Finance

In addition to Kicking Gas, there are many examples of pilot neighborhood-scale efforts, including Energy Fit in NYC, Weatherize ATL in Atlanta, Extreme Energy Makeover in Tennessee, and even Laminar Collective's bulk procurement model in Boston.

* Kicking Gas is led by nonprofit For The People, in collaboration with additional nonprofits

** Residents earning 80-120% AMI receive 50%, while residents earning below 80% AMI receive 75% in rebates.

Opportunity: **Window Heat Pump Technology**

Window heat pumps are an emerging electrification technology that integrates heating and cooling into a single window-mounted unit, providing a lower-cost, lower-disruption alternative to traditional heat pump retrofits in multifamily buildings.

Model Concept

Individual window units provide both heating and cooling directly within apartments, improving resident comfort and reducing reliance on inefficient building-wide systems. Units can be installed without ductwork, major construction, or extensive electrical upgrades, reducing barriers common in older multifamily buildings.

The technology may significantly reduce upfront costs compared to centralized HVAC or traditional heat pump systems. This model is particularly promising for older multifamily and public housing buildings where conventional retrofits can be costly and disruptive.



Image Source: [Gradient](#), via Canary Media

While promising, some barriers remain to mass deployment, such as eligibility for incentives and efficacy in smaller garden-style apartments.

The Potential

Window heat pumps could expand access to electrification in buildings that have historically been difficult or expensive to retrofit, particularly affordable housing and older multifamily properties.

By reducing installation complexity and cost, this technology could create a faster pathway for building owners and housing authorities to decarbonize units while improving resident comfort. National deployments, including NYCHA's Clean Heat for All initiative, will provide additional evidence on scalability and long-term performance. NYCHA has committed to incorporating packaged window heat pumps into its capital programs, with a goal of reaching 20,000 apartments.

What to Watch for in Massachusetts

Continued evaluation of BHA's Hassan Apartments pilot in Mattapan and other early deployments will help determine where this technology can provide the greatest value.

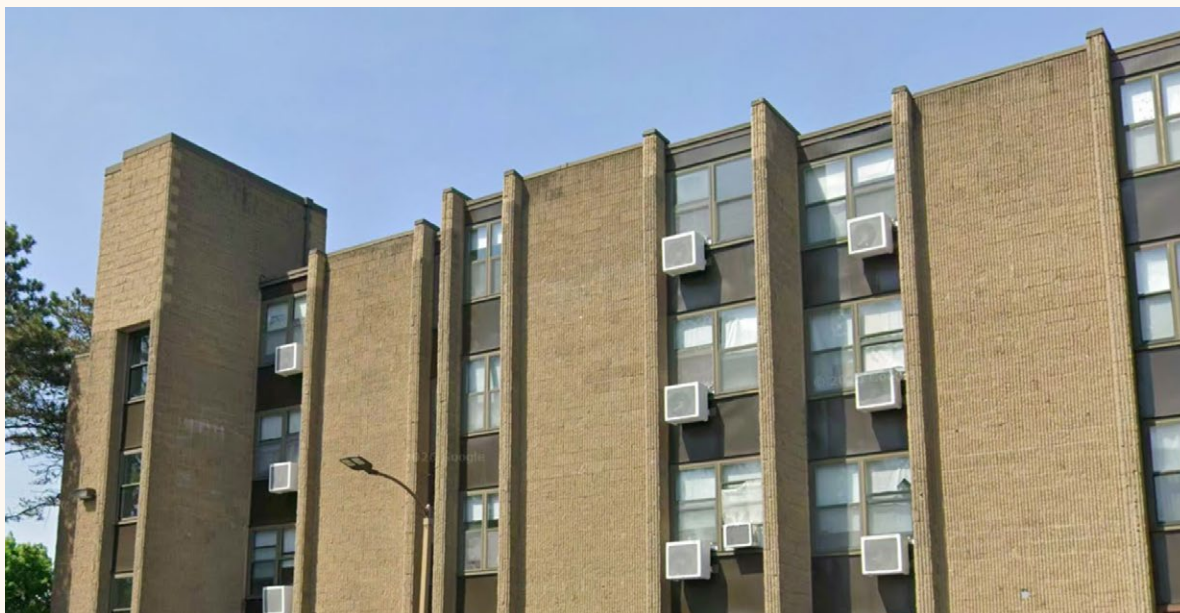
As the technology matures, opportunities may emerge to combine bulk procurement, utility incentives, and targeted philanthropic support to accelerate adoption in affordable multifamily housing. This is true for any technology that can accelerate market transformation and drive down costs and may be well-suited for catalytic investment to bring decarbonization solutions to scale.

CASE STUDY: HASSAN APARTMENTS

The Boston Housing Authority (BHA) is piloting advanced window heat pumps as a lower-cost, lower-disruption approach to providing efficient heating and cooling in affordable housing. Manufactured by Gradient, the window heat pumps are designed to sit in existing window openings and connect to standard 120-volt outlets, avoiding the major construction, electrical upgrades, and ductwork typically required for traditional heat pump installations. The materials and installation of the window heat pumps, one unit and a smart thermostat, costs roughly \$5,450 per apartment.

The pilot replaced aging electric resistance heating systems in 100 units at the four-story Hassan Apartments in Mattapan, serving seniors and adults with disabilities. (A similar pilot is under way by the New York City Housing Authority, which committed to purchasing and deploying 20,000 window heat pumps across its portfolio.)

The pilot will provide important lessons on installation costs, resident experience, energy performance, and scalability across Boston's affordable housing portfolio.



KEY TAKEAWAYS





Solid Foundation—with Gaps

Boston has a strong foundation of incentives, financing programs, and trusted delivery partners, but significant funding and financing gaps remain for low- and moderate-income (LMI) households. Catalytic capital can accelerate market transformation by addressing financing barriers that traditional public and private capital cannot, but success depends on the broader ecosystem—including robust incentives, trusted navigators, community partnerships, and coordination across housing and climate programs.



Priority Action Items

Two near-term, high-impact opportunities stand out to deploy catalytic capital in Boston's small residential homes, both with the ability to be deployed through the Massachusetts Community Climate Bank:

1. Expand and coordinate deployment of the State's Energy Saver Home Loan Program to key Boston building segments.
2. Develop and create a fund to support energy efficiency and decarbonization retrofits for priority housing portfolios at time of acquisition and renovation.



Design Phase Needed

A dedicated design phase will be needed to translate these identified opportunities into scalable investment strategies, including refining program models, validating financing structures, quantifying impact, and identifying the right role for catalytic capital.



Other Promising Approaches

Advocates and investors should continue monitoring emerging opportunities, including inclusive utility investment, neighborhood-scale deployment, and innovative electrification technologies as they mature.

Catalytic capital is most impactful when it complements and accelerates—not replaces—public funding, private investment, and community-led implementation. Targeted philanthropic investment should serve as a catalyst—unlocking additional capital, strengthening delivery systems, and accelerating equitable building decarbonization for Boston's LMI households.

APPENDIX

Stakeholder Interviewees (by Affiliation)

Meredith Levy, Boston Neighborhood Community Land Trust

Rebecca Price, Cambridge Associates

Ashley Muspratt, Center for EcoTechnology

Adrian Rodrigues, Coalition for Green Capital

Adriana Lasso-Harrier, City of Boston Mayor's Office of Housing

Daniel Lesser, City of Boston Mayor's Office of Housing

Isabella Gilmartin, City of Boston Mayor's Office of Housing

Joe Backer, City of Boston Mayor's Office of Housing

Karen Rebaza, City of Boston Mayor's Office of Housing

Kristen Simmons, City of Boston Mayor's Office of Housing

Minnie McMahon, Dudley Street Neighborhood Initiative

Phil Giudice, Former Federal & State Government Official

Michael Walsh, Groundwork Data

Emily Jones, Local Initiatives Support Corporation

Emily Haber and Don Bianchi, Massachusetts Association of Community Development Corporations

Martha Grover, Massachusetts Executive Office of Energy and Environmental Affairs

Jennifer Applebaum, Massachusetts Clean Energy Center

Kelsey Read, Massachusetts Clean Energy Center

Peter McPhee, Massachusetts Clean Energy Center

Adam Kent, Natural Resources Defense Council

Doug Simms, Natural Resources Defense Council

Orlando Watkins, The Boston Foundation

Glossary

Additionality - In the context of catalytic capital, additionality refers to the environmental and/or social outcomes that would not have happened without that catalytic investment.

Capital intermediation - The economic process of channeling funds from entities with surplus capital (savers and investors) to those needing capital (borrowers and corporations). Specialized financial professionals and institutions bridge this gap to optimize resource allocation, manage risk, and reduce transaction costs.

Capitalization - In a housing or real estate project, capitalization means recording the cost of a building or building renovation as a long-term asset on a balance-sheet, instead of writing it off as a normal, immediate expense. These costs are then spread out and depreciated over time.

Catalytic capital - Investment capital that is deliberately structured to take on more risk, accept a lower return, or be more patient than an ordinary investor would be, in exchange for additional social and/or environmental impact. It's called "catalytic" because its purpose isn't just to fund a project directly, but also to attract additional, more conventional money into the project.

Community Development Financial Institution (CDFI) - A bank, credit union, loan fund, or venture fund that is certified by the U.S. Treasury specifically because its mission is to lend in low-income or underserved communities.

Concessional capital - Money lent at interest rates that are lower than the commercial market would normally offer. Providers of concessional capital accept a lower return because they're prioritizing a social or environmental goal.

Debt service reserve funds - A pool of money set aside specifically to cover loan payments if a project runs short on cash for a period of time. Lenders sometimes require this before they'll approve a loan, because it reassures them the borrower can keep making payments even if there is an unforeseen event that affects project cashflow.

Donor advised fund - A charitable giving account, typically held at a community foundation or financial institution, that lets a donor contribute money (and get an immediate tax deduction), then recommend—over time—which nonprofits or projects should receive grants from that account.

First loss funds - Capital that is deliberately positioned to absorb the first losses if an investment or loan doesn't perform as expected, protecting other lenders and investors. Because it takes on the greatest risk, first-loss capital makes a deal look safer to more risk-averse, conventional investors.

Green Bank - A public, quasi-public, or nonprofit institution created specifically to finance clean energy and climate projects using public or philanthropic dollars to attract additional private investment.

Loan guarantee - A commitment from a third party (often a government agency, philanthropic foundation, or CDFI) to repay some or all of a loan if the original borrower defaults. A loan guarantee helps reduce the lender's risk, which often makes the lender willing to offer a loan, or offer better terms for that loan, that it wouldn't have offered otherwise.

Portfolio - A collection of financial assets like stocks, bonds, loans, other investments including real estate, owned by an entity. It acts like a single container for all your investments across different accounts to help oversee and manage money and financial risk. Owners of multiple real estate investments, such as affordable housing, often refer to them as a portfolio.

Program related investment (PRI) - A loan or investment (rather than a grant) that a private foundation makes in pursuit of its charitable mission. PRIs count toward a foundation's legally required annual giving, but if the money is repaid as is expected, it can be recycled and reinvested in new projects—making it a way for foundations to stretch their impact further than a one-time grant would.

Seed capital - The initial funding used to start a new business and support the early stage expenditures needed to get the business up and running.

Subordinated capital - A loan or investment that agrees to be repaid after other lenders in a deal, if there isn't enough money to go around. Because it stands "behind" other debt in line, subordinated capital lowers risk for other lenders and investors, which can help unlock financing from more conventional, risk-averse lenders.

