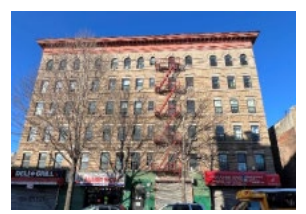




Weatherization Assistance Program Enhancement & Innovation

Lessons Learned: Electrifying New York's Affordable Housing

August 2026



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Introduction

In 2023, Enterprise Community Partners received a U.S. Department of Energy Weatherization Assistance Program Enhancement & Innovation (E&I) grant to examine the following questions:

- How can retrofits of low-income multifamily buildings improve resident health, reduce energy use, and lower utility bills?
- How can clean energy programs and weatherization be integrated in a streamlined way, and how can we effectively prioritize participation for buildings whose residents can most benefit?

To answer these questions, Enterprise Community Partners (Enterprise) launched a three-year pilot project focused on weatherization and electrification with the Association for Energy Affordability (AEA), with support from the New York City Department of Housing Preservation and Development (HPD) and New York State Homes and Community Renewal (HCR). The pilot utilized New York State Weatherization Assistance Program (WAP) funding to improve energy efficiency through weatherization and also converted buildings to clean heating systems through electrification. Enterprise developed this approach on five multifamily buildings in New York City, with the goal of ultimately developing a knowledge base for pursuing similar retrofits nationwide.

WAP upgrades reduce energy costs for low-income households by increasing the energy efficiency of their homes and improve health and safety. WAP services typically include air sealing, insulation, HVAC upgrades, and health and safety improvements. Electrification, which is the process of replacing systems powered by fossil fuels with electrically powered ones, is typically excluded from WAP unless the state receives pre-approval from DOE for each type of switch.

Weatherization and electrification are both steps in the decarbonization process, which reduces or eliminates building greenhouse gas emissions. The decarbonization framework consists of three steps: 1) improve energy efficiency, 2) electrify building systems, and 3) generate power through renewable sources. This pilot program focused on combining resources to complete steps one and two, though we also integrated step three in some cases by installing solar on site.

Most directly, residents see improved health outcomes from decarbonization, as eliminating fuel combustion in buildings improves indoor air quality and eliminates risk of gas leaks. Electrification can have a mixed effect on building operating costs, largely based on local utility tariff pricing. In most communities, electrification will reduce operating expenses when paired with energy efficiency improvements and inclusion of renewable energy on site. In some cases, operating expenses may increase if efficiency upgrades are not sufficient or in areas where natural gas is much cheaper than electricity. In our pilot buildings, four out of five buildings are projected to save on utility costs post-construction. Because of rent and utility restrictions in place at pilot properties, no residents will face utility bill increases due to this work.

It is important in the long term that affordable housing buildings are not left behind as other buildings in a region decarbonize, as the cost of maintaining natural gas infrastructure could be

disproportionately passed on to these properties when market-rate properties move toward electrification.

Benefits of Combining Weatherization and Electrification

Weatherization is a proven approach to reduce energy usage through increased energy efficiency. Older multifamily affordable housing buildings often have deferred maintenance, poor insulation, and older windows, leading to high operating costs. Without a strategy to improve energy efficiency, electrified building systems can initially cost more to operate in New York City than buildings utilizing fossil fuels because of the current distribution of utility costs. This work builds on evidence that electrification should be paired with weatherization or other energy efficiency measures to mitigate potential operating cost increases. If resources are available, it is beneficial to incorporate electrification measures when conducting weatherization to 1) minimize disruptions to a building with multiple retrofits in a short time and 2) enhance health and safety outcomes noted above.

Overview of Completed WAP + Electrification Projects

The project team reviewed and conducted outreach to 140 eligible properties. Owners of eighteen buildings indicated interest, and five properties totaling 154 units were ultimately selected for a comprehensive retrofit. The properties all had regulatory agreements governing affordability and were selected based on the following characteristics:

1. Met New York State WAP income eligibility requirements.
2. Located in an area with high health vulnerability (high asthma hospitalization rates and/or poor air quality) or climate vulnerability (high heat index and/or flood zone).
3. Had additional building characteristics such as vulnerable tenant populations including the presence of older adults, a history of utility blackouts, and heating and hot water system equipment that had reached the end of its useful life.
4. Included additional characteristics that would increase the likelihood of successful outcomes such as master metered electricity (to adequately incentivize owners to undertake the work), and existing hydronic heating systems (which have more options for cost-effective electrification).

Four of five buildings in this pilot are projected to see utility savings post-construction, ranging from \$240- \$270 per unit annually. The fifth project is expected to experience a utility increase of approximately \$220 per unit annually, that will be paid by the building owner. One participating building is direct metered (each tenant is directly billed for in-unit electric consumption) and used a steam heating system, and four buildings are master metered (the entire building is on one electric meter that is paid for directly by the owner) and used a hydronic heating system. We stacked multiple funding sources for each project to implement weatherization and electrification measures. Costs for electrification measure varied:

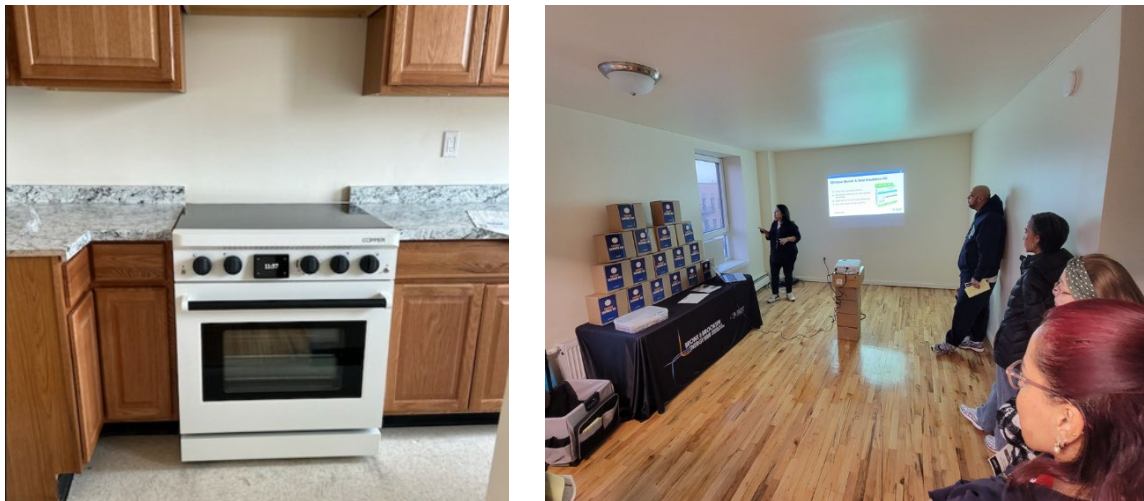
- Domestic hot water (DHW) electrification: \$9,000 - \$12,000 per unit

- Space heating electrification: \$30,000 per unit
- Combined heat pump - DHW & space heating electrification: \$38,000 - \$57,000 per unit
- Low temperature radiator panel electrification (equipment & labor): \$6,000 - \$8,000 per unit
- 120v induction stove electrification: \$8,000 - \$8,500 per unit

Bryant Avenue: DHW



Seneca Avenue: stove & tenant engagement on the use of the new Copper induction stoves



Bryant Avenue: low temperature radiator panel



Seneca Avenue: combined heat pump - space heating and DHW



Lessons Learned for Building Owners and Contractors

Through this work, the team identified several steps required to ensure successful outcomes.

Pre-screening

Pre-screening is important to determine if a property is a viable candidate for weatherization and electrification and if conversion will generate cost savings. AEA recommends conducting a thorough energy audit and site assessment, so the data collected can be used to put together a detailed scope, including electrification readiness measures and a detailed bid package that includes drawings. When completing an audit, the auditor should inquire about system reliability, maintenance challenges, and energy efficiency. Buildings benefit from an early electrification assessment as part of the screening process to determine operationally and financially viable options for providing space heating and DHW, including whether the building is a viable candidate for electrification.

For example, due to limited funding and design challenges, two of the pilot buildings ultimately prioritized electrifying the DHW system and not the space heating system. The auditor should perform diagnostic tests on existing heating, cooling and DHW systems to identify inefficiencies, and establish baseline performance data for comparison after the retrofit.

Workforce Selection

Electrification and weatherization are rapidly evolving sectors, requiring that providers keep abreast of new technologies and skillsets. For these pilot projects, it was important that auditors understand the staffing and expertise needed to complete work. For example, WAP uses EQUIP for modeling energy savings and future cost projections. For electrification scopes, AEA utilized their in-house engineers to develop an excel workbook which worked well to assess load needed during the auditing process and required in-house engineers.

Longer term, we also recommend investing in expanding the workforce for electrification to ensure there are adequate contractors, skilled technicians and workers available to implement retrofits.

Owner and Tenant Engagement

It is important to conduct early outreach and education to the building owner and tenants. This is especially important in the energy audit and site assessment phases, resulting in early feedback and buy-in from the building owner and tenants about the recommended systems and technology appropriate for the building. This process will also enable the auditor to capture any tenant feedback, particularly regarding comfort issues such as overheating, underheating, or inadequate hot water supply. Costs from additional demand (such as added cooling if incorporated into the scope) should also be discussed with the owner to provide more accurate operating cost projections.

Cost Shifting

The electrification of space heating and DHW are not impacting any resident costs since these continue to be owner paid. Owners should be aware of the cost and the potential for cost shifting from owner to tenant (or, in certain cooling scenarios, from tenant to owner) depending on the electrification strategies selected. None of the projects in this pilot resulted in cost shifting, and all costs paid by the owner will continue to be paid by the owner.

Electrification Planning

There are currently no flexible or comprehensive funding sources for mid-cycle weatherization and electrification retrofits of multifamily buildings. Projects in this pilot were therefore complex to

piece together and required significant time and creative structuring to secure. Different funding sources had different eligible uses, compliance requirements, eligibility requirements, and periods of performance. This resulted in the need to phase different elements of an electrification and weatherization project, as financial resources are not often available to complete desired upgrades all at once.

Beginning with efficiency and electric-readiness measures can ease the burden of electrifying the building in the future. This includes weatherization measures already discussed (air sealing, roof insulation, window upgrades, etc.) as well as electrical system upgrades such as upgrading electrical panels for higher loads. Aligning electrification of systems with those systems' life cycle can also result in decarbonization at a lower capital cost over time. For example, two buildings in the pilot completed only DHW retrofits due to limited funding; upgrading the DHW rather than the space heating systems at this time provided the greatest benefit for these properties.

Longer term, these issues of phased work and the complexity of overlapping program requirements could be alleviated through the creation of a new comprehensive flexible funding source for weatherization and electrification or reforms to the Weatherization Assistance Program (WAP) to allow electrification.

Electrification audit training for WAP providers



LAARS E-therm heat pump water heater training



Conclusion

This pilot shows the effectiveness of combining weatherization and electrification. Four of five retrofits are projected to reduce utility costs, and all are expected to improve outcomes for residents. For building owners and contractors, key recommendations include thorough prescreening, early owner and tenant engagement, alignment with available incentives, cost-benefit evaluation, and electrification readiness planning due to the complex regulatory environment.