

DEEP ENERGY RETROFIT AT HANO HOMES

Allston Brighton Community Development Corporation

BUILDING TYPE

- Deed-restricted affordable housing
- Multi-family building with 20 units
- Built in 1888
- 24,083 sq. ft. of Gross Floor Area (GFA)

PROJECT TEAM

- **Building Owner/Developer:** Allston Brighton Community Development Corporation (ABCDC)
- **Property Manager:** Maloney Properties
- **Architect:** Onion Flats Architecture
- **Contractor:** Haycon Building LLC
- **Energy efficiency consultant:** Sustainable Comfort
- **Relocation Consultant:** Judy Cohn Housing and Relocation Consultants
- **Solar consultant:** Resonant Energy
- **Other partners:** Tierney Development Services and RMI



PHOTO CREDIT: JANE MESSINGER

HIGHLIGHTS

RETROFIT COST **\$7.6 million**

81% ANTICIPATED REDUCTION IN ANNUAL ENERGY USE

MODELED ENERGY USE INTENSITY CHANGE
BEFORE **69.9** *kbtu per sq. ft.*
AFTER **13.5** *kbtu per sq. ft.*

74% ANTICIPATED REDUCTION IN EMISSIONS INTENSITY

FUNDING SOURCES

- City of Boston Mayor’s Office of Housing
- Community Economic Development Assistance Corporation (CEDAC)
- Eastern Bank
- Liberty Mutual Foundation
- LISC MA
- Low-Income Energy Affordability Network (LEAN) Program
- MA Department of Energy Resources (DOER)
- MA Department of Environmental Protection (MassDEP)
- MA Executive Office of Housing and Livable Communities
- Mass Housing Partnership
- MassCEC

PRE-EXISTING CONDITIONS

Pre-retrofit, the property was served by central gas-fired boilers and water heaters, with no cooling or ventilation systems. Inefficient older windows leaked heat from inside the unit and let in cold air during the winter. Tenants used window air conditioning units for cooling during summer months. The building also suffered from extensive rot in the wood framing, plumbing issues, broken pipes and outdated systems that needed quick intervention.

KEY RETROFIT COMPONENTS

EXTERIOR INSULATION

- Walls (R-36)**
- 7/16" ZIP System wall sheathing
 - 5.5" of PEFP-certified wood fiber insulation (R-20)
 - New furring strips and James Hardie siding
- Roof (R-69)**
- Blown-in dense-packed cellulose in existing roof frame (R-3.7/inch)
 - 2" of new polyiso insulation (R-14)
 - EPDM membrane

- Windows**
- New U-0.17 Triple Pane UPVC windows

MECHANICALS

- Heating, Cooling and Ventilation**
- All-electric Daikin combined Energy Recovery Ventilator (ERV)
 - Air-source heat pump units
- Domestic Hot Water**
- All-electric heat pump hot water heaters

RENEWABLE ENERGY

- 67.6 kW rooftop solar PV system



PHOTO CREDIT: JANE MESSINGER

CONNECTING RETROFITS TO RESIDENTS’ LIVES

ENGAGING WITH TENANTS

ABCDC was proactive about communicating with tenants living in Hano Homes throughout the Deep Energy Retrofit (DER) process, but hopes to continue to improve and increase tenant transparency and communication. ABCDC’s Real Estate Development Project Manager, **Mara Tu**, emphasized the **importance of educating and communicating with residents** without placing extra burden on tenants: “there’s a balance between figuring out how to really try to educate people and get people involved while also not bothering them. Everyone on the project team is respectful, and I think that builds a certain degree of trust, which is necessary when you are changing someone’s entire home and asking them to temporarily move their entire lives”.

The team’s experience with Hano Homes highlighted both successes and areas for improvement in resident engagement for Tu: “now that we have completed this DER, knowing how to set expectations—exactly what will be done in residents’ homes, what to expect during construction, what different processes like blower door tests look like, etc.—is important”.

Resident education, they noted, has two essential components: “**connecting residents to the core mission of decarbonization**” and “**getting people up to speed with the learning curve of how to use and control the new systems**”. With these lessons in hand, the team continues to refine its approach, working to build trust and develop more effective strategies for supporting residents through the retrofit process.

MINIMIZING DISRUPTIONS AND COST BURDENS

ABCDC’s Director of Real Estate Development, **Caitlin Robillard**, explained that “the most important thing was to communicate that tenants were still going to pay their rent like normal. There would be no change in rental costs of processes, and they would not incur any expenses associated with moving, packing, and storage– just the burden of having to move [during the retrofit of their unit]”.

ABCDC was able to relocate tenants into two vacated units on site, greatly reducing the burden on tenants and costs associated with relocation. After the initial meeting with the Hano Homes community, ABCDC coordinated one-on-one meetings between the relocation consultants and tenants to account for any extenuating circumstances. “Every family is different. We wanted everyone to be able to put out all of their questions in a less vulnerable space than this group meeting. They had direct lines to the property manager, the relocation consultant, and to [ABCDC] as well.” For instance, one tenant whose unit was fitted with ADA accommodations was relocated to a hotel during the two-week indoor renovation period. “While living on an active construction site is disruptive to your life, I think it’s less disruptive than having to move to a different neighborhood when your kids normally get their school bus right outside their door and having to change your route to work and your grocery store and your pharmacy. We really want to try to keep tenants in place.”

The Hano Homes DER is set to improve the quality of life of all its residents without increasing their living costs. Post-retrofit, Hano Homes will maintain the **owner-paid utility system** that Maloney Properties already used. The only change will be that tenants now receive central air conditioning in addition to hot water and electricity covered in their owner-paid utility bills. Since the retrofit has made the units so airtight and rooftop solar is soon to be installed, the project team is projecting that the property’s annual utility costs will decrease. In addition, the wood fiber insulation used on the building envelope plays a double role by helping to dampen the sounds of nearby car traffic and trains, which greatly reduces noise pollution within all of the units.

★ BEST PRACTICES IN ENGAGEMENT

Engagement included early evening hybrid meetings in an effort to have as many people attend as possible. Since several households do not speak English as their primary language, ABCDC brought in live interpreters to assist with the presentation.

In addition, ABCDC paid for tenants with mobility issues or transportation limitations to take rideshares to the presentation at their office. The property manager, ABCDC staff, and state-approved relocation consultants were at the meeting to provide information about the project and to maintain transparency with residents.

AS A RESULT OF THIS DEEP ENERGY RETROFIT, RESIDENTS WILL BENEFIT FROM THE FOLLOWING IMPROVEMENTS:



LESSONS FROM THE FIELD

PLAN AHEAD, BUT BE READY TO ADAPT

DER processes are not always linear. While long-term building decarbonization planning is a key component of BERDO compliance, building owners should also be prepared to adapt their plans to **respond to unforeseen challenges** and **take advantage of emerging opportunities** to incorporate decarbonization efforts into existing or planned projects. For example, Robillard explained that Hano Homes’ building typology presented significant advantages for the project timeline: “[A] big positive was the townhome basements, because the tenants don't use those. We don't have on-site basement laundry like you see in most places. Since it's such an old building, the homes have never been set up that way. There is no head room [in the basements], which makes it difficult for tenants to access the space. That worked in our favor because we could have the contractors in the basement all the time without displacing tenants from their homes and allowed us to put mechanical systems in there too.”

On the other hand, due to the building’s age, the walls of Hano Homes contained multiple layers of cladding material from renovations that happened over the century of its existence. The project team had to carry out initial investigative work on site to understand the building’s condition under these layers. Though there was water damage and some of the underlying wood had begun to rot, this early observation of the site conditions ensured that the team had time to address these bigger issues within the building in a timely fashion. The project team originally wanted to use prefabricated panels for exterior insulation, but due to the property’s physical constraints, which included limited street access and overhead wires in close proximity to the building, the team decided to build the insulation on-site instead.

FIND YOUR BUILDING DECARBONIZATION DREAM TEAM

Tu spoke to the importance of outreach and relationship-building to the formation of the **ideal project team**: “ABCDC’s leadership has done an incredible job of reaching out, seeing who is an expert in this field, who has experience, and who is willing to take on the project. Spearheading retrofit projects and being one of the first teams to take these grants and do a project like this requires a little bit of risk-taking and trust in people's expertise.”

ABCDC initially engaged the local **RMI** team, who identified **Onion Flats** as an architecture firm with the skills and expertise to tackle the retrofit learning curve. The combined team then assessed the range of properties under ABCDC’s purview and recommended Hano Homes for a DER project.

Robillard spoke to the timeline benefits of having a local general contractor on the project. The contractor for the project, **Haycon**, was able to store incoming materials and equipment at their nearby site in Roxbury - “The day we needed something, we could get it”.



MISSION-ALIGNED TEAM

Both Robillard and Tu spoke to the importance of assembling a mission-aligned team at the outset of the project. “Everybody was so committed to making this project happen. [Project Lenders] let us close on construction financing without every single resource in hand. They understood what was happening. We explained to them how grant financing was going to work, for example, how we would use Low-Income Energy Affordability Network’s (LEAN) new deep energy retrofit incentive and that funding was still a work in progress, and they trusted us and believed us,” said Robillard.

BRINGING IN EXPERTS

As with the initial assessment of ABCDC’s properties that led to the selection of Hano Homes for the project, Robillard says it is critical to “start with that initial property assessment and with hiring a firm that can do an energy and water audit or decarbonization assessment. That part can be overwhelming if you aren’t an expert, so that's where we started to bring in the expertise to understand the key considerations for the property and get that early data about how much we could save and how much we could reduce energy usage. Having those data points really matters because there isn’t a one-size-fits-all approach to this work.”

VALUE OF LOCAL RESOURCES

Tu reflected on how useful it was for members of their team to connect with others conducting similar projects at the Northeast Sustainable Energy Association (NESEA) conference: “Things like [NESEA] are very valuable not just for organizations, but for individuals to network. Our team met a lot of the key players for the Hano Homes project through communal spaces like NESEA,” said Tu. Robillard pointed out that working with a local architect who could be on-site as frequently as possible was essential to keeping the project on track. Additionally, Tu noted that “having so many local lenders and our state and city committed to these types of decarbonization and high energy savings projects in affordable housing made me very hopeful for our organization and city as we move towards our collective climate goals”.

