

ECONOMIC OPPORTUNITY STUDIES



Action for Boston Community Development, Inc. (ABCD)

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When the American Recovery and Reinvestment Act (ARRA) was enacted, Action for Boston Community Development (ABCD) began planning to weatherize more of multifamily buildings and larger buildings than it served in the past. Up to 2008, Massachusetts's W.A.P. providers had more utility funding than federal funding, and state legislation added even more funds from a regional greenhouse gas auction beginning in 2009. Practices and tools developed for the utility-funded programs were adapted to use for ARRA-W.A.P. requirements for larger apartment buildings.

Weatherizers may find it useful to learn about new practices including: (1) cooperation and coordination to identify target buildings; (2) pre-assessment tools and techniques to optimize building candidates; (3) effective handling of contractor issues; (4) crafting landlord agreements that maximize tenant benefits.

Background: Multifamily Weatherization in Massachusetts

Two programs fund low-income multifamily weatherization services in the state. DOE W.A.P. is administered by the Energy Conservation Unit (ECU) of the Department of Housing and Community Development (DHCD) in Massachusetts. The second program is the Massachusetts Low-Income Multi-Family Retrofit Program funded by the state's gas and electric utilities. All the utilities' work is contracted to and administered by a consortium of the W.A.P. local agencies and their partners, including the utilities and other stakeholders. It is called the Low Income Affordability Network ([LEAN](#)) and played an important role in ensuring utility-financed resources and projects supported and coordinated with ARRA-W.A.P. work.

Identifying Buildings

Massachusetts budgeted \$31 million for ARRA multifamily buildings. Two categories of multifamily owners are targeted, and priority in each category is for residences where the utility bills are paid by the tenants.

Six million (\$6M) is allocated to **expiring-use properties**. These are properties near the termination of the federal subsidy requirements that were applied to them when they were first placed into service and the owner agreed to pass the benefit of federal subsidization for the capital to tenants in the form of rent reductions. In recent years, the trend has been for owners to turn these properties into market-value rentals when their federal subsidy obligations expire.

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Recruiting these owners requires substantial outreach even before W.A.P. resources can be “packaged” with other support to induce the owner to keep the building in low-income use.

The balance of multifamily ARRA, \$25 million, is allocated for the second multifamily housing type: **state-owned assisted housing**. This building stock is described as being military-style townhouses, constructed in the 1940s and 50s. These residences typically do not have ceiling and wall insulation, and their heating systems are chronically inoperable. The goal was to weatherize approximately 4,000 individual units in these state projects, and selecting sites primarily requires state experts to identify and assess alternative projects.

Assessing Prospective Multifamily Projects

Finding the project opportunities is greatly facilitated through internal departmental channels. The Energy Conservation Unit (ECU) and the state housing division both reside within the Department of Housing Community Affairs (DHCD). This proximity helps in identifying and implementing projects. Staff from each unit exchange information without the need of the formal sharing protocols that would otherwise have to be established through inter- or intra-agency memorandums or contracts. DHCD also administers LIHEAP; client bill and income information from LIHEAP assists in verifying and cross-checking income eligibility and high energy use.

DHCD’s housing department also uses the information it keeps on buildings in both categories to provide a pre-assessment to aid ECU’s W.A.P. office in pre-selecting likely candidates. Staff flags general and specific conditions in each building that may need to be addressed prior to conducting an energy audit. This pre-assessment provides vital information to ECU W.A.P. staff, including about the heating systems and general repair needs and saves the state and sub-grantees substantial time.

The utility-funded, LEAN-administered Massachusetts Low Income Multi-Family Retrofit Program is a “one-stop” resource to other owners, especially public housing authorities (PHA’s) and affordable housing owners applying for Weatherization funded by either the utility program or W.A.P.. In practice, a building can receive a mix of ARRA and utility funds. Coordination is not simple: The W.A.P.-approved energy analysis tool used by the state is EA-Quip. However, the utilities have their own methodologies for calculating energy savings. Each project must be reviewed to analyze the results from both the EA-Quip-generated analysis and the results from the utility-generated assessment.

Although the LEAN network has no corporate status on behalf of its parent CAAs, it handles the intake and review of applications, coordinates auditors, recommends projects for approval, and administers the program in accordance with established state and utility guidelines.¹

LEAN’s Building Pre-Assessment Tools

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LEAN established a web-based portal for applying for utility-funded weatherization services. A multifamily building owner has access to the LEAN application by registering a user name and password on the LEAN website. In addition to providing ownership information, each applicant must document tenant income eligibility and tell whether tenants pay their own utility bills or not.

The second step is for the owner to provide building information and energy characteristics through an external benchmarking portal linked to the application site. [WegoWise](#) is an online, commercially available tool that allows building owners to input their utility information, review the results graphically and numerically, and observe building energy performance within a portfolio or as a stand-alone facility.² WegoWise staff use the input data to report to project managers on each building's benchmark energy performance. WegoWise ranks buildings according to their existing and proposed energy performance. The ranking enables project administrators to determine the cost-effectiveness of a proposed building retrofit and decide which buildings to approve for funding.³

The LEAN Two-Part Energy Assessment

The LEAN building assessment is a process with two stages or levels. The Level 1 Assessment is a prescriptive data collection at an onsite inspection that checks existing conditions and equipment including: the building enclosure, heating systems, domestic hot water, ventilation systems, cooling systems, lighting systems and appliances. (See Appendix 1) A Level I Assessment notes any safety or health issues such as moisture problems, pest infestations or fire safety risks and provides an opportunity to observe the mechanical heating and ventilation systems. Depending on the conditions and/or complexity of these systems, the Level 1 Assessment may recommend that more calculations are warranted to determine the feasibility of a mechanical system retrofit or replacement. If so, the project moves onto the second stage, or Level 2 Assessment.

A Level 2 Assessment is conducted by an engineer and confirms and expands the observations in the Level 1 Assessment. It also verifies health and safety conditions described in the Level 1 Assessment, addressing remediation measures in more detail. The Level 2 Assessment provides more data related to the operation of the boiler and ventilation systems. The engineer/auditor is also required to provide a rough field sketch of how a proposed retrofit should be designed. The assessment includes recorded measurements of fan ventilation rates and a visual inspection of all penetration areas—for instance roof leaks, fan systems that may inadvertently be discharging air flow, system pressures, and other issues that air sealing and the ventilation system work may need to remedy.

Combining Leveraged Funds with ARRA

In general, ARRA-W.A.P. funding is allocated to the heating and mechanical ventilation systems because the utilities prefer to fund air sealing and building envelope measures. The portion of a project that will be funded by W.A.P. will be determined by using the W.A.P. multifamily audit,

EA-Quip, and must meet the W.A.P.-required SIR. The W.A.P. portion of the project is documented to DHCA including the income verification provided by the DHCA's own housing unit. Not only are W.A.P. and utility energy-assessment calculation results not always the same, but there is also some variation among the energy audit standards and the savings required of the utilities. A utility's criterion may actually require a higher savings. LEAN staff members apply all the conditions relevant to each project and the utilities that serve it, review the amount of funding (W.A.P., state, and utility) for each project based on the results from the required energy assessments, and then provide recommendations for implementation, including specific allocations of the funding streams. DHCA then provides a \$500 rebate on heating systems that are retrofitted or replaced to a certain standard.

Solving Contract Issues

The LEAN partnership network has a well-established, trained pool of contractors that owners of large buildings are encouraged to use. The advantage of using the LEAN contractor pool is that the bid and contract for services are standardized to match the utility and W.A.P. program requirements, and are administratively expedient to process. However, an owner is allowed to choose its own contractor so long as any bid submitted by a contractor who is not part of the LEAN pool passes an allowable cost test and meets the same requirements as those in the LEAN contractor-approved pool. A building owner must consider the additional complexity of the cost test and the time allowed for the requirements to be met in weighing whether to select from the LEAN pool or not.

New Multifamily Contractors for ARRA

Factors that play into the selection of contractors are building size and the contractor ability to handle cash flow. Cash flow is a major factor when a contractor is working on a very large building—or several buildings at one time—and is required to keep a constant flow of materials and employees contributing to the project. It is very difficult for the typical single-family Weatherization contractor to handle this flow of materials, personnel and finances in these projects.

ABCD cited an example of one 200-unit building owner who submitted a weatherization application. The owner needed to have the project implemented very quickly. Normally a single-family weatherization contractor could handle the property in stages but, given the time constraint, a commercial building contractor was selected to perform the work. Weatherization rules do not permit progress payments before completion. One result of taking on the bigger multifamily projects in Boston is that ABCD has developed relationships with large, well-established contractors, including unionized contractors, who are likely future partners in housing development as well as in energy projects.

Contractor Bidding Tools

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State-supported procurement tools provide online access for W.A.P. bidders. The Massachusetts "[Comm-PASS](#)" procurement page allows interested parties to review many proposed and existing contracts with the state. This information is updated frequently, and an online subscriber can also obtain information about the general progress of projects. The site lists the current and approved vendors working for the state. There is a wide variety of topics including training; non-profit assistance and minority-owned vendor information; environmentally-preferred products; and several other procurement-based issues, including a monthly e-business newsletter.

The Comm-PASS system uses the online BidDocs™ tool to provide detailed information about each weatherization project receiving W.A.P. funding. There are separate icons on the home page that access advertising, specifications, drawings and other information pertinent to each project.

Landlord Agreements

Tenant Benefits

The State directs W.A.P. service to multifamily properties where renters pay the utilities. A standard landlord agreement is used to authorize these projects when they meet the statutory W.A.P. requirements of weatherization benefits returned to the tenants as lower bills. However, other creative arrangements have been made to achieve the same results on properties where the renters do not pay their own utilities. An example of a project⁴ that was completed utilizing a non-standard landlord agreement follows:

A “non-standard” landlord agreement summarized the direct benefits to the tenants. Annual average utility savings were estimated to be \$120,000.

1. Forty (40) of the units that would have lost expiring- use status in 2016 were extended another 40 years. The rent savings to tenants over this period (adjusted 2% annually for inflation) is an estimated \$2,313,000 or \$1,446 per apartment per year.
2. 156 units were renewed under the Section 8 Housing Assistance Program for 20 years. The annual direct benefit to 156 tenants with rent subsidy is \$1,946,000.
3. Half of the estimated annual utility savings ($\$120,000/2=\$60,000$) were dedicated to an operating budget to that provide “enhanced tenant services”, including a social services center.

Summation: The developers provided a cost/benefit matrix demonstrating that the one-time \$1,200,000.00 request for W.A.P. weatherization would produce a recurring annual direct benefit to the tenants of \$2,044,716.00. On a per-tenant basis, the energy cost-savings calculation demonstrated a savings of \$9,924 per tenant household.

Summary

ARRA weatherization funding for ABCD and the other Community Action Agencies is supported by a significant amount of utility funding in Massachusetts. The combination of financial and technical resources (through LEAN and W.A.P.) will make a significant impact on the quality and cost of operating many multifamily units. These quality and efficiency gains directly impact the lives of many low-income residents of the state, who otherwise would not be able to afford or enjoy the direct benefits from weatherization. The utilities, Community Action Agencies, public housing agencies, and other members of the LEAN partnership will continue to provide multifamily weatherization services after ARRA funds have been exhausted. Utility funding is authorized for the near future, and the LEAN partnership provides a framework for an extended network to continue to adopt new practices. The online tools that provide many of the resources for multifamily weatherization—from benchmarking energy usage to submitting bids—reflect a supportive environment for users. W.A.P. agencies in other states may well find applications for these tools suitable to their own partnerships.

Attachment A- LEAN Prescriptive Measures and Descriptions-Level 1 Assessments

Air Sealing

Air sealing in multifamily buildings will be a significant and frequently used prescriptive measure, if deemed cost-effective by the Program Administrators. Air sealing can be done in buildings heated with any fuel type. Much of the air sealing work in multifamily buildings will be in attics and basements. Air sealing stops the flow of heated or cooled air that should not escape the conditioned space. A significant part of the air sealing work may also address "thermal by-passes" (such as wet walls), as opposed to direct leakage points.

Attic Insulation

Another likely prescriptive measure will be insulation in attics. Recommended maximum insulation levels in electrically heated buildings is R-49. Buildings with less than R-49 will be screened for the addition of insulation to raise the total insulation level to R-49. For natural gas heated facilities, the recommended maximum insulation is R-38. Costs will include required ventilation upgrades, insulation baffles ("Propa-vents"), access openings, etc. The auditor will determine how the attic will be accessed, taking into ways to minimize inconvenience to tenants. Auditors will identify issues related to such things as "knob and tube" wiring, recessed lights, exhaust fans, air handlers, and tenant storage areas.

Floor Insulation

The recommended maximum insulation level in buildings with unheated basements or crawl spaces is R-19. Auditors will identify accessibility issues, ventilation requirements, frozen pipe potential, ground sheets, etc.

Domestic Hot Water (DHW)

Domestic Hot Water Heaters may be a prescriptive measure, while a replacement of a DHW heater in conjunction with a boiler upgrade will be a custom project. Other DHW measures such as pipe insulation, showerheads and aerators are prescriptive.

Thermostats

This prescriptive measure is generally applicable. Thermostats appropriate to usage with some form of automatic adjustment will be installed. This measure will not be recommended where the building has heat pumps. Thermostats are usually installed on a one-for-one basis excluding very small areas (for example, bathrooms). The auditor must determine if the thermostat is line voltage (baseboard heaters) or low voltage (electric furnace). If the amount of space being controlled is relatively small, this measure may not prove to be cost-effective. Tenant education is a very important part of the success of this measure, since thermostats save very little if they are not being used properly.

Wall Insulation

Insulation of walls will be a prescriptive measure but will likely vary in its applicability. Many buildings do not lend themselves to the cost-effective addition of wall insulation. Older wood

frame buildings with empty stud cavities do offer the opportunity for addition of blown-in wall insulation. The Program will be particularly mindful of potential issues related to wall insulation, such as the existence of "knob and tube" wiring, insulation spillage points, particularly in balloon framed buildings, and the impact that the installation may have on the building aesthetics, moisture dynamics or air quality.

Refrigerators

Refrigerator tests are done as part of each Appliance Audit. During a Level I Assessment, the auditor will also take a general look at the age and condition of refrigerators. Inefficient refrigerators can contribute significantly to overall energy use. Since consumers typically tend to replace refrigerators only upon failure, upgrades through the Program are a great convenience to Applicants.

Electrical system considerations

Auditors will attempt to identify substandard or unusual electrical circumstances. These include: code violations (for example: no electrical box, substandard wiring), the existence of a non-GFI outlet integral to a fixture or medicine cabinet to be retrofitted, or the existence of aluminum wiring. Some issues can be dealt with routinely as part of the fixture installation cost or the Applicant may be required to pay for corrections. Auditors will consult the Program Manager on a case-by-case basis.

Ballast and lamp disposal

Lighting upgrades are identified through the Appliance Audit. Prescriptive measures will include fixture upgrades. Some older fluorescent ballasts contain PCBs and must be properly disposed of as hazardous materials. Fluorescent lamps contain a small amount of mercury and must also be disposed of in an approved fashion. All removed ballasts (PCB or not) and lamps will be stored on site in designated containers until pick up and disposal. The PA or auditing vendor will arrange for pick up and disposal upon receipt of all pertinent information on the designated form.

Health and Safety Issues

Auditors will note any health or safety issues that are observed during the Assessment. Health issues may include observations such as mold or pests, while safety issues may include such items as improper fire blocking or fire hazards.

Renewable Energy Potential

During the Level I Assessment, the auditor will conduct a preliminary evaluation of whether a particular building may have good solar access. The auditor will note such factors as building orientation, roof space and obstructions. It is noted that such preliminary evaluation is not a substitute for a professional evaluation of the feasibility of such solar resource. As appropriate and possible, leveraging available funding from other existing sources will be coordinated.

Operation and Management of Installed Equipment

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The Program will direct its contractors to work with the Applicant and maintenance staff at multifamily facilities to assist them in understanding how to maximize the long term savings available from installed measures. The Contractor will provide appropriate manuals, manufacturer's maintenance schedules, operating guidelines, and lists of service and component suppliers. Tenant education materials may also be provided as appropriate and available. Information and instruction will be customized to the specific measures installed in each building.

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¹ LEAN is comprised of many partner-organizations that are represented by the multifamily advisory council which also oversees policy and development of the program. The partner organizations represented on the council include:

- Massachusetts Department of Housing & Community Development
- ABCD + Action Inc., two CAAs
- Public Housing Authorities (PHAs)
- Community Development Corporations (CDCs)
- Other non-profit entities that own or operate low-income non-institutional multifamily housing
- Utility efficiency program managers
- Tenant organizations
- National Consumer Law Center

The LEAN administrative structure is comprised of staff and consultants from community action, public housing and technical organizations that prepare and document individual projects. The responsibility for authorizing projects is vested with the utility companies through designated Program Administrators. Ultimately, the Program Administrators approve projects based on each utility's definition of cost-effectiveness; however, LEAN staff members manage projects from intake to completion and work closely with the Program Administrators to facilitate each project.

² "Wego" stands for Water, Electricity, Gas, and Oil.

³ Its creators describe this tool as one developed with the affordable housing community in mind. In Massachusetts, it is used for every project's pre-assessment of energy data and as an energy-performance tracking model subsequent to implementation. The WegoWise® program is free to owners for a period of between twelve- to twenty-four months after upgrades have been installed. (Thereafter the program costs \$10 per month for each building that has 50 or less units and only \$20 per month for buildings with more than 50 units.)

⁴ The \$1.6 million in funding used for this project was described by the developers as the final piece of financing needed to complete the rehabilitation and recapitalization of a \$36.5 million project. The developers petitioned DHCD for a request for W.A.P. funding indicating that the recapitalization project

was focused on providing long-term rent stability to the tenants in addition to other non-monetary benefits to them. The calculated energy savings for the project was estimated by the developer's engineering firm to be approximately \$120,000 per year. The developers indicated that the utility savings would allow the firm to raise \$1.45 million in new permanent first mortgage. The long-term aspect of this debt would ensure greater rent stability through the projection that outside capital would not be necessary for a period of 15-20 years. The developers point out in their petition to DHCD and ABCD that this particular property is similar to many older low-income multifamily buildings across the nation in that they were developed with central heating systems and a rent structure that included heat and hot water as part of the rental benefit. The developers made a compelling argument in their petition for weatherization despite the DHCD and ABCD priority of weatherizing tenant-paid buildings.