

## Workplan – Greater Boston Affordable Housing Decarbonization Accelerator

### 1) Overall Project Summary and Approach

#### a) Description of GHG Reduction Measures

Decarbonizing residential buildings, which make up 27% of total emissions in Greater Boston Metro Statistical Area (MSA) is critical to achieving Massachusetts’ greenhouse gas (GHG) reduction targets.<sup>1</sup> While MA’s aggressive energy codes drive efficient new construction, over 80% of residential buildings that will exist in 2050 have already been built today.<sup>2</sup> Most existing buildings face challenging pathways to decarbonizing, including hundreds of thousands of units of affordable housing (AH), which house people who are least able to afford or make retrofits. Public Housing Authorities (PHAs) need financial and technical support to address these challenges and accelerate decarbonization. Accelerating these measures will help to ensure that Justice40 and low-income and disadvantaged communities (LIDAC) can be on the leading edge of the clean energy transformation.

As EPA Administrator Michael Regan said at the Boston Housing Authority’s (BHA) Franklin Field site in August 2023 on his visit to celebrate the BHA’s commitment to going fossil-fuel-free across its portfolio, “This Administration is trying to create a rising tide that doesn’t leave anyone behind. We’re here in Boston today to mine this story and export it to the rest of the nation.”<sup>3</sup>

MAPC, in partnership with the Boston, Lowell, and Chelsea Housing Authorities (“the Coalition”)<sup>4</sup> seeks CPRG implementation grant funding to establish the **Greater Boston Affordable Housing Decarbonization Accelerator (AHDA)**. Through the AHDA, the Coalition proposes to undertake four GHG reduction measures aligned with measures B1 (Building Decarbonization Technical Assistance) and B2 (Building Decarbonization Financial Assistance) in the Greater Boston Priority Climate Action Plan (PCAP),<sup>5</sup> with a total funding request of \$49,334,217, as outlined in the table below. The Coalition selected these measures based on their: (1) ability to deliver GHG reductions by 2030; (2) focus on delivering benefits to residents of AH in LIDAC communities; and (3) relevance to the local climate action priorities established in municipal plans for the Coalition cities.<sup>6</sup>

AHDA Measure	PCAP Measure	Funding Requested
<b>1) Kickstart decarbonization retrofits at Public Housing Authorities</b>	B2 – Building Decarbonization Financial Assistance	\$46,087,359
<b>2) Establish a technical assistance program to support AH decarbonization</b>	B1 – Building Decarbonization Technical Assistance	\$2,354,132

<sup>1</sup> The Greater Boston Priority Climate Action Plan (2024) <https://www.mapc.org/wp-content/uploads/2024/03/Greater-Boston-Priority-Climate-Action-Plan-March-2024.pdf>.

<sup>2</sup> Buildings Sector Report: A Technical Report of the Massachusetts 2050 Decarbonization Roadmap Study (2020). <https://www.mass.gov/doc/buildings-sector-technical-report/download>.

<sup>3</sup> Boston City TV. (2023). *BHA Franklin Field Tour* [Video file]. YouTube. <https://youtu.be/DAnoTu6Haxk>

<sup>4</sup> Public Housing Authorities in Massachusetts constitute public bodies created pursuant to state law under M.G.L. Chapter 121B that are accountable to the state’s Executive Office of Housing and Livable Communities. Legal opinions from the Chief Legal Officers of MAPC, BHA, and LHA are provided in the Other Attachments form (“PHA\_Eligibility-Legal (MAPC)”, “BHA\_Eligibility-Legal,” and “LHA\_Eligibility-Legal”), as well as BHA’s certificate from the Secretary of the Commonwealth.

<sup>5</sup> The Greater Boston PCAP is included in the Other Attachments form and is accessible online at <https://www.mapc.org/wp-content/uploads/2024/03/Greater-Boston-Priority-Climate-Action-Plan-March-2024.pdf>

<sup>6</sup> The municipal plans include the 2019 [Boston Climate Action Plan](#), the [North Suffolk Zero Carbon Action Plan](#), and the [Sustainable Lowell Plan](#).

<b>3) Streamline decarbonization procurement</b> to reduce project costs	B2 – Building Decarbonization Financial Assistance	\$314,870
<b>4) Expand a regional community of practice</b> for AH decarbonization	B1 – Building Decarbonization Technical Assistance	\$577,856

The AHDA will retrofit 433 units of AH in LIDAC communities and accelerate the decarbonization of thousands more throughout the region, leading to a reduction of 6,590.5 MTCO<sub>2e</sub> by 2030. The AHDA will also deliver co-benefits to residents in LIDAC communities including energy bill savings, improved indoor air quality (IAQ), and opportunities for good clean energy jobs. The AHDA's activities will support key actors within the AH sector in assessing and scoping building decarbonization pathways, reduce costs and improving access to decarbonization services for PHAs throughout MA through streamlined procurement, and advance regional coordination and practices to accelerate AH decarbonization.

MAPC is committed to submitting a memorandum of agreement (MOA) signed by the other Coalition members to EPA in support of this application by no later than July 1, 2024, as indicated in the letters of intent in the Other Attachments form. Several non-profit organizations will support the Coalition members as subawardees and will serve as key partners in implementing AHDA measures. These include Local Initiatives Support Corporation of Boston (LISC), New Ecology, Inc. (NEI), Citizens' Housing & Planning Association (CHAPA), and Massachusetts Union of Public Housing Tenants (Mass Union), all of whom have a long and successful history of leadership in decarbonization and supporting AH.

### Measure 1: Kickstart decarbonization retrofits at housing authorities

The primary measure will focus on kickstarting decarbonization retrofit projects at the Coalition PHAs. This measure focuses on funding high-impact projects in buildings representative of common typologies and vintages of public housing across Greater Boston to demonstrate proof of concept for decarbonization retrofits in AH. In total, we expect that CPRG funding will enable the Coalition PHAs to implement decarbonization retrofits in 433 units of federally-funded public housing. These units and their associated PHA developments and Justice40/EPA IRA DAC Census tracts are summarized below.<sup>7</sup>

City and Census Tract	PHA and Development Name	Number of Units and Buildings
<b>Boston</b> ( <i>Justice40 Tract: 25025100100</i> )	BHA – Franklin Field	129 units across 7 buildings
<b>Boston</b> ( <i>EPA IRA DAC Tract: 250251204005</i> )	BHA – Pond Street	44 units across 5 buildings
<b>Boston</b> ( <i>Justice 40 Tract: 25025081200</i> )	BHA – Mildred C. Hailey Phase 2	72 units across 5 buildings
<b>Cheslea</b> ( <i>Justice40 Tract: 25025160502</i> )	CHA – Mace Apartments	96 units across 4 buildings
<b>Lowell</b> ( <i>Justice40 Tract: 25017388300</i> )	LHA – North Common Village	92 units across 10 buildings

Building retrofits will include all or a combination of the following measures:

- **Building envelope improvements**, including air sealing, exterior insulation, and roof and window replacement. Nearly all of these buildings were constructed before 1960 and have limited insulation.
- **Space heating electrification** using cold climate air source and geothermal heat pumps.
- **Domestic hot water electrification** using central heat pump water heaters.
- **Appliance electrification**, including cooking and laundry appliances.
- **Ventilation improvements**, including use of energy recovery ventilation.
- **On-site solar photovoltaics (PV)** on suitable rooftops or parking lots.
- **Other enabling retrofits** such as pre-electrification barrier mitigation and electrical upgrades.

<sup>7</sup> Justice40 and EPA IRA DAC Census tracts were identified using the EJScreen and CEJST tools.

The Coalition PHAs are ideally positioned to implement the proposed decarbonization retrofits. The PHAs have conducted energy efficiency (EE) analyses and have made significant strides towards implementing decarbonization in their portfolios. BHA and Mayor Michelle Wu announced a goal in 2023 of achieving fossil-fuel free public housing by 2030, and BHA recently completed multiple energy studies to assess opportunities for decarbonization across its entire portfolio.<sup>8</sup> In pursuit of decarbonization, LHA purchases energy from a 7.4 MW solar PV site and is pursuing electrification at multiple properties, including exploring networked geothermal feasibility at a new 118-unit project.

Achieving these goals requires accelerating the pace at which decarbonization retrofits are completed. Currently, significant investments in decarbonization typically occur only during major recapitalization events. With limited opportunities for recapitalization before 2050, retrofitting public housing outside of recapitalization is critical to meeting decarbonization goals and ensuring tenants can rapidly access the benefits associated with decarbonization, as outlined in measure B2 in the Greater Boston PCAP.

**Key Tasks and Milestones.** Additional details on milestones, responsible parties, and timeline are provided in Section 3c.

Task	Responsible	Expected Completion Date
1.1 Completion of supplemental analysis: if needed, PHAs and New Ecology will conduct supplemental decarbonization analyses of specific buildings	PHAs; New Ecology	Within 6 months of contracting
1.2 Issue RFP for architect/engineer for projects	PHAs	Within 3 months of contracting*
1.3 Completion of initial tenant engagement activities	Mass Union and PHA tenant organizations)	Within 6 months of contracting*
1.4 Completion of schematic design, design documents, and construction documents	Architect/Engineer (to be procured by PHAs)	Within 9 months of contracting*
1.5 Bidding and selection of construction firm(s)	PHAs	Within 15 months of contracting*
1.6 Completion of all decarbonization retrofits	Contractors (to be procured by PHAs)	Within 27 months of contracting*

*\*Or completion of supplemental analysis*

**Assumptions and Risk Management.** The Coalition makes the following assumptions with regards to successfully implementing Measure 1. Potential risks are identified in the table below.

- Equipment necessary for the decarbonization retrofits is readily available for procurement.
- Qualified and diverse contractors can be found to implement the decarbonization retrofit scopes in accordance with Good Job requirements (see Section 5).
- Sufficient electrical service can be delivered to the buildings by the electric utility (with additional on-site upgrades) to meet the increased load from electrification.
- Sites selected do not encounter any unexpected barriers to proceeding with construction.

Risk	Potential Impact(s)	Mitigation
Analysis indicates retrofit is infeasible or requires additional renovations	In specific buildings, inability to proceed with retrofit or scope of retrofit is constrained	<ul style="list-style-type: none"> <li>• Identify alternative sites for retrofits (PHAs have already identified other candidate sites)</li> <li>• Proceed with more limited scope of retrofit to reduce GHG emissions and complete limited retrofits in other facilities</li> </ul>

<sup>8</sup> "Sustainable Buildings," Boston Housing Authority, [https://www.bostonhousing.org/en/Departments/Planning-and-Real-Estate-Development/The-BHA-and-Sustainability-\(1\)/Sustainable-Buildings.aspx](https://www.bostonhousing.org/en/Departments/Planning-and-Real-Estate-Development/The-BHA-and-Sustainability-(1)/Sustainable-Buildings.aspx)

Cost to implement measures escalates	Reduced number of units that can be retrofitted, reducing GHG savings	<ul style="list-style-type: none"> <li>• Identify additional sources of funding from state decarbonization and utility incentives to close gap</li> <li>• Use opportunities to streamline or combine procurement to realize cost efficiencies from service and equipment providers</li> </ul>
Delays in receiving utility electrical service upgrades (if needed)	Increased timeline to complete retrofits, reducing GHG savings	<ul style="list-style-type: none"> <li>• Proactive engagement of utilities serving PHAs to understand need for service upgrades and timeline for implementation</li> <li>• Proactively explore alternative sites in the event selected sites cannot receive utility upgrades in a timely fashion</li> </ul>
Delays in procurement process or construction	Increased timeline to complete retrofits, reducing lifetime GHG savings	<ul style="list-style-type: none"> <li>• Provide technical expertise through New Ecology to PHAs to support process management and scope development</li> <li>• Conduct proactive outreach to previous contractors and contractor networks identified by utilities and state (e.g., Mass Save Heat Pump Installers Network) in advance of RFP</li> </ul>
Resident concerns with scope and disruption of retrofits	Increased timeline and to address resident concerns, delaying retrofits	<ul style="list-style-type: none"> <li>• Proactive engagement of impacted residents early in the design process to provide education about potential disruptions and benefits of retrofits and to solicit their input and advice on ways to minimize disruption</li> </ul>
Scope of retrofits necessitates temporary tenant relocation	Increased timeline to complete retrofits, increased costs for temporary housing and relocation	<ul style="list-style-type: none"> <li>• Proactive coordination with project team to understand as early as possible whether relocation will be needed</li> <li>• State goal of minimizing relocation in RFP and request plan for phasing retrofits in contractor RFP response</li> <li>• If required, begin planning for relocation during design phase</li> </ul>

## Measure 2: Establish a technical assistance program

AHDA will establish a regional TA program to help owners and managers of AH pursue decarbonization retrofits as current programs are insufficient, limited, and too rigid.<sup>9</sup> The new program will provide flexible, bespoke support to AH owners and managers and leverage existing utility incentives for EE. The TA program will be accessible to all AH providers throughout the Greater Boston region that have the authority to implement decarbonization efforts, such as community development corporations (CDCs), owners of naturally occurring AH (NOAH), non-profit and for-profit affordable or mixed-income housing owners, and community-based organizations. Grant durations are expected to range from 6-12 months, with at least two rounds of funding. TA awards will be prioritized based on need, potential benefit to LIDAC communities, and potential to result in near-term decarbonization.

The TA program will provide a diverse range of activities, including: increasing staff capacity and training; supporting project scoping, design, development, and implementation; community engagement and translation; and leveraging funding and financing to maximize benefits. MAPC will select expert service provider(s) through a competitive solicitation that meets relevant federal and state procurement law. We will work with these providers to develop multiple scope of work templates to facilitate expedient contracting with awardees, though awardees will have the option to work with their TA provider to develop a custom scope of work or receive a grant to select their own TA provider. A portion of grant funding may be used as a stipend to cover staff time for a limited number of grantees serving LIDAC communities.

TA recipients will provide a final report summarizing key activities completed, sharing any reports or analyses developed, and discussing lessons learned and potential next steps. Summaries of these reports will be shared with the regional Community of Practice (RCOP), and recipients will also be asked

<sup>9</sup> This is based on stakeholder input received during the Greater Boston PCAP process, as well as heard through MAPC's role on the State's Energy Efficiency Advisory Council (EEAC), which oversees implementation of MA utility energy efficiency programs.

to present their findings and next steps upon request at RCOP events (see Measure 4). TA award agreements will also include requirements to provide brief annual updates about follow-on activities completed, including sharing data on decarbonization retrofits completed as a result of TA received.

The Coalition will coordinate with key stakeholders and with state agencies like the Massachusetts Clean Energy Center (MassCEC) and the Massachusetts Department of Energy Resources (DOER), which are currently implementing TA programs targeting different market segments or with more restricted TA scopes. We will leverage their expertise and key experiences in designing the AHDA TA program.

**Key Tasks and Milestones.** Additional details on milestones, responsible parties, and timeline are provided in Section 3c.

Task	Responsible	Expected Completion Date
2.1 Develop TA program design based on stakeholder input; issue solicitation for TA providers	MAPC	Within 3 months of contracting
2.2 Execute contracts with selected TA providers; issue program opportunity notice (round 1)	MAPC	Within 6 months of contracting
2.3 Select round 1 TA awardees; finalize scopes of work between providers and awardees	MAPC	Within 9 months of contracting
2.4 Refine TA program design as needed; issue program opportunity notice (round 2)	MAPC	Within 18 months of contracting
2.5 Select round 2 TA awardees; finalize scopes of work between providers and awardees	MAPC	Within 21 months of contracting
2.6 Final reports from round 1 awardees due	Awardees	Within 24 months of contracting
2.7 Final reports from round 2 awardees due	Awardees	Within 36 months of contracting

**Assumptions and Risk Management.** The Coalition makes the following assumptions with regard to successfully implementing Measure 2. Potential risks are identified in the table below.

- Qualified service providers respond to the solicitation and have sufficient capacity to provide timely and efficient TA to awardees.
- TA can be awarded to a sufficient number of committed AH owners and managers in the region.
- TA enables awardees to complete future decarbonization retrofits.

Risk	Potential Impact(s)	Mitigation
Limited number of service providers available to provide TA	Reduced number of TA awards, reducing potential follow-on actions that reduce GHGs	<ul style="list-style-type: none"> <li>• Utilize existing MA state contract vehicles for building, energy, and TA services</li> <li>• Conduct a third round of grants to manage capacity for selected service providers</li> </ul>
Limited number of TA applicants or awardees	Reduced number of TA awards, reducing potential follow-on actions that reduce GHGs	<ul style="list-style-type: none"> <li>• Increase outreach to potential stakeholders through engaging other AH building networks</li> <li>• Conduct a third round of grants to spread out number of awards</li> </ul>
TA awardees do not complete follow-on retrofits	Reduced GHG savings from recipients of TA	<ul style="list-style-type: none"> <li>• Encourage participation in RCOP to address other barriers to completing follow-on retrofits and identify other opportunities for further support</li> </ul>

### Measure 3: Streamline decarbonization procurement

Through stakeholder engagement to develop the Greater Boston PCAP, municipalities expressed challenges with procurement of decarbonization technologies for portfolios of public buildings, including public housing, schools, and other municipal buildings. Developing specifications to procure whole building decarbonization can be challenging because limited state statutory vehicles exist to facilitate procurement of some decarbonization technologies and energy management service providers have not

universally expanded their service delivery to integrate “decarbonization-as-a-service.” This measure seeks to address these procurement-related challenges by leveraging economies of scale to shift market offerings for building decarbonization as outlined in measure B2 of the Greater Boston PCAP.

The AHDA will explore opportunities to develop one or more collective regional procurement vehicles for decarbonization measures in AH, with the goal of reducing costs and streamlining procurement to implement decarbonization in public housing. The Coalition will first determine what decarbonization measures are feasible and advantageous to procure through a collective procurement vehicle. Additionally, the Coalition will explore the potential to develop a procurement model for service providers offering “decarbonization-as-a-service,” which could expand services beyond existing energy service company models to deliver a wider range of decarbonization measures.

We will also consider opportunities to further modernize procurement approaches to facilitate decarbonization in other municipal facilities beyond public housing. We will aim to leverage our work to develop procurement vehicles that can be made available to municipalities across the state, incorporating input from municipal representatives and the RCOP throughout the process. Key outcomes associated with this measure will include procurement documents, letters of interest from other municipal entities interested in using the procurement vehicles, and identified service providers.

The Coalition will identify opportunities to adjust Massachusetts procurement statutes—many of which are more than 30 years old and pre-date decarbonization methods and strategies that are commonplace in the market—to meet current needs to purchase decarbonization products and services in a competitive, cost-effective, and efficient manner. For example, Massachusetts procurement law does not allow for most public entities to procure contractors offering design-build services, which are common within the EE retrofit space. We will also explore how the regulatory frameworks adopted for current statutes can be adjusted without changing the statutes themselves.

**Key Tasks and Milestones.** Additional details on milestones, responsible parties, and timeline are provided in Section 3c.

Task	Responsible	Expected Completion Date
3.1 Develop procurement vehicle concept for at least one decarbonization measure or service based on stakeholder input	MAPC; PHAs	Within 6 months of contracting
3.2 Issue procurement vehicle for at least one decarbonization measure or service	MAPC	Within 12 months of contracting
3.3 Examine state and federal procurement laws and identify opportunities to leverage existing laws favorable to decarbonization procurement and consider what appropriate adjustments could be developed.	MAPC	Within 18 months of contracting

**Assumptions and Risk Management.** The Coalition makes the following assumptions with regard to successfully implementing Measure 3. Potential risks are identified in the table below.

- Consensus recommendations can be identified among municipal, PHA, and housing developer/owner stakeholders for legislative and regulatory reforms.
- Collective procurement vehicles can reduce costs and timeframes to procure measures for PHAs and other municipal entities, allowing for more efficient and faster implementation of reduction in GHG.

Risk	Potential Impact(s)	Mitigation
Decarbonization technologies and services are determined to not be suitable for collective procurement	No resulting cost savings and incremental GHG reductions	<ul style="list-style-type: none"> <li>• Conduct extensive stakeholder engagement as well as engagement with industry (e.g., through interviews, requests for information) to identify options for collective procurement vehicles</li> </ul>

Procurement adjustments are not made by state entities with jurisdiction and authority	No resulting cost savings and incremental GHG reductions	<ul style="list-style-type: none"> <li>Educate state authorities and legislators throughout research process and after development of consensus recommendations</li> </ul>
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#### Measure 4: Expand a regional community of practice

Stakeholders engaged in developing the Greater Boston PCAP highlighted a need for better resource and peer knowledge sharing among professionals and building owners across various building sectors (as outlined in measure B1 of the Greater Boston PCAP). After researching existing initiatives focused on promoting decarbonization in AH, the Coalition deemed that strengthening an existing, active RCOP be more effective than establishing a new RCOP.

Under Measure 4, the AHDA will fund the expansion of an existing RCOP dedicated to providing peer-to-peer learning and engagement around decarbonization topics for AH developers, owners, managers, and professionals. Currently, LISC and New Ecology along with MACDC, convene the “Energy Cohort”, a community of practice engaging individuals and organizations within the AH space. The Cohort aims to support the AH community in cultivating experience and successfully developing and preserving high-performance, resilient, and healthy buildings. Cohort activities have included holding bi-monthly meetings, coordinating capacity building trainings, and surveying participants to understand emerging needs and trends.

Funding through CPRG will be used to expand the Cohort’s activities and to grow membership to include more organizations across all sectors of AH (including for-profit, non-profit, and public). This may include increasing frequency of meetings, broadening range of capacity building activities, and expanding the collection and development of resources, guides, and toolkits in an accessible, online platform. New and expanded activities will be determined through engaging the existing members of the Cohort, as well as other AH stakeholders that have not yet been engaged but are interested in participating.

Additionally, the expanded Cohort will be a key platform for stakeholder engagement and knowledge sharing for other AHDA Measures.

- Results from Measure 1 will be shared periodically through Cohort meetings. Case studies developed from the final outcomes of PHA retrofit projects will be shared with Cohort members.
- For Measure 2, we will solicit input from Cohort members in designing the AH TA program. The program’s funding rounds will be promoted through the Cohort, and awardees will be asked to share experiences through Cohort meetings and resources.
- For Measure 3, we will solicit input from Cohort members in examining needs and developing recommendations for streamlining procurement and developing collective procurement vehicles. We will promote all key outcomes through Cohort meetings and resources.

Beyond the duration of CPRG grant funding, we expect to explore linking the Cohort to the Decarbonization Clearinghouse currently under development by the Commonwealth of Massachusetts, which is expected to launch in full no earlier than 2028.<sup>10</sup> As indicated in our letters of support, we expect to coordinate regularly with staff at the Executive Office of Energy and Environmental Affairs (EEA) to share experiences and inform development of the Clearinghouse, which could include surveying Cohort members to collect information to shape the Clearinghouse’s structure and programming.

**Key Tasks and Milestones.** Additional details on milestones, responsible parties, and timeline are provided in Section 3c.

<sup>10</sup> Additional information about the proposed Decarbonization Clearinghouse can be found at: <https://www.mass.gov/doc/massachusetts-commission-on-clean-heat-final-report-november-30-2022/download>



Task	Responsible	Expected Completion Date
4.1 Complete engagement of Cohort members and other AH stakeholders; develop multi-year plan for expanding the Energy Cohort	LISC, New Ecology, CHAPA	Within 6 months of contracting
4.2 Increase participation and engage new members in Cohort; provide education, trainings, and resources as identified in 4.1.	LISC, New Ecology, CHAPA	Within 12 months of contracting
4.3 Collect feedback on expanded Cohort activities; revise Cohort implementation plan	LISC, New Ecology, CHAPA	Within 18 months of contracting
4.4 Continue to implement the Cohort bases on revised plan.	LISC, New Ecology, CHAPA	Within the program timeline

**Assumptions and Risk Management.** The Coalition makes the following assumptions with regard to successfully implementing Measure 4.

- Additional AH stakeholders are interested in participating in the Energy Cohort.
- Existing participants have capacity to engage with an increased activity from the Energy Cohort.

Given that the Coalition is proposing to expand an existing established initiative, all risks are related to the above assumptions regarding expanding membership and expanding Cohort activities. As discussed, we will engage existing Cohort members and stakeholders not yet participating in the Cohort extensively to shape expanded activities and outreach based on their feedback.

#### b) Demonstration of Funding Need

To make significant and timely progress towards decarbonization across their portfolios, the Coalition PHAs seek to retrofit public housing facilities without having to wait for limited recapitalization cycles or relying their typical operational sources, which are inadequate to make improvements beyond basic maintenance. For example, BHA estimates that it will need an additional \$207,000,000 in funding to complete decarbonization of its entire portfolio. Chelsea and Lowell Housing Authorities have not yet completed similar estimates, but with planned capital funding of less than \$5,000,000 per year, these housing authorities are unable to make significant decarbonization retrofits with existing capital and operating funds alone. Significant funding is needed to ensure that the PHAs can pursue these extensive projects, demonstrate proof of concept, and begin delivering decarbonization benefits to tenants.

The Coalition has reviewed federal, state, and energy utility funding sources to support the proposed decarbonization retrofits (Measure 1). A summary of the expected complementary funding sources is provided below. In aggregate, the combination of these funding sources is inadequate to enable these projects proposed through Measure 1 to proceed. CPRG funds are essential to close the funding gap and enable these retrofits to occur.

#### Federal Funding:<sup>11</sup>

- Where on-site solar PV is appropriate for the properties, the Coalition PHAs will seek to leverage Section 48E, Clean Energy Investment Tax Credit (through Elective Pay).
- Massachusetts has a pending application to EPA's Solar for All program, which would direct \$25 million towards a Solar on Public Housing Initiative (to be administered by BHA on behalf of all PHAs statewide), which could potentially further offset costs for solar PV installations. However, solar PV is expected to account for less than 5% of the overall retrofit cost.

<sup>11</sup> The Coalition PHAs have explored the Dept. of Housing and Urban Development's (HUD) Green and Resilient Retrofit Program (GRRP) as a possible funding source to support decarbonization retrofits. However, the properties pursued through this application are ineligible for award through GRRP.



### State/Utility Energy Incentives:

- DOER has made \$50 million available through the AH Deep Energy Retrofit Program. As of March 2024, over half of the funding had already been awarded, with an additional round of awards expected in Q2 2024. As BHA has already received \$6.4 million through the program to support decarbonization of 159 units, the Coalition PHAs believe it is unlikely that additional funding will be awarded—or that funding will remain after the ongoing second round of application review.
- The Coalition PHAs expect to apply to participate in the LEAN Multifamily Program, which is the MA ratepayer-funded EE program for low-income multifamily properties.<sup>12</sup> However, an analysis completed in February 2024 by Arup for BHA estimated that existing state and utility incentives would account for approximately 25% of the cost of comprehensive decarbonization retrofits, which would be insufficient to enable these projects to proceed.

For Measure 2, the Coalition has explored federal and state funding opportunities and does not believe additional funding sources will be available to support the development of the TA program. The Coalition notes that a small proportion of applicants may also be able to apply for TA through the aforementioned DOER AH Deep Energy Retrofit Program or through MassCEC's Building Electrification and Transformation Accelerator (BETA) pilot program. However, after discussion with managers of these programs, the eligibility requirements and scopes of services offered may restrict many applicants who would benefit from more flexible TA provided at an earlier stage of decarbonization planning.

The Coalition has explored federal and state funding opportunities for Measures 3 and 4 and does not believe additional funding sources are available. If state or foundation grant programs become available that could fund Measures 3 and 4, the Coalition will evaluate these opportunities and seek funding where applicable to expand the scope of these measures.

### c) Transformative Impact

Decarbonization efforts in existing AH have lagged behind other residential building sectors in Massachusetts. Overcoming barriers, successfully jump-starting the market and increasing momentum to achieve near- and long-term climate goals requires interventions across multiple fronts to address financial barriers, increase the availability of existing technical expertise, and build capacity among building owners. The AHDA is well-positioned to have a transformative impact on this critical sector.

**Direct impacts on a hard-to-abate sector.** By retrofitting over 430 units across three major cities the AHDA will generate significant GHG emissions reductions in a hard-to-abate sector and deliver direct economic and health benefits to hundreds of low- and moderate-income households in Justice40 communities across the region. While significant progress has been made in implementing low-carbon, all-electric, and/or Passive House building practices in new AH construction, decarbonization retrofits of AH have been very limited to date. Moreover, higher income residents have disproportionately benefitted from Massachusetts' decarbonization investments: for example, from 2022-2023, less than 10% of heat pumps incentivized through Mass Save were installed in low-income homes.<sup>13</sup>

**Scalability of decarbonization efforts in AH.** The capital projects proposed by the AHDA target building typologies that are very common across AH in Massachusetts (e.g., low-rise, masonry, 8-24 units, built between 1950-1960). By providing TA, replicable and scalable best practices, and procurement

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<sup>12</sup> Additional information about the LEAN program can be found at <https://leanmultifamily.org/>

<sup>13</sup> Program Administrators of Massachusetts. (2024, March). 2023 Q4 Presentation of the Program Administrators. Presented at the March 2024 EE Advisory Council Meeting. <https://ma-eeac.org/wp-content/uploads/EEAC-Presentation-Q4-2023.pdf>; EEAC Consultant Team. (2024, March). 2023 Q4 Results. Presented at the March 2024 Energy Efficiency Advisory Council Meeting. [https://ma-eeac.org/wp-content/uploads/2023-Q4-presentation-3\\_20\\_2024-v2.pdf](https://ma-eeac.org/wp-content/uploads/2023-Q4-presentation-3_20_2024-v2.pdf)

resources we expect to help dozens of other AH owners to launch and accelerate decarbonization efforts across the region. We will also connect AH owners with existing utility incentives, funding, and financing opportunities. In conjunction with integrating grant recipients into the RCOP (which will continue to be sustained beyond the period of performance) to share results and learn from other building owners and practitioners, we expect the impacts of the AHDA's efforts to facilitate future decarbonization retrofits beyond the duration of the CPRG grant funding. Moreover, successful implementation of activities to streamline procurement will reduce costs and staff capacity needed to pursue future decarbonization retrofits across all PHAs, thereby supporting the scaling of decarbonization retrofits across public building portfolios throughout Massachusetts.

**Persistence of efforts beyond CPRG grant.** Massachusetts has made ambitious commitments to achieving net-zero carbon emission by 2050. In developing the AHDA concept, the Coalition has engaged extensively with the state agencies (i.e., EEA, DOER, MassCEC) charged with implementing programs and policies to achieve these commitments. We have identified pathways for ensuring that efforts developed through the AHDA and key lessons learned can inform development of and be carried forward in future state-funded initiatives. This includes EEA's Building Decarbonization Clearinghouse (a priority recommendation in MA's 2030 Clean Energy and Climate Plan), which is kicking off development and expected to launch no later than 2028, and MassCEC's Building Electrification and Transformation Accelerator (BETA) pilot program, which is currently focused on commercial buildings more broadly but exploring how best to pivot towards a focus in supporting AH in the future. As indicated in our letters of support, we expect to regularly share progress with key state agencies and make recommendations that can enable insights and lessons learned from AHDA activities (and the AHDA activities themselves) to be incorporated into future state- and ratepayer-funded programs.

## 2) Impact of GHG Reduction Measures

A summary of estimated cumulative GHG emission reductions is provided in this section. Detailed information regarding the assumptions made for each Measure is provided in the Technical Appendix (Techappx\_MAPC.pdf). A spreadsheet documenting GHG emission reduction calculations is also provided (GHGcalcs\_MAPC.xlsx). As requested in Section IV.B-2 of the NOFO, all GHG reduction values have been adjusted to account for other sources of funding separate from CPRG funding.

All Measures with estimated GHG reductions are durable: decarbonization retrofits pursued through the AHDA reflect renovations to buildings with measures with expected lifetime of 15 years or more. GHG reductions are expected to increase over time as electricity emissions continue to decline in accordance with the requirements of the MA Renewable Portfolio (RPS) and Clean Energy Standards (CES).

### a) Magnitude of GHG Reductions from 2025 through 2030 and 2025 through 2050

Measure	Cumulative GHG Reductions 2025-2030 (MTCO <sub>2e</sub> )	Cumulative GHG Reductions 2025-2050 (MTCO <sub>2e</sub> )
1) Kickstart decarbonization retrofits	6,357.9	38,298.9
2) Establish a technical assistance program	177.2	4,224.2
3) Streamline decarbonization procurement	31.0	1,022.1
4) Expand a regional COP	24.5	761.1
<b>Total</b>	<b>6,590.5</b>	<b>44,306.3</b>

### b) Cost Effectiveness of GHG Reductions

The AHDA measures in the aggregate are expected to have a GHG reduction cost-effectiveness of \$7,486/MTCO<sub>2e</sub> for the 2025-2030 period and \$1,113/MTCO<sub>2e</sub> for the 2025-2050 period. As discussed in Technical Appendix and Budget Narrative, this includes supplemental funding sources from the MA

utility EE program, Section 48E tax credits (received through Elective Pay), and the Solar for All program estimated at \$15,600,000.<sup>14</sup> As discussed in Section 1b, no additional funding sources are expected.

### c) Documentation of GHG Reduction Assumptions

See the Technical Appendix and GHG calculations spreadsheet for documentation of assumptions.

## 3) Environmental Results – Outputs, Outcomes, and Performance Measures

### a) Expected Outputs and Outcomes

As noted in Section 2 above, the proposed activities are expected to **result in reductions of 6,590.5 MTCO<sub>2e</sub> by 2030 and 44,306.3 by 2050**. Additionally, the elimination of gas appliances is expected to significantly reduce Criteria Air Pollutants (CAP) in all retrofitted buildings. In particular, numerous academic articles have demonstrated that gas stoves release higher CO, PM<sub>2.5</sub>, and NO<sub>2</sub> emissions, which have been linked to higher incidence of respiratory diseases and asthma.<sup>15</sup> In combination with improved ventilation, we expect to reduce CAPs and deliver health benefits to residents of affected properties. All properties in Measure 1 are in Justice40 or EPA IRA Disadvantaged Communities. GHG and CAP reductions that stem from Measures 2-4 may or may not be in Justice40/EPA IRA DAC tracts, though as noted, TA will be prioritized in LIDAC communities.

Expected outputs and outcomes for each proposed Measure are summarized in the table below.

Measure	Key Outputs	Key Outcomes
<b>1) Kickstart decarbonization retrofits</b>	<ul style="list-style-type: none"> <li>• 443 units of AH receive building decarbonization retrofits</li> <li>• 250 residents of retrofitted buildings engaged in project design process</li> <li>• Good jobs hiring policies implemented in retrofit project procurement</li> <li>• Increased staff capacity at PHAs to implement future decarbonization projects</li> </ul>	<ul style="list-style-type: none"> <li>• Cum. GHG Reductions by 2030: 6,357.9</li> <li>• Cum. GHG Reductions 2050: 38,299.2</li> <li>• CAP (CO, PM<sub>2.5</sub>, and NO<sub>2</sub>) reductions (amount TBD based on measurements)</li> <li>• Achieved EUI reductions of at least 40% per building</li> <li>• Net energy bill reductions in all retrofitted buildings</li> </ul>
<b>2) Establish technical assistance program</b>	<ul style="list-style-type: none"> <li>• 40 TA grants awarded</li> <li>• At least 40% of TA grants awardees located in Justice40/EPA IRA DAC tracts</li> <li>• Decarbonization retrofits at 90 units within CPRG grant period at properties that have received TA</li> <li>• Increased capacity at awardee organizations to implement decarbonization projects</li> </ul>	<ul style="list-style-type: none"> <li>• Cum. GHG Reductions by 2030: 177.2</li> <li>• Cum. GHG Reductions 2050: 4,224.2</li> <li>• CAP (CO, PM<sub>2.5</sub>, and NO<sub>2</sub>) reductions (amount TBD based on measurements from Measure 1)</li> </ul>
<b>3) Streamline decarbonization procurement</b>	<ul style="list-style-type: none"> <li>• Collective procurement vehicle established for at least one decarbonization measure or service</li> <li>• Legislative and regulatory recommendations for</li> </ul>	<ul style="list-style-type: none"> <li>• Cum. GHG Reductions by 2030: 31.0</li> <li>• Cum. GHG Reductions 2050: 1,022.1</li> <li>• CAP (CO, PM<sub>2.5</sub>, and NO<sub>2</sub>) reductions</li> </ul>

<sup>14</sup> While the projects under Measure 1 are expected to receive funding from Mass Save and Section 48 tax credits, given that Solar for All is a competitive nationwide program—and the Coalition PHAs would still need to apply for funding under the Massachusetts program—the potential funding from Solar for All is discounted by 80% to reflect uncertainty.

<sup>15</sup> Hu, T., Singer, B., and Logue, J. (2012). *Developing PM<sub>2.5</sub> Emission Inventories for Assessing Residential Air Pollution Exposure to Periodic and Episodic Sources*. LBNL-5890E. [https://eta-publications.lbl.gov/sites/default/files/brett\\_singer\\_-\\_compilation\\_of\\_published\\_pm\\_2.5\\_emission\\_rates\\_for\\_cooking\\_candles\\_and\\_incense\\_for\\_the\\_use\\_in\\_modeling\\_of\\_exposures\\_in\\_residences.pdf](https://eta-publications.lbl.gov/sites/default/files/brett_singer_-_compilation_of_published_pm_2.5_emission_rates_for_cooking_candles_and_incense_for_the_use_in_modeling_of_exposures_in_residences.pdf); Paulin, L.M., et. al. (2014). Home interventions are effective at decreasing indoor nitrogen dioxide concentrations. *Indoor Air*, 24(4):416-24: <https://pubmed.ncbi.nlm.nih.gov/24329966/>; Seals, B. A., and Krasner, A. (2020). *Health Effects from Gas Stove Pollution*. <https://rmi.org/insight/gas-stoves-pollution-health>.

	streamlining procurement <ul style="list-style-type: none"> <li>• Legislative and regulatory procurement recommendations enacted by state authorities</li> <li>• Increased procurement of decarbonization measures by public entities through streamlined procurement vehicles</li> </ul>	(amount TBD based on measurements from Measure 1)
<b>4) Expand regional COP</b>	<ul style="list-style-type: none"> <li>• Membership in Energy Cohort grows to 1,000</li> <li>• At least 40 meetings, trainings, and capacity-building activities completed</li> <li>• Increased capacity from participants to implement decarbonization projects</li> <li>• Increased engagement between AH owners, managers, and professionals</li> </ul>	<ul style="list-style-type: none"> <li>• Cum. GHG Reductions by 2030: 24.5</li> <li>• GHG Reductions 2050: 761.1</li> </ul>

#### b) Performance Measures and Plan

The Coalition proposes a robust set of activities throughout the duration of the grant to track, measure, and report progress towards realizing GHG and CAP reductions from implementing the AHDA. Our measurement activities will include reporting a combination of measured reductions (i.e. through analyzing pre- and post-retrofit energy bills, measuring air quality in retrofitted units) and estimated reductions (i.e. through estimating emission reductions from projects supported by TA grants).

Below we describe the proposed performance measures, tracking and measurement process, and approach to quantifying actual GHG and CAP reductions by measure, as well as what information will be reported in semi-annual progress, year 1, and final reports. As discussed in Section 3c, MAPC will oversee data collection, measurement, and reporting, with support from the Coalition and partners.

#### Measure 1 – Kickstart decarbonization retrofits

**GHG Reductions:** Actual GHG reductions realized will be measured through energy bill analysis conducted before and after completing decarbonization retrofits.

- Prior to retrofits, we will analyze at least one year of electricity and gas bills from each property to establish a weather-normalized energy consumption and GHG emissions baseline.
- GHG emissions baseline for all targeted properties will be calculated and reported out in the aggregate and on a building-by-building basis in the first semi-annual progress report.
- After construction is completed, we will periodically collect energy bills from the retrofitted properties and provide interim comparisons of pre- and post-retrofit energy consumption in semi-annual progress reports. After one full year of data is available, we will weather-normalize the post-retrofit energy bill data and compare actual post-retrofit energy consumption and GHG emissions with pre-retrofit data and modeled estimates. We will report energy and emissions data in semi-annual progress reports as each full year of post-retrofit bill data becomes available.
- As part of the final report, we will average and weather normalize all post-retrofit energy bill data and provide a final measurement of actual annual and cumulative GHG emissions reductions realized through decarbonization retrofits. We will also narratively discuss the reasons why actual GHG emissions reduction realized may have fallen short of or exceeded modeled estimates.

**CAP Reductions:** We will quantify reductions in three CAPs (PM<sub>2.5</sub>, NO<sub>2</sub>, and CO) and CO<sub>2</sub>:

- We will select a representative sample of housing units (approx. 20-25 units) within one or two buildings that are most representative of all buildings retrofitted. Given the similarities between the buildings targeted (e.g. low-rise, walk-up style masonry buildings with similar vintages and unit counts) and similar retrofit approaches, a sample size of 5% or less will adequately represent major factors that influence CAP emissions.

- We will assess multiple strategies (and adopt one or more) to gather information on pre-retrofit usage of gas devices. This will include assessing usage from energy bills and occupant surveys, as well as existing surveys and usage schedules (e.g., RECS, Building America simulations). We will validate these with real measurements of usage (using plug-load and/or motor monitors) to quantify actual usage for a full year pre- and post-retrofit in the sample.
- We will use existing, published CAP emission rates but also validate emission rates by conducting measurements using state-of-the-art Federal Reference Methods/Federal Equivalent Methods or research-grade instruments in a representative subsample. The measurement experiments will follow a standardized protocol and utilize the static flux chamber approach as in previous successful studies (e.g., Lebel et al. 2022). Measurements will be conducted pre- and post-retrofit.
- Usage dataset will be coupled with emission rates and use modeled/expected building usage schedules to estimate the annual CAP reduction realized by the retrofits.
- Lastly, we will also develop factsheets for the community and residents on IAQ benefits realized.

**Other Outputs and Outcomes:** We will survey PHA staff after completion of retrofit projects and prior to completion of the CPRG grant period to examine how capacity to implement decarbonization projects has improved over the course of the project.

## Measure 2 – Establish technical assistance program

**GHG Reductions:** GHG reductions will be estimated through data collected from recipients of TA grants. While TA does not directly result in GHG reductions, we expect the receipt of TA grants will enable many grant recipients to implement decarbonization retrofits. To measure the impact of TA grants and whether recipients have proceeded with implementing retrofit projects, we propose the following activities:

- Recipients of TA grants will be asked to provide a final report summarizing activities completed under the grants and next steps to build on the results of TA activities (including expected timeline for any next steps). Recipients will also be asked to share data regarding any future projects resulting from the TA grant as a condition of award.
- MAPC will follow up with grant recipients in six-month intervals after the conclusion of their grants to determine whether the recipients ultimately pursued the decarbonization retrofits supported by TA activities.
- For recipients that do pursue decarbonization retrofits, MAPC will request data on expected and/or realized energy and GHG reductions, as well as retrofit project costs. Data received will be analyzed and reported to EPA in semi-annual progress reports. Where data provided is inadequate, MAPC will estimate reductions from energy models of similar buildings or assume similar reductions to those resulting from Measure 1 retrofits.
- In the final report, we will provide a final estimate of annual and cumulative GHG emissions reductions reported by from decarbonization retrofits that are completed as a result of TA grant awards. We will estimate the proportion of these emissions reductions attributable to TA grants through reported project cost data.

**CAP Reductions:** Measuring pre- and post-retrofit CAP emission rates in properties that receive TA grants to support future decarbonization projects will be challenging and not cost-effective. We will treat measured per-housing unit CAP reductions from Measure 1 as deemed estimates for CAP reductions from decarbonization retrofits that are ultimately completed by grant recipients.

**Other Outputs and Outcomes:** As part of TA grant close-out activities, we will briefly survey awardees to examine how capacity to implement decarbonization projects has improved as a result of receiving TA.

### Measure 3 – Streamline decarbonization procurement

**GHG and CAP Reductions:** As the direction of Measure 3 will be dependent on the input of stakeholders engaged, we anticipate that GHG and CAP reductions that can be attributed to Measure 3 will be highly dependent on the procurement-related outcomes. For example, if collective procurement pathways are developed for specific decarbonization measures (e.g. heat pumps, stoves), we would base estimated GHG reductions on the cost reductions achieved—i.e. if the collective procurement pathway reduces costs to the procuring entity by 5%, we would attribute 5% of the GHG reductions expected from the project to Measure 3. Alternatively, streamlined procurement approaches could enable decarbonization projects to proceed that would been otherwise delayed or not able to proceed.

We anticipate working closely with the EPA officer assigned to manage our grant to refine our approach to measure emissions reductions attributable to Measure 3 throughout the period of performance. We will provide regular updates through semi-annual progress reports and through ad hoc meetings and will work with EPA to revise our approach if deemed appropriate.

**Other Outputs and Outcomes:** After completing the streamlined procurement vehicles, we will periodically survey selected service/equipment providers to determine whether sales have increased from public entities. We will also survey public entities who use the procurement vehicles to discuss their experiences and identify opportunities to improve future procurement vehicles.

### Measure 4 – Expand regional community of practice

As with Measure 2, while the regional COP is not expected to directly result in GHG and CAP reductions, we expect that participants will gain insights and access to resources through the COP that will enable them to proceed with decarbonization projects.

We will survey participants in the COP on an annual basis to determine how knowledge sharing activities have enabled them to proceed with decarbonization projects; how their capacity to implement decarbonization projects has improved; and whether their engagement between other AH owners, managers, and professionals has increased. We will follow up with individuals who indicate that participation in the COP helped them to complete decarbonization projects to collect information about the energy and emissions reductions and costs associated with the projects, reporting them in semi-annual progress reports and in the final report.

### c) Authorities, Implementation Timeline, and Milestones

This section describes the roles and responsibilities of all Coalition members and subawardees for implementation, timelines for implementation, and milestones for each Measure. For each Measure we also discuss the authority Coalition members and partners have to implement Measures; other entities that will be engaged in measure implementation; quality assurance planning; and expectations for procurement, bidding, and construction. Additional information about how individual Coalition members and partners will use CPRG funding is provided in the Budget Narrative (Budget\_MAPC.pdf).

All timelines are expressed as months, quarters, or years from receipt of award from EPA throughout the five-year period of performance. Semi-annual, end of year 1, and final reports are not included in the timelines, but will be provided regularly starting six months after contracting.

### Measure 1 – Kickstart decarbonization retrofits

#### Roles and responsibilities

Organization	Roles and Responsibilities	Authority
Housing Authorities	<ul style="list-style-type: none"><li>• Oversee design and implementation of decarbonization retrofits</li><li>• Procure and contract with architects and engineers</li></ul>	PHAs have the authority to issue procurements



(Lead)	<ul style="list-style-type: none"> <li>• Procure and contract with contractors to complete decarbonization retrofit construction activities</li> <li>• Oversee contractor construction activities and quality assurance</li> <li>• Engage residents of affected properties</li> </ul>	and implement retrofits on their properties
New Ecology	<ul style="list-style-type: none"> <li>• Provide technical expertise to support PHAs in design and implementation of decarbonization retrofits</li> </ul>	Provides support to PHAs, who have ultimate authority to implement
MAPC	<ul style="list-style-type: none"> <li>• Provide overarching grant management and reporting</li> <li>• Collect project data and findings to develop case studies and share insights with COP</li> <li>• Facilitate development of project labor agreements</li> </ul>	
Mass Union	<ul style="list-style-type: none"> <li>• Support and facilitate tenant engagement activities, including gathering meaningful feedback on decarbonization projects</li> </ul>	
Architects/Engineers	<ul style="list-style-type: none"> <li>• Respond to architect/engineer RFP and contract with PHAs</li> <li>• Provide design services to PHAs</li> </ul>	Will contract with PHAs to complete design work
Construction Contractors (to be procured)	<ul style="list-style-type: none"> <li>• Respond to decarbonization retrofit procurement solicitations and contract with PHAs</li> <li>• Complete decarbonization retrofits</li> </ul>	Will contract with PHAs to complete construction

To procure architecture/engineering and construction contractors, the Coalition PHAs will issue RFPs that comply with all federal procurement requirements. The Coalition PHAs regularly issue solicitations to complete design and construction work on federally-funded public housing properties and anticipate no issues in completing a full and open process that complies with federal and state requirements.

### Timeline and Milestones

Task	Expected Completion Date	Key Parties
1.1 Completion of Supplemental Retrofit Analysis (if needed)	Within 6 months of contracting	<ul style="list-style-type: none"> <li>• Lead: New Ecology</li> <li>• Support: PHAs</li> </ul>
1.2 Issue RFP for architect/engineer for projects	Within 3 months of contracting*	<ul style="list-style-type: none"> <li>• Lead: PHAs</li> <li>• Support: New Ecology, MAPC</li> </ul>
1.3 Completion of initial tenant engagement activities	Within 6 months of contracting*	<ul style="list-style-type: none"> <li>• Lead: PHAs</li> <li>• Support: Mass Union</li> </ul>
1.4 Completion of schematic design, design documents, and construction documents	Within 9 months of contracting*	<ul style="list-style-type: none"> <li>• Lead: Architects/engineers, with oversight from PHAs</li> <li>• Support: New Ecology</li> </ul>
1.5 Bidding and selection of construction firm(s)	Within 15 months of contracting*	<ul style="list-style-type: none"> <li>• Lead: PHAs</li> <li>• Support: New Ecology</li> </ul>
1.6 Completion of all decarbonization retrofits	Within 27 months of contracting*	<ul style="list-style-type: none"> <li>• Lead: Construction Contractors, with oversight from PHAs</li> </ul>

*\*Or completion of supplemental analysis*

## Measure 2: Establish a technical assistance program

### Roles and responsibilities

Organization	Roles and Responsibilities	Authority
MAPC (lead)	<ul style="list-style-type: none"> <li>• Oversee design of TA program</li> <li>• Issue procurement for TA providers, conduct competitive process, and establish contracts with service providers</li> <li>• Work with contractors to develop TA scope of work templates</li> <li>• Issue program opportunity notice (PON) for TA grant rounds</li> <li>• Establish contracts between awardees and service providers</li> <li>• Check in regularly with service providers and awardees to ensure</li> </ul>	MAPC has authority to design and implement TA grant programs and contract with service providers under state procurement law



	quality and timeliness of TA provided <ul style="list-style-type: none"> <li>Collect and consolidate reports from awardees; follow-up with awardees annually after award period to capture follow-on actions</li> </ul>	
Housing Authorities, LISC, New Ecology, and CHAPA	<ul style="list-style-type: none"> <li>Provide feedback on TA program design</li> <li>Provide outreach support to encourage AH stakeholders to apply for TA</li> <li>Serve on selection committee for service providers and/or awardees upon request (if not bidding)</li> </ul>	Supports MAPC, which has authority to implement
TA Contractors (to be procured)	<ul style="list-style-type: none"> <li>Respond to TA program procurement for service providers</li> <li>Work with MAPC to develop TA scope of work templates</li> <li>Deliver TA to awardees</li> <li>Correspond with MAPC to provide program updates and recommendations for revisions</li> </ul>	Through contracts with MAPC, has authority to deliver TA to awardees

MAPC is a quasi-public agency with significant experience in issuing procurements for technical service providers that comply with federal and state requirements, most recently in selecting a contractor to provide technical consulting services to develop the Greater Boston PCAP. As with the Greater Boston PCAP, MAPC may use existing statewide contracts administered by the MA Operational Services Division to facilitate procurement. Additionally, MAPC regularly administers TA grant programs (as discussed further in Section 6) and establishes agreements with awardees. MAPC anticipates no issues with developing and implementing procurements that comply with all federal requirements.

### Timeline and Milestones

Task	Expected Completion Date	Key Parties
2.1 Develop TA program design; issue solicitation for TA providers	Within 3 months of contracting	Lead: MAPC Support: PHAs, LISC, New Ecology, CHAPA
2.2 Execute contracts with selected TA providers; issue PON (round 1)	Within 6 months of contracting	Lead: MAPC/TA Contractors Support: PHAs, LISC, New Ecology, CHAPA
2.3 Select round 1 TA awardees; finalize scopes of work and establish contracts between providers and awardees	Within 9 months of contracting	Lead: MAPC Support: TA Contractors, PHAs, LISC, New Ecology, CHAPA
2.4 Refine TA program design as needed; issue PON (round 2)	Within 18 months of contracting	Lead: MAPC Support: TA Contractors, PHAs, LISC, New Ecology, CHAPA
2.5 Select round 2 TA awardees; finalize scopes of work and establish contracts between providers and awardees	Within 21 months of contracting	Lead: MAPC Support: TA Contractors, PHAs, LISC, New Ecology, CHAPA
2.6 Final reports from round 1 awardees due	Within 24 months of contracting	Lead: Awardees
2.7 Final reports from round 2 awardees due	Within 36 months of contracting	Lead: Awardees

## Measure 3 – Streamline decarbonization procurement

### Roles and responsibilities

Organization	Roles and Responsibilities	Authority
MAPC (lead)	<ul style="list-style-type: none"> <li>Oversee development of streamlined procurement vehicles for decarbonization measures or services</li> <li>Issue collective procurement vehicle(s)</li> <li>Oversee development of legislative and regulatory procurement recommendations</li> </ul>	MAPC has authority to develop and implement streamlined procurement vehicles that comply with the Uniform Procurement Act (M.G.L. Ch. 30B). MAPC does not

	<ul style="list-style-type: none"> <li>• Solicit input from other public entities regarding decarbonization procurement needs and potential procurement reforms</li> <li>• Engage legislators and regulators to discuss potential procurement reforms</li> </ul>	have the authority to implement legislative and regulatory reforms, does not anticipate having this authority, and will not engage in advocacy activities under the grant.
Housing Authorities	<ul style="list-style-type: none"> <li>• Provide input on development of streamlined procurement vehicles</li> <li>• Provide input on potential legislative and regulatory procurement reforms</li> </ul>	Supports MAPC, which has authority to implement procurement vehicles; does not have authority to implement legislative/ regulatory reforms
LISC, New Ecology, CHAPA	<ul style="list-style-type: none"> <li>• Support gathering input from public stakeholders (e.g. through Energy Cohort) regarding decarbonization procurement needs and potential procurement reforms</li> </ul>	

As noted above, MAPC has authority to issue collective procurement vehicles on behalf of municipal entities that comply with the Uniform Procurement Act (M.G.L. Ch. 30B). MAPC has conducted procurements for municipalities for a variety of energy technologies and services, including LEDs, electric vehicles, solar, and energy aggregation services. MAPC anticipates no issues with developing compliant procurement vehicles for decarbonization measures or services under its existing authority.

### Timeline and Milestones

Task	Expected Completion Date	Key Parties:
3.1 Develop procurement vehicle concept for at least one decarbonization measure or service	Within 6 months of contracting	Lead: MAPC Support: PHAs, LISC, New Ecology, CHAPA, TBD procurement partner
3.2 Issue procurement vehicle for at least one decarbonization measure or service	Within 12 months of contracting	Lead: MAPC
3.3 Develop legislative and regulatory recommendations for adjusting procurement law	Within 18 months of contracting	Lead: MAPC Support: LISC, New Ecology, CHAPA, TBD procurement partner

## Measure 4 – Expand regional community of practice

### Roles and responsibilities

Organization	Roles and Responsibilities	Authority
LISC (Lead)	<ul style="list-style-type: none"> <li>• Oversee day-to-day management of Energy Cohort</li> <li>• Oversee development of Energy Cohort expansion plan</li> <li>• Oversee expansion of Energy Cohort programming and recruitment of additional members</li> <li>• Provide reporting information to MAPC</li> </ul>	LISC and New Ecology co-lead the Energy Cohort with MACDC and have authority to implement changes to the Cohort programming and incorporate new members
New Ecology	<ul style="list-style-type: none"> <li>• Support LISC with Energy Cohort management</li> <li>• Provide input on Energy Cohort expansion plan</li> <li>• Support expansion of Energy Cohort programming and recruitment of additional members</li> </ul>	
MAPC	<ul style="list-style-type: none"> <li>• Coordinate subawardees and provide overall quality assurance</li> <li>• Provide input on Energy Cohort expansion plan</li> <li>• Support expansion of Energy Cohort programming and recruitment of additional members</li> <li>• Coordinate stakeholders and provide relevant content from implementation of Measures 1-3</li> </ul>	Support LISC and New Ecology, which have authority to implement changes to Energy Cohort
CHAPA, Mass Union, PHAs	<ul style="list-style-type: none"> <li>• Provide input on Energy Cohort expansion plan</li> <li>• Participate in Energy Cohort</li> </ul>	

## Timeline and Milestones

Task	Expected Completion Date	Key Parties
4.1 Complete engagement of Cohort members and other AH stakeholders; develop multi-year plan for expanding the Energy Cohort	Within 6 months of contracting	Lead: LISC Support: New Ecology, MAPC, CHAPA, Mass Union, PHAs
4.2 Increase participation and engage new members in Cohort; provide education, trainings, and resources as identified in 4.1.	Within 12 months of contracting	Lead: LISC Support: New Ecology, MAPC, CHAPA, Mass Union, PHAs
4.3 Collect feedback on expanded Cohort activities; revise Cohort implementation plan	Within 18 months of contracting	Lead: LISC Support: New Ecology, MAPC, CHAPA, Mass Union, PHAs
4.4 Continue to implement the Cohort bases on revised plan.	Within the full program timeline	Lead: LISC Support: New Ecology, MAPC, CHAPA, Mass Union, PHAs

Currently, the Energy Cohort holds events bi-monthly. Cohort activities are expected to scale up, as determined by the multi-year expansion plan. The Coalition anticipates working with the EPA Program Officer to identify additional milestones based on the multi-year plan.

## 4) Low-Income and Disadvantaged Communities

### a) Community Benefits

All of the public housing properties that will be decarbonized through this program are located in Justice40 or EPA IRA DAC Census tracts.<sup>16</sup> Decarbonization retrofits will benefit the current and future residents and the surrounding communities in numerous ways, including improved health outcomes, increased resiliency, improved comfort and amenities, and reduced energy costs.

**Improved Health Outcomes.** Onsite combustion of fossil fuels, particularly gas stoves, exposes residents to increased levels of CO, PM<sub>2.5</sub>, NO<sub>2</sub>, and other air pollutants.<sup>17</sup> Exposure to these pollutants is linked to higher incidence of respiratory diseases and asthma.<sup>18</sup> Asthma rates are disproportionately high in the Coalition cities, especially in LIDAC census tracts. A 2017 study by the MA Department of Public Health found that the cities of Boston, Chelsea, and Lowell all rank in the top 15 cities in the state with the highest prevalence of asthma,<sup>19</sup> and a 2021 study by the Boston Public Health Commission found that public high school students of color had higher rates of asthma than white students.<sup>20</sup> Removing gas appliances can improve IAQ and occupant health. A recent study by NMR Group on behalf of the MA

<sup>16</sup> Justice40 and EPA IRA DAC Census tracts were identified using EJScreen and CEJST and are listed in Section 1a.

<sup>17</sup> American Lung Association, *Health Impacts of Combustion in Homes*, accessed March 22, 2024, <https://www.lung.org/policy-advocacy/healthy-air-campaign/residential-combustion>

<sup>18</sup> Hu, T., Singer, B., and Logue, J. (2012). *Developing PM<sub>2.5</sub> Emission Inventories for Assessing Residential Air Pollution Exposure to Periodic and Episodic Sources*. LBNL-5890E. <https://doi.org/10.2172/1172959>; Paulin, L.M., et. al. (2014). Home interventions are effective at decreasing indoor nitrogen dioxide concentrations. *Indoor Air*, 24(4):416-24: <https://pubmed.ncbi.nlm.nih.gov/24329966/>; Seals, B. A., and Krasner, A. (2020). *Health Effects from Gas Stove Pollution*. <https://rmi.org/insight/gas-stoves-pollution-health>; Gruenewald, T., et al. (2023) *Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States*, International Journal of Environmental Research and Public Health 20, no. 1, <https://doi.org/10.3390/ijerph20010075>.

<sup>19</sup> Massachusetts Dept. of Public Health. (2017). *Prevalence of Asthma Among Adults and Children in Massachusetts*. <https://www.mass.gov/doc/prevalence-of-asthma-among-adults-and-children-in-massachusetts/download>

<sup>20</sup> Ojikutu, B. (2023). *Health of Boston 2023: The Asthma Report*. [https://www.boston.gov/sites/default/files/file/2023/05/HOB\\_Asthma\\_2023\\_FINAL\\_May11.pdf](https://www.boston.gov/sites/default/files/file/2023/05/HOB_Asthma_2023_FINAL_May11.pdf)

utility program administrators estimated the annual value of respiratory and asthma-related health benefits at up to \$194 per gas stove replaced by electric or induction.<sup>21</sup> Furthermore, combining building envelope improvements with improved energy recovery ventilation systems will reduce air and moisture infiltration, which can lead to mold, pest infiltration, and viruses that cause or exacerbate asthma and respiratory conditions and many other adverse health impacts.<sup>22</sup>

As discussed in Section 3b, the Coalition will measure annual CAP emission reductions in the buildings retrofitted in Measure 1 and use deemed estimates for other Measures 2 and 3. All buildings retrofitted in Measure 1 are in Justice40 or EPA IRA DAC Census tracts, as well as a portion of the recipients of TA and procurement support in Measure 2 and 3.

**Lower Energy Costs.** As indicated in the “Energy Model Output” tab of the GHG Calculations Spreadsheet, the decarbonization retrofits pursued through the AHDA are expected to reduce energy costs. While the Coalition PHA residents do not pay their own utility bills, lower energy costs will indirectly benefit residents by allowing PHAs to redirect operating funds to other needed maintenance projects, many of which have been deferred for years due to lack of funds. We expect the retrofits from Measure 1 to reduce energy costs to the PHAs by approximately \$150,000 per year. Energy cost reductions from decarbonization retrofits supported through Measures 2-4 may in some cases accrue directly to residents, many of whom are among the most energy burdened in Massachusetts.

In addition to the proposed plan to measure actual GHG reductions resulting from decarbonization retrofits (as described in Section 3b), we will compare pre- and post-retrofit energy bills to track the actual energy savings realized. In semi-annual reporting, we will also discuss how the PHAs were able to redirect funding from avoided energy costs into other maintenance and improvement projects to benefit residents. We will also request information on realized energy bill savings from Measure 2 awardees who implement projects.

**Increased Resident Livability and Resilience.** Thermal improvements from building envelope retrofits and heat pump systems will improve resident livability and resilience to extreme heat. The PHA properties targeted (and AH in general) lack insulation, have not had substantive renovations since construction, and provide limited opportunities for tenants to control temperature. Heat pumps will provide residents with greater control over indoor temperature, providing cooling to residents who currently lack air conditioning (AC), which is becoming increasingly important in Greater Boston as peak temperatures rise and the urban heat island intensifies. As discussed in the region’s PCAP, by 2030, the region will experience up to 27 days of extreme heat annually and by 2080, upwards of 80 days over 90 degrees; average daily temperature in the region will increase by between 2.5-3°F by 2040.<sup>23</sup> Prolonged exposure to extreme temperatures can result in many heat-related illnesses and death, and exacerbate chronic illnesses, including respiratory and cardiovascular disease.<sup>24</sup> For units that already have window AC units, heat pumps will replace noisy window units, eliminating the need to annually replace window

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<sup>21</sup> NMR Group, Inc. and Three<sup>3</sup>. (2023). Residential Gas-to-Induction Stovetop Conversion NEIs Study (MA22X03-E-GSCNEI). [https://ma-eeac.org/wp-content/uploads/MA22X03-E-GSCNEI\\_Gas-to-Induction-Stovetop-NEIs-Study\\_-\\_Final-Report\\_1.12.2023.pdf](https://ma-eeac.org/wp-content/uploads/MA22X03-E-GSCNEI_Gas-to-Induction-Stovetop-NEIs-Study_-_Final-Report_1.12.2023.pdf)

<sup>22</sup> Cheryl Forchuk, Kevin Dickens, and Deborah Corring. (2016) *Social Determinants of Health: Housing and Income*, Healthcare Quarterly 18, <https://doi.org/10.12927/hcq.2016.24479>.

<sup>23</sup> Douglas, Ellen and Paul Kirshen. Green Ribbon Commission. *Climate Change Impacts and Projections for the Greater Boston Area*, [greenribboncommission.org/wp-content/uploads/2022/06/GBRAG\\_report\\_05312022@1915.pdf](https://greenribboncommission.org/wp-content/uploads/2022/06/GBRAG_report_05312022@1915.pdf). Accessed 27 Feb. 2024.

<sup>24</sup> Sarofim, M.C., S. Saha, M.D. Hawkins, D.M. Mills, J. Hess, R. Horton, P. Kinney, J. Schwartz, and A. St. Juliana, (2016) *Ch. 2: Temperature-Related Death and Illness. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. U.S. Global Change Research Program, Washington, DC, 43–68. <http://dx.doi.org/10.7930/J0MG7MDX>.

units, which can be challenging for senior and disabled residents. Replacing decades-old systems with modern technology will substantially increase resident comfort and air quality. This is particularly important for properties serving seniors and disabled residents, who are more likely to be susceptible to drafts and temperature fluctuation. Additionally, during periods of prolonged power outages, improved thermal envelopes will improve the passive survivability of buildings and limit comfort impacts.

**Good Jobs.** As discussed further in Section 5, CPRG funding will support good jobs in the building trades sector for decarbonizing buildings. The AHDA provides an opportunity to ensure that new clean energy sector jobs are high quality, good local jobs that can set new benchmarks for the region. Each PHA would require federal prevailing wage under the Davis Bacon Act and each is subject to Housing and Urban Development Act of 1968 Minority and Women's Participation Policy and Section 3 requiring benefits go towards low-income persons.<sup>25</sup> Additionally, program partners will explore Project Labor Agreements (PLAs) where permissible under state procurement law. This includes local access to jobs, apprenticeship programs that provide training for young people, and protecting job standards. Staff directly employed by the PHAs are represented by collective bargaining and have strong benefits packages. Best practices for workforce development and establishing PLAs will also be included in TA services through Measure 2 and the RCOP.

**Potential Equity Disbenefit – Disruption During Construction.** Decarbonization retrofits will require construction that may cause short-term disruption to the daily lives of residents. This could range from noise during the daytime to residents needing to move to alternative accommodations for the short-term if whole-unit improvements are being made. The PHAs will endeavor to develop retrofit plans that minimize tenant disruption and eliminate the need for relocation (e.g., through phased construction). Disruptions during construction will be minimized by communicating early and often with tenants and limiting when louder construction can take place. If temporary relocation is required, the PHAs will utilize Tenant Coordinators and Mass Union to facilitate relocation, maintain communications throughout construction, and ensure residents are positioned to return to their homes after the project is complete. We will encourage awardees of TA grants to explore decarbonization approaches that limit disruption to tenants and eliminate the need for relocation.

#### b) Community Engagement

The Coalition's selection of decarbonizing federally funded AH for this implementation grant was directly informed by engagement sessions from developing the Greater Boston PCAP with MAPC's Justice40 Advisory Group, which included 25 CBOs representing LIDAC communities in the region. The Coalition will work closely with tenants of the buildings identified in this grant to ensure that residents can actively participate in and meaningfully inform the design and decision-making process throughout the project lifecycle. The PHAs, their Tenant Coordinators and organizations, and Mass Union staff will plan and execute tenant engagement and outreach activities. Engagement will include holding onsite meetings and focus groups with residents during the design phases of each project. These meetings will allow residents to learn about each project and offer input into design decisions, construction timelines, and potential disruptions construction may cause (such as short-term closures or shifts to building systems, as needed depending on the project). As needed, engagement will include interpretation and translation of materials to ensure resident accessibility.

During project implementation, each project will include at least one designated Tenant Coordinator, or multiple Coordinators for a large project, who will interface between residents, the PHA, and the

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<sup>25</sup> "Section 3 and Contract Compliance". Boston Housing Authority. <https://www.bostonhousing.org/en/Departments/Civil-Rights/Section-3-and-Contract-Compliance.aspx>

construction firm leading the renovation work. PHAs currently requires Tenant Coordinators on construction projects who are current residents, and this approach would build on that practice with each PHAs. These Tenant Coordinators will provide a direct line of communication between the project and residents, ensuring that residents know what to expect throughout the project and that any concerns are heard and quickly addressed. The Tenant Coordinators will work with Mass Union during construction to provide regular meetings and communications to update residents on project progress and any potential impact it will have on their units and common spaces in the building.

Mass Union and the Tenant Coordinators will work with the PHAs and MAPC to evaluate community engagement approaches used during each project. This is anticipated to include at least one survey of residents and targeted interviews and focus groups after retrofits are complete to understand how well resident needs and concerns were accounted for, explore how the renovation projects have impacted tenant quality of life, and identify lessons learned for future decarbonization retrofits.

TA awardees in Measure 2 will be able to receive TA from service providers to support tenant engagement activities as well. The RCOP will also include tenant and community engagement as a key topic area in its trainings and information sessions for AH providers in the region. This will include sharing approaches used on the Measure 1 retrofit projects and sharing best practices and lessons learned from other community and tenant engagement approaches used in similar projects.

## 5) Job Quality

Decarbonizing existing buildings requires skilled workers/tradespeople including construction and insulation workers, electricians, HVAC installers and technicians, as well as related services in construction and building inspection. In MassCEC's 2023 report "Powering the Future: A Massachusetts Clean Energy Workforce Needs Assessment," they estimate a need for an additional 13,000 workers by 2030 in the high-performance building sector in Massachusetts.<sup>26</sup> In the Greater Boston and Northeast Massachusetts regions, the projected growth is 10,087 new EE jobs.

As described in greater detail in Section 4a above, the Coalition will aim to adhere to the Good Jobs principles from DOL and DOC. To that end, the Coalition will explore Project Labor Agreements (PLAs) to the extent allowed by procurement law, to ensure job quality and to facilitate local training and hiring from within LIDAC census tracts involved in this grant. PHAs will also require federal prevailing wage and encourage women and minority-owned business participation.

This program will also build upon existing practices from the PHAs and aim to utilize and strengthen existing regional job training programs run by the City of Boston. These programs include Building Pathways, which places public housing residents in union pre-apprenticeship training positions, and PowerCorpsBOS, a 10-month Green Industry Workforce Development Program,<sup>27</sup> which provides young adults with paid training, career readiness support, and connections to employers in the green industry. Finally, the Good Jobs Metro Boston Coalition is a three-year federal grant for which MAPC is an implementation partner.<sup>28</sup> The grant funds clean energy job training programs that largely serve low-income students and students of color and job placements for graduates of the programs into high

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<sup>26</sup> MassCEC. July 2023. "Powering the Future: A Massachusetts Clean Energy Workforce Needs Assessment". [https://www.masscec.com/sites/default/files/documents/Powering%20the%20Future\\_A%20Massachusetts%20Clean%20Energy%20Workforce%20Needs%20Assessment\\_Final.pdf](https://www.masscec.com/sites/default/files/documents/Powering%20the%20Future_A%20Massachusetts%20Clean%20Energy%20Workforce%20Needs%20Assessment_Final.pdf)

<sup>27</sup> Additional information about PowerCorpsBOS can be found here: <https://www.boston.gov/departments/workforce-development/powercorpsbos>

<sup>28</sup> Additional information about the Good Jobs Metro Boston Coalition can be found here: <https://www.boston.gov/worker-empowerment/good-jobs-metro-boston-coalition>

quality clean energy positions throughout the region. As a public purchaser, BHA is a community workforce site and creates construction work opportunities that allow both BHA- and non-BHA residents high quality career opportunities.

## 6) Programmatic Capability and Past Performance

### a) Past Performance

Project Title	Climate Pollution Reduction Grant – Metro Boston Climate Pollution Reduction Plan
Assistance agreement number	00A01117
Funding agency and assistance listing number	Environmental Protection Agency (EPA); 66.046
Brief description of the agreement	Provides funding to MAPC to develop a climate mitigation plan to address GHG emissions and reduction measures for the region. As part of the planning process, MAPC is conducting extensive engagement with low-income and disadvantaged communities.
Contact	Beatrice Pickett, U.S. EPA Region 1—New England Air and Radiation Division, Energy and Resilience Branch <a href="mailto:pickett.beatrice@epa.gov">pickett.beatrice@epa.gov</a>   (617) 918-1166
Discussion on work completion	MAPC submitted the Greater Boston Priority Climate Action Plan (PCAP) to EPA on March 1, 2024. This plan included a regional GHG inventory, eleven priority measures, and an analysis of LIDAC benefits. MAPC has partnered with six other regional planning agencies in the MSA and established a Municipal Advisory Group and Justice40 Advisory Group consisting of 25 non-profits from LIDAC communities. MAPC and project partners are currently working on the Comprehensive Climate Action Plan (CCAP).

Project Title	Safe Streets for All (SS4A) Action Plan / Boston Region Vision Zero Plan
Assistance agreement number	693JJ32340178
Funding agency and assistance listing number	Department of Transportation (DOT); 20.939
Brief description of the agreement	MAPC, on behalf of the Boston regional Metropolitan Planning Organization, awarded SS4A grant to develop and adopt regional Comprehensive Safety Action Plan to eliminate deaths and serious injuries on streets and roads in Greater Boston.
Contact	Cassandra Ostrander, Program Development Team Leader <a href="mailto:Cassandra.ostrander@dot.gov">Cassandra.ostrander@dot.gov</a>   (617) 494-3113
Discussion on work completion	MAPC, and the Boston Region MPO executed the agreement in May 2023 and plans to complete the adopted regional safety plan in 2025. To-date, MAPC and the MPO have established a Vision Zero Task Force and selected a consultant team to assist in developing the regional roadway safety action plan. MAPC is maintaining timely project management and meeting all required milestones for this project.

Project Title	Greater Boston Region (GBR) Regional Workforce Training System (RWTS) Awardee: Economic Development & Industrial Corporation of Boston (EDIC) Sub-awardee: Metropolitan Area Planning Council
Assistance agreement number	ED22HDQ3070112
Funding agency and assistance listing number	US Department of Commerce, Economic Development Administration (EDA) 11.307 (EDA-Economic Adjustment Assistance)
Brief description of the agreement	EDIC and MAPC will work with educational and training partners, employers, and support service providers in the Metro Boston region to create pathways



	into quality childcare, healthcare, and clean energy jobs.
Contact	Patrick Q. Bourke, Good Jobs Challenge Program Lead Economic Development Administration, U.S. Department of Commerce <a href="mailto:pbourke@eda.gov">pbourke@eda.gov</a>   (202) 209-4295
Discussion on work completion	With MAPC's support, after 1.5 of 3 years, EDIC is on track with its workplan. The consortium has helped enroll 243 participants in childcare sectoral partnership training and 732 participants in the healthcare sector partnership training, and placed 190 completers into healthcare careers with advancement opportunities. It has supported the enrollment of 293 participants into clean energy sector partnership trainings and placed 39 completers in skilled employment in the clean energy industry. A program of comprehensive training and support to low-income, diverse participants has been crafted and fully operationalized across all three industry sectors.

Project Title	Massachusetts Flood Vulnerability Assessment - Identifying Impacts to Environmental Justice Communities
Assistance agreement number	n/a
Funding agency and assistance listing number	Massachusetts Executive Office of Energy and Environmental Affairs (EEA), COMMBUYS Bid#: BD-24-1042-ENV-ENV01-95534
Brief description of the agreement	MAPC is leading a team to develop a statewide assessment of flood vulnerability with a focus on Environmental Justice (EJ) populations across Massachusetts. The project is using in-depth community engagement processes to integrate local insights into flood vulnerability mapping and develop floodplain mitigation solutions.
Contact	Vandana M. Rao, PhD, Director of Water Policy, Executive Director of Water Resources Commissions <a href="mailto:vandana.rao@mass.gov">vandana.rao@mass.gov</a>   (617) 721-3884
Discussion on work completion	The project has an 18-month timeline through June 2025. MAPC has convened a project team of three consultants and is coordinating with 11 other Regional Planning Agencies across Massachusetts. MAPC monitors monthly progress of all service providers' tasks and budgets and is The project is coordinating with numerous CBOs that serve and represent the interest of EJ populations in 182 EJ communities state-wide.

Project Title	Accelerating Climate Resilience Grant Program
Assistance agreement number	n/a
Funding agency and assistance listing number	The Barr Foundation
Brief description of the agreement	MAPC administers a competitive grant program for municipalities and CBO partners in the Metro Boston region to support projects that protect people, places, and communities from the impacts of climate change. The program began in 2020 and includes MAPC's facilitation of a Resilience Community of Practice (RCOP) for sharing best practices and learnings among grantees.
Contact	Kalila Barnett, Senior Program Officer, Climate Resilience The Barr Foundation <a href="mailto:kbarnett@barrfoundation.org">kbarnett@barrfoundation.org</a>   (617) 854-3126
Discussion on work completion	MAPC's current renewed contract for this program runs from 2022 to 2025. MAPC has administered two competitive rounds of grantmaking among its 101 municipalities during this time and awarded \$1.1 million in 22 grants to municipalities. Current work includes overseeing successful implementation of funded projects in communities and continuing to facilitate the RCOP.

## b) Reporting Requirements

For each assistance agreement listed above, MAPC has a designated Project Director, Project Manager, and support staff who ensure that the project is proceeding as outlined in its Scope of work and that all deliverables, regular funding agency reporting requirements, and invoices are completed on time and to satisfaction for the funder agency and the communities served by the project. For each project, MAPC has provided acceptable monthly/quarterly/interim and final reports required under those agreements and reported on its progress towards expected outputs and outcomes in a timely manner to each funder agency or organization. There have been no issues with meeting required reporting under any projects that MAPC has overseen.

## c) Staff Expertise

**MAPC** serves the people who live and work in the 101 cities and towns in Greater Boston. MAPC will serve as the lead agency for this project. MAPC is the regional planning agency for the region and works with municipal governments and CBO partners to advance smart growth, regional collaboration, equity, and climate change priorities. MAPC's Clean Energy Department staff will lead the project with support from MAPC's Community Development, Housing, Municipal Collaboration, Government Affairs, Public Health, and Finance and Administrative teams. Project staff have deep experience and expertise in EE, AH, building retrofits, clean energy procurement, building energy codes, and broader GHG mitigation strategies. MAPC's staff are also experienced project managers and facilitators and, as noted above, the agency is currently working on several federal contracts, including recently leading the development of the region's Priority Climate Action Plan as part of the EPA CPRG Planning Grant program. MAPC often develops and manages collaborative projects that span multiple municipalities and CBO partners to achieve greater efficiency and innovation via collaboration. MAPC has worked closely previously with the Cities of Boston, Chelsea, and Lowell and recently collaborated with the BHA to explore programmatic pathways for increasing clean energy access for public housing residents and with CHA to improve broadband internet access to public housing tenants. Jeremy Koo, the Assistant Director of the Clean Energy Department, will serve as the project manager and primary point of contact.

**BHA** is the largest housing provider in the City of Boston. In total, BHA currently owns and/or oversees approximately 10,000 rental units of public housing across 56 housing developments in Boston and houses more than 17,000 people under the public housing program. In January 2023, BHA and Mayor Michelle Wu announced an ambitious goal of achieving fossil fuel-free public housing by 2030. BHA is working to reduce greenhouse gas emissions by increasing its buildings' EE and exploring opportunities to incorporate clean energy technology. BHA often utilizes opportunities created by redevelopment projects to upgrade buildings' ventilation, reduce energy consumption, and introduce higher efficiency systems. BHA has previously used federal funds for rehabilitation projects and strategies like energy performance contracts for utility upgrades and is pursuing innovative approaches to accelerate decarbonization, including piloting networked geothermal installations in partnership with National Grid. BHA's Deputy Administrator for Sustainability and Capital Transformation, Joel Wool, will lead implementation on this project for BHA and serve as the primary point of contact.

**LHA** is the first public housing authority in Massachusetts and the states' seventh largest. LHA is pursuing emissions reductions across its portfolio of housing to improve residents' quality of life and to meet climate goals. Past projects have included working closely with an ESCO to improve heating, hot water, plumbing and lighting systems across 1,500 units and eight multifamily properties. LHA has also contracted for solar energy for its properties, pursued system-wide weatherization, electrified a 28-unit apartment building, and is partnering with National Grid on a networked geothermal pilot. LHA is skilled in administering federal and state grants and implementing capital projects. LHA's Capital Asset

Director, Jonathan Goldfield, will lead implementation on this project for LHA and serve as the primary point of contact.

**CHA** works to provide safe, decent and AH and to establish programs that educate, enhance, and empower the lives of all residents. CHA is committed to improving the 914 units it oversees over eight developments through a mix of public-private partnerships, tax-credit incentives, and the use of federal, state and private fund resources. CHA has worked closely with MAPC to procure and deploy high speed internet at one of its sites, and MAPC also supported the City of Chelsea and the nonprofit Green Roots on its work to develop and deploy a virtual microgrid in the city. CHA's Director of Operations, Matthew Frank, will implement this project for CHA and serve as the primary point of contact.

The Project Team includes five non-profit partner organizations, New Ecology, CHAPA, LISC, the Mass Union of Public Housing Tenants, and Environmental Monitoring Partners and Tufts University:

- **New Ecology** is a nonprofit focused on green building and sustainable design. New Ecology's staff have greened over 28,000 units of housing and its staff expertise includes building energy modeling, energy engineering, green building services, finance, building decarbonization, and project management and construction. Its staff will provide technical expertise as part of Measure 1 to help each HA plan and implement their decarbonization retrofits as effectively and efficiently as possible. Marty Josten, Principal Director of Building Decarbonization, will lead New Ecology's efforts and serve as the primary point of contact.
- **LISC Boston** is one of the country's largest community development support organizations and leads energy and healthy housing work with Massachusetts AH owners. LISC helps AH managers maximize the EE of their properties, integrate appropriate clean energy technologies, decrease carbon emissions, and provide residents with a higher quality of life. LISC will use its expertise to lead the Energy Cohort in Measure 4 and support TA program development and application outreach in Measure 2. Emily Jones, Senior Program Officer and current manager of the Energy Cohort, will lead LISC's efforts and serve as the primary point of contact.
- **CHAPA** encourages the production and preservation of AH for low- and moderate-income families and individuals. CHAPA runs programs that connect people with affordable rental and homeownership opportunities, and runs trainings and forums to build capacity in the field and to advocate for supportive policy. CHAPA will support TA program design and outreach in Measure 3, procurement planning in Measure 3, and the Energy Cohort in Measure 4.
- **Mass Union of Public Housing Tenants** is a nonprofit union run by tenants for tenants. Mass Union's mission is to preserve and improve public housing across the state. Mass Union is comprised of public housing tenant associations from around the Commonwealth. Mass Union will lead on tenant outreach and engagement in Measure 1 and represent public housing tenant interests in the Energy Cohort in Measure 4. Sarah Byrne, the Executive Director of Mass Union, will serve as the primary point of contact.
- **Environmental Monitoring Partners (EMP)** is a minority and woman-owned small business enterprise founded by Dr. Neelakshi Hudda. The consulting firm uses high-quality research-grade instruments and scientific study design methods in applications that are geared towards multi-stakeholder, community-engaged, complex but practical solutions to reduce GHG emission and environmental exposures. EMP will be supported by Dr. John Durant from the Tufts University Department of Civil and Environmental Engineering and will lead air quality monitoring, measurement, and reporting on Measure 1. Dr. Hudda will serve as the primary point of contact.

## 7) Budget

See Budget\_MAPC.pdf and Budgetcalcs\_MAPS.xlsx for details on the proposed budget.